GeoStrategies Inc.

SITE SUMMARY

Chevron Service Station No. 0504
15900 Hesperian Boulevard
San Lorenzo, California

Report No. 7259-4

September 10, 1990

GeoStrategies Inc.
2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545
(415) 352-4800

September 10, 1990

Gettler-Ryan Inc.
2150 West Winton Avenue
Hayward, California 94545

Re: SITE SUMMARY
Chevron Service Station No. 0504
15900 Hesperian Boulevard
San Lorenzo, California

Gentlemen:

This site summary has been prepared for the Chevron Service Station at the above referenced location (Plate 1).

BACKGROUND

Gettler-Ryan Inc. (G-R) installed five ground-water monitoring wells (C-1 through C-5) to 20 feet in December 1983 at the site. Soil samples for chemical analysis were not collected and well construction details for the well installations are not available. Copies of the boring logs are presented in Appendix A.

GeoStrategies Inc. (GSI) installed three additional wells (C-6, C-7, and C-8) to 25 feet in November 1989. Soil chemical analytical data collected during this investigation have been summarized and are presented on Table 1 and the certified analytical reports are presented in Appendix B. Boring logs and well construction details are presented in Appendix C. The monitoring well locations are presented on Plate 2.

The site appears to be underlain by a shallow low permeability aquifer, with groundwater beneath the site flowing south-southwest (Plate 3). G-R conducted groundwater sampling on December 8, 1989. Floating hydrocarbons were observed in Wells C-1 and C-2, and a sheen was observed in Well C-3. Chemical analyses revealed dissolved fuel contaminants in Wells C-3, C-7, and C-8. A copy of the G-R groundwater sampling report and certified analytical results are presented in Appendix D.

In August, 1990, GSI installed 3 additional wells off-site (C-9 through C-11). Chemical analytical data for soil samples collected during this investigation has not yet been received.

SOIL SAMPLING

The three exploratory soil borings were drilled on November 27 and 28, 1989 using a truck mounted, hollow-stem auger drilling rig and were subsequently converted into ground-water monitoring wells. All field work was performed according to GSI Field Methods and Procedures (Appendix E). Soil samples were collected at five-foot depth intervals, using a modified California split-spoon sampler fitted with clean brass tube liners. A GSI geologist supervised the drilling, described soil samples using the Unified Soil Classification System (ASTM D-2488) as well as geologic observations and prepared a lithology log for each borehole (Appendix C).

A 4-inch long brass tube of soil from each sampled interval was used to perform head-space analysis in the field to screen for the presence of Volatile Organic Compounds (VOCs). Head-space analysis involved transferring soil from the brass liner into a clean glass jar and immediately covering the jar with aluminum foil secured with a ring type threaded lid. After approximately twenty minutes, the foil was pierced and the head-space within the jar was tested for total organic vapor measured in parts per million (ppm) using an Organic Vapor Monitor (OVM) photoionization detector. Head-space analysis results are presented on the boring logs in Appendix C.

Selected soil samples retained for chemical analysis were collected in clean brass liners, covered on both ends with aluminum foil and sealed with plastic end caps. The samples were labeled, entered on a Chain-of-Custody form and transported in a cooler with blue ice to Superior Analytical Laboratory (Superior), a State-certified laboratory located in San Francisco, California.

Monitoring Well Construction

Borings C-6 through C-8 were drilled with an 8-inch-diameter hollow-stem auger to a total depth of 25. The monitoring wells were constructed through the hollow-stem augers using 2-inch-diameter Schedule 40 PVC well casing, and 0.020-inch factory slotted well screen. Lonestar #2/12 sand was placed in the annular space across the entire screened interval and extended a minimum of 2-foot above the top of the well screen. A 1-foot bentonite seal was placed above the sand pack, followed by a cement grout seal to ground surface. A traffic rated Christy Box was placed at ground surface, and a locking cap was then placed on the well. The well construction details are presented with the boring logs in Appendix C.

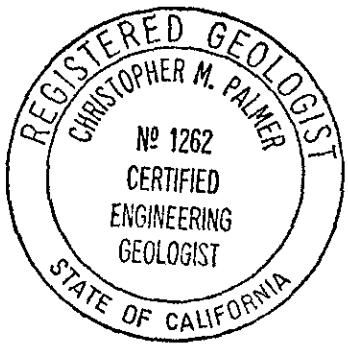
If you have any questions, please call.

GeoStrategies Inc. by,

Melissa A. Wann

Melissa Wann
Project Geologist

Christopher M. Palmer



Christopher M. Palmer
Senior Geologist
C.E.G. 1262, R.E.A. 285

MLW/CMP/mlg

Plate 1. Vicinity Map
Plate 2. Site Plan
Plate 3. Potentiometric Map

Appendix A. Gettler-Ryan Inc. Boring Logs
Appendix B. Soil Analytical Results
Appendix C. Boring Logs and Well Completion Details
Appendix D. Gettler-Ryan Inc. Groundwater Sampling Report
Appendix E. GeoStrategies Inc. Field Methods and Procedures

TABLE 1

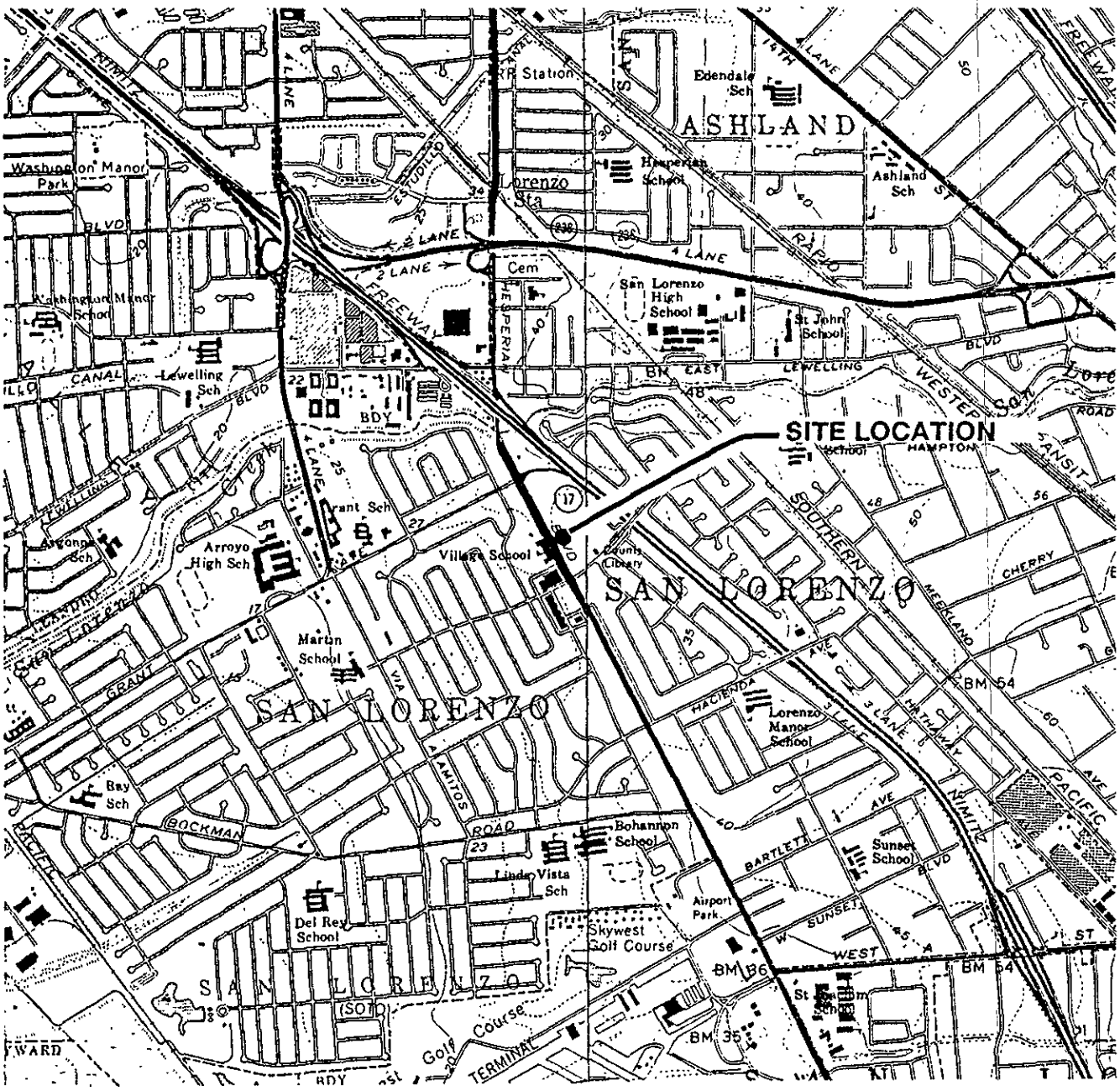
SOIL ANALYSES DATA

SAMPLE NO	SAMPLE DATE	ANALYZED DATE	TPH (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
C-6-10.5'	27-Nov-89	06-Dec-89	<1	<0.05	<0.05	<0.05	<0.05
C-6-15.5'	27-Nov-89	06-Dec-89	<1	<0.05	<0.05	<0.05	<0.05
C-6-20.5'	27-Nov-89	06-Dec-89	<1	<0.05	<0.05	<0.05	<0.05
C-7-10.5'	27-Nov-89	06-Dec-89	3.7	<0.05	<0.05	<0.05	0.05
C-7-15.5'	27-Nov-89	06-Dec-89	<1	<0.05	<0.05	<0.05	<0.05
C-7-20.5'	27-Nov-89	06-Dec-89	4.0	0.11	<0.05	0.05	0.11
C-8-10.5'	27-Nov-89	06-Dec-89	<1	<0.05	<0.05	<0.05	<0.05
C-8-15.5'	27-Nov-89	08-Dec-89	37	<0.05	<0.05	0.14	0.24
C-8-20.5'	27-Nov-89	08-Dec-89	<1	<0.05	<0.05	<0.05	<0.05

TPH = Total Petroleum Hydrocarbons as Gasoline

Note: 1. All data shown as <X are reported as ND (none detected)

ILLUSTRATIONS



Base Map: USGS Topographic Map

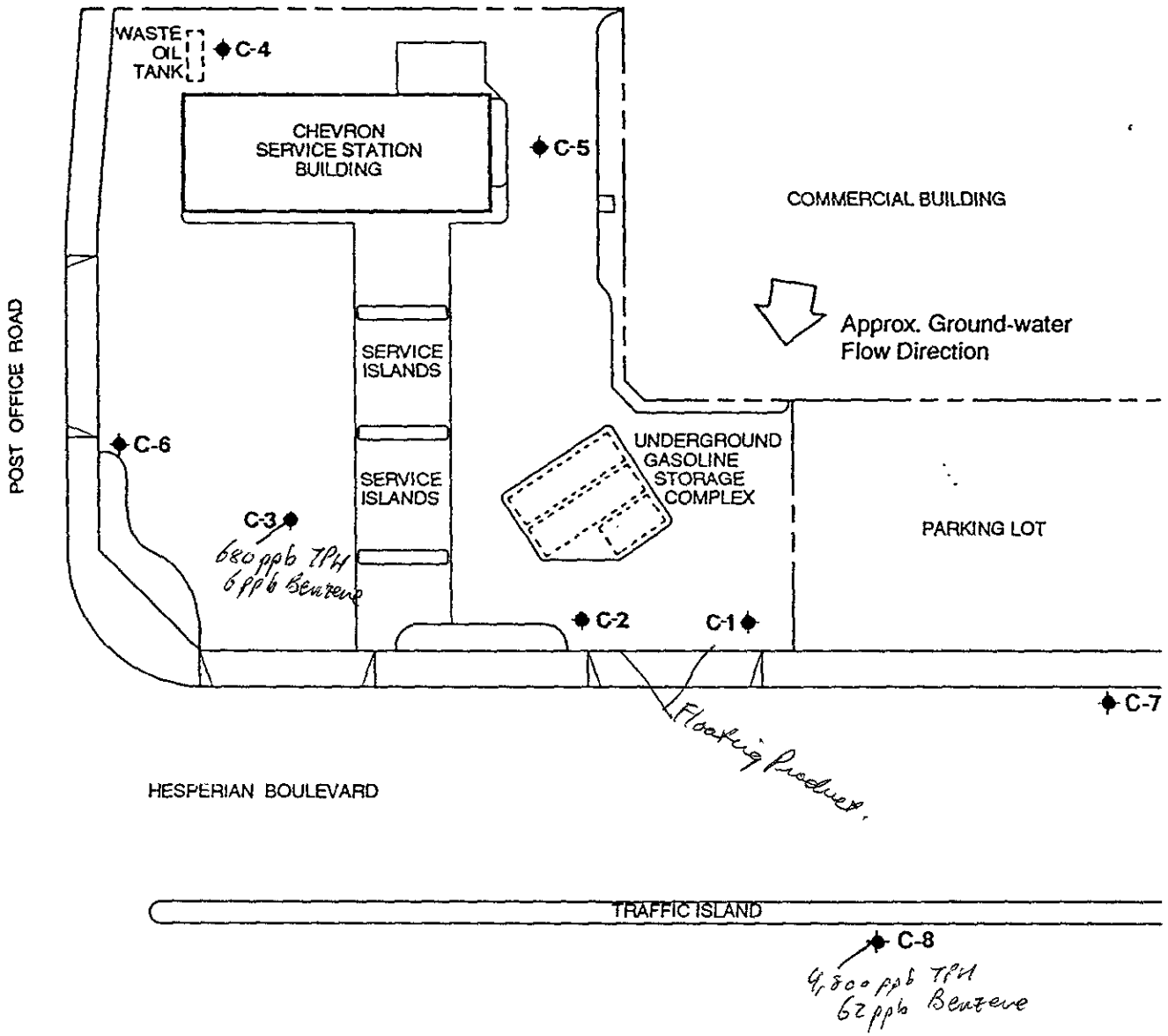
Approx. SCALE: 1" = 2000'

GeoStrategies Inc.

Vicinity Map
Chevron Service Station #0504
15900 Hesperian Boulevard
San Lorenzo, California

PLATE
1

JOBNUMBER	REVIEWEDBYRG/CEG	DATE	REVISEDDATE	REVISEDDATE
7259		10/89		



EXPLANATION

C-1 Ground-water monitoring well location

N

0 40 80

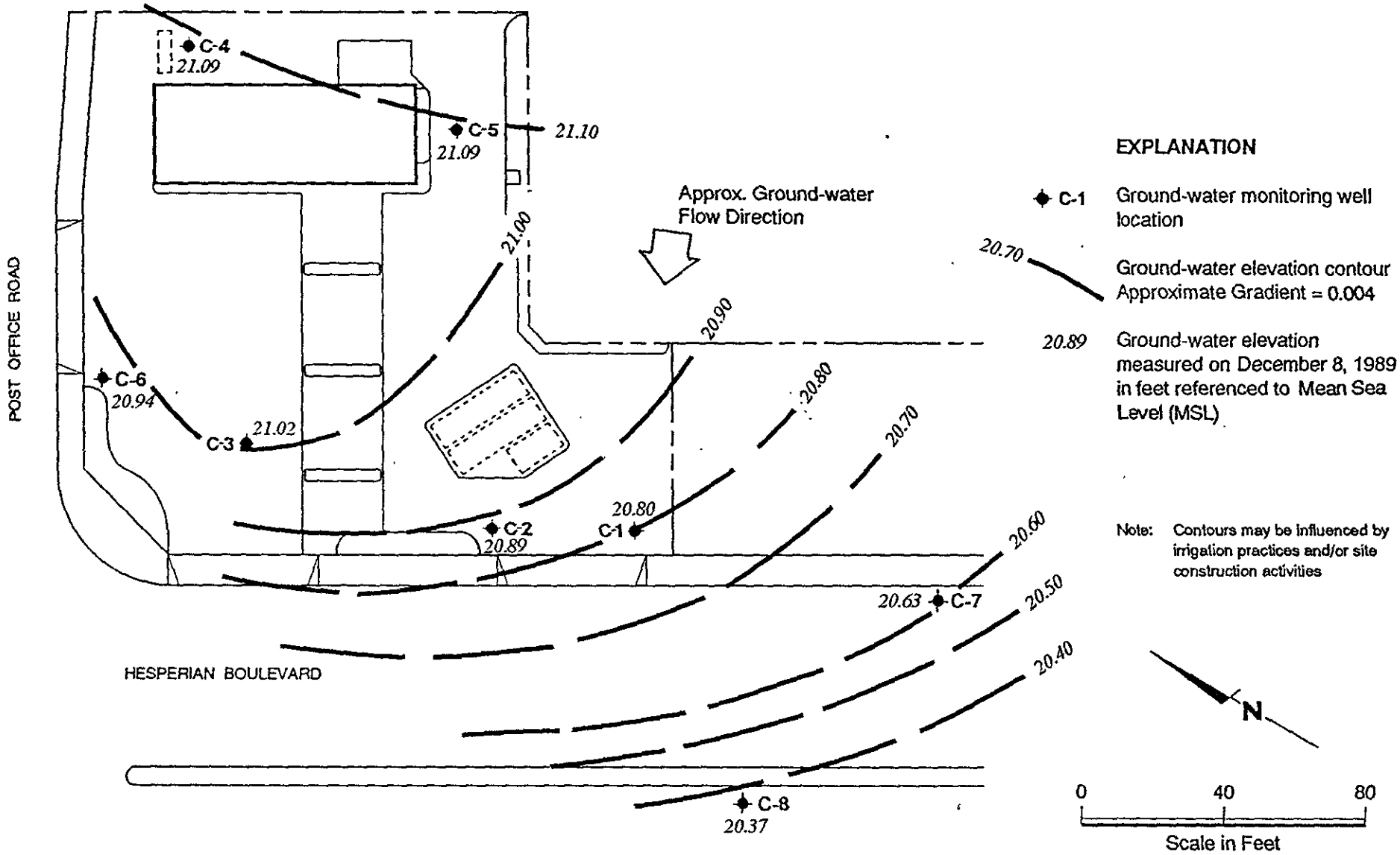
Scale in Feet

GeoStrategies Inc.

Site Plan
Chevron Service Station #0504
15900 Hesperian Boulevard
San Lorenzo, California

PLATE
2

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7259	Compare 12/92	1/90		



GeoStrategies Inc.

Potentiometric Map
Chevron Service Station #0504
15900 Hesperian Boulevard
San Lorenzo, California

PLATE
3

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7259	CMP CEG 12/92	1/90		

APPENDIX A

GETTLER-RYAN INC. BORING LOGS

COMPANY: Chevron U.S.A. JOB NO: OR - 5107

LOCATION: 15900 Hesperian DATE: 12-29-83

CITY: San Lorenzo WELL #: 1

DEPTH	SAMPLE NO.	SOIL DESCRIPTION
0 ft.		
4"		Asphalt
1'		Black clay
3'		Brown Sandy clay
7'		Brown sandy clay (moist)
9'		Black clay
11'		Grey clay (hydrocarbon vapor)
14'		Tan mud (water)
20'		" "

FOREMAN: Mike Divita SHEET: 1 OF 1

COMPANY: Chevron U.S.A JOB NO: OR - 5107

LOCATION: 15900 Hesperian DATE: 12-29-83

CITY: San Lorenzo WELL #: 2

DEPTH	SAMPLE NO.	SOIL DESCRIPTION
0 ft.		
4"		Asphalt
3½'		Black sandy clay
5'		Brown sandy clay
6'		Brown clay
8'		Light brown clay
12'		Black clay
15'		Tan sandy clay
20'		Tan mud

FOREMAN: Mike Divita SHEET: 1 OF 1

COMPANY: Chevron U.S.A. JOB NO: OR - 5107

LOCATION: 15400 Hesperian DATE: 12-29-83

CITY: San Lorenzo WELL #: 3

DEPTH	SAMPLE NO.	SOIL DESCRIPTION
0 ft.		
4"		Asphalt
2½'		Basecrock
4½'		Reddish brown sandy clay
5'		Brown sandy clay
7'		Brown sand
8'		Brown sandy clay
11'		Dark brown clay
14'		Black clay
[redacted]'		Tan sandy clay (water)
20'		"

FOREMAN: Mike Divita SHEET: 1 OF 1

COMPANY: Chevron U.S.A. JOB NO: OR - 5107

LOCATION: 15900 Hesperian DATE: 12-29-83

CITY: San Lorenzo WELL #: #4

DEPTH	SAMPLE NO.	SOIL DESCRIPTION
0 ft.		
4"		Asphalt
3'		Basecrock
4'		Sand
5'		Black clay
6'		Dark brown sandy clay
8'		Black clay
15'		Tan sandy clay (water)
17'		Tan mud
20'		" "

FOREMAN: Mike Divita SHEET: 1 OF 1

COMPANY: Chevron U.S.A. JOB NO: OR - 5107

LOCATION: 15900 Hesperian DATE: 12-29-83

CITY: San Lorenzo WELL #: 5

DEPTH	SAMPLE NO.	SOIL DESCRIPTION
0 ft.		
3"		Asphalt
1'		Basecrock
3'		Top soil - silt
5'		Brown sandy clay
6½'		Dark brown sandy clay
13'		Dark tan clay
15'		Light tan sandy clay (water)
17'		Tan clay
20'		" "

FOREMAN: Mike Divita SHEET: 1 OF 1

APPENDIX B

SOIL ANALYTICAL RESULTS

SUPERIOR ANALYTICAL LABORATORY, INC.
1385 FAIRFAX ST., STE. D. · SAN FRANCISCO, CA 94124 · PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 10320
CLIENT: Geo Strategies Inc.
CLIENT JOB NO.: 7259

DATE RECEIVED: 11/30/89
DATE REPORTED: 12/08/89

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
10320- 1	C-6-10.5	11/29/89	12/06/89
10320- 2	C-6-15.5	11/29/89	12/06/89
10320- 3	C-6-20.5	11/29/89	12/06/89
10320- 4	C-7-10.5	11/29/89	12/06/89
10320- 5	C-7-15.5	11/29/89	12/06/89
10320- 6	C-7-20.5	11/29/89	12/06/89
10320- 7	C-8-10.5	11/29/89	12/06/89
10320- 8	C-8-15.5	11/29/89	12/06/89
10320- 9	C-8-20.5	11/29/89	12/06/89
10320-10	C-6-5.5	11/29/89	/ /

Laboratory Number:	10320 1	10320 2	10320 3	10320 4	10320 5
ANALYTE LIST	Amounts/Quantitation Limits (mg/kg)				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	ND<1	ND<1	ND<1	3.7	ND<1
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05
TOLUENE:	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05
ETHYL BENZENE:	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05
XYLENES:	ND<0.05	ND<0.05	ND<0.05	0.05	ND<0.05

Laboratory Number:	10320 6	10320 7	10320 8	10320 9	10320 10
ANALYTE LIST	Amounts/Quantitation Limits (mg/kg)				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	4.0	ND<1	37	ND<1	NA
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	0.11	ND<0.05	ND<0.05	ND<0.05	NA
TOLUENE:	ND<0.05	ND<0.05	ND<0.05	ND<0.05	NA
ETHYL BENZENE:	0.05	ND<0.05	0.14	ND<0.05	NA
XYLENES:	0.11	ND<0.05	0.24	ND<0.05	NA

SUPERIOR ANALYTICAL LABORATORY, INC.
1385 FAIRFAX ST., STE. D. • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 10320
CLIENT: Geo Strategies Inc.
CLIENT JOB NO.: 7259

DATE RECEIVED: 11/30/89
DATE REPORTED: 12/08/89

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
10320-11	C-6-25.5	11/29/89	/ /
10320-12	C-7-5.5	11/29/89	/ /
10320-13	C-7-25.5	11/29/89	/ /
10320-14	C-8-5.5	11/29/89	/ /
10320-15	C-8-25.5	11/29/89	/ /

Laboratory Number:	10320 11	10320 12	10320 13	10320 14	10320 15
ANALYTE LIST	Amounts/Quantitation Limits (mg/kg)				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	NA	NA	NA	NA	NA
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	NA	NA	NA	NA	NA
TOLUENE:	NA	NA	NA	NA	NA
ETHYL BENZENE:	NA	NA	NA	NA	NA
XYLENES:	NA	NA	NA	NA	NA

SUPERIOR ANALYTICAL LABORATORY, INC.
1385 FAIRFAX ST., STE. D. • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

C E R T I F I C A T E O F A N A L Y S I S

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
Diesel by Modified EPA SW-846 Method 8015
Gasoline by Purge and Trap: EPA MEthod 8015/5030
ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

QA/QC INFORMATION
SET: 10320

NA = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT

mg/kg = part per million (ppm)

OIL AND GREASE ANALYSIS By Standard Methods Method 503E:
Duplicate RPD NA
Minimum Detection Limit in Soil: 20mg/kg

Modified EPA Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Soil: 10mg/kg
Daily Standard run at 200mg/L; RPD Diesel = NA
MS/MSD Average Recovery = NA: Duplicate RPD = NA

8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Soil: 1mg/kg
Daily Standard run at 2mg/L; RPD Gasoline = <15%
MS/MSD Average Recovery = 89%: Duplicate RPD = 3%

8020/BTXE
Minimum Quantitation Limit in Soil: 0.05mg/kg
Daily Standard run at 20ug/L; RPD = <15%
MS/MSD Average Recovery = 93%: Duplicate RPD = 1%

Richard Srna, Ph.D.
Laboratory Director

Chain-of-Custody Record

Chevron U.S.A. Inc.
P.O. Box 5004
San Ramon, CA 94583
FAX (415) 842-9591

Chevron Facility Number #0504
Consultant Release Number
Consultant Project Number 7259
Consultant Name Low Stress Tech. Inc.
Address 2140 W. Winton Ave. Hayward
Fax Number 783-1089 Phone 783-7500
Project Contact (Name) Jerry Mitchell
(Phone) 415-352-4800

Chevron Contact (Name) John Randall
(Phone)
Laboratory Name Superior Analytical Lab.
Contract Number 2472450
Samples Collected by (Name) Randall Young
Collection Date 11/27/89 11/28/89
Signature Randall Young

Sample Number	Lab Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite	Time	Sample Preservation	Iced	Analyses To Be Performed: Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline + Diesel	503 Oil and Grease	Arom. Volatiles - BTXE Soil: 8020/Wtr.: 602	Arom. Volatiles - BTXE Soil: 8240/Wtr.: 624	Total Lead DHS-Luft	EDB DHS-AB 1803				Remarks
C-6-10.5	10320-1	1	S	G	11:30		✓	X			X							
C-6-15.5	2	1	S	G	11:40		✓	X			X							
C-6-20.5	3	1	S	G	11:43		✓	X			X							
C-7-10.5	4	1	S	G	10:10		✓	X			X							
C-7-15.5	5	1	S	G	10:20		✓	X			X							
C-7-20.5	6	1	S	G	10:30		✓	X			X							
C-8-10.5	7	1	S	G	10:10		✓	X			X							
C-8-15.5	8	1	S	G	10:15		✓	X			X							
C-8-20.5	9	1	S	G	10:20		✓	X			X							

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time	Turn Around Time (Circle Choice)
Randall Young	GSE	11/29/89 16:00		CR	11:05	24 Hrs
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time	48 Hrs
				EXPRESS IT	11/30 1348	5 Days
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time	10 Days
	EXPRESS IT	11/30/89		Superior Lab	11/30 3:15pm	

Chain-of-Custody Record

Chevron U.S.A. Inc.
P.O. Box 5004
San Ramon, CA 94583
FAX (415) 842-9591

Chevron Facility Number 10504
Consultant Release Number _____ , Consultant Project Number 7259
Consultant Name Geostrategies Inc.
Address 2140 W. Winton Ave, Hayward
Fax Number 783-1089 phone 783-7500
Project Contact (Name) Jessy Mitchell
(Phone) 415 352-4800

Chevron Contact (Name) John Randall
(Phone) _____
Laboratory Name Superior Analytical Laboratory
Contract Number 247245O
Samples Collected by (Name) Randall Young
Collection Date 11/27/89, 11/28/89
Signature Randall Young

Sample Number	Lab Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite	Time	Sample Preservation	Iced	Analyses To Be Performed: Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline + Diesel	503 Oil and Grease	Arom. Volatiles - BTXE Soil: 8020/Wtr.: 602	Arom. Volatiles - BTXE Soil: 8240/Wtr.: 624	Total Lead DHS-LUFT	EDB DHS-AB 1803	HOLD			Remarks
C-6-5.5	10320-10	1	S	G	11:20		✓								X			
C-6-25.5	11	1	S	G	11:45		✓								X			
C-7-6.5	12	1	S	G	05:45		✓								X			
C-7-25.5	13	1	S	G	10:40		✓								X			
C-8-5.5	14	1	S	G	10:00		✓								X			
C-8-25.5	15	1	S	G	10:35		✓								X			

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time	Turn Around Time (Circle Choice)
Randall Young	GSI	11/29/89 16:00	[signature]	G-R	11:05	24 Hrs
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time	48 Hrs
			[signature]	Express-It	11/30 13:48	5 Days
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time	10 Days
			Onyn A Nwogu Superior Lab		11/30 3:15pm	

APPENDIX C
BORING LOGS AND
WELL COMPLETION DETAILS

Field location of boring:	Project No.: 7259	Date: 11/27/89	Boring No:
(See Plate 2)	Client: Chevron Service Station #0504		C-6
	Location: 15900 Hesperian Boulevard		
	City: San Lorenzo, California		Sheet 1
	Logged by: R.S.Y.	Driller: Bayland	of 2
	Casing installation data:		
Drilling method: Hollow-Stem Auger			
Hole diameter: 8-Inches	Top of Box Elevation: 36.89		Datum: MSL

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Water Level / Time / Date	Description
									PAVEMENT SECTION - 3.0 feet
				1					
				2					
				3					
				4					
2.6	100	S&H							SILT (ML) - dark yellow brown (10YR 4/4), medium stiff,
	100	push	C-6	5					moist; voids; low plasticity; no chemical odor.
	100		5.5						
				6					
				7					
				8					
				9					
0	100	S&H							COLOR CHANGE to very dark gray (7.5YR 3/0); at 9.0
	100	push	C-6	10					feet; rootlets; no chemical odor.
	100		10.5						
				11					
				12					
				13					
				14					
0	4	S&H							COLOR CHANGE to dark yellow brown (10YR 4/4); at
	5		C-6	15		▽			14.0 feet, stiff, moist; no chemical odor.
	8		15.5						
				16					
				17					
				18					SILTY CLAY (CL) - very dark gray (10YR 3/0), medium
				19					stiff, saturated; 35-40% silt; medium plasticity; no chemical odor.

Remarks:

GeoStrategies Inc.

Log of Boring

BORING NO. C-6

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7259		11/89		

Field location of boring:

(See Plate 2)

Project No.: 7259	Date: 11/27/89	Boring No: C-6	
Client: Chevron Service Station #0504			
Location: 15900 Hesperian Boulevard			
City: San Lorenzo, California		Sheet 2 of 2	
Logged by: R.S.Y.	Driller: Bayland		

Casing installation data:

Drilling method: Hollow-Stem Auger

Hole diameter: 8-Inches

Top of Box Elevation: Datum:

Water Level				
Time				
Date				

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
6.2	2	S&H		20				
	3		C-6					
	5		20.5					
				21				
				22				
				23				
				24				
1.3	6	S&H						very stiff, caliche stringers; trace fine sand; no chemical odor.
	11		C-6	25				
	13		25.5					
				26				Bottom of sample 25.5 feet.
				27				Bottom of boring at 25.5 feet.
				28				
				29				
				30				
				31				
				32				
				33				
				34				
				35				
				36				
				37				
				38				
				39				

Remarks:

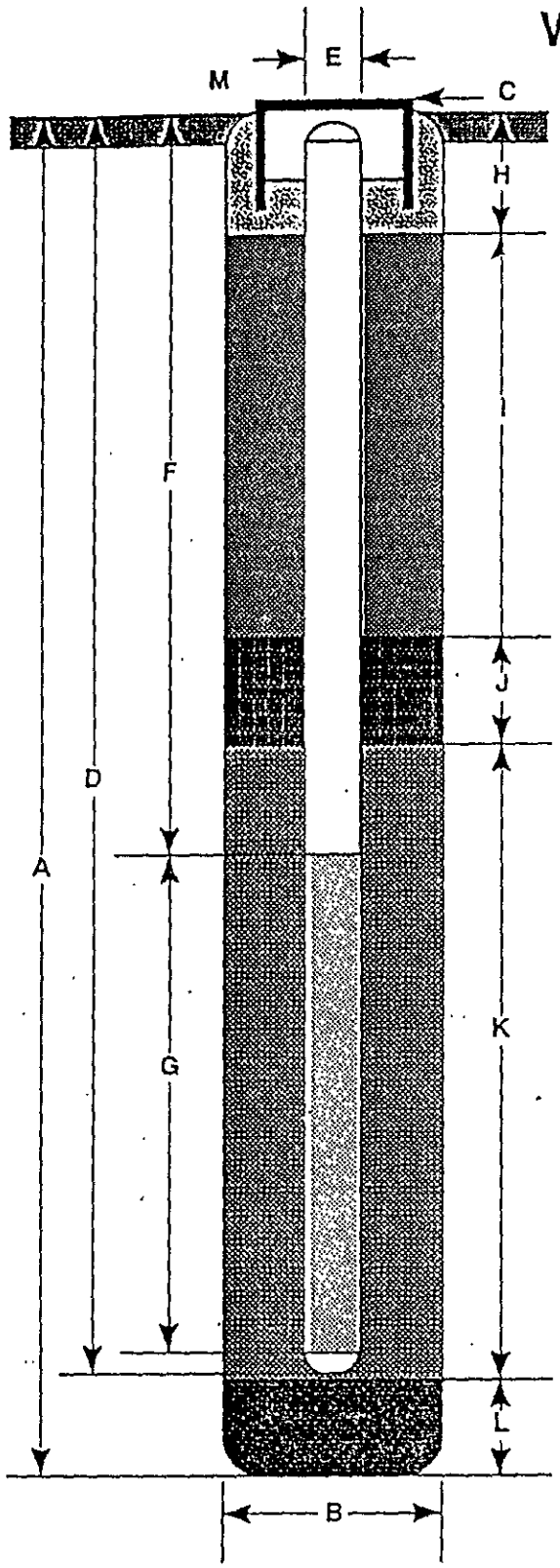
GeoStrategies Inc.

Log of Boring

BORING NO. C-6

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7259		11/89		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring 25.5 ft.

B Diameter of Boring 8 in.
Drilling Method Hollow-Stem Auger

C Top of Box Elevation 36.89 ft.
[X] Referenced to Mean Sea Level
[ ] Referenced to Project Datum

D Casing Length 25 ft.
Material Schedule 40 PVC

E Casing Diameter 2 in.

F Depth to Top Perforations 5 ft.

G Perforated Length 20 ft.
Perforated Interval from 5 to 25 ft.
Perforation Type Machine Slot
Perforation Size 0.020 in.

H Surface Seal from 0 to 1.5 ft.
Seal Material Concrete Grout

I Backfill from 1.5 to 3 ft.
Backfill Material Cement Grout

J Seal from 3 to 4 ft.
Seal Material Bentonite Pellets

K Gravel Pack from 4 to 25 ft.
Pack Material Lonestar 2/12 Sand

L Bottom Seal 0.5 ft.
Seal Material Native Soil

M Christy box with locking well cap and lock.

Note: Depths measured from initial ground surface.

GeoStrategies Inc.

Well Construction Detail

WELL NO. C-6

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7259		11/89		

Field location of boring: (See Plate 2)	Project No.: 7259	Date: 11/28/89	Boring No: C-7
	Client: Chevron Service Station #0504		
	Location: 15900 Hesperian Boulevard		
	City: San Lorenzo, California		Sheet 1 of 2
	Logged by: R.S.Y.	Driller: Bayland	
	Casing installation data:		
Drilling method: Hollow-Stem Auger			
Hole diameter: 8-Inches	Top of Box Elevation: 32.75		Datum: MSL

Water Level								
Time								
Date								

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				1				PAVEMENT SECTION - 3.5 feet
				2				
				3				
				4				FILL - Sand (SP) - trench backfill; loose, moist.
				5				
		S&H						
		push	C-7	6				
	150		6.5					
				7				SILT (ML) - olive gray (5Y 4/2), medium stiff, moist; rootlets; voids; low plasticity; low dry strength; trace fine sand; no chemical odor.
				8				
				9				
	100	S&H						
	150	push	C-7	10				SILTY CLAY (CL) - very dark gray (7.5YR 3/0), medium stiff, moist; trace fine sand; medium plasticity; weak chemical odor.
	150		10.5					
				11				
				12				
				13				
				14				COLOR CHANGE to dark gray (7.5YR 4/1); at 14.0 feet, saturated; caliche stringers; moderate chemical odor.
	3	S&H				▽		
	4		C-7	15				
	9		15.5					
				16				
				17				
				18				
				19				

Remarks:

GeoStrategies Inc.

Log of Boring

BORING NO. C-7

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7259		11/89		

Field location of boring:

(See Plate 2)

Project No.:	7259	Date: 11/28/89	Boring No: C-7
Client:	Chevron Service Station #0504		
Location:	15900 Hesperian Boulevard		
City:	San Lorenzo, California		Sheet 2 of 2
Logged by:	R.S.Y.	Driller: Bayland	

Casing installation data:

Drilling method: Hollow-Stem Auger

Hole diameter: 8-Inches

Top of Box Elevation: Datum:

Water Level				
Time				
Date				

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
	5	S&H		20				
	10		C-7					very stiff; decrease silt to 10%; no chemical odor.
	13		20.5	21				
				22				
				23				
				24				color change to yellow brown (10YR 4/1), at 24.0 feet,
	6	S&H						stiff.
	6		C-7	25				
	8		25.5	26				Bottom of sample at 25.5 feet.
								Bottom of boring at 25.5 feet.
				27				
				28				
				29				
				30				
				31				
				32				
				33				
				34				
				35				
				36				
				37				
				38				
				39				

Remarks:

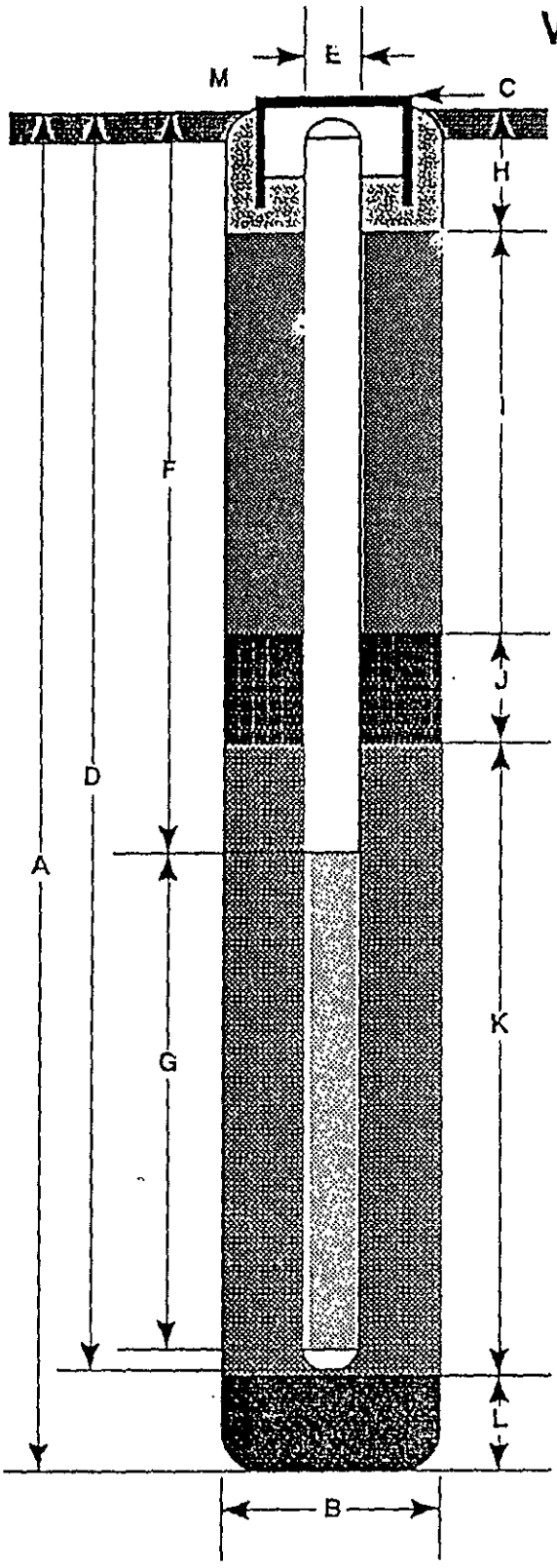
GSI GeoStrategies Inc.

Log of Boring

BORING NO. C-7

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7259		11/89		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring 25.5 ft.

B Diameter of Boring 8 in.
Drilling Method Hollow-Stem Auger

C Top of Box Elevation 32.75 ft.
[X] Referenced to Mean Sea Level
[ ] Referenced to Project Datum

D Casing Length 25 ft.
Material Schedule 40 PVC

E Casing Diameter 2 in.

F Depth to Top Perforations 8 ft.

G Perforated Length 17 ft.
Perforated Interval from 8 to 25 ft.
Perforation Type Machine Slot
Perforation Size 0.020 in.

H Surface Seal from 0 to 1.5 ft.
Seal Material Concrete Grout

I Backfill from 1.5 to 6 ft.
Backfill Material Cement Grout

J Seal from 6 to 7 ft.
Seal Material Bentonite Pellets

K Gravel Pack from 7 to 25 ft.
Pack Material Lonestar 2/12 Sand

L Bottom Seal 0.5 ft.
Seal Material Native Soil

M Christy box with locking well cap and lock.

Note: Depths measured from initial ground surface.

GeoStrategies Inc.

Well Construction Detail

WELL NO. C-7

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7259		11/89		

Field location of boring:

(See Plate 2)

Project No.: 7259	Date: 11/27/89	Boring No: C-8	
Client: Chevron Service Station #0504			
Location: 15900 Hesperian Boulevard			
City: San Lorenzo, California		Sheet 1 of 2	
Logged by: R.S.Y.	Driller: Bayland		

Casing installation data:

Drilling method: Hollow-Stem Auger

Hole diameter: 8-Inches

Top of Box Elevation: 33.82 Datum: MSL

							Water Level	
							Time	
							Date	
PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
								PAVEMENT SECTION - 3.0 feet
25.5	100	S&H		5				SILT (ML) - olive (5Y 4/3), medium stiff, moist; trace fine sand; low plasticity; no chemical odor.
	100	push	C-8					
	100		5.5					
6.2	150	S&H		10				COLOR CHANGE to very dark gray (7.5YR 3/0); at 9.0 feet; weak chemical odor.
	250	push	C-8					
	250		10.5					
195	3	S&H		15				SILTY CLAY (CL) - dark gray (5Y 4/1), stiff, moist, low plasticity; caliche stringers; strong chemical odor.
	5		C-8					
	7		15.5					

Remarks:

GeoStrategies Inc.

Log of Boring

BORING NO. C-8

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7259		11/89		

Field location of boring:

(See Plate 2)

Project No.:	7259	Date: 11/27/89	Boring No: C-8
Client:	Chevron Service Station #0504		
Location:	15900 Hesperian Boulevard		
City:	San Lorenzo, California		Sheet 2 of 2
Logged by:	R.S.Y.	Driller: Bayland	

Casing installation data:

Drilling method: Hollow-Stem Auger

Hole diameter: 8-Inches

Top of Box Elevation: Datum:

Water Level				
Time				
Date				

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
6	3	S&H		20				COLOR CHANGE to olive (5Y 4/3); at 19.0 feet; no chemical odor.
	6		C-8					
	8		21.5					
				21				
				22				
				23				
				24				COLOR CHANGE to yellow brown (10YR 5/6); at 24.0 feet; 25% very fine sand; no chemical odor.
	7	S&H						
	10		C-8	25				
	13		25.5					
				26				Bottom of sample at 25.5 feet.
				27				Bottom of boring at 25.5. feet.
				28				
				29				
				30				
				31				
				32				
				33				
				34				
				35				
				36				
				37				
				38				
				39				

Remarks:

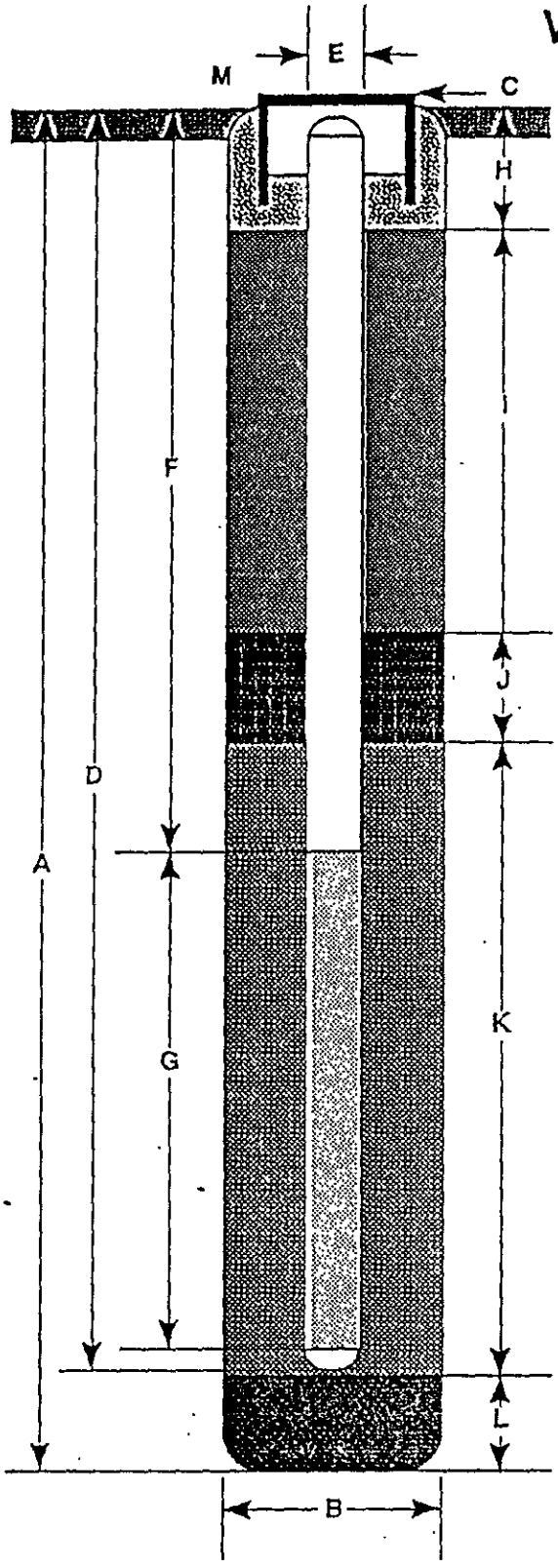
GSI GeoStrategies Inc.

Log of Boring

BORING NO. C-8

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7259		11/89		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring 25.5 ft.

B Diameter of Boring 8 in.
Drilling Method Hollow-Stem Auger

C Top of Box Elevation 33.82 ft.
[X] Referenced to Mean Sea Level
[ ] Referenced to Project Datum

D Casing Length 25 ft.
Material Schedule 40 PVC

E Casing Diameter 2 in.

F Depth to Top Perforations 5 ft.

G Perforated Length 20 ft.
Perforated Interval from 5 to 20 ft.
Perforation Type Machine Slot
Perforation Size 0.020 in.

H Surface Seal from 0 to 1.5 ft.
Seal Material Concrete Grout

I Backfill from 1.5 to 3 ft.
Backfill Material Cement Grout

J Seal from 3 to 4 ft.
Seal Material Bentonite Pellets

K Gravel Pack from 4 to 25 ft.
Pack Material Lonestar 2/12 Sand

L Bottom Seal 0.5 ft.
Seal Material Native Soil

M Christy box with locking well cap and lock.

Note: Depths measured from initial ground surface.

GeoStrategies Inc.

Well Construction Detail

WELL NO.
C-8

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7259		11/89		

APPENDIX D
GETTLER-RYAN INC. GROUND-WATER SAMPLING REPORTS

January 5, 1990

GROUNDWATER SAMPLING REPORT

Chevron U.S.A. Inc.
Post Office Box 5004
San Ramon, California 94583-0804

Referenced Site: Chevron Service Station #0504
15900 Hesperian Blvd.
San Lorenzo, California

Sampling Date: December 8, 1989

This report presents the results of the groundwater sampling and analytical program conducted by Gettler-Ryan Inc. on December 8, 1989 at the referenced location. The site is occupied by an operating service station located on the northeast corner of Hesperian Boulevard and Post Office Road. The service station has underground storage tanks containing regular leaded, unleaded and super unleaded gasoline products, and waste oil.

There are currently six groundwater monitoring wells on site and two off site at the locations shown on the attached site map. Prior to sampling, all monitoring wells were inspected for total well depth, water levels, and presence of separate phase hydrocarbons using an electronic interface probe. A clean acrylic bailer was used to visually confirm the presence and thickness of separate phase hydrocarbons. Groundwater depths ranged from 12.12 to 15.95 feet below grade. Separate phase hydrocarbons were observed in wells C-1 and C-2.

The wells were then purged and sampled. Standard sampling procedure calls for a minimum of four case volumes to be purged from each well. Each well was purged while pH, temperature, and conductivity measurements were monitored for stability. The purge water was drummed for proper disposal. Details of the final well purging results are presented on the attached Table of Monitoring Data.

Samples were collected, using Teflon bailers, in properly cleaned and laboratory prepared containers. All sampling equipment was thoroughly cleaned after each well was sampled and steam cleaned upon completion of work at the site. A trip blank, supplied by the laboratory, was included and analyzed to assess quality control. Analytical results for the trip blank are included in the Certified Analytical Report (CAR's). The samples were labeled, stored on blue ice, and transported to the laboratory for analysis. Chain of custody records were established noting sample identification numbers, time, date, and custody signatures.

1992 national avenue • hayward, california 94545-1787 • (415) 783-7500

The samples were analyzed at Superior Analytical Laboratory located at 1385 Fairfax Street, Suite D., San Francisco, California. The laboratory is assigned a California DHS-HMTL Certification number of 220. The results are presented as a Certified Analytical Report, a copy of which is attached to this report.

Tom Paulson
Sampling Manager

attachments

TABLE OF MONITORING DATA
GROUNDWATER WELL SAMPLING REPORT

WELL I.D.	C-1	C-2	C-3 CD-3	C-4	C-5	C-6
Casing Diameter (inches)	3	3	3	3	3	2
Total Well Depth (feet)	----	----	19.4	20.4	19.3	24.7
Depth to Water (feet)	13.14 **	13.44 **	14.44	14.69	14.22	15.95
Free Hydrocarbons (feet)	0.01	0.15	sheen	none	none	none
Reason Not Sampled	free product	free product	----	----	----	----
Calculated 4 Case Vol.(gal.)	----	----	7.5	8.6	7.8	5.9
Did Well Dewater?	----	----	no	no	no	no
Volume Evacuated (gal.)	----	----	9	10	10	15
Purging Device	----	----	Bailer	Bailer	Bailer	Bailer
Sampling Device	----	----	Bailer	Bailer	Bailer	Bailer
Time	----	----	10:58	12:12	12:48	11:37
Temperature (F)*	----	----	64.5	69.0	70.1	69.4
pH*	----	----	7.15	6.86	6.84	7.00
Conductivity (umhos/cm)*	----	----	379	1337	1175	1278

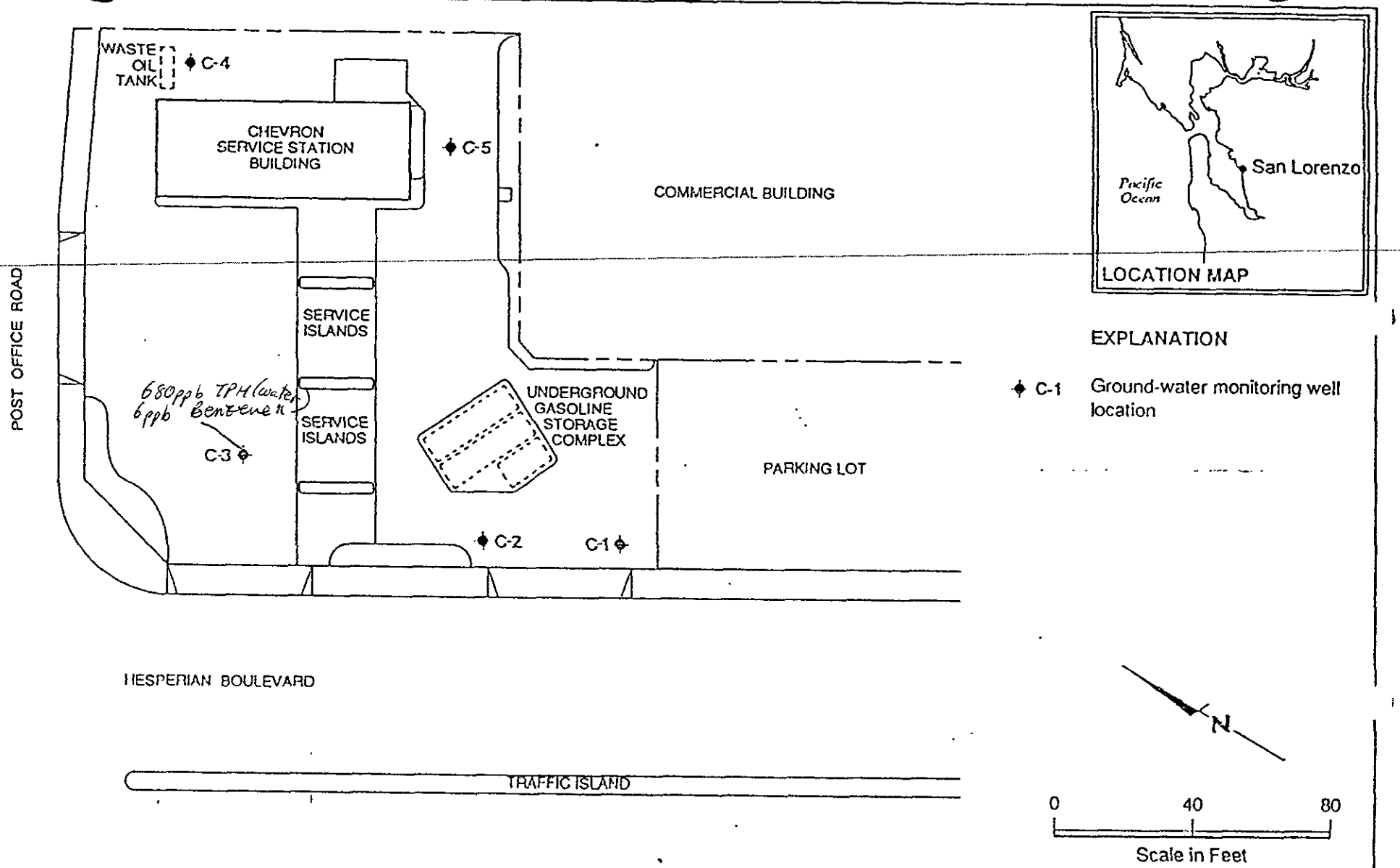
* Indicates Stabilized Value

** Not corrected for separate phase hydrocarbons

TABLE OF MONITORING DATA
GROUNDWATER WELL SAMPLING REPORT

WELL I.D.	C-7	C-8
Casing Diameter (inches)	2	2
Total Well Depth (feet)	25.2	24.5
Depth to Water (feet)	12.12	13.45
Free Hydrocarbons (feet)	none	none
Reason Not Sampled	----	----
Calculated 4 Case Vol.(gal.)	8.9	7.5
Did Well Dewater?	no	no
Volume Evacuated (gal.)	22	19
Purging Device	Bailer	Bailer
Sampling Device	Bailer	Bailer
Time	09:42	08:41
Temperature (F)*	68.7	69.6
pH*	6.89	6.86
Conductivity (umhos/cm)*	1270	1427

* Indicates Stabilized Value



GSI GeoStrategies Inc.

Site Plan
Chevron Service Station #0504
15900 Hesperian Boulevard
San Lorenzo, California

PLATE 1

JOB NUMBER	REVIEWED BY RG,CEG	DATE	REVISED DATE	REVISED DATE
259		10/89		

SUPERIOR ANALYTICAL LABORATORY, INC.
1385 FAIRFAX ST., STE. D. • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

RECEIVED
JAN 3 1990

GETTLER-RYAN INC.
GENERAL CONTRACTORS

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 10338
CLIENT: Chevron USA
CLIENT JOB NO.: 3259

DATE RECEIVED: 12/11/89
DATE REPORTED: 12/18/89

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
10338- 1	C-3	12/08/89	12/15/89
10338- 2	C-4	12/08/89	12/15/89
10338- 3	C-5	12/08/89	12/15/89
10338- 4	C-6	12/08/89	12/15/89
10338- 5	C-7	12/08/89	12/15/89
10338- 6	C-8	12/08/89	12/15/89
10338- 7	CD-3	12/08/89	12/16/89
10338- 8	TRIP	12/08/89	12/16/89

Laboratory Number:	10338 1	10338 2	10338 3	10338 4	10338 5
ANALYTE LIST	Amounts/Quantitation Limits (ug/l)				
OIL AND GREASE:	NA	ND<5000	NA	NA	NA
TPH/GASOLINE RANGE:	680	ND<500	ND<500	ND<500	1700
TPH/DIESEL RANGE:	NA	ND<1000	NA	NA	NA
BENZENE:	6	ND<0.5	ND<0.5	ND<0.5	32
TOLUENE:	1	ND<0.5	ND<0.5	ND<0.5	12
ETHYL BENZENE:	31	ND<0.5	ND<0.5	ND<0.5	17
XYLENES:	58	ND<0.5	ND<0.5	ND<0.5	150

Laboratory Number:	10338 6	10338 7	10338 8
ANALYTE LIST	Amounts/Quantitation Limits (ug/l)		
OIL AND GREASE:	NA	NA	NA
TPH/GASOLINE RANGE:	4800	710	ND<500
TPH/DIESEL RANGE:	NA	NA	NA
BENZENE:	62	6	ND<0.5
TOLUENE:	11	1	ND<0.5
ETHYL BENZENE:	95	32	ND<0.5
XYLENES:	160	61	ND<0.5

SUPERIOR ANALYTICAL LABORATORY, INC.
1385 FAIRFAX ST., STE. D. · SAN FRANCISCO, CA 94124 · PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
Diesel by Modified EPA SW-846 Method 8015
Gasoline by Purge and Trap: EPA MEthod 8015/5030
ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

QA/QC INFORMATION
SET: 10338

NA = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT

ug/L = part per billion (ppb)

OIL AND GREASE ANALYSIS By Standard Methods Method 503E:
Duplicate RPD NA
Minimum Detection Limit in Water: 5000ug/L

Modified EPA Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Water: 1000ug/L
Daily Standard run at 200mg/L; RPD Diesel =<15%
MS/MSD Average Recovery =95%: Duplicate RPD =14%

8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Water: 500ug/L
Daily Standard run at 2mg/L; RPD Gasoline = <15%
MS/MSD Average Recovery = 95%: Duplicate RPD = 0%

8020/BTXE
Minimum Quantitation Limit in Water: 0.50ug/L
Daily Standard run at 20ug/L; RPD = <15%
MS/MSD Average Recovery = 104%: Duplicate RPD = <7%

Richard Srna, Ph.D.
Laboratory Director

10554 JH

Chain-of-Custody Record

Chevron U.S.A. Inc.
P.O. Box 5004
San Ramon, CA 94583
FAX (415) 842-9591

Chevron Facility Number 0504
Consultant Release Number 2451960
Consultant Project Number 3259
Consultant Name Getter Ryan Inc
Address 1992 National Ave, Hayward
Fax Number 415 783-1089
Project Contact (Name) Jerry Mitchell
(Phone) 415 783-7500

Chevron Contact (Name) John Randall
(Phone)
Laboratory Name Superior Analytical
Contract Number 247450
Samples Collected by (Name) Phil Dye
Collection Date 12-8-89
Signature Philly Dye

	Sample Number	Lab Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite	Time	Sample Preservation	Iced	Analyses To Be Performed: Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline + Diesel	503 Oil and Grease	Arom. Volatiles - BTXE Soil: 8020/Wtr.: 602	Arom. Volatiles - BTXE Soil: 8240/Wtr.: 624	Total Lead DHS-Luft	EDB DHS-AB 1803	Total Petro Hydrocarbons as Waste Oil			Remarks
1	C-3		3	water	well	10:58	HCL	Y	✓			✓							
2	C-4		~~5~~ 3			12:12			✓			✓				✓			
3	C-5		3			12:48			✓			✓							
4	C-6		3			11:37			✓			✓							
5	C-7	KW 1028	~~3~~ 2			09:42			✓			✓							
6	C-8		3			08:41			✓			✓							
7	CD-3		3			—			✓			✓							
8	Trip		1	↓	↓	—	↓		✓			✓							

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time	Turn Around Time (Circle Choice)
Philly D Dye	G/R	12-8/1255		G/R	12-8-89 12:48	24 Hrs
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time	48 Hrs
	G/R	12-8/89 1:47pm				5 Days
Relinquished By (Signature)	Organization	Date/Time	Received for Laboratory By (Signature)		Date/Time	10 Days
					12/8/89 1:50	Need results no

Printed in USA

APPENDIX E

GEOSTRATEGIES INC.

FIELD METHODS AND PROCEDURES

FIELD METHODS AND PROCEDURES

EXPLORATION DRILLING

Mobilization

Prior to any drilling activities, GeoStrategies Inc. (GSI) will verify that necessary drilling permits have been secured.

Utility locations will be located and drilling will be conducted so as not to disrupt activities at a project site. GSI will obtain and review available public data on subsurface geology and if warranted, the location of wells within a half-mile of the project site will be identified. Drillers will be notified in advance so that drilling equipment can be inspected prior to performing work.

Drilling

The subsurface investigations are typically performed to assess the lateral and vertical extent of petroleum hydrocarbons present in soils and groundwater. Drilling methods will be selected to optimize field data requirements as well as be compatible with known or suspected subsurface geologic conditions.

Monitoring wells are installed using a truck-mounted hollow-stem auger drill rig or mud-rotary drill rig. Typically, the hollow-stem rig is used for wells up to 100 feet, if subsurface conditions are favorable. Wells greater than 100-feet deep are typically drilled using mud-rotary techniques. When mud rotary drilling is used, an electric log will be performed for additional lithological information. Also during mud rotary drilling, precautions will be taken to prevent mud from circulating contaminants by using a conductor casing to seal off contaminated zones. Samples will be collected for lithologic logging by continuous chip, and where needed by drive sample or core as specified by the supervising geologist.

Soil Sampling

Shallow soil borings will be drilled using a truck-mounted hollow-stem auger drilling rig, unless site conditions favor a different drilling method. Drilling and sampling methods will be consistent with ASTM Method D-1452-80. The auger size will be a minimum 6-inch nominal outside-diameter (O.D). No drilling fluids will be used during this drilling method. The augers and other tools used in the bore hole will be steam cleaned before use and between borings to minimize the possibilities of cross-contamination between borings.

Soil samples are typically collected at 5-foot intervals as a minimum from ground surface to total depth of boring. Additional soil samples will be collected based on significant lithologic changes and/or potential chemical content. Soil samples from each sampling interval will be lithologically described by a GSI geologist (Figure 1). Soil colors will be described using the Munsell Color Chart. Rock units will be logged using appropriate lithologic terms, and colors described by the G.S.A. Rock Color Chart.

Head-space analyses will be performed to check for the evidence of volatile organic compounds. Head-space analyses will be performed using an organic vapor analyzer; either an OVA, HNU, or OVM. Organic vapor concentrations will be recorded on the GSI field log of boring (Figure 1). The selection of soil samples for chemical analysis are typically based on the following criteria:

1) Soil discoloration
2) Soil odors
3) Visual confirmation of chemical in soil
4) Depth with respect to underground tanks (or existing grade)
5) Depth with respect to ground water
6) OVA reading

Soil samples (full brass liners) selected for chemical analysis are immediately covered with aluminum foil and the liner ends are capped to prevent volatilization. The samples are labeled and entered onto a Chain-of-Custody form, and placed in a cooler on blue ice for transport to a State-certified analytical laboratory.

Soil cuttings are stockpiled on-site. Soils are sampled and analyzed for site-specific chemical parameters. Disposition of soils is dependent of chemical analytical results of the samples.

Soil Sampling - cont.

Soil borings not converted to monitoring wells will be backfilled (sealed) to ground surface using either a neat cement or cement-bentonite grout mixture. Backfilling will be tremied by continuously pumping grout from the bottom to the top of the boring where depth exceeds 20' or as required by local permit requirements.

All field and office work, including exploratory boring logs, are prepared under the direction of a registered geologist.

Monitoring Well Installation

Monitoring well casing and screen will be constructed of Schedule 40, flush-joint threaded polyvinylchloride (PVC). The well screen will be factory mill-slotted unless additional open area is required (eg. conversion to an extraction well in a low-yield aquifer). The screen length will be placed adjacent to the aquifer material to a minimum of 2-feet above encountered water. No screen shall be placed in a borehole that potentially creates hydraulic interconnection of two or more aquifer units. Screen slot size and well sand pack will be compatible with encountered aquifer materials, as confirmed by sieve analysis.

Monitoring wells will be completed below grade (Figure 2) unless special conditions exist that require above-grade completion design. In the event a monitoring well is required in an aquifer unit beneath an existing aquifer, the upper aquifer will be sealed off by installing a steel conductor casing with an annular neat cement or cement-bentonite grout seal. This seal will be continuously tremie pumped from the bottom of the annulus to ground surface.

The monitoring well sand pack will be placed adjacent to the entire screened interval and will extend a recommended minimum distance of 2-feet above the top of the screen. No sand pack will be placed that interconnects two or more aquifer units. A minimum 2-foot bentonite pellet or bentonite slurry seal will be placed above the sand pack. Sand pack, bentonite, and cement seal levels will be confirmed by sounding the annulus with a calibrated weighted tape. The remaining annular space above the bentonite seal will be grouted with a bentonite-cement mixture and will be tremie-pumped from the bottom of the annular space to the ground surface. The bentonite content of the grout will not exceed 5 percent by weight. A field log of boring and a field well completion form will be prepared by GSI for each well installed.

Decontamination of drilling equipment before drilling and between wells will consist of steam cleaning, and/or Alconox wash.

Well Development

All newly installed wells will be properly developed within 48 hours of completion. No well will be developed until the well seal has set a minimum of 12 hours. Development procedures will include one or more of the methods described below:

Bailing

Bailing will be used to remove suspended sediments and drilling fluids from the well, where applicable. The bailer will be raised and lowered through the column of water in the well so as to create a gentle surging action in the screened interval. This technique may be used in conjunction with other techniques, such as pumping, and may be used alone if the well is of low yield.

Pumping

Pumping will be used in conjunction with bailing or surging. The pump will be operated in such a manner as to gently surge the entire screened interval of the well. This may involve operating the pump with a packer type mechanism attached and slowly raising and lowering the pump, or by cycling the pump off and on to allow water to move in and out of the screened interval. Care will be used not to overpump a well.

Surging

Surging will be performed on wells that are screened in known or suspected high yield formations and/or on larger diameter (recovery) wells. A surge block will be raised and lowered through the entire screened interval, forcing water in and out of the well screen and sand pack. Pumping or air lifting will be used in conjunction with this method of development to remove any sediment brought into the well during surging.

Air Lifting

Air lifting will be used to remove sediment from wells as an alternative to pumping under certain conditions. When appropriate, a surge block designed for use with air lifting will be used to agitate the entire screened interval and water will be lifted out of the well using forced air. When air lifting is performed, the air source will be either nitrogen or filtered air and the procedure will be performed gently to prevent any damage to the well screen or casing and to insure that discharged water is contained.

Well Development - cont.

All well developing equipment will be thoroughly decontaminated prior to development using a steam cleaner and/or Alconox detergent wash and clean water rinse. During development procedures, field parameters (temperature, specific conductance and pH) will be monitored and recorded on well development forms (Figure 3). Equilibration requirements consist of a minimum of three readings with the following accuracy standards:

pH	± 0.1 pH units
Specific Conductance	± 10% of full scale reading
Temperature	± 0.5 degrees Celsius

The wells will be developed until water is visibly clear and free of sediment, and well purging parameters stabilized. A minimum of 8 to 10 well volumes will be purged from each well, if feasible. If well purging parameters have not stabilized before 10 casing volumes have been removed, well development will continue until purging parameters have stabilized and formation water is being drawn into the well. The adequacy of well development will be judged by the field technician performing the well development and based on known formation conditions.

Well Surveying

Monitoring wells will be surveyed to obtain top of box elevations to the nearest ±0.01 foot. Water level measurements will be recorded to the nearest ±0.01 foot and referenced to Mean Sea Level (MSL). If additional wells are required, then existing and newly installed wells are surveyed relative to MSL.

GROUND-WATER SAMPLING AND ANALYSIS

Quality Assurance/Quality Control Objectives

The sampling and analysis procedures employed by Gettler-Ryan Inc. (G-R) for ground-water sampling and monitoring follow specific Quality Assurance/Quality Control (QA/QC) guidelines. Quality Assurance objectives have been established by G-R to develop and implement procedures for obtaining and evaluating water quality and field data in an accurate, precise, and complete manner so that sampling procedures and field measurements provide information that is comparable and representative of actual field conditions. Quality Control (QC) is maintained by G-R by using specific field protocols and requiring the analytical laboratory to perform internal and external QC checks. It is the goal of G-R to provide data that are accurate, precise, complete, comparable, and representative. The definitions for accuracy, precision, completeness, comparability, and representativeness are as follows:

- Accuracy - the degree of agreement of a measurement with an accepted referenced or true value.

- Precision - a measure of agreement among individual measurements under similar conditions. Usually expressed in terms of the standard deviation.

- Completeness - the amount of valid data obtained from a measurement system compared to the amount that was expected to meet the project data goals.

- Comparability - expresses the confidence with which one data set can be compared to another.

- Representativeness - a sample or group of samples that reflects the characteristics of the media at the sampling point. It also includes how well the sampling point represents the actual parameter variations which are under study.

As part of the G-R QA/QC program, applicable federal, state, and local reference guidance documents are followed. The procedures outlined in these regulations, manuals, handbooks, guidance documents, and journals are incorporated into the G-R sampling procedures to assure that; (1) ground-water samples are properly collected, (2) ground-water samples are identified, preserved, and transported in a manner such that they are representative of field conditions, and (3) chemical analysis of samples are accurate and reproducible.

Guidance and Reference Documents Used to Collect Groundwater Samples

These documents are used to verify G-R sampling procedures and are consistent with current regulatory guidance. If site specific work and sampling plans are required, those plans will be developed from these documents, and newly received applicable documents.

U.S.E.P.A. - 330/9-51-002	NEIC Manual for Groundwater/Subsurface Investigation at Hazardous Waste Sites
U.S.E.P.A. - 530/SW611	Procedures Manual for Groundwater Monitoring at Solid Waste Disposal Facilities (August, 1977)
U.S.E.P.A. - 600/4-79-020	Methods for Chemical Analysis of Water and Wastes (1983)
U.S.E.P.A. - 600/4-82-029	Handbook for Sampling and Sample Preservation of Water and Wastewater (1982)
U.S.E.P.A. - 600/4-82-057	Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater (July, 1982)
U.S.E.P.A. - SW-846#, 3rd Edition	Test Methods for Evaluating Solid Waste - Physical/Chemical Methods (November, 1986)
40 CFR 136.3e,Table II (Code of Federal Regulations)	Required Containers, Preservation Techniques, and Holding Times
Resources Conservation and Recover Act (OSWER 9950.1)	Groundwater Monitoring Technical Enforcement Guidance Document (September, 1986)
California Regional Water Quality Control Board (Central Valley Region)	A Compilation of Water Quality Goals (September, 1988); Updates (October, 1988)
California Regional Water Quality Control Board (North Coast, San Francisco Bay, and Central Valley)	Regional Board Staff Recommendations for Initial Evaluations and Investigation of Underground Tanks: Tri-Regional Recommendations (June, 1988)

Guidance and Reference Documents Used to Collect Groundwater Samples (cont.)

Regional Water Quality Control Board (Central Valley Region)	Memorandum: Disposal, Treatment, and Refuse of Soils Contaminated with Petroleum Fractions (August, 1986)
State of California Department of Health Services	Hazardous Waste Testing Laboratory Certification List (March, 1987)
State of California Water Resources Control Board	Leaking Underground Fuel Tank (LUFT) Field Manual (May, 1988), and LUFT Field Manual Revision (April, 1989)
State of California Water Resources Control Board	Title 23, (Register #85.#33-8-17-85), Subchapter 16: Underground Tank Regulations; Article 3, Sections 2632 and 2634; Article 4, Sections 2645, 2646, 2647, and 2648; Article 7, Sections 2670, 2671, and 2672 (October, 1986: including 1988 Amendments)
Alameda County Water District	Groundwater Protection Program: Guidelines for Groundwater and Soil Investigations at Leaking Underground Fuel Tank Sites (November, 1988)
American Public Health Association	Standard Methods for the Examination of Water and Wastewaters, 16th Edition
Analytical Chemistry (journal)	Principles of Environmental Analysis, Volume 55, Pages 2212-2218 (December, 1983)
Napa County	Napa County Underground Storage Tank Program: Guidelines for Site Investigations; February 1989.
Santa Clara Valley Water District	Guidelines for Preparing or Reviewing Sampling Plans for Soil and Groundwater Investigation of Fuel Contamination Sites (January, 1989)

Guidance and Reference Documents Used to Collect Groundwater Samples (cont.)

Santa Clara Valley Water District	Investigation and Remediation at Fuel Leak sites: Guidelines for Investigation and Technical Report Preparation (March 1989)
Santa Clara Valley Water District	Revised Well Standards for Santa Clara County (July 18, 1989)
American Petroleum Institute	Groundwater Monitoring & Sample Bias; API Publication 4367, Environmental Affairs Department, June 1983
American Petroleum Institute	A Guide to the Assessment and Remediation of Underground Petroleum Releases; API Publication 1628, February 1989
American Petroleum Institute	Literature Summary: Hydrocarbon Solubilities and Attenuations Mechanisms, API Publication 4414, August 1985
Site Specific (as needed)	General and specific regulatory documents as required.

Because ground-water samples collected by G-R are analyzed to the parts per billion (ppb) range for many compounds, extreme care is exercised to prevent contamination of samples. When volatile or semi-volatile organic compounds are included for analysis, G-R sampling crew members will adhere to the following precautions in the field:

1. A clean pair of new, disposable gloves are worn for each well being sampled.

2. When possible, samples are collected from known or suspected wells that are least contaminated (i.e. background) followed by wells in increasing order of contamination.

3. Ambient conditions are continually monitored to maintain sample integrity.

When known or potential organic compounds are being sampled for, the following additional precautions are taken:

1. All sample bottles and equipment are kept away from fuels and solvents. When possible, gasoline (used in generators) is stored away from bailers, sample bottles, purging pumps, etc.

2. Bailers are made of Teflon or Stainless Steel. Other materials such as plastic may contaminate samples with phthalate esters which interfere with many Gas Chromatography (GC) analyses.

3. Volatile organic ground-water samples are collected so that air passage through the sample does not occur or is minimal (to prevent volatiles from being stripped from the samples): sample bottles are filled by slowly running the sample down the side of the bottle until there is a positive convex meniscus over the neck of the bottle; the Teflon side of the septum (in cap) is positioned against the meniscus, and the cap screwed on tightly; the sample is inverted and the bottle lightly tapped. The absence of an air bubble indicates a successful seal; if a bubble is evident, the cap is removed, more sample is added, and the bottle is resealed.

4. Extra Teflon seals are brought into the field in case seals are difficult to handle and/or are dropped. Dropped seals are considered contaminated and are not used. When replacing seals or if seals become flipped, care is taken to assure that the Teflon seal faces down.

Sample analysis methods, containers, preservatives and holding times are shown on Table 1.

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Laboratory and field handling procedures of samples are monitored by including QC samples for analysis with every submitted sample lot from a project site. QC samples may include any combination of the following:

A. Trip Blank: Used for purgeable organic compounds only; QC samples are collected in 40 milliliter (ml) sample vials filled in the analytical laboratory with organic-free water. Trip blanks are sent to the project site, and travel with project site samples. Trip blanks are not opened, and are returned from a project site with the project site samples for analysis.

B. Field Blank: Prepared in the field using organic-free water. These QC samples accompany project site samples to the laboratory and are analyzed for specific chemical parameters unique to the project site where they were prepared.

C. Duplicates: Duplicated samples are collected "second samples" from a selected well and project site. They are collected as either split samples or second-run samples collected from the same well.

D. Equipment Blank: Periodic QC sample collected from field equipment rinsate to verify decontamination procedures.

The number and types of QC samples are determined as follows:

A. Up to 2 wells - Trip Blank Only

B. 2 to 5 Wells - 1 Field Blank and 1 Trip Blank

C. 5 to 10 Wells - 1 Field blank, 1 Trip Blank, and 1 Duplicate

D. More than 10 Wells - 1 Field Blank, 1 Trip Blank, and 1 Duplicate per each 12 wells

E. If sampling extends beyond one day, quality control samples will be collected for each day.

Additional QC is performed through ongoing and random reviews of duplicate samples to evaluate the precision of the field sampling procedures and analytical laboratory. Precision of QC data is accomplished by calculating the Relative Percent Difference (RPD). The RPD is evaluated to assess whether values are within an acceptable range (typically ± 20% of duplicate sample).

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SAMPLE COLLECTION

This section describes the routine procedures followed by G-R while collecting ground-water samples for chemical analysis. These procedures include decontamination, water-level measurements, well purging, physical parameter measurements, sample collection, sample preservation, sample handling, and sample documentation. Critical sampling objectives for G-R are to:

1. Collect ground-water samples that are representative of the sampled matrix and,

2. Maintain sample integrity from the time of sample collection to receipt by the analytical laboratory.

Sample analyses methods, containers, preservation, and holding times are presented in Table 1.

Decontamination Procedures

All physical parameter measuring and sampling equipment are decontaminated prior to sample collection using Alconox or equivalent detergent followed by steam cleaning with deionized water. Any sampling equipment surfaces or parts that might absorb specific contaminants, such as plastic pump valves, impellers, etc., are cleaned in the same manner.

Sample bottles, bottle caps, and septa used for sampling volatile organics are thoroughly cleaned and prepared in the laboratory. Sample bottles, bottle caps, and septa are protected from all potential chemical contact before actual usage at a sample location.

During field sampling, equipment placed in a well are decontaminated before purging or sampling the next well. The equipment are decontaminated by cleaning with Alconox or equivalent detergent followed by steam cleaning with deionized water.

Water-Level Measurements

Prior to purging and sampling a well, the static-water levels are measured in all wells at a project site using an electric sounder and/or calibrated portable oil-water interface probe (Figure 4). Both static water-level and separate-phase product thickness are measured to the nearest ±0.01 foot. The presence of separate-phase product is confirmed using a clean, acrylic or polyvinylchloride (PVC) bailer, measured to the nearest ±0.01 foot with a decimal scale tape.

Water-Level Measurements (continued)

The monofilament line used to lower the bailer is replaced between wells with new line to preclude the possibility of cross-contamination. Field observations (e.g. well integrity, product color, turbidity, water color, odors, etc.) are noted on the G-R Well Sampling Field Data Sheet shown in Figure 4. Before and after each use, the electric sounder, interface probe and bailer are decontaminated by washing with Alconox or equivalent detergent followed by rinsing with deionized water to prevent cross-contamination.

As mentioned previously, water-levels are measured in wells with known or suspected lowest dissolved chemical concentrations to the highest dissolved concentrations.

Well Purging

Before sampling occurs, well casing storage water and interstitial water in the artificial sand pack will be purged using (1) a positive displacement bladder pump constructed of inert, non-wetting, Teflon and stainless steel, (2) a pneumatic-airlift pumping system, (3) a centrifigal pumping system, or (4) a Teflon or Stainless steel bailer (Figure 5). Methods of purging will be assessed based on well size, location, accessibility, and known chemical conditions. Individual well purge volumes are calculated from borehole volumes which take into account the sand packed interval in the well annular space. As a general rule, a minimum of 3 and a maximum of 10 borehole volumes will be purged. Wells which dewater or demonstrate slow recharge periods (i.e. low-yield wells) during purging activities may be sampled after fewer purging cycles. If a low-yield (low recovery) well is to be sampled, sampling will not take place until at least 80 percent of the previously measured water column has been replaced by recharge, or as per local requirements. Physical parameter measurements (temperature, pH, and specific conductance) are closely monitored throughout the well purging process and are used by the G-R sampling crew as indicators for assessing sufficient purging. Purging is continued until all three physical parameters have stabilized. Specific conductance (conductivity) meters are read to the nearest ± 10 umhos/cm, and are calibrated daily. pH meters are read to the nearest ± 0.1 pH units and are calibrated daily. Temperature is read to the nearest 0.1 degree F. Calibration of physical parameter meters will follow manufacturers specifications. Monitoring wells will be purged according to the protocol presented in Figure 5. Collected field data during purging activities will be entered on the G-R Well Sampling Field Data Sheet shown in Figure 4. Copies of the G-R Field Data Sheets will be reviewed by the G-R Sampling Manager for accuracy and completeness.

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DOCUMENTATION

Sample Container Labels

Each sample container will be labeled by an adhesive label, noted in permanent ink immediately after the sample is collected. Label information will include:

Sample point designation (i.e. well number or code)

Sampler's identification

Project number

Date and time of collection

Type of preservation used

Well Sampling Data Forms

In the field, the G-R sampling crew will record the following information on the Well Sampling Data Sheet for each sample collected:

Project number

Client

Location

Source (i.e. well number)

Time and date

Well accessibility and integrity

Pertinent well data (e.g. depth, product thickness, static water-level, pH, specific conductance, temperature)

Calculated and actual purge volumes

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Chain-of-Custody

A Chain-of-Custody record (Figure 6) shall be completed and accompany every sample and every shipment of samples to the analytical laboratory in order to establish the documentation necessary to trace sample possession from time of collections. The record will contain the following information:

- Sample or station number or sample identification (ID)
- Signature of collector, sampler, or recorder
- Date and time of collection
- Place of collection
- Sample type
- Signatures of persons involved in chain of possession
- Inclusive dates of possession

Samples shall always be accompanied by a Chain-of-Custody record. When transferring the samples, the individual relinquishing and receiving the samples will sign, date, and note the time on the Chain-of-Custody record. G-R will be responsible for notifying the laboratory coordinator when and how many samples will be sent to the laboratory for analysis, and what types of analyses shall be performed.

TABLE 1

SAMPLE ANALYSIS METHODS, CONTAINERS, PRESERVATIONS, AND HOLDING TIMES

Parameter	Analytical Method	Reporting Units	Container	Preservation	Maximum Holding Time
Total Petroleum Hydrocarbons (Gasoline)	EPA 8015 (modified)	mg/l ug/l	40 ml. vial glass, Teflon	cool, 4 C HCl to pH<2	14 days (maximum)
Benzene Toluene Ethylbenzene Xylenes (BTEX	EPA 8020	mg/l ug/l	50 ml. vial glass, Teflon lined septum	cool, 4 C HCl to pH<2	7 days (w/o preservative) 14 days (w preservative)
Oil & Grease	SM 503E	mg/l ug/l	1 l glass, Teflon lined septum	H2SO4 or HCl to pH<2	28 days (maximum)
Total Petroleum Hydrocarbons (Diesel)	EPA 8015 (modified)	mg/l ug/l	40 ml. vial glass, Teflon lined septum	cool, 4 C	14 days (maximum)
Halogented Volatile Organics (chlorinated solvents)	8010	mg/l ug/l	40 ml. vial glass, Teflon lined septum	cool, 4 C	14 days (maximum)
Non chlorinated solvents	8020	mg/l ug/l	40 ml. vial glass, Teflon lined septum	cool, 4 C HCl to pH<2	14 days (maximum)
Volatile Organics	8240	mg/l ug/l	40 ml. vial glass, Teflon lined septum	cool, 4 C HCl to pH<2	14 days (maximum)
Semi-Volatile Organics	8270	mg/l ug/l	1 l amber glass, Teflon lined septum	cool, 4 C	7 days extract 40 days (maximum to analyze)
Specific Conductance (Field test)		umhos/cm			
pH (Field test)		pH units			
Temperature (Field test)		Deg F			

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FIELD EXPLORATORY BORING LOG

FIGURE 1

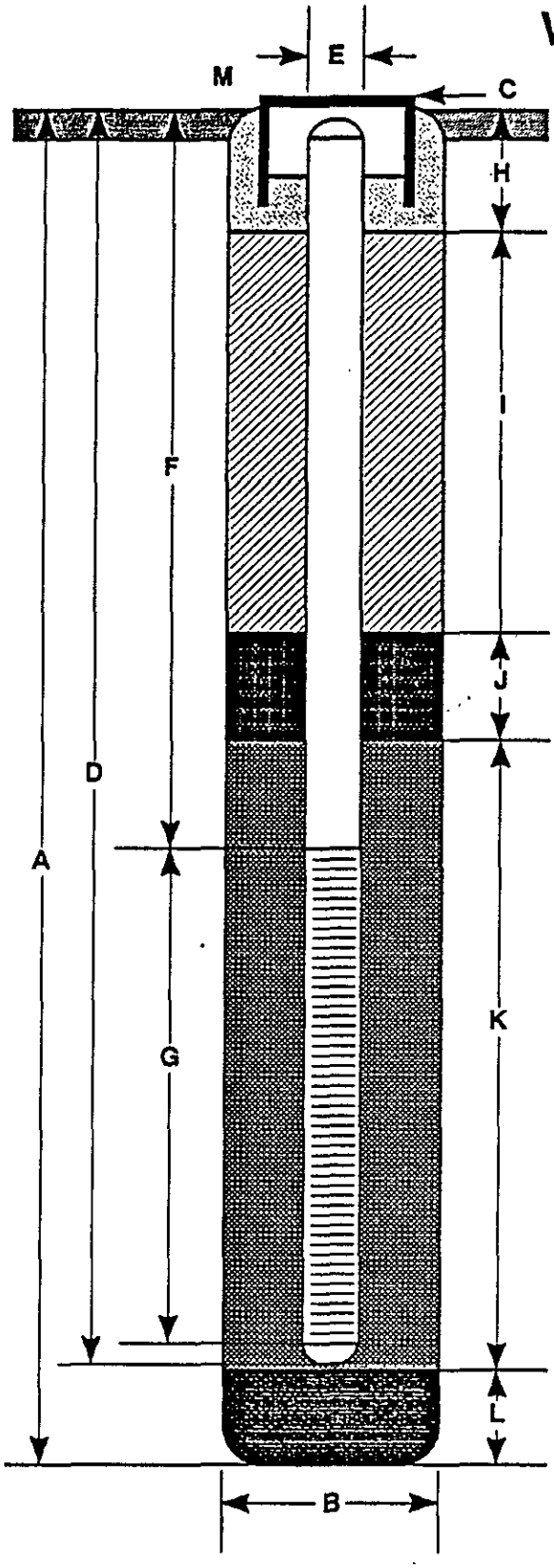
Field location of boring:	Project No.:	Date:	Boring No:
	Client:		
	Location:		
	City:		Sheet
	Logged by:	Driller:	of
Drilling method:	Casing installation data:		
Hole diameter:	Top of Box Elevation:		Datum:

								Water Level		
								Time		
								Date		
PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description		

Remarks:

WELL CONSTRUCTION DETAIL

FIGURE 2



A Total Depth of Boring _____ ft.

B Diameter of Boring _____ in.
Drilling Method _____

C Top of Box Elevation _____ ft.
☐ Referenced to Mean Sea Level
☐ Referenced to Project Datum

D Casing Length _____ ft.
Material _____

E Casing Diameter _____ in.

F Depth to Top Perforations _____ ft.

G Perforated Length _____ ft.
Perforated Interval from _____ to _____ ft.
Perforation Type _____
Perforation Size _____ in.

H Surface Seal from _____ to _____ ft.
Seal Material _____

I Backfill from _____ to _____ ft.
Backfill Material _____

J Seal from _____ to _____ ft.
Seal Material _____

K Gravel Pack from _____ to _____ ft.
Pack Material _____

L Bottom Seal _____ ft.
Seal Material _____

M _____

Note: Depths measured from initial ground surface

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Well Construction Detail

WELL NO.

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE

WELL DEVELOPMENT FORM FIGURE 3

Page_____ of_____

(to be filled out in office)

Client_____ SS#_____ Job#_____

Name_____ Location_____

Well#_____ Screened Interval_____ Depth_____

Aquifer Material_____ Installation Date _____

Drilling Method_____ Borehole Diameter_____

Comments regarding well installation:_____

(to be filled out in the field) Name_____

Date_____ Development Method_____

Total Depth_____ - Depth to liquid_____ = WaterColumn_____

Product thickness_____

_____ x _____ x _____ x 0.0408 = _____gals
Water Column Diameter (in.) #Vol

Purge Start_____ Stop_____ Rate_____ gpm

Gallons	Time	Clarity	Temp.	pH	Conductivity
0					

Total gallons removed_____ Development stop time_____

Depth to liquid _____at_____(time)

Odor of water_____ Water discharged to_____

Comments_____

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WELL SAMPLING FIELD DATA SHEET

FIGURE 4

COMPANY _____ JOB # _____

LOCATION _____ DATE _____

CITY _____ TIME _____

Well ID. _____ Well Condition _____

Well Diameter _____ in. Hydrocarbon Thickness _____ ft.

Total Depth _____ ft.

Depth to Liquid– _____ ft.

Volume Factor (VF)	2" = 0.17	3" = 0.38	4" = 0.66	6" = 1.50	8" = 2.60	10" = 4.10	12" = 5.80

(# of casing volumes) _____ x _____ x(VF) _____ = (Estimated Purge Volume) _____ gal.

Purging Equipment _____

Sampling Equipment _____

Starting Time _____ Purging Flow Rate _____ gpm.

(Estimated Purge Volume) _____ gal. / (Purging Flow Rate) _____ gpm. = (Anticipated Purging Time) _____ min.

Time	pH	Conductivity	Temperature	Volume

Did well dewater? _____ If yes, time _____ Volume _____

Sampling Time _____ Weather Conditions _____

Analysis _____ Bottles Used _____

Chain of Custody Number _____

COMMENTS _____

FOREMAN _____ ASSISTANT _____

FIGURE 5

Monitoring Well Sampling Protocol Schematic

Sampling Crew Reviews Project Sampling Requirements/Schedule

↓

Field Decontamination and Instrumentation Calibration

↓

Check Integrity of Well (Inspect for Well Damage)

↓

Measure and Record Depth to Water and Total Well Depth (Electric Well Sounder)

↓

Check for Floating Product (Oil/Water Interface Probe)

Floating Product Present

↓

Confirm Product Thickness (Acrylic or PVC Bailer)

↓

Collect Free-Product Sample

↓

Dissolved Product Sample Not Required

↓

Record Data on Field Data Form

Floating Product Not Present

↓

Purge Volume Calculation

$V = \pi (r/12)^2 h(\_\% \text{ vol})(7.48) = \_\_\_ / \text{gallons}$

V = Purge volume (gallons)

$\pi = 3.14159$

h = Height of Water Column (feet)

r = Borehole radius (inches)

↓

Evacuate water from well equal to the calculated purge volume while monitoring groundwater stabilization indicator parameters (pH, conductivity, temperature) at intervals of one casing volume.

Well Dewaters after One Purge Volume (Low yield well)

↓

Well Recharges to 80% of Initial Measured Water Column Height in Feet within 24 hrs. of Evacuation.

↓

Measure Groundwater Stability Indicator Parameters (pH, Temperature, Conductivity)

↓

Collect Sample and Complete Chain-of-Custody

↓

Preserve Sample According to Required Chemical Analysis

↓

Transport to Analytical Laboratory

Well Readily Recovers

↓

Record Groundwater Stability Indicator Parameters from each Additional Purge Volume

Stability indicated when the following Criteria are met:

pH :	± 0.1 pH units
Conductivity:	± 10%
Temperature:	1.0 degrees F

Groundwater Stability Achieved

↓

Collect Sample and Complete Chain-of-Custody

↓

Preserve Sample According to Required Chemical Analysis

↓

Transport to Analytical Laboratory

Groundwater Stability Not Achieved

↓

Continue Purging Until Stability is Achieved

↓

Collect Sample and complete Chain-of-Custody

↓

Preserve Sample According to Required Chemical Analysis

↓

Transport to Analytical Laboratory

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Chain of Custod
FIGURE 6

)MPANY _____ JOB NO. _____

OB LOCATION _____

CITY _____ PHONE NO. _____

AUTHORIZED _____ DATE _____ P.O. NO. _____

SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID

RELINQUISHED BY: RECEIVED BY:

RELINQUISHED BY: RECEIVED BY:

RELINQUISHED BY: RECEIVED BY LAB:

DESIGNATED LABORATORY: _____ DHS #: _____

REMARKS: _____

DATE COMPLETED _____ FOREMAN _____