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GROUNDWATER MONITORING REPORT
FIRST QUARTER 1998

HEGENBERGER MAINTENANCE STATION
OAKLAND, CALIFORNIA

PREPARED FOR

CALIFORNIA DEPARTMENT OF TRANSPORTATION
OAKLAND, CALIFORNIA

CALTRANS CONTRACT NO. 43Y097
TASK ORDER NO. 04-5T9000-01

GEOCON PROJECT NO. S8130-06-38

JUNE 1998

GEOCON
GEOTECHNICAL
&
ENVIRONMENTAL
CONSULTANTS

The contents of this report reflect the views of the author who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

GEOCON

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Project No. S8130-06-38
June 11, 1998

California Department of Transportation
District 4
Environmental Engineering Branch
111 Grand Avenue, 14th Floor
Post Office Box 23660
Oakland, California 94623-0660

Attention: Mr. Christopher Wilson

Subject: HEGENBERGER MAINTENANCE STATION
OAKLAND, CALIFORNIA
CONTRACT NO. 43Y097
TASK ORDER NO. 04-5T9000-01
GROUNDWATER MONITORING REPORT - FIRST QUARTER 1998

Dear Mr. Wilson:

In accordance with Caltrans Contract No. 43Y097 and Task Order No. 04-5T9000-01, Geocon Environmental Consultants, Inc. (Geocon) has completed First Quarter 1998 groundwater monitoring services at the subject site. The scope of services provided by Geocon included groundwater level measurements, the sampling of five groundwater monitoring wells, and the submittal of the water samples to a California-certified laboratory for analytical testing.

The site is located east of Interstate 880 at 555 Hegenberger Road in Oakland, California. The approximate site location is depicted on the attached Vicinity Map, Figure 1.

PROJECT SCOPE

Groundwater Elevation Measurements

A representative of Geocon measured groundwater levels within existing groundwater monitoring wells MW-1 through MW-5 on February 18, 1998. Depth to groundwater measurements were obtained using a battery operated water level meter with measurements obtained from the top of each well casing. Groundwater was encountered at depths between 3.82 and 5.74 feet below the top of the well casings.

Based on the February 18, 1998 groundwater elevation data, the approximate groundwater flow is directed to the northwest with an approximate gradient of 0.024 ft/ft. The approximate well locations and interpreted groundwater flow direction and elevation contours are depicted on Figure 2, Groundwater Elevation Map - February 1998. The February 1998 groundwater flow direction and gradient are consistent with those measured and evaluated since October 1995. A summary of the top of well casing elevations, groundwater level measurements and elevations is presented on Table 1.

Well Purging and Sampling

Approximately three casing volumes of water (approximately 28 to 32 gallons) were purged from each monitoring well on February 18, 1998 utilizing a 2-inch diameter submersible pump. Groundwater extraction was performed to allow fresh formation water to infiltrate the wells. During well purging, the pH, temperature, and electrical conductivity of the groundwater was measured and the purging was considered complete when these parameters stabilized to within approximately 10 percent. Groundwater recovery was monitored in order to achieve 80 percent well recovery prior to well sampling. Wells MW-1, MW-4 and MW-5 were deemed slow recharging wells. Dissolved oxygen (DO) and oxidation-reduction potential (ORP) measurements were obtained from each well after sampling. DO values ranged from 0.9 to 3.1 milligrams per liter (mg/l). ORP values ranged from -36 to 73 millivolts. The DO and ORP measurements are included on Table 2. Monitoring well sampling data sheets are presented in Appendix A. Extracted groundwater was contained in DOT 17-H 55-gallon drums which were labeled and stored onsite pending receipt of laboratory analysis and subsequent disposal following regulatory protocols.

Following well purging and recovery, water samples were collected from each well using polyethylene disposable bailers. The samples were decanted into pre-preserved 40-milliliter volatile organic analyses (VOA) vials equipped with teflon septums, and one-liter amber bottles. The groundwater samples and a travel blank consisting of one pre-preserved 40-ml VOA vial were sealed, labeled and placed in an ice chest containing blue ice and subsequently transported to Advanced Technology Laboratories (ATL) using standard chain-of-custody documentation.

Laboratory Analyses

The groundwater samples were submitted for the analyses of total petroleum hydrocarbons as gasoline and diesel (TPHg and TPHd) following EPA Test Method 8015 modified, benzene, toluene, ethylbenzene and total xylenes (BTEX) and methyl tert-butyl ether (MTBE) following EPA Test Method 8020, dissolved nitrate and dissolved sulfate following EPA Test Method 300, and dissolved iron following EPA Test Method 6010. The laboratory reports and chain of custody documentation are presented in Appendix B.

ANALYTICAL RESULTS AND DISCUSSION

TPHg was detected in wells MW-1, MW-3, MW-4 and MW-5 at concentrations ranging from 1,200 to 11,000 micrograms per liter (µg/l). TPHd was detected in each well sampled at concentrations ranging from 260 to 2,500 µg/l. BTEX was detected in wells MW-1, MW-3, MW-4 and MW-5 at concentrations ranging from 0.59 to 3,070 µg/l. The maximum concentrations of the target compounds were detected in well MW-3. Nondetected concentrations of the target compounds, excluding diesel, were reported for well MW-2.

TPHg and TPHd concentrations have increased in each well since November 1996 with the exception of TPHg which remained nondetected in well MW-2. The increase in dissolved phase petroleum hydrocarbon concentrations may be due to the shallowest groundwater elevations recorded since October 1995.

Dissolved nitrate was not detected in each of the five wells. Dissolved sulfate was detected in wells MW-2 through MW-5 at concentrations ranging from 9.6 to 311 mg/l. Dissolved iron was detected in each of the wells sampled at concentrations ranging from 1.6 to 4.9 mg/l.

The geochemical data suggests that intrinsic bioremediation may be occurring within the interior of the groundwater plume. For the interior plume wells in the presence of higher concentrations of petroleum hydrocarbons as compared to assumed background conditions in well MW-2, decreased sulfate and oxidation-reduction potential are indicators of anaerobic chemical degradation. The dissolved nitrate, iron and dissolved oxygen data does not support the presence of significant bioremedial activity at the site.

A cumulative summary of groundwater analytical data is presented on Tables 1 and 2. In addition, the TPHg, TPHd, benzene and MTBE concentrations are depicted on Figure 3, Petroleum Hydrocarbons in Groundwater - February 1998.

CONCLUSIONS AND RECOMMENDATIONS

Additional groundwater monitoring wells should be installed at the site to further define the lateral extent of the dissolved phase petroleum hydrocarbon impacts and to evaluate the potential for contributory offsite sources.

Subsequent groundwater monitoring events should include geochemical analyses to further evaluate the potential for intrinsic bioremediation and plume stability.

If you have any questions concerning the contents of this groundwater monitoring report, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON ENVIRONMENTAL CONSULTANTS, INC.

John E. Juhrend, PE, CEG
Project Manager

REGISTERED PROFESSIONAL ENGINEER
JOHN JUHREND
No. 46681
Exp. 6/30/99
CIVIL
STATE OF CALIFORNIA

Rebecca L. Silva
Sr. Staff Environmental Scientist

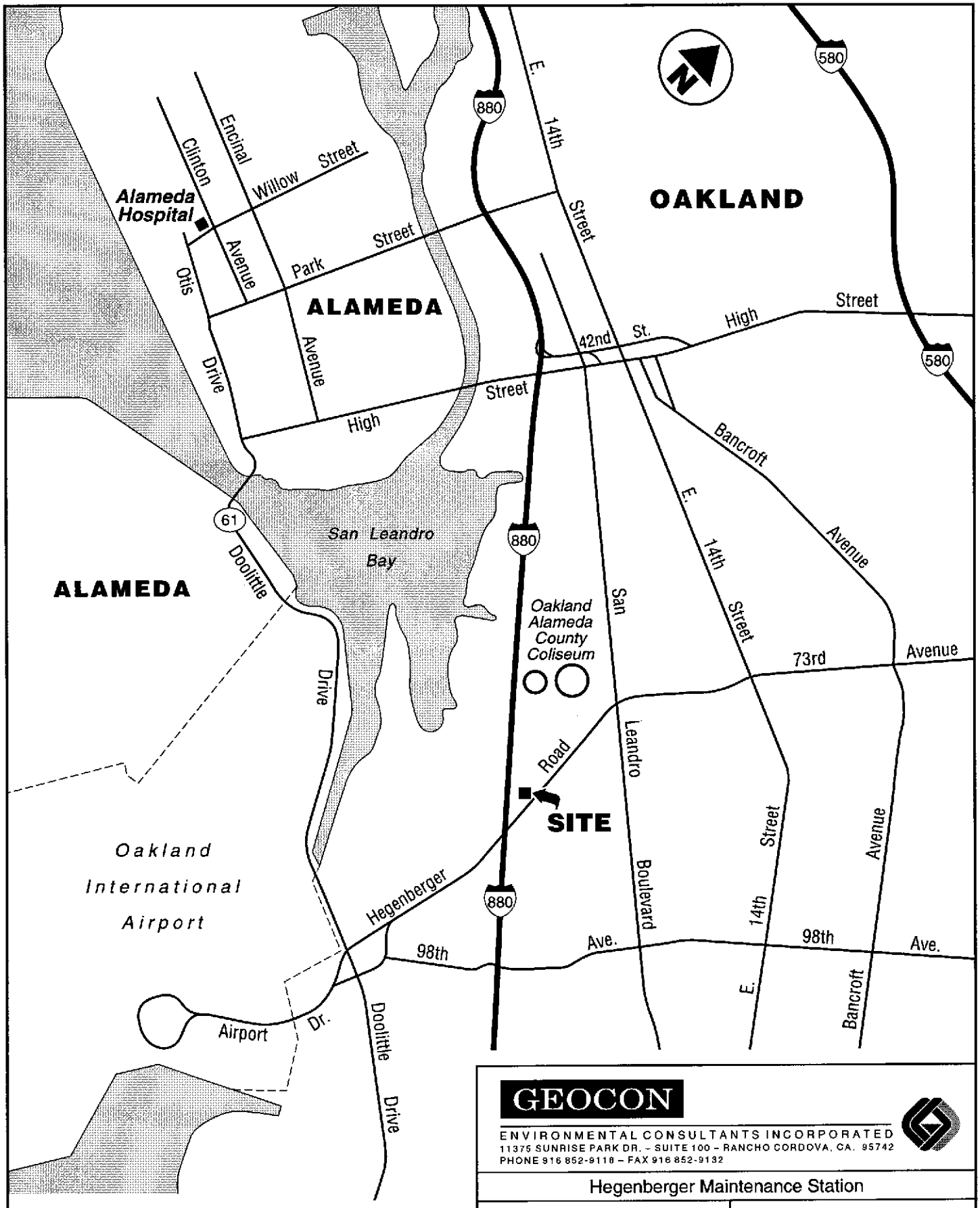
RLS:JEJ:db

(5) Addressee

Attachments: Figure 1 - Vicinity Map
Figure 2 - Groundwater Elevation Map - February 1998
Figure 3 - Petroleum Hydrocarbons in Groundwater - February 1998

Table 1 - Cumulative Summary of Groundwater Elevation and Analytical Data
Table 2 - Summary of Groundwater Geochemical Data

Appendix A: Monitoring Well Sampling Data Sheets
Appendix B: Laboratory Reports and Chain of Custody Documentation



GEOCON
ENVIRONMENTAL CONSULTANTS INCORPORATED
11375 SUNRISE PARK DR. – SUITE 100 – RANCHO CORDOVA, CA. 95742
PHONE 916 852-9118 – FAX 916 852-9132

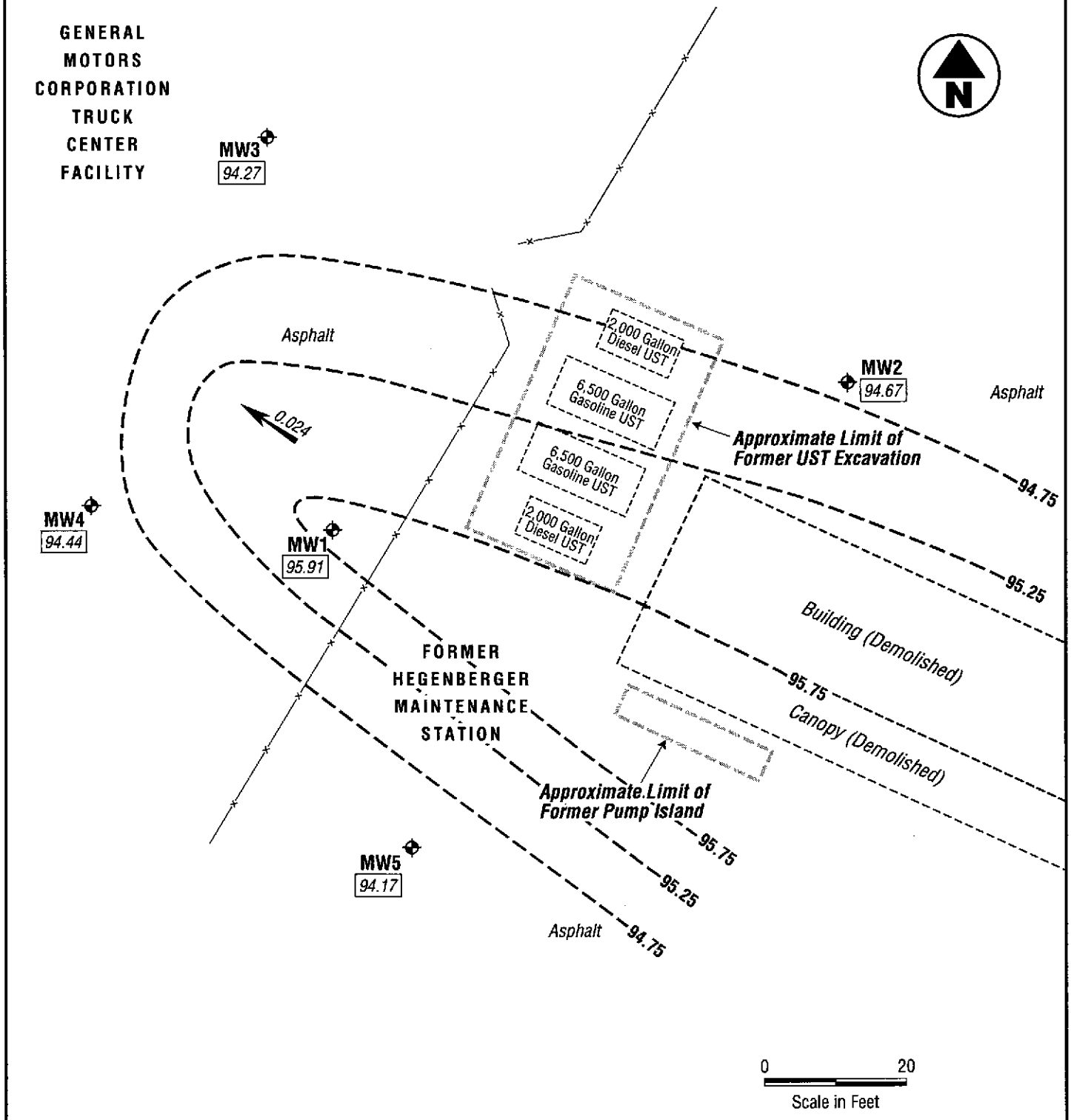
Hegenberger Maintenance Station

555 Hegenberger Road
Oakland, California

VICINITY MAP

GEOCON Proj. No. S8130-06-38

Task Order No. 04-5T9000-01 | June 1998 | Figure 1



LEGEND:

- Location of Former UST
- MW1 — Location of Groundwater Monitoring Well, GEOCON, Sept. 95
- Groundwater Elevation Contour (Interval = 0.50 Ft.)
- 94.17 — Relative Elevation of Groundwater Measured 2/18/98
- 0.024 — Approximate Groundwater Gradient

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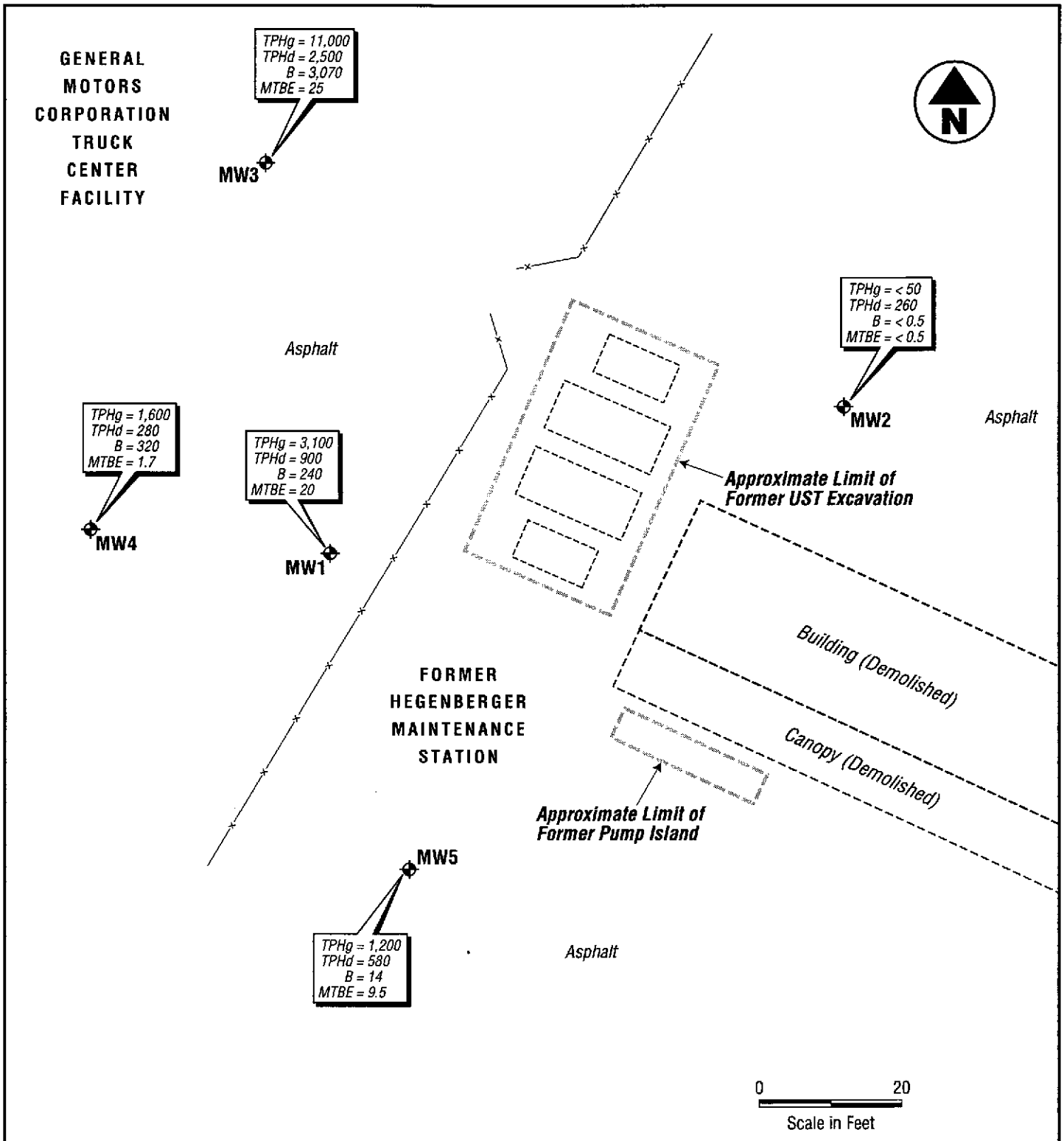
GROUNDWATER ELEVATION MAP – FEBRUARY 1998

GEOCON Proj. No. S8130-06-38

Task Order No. 04-5T9000-01

June 1998

Figure 2



LEGEND:

Location of Former UST

MW1 Location of Groundwater Monitoring Well, GEOCON, Sept. 95

TPHg = Total Petroleum Hydrocarbons as Gasoline
TPHd = Total Petroleum Hydrocarbons as Diesel
B = Benzene
MTBE = Methyl tert-butyl ether
All Concentrations in Micrograms Per Liter (ppb)

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PETROLEUM HYDROCARBONS IN GROUNDWATER- FEBRUARY 1998

GEOCON Proj. No. S8130-06-38

Task Order No. 04-5T9000-01 | June 1998 | Figure 3

TABLE 1
CUMULATIVE SUMMARY OF GROUNDWATER ELEVATION AND ANALYTICAL DATA
HEGENBERGER MAINTENANCE STATION
OAKLAND, CALIFORNIA

SAMPLE I.D.	DATE	TOC ELEVATION (REF)	DEPTH TO GROUNDWATER (feet)	GROUNDWATER ELEVATION (REF)	TPHg (µg/l)	TPHd (µg/l)	TPHmo (µg/l)	O&G (µg/l)	B (µg/l)	T (µg/l)	E (µg/l)	X (µg/l)	MTBE (µg/l)
MW-1	10/11/95	99.73	6.55	93.18	720	<50	<50	<5,000	660	13	4.7	2.8	---
MW-1	01/17/96	99.73	5.64	94.09	4,400	<50	<50	---	1,000	30	21	17	---
MW-1	04/16/96	99.73	5.46	94.27	6,050	7,450	---	---	914	34.7	34.4	15.8	---
MW-1	08/26/96	99.73	5.91	93.82	3,800	430	---	---	780	23	21	20	---
MW-1	11/14/96	99.73	6.16	93.57	2,600	270	---	---	500	18	14	8.9	---
MW-1	2/18/98	99.73	3.82	95.91	3,100	900[a]	---	---	240	18	7.8	11	20
MW-2	10/11/95	99.68	6.88	92.80	<50	<50	<50	<5,000	<0.3	<0.3	<0.3	<0.5	---
MW-2	01/17/96	99.68	5.32	94.36	4,900	<50	<50	---	2,100	<15	<15	<15	---
MW-2	04/16/96	99.68	5.81	93.87	<50	<50	---	---	1.02	<0.5	<0.5	<0.5	---
MW-2	08/26/96	99.68	5.98	93.70	<50	<50	---	---	<0.5	<0.5	<0.5	<0.5	---
MW-2	11/14/96	99.68	6.72	92.96	<50	56	---	---	<0.5	<0.5	<0.5	<0.5	---
MW-2	2/18/98	99.68	5.01	94.67	<50	260[b]	---	---	<0.5	<0.5	<0.5	<0.5	<0.5
MW-3	10/11/95	98.92	6.42	92.50	1,300*	<50	<50	<5,000	1.0	<0.3	<0.3	<0.3	---
MW-3	01/17/96	98.92	5.82	93.10	171	<50	<50	---	64	<0.3	1.0	<0.3	---
MW-3	04/16/96	98.92	5.85	93.07	6,740	565**	---	---	2,770	31.0	13.9	21.9	---
MW-3	08/26/96	98.92	5.72	93.20	700	70	---	---	180	4.2	1.0	4.6	---
MW-3	11/14/96	98.92	6.28	92.64	300	120	---	---	6.2	1.2	0.7	1.4	---
MW-3	2/18/98	98.92	4.65	94.27	11,000	2,500[a]	---	---	3,070	50	54	19	25
MW-4	10/11/95	99.46	6.63	92.83	500	<50	<50	<5,000	17	1.1	<0.3	0.48	---
MW-4	01/17/96	99.46	5.77	93.69	459	<50	<50	---	72	4.1	<0.3	1.7	---
MW-4	04/16/96	99.46	5.89	93.57	2,200	<50	---	---	851	7.67	1.41	5.72	---
MW-4	08/26/96	99.46	6.14	93.32	300	110	---	---	55	4.9	1.2	<0.5	---
MW-4	11/14/96	99.46	6.72	92.74	200	200	---	---	3.4	<0.5	<0.5	<0.5	---
MW-4	2/18/98	99.46	5.02	94.44	1,600	280[a]	---	---	320	9.1	1.0	0.59	1.7
MW-5	10/11/95	99.91	6.68	93.23	1,000	<50	<50	<5,000	45	15	1.9	6.1	---
MW-5	01/17/96	99.91	5.74	94.17	<50	<50	<50	---	2.0	<0.3	<0.3	<0.3	---
MW-5	04/16/96	99.91	5.85	94.06	1,740	855**	---	---	157	20.1	3.92	22.4	---
MW-5	08/26/96	99.91	5.99	93.92	900	270	---	---	55	6.4	0.9	3.7	---
MW-5	11/14/96	99.91	6.70	93.21	700	320	---	---	31	5.7	0.7	3.6	---
MW-5	11/14/96	99.91	6.70	93.21	700	320	---	---	31	5.7	0.7	3.6	---
MW-5	2/18/98	99.91	5.74	94.17	1,200	580[a]	---	---	14	5.2	0.76	5.5	9.5

TABLE 1
CUMULATIVE SUMMARY OF GROUNDWATER ELEVATION AND ANALYTICAL DATA
HEGENBERGER MAINTENANCE STATION
OAKLAND, CALIFORNIA

Notes:
TOC = Top of casing
REF = Top of casing elevations referenced to an onsite arbitrary elevation of 100.00 feet
TPHg = Total petroleum hydrocarbons as gasoline
TPHd = Total petroleum hydrocarbons as diesel
BTEX = Benzene, toluene, ethylbenzene and total xylenes
TPHmo = Total petroleum hydrocarbons as motor oil
O&G = Oil and grease
MTBE = Methyl tert-butyl ether analyzed by 8020/8260

* = Laboratory report notation "Weathered gas detected"
** = Laboratory report notation "Peaks in the diesel range"
a = Laboratory report notation "The sample contains heavier and lighter hydrocarbons than diesel. However, the quantitation was based on diesel standard."
b = Laboratory report notation "The sample contains heavier hydrocarbons than diesel. However, the quantitation was based on diesel standard."
µg/l = Micrograms per liter
--- = Not tested
< = Less than laboratory test method detection limit

TABLE 2
SUMMARY OF GROUNDWATER GEOCHEMICAL DATA
HEGENBERGER MAINTENANCE STATION
OAKLAND CALIFORNIA

WELL NUMBER	DATE	DISSOLVED NITRATE (mg/l)	DISSOLVED SULFATE (mg/l)	DISSOLVED FERROUS IRON** (mg/l)	DISSOLVED OXYGEN (mg/l)	ORP (millivolts)
MW-1	11/14/96	---	---	---	2.7	---
MW-1	2/18/98	<1.0	<5.0	2.1	3.1	-36
MW-2*	11/14/96	---	---	---	2.2	---
MW-2*	2/18/98	<1.0	65	4.1	2.8	73
MW-3	11/14/96	---	---	---	0.7	---
MW-3	2/18/98	<1.0	9.6	1.8	1.2	-7.0
MW-4	11/14/96	---	---	---	1.2	---
MW-4	2/18/98	<1.0	311	4.9	0.9	15
MW-5	11/14/96	---	---	---	3.3	---
MW-5	2/18/98	<1.0	12	1.6	2.7	36
Parameter effect compared to background under RNA conditions		Decreases	Decreases	Increases	Decreases	Decreases

Notes:
mg/l = Milligrams per liter
ORP = Oxidation-reduction potential
< = Not detected above laboratory test method detection limits
--- = Not tested
* = Assumed background conditions
** = Calculated Value based on: Dissolved Ferrous Iron = Dissolved Total Iron - Dissolved Ferric Iron

MONITORING WELL SAMPLING DATA

Project Name: Hegenberger Maint. Station	**Project Number**: S8130-06-38
Well No.: MW-1	Date: 2/18/98
Well Diameter: 4 in.	Field Personnel: BL
Total Well Depth: 20 feet	Screened Casing Length
Well Elevation: feet MSL measured from	

PURGE CHARACTERISTICS		
Water Depth Before Pumping: 3.82 ft.	2 in.=.1632 Gal/ft. 4 in. = .6528 Gal/ft.	
Calculated Water Column Volume: 10.6 Gal.		Volumes Purged: 3
Start Pumping Time: 1540	End Pumping Time: 1640	
Total Time: 60 min.	Flow Gauge: to	
Total Volume Pumped: 32 Gal.	Avg. Flow Rate: 0.5 gpm	
Water Depth After Pumping: feet	Time:	

SAMPLING CHARACTERISTICS

Sampling Method: disposable bailer

Laboratory Analysis: TPHg, TPHd, BTEX, MTBE, Sulfate, Iron, Nitrate

TIME	TEMPERATURE (°C)	CONDUCTIVITY (µmhos/cm)	pH	Gallons Purged
1600	16.6	652	7.6	10
1627	18.2	709	7.6	20
1637	19.7	858	7.4	32
1650				sample

comments: clear, strong odor

ORP = -36 mV, DO = 3.1 mg/l

slow recharge

MONITORING WELL SAMPLING DATA

Project Name: Hegenberger Maint. Station	**Project Number**: S8130-06-38
Well No.: MW-2	Date: 2/18/98
Well Diameter: 4 in.	Field Personnel: BL
Total Well Depth: 20 feet	Screened Casing Length
Well Elevation: feet MSL measured from	

PURGE CHARACTERISTICS	
Water Depth Before Pumping: 5.01 ft.	2 in.=.1632 Gal/ft. 4 in. = .6528 Gal/ft.
Calculated Water Column Volume: 9.8 Gal.	Volumes Purged: 3
Start Pumping Time: 1200	End Pumping Time: 1230
Total Time: 30 min.	Flow Gauge: 31439 to 31469
Total Volume Pumped: 30 Gal.	Avg. Flow Rate: 1.0 gpm
Water Depth After Pumping: feet	Time:

SAMPLING CHARACTERISTICS

Sampling Method: disposable bailer

Laboratory Analysis: TPHg, TPHd, BTEX, MTBE, Sulfate, Iron, Nitrate

TIME	TEMPERATURE (°C)	CONDUCTIVITY (µmhos/cm)	pH	Gallons Purged
1214	22.6	1919	7.4	10
1220	23.2	1954	7.6	20
1230	23.4	1983	7.5	30
1300				sample

comments: turbid, odor, becomes clear after 15 gallons, mild odor

ORP = 73 mV, DO = 2.8 mg/l

MONITORING WELL SAMPLING DATA

Project Name: Hegenberger Maint. Station	**Project Number**: S8130-06-38
Well No.: MW-3	Date: 2/18/98
Well Diameter: 4 in.	Field Personnel: BL
Total Well Depth: 20 feet	Screened Casing Length
Well Elevation: feet MSL measured from	

PURGE CHARACTERISTICS	
Water Depth Before Pumping: 4.65 ft.	2 in.=.1632 Gal/ft. 4 in. = .6528 Gal/ft.
Calculated Water Column Volume: 10 Gal.	Volumes Purged: 3
Start Pumping Time: 1400	End Pumping Time: 1425
Total Time: 25 min.	Flow Gauge: 31610 to 31640
Total Volume Pumped: 30 Gal.	Avg. Flow Rate: 1.2 gpm
Water Depth After Pumping	Time:

SAMPLING CHARACTERISTICS

Sampling Method: disposable bailer

Laboratory Analysis: TPHg, TPHd, BTEX, MTBE, Sulfate, Iron, Nitrate

TIME	TEMPERATURE (°C)	CONDUCTIVITY (µmhos/cm)	pH	Gallons Purged
1408	18.7	1844	7.6	10
1415	19.8	1859	7.4	20
1425	21.1	1878	7.3	30
1450				sample

comments: Clear, strong odor

ORP = -7 mV, DO = 1.2 mg/l

Project Name: Hegenberger Maint. Station	**Project Number**: S8130-06-38
Well No.: MW-4	Date: 2/18/98
Well Diameter: 4 in.	Field Personnel: BL
Total Well Depth: 20 feet	Screened Casing Length
Well Elevation: feet MSL measured from	

PURGE CHARACTERISTICS		
Water Depth Before Pumping: 5.02 ft.	2 in.=.1632 Gal/ft. 4 in. = .6528 Gal/ft.	
Calculated Water Column Volume: 9.8 Gal.		Volumes Purged: 3
Start Pumping Time: 1530	End Pumping Time: 1610	
Total Time: 40 min.	Flow Gauge: to	
Total Volume Pumped: 30 Gal.	Avg. Flow Rate: 0.75 gpm	
Water Depth After Pumping	Time:	

SAMPLING CHARACTERISTICS

Sampling Method: disposable bailer

Laboratory Analysis: TPHg, TPHd, BTEX, MTBE, Sulfate, Iron, Nitrate

TIME	TEMPERATURE (°C)	CONDUCTIVITY (µmhos/cm)	pH	Gallons Purged
1538	18.0	1877	7.5	10
1600	18.8	1998	7.3	20
1610	18.4	1999	7.3	30
1610				sample

comments: Clear, strong odor, well dry after 10 gallons; slow recharge

ORP = 15 mV, DO = 0.9 mg/l

Project Name: Hegenberger Maint. Station	**Project Number**: S8130-06-38
Well No.: MW-5	Date: 2/18/98
Well Diameter: 4 in.	Field Personnel: BL
Total Well Depth: 20 feet	Screened Casing Length
Well Elevation: feet MSL measured from	

PURGE CHARACTERISTICS	
Water Depth Before Pumping: 5.74 ft.	2 in.=.1632 Gal/ft. 4 in. = .6528 Gal/ft.
Calculated Water Column Volume: 9.3 Gal.	Volumes Purged: 3
Start Pumping Time: 1320	End Pumping Time: 1355
Total Time: 35 min.	Flow Gauge: 31470 to 31498
Total Volume Pumped: 28 Gal.	Avg. Flow Rate: 0.8 gpm
Water Depth After Pumping:	Time:

SAMPLING CHARACTERISTICS

Sampling Method: disposable bailer

Laboratory Analysis: TPHg, TPHd, BTEX, MTBE, Sulfate, Iron, Nitrate

TIME	TEMPERATURE (°C)	CONDUCTIVITY (µmhos/cm)	pH	Gallons Purged
1325	18.7	878	7.6	10
1336	22.9	906	7.5	20
1355	22.5	915	7.4	28
1400				sample

comments: Clear, strong odor, well dry after 19 gallons, well dry after 23 gallons, slow recharge

ORP = 36 mV, DO = 2.7 mg/l

Advanced Technology Laboratories

February 27, 1998 ELAP No.: 1838

Geocon Environmental
3235 Sunrise Blvd. #6
Rancho Cordova, CA 95742

ATTN: Ms. Rebecca Silva

Client's Project: Hegonburger Maintenance, S8130-06-38
Lab No.: 24005-001/005

Gentlemen:

Enclosed are the results for sample(s) received by Advanced Technology Laboratories and tested for the parameters indicated in the enclosed chain of custody.

Thank you for the opportunity to service the needs of your company. Please feel free to call me at (562) 989 - 4045 if I can be of further assistance to your company.

Sincerely,

Edgar P. Caballero
Laboratory Director
EPC/ms

Enclosures

This cover letter is an integral part of this analytical report.

Mailing Address: P.O. Box 9108 Newport Beach, CA 92658
1510 E. 33rd Street Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Client: Geocon Environmental
Attn: Ms. Rebecca Silva

Client's Project: Hegonburger Maintenance, S8130-06-38
Date Received: 02/20/98
Matrix: Water

METHOD 8015M (Gasoline)/EPA 8020

Lab No.:	Method Blank		24005-001		24005-001D		24005-002		24005-003		24005-004		24005-005		LCS			
Client Sample I.D.:	---		MW1		MW1		MW2		MW3		MW4		MW5		---			
Date Sampled:	----		02/18/98		02/18/98		02/18/98		02/18/98		02/18/98		02/18/98		---			
QC Batch #:	E988G20W035		E988G20W035		E988G20W035		E988G20W035		E988G20W035		E988G20W035		E988G20W035		E988G20W035			
Date Analyzed:	02/25/98		02/25/98		02/25/98		02/26/98		02/26/98		02/26/98		02/25/98		02/25/98			
Analyst Initials:	RL		RL		RL		RL		RL		RL		RL		RL			
Dilution Factor:	1		1		1		1		8.6		1		1		1			
Analyte	MDL	Units	DLR	Results	DLR	Results	DLR	Results	DLR	Results	DLR	Results	DLR	Results	DLR	Results	Limits	%Rec		
TPH (Gas)	0.05	mg/l	0.05	ND	0.05	3.1	0.05	3.1	0.05	ND	0.43	11	0.05	1.6	0.05	1.2	73-129	76		
Benzene	0.5	µg/l	0.50	ND	0.50	240	0.50	250	0.50	ND	4.3	3070	0.50	320	0.50	14	65-133	81		
Toluene	0.5	µg/l	0.50	ND	0.50	18	0.50	18	0.50	ND	4.3	50	0.50	9.1	0.50	5.2	62-142	80		
Ethylbenzene	0.5	µg/l	0.50	ND	0.50	7.8	0.50	8.1	0.50	ND	4.3	54	0.50	1.0	0.50	0.76	63-142	80		
Xylenes (total)	0.5	µg/l	0.50	ND	0.50	11	0.50	12	0.50	ND	4.3	19	0.50	0.59	0.50	5.5	61-136	84		
MTBE	0.5	µg/l	0.50	ND	0.50	20	0.50	21	0.50	ND	4.3	25	0.50	1.7	0.50	9.5	50-150	88		

Lab No.:																				
Client Sample I.D.:																				
Date Sampled:																				
QC Batch #:																				
Date Analyzed:																				
Analyst Initials:																				
Dilution Factor:																				
Analyte	MDL	Units	DLR	Results	DLR	Results	DLR	Results	DLR	Results	DLR	Results	DLR	Results	DLR	Results	DLR	Results	DLR	Results
TPH (Gas)	0.05	mg/l																		
Benzene	0.5	µg/l																		
Toluene	0.5	µg/l																		
Ethylbenzene	0.5	µg/l																		
Xylenes (total)	0.5	µg/l																		
MTBE	0.5	µg/l																		

MDL = Method Detection Limit
ND = Not Detected. (Below DLR)

DLR = MDL X Dilution Factor
NA = Not Analyzed

Reviewed/Approved By: _____ for _____
Lee Ingvaldson, Department Supervisor

Date: 2/27/98

The cover letter is an integral part of this analytical report.

Advanced Technology Laboratories

Client:	**Geocon Environmental**	**QC Batch #:**	**L988015DW080**
Attn:	**Ms. Rebecca Silva**	**Date Sampled:**	**02/18/98**
		Date Received:	**02/20/98**
		Date Extracted:	**02/24/98**
		Date Analyzed:	**02/24/98**
Client's Project:	**Hegonburger Maintenance, S8130-06-38**	**Extraction Method:**	**3510**
Matrix:	**Water**	**Extraction Material:**	**Methylene Chloride**
Analyst Initials:	**DT**		

Method 8015M/TPH (Diesel)

Lab No.:	Sample ID:	Results, mg/L	DLR, mg/L	Dilution Factor
Method Blank	----	ND	0.05	1
24005-001	MW1	0.9*	0.05	1
24005-002	MW2	0.26**	0.05	1
24005-003	MW3	2.5*	0.05	1
24005-004	MW4	0.28*	0.05	1
24005-005	MW5	0.58*	0.05	1
		%Rec.	Limits	
LCS	----	72	50-150	1

MDL = Method Detection Limit
ND = Not Detected (Below DLR).
DLR = MDL X Dilution Factor

* = The sample contains heavier and lighter hydrocarbons than diesel. However, the quantitation was based on diesel standard.

** = The sample contains heavier hydrocarbons than diesel. However, the quantitation was based on diesel standard.

Reviewed/Approved By: _____ for _____ **Date:** 2/27/98

Lee Ingvaldson
Department Supervisor

The cover letter is an integral part of this analytical report.

Spike Recovery and RPD Summary Report - WATER

Method : C:\HPCHEM\5\METHODS\8025WAT.M
Title : EPA M8015 (Gasoline) / EPA 602 (BTEX)
Last Update : Wed Feb 25 17:15:20 1998
Response via : Initial Calibration

Non-Spiked Sample: 24005-05.D

	Spike Sample	Spike Duplicate Sample
File ID :	EMS0225A.D	EMD0225A.D
Sample :	24005-05 1ppm MS Gas (+BTEX)	24005-05 1ppm MSD Gas (+BTEX)
Acq Time:	26 Feb 98 01:08 AM	26 Feb 98 01:37 AM

Compound	Sample Conc	Spike Added	Spike Res	Dup Res	Spike %Rec	Dup %Rec	RPD	QC Limits RPD	QC Limits % Rec
Gasoline (mg/L)	1.2	1	2	2	97	92	5	19	66-129
Benzene (ug/L)	14.3	12	24	23	78	76	3	6	73-121
Toluene (ug/L)	5.1	66	57	58	79	81	2	12	70-127

QC BATCH #:E988G20W035

Reviewed and Approved by: _____ for Date: 2/27/98

Lee Ingvaldson
Organics Supervisor

Advanced Technology Laboratories
1510 E. 33rd Street Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Spike Recovery and RPD Summary Report - WATER(mg/l)

Method : C:\HPCHEM\5\METHODS\DIESEL.M
Title : Diesel
Last Update : Tue Feb 24 12:18:30 1998
Response via : Initial Calibration

Non-Spiked Sample: L98B1000.D

	Spike Sample	Spike Duplicate Sample
File ID :	L98S1007.D	L98S1008.D
Sample :	Blank MS	Blank MSD
Acq Time:	22 Feb 98 11:34 PM	22 Feb 98 11:55 PM

Compound	Sample Conc	Spike Added	Spike Res	Dup Res	Spike %Rec	Dup %Rec	RPD	QC Limits RPD	QC Limits % Rec
Diesel	ND	1000	703	658	71	66	6	50	50-150

QC Batch # :L988015DW080

Reviewed/Approved by: _____ for _____ Date: 2/27/98

Lee Ingvaldson
Organics Supervisor

Advanced Technology Laboratories
1510 E. 33rd Street Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Client: Geocon Environmental
Attn: Ms. Rebecca Silva

Client's Project: Hegonburger Maintenace, S8130-06-38

Date Received: 02/20/98
Date Sampled: 02/18/98
*Date Digested: 02/24/98
*Digestion Method: EPA 3010

Lab No.	Sample I.D.	Analysis	Date Analyzed	Results	Matrix, Units	MDL	DLR	Analyst
24005-001*	MW1	EPA 6010 (Iron)	02/25/98	2.1	Water, mg/L	0.10	0.10	LRB/LP
24005-002*	MW2	EPA 6010 (Iron)	02/25/98	4.1	Water, mg/L	0.10	0.10	LRB/LP
24005-003*	MW3	EPA 6010 (Iron)	02/25/98	1.8	Water, mg/L	0.10	0.10	LRB/LP
24005-004*	MW4	EPA 6010 (Iron)	02/25/98	4.9	Water, mg/L	0.10	0.10	LRB/LP
24005-005*	MW5	EPA 6010 (Iron)	02/25/98	1.6	Water, mg/L	0.10	0.10	LRB/LP
24005-005D*	MW5	EPA 6010 (Iron)	02/25/98	1.9	Water, mg/L	0.10	0.10	LRB/LP
24005-001	MW1	EPA 6010 (Ferrous Iron)**	02/27/98	2.1	Water, mg/L	----	----	CDR
24005-002	MW2	EPA 6010 (Ferrous Iron)**	02/27/98	4.1	Water, mg/L	----	----	CDR
24005-003	MW3	EPA 6010 (Ferrous Iron)**	02/27/98	1.8	Water, mg/L	----	----	CDR
24005-004	MW4	EPA 6010 (Ferrous Iron)**	02/27/98	4.9	Water, mg/L	----	----	CDR
24005-005	MW5	EPA 6010 (Ferrous Iron)**	02/27/98	1.6	Water, mg/L	----	----	CDR
24005-001	MW1	EPA 300 (Nitrate-N)	02/20/98	ND	Water, mg/L	1.0	1.0	IG
24005-001D	MW1	EPA 300 (Nitrate-N)	02/20/98	ND	Water, mg/L	1.0	1.0	IG
24005-002	MW2	EPA 300 (Nitrate-N)	02/20/98	ND	Water, mg/L	1.0	1.0	IG
24005-003	MW3	EPA 300 (Nitrate-N)	02/20/98	ND	Water, mg/L	1.0	1.0	IG
24005-004	MW4	EPA 300 (Nitrate-N)	02/20/98	ND	Water, mg/L	1.0	1.0	IG
24005-005	MW5	EPA 300 (Nitrate-N)	02/20/98	ND	Water, mg/L	1.0	1.0	IG
24005-001	MW1	EPA 300 (Sulfate)	02/20/98	ND	Water, mg/L	5.0	5.0	IG
24005-001D	MW1	EPA 300 (Sulfate)	02/20/98	ND	Water, mg/L	5.0	5.0	IG
24005-002	MW2	EPA 300 (Sulfate)	02/20/98	65	Water, mg/L	5.0	10	IG
24005-003	MW3	EPA 300 (Sulfate)	02/20/98	9.6	Water, mg/L	5.0	5.0	IG
24005-004	MW4	EPA 300 (Sulfate)	02/20/98	311	Water, mg/L	5.0	50	IG
24005-005	MW5	EPA 300 (Sulfate)	02/20/98	12	Water, mg/L	5.0	5.0	IG

MDL = Method Detection Limit
ND = Not Detected (Below DLR)
DF = Dilution Factor (DLR/MDL)
** = Calculated Value.

Reviewed/Approved By: Cheryl de los Reyes Date: 2/27/98
Cheryl De Los Reyes
Department Supervisor

The cover letter is an integral part of this analytical report.

Advanced Technology Laboratories
1510 E. 33rd Street Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Spike Recovery and RPD Summary Report

Method: EPA 6010(IRON)
Analyst: LB/LP/OL
Data File: ICP80225-1
QA File: 8056-1

Date Analyzed: 2/25/98
Date Digested: 2/24/98
Sample ID: See below
Matrix: WATER

SAMPLE ID	UNITS	LCS Conc	LCS Res	% Rec	METH BLANK	SPL CONC	SPL DUP	% Dev	SPK ADDED	MS RESULT	MSD RESULT	%MS REC	%MSD REC	% REC	RPD	RPD Limit	MDL
24005-005	mg/L	50	56	112	ND	1.6	1.9	17	100	94	101	92	99	60-130	7	13	0.1

Approved by: Cheryl de los Reyes
Cheryl De Los Reyes
Inorganics Supervisor

Date: 2/27/98

Advanced Technology Laboratories

Spike Recovery and RPD Summary Report

Method: EPA 300
Analyst: IG
Data File 8051-1CTW

Date Analyzed 02/20/98
Sample ID: 24005-001
Matrix: Water

ANALYTE	UNITS	LCS Conc	LCS Res	% Rec	METH BLANK	SPL CONC	SPL DUP	% Dev	SPK ADDED	MS RESULT	MSD RESULT	%MS REC	%MSD REC	% REC Limit	RPD	RPD Limit	MDL
Nitrate-N	mg/L	2.5	2.4	96	ND	ND	ND	0	5	5	5	90	90	51-124	0	50	1.0
Sulfate	mg/L	15	14	93	ND	ND	ND	0	30	31	31	103	103	51-124	0	50	5.0

Approved by: Cheryl de los
Cheryl De Los Reyes
Inorganics Supervisor

Date: 2/27/98

Advanced Technology Laboratories

Spike Recovery and RPD Summary Report

Method: SM4500CN M
Analyst: IG/LB
Data File: 8058-1W

Date: 02/27/98
Sample ID: 24005-005
Matrix: Water

ANALYTE	UNITS	LCS Conc	LCS Res	% Rec	METH BLANK	SPL CONC	SPK ADDED	MS RESULT	MSD RESULT	%MS REC	%MSD REC	% REC Limit	RPD	RPD Limit	MDL
Fe3+	mg\L	4.0	4.2	105	ND	ND	4.0	4.1	4.1	103	103	50 - 130	0	20	0.25

Approved by: Cheryl De Les Reyes
Cheryl De Les Reyes
Inorganics Supervisor

Date: 2/27/98

Advanced Technology Laboratories

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
1510 E. 33rd Street
Signal Hill, CA 90807
(310) 989-4045 • FAX (310) 989-4040

FOR LABORATORY USE ONLY:

Logged By: [illegible] Date: 2/20 Time: 1300
Batch #: _____ D.O. #: _____
P.O. #: _____

Method of Transport: Walk-in ☐ Courier ☑ UPS ☐ FED. EXP. ☐ ATL ☐

Sample Condition Upon Receipt:
1. COOLER TEMP °C _____ (2-6) 5. SEALED Y☐ N☒
2. CHILLED Y☒ N☐ 6. # OF SPLS MATCH COC Y☒ N☐
3. HEADSPACE (VOA) Y☐ N☒ 7. PRESERVED Y☒ N☐
4. CONTAINER INTACT Y☒ N☐ 8. CONTR. LOT # _____

Client: GEOCON ENVIRONMENTAL - SACRAMENTO
Attn: Rebecca Silva
Address: 3235 Sunrise Blvd. #6
City Rancho Cordova State CA Zip Code 95742
TEL: (916) 852-9118
FAX: (916) 852-9132

Project Name: Hagenburger Maintenance Project #: 58130-06-38 Sampler: (Printed Name) Robert LaRusso (Signature) Robert LaRusso

Relinquished by: (Signature and Printed Name) Robert LaRusso	Received by: (Signature and Printed Name) Geocon Storage	Date: 2/18/98	Time: 1800
Relinquished by: (Signature and Printed Name) Geocon Storage	Received by: (Signature and Printed Name) [illegible]	Date: 2/19/98	Time: 1600
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name) Diane Galvan	Date: 2-20-98	Time: 09:00

Unless otherwise requested, all samples will be disposed 45 days after receipt.

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter: JEREMY ZORNE Date: 02/19/98
Print Name
Signature

Send Report To:
Attn: REBECCA SILVA
Co: SAA
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:
CT43097

SHIP TO LAB: (SUB CONTRACT) _____ TEST: _____ ATL #: _____ DATE: _____ CLIENT I.D. _____

SHIP TO LAB: (SUB CONTRACT) _____ TEST: _____ ATL #: _____ DATE: _____ CLIENT I.D. _____

SHIP TO LAB: (SUB CONTRACT) _____ TEST: _____ ATL #: _____ DATE: _____ CLIENT I.D. _____

Circle or Add Analysis(es) Requested

CIRCLE APPROPRIATE MATRIX

PRESERVATION

QA/QC: RTNE ☐ RWQCB ☐ WIP ☐ NAVY ☐ CT ☒ OTHER _____

ITEM	LAB USE ONLY: Batch # / Lab No.	Sample Description: Sample I.D.	Date	Time	601/8010 (Halogenated Volatiles-GC)	602/8020/BTEX (Aromatic Volatiles-GC)	608/8080 (Pesticides/PCB-GC)	624/8240/8260 (Volatiles-GC/MS)	625/8270 (BNA-GC/MS)	8015M (TPHG/BTEX COMBINATION)	8015M (TPHD Diesel-GC)	418.1 (TPH-IR)	Metals-Total (CAC-5010/7000)	IRON (Fe++) - 6010	NITRATE - 300	SULFATE - 300	MTBE - 8020	SOLID • SOIL • SLUDGE	OIL • SOLVENT • LIQUID	WATER • WASTEWATER	DRINKING WATER	AIR	WIPE • FILTER	OTHER	TAT	Container(s) #	Container(s) Type	REMARKS
	24005-001	MW1	2/18/98	1650	X										X		X		X						E	4	V	
						X								X	X	X										2	A/L	
	002	MW2		1300	X										X		X									4	V	
						X								X	X	X										2	L	
	003	MW3		1450	X										X		X									4	V	
						X								X	X	X										2	L	
	004	MW4		1610	X										X		X									4	V	
						X								X	X	X										2	L	
	005	MW5		1400	X										X		X									4	V	
						X								X	X	X										2	L	

Sample Archive/Disposal:
☐ Laboratory Standard
☐ Other _____
☐ Return To: _____

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays
• TAT starts 8 a.m. following day if samples received after 3 p.m.

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives:
H=HCl N=HNO_3 S=H_2SO_4 C=4°C
Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

* $10.00 FEE PER HAZARDOUS SAMPLE DISPOSAL.

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.