

FOURTH QUARTER 2002 GROUNDWATER MONITORING REPORT

3/28/03

GOLDEN GATE PETROLEUM HAYWARD BULK PETROLEUM DISTRIBUTION FACILITY HAYWARD, CALIFORNIA

> Bonkowski & Associates, Inc. 6400 Hollis Street, Suite 4 Emeryville, California 94608

March 28, 2003 L98184



BONKOWSKI & ASSOCIATES, INC. Geotechnical Services and Hazardous Materials Management

Corporate Headquarters 6400 Hollis Street, Suite 4 Emeryville, California 94608 Phone: (510) 450-0770 Fax: (510) 450-0801 Ms. Wenche Lier Golden Gate Petroleum 501 Shell Avenue Martinez, CA 94553

Subject: Fourth Quarter 2002 Groundwater Monitoring Report Hayward Bulk Distribution Facility, Haward, California

Dear Ms. Lier:

Enclosed is the report summarizing Bonkowski & Associates, Inc. review of the fourth quarter 2002 groundwater monitoring data at the Hayward Bulk Petroleum Distribution Facility in Hayward, California. This report presents the results of the investigative work and chemical testing, the laboratory reports and Chain-of-Custody records, the groundwater well sampling records, and a site location map and site plan with groundwater flow direction.

We appreciate the opportunity to be of service on this project. Please call Tony Choi at (510) 450-0770 if you have any questions or need any additional information.

Sincerely,

Tony Choi

Assistant Project Geologist

Cynthia A. Dittmar, RG 7213

Project Engineer

Enclosure

TC: cd

cc:

Mr. Scott Seery, ACHCS

GROUNDWATER MONITORING REPORT FOURTH QUARTER 2002

Hayward Bulk Petroleum Distribution Facility Hayward, California



SITE DESCRIPTION

Golden Gate Petroleum Hayward Bulk Petroleum Distribution Facility is located at 1565 Industrial Parkway West in Hayward, California (Figure 1). The facility is located along the north side of Industrial Parkway West in an area zoned for industrial and commercial use. It has been used for the retail sale of gasoline and petroleum fuel products since approximately 1960. The Site presently has three (3) 20,000-gallon fiberglass underground fuel storage tanks (USTs) and nine (9) dispenser islands that dispense diesel, unleaded regular, plus unleaded, and premium unleaded regular gasoline (Figure 2). Previous investigations of the Site have encountered groundwater in silt, silty clays, and silty sand combinations from depths of 10 to 18 feet below (Bonkowski & Associates, Inc. [B&A], 1999). Seven (7) monitor wells have been installed at the site for the purpose of groundwater monitoring. Site history information can be found in the Preliminary Site Assessment Report (B&A, 2002).

GROUNDWATER MONITORING FIELD ACTIVITIES

Dates of field activities: December 4, 2002

(monitoring and sampling)

Wells inspected: MW-1 through MW-7

Wells sampled: MW-1 through MW-7

Water analyses: TPHD and TPHMO (DHS LUFT), TPHG,

BTEX, MTBE, DIPE, ETBE, TAME,

EDB and 1,2-DCA (EPA 8260B)

Laboratory: Sequoia Analytical

(Sacramento, California)

Groundwater elevations: Ranged from -0.88 ft (MW-1) to -1.20 ft

(MW-7) above mean sea level

Flow direction/gradient: 0.001 ft/ft radially away from MW-5

(toward the east)

Separate phase hydrocarbons (SPH): None observed

GROUNDWATER MONITORING RESULTS

TPHG concentrations:

0.50 mg/l (MW-3)

TPHD concentrations:

Up to 0.29 mg/l (MW-2)

TPHMO concentrations:

Up to 5.0 mg/l (MW-4)

Benzene concentrations:

 $1.2 \,\mu g/l \,(MW-2)$

Toluene and ethylbenzene concentrations:

 $< 0.50 \,\mu\text{g/l}$ in all wells

Total xylenes concentrations:

 $< 1.0 \,\mu\text{g/l}$ in all wells

MTBE concentrations:

Up to 520 µg/l (MW-3)

TAME concentrations:

Up to 1.7 µg/l (MW-3 and MW-7)

ETBE, DIPE, 1,2-DCA, and EDB

 $< 0.50 \mu g/l$ in all wells

concentrations:

10

TBA concentrations:

 $< 5.0 \,\mu\text{g/l}$ in all wells

DISCUSSION

Separate phase hydrocarbons were not observed in wells MW-1 through MW-7 during fourth quarter 2002 monitoring activities. TPHG was detected in well MW-3, where its concentration exceeded the State taste and odor threshold. TPHD was detected above Federal taste and odor threshold in wells MW-2 and MW-7. Concentrations of Benzene exceeded the California MCL in well MW-2. MTBE was detected above California secondary MCL in wells MW-2, MW-3, and MW-7. Toluene, ethylbenzene, total xylenes, ETBE, DIPE, TBA, 1,2-DCA, and EDB were not detected above laboratory reporting limits.

ATTACHMENTS

- Summary of Monitor Well Construction Details and Groundwater Elevations (Table 1)
- Groundwater Chemical Test (EPA 8260B and DHS LUFT) Results (Table 2)
- Site Location (Figure 1)
- Site Plan (Figure 2)
- Location of Former USTs (Figure 3)
- Potentiometric Surface Elevation Contour Map, December 4, 2002 (Figure 4)
- TPHD Isoconcentration Contours, December 4, 2002 (Figure 5)
- TPHMO Isoconcentration Contours, December 4, 2002 (Figure 6)
- MTBE Isoconcentration Contours, December 4, 2002 (Figure 7)
- Monitor Well Sampling Forms (Appendix A)
- Laboratory Analytical Report and Chain-of-Custody Forms (Appendix B)
- Groundwater Monitoring and Sampling Protocols (Appendix C)

CERTIFICATION

This report has been prepared by the staff of Bonkowski & Associates, Inc. and has been reviewed and approved by the professionals whose signatures appear below.

The findings, recommendations, specifications, or professional opinions are presented, within the limits prescribed by the Client, after being prepared in accordance with generally accepted engineering practice in Northern California at the time this report was prepared. No other warranty is either expressed or implied.

BONKOWSKI & ASSOCIATES, INC.

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Tony Choi Assistant Project Geologist Cynthia A. Dittmar, RG 7213

CYNTHIA A. DITTMAR No. 7213

Project Geologist

Table 1. Summary of Monitor Well Construction Details and Groundwater Elevations Golden Gate Petroleum Hayward Cardlock, Hayward, California.

Well No.	Well Casing Diameter (inches)	Total Depth (feet)	Geologic Units Monitored	Depth of Screened Interval (feet)	Top of Casing Elevation (feet amsl)	Depth to Water (feet)	Potentiometric Surface Elevation (feet amsl)	Date
MW-1	2	31.5	silty clay, organic-rich clay sandy clay, clay	10-30	10.43	11.31 11.38	-0.88 -0.95	12/4/2002 10/9/2002
MW-2	2	26.5	sandy gravel clay, sand	10-25	10.98	12.05 12.13	-1.07 -1.15	12/4/2002 10/9/2002
MW-3	2	26.5	base gravel, clay, gravelly sand, silty sand, sandy gravel, clay	10-25	11.17	12.19 12.31	-1.02 -1.14	12/4/2002 10/9/2002
MW-4	2	25	pea gravel, sand	10-25	11.36	12.38 12.64	-1.02 -1.28	12/4/2002 10/9/2002
MW-5	2	31.5	silty gravel, gravelly clay, silty clay, clay, sand	10-30	11.41	12.23 12.38	-0.82 -0.97	12/4/2002 10/9/2002
MW-6	2	31.5	fill gravel, clay, clayey gravel	10-30	10.86	11.78 11.92	-0.92 -1.06	12/4/2002 10/9/2002
MW-7	2	26.5	gravel, silt, clay, sand	10-25	10.78	11.98 12.02	-1.20 -1.24	12/4/2002 10/9/2002

amsl - above mean sea level (National Geodetic Vertical Datum 1929)

Table 2. Groundwater Chemical Test (EPA 8015M and EPA 8260B) Results, Golden Gate Petroleum Hayward Cardlock, Hayward, California.

Sample Number	TPHG (mg/l)	TPHD (mg/l)	TPHMO (mg/l)	Benzene (µg/l)	Toluene (μg/l)	Ethyl- benzene (µg/l)	Total Xylenes (μg/l)	MTBE (μg/l)	TAME (µg/l)	ETBE (µg/l)	DIPE (µg/l)	TBA (μg/l)	Methanol (μg/l)	Ethanol (μg/l)	1,2- DCA (μg/l)	EDB (µg/l)	Date Sampled
MW-1	<0.050 ND	<0.050 ND	<0.10 ND	<0.50 ND	<0.50 ND	<0.50 ND	<1.0 ND	0.54 ND	<0.50 ND	<0.50 ND	<0.50 ND	<5.0 ND			<0.50 ND	<0.50 ND	12/4/2003 10/9/2002
MW-2	<0.050 ND	0.29 0.48	<0.10 0.12 ^c	1.2 1.9	<0.50 ND	<0.50 ND	<1.0 0.54	7.8 8.8	<0.50 ND	<0.50 ND	<0.50 ND	<5.0 ND	-		<0.50 ND	<0.50 ND	12/4/2003 10/9/2002
MW-3	0.50 0.62 ^a	<0.050 0.17 ^b	0.56 ^c ND	<0.50 ND	<0.50 ND	<0.50 ND	<1.0 ND	520 890	1.7 2.9	<0.50 ND	<0.50 ND	<5.0 7.6			<0.50 ND	<0.50 ND	12/4/2003 10/9/2002
MW-4	<0.050 ND	<0.25 0.18 ^b	5.0 ^{c, d} ND	<0.50 ND	<0.50 ND	<0,50 ND	<1.0 ND	<0.50 1.0 ^d	<0.50 ND	<0.50 ND	<0.50 ND	<5.0 ND	-		<0.50 ND	<0.50 ND	12/4/2003 10/9/2002
MW-5	<0.050 ND	<0.050 ND	0.22 ^d ND	<0.50 ND	<0.50 ND	<0.50 ND	<1.0 ND	2.0 0.59	<0.50 ND	<0.50 ND	<0.50 ND	<5.0 ND			<0.50 ND	<0.50 ND	12/4/2003 10/9/2002
MW-6	<0.050 <0.50	0.053 ^b 0.73	<0.10 0.16 ^c	<0.50 110	<0.50 11	<0.50 <5.0	<1.0 <5.0	<0.50 <5.0	<0.50 <5.0	<0.50 <5.0	<0.50 <5.0	<5.0 <5.0			<0.50 ND	<0.50 ND	12/4/2003 10/9/2002
MW-7	<0.050 0.34 ^a	0.14 ^b 0.49	<0.10 0.13°	<0.50 ND	<0.50 ND	<0.50 ND	<1.0 ND	170 480	1.7 5.1	<0.50 ND	<0.50 ND	<5.0 ND			<0.50 ND	<0.50 ND	12/4/2003 10/9/2002
Regulatory Standard	0.0051	0.1 ²		1.0 ³	42 ²	29 ²	17 ²	5 ⁴				12 ⁵					

^{1 --} Taste and odor threshold (SWRCB)

^{2 --} Taste and odor threshold (U.S. EPA)

^{3 --} California Primary MCL

^{4 --} California Secondary MCL

^{5 --} California Action Level

^a Hydrocarbon pattern does not resemble gasoline.

^b Hydrocarbon pattern does not resemble diesel.

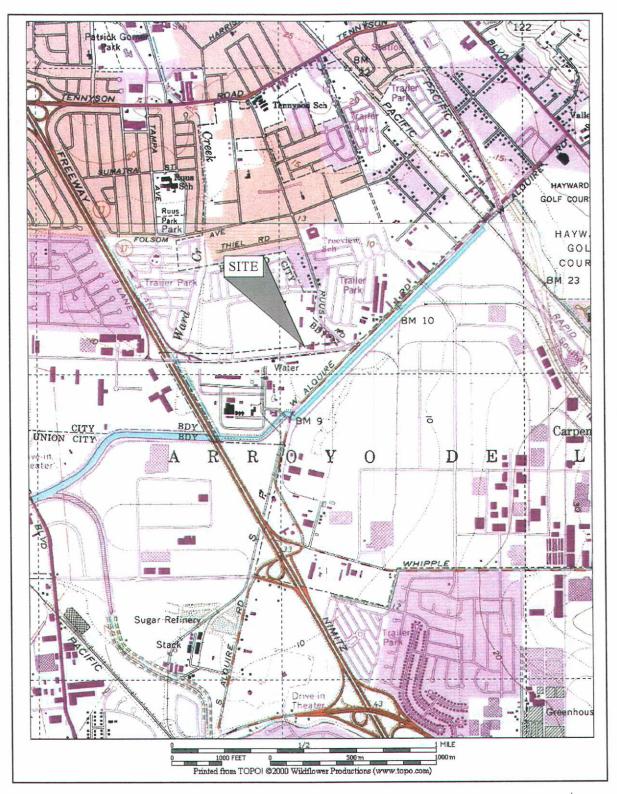
^c Hydrocarbon pattern does not resemble motor oil.

d Coeluting compounds interferred with surrogate recovery

< 0.50 -- Not detected above lab reporting limit of 0.50

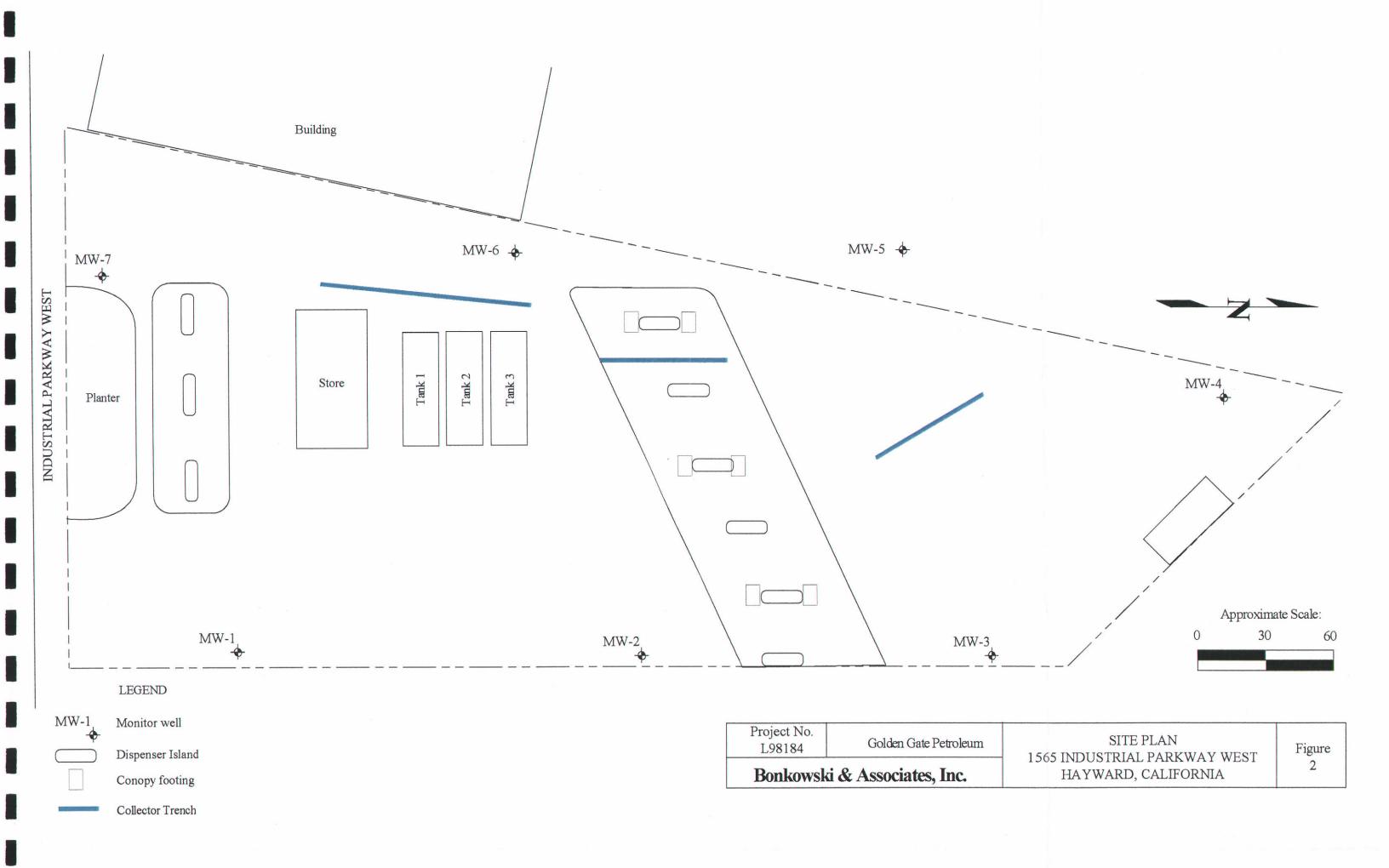
ND -- Not detected above lab reporting limit

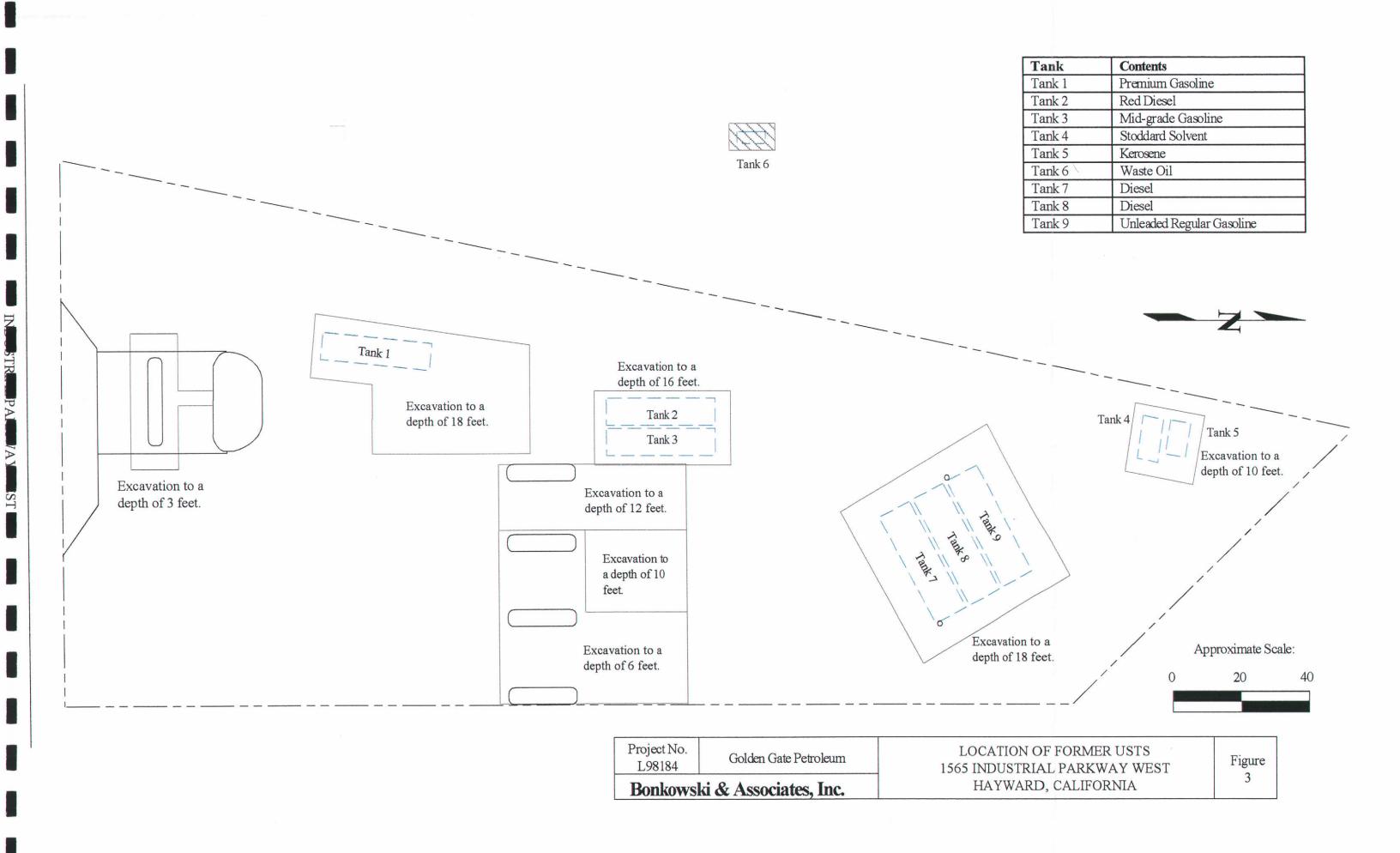
⁻⁻ Not analyzed

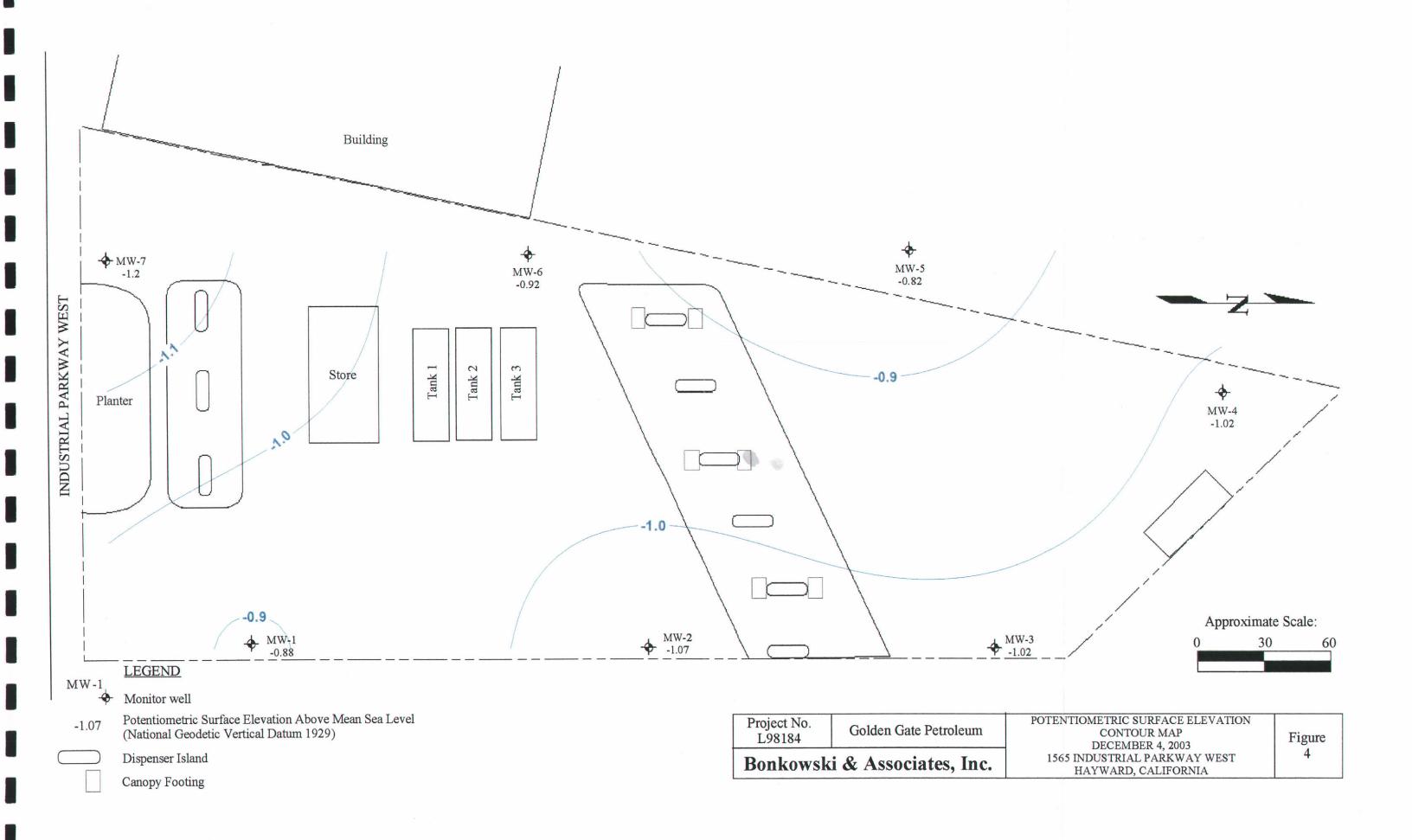


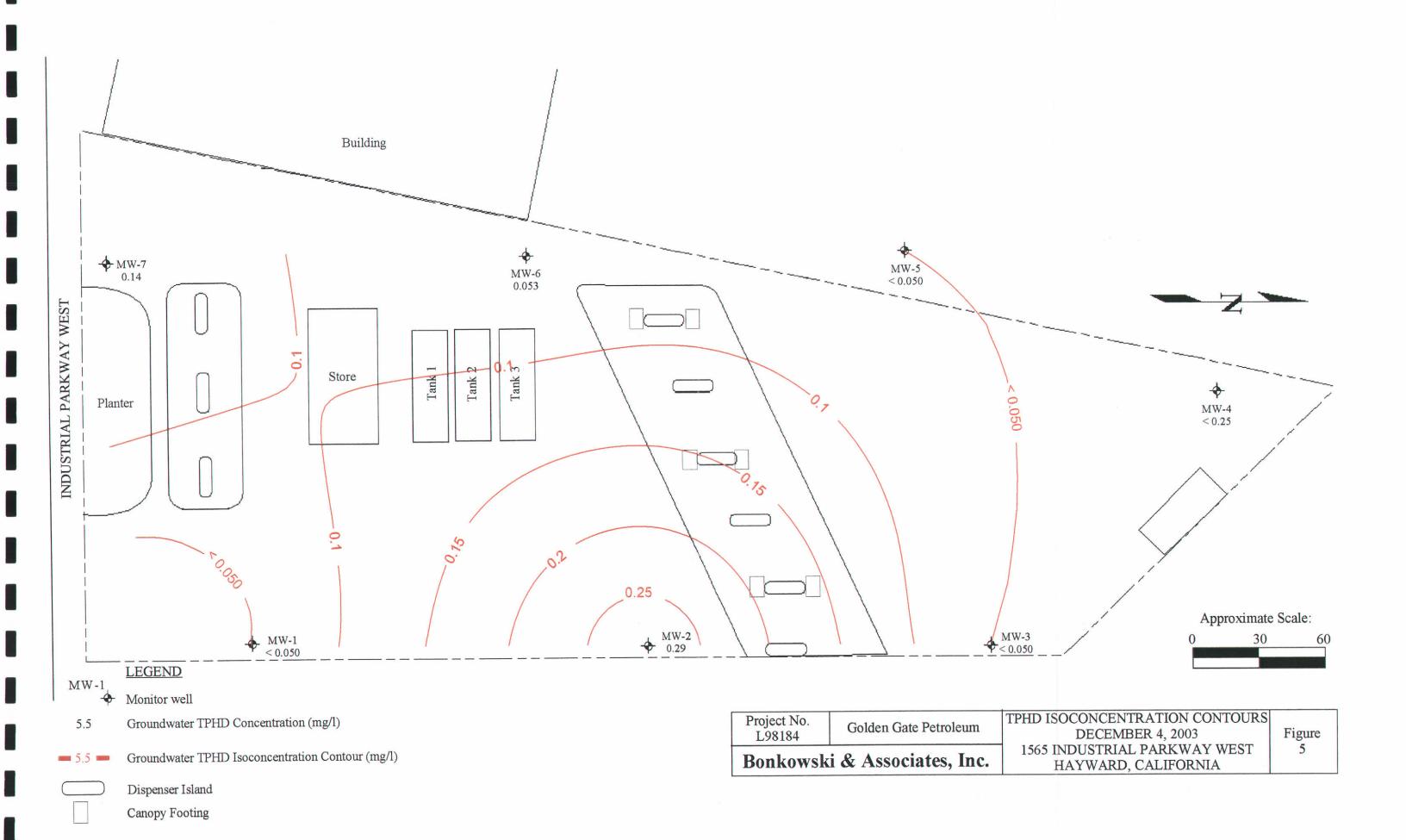


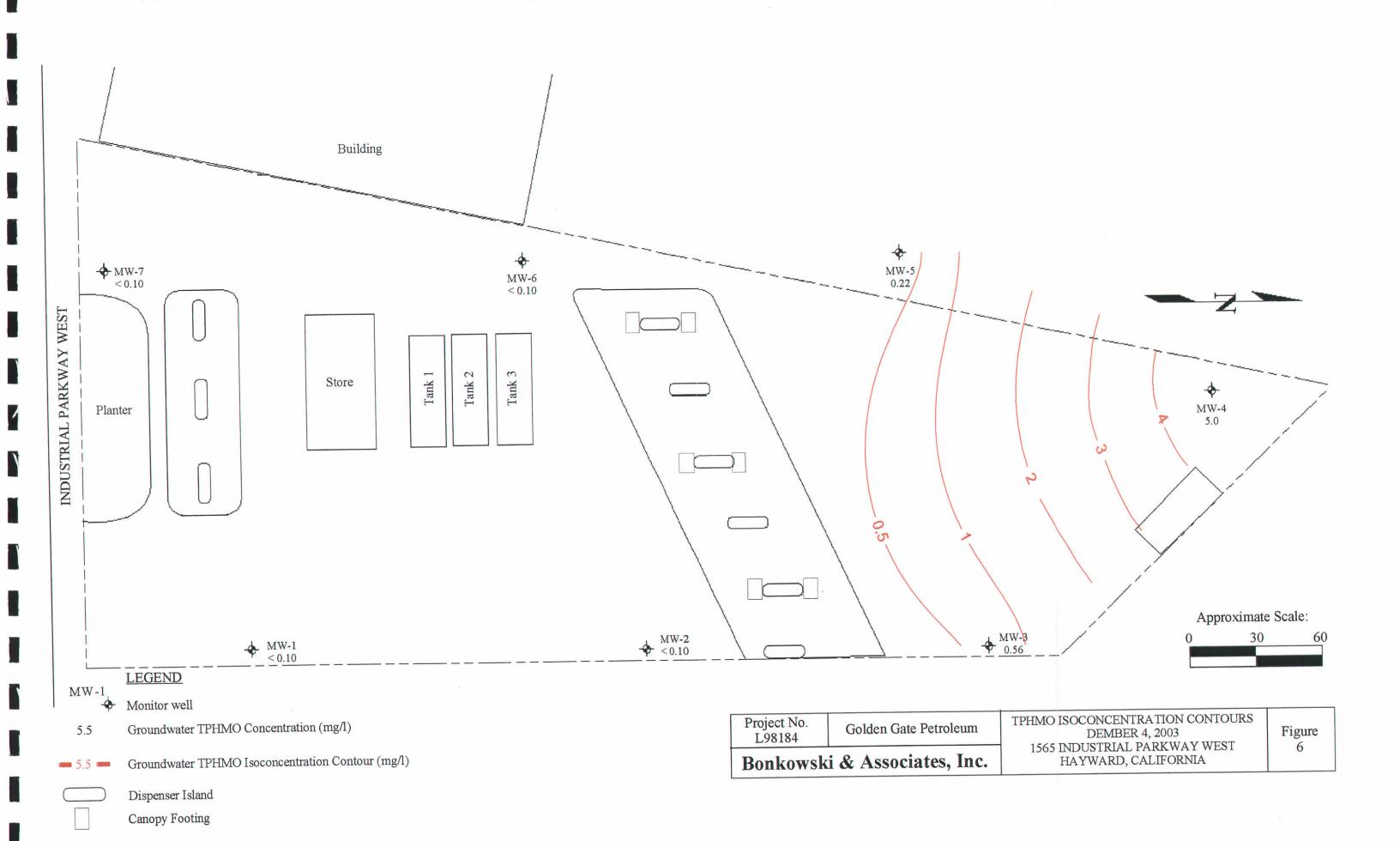
Bonkows	ski & Associates, Inc.	1565 INDUSTRIAL PARKWAY WEST HAYWARD, CALIFORNIA	1
Project No. L98184	Golden Gate Petroleum	SITE LOCATION	Figure











	: No./Site: ld Tech.:	GGP - Hayv す: Gios	<u>ward - L98</u>	184		_Well No.: <u>_M</u> _Date: <i>ta</i>	2/4/2_	1 /
	_		IATELY	BEFORE A	ND AFTER	DEVELOPM	IENT	
	· · · · · · · · · · · · · · · · · · ·	water measu				of casing (ft.):		
	Before Pu	rging: דען	\$ 11.31	*	Linear feet o	f water:	8.67	
	After Purg				Area of casi	ng x-sect: 0.02	218 ft ²	
		of FP (ft):	Ø		Volume of v	vater in 1 casi	ng (ft³): Ø, 4	(
	Total purg	ging time (m	in.) 11 0	e 7	$1 \text{ ft}^3 = 7.48$	gal.		
	Begin:				Volume of v	vater in 1 casi	ng (gal): 3.	<u>e</u>
	End: 11	09						
	Time	Cumulative Volume Removed	Water Temp (°F)	Conductivity (µohm/em)	pH of Water	* Water Appearance	** Primary Particulate	
	102	0.5	649	2220	7.40	CL		
	1103	0.82	65.6	2070	7.47	CL.		
	1106	1.1	65.6	2060	7.48	a		
	1109	1.4	65.3	2050	7. 49	CL		
	PARAI	* Appearance CL = c CO = c	lear loudy urbid	3 rowsec, 1	** Particle S = ML = CL =	sand silt clay		!
Co	mments:_	MICEPPE EQUIL, C	DNP.		un w/Aunt	PINTALE SET	1@~ W' F	π <i>α</i>
_				8184-MW-				
mr:					op of Casing E Groundwater Ele			
111	ne Sampled:				<u>nounuwater Ete</u>	yauvii.		

Volume of water in 1 casing (ft ³): 0.5 otal purging time (min.) 9 1 ft ³ = 7.48 gal. egin: 1030 Nolume of water in 1 casing (gal): 3.7 Time Removed (°F) Cumulative Volume Temp (°F) Conductivity pH of Water Appearance Particulate 1030 677 CO 1033 O.3 67.5 4630 Volume of water in 1 casing (ft ³): O.5 ** ** Primary Particulate 677 CO 678 CO 678	Area of casing x-sect: 0.0218 ft ² Notal purging time (min.) 9 Otal purging time (m	fter Purgi hickness o		<u> </u>				25 35 4
Volume of water in 1 casing (ft³): 0.5 Total purging time (min.) 9	Thickness of FP (ft): Volume of water in I casing (ft³): 0.6 Total purging time (min.) 9 I ft³ = 7.48 gal. Begin: 1030 Volume of water in I casing (gal): 3.7 End: 1030 Cumulative Water Temp (Conductivity (µohm/om) Water Appearance Primary Particulate 1030 0.4 66,3 4420 697 CD 1036 1.2 67.9 4700 6.90 CD PARAMETERS STABULZED & DASSEC # 15 © *Appearance CL = clear S = sand CO = cloudy TU = turbid CL = clay **Particle S = sand CL = clay **MIL = silt CL = clay **MIL = silt CL = clay	hickness of	ng:			Linear feet o	f water: 22	.35
Total purging time (min.) 9 If t3 = 7.48 gal. Volume of water in 1 casing (gal): 3.7 End: 1030 End: 1030 Cumulative Volume Removed (°F) Volume Removed (°F)	Total purging time (min.)					Area of casin	ng x-sect: 0.02	218 ft ²
Begin: 1030 Volume of water in 1 casing (gal): 3.7	Cumulative Water YUS/CN		of FP (ft): (j		Volume of w	vater in 1 casi	ng (ft ³): 0.5
End: 1039 Cumulative Volume Temp (°F) Removed (°F) Conductivity pH of Water Appearance Primary Particulate 1030 0.4 66,3 4420 677 CD 1033 0.3 67.5 4630 677 CL 1039 1.6 63.7 4700 6.16 CL PARAMETERS STABILIZED & MISEC + 15% * Appearance CL = clear CO = cloudy ** Particle S = sand ML = silt	Cumulative	otai puigi	ng time (mi	n.) 9		$1 \text{ ft}^3 = 7.48 \text{ s}$	gal.	
Cumulative Volume Temp (°F) (uohm/cm) PH of Water Appearance Primary Particulate 1030 0.4 66.3 4420 677 CO 1033 0.3 67.5 4630 6.77 CL 1036 1.2 67.9 4700 6.96 CL 1039 1.6 63.7 4730 6.97 CL PARAMETERS STABILIZED & DASEC # 15% * Appearance CL = clear S = sand CO = cloudy ML = silt	Cumulative Water YUS/CA pH of Water Primary Particulate 1030 0.4 66,3 4420 697 CO 1033 0.3 67.5 4630 6.97 CL 1036 1.2 67.9 4700 6.97 CL 1039 1.6 63.7 4730 6.97 CL PARAMETERS STARFUZED & DISECT 15% *Appearance ** Particle CL = clear S = sand CO = cloudy ML = silt TU = turbid CL = clay CD MUCERPURE © ~ \$0.50 MIN SET PUMP MTRKE © ~ 20 BTOX GOULAND ** Appearance ** Particle CL = clay CL CL ** Appearance ** Particle CL = clay CL CL ** Appearance CL = clay CL CL CL CL ** Appearance CL = clay CL CL CL CL CL ** Appearance CL = clay CL CL CL CL CL CL CL C	Begin: 10	30			Volume of v	vater in 1 casi	ng (gal): 3.7
Volume Temp Conductivity pH of Water Appearance Primary Particulate 1030	Time Removed (°F) Conductivity pH of Water Appearance Primary Particulate 1030	end: 10	39	·				
1030	10 € 20		Volume	Temp	Conductivity			Primary
1033 0.3 67.5 4636 6.77 CL 1036 1.2 67.9 4700 6.96 CL 1039 1.6 63.7 4730 6.97 CL PARAMETERS STABILIZED & DISECT 1592 * Appearance ** Particle CL = clear S = sand CO = cloudy ML = silt	1033 0.3 67.5 4636 6.77 CL 1036 1.2 67.9 4700 6.96 CL 1039 1.6 63.7 4730 6.97 CL PARAMETERS STARMIZED & ANSEC ≠ 15% * Appearance CL = clear CO = cloudy TU = turbid MICESPURSE ® ~ ≤0.5c/MIN. SCT. PUMP INTERE ® ~ 20 BT 0X. GAU mments: MICESPURSE ® ~ ≤0.5c/MIN. SCT. PUMP INTERE ® ~ 20 BT 0X. GAU					1		
1036 1.2 67.9 4700 6.96 CL 1039 1.6 68.7 4730 6.97 CL PARAMETERS STARFUZED & DASEC # 15% * Appearance CL = clear CO = cloudy ML = silt	1036 1.2 67.9 4700 6.96 CL 1039 1.6 63.7 4730 6.97 CL PARAMETERS STABILIZED & DASEC ≠ 15% * Appearance CL = clear CO = cloudy TU = turbid ML = silt CL = clay MICERPLAGE © ~ ≤0.56/MIN. SET PUMP INTRE © ~ 20 BT of . Gau					6,77	Ci_	,
PARAMETERS STABULIZED & DANSEC # 15 % * Appearance	PARAMETERS STARWIZED & MISEC # 15 % * Appearance			67.9			CL	
* Appearance ** Particle $CL = clear$ $S = sand$ $CO = cloudy$ $ML = silt$	*Appearance ** Particle $CL = clear$ $S = sand$ $CO = cloudy$ $ML = silt$ $TU = turbid$ $CL = clay$ mments: $MCCOPURSC @ \sim \leq 0.5 C/NIN . SCTPUMP INTRKE @ \sim 20 BTOX . GQU$	1039	1,6	63.7	4730	6.97	CL	
		*	Appearance CL = c CO = c	lear loudy	consecrt is	** Particle S = ML =	silt	
						 -		<u></u>

ater measur ging: 12.46 ng: — of FP (ft): 5 ng time (mi	()		Linear feet o	of casing (ft.): If water: 12 Ing x-sect: 0.02 Vater in 1 casin	. 9 î 218 ft ²		
ng: of FP (ft): \(\int \) ng time (mi	7		Area of casi	ng x-sect: 0.02	218 ft ²		
of FP (ft): 5 ng time (mi				•			
ng time (mi 39			Volume or v	ratel in reasi.			
39	n.) 15			.**			
39		l	$1 \text{ ft}^3 = 7.48$	gal.			
			Volume of v	vater in 1 casi	ng (gal): 2 . [
		1		<u> </u>			
Cumulative	Water	-MS/CM	11.6	*	**		
Volume Removed			pH of Water	Water Appearance	Primary Particulate		
0.3	G4.7	2430	7.36	co			
1142 0.7 65.4 2510 7.41 CL							
1145 1.1 65.1 2530 7.42 CL							
1,5	64.4	3180	7.30	CL			
1,4	64.9	3450	7.21	CL			
	lear		S =	sand			
2O – al	landu		ML =	silt			
เบ = น ว .วิ	1101a 44, S	3620	7.20	CL			
ers staei	LIZED, 3	CONSECT	15%				
MICEO	purce c	Sasylvin	1. SET PUMP	INTEKE @ ~	<u>17'BTOC.E</u>		
CURUD. E	STAPLISH:	୧୦					
MOFP	OB SERVE I	<u> </u>					

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	Volume Removed C:3 6:7 1.1 1.9 1.9 Appearance CL = c CO = c TU = tt 2.3 ERS STABI MICRO COND. E MO FP (Volume Removed (°F) C:3 G4.7 6.7 65.4 1.1 65.1 1.9 64.4 1.9 64.9 Appearance CL = clear CO = cloudy TU = turbid 2.3 64.8 ERS STABILIZED, 3 MICROPURCE G COND. ESTABLISH NO FP OBSERVED MULTIMAN IX ILAME MULTIMAN IX ILAME	Volume Removed (°F) Conductivity (µohm/em) 0.3 G4.7 2430 0.7 65.4 2510 1.1 65.1 2530 1.9 64.4 3180 1.9 64.4 3450 Appearance CL = clear CO = cloudy TU = turbid 2.3 G4.8 3620 ERS STABILIZED, 3 CONSEC. + MICROPURCE @ SO.SL/MIN COND. ESTABLISHED. MO FP ORSERVED GU SAMPUT HWL98184-MW-3 WHICH MUNACE IX ILANGER 1	Volume Removed (°F) (conductivity pH of Water 0.3 G4.7 2430 7.36 0.7 65.4 2510 7.41 1.1 65.1 2530 7.42 1.9 64.4 3180 7.30 1.9 64.4 3180 7.30 7.21 Appearance ** Particle CL = clear S = CO = cloudy ML = CL = clear S = CL = clear S = CL = clear S = CL = cloudy ML = CL =	Volume Removed (°F) (conductivity pH of Water Appearance C.3 C4.7 2430 7.36 CO 6.7 65.4 2510 7.41 CL 1.1 65.1 2530 7.42 CL 1.2 64.4 3183 7.30 CL 1.1 64.4 3450 7.21 CL Appearance ** Particle CL = clear CO = cloudy ML = silt CL = clay 7.30 CL Appearance ** Particle CL = clear CO = cloudy ML = silt CL = clay 7.20 CL ERS STABILIZED, 3 CONSEC. + 15% MICROPURGE O SO SUMIN, SET PUMP INTERCE O ~ COND. ESTABLISHED. MO FP OBSERVED GONSAMPLE HWL 98184-MW-3 WHAT MUNACL ILMIGER Top of Casing Elevation:		

File No./Site: <u>GGP - I</u>		3184		Well No.: <u>M</u> Date: 12/	W-4				
Field Tech.: T.					•				
DATA FROM IMM						<u> </u>			
Depth to water me	asured from T	OC (ft.):	Total depth of	of casing (ft.):	25				
Before Purging:	12.38		Linear feet of water: 12.6-2						
After Purging: _			Area of casing x-sect: 0.0218 ft ²						
Thickness of FP (f	t): Ø		Volume of v	vater in 1 casi	$ng(ft^3)$: O . 2	<u> 18</u>			
Total purging time	(min.) ¶		$1 \text{ ft}^3 = 7.48 \text{ g}$	gal.					
Begin: 1214			Volume of v	vater in 1 casi	ng (gal): 2.	1			
End: 1223									
Cumulat Volum Time Remove	e Temp	Conductivity (µohm/cm)	pH of Water	* Water Appearance	** Primary Particulate				
1214 0.5 68.3 1040 6.98 CL									
1217 0.9	68.6	878	40 87.01	CL					
1220 1.3	63.7	762	7.01	CL					
1223 1.7	68.7	858	6.99	CL					
PARAMETERS ST	AB LIZED, 3	CONSEC. 115	المؤن						
* Appeara CL =	ance clear cloudy		S = ML =	sand silt clay					
Comments: MICAR		≤0.5 YMIN	w/fumf	NTF&£@ ~	7'BTOC, E	<u>अपाट</u>			
	CEXEVED					_			
	<u> </u>								
A - M - AM - M				· 					
					···-				
conect co	sample Hw	_93184-MW	-4						
	WHIXILA	MBGR T	op of Casing El	evation:					
Time Sampled: (23	0	G	roundwater Ele	vation:					

e No./Site:	<u>GGP - Hayv</u>	<u>vard - L98</u>	184		_Well No.:_ <u>M</u>	W-5
eld Tech.:_	T:CHO!				Date: 12/	4/2-
ATA FRO	M IMMEDI	ATELY]	BEFORE A	ND AFTER	DEVELOPM	ENT
Depth to	water measu	red from T	OC (ft.):	Total depth of	of casing (ft.):	30
Before Pu	irging: /2.	23		Linear feet o	f water: 17	8
After Pur				Area of casin	ng x-sect: 0.02	18 ft ²
	s of FP (ft):	<i>(</i>)	<u>-</u>	Volume of v	vater in 1 casi	ng (ft ³): 0.1
Total pur	ging time (m	in.)		$1 \text{ ft}^3 = 7.48 \text{ g}$	gal.	
Begin:	1246	-		Volume of v	vater in 1 casi	ng (gal): 2 . ૧
End:	1255					
					<u> </u>	
Time	Cumulative Volume Removed	Water Temp (°F)	Conductivity (µohm/cm)	pH of Water	* Water Appearance	** Primary Particulate
1246	0.4	64,5	4350	6.92	Ch	
1249	0.7	64.7	4570	6.43	CL	
1252	1:0	64.7	4610	6.96	CL	
1255	i.3	64,5	4600	6.95	CL	
PARAM	GROPS STA	BILIZED,	3 consec.	± 15 %		
-	CO = c	dear doudy urbid		** Particle S = ML = CL =	sand silt clay	
omments:_	мискорика	SE @ ~ 0.	4 L/MIN "	YFUMP INTA	KE @ ~20'	610C, ESTA
	Eawubri	UM COND	•			
	No FP OB	Serve D	,			
				.		<u></u>
	- -					
	_					
			18184-MW			
IN 3×		√πC1 ♦ 1		Cop of Casing E		
ime Sampled	: 1305			Groundwater Ele	evation:	

	GGP - Hay	ward - L9	8184	· ·	_Well No.:_M	₩-1 MW - 6	2_16
ield Tech.:_	T.CHO!				_Date:124	7/	
ATA FRO	M IMMEDI	IATELY	BEFORE A	ND AFTER	DEVELOPM	<u>IENT</u>	
Depth to	water measu	red from T	OC (ft.):	Total depth	of casing (ft.):		
Before Pu	irging: באנן	1 11.78	PE	Linear feet o	of water: 1	369 18.2	2
After Pur	ging: —			Area of casi	ng x-sect: 0.02	218 ft ²	
Thickness	s of FP (ft): (P		Volume of v	water in 1 casir	ng (ft ³): 0-14	0.4
Total pur	ging time (m	in.) '($1 \text{ ft}^3 = 7.48$	gal.		-
Begin: (Volume of v	water in 1 casi	ng (gal): عبركر	3.0
End: 1	007	<u>. </u>			· · · · · · · · · · · · · · · · · · ·		
			7315/cm		*	**	
Time	Cumulative Volume Removed	Water Temp (°F)	Conductivity	pH of Water	Water Appearance	Primary Particulate	
0958	Ø	63.8	2560	7.32_	CL		
1001	0.3	65.0	2460	7.44	CL		
1004	0.6	65.6	2510	7.45	در		
1007	0.7	66,5	2540	7.43	cu		
PARANA			3 consec. ±	15%			
	* Appearance CL = c	elear		** Particle S =	sand		
		cloudy urbid		ML = CL =	silt clay		
	10 - 0	uibid		02			
	4		ا باداد دانسه	m/oduo us	AKG SET @ 1	~ 20 enos.	Houn C
omments	NO FP OB		SUMPTION	10/ 10/14 40/	P31-12		
 _	MO II DO	SIZION					
	· -						
						 	
Cours	GW CAMPU	E#WY8	184-MW-6				
IN 3x4	OML WA U	WHICH OF 1	X I LAMBER	Cop of Casing E	Elevation:		
Time Sampled	: 1015			Groundwater El	evation:		

	GGP - Hay	<u>ward - L98</u>	3184		_Well No.: <u>_M</u>	
ield Tech.:_	T.Caoi		,		_Date:12	1412
ATA FRO	M IMMED	IATELY	BEFORE A	ND AFTER	DEVELOPM	IENT
Depth to	water measu	red from T	OC (ft.):	Total depth	of casing (ft.):	25
Before Pu	irging: [[93		Linear feet o	of water: 13.	02
After Pur	ging: 😽			Area of casi	ng x-sect: 0.02	218 ft ²
Thickness	s of FP (ft): (D		Volume of v	vater in 1 casi	ng (ft³): O. 23
Total pur	ging time (m	in.) 🎙		$1 \text{ ft}^3 = 7.48$	gal.	
Begin:	0923			Volume of v	vater in 1 casi	ng (gal): 2.1
End:	0932		•	<u> </u>		
				1	<u></u>	
Time	Cumulative Volume Removed	Water Temp (°F)	Conductivity (µohm/cm)	pH of Water	* Water Appearance	** Primary Particulate
0323	Ø	63.7	3410	7.02-	CL	
6926	0.4	65.3	3500	7.16	6L	
0729	0.8	65.4	3740	7.14	CL	
0932	1.2	65.3	3790	7.17	دـ	
PAR	AMETORS S	AGILIZEI	3 CONSEC	, + 15 %		
	* Appearance CL = c CO = c	lear loudy urbid		** Particle S = ML = CL =	sand silt clay	
omments:_	MICRUPURE NO FP 08		0,5c/kin u	N PUMP INTA	KF @ ~17'	B1 &-
	<u></u>			····	· · ·	
					,	
				<u> </u>		
			184-mw-7			
IN 3x40	ML HCI VO	441x16	-	op of Casing E		
me Sampled:	0940			iroundwater Ele	evation:	



13 February, 2003

J. Springer Bonkowski & Associates 6400 Hollis St., Ste. 4 Emeryville, CA. 94608

RE: Golden Gate Petroleum, Hayward Sequoia Work Order: S212158

Enclosed are the results of analyses for samples received by the laboratory on 12/05/02 16:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ron Chew Client Services Representative

CA ELAP Certificate #1624



Bonkowski & Associates 6400 Hollis St., Ste. 4 Emeryville CA., 94608 Project: Golden Gate Petroleum, Hayward

Project Number: L98184 Project Manager: J. Springer S212158 Reported: 02/13/03 16:48

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WL98184-MW-1	S212158-01	Water	12/04/02 11:15	12/05/02 16:50
WL98184-MW-2	S212158-02	Water	12/04/02 10:55	12/05/02 16:50
WL98184-MW-3	S212158-03	Water	12/04/02 11:55	12/05/02 16:50
WL98184-MW-4	S212158-04	Water	12/04/02 12:30	12/05/02 16:50
WL98184-MW-5	S212158-05	Water	12/04/02 13:05	12/05/02 16:50
WL98184-MW-6	S212158-06	Water	12/04/02 10:15	12/05/02 16:50
WL98184-MW-7	S212158-07	Water	12/04/02 09:40	12/05/02 16:50



Bonkowski & Associates 6400 Hollis St., Ste. 4 Emeryville CA., 94608 Project: Golden Gate Petroleum, Hayward

Project Number: L98184 Project Manager: J. Springer S212158 Reported: 02/13/03 16:48

Diesel Hydrocarbons by DHS LUFT Sequoia Analytical - Sacramento

		<u> </u>							
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WL98184-MW-1 (S212158-01) Water	Sampled: 12/0	4/02 11:15	Received:	: 12/05/02 1	16:50			·	
Diesel Range Hydrocarbons (C10-C28)	ND	0.050	mg/l	1	2120231	12/13/02	12/19/02	DHS LUFT	
Motor Oil (C16-C36)	ND	0.10					*	н 	
Surrogate: Octacosane		72 %	50-	150	"	"	rt	ri e	
WL98184-MW-2 (S212158-02) Water	Sampled: 12/0	4/02 10:55	Received	: 12/05/02	16:50				
Diesel Range Hydrocarbons	0.29	0.050	mg/l	1	2120231	12/13/02	12/19/02	DHS LUFT	
(C10-C28) Motor Oil (C16-C36)	ND	0.10	**	п	10	**	w	н	
Surrogate: Octacosane		86 %	50-	-150	"	n	ri	n	
WL98184-MW-3 (S212158-03) Water	Sampled: 12/0	14/02 11:55	Received	: 12/05/02	16:50				
Diesel Range Hydrocarbons (C10-C28)	ND	0.050	mg/l	1	2120231	12/13/02	12/19/02	DHS LUFT	
Motor Oil (C16-C36)	0.56	0.10	**	"	41		"	11	HC-12
Surrogate: Octacosane		78 %	50-	-150	"	ř1	р	ø	
WL98184-MW-4 (S212158-04) Water	Sampled: 12/0	04/02 12:30	Received	: 12/05/02	16:50				
Diesel Range Hydrocarbons (C10-C28)	ND	0.25	mg/l	5	2120231	12/13/02	12/19/02	DHS LUFT	
Motor Oil (C16-C36)	5.0	0.50	н	**	н	"		**	HC-12
Surrogate: Octacosane		434 %	50	-150	'n	υ	н	**	S-02
WL98184-MW-5 (\$212158-05) Water	Sampled: 12/0	04/02 13:05	Received	: 12/05/02	16:50				
Diesel Range Hydrocarbons (C10-C28)	ND	0.050		L L	2120231	12/13/02	12/19/02	DHS LUFT	
Motor Oil (C16-C36)	0.22	0.10	4+		II	*	н ——	#	
Surrogate: Octacosane		330 %	50	-150	**	H	ij	Ħ	S-02
WL98184-MW-6 (S212158-06) Water	Sampled: 12/0	04/02 10:15	Received	: 12/05/02	16:50				
Diesel Range Hydrocarbons	0.053	0.050		1	2120231	12/13/02	12/19/02	DH\$ LUFT	HC-12
(C10-C28)		0.10	"		**	ıı	**	н	
Motor Oil (C16-C36)	ND	0.10				#	"	tt	
Surrogate: Octacosane		71 %	30	150					



Bonkowski & Associates 6400 Hollis St., Ste. 4 Emeryville CA., 94608 Project: Golden Gate Petroleum, Hayward

Project Number: L98184 Project Manager: J. Springer S212158 Reported: 02/13/03 16:48

Diesel Hydrocarbons by DHS LUFT Sequoia Analytical - Sacramento

		') _							
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WL98184-MW-7 (S212158-07) Water	Sampled: 12/04/	02.09:40 F	leceived:	12/05/02	16:50	<u>. </u>			
Diesel Range Hydrocarbons	0.14	0.050	mg/l	i	2120231	12/13/02	12/19/02	DHS LUFT	HC-12
(C10-C28) Motor Oil (C16-C36)	ND	0.10	11	,,			11	H	
Surroyate: Octacosane		84 %	50-	150	"	**	**	υ	



Bonkowski & Associates 6400 Hollis St., Ste. 4 Emeryville CA., 94608 Project: Golden Gate Petroleum, Hayward

Project Number: L98184 Project Manager: J. Springer S212158 Reported: 02/13/03 16:48

BTEX by EPA Method 8260B Sequoia Analytical - Sacramento

	. ,	Reporting	<u> </u>						, , ,_
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
W1.98184-MW-1 (S212158-01) Water	Sampled: 12/0	4/02 11:15 J	Received	: 12/05/02 1	16:50				
Tert-butyl alcohol	ND	5.0	ug/l	i	2120229	12/13/02	12/13/02	EPA 8260B	
Methyl tert-butyl ether	0.54	0.50	17	**		11	11	ч	
Di-isopropyl ether	ND	0.50	17	**	II .	III	11	II .	
Ethyl tert-butyl ether	ND	0.50	ы	**	u	**	п	н	
Tert-amyl methyl ether	ND	0.50	11	"	u	ļi.	н	и	
1,2-Dichloroethane	ND	0.50	**	**	**	**	ч	**	
1,2-Dibromoethane (EDB)	ND	0.50	**	11	**	**	11	**	
Веплепе	ND	0.50	51	**	H	**	89	**	
Ethylbenzene	ND	0.50	\$1	**	**	\$1	Ħ	и	
Toluene	ND	0.50	**	17	H	**	**	**	
Xylenes (total)	ND	1.0	**	**	**	**	19	**	
Gasoline (C6-C10)	ND	50	н	n	**	n	**	**	
Surrogate: Toluene-d8		110%	60-	-140	11	•7	71	**	
Surrogate: 4-BFB		92 %	60-	-140	"	v	n	**	
Surrogate: 1,2-DCA-d4		111 %	60-	-140	n	v	"	tt .	
WL98184-MW-2 (S212158-02) Water	Sampled: 12/0	4/02 10:55 I	Received	: 12/05/02	16:50			<u></u>	
Tert-butyl alcohol	ND	5.0	ug/l	1	2120229	12/13/02	12/13/02	EPA 8260B	
Methyl tert-butyl ether	7.8	0.50	п	н	II	**	II	**	
Di-isopropyl ether	ND	0.50		н	н	**	II .	"	
Ethyl tert-butyl ether	ND	0.50	н	61	Ħ	₩	н	**	
Tert-amyl methyl ether	ND	0.50	н	Ħ	n	т н	Ħ	v	
1,2-Dichloroethane	ND	0.50		*		**	*	**	
1,2-Dibromoethane (EDB)	ND	0.50	••	**	**	**	**	**	
Benzene	1.2	0.50	**	**	**	II .	**	11	
Ethylbenzene	ND	0.50	**	"	Ħ	Ħ		*7	
Toluene	ND	0.50	н	"	11	Ħ	1)	61	
Xylenes (total)	ND	1.0	**	11	14	**	n	H	
Gasoline (C6-C10)	ND	50	**	н	н	*	**	17	
Surrogate: Toluene-d8		114 %	60	-140	"	<i>n</i>	#	n	
Surrogate: 4-BFB		90 %	60	-140	"	n	"	"	
Surrogate: 1,2-DCA-d4		115 %	60	-140	"	"	n	"	



Bonkowski & Associates 6400 Hollis St., Ste. 4 Emeryville CA., 94608 Project: Golden Gate Petroleum, Hayward

Project Number: L98184
Project Manager: J. Springer

S212158 Reported: 02/13/03 16:48

BTEX by EPA Method 8260B Sequoia Analytical - Sacramento

		Reporting		- Sacra					
Analyte	Result	Limit	Units	Dilution	Batch.	Prepared	Analyzed	Method	Notes
WL98184-MW-3 (S212158-03) Water	Sampled: 12/04	1/02 11:55 F	Received	12/05/02 1	16:50				
Tert-butyl alcohol	ND	5.0	பத/]	l	2120229	12/13/02	12/13/02	EPA 8260B	
Methyl tert-butyl ether	520	5.0	u	10	**	"	12/16/02	"	
Di-isopropyl ether	ND	0.50	н	1	**	11	12/13/02	**	
Ethyl tert-butyl ether	ИD	0.50	**	**	v	"	**	**	
Tert-amyl methyl ether	1.7	0.50	**	Ħ	67	"	H	**	
1,2-Dichloroethane	ND	0.50	*	**	**	"	11	*	
1,2-Dibromoethane (EDB)	ND	0.50	14	**	**	**	"		
Benzene	ND	0.50	91	**	II .	41	+1	н	
Ethylbenzene	ND	0.50	**	**	u	**	**	11	
Toluene	ND ·	0.50	0	"	"	H	"	*	
Xylenes (total)	ND	1.0	n	'n	•	"	54	*1	
Gasoline (C6-C10)	500	50	ш	· ·	11	и	11	w	
Surrogate; Toluene-d8	·	110 %	60-	-140	п	"	"	п	
Surrogate: 4-BFB		88 %		-140		n	**	"	
Surrogate: 1,2-DCA-d4		108 %		-140	#	•	#	e	
WL98184-MW-4 (S212158-04) Water	Sampled: 12/0		Received	: 12/05/02	16:50				
Tert-butyl alcohol	ND	5.0	ug/l		2120229	12/16/02	12/16/02	EPA 8260B	
Methyl tert-butyl ether	ND	0.50	"	71	**	II	**	₹+	
Di-isopropyl ether	ND	0.50	11	11	**	n n	**	**	
Ethyl text-butyl ether	ND	0.50	h	μ	μ	u	**	**	
Tert-amyl methyl ether	ND	0.50	н	**	**	**	II .	11	
1,2-Dichloroethane	ND	0.50		*1	14	44	"	н	
•	ND	0.50	**	#	19	**	**	II .	
1,2-Dibromoethane (EDB) Benzene	ND	0.50	*	16	н	17	**	**	
	ND ND	0.50	R.	10	*1	n	17	n	
Ethylbenzene	ND ND	0.50	11	u	н	**	μ	**	
Toluene	ND	1.0		••	**	**	II	11	
Xylenes (total)	ND ND	50	n	#	**	**			
Gasoline (C6-C10)	ND				.,			n/	
Surrogate: Toluene-d8		102 %		-140	,,	,,	rt	,	
Surrogate: 4-BFB		84 %		-140	,,	e e	n		
Surrogate: 1,2-DCA-d4		104 %	60	-140	*	••			



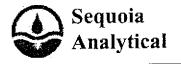
Bonkowski & Associates 6400 Hollis St., Ste. 4 Emeryville CA., 94608 Project: Golden Gate Petroleum, Hayward

Project Number: L98184
Project Manager: J. Springer

\$212158 Reported: 02/13/03 16:48

BTEX by EPA Method 8260B Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WL98184-MW-5 (S212158-05) Water	Sampled: 12/0	1/02 13:05 E	haviana	. 12/05/02 1	6.50				
Tert-butyl alcohol	ND	5.0	ug/l	1	2120230	12/13/02	12/13/02	EPA 8260B	
Methyl tert-butyl ether	2.0	0.50	"		11	**	п	NT.	
Di-isopropyl ether	ND	0.50	п	11	**	11		••	
Ethyl tert-butyl ether	ND	0.50	п		**		**	u	
Tert-amyl methyl ether	ND	0.50	п	11	51	11	11	**	
1,2-Dichloroethane	ND	0.50	11	*1	**	u	**	**	
1,2-Dichloroethane (EDB)	ND	0.50		**	**	"	11	17	
Benzene	ND	0.50	**	**	"	**	**	n .	
Ethylbenzene	ND	0.50	н	54	n	77	**	п	
Toluene	ND	0.50	**	1)		14	н	"	
Xylenes (total)	ND	. 1.0	**			77	н	n	
Gasoline (C6-C10)	ND ND	50	**	υ	••	**		**	
		108 %	60	-140	"	"	"	ri .	
Surrogate: Toluene-d8 Surrogate: 4-BFB		111 %		-140	"	"	,,	**	
Surrogate: 1,2-DCA-d4		138 %		-140	<i>u</i> ·	"	"	a.	
**					0				
WL98184-MW-6 (S212158-06) Water				: 12/05/02					
Tert-butyl alcohol	ND	5.0	ug/l	1	2120230	12/13/02	12/13/02	EPA 8260B	
Methyl tert-butyl ether	ND	0.50	11	**	**	11	11		
Di-isopropyl ether	ND	0.50	11	11	17	*1	и	54	
Ethyl tert-butyl ether	ND	0.50	н	••	н	**	"	**	
Tert-amyl methyl ether	ND	0.50	н	**	U	*11	н	**	
1,2-Dichloroethane	ND	0.50	н	11	e e	11	**	11	
1,2-Dibromoethane (EDB)	ND	0.50	н	**	II .	**	"	17	
Веплепе	ND	0.50	10	19	**	11	*	**	
Ethylbenzene	ND	0.50	"	н	"	н	11	M	
Toluene	ND	0.50	#	**	**	91	11	**	
Xylenes (total)	ND	1.0	**	**	**	77	ш	11	
Gasoline (C6-C10)	ND	50	**	**	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		*		
Surrogate; Toluene-d8		106 %	60	-140	"	W	п	•	
Surrogate: 4-BFB		108 %		-140	"	n	"	"	
Surrogate: 1,2-DCA-d4		126 %	60	-140	"	**	TT TT	н	

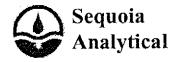


Bonkowski & Associates 6400 Hollis St., Ste. 4 Emeryville CA., 94608 Project: Golden Gate Petroleum, Hayward

Project Number: L98184 Project Manager: J. Springer S212158 Reported: 02/13/03 16:48

BTEX by EPA Method 8260B Sequoia Analytical - Sacramento

Analyte	Result.	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WL98184-MW-7 (S212158-07) Water	Sampled: 12/0	4/02 09:40	Received	: 12/05/02	L6:50				
Tert-butyl alcohol	ND	5.0	ug/l	1	2120230	12/13/02	12/13/02	EPA 8260B	
Methyl tert-butyl ether	170	0.50	u	n.	"	14	**	**	
Di-isopropyl ether	ND	0.50	**	11	"	"	**		
Ethyl tert-butyl ether	ND	0.50	*	U	u	**		n	
Tert-amyl methyl ether	1.7	0.50	,,	п	u	**	**	U	
1.2-Dichloroethane	ND	0.50	++	ч	**	14	1)	#1	
1,2-Dibromoethane (EDB)	ND	0.50		u	**	11	n	**	
Benzene	ND	0.50	**	u	*1	41	ч	**	
Ethylbenzene	ND	0.50	"	Ħ	**	и	"	H	
Toluene	ND	0.50	1+	**	47	**	**	H	
Xylenes (total)	ND	1.0	**	**	u	**	**	11	
Gasoline (C6-C10)	ND	50	b		**	17	"	ч	
Surrogate: Toluene-d8		108 %	60-	-140	"	tr .	ď	*	
Surrogate: 4-BFB		109 %	60-	-140	"	"	n	0	
Surrogate: 1,2-DCA-d4		135 %	60-	-140	*	"	"	a	



Bonkowski & Associates 6400 Hollis St., Ste. 4 Emeryville CA., 94608 Project: Golden Gate Petroleum, Hayward

Project Number: L98184 Project Manager: J. Springer S212158 Reported: 02/13/03 16:48

Diesel Hydrocarbons by DHS LUFT - Quality Control Sequoia Analytical - Sacramento

		Banarina		Spike	Source		%REC		RPD	
Analyte	Result	Reporting Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 2120231 - EPA 3510C		· · · · · · · · · · · · · · · · · · ·								
Blank (2120231-BLK1)				Prepared:	12/13/02	Analyzed	: 12/18/02			
Diesel Range Hydrocarbons (C10-C28)	ND	0.050	mg/4							
Motor Oil (C16-C36)	ND	0.10	n							
Surrogate: Octacosane	0.0165		"	0.0200	 	82 .	50-150			
Laboratory Control Sample (2120231-BS1))			Prepared:	12/13/02	Analyzeo	l: 12/18/02			
Diesel Range Hydrocarbons (C10-C28)	0.482 .	0.050	mg/l	0.500		96	60-140			
Surrogate: Octacosane	0.0173			0.0200		87	50-150			
Laboratory Control Sample Dup (2120231	-BSDI)			Prepared:	12/13/02	Analyzeo	1: 12/18/02			
Diesel Range Hydrocarbons (C10-C28)	0.482	0.050	mg/l	0.500		96	60-140	0	50	
Surrogate: Octacosane	0.0180		**	0.0200		90	50-150	 –	 	



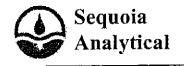
Bonkowski & Associates 6400 Hollis St., Ste. 4 Emeryville CA., 94608 Project: Golden Gate Petroleum, Hayward

Project Number: L98184 Project Manager: J. Springer S212158 Reported: 02/13/03 16:48

BTEX by EPA Method 8260B - Quality Control Sequoia Analytical - Sacramento

Austra	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Analyte.	Resuit	EMI	- ОШГХ	Dever	Acadin_	751110				
Batch 2120229 - EPA 5030B [P/T]		<u> </u>		<u> </u>						
Blank (2120229-BLK1)			····	Prepared	& Analyzo	d: 12/13/4	02			
Ethanol	ND	50	ug/l							
Fert-butyl alcohol	ND	5.0	17							
Methyl tert-butyl ether	ND	0.50	п							
Di-isopropyl ether	ND	0.50	11							
Ethyl tert-butyl ether	ND	0.50	#							
Tert-amyl methyl ether	ND	0.50	**							
,2-Dichloroethane	ND	0.50	**							
,2-Dibromoethane (EDB)	ND	0.50	91							
Benzene	ND	0.50	**							
Ethylbenzene	ND	0.50	**							
- Foluene	ND	0.50	ıı .							
Xylenes (total)	ND	1.0	II .							
Gasoline (C6-C10)	ND	50	"							
			и			104	60-140			
Surrogate: Toluene-d8	26.0		,,	25.0		104 88	60-140			
Surrogate: 4-BFB	22.1		"	25.0		00 110	60-140			
Surrogate: 1,2-DCA-d4	27.5		"	25.0		110	00-140			
Blank (2120229-BLK2)				Prepared	& Analyz	ed: 12/16/	02			
Ethanol	ND	50	ug/l							
Tert-butyl alcohol	ND	5.0	*							
Methyl tert-butyl ether	ND	0.50	*							
Di-isopropyl ether	ND	0.50	"							
Ethyl tert-busyl ether	ND	0.50	*							
Tert-amyl methyl ether	ND	0.50	P							
1,2-Dichloroethane	ND	0.50	n							
1,2-Dibromoethane (EDB)	ND	0.50	**							
Benzene	ND	0.50	*							
Ethylbenzene	ND	0.50	Ħ							
Toluene	ND	0.50	**							
Xylenes (total)	ND	1.0	11							
Gasoline (C6-C10)	ND	50	н							
Surrogate: Toluene-d8	26,8		п	25.0		107	60-140			
Surrogate: 4-BFB	22.8		"	25.0		91	60-140			
Surrogate: 1,2-DCA-d4	21.9		17	25.0		88	60-140			

The results in this report apply to the samples gnalyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.



Bonkowski & Associates 6400 Hollis St., Ste. 4 Emeryville CA., 94608 Project: Golden Gate Petroleum, Hayward

Project Number: L98184
Project Manager: J. Springer

\$212158 Reported: 02/13/03 16:48

BTEX by EPA Method 8260B - Quality Control Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2120229 - EPA 5030B [P/T]					· -					
Blank (2120229-BLK2)				Prepared	& Analyze	ed: 12/16/	02			
Blank (2120229-BLK3)				Prepared	& Analyz	ed: 12/18/	02			
Ethanol	ND	50	ug/l							
Tert-butyl alcohol	ND	5.0	n							
Methyl tert-butyl ether	ND	0.50	II .							
Di-isopropyl ether	ND	0.50	"							
Ethyl tert-butyl ether	ND,	0.50	н							
Tert-amyl methyl ether	ND	0.50	**							
1,2-Dichloroethane	ND	0.50	tr							
1,2-Dibromoethane (EDB)	ND	0.50	н							
Benzene	ND	0.50	**							
Ethylbenzene	ND	0.50	11							
Toluene	ND	0.50	14							
Xylenes (total)	ND	1.0	н							
Gasoline (C6-C10)	ND	50	"							
Surrogate: Toluene-d8	23.4		#	25.0		94	60-140		· ·	
Surrogate: 4-BFB	22.6		π	25.0		90	60-140			
Surrogate: 1,2-DCA-d4	21.7		#	25.0		87	60-140			
Laboratory Control Sample (2120229-BS1)				Prepared	& Analyz	ed: 12/13/	/02			
Methyl tert-butyl ether	15.4	0.50	ug/l	22.4		69	60-140			
Benzene	11.9	0.50	"	13.6		87	70-130			
Toluene	72.4	0.50		83.4		87	70-130			
Gasoline (C6-C10)	1080	50	**	1100		98	70-130			
Surrogate: Toluene-d8	26.6			25.0		106	60-140			
Surrogate: 4-BFB	23.4		rt	25. 0		94	60-140			
Surrogate: 1,2-DCA-d4	23.5		•	25.0		94	60-140			



Bonkowski & Associates 6400 Hollis St., Ste. 4 Emeryville CA., 94608 Project: Golden Gate Petroleum, Hayward

Project Number: L98184
Project Manager: J. Springer

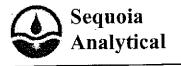
\$212158 Reported: 02/13/03 16:48

BTEX by EPA Method 8260B - Quality Control Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	ziinU	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2120229 - EPA 5030B [P/T]	·									
Laboratory Control Sample (2120229-BS2)				Prepared	& Analyze	ed: 12/16/0	02	· <u></u>		
Methyl tert-butyl ether	20.2	0.50	ug/l	22.4		90	60-140			
Benzene	11.1	0.50	t	13.6		82	70-130			
Foluene	71.3	0.50	v	83.4		85	70-130			
Gasoline (C6-C10)	996	50	"	1100		91	70-130			
Surrogate: Toluene-d8	25.2		, <u></u>	25.0	_,	101	60-140			
Surrogate: 4-BFB	21.3		"	25.0		85	60-140			
Surrogale: 1,2-DCA-d4	26.9		Ħ	25.0		108	60-140			
Laboratory Control Sample (2120229-BS3)				Prepared	& Analyz	ed: 12/18/	02			
Methyl tert-butyl ether	18.8	0.50	ug/l	22.4		84	60-140			
Benzene	12.7	0.50	,,	13.6		93	70-130			
Toluene	82.7	0.50	**	83. 4		99	70-130			
Gasoline (C6-C10)	1040	50	"	1100		95	70-130			
Surrogate: Toluene-d8	23.2			25.0		93	60-140			
Surrogate: 4-BFB	22.3		*	25.0		89	60-140			
Surrogate: 1,2-DCA-d4	23.5		7	25.0		94	60-140			
Matrix Spike (2120229-MS1)	So	urce: \$21230	7-04	Prepared	& Analyz	ed: 12/13/	02			
Methyl tert-butyl ether	24.2	0.50	ug/l	22.4	0.83	104	60-140			
Benzene	12.8	0.50	"	13.6	ND	94	70-130			
Toluene	88.9	0.50	н	83.4	ND	107	70-130			
Gasoline (C6-C10)	1180	50	**	1100	ND	106	60-140			
Surrogate: Toluene-d8	25.2		n	25.0		101	60-140	.		
Surrogate: 4-BFB	22.4		н	25.0		90	60-140			
Surrogate: 1,2-DCA-d4	29.0		н	25.0		116	60-140			
Matrix Spike Dup (2120229-MSD1)	So	urce: \$21230	07-04	Prepared	& Analya	zed: 12/13	/02			
Methyl tert-butyl ether	23.2	0.50	ug/l	22.4	0.83	100	60-140	4	25	
Benzene	11.8	0.50	#	13.6	ND	87	70-130	8	25	
Toluene	74.5	0.50	11	83.4	ND	89	70-130	18	25	
Gasoline (C6-C10)	1090	50	н	1100	ND	98	60-140	8	25	

Sequoia Analytical - Sacramento

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Bonkowski & Associates 6400 Hollis St., Ste. 4 Emeryville CA., 94608 Project: Golden Gate Petroleum, Hayward

Project Number: L98184
Project Manager: J. Springer

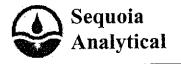
S212158 Reported: 02/13/03 16:48

BTEX by EPA Method 8260B - Quality Control Sequoia Analytical - Sacramento

	DE:	чпотя Апа	ily tica	- Jacia	Henro					
Analyte	Result	Reporting Limit	Units.	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2120229 - EPA 5030B [P/T]										
Matrix Spike Dup (2120229-MSD1)	So	urce: S21230	7-04	Prepared	 & Analyze	ed: 12/13/0	92			
Surrogate: Toluene-d8	26.7		ug/l	25.0		107	60-140			
Surrogate: 4-BFB	21.6		"	25.0		86	60-140			
Surrogate: 1.2-DCA-d4	28.8		"	25.0		115	60-140			
Batch 2120230 - EPA 5030B [P/T]										
Blank (2129230-BLK1)				Prepared	& Analyz	ed: 12/13/	92			
Ethanol	ND	50	ug/l							
Fert-butyl alcohol	ND	5.0	"							
Methyl tert-budyl ether	ND	0.50	u							
Di-isopropyl ether	ND	0.50								
Ethyl tert-butyl ether	ND	0.50	**							
ent-amyl methyl ether	ND	0.50	**							
,2-Dichloroethane	ND	0.50	v							
2-Dibromoethane (EDB)	ND	0.50	*							
Benzene	ND	0.50	**							
Ethylbenzene	ND	0.50	39							
Foluene	ND	0.50	19							
Xylenes (total)	ND	1.0	"							
Gasoline (C6-C10)	ND	50	н							
Surrogate: Toluene-d8	27.4		,,	25.0		110	60-140			
Surrogate: 4-BFB	26.8		**	25.0		107	60-140			
Surrogate: 1,2-DCA-d4	29.9		n	25.0		120	60-140			
Laboratory Control Sample (2120230-BS1)				Prepared	& Analyz	ed: 12/13	/02	<u></u>		
Methyl tert-butyl ether	17.9	0.50	ug/l	22.4		80	60-140			
Benzene	13.6	0.50	**	13.6		100	70-130			
Toluene	79.5	0.50	**	83.4		95	70-130			
Gasoline (C6-C10)	973	50	**	1100		88	70-130			
Surrogate: Toluene-d8	27.1		"	25.0		108	60-140			
Surrogate: 4-BFB	27.6		π	25.0		110	60-140			
Surrogate: 1,2-DCA-d4	30.3		•	25.0		121	60-140			

Sequoia Analytical - Sacramento

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Bonkowski & Associates 6400 Hollis St., Ste. 4 Emeryville CA., 94608 Project: Golden Gate Petroleum, Hayward

Project Number: L98184 Project Manager: J. Springer S212158 Reported: 02/13/03 16:48

BTEX by EPA Method 8260B - Quality Control Sequoia Analytical - Sacramento

Analyte.	Result.	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2120230 - EPA 5030B [P/T]							· · · · · · · · · · · · · · · · · · ·			
Matrix Spike (2120230-MS1)	So	urce: S21210	6-15	Prepared	& Analyz	ed: 12/13/	02			
Methyl tert-butyl ether	288	0.50	ug/l	22.4		NR	60-140			QM-4X
Benzene	13.0	0.50		13.6	ND	96	70-130			
Toluene	74.7	0.50	II .	83.4	0.65	89	70-130			
Gasoline (C6-C10)	930	50	u	1100	ND	85	60-140			
Surrogate: Toluene-d8	26.0		"	25.0		104	60-140			
Surrogate: 4-BFB	26.6		"	25.0		106	60-140			
Surrogate: 1.2-DCA-d4	32.7		#	25.0		131	60-140			
Matrix Spike Dup (2120230-MSD1)	So	ource: S21210	6-15	Prepared	& Analyz	ed: 12/13/	02			
Methyl tert-butyl ether	298	0.50	սք/1	22.4		NR	60-140	3	25	QM-4X
Benzene	14.I	0.50	**	13.6	ND	104	70-130	8	25	
Toluene	81.9	0.50	**	83.4	0.65	97	70-130	9	25	
Gasoline (C6-C10)	1010	50	×	-00 11	NĐ	92	60-140	8	25	
Surrogate: Toluene-d8	25.6		1)	25.0	<u> </u>	102	60-140			
Surrogate: 4-BFB	26.3		n	25.0		105	60-140			
Surrogate: 1,2-DCA-d4	31.5		"	25.0		126	60-140			



Bonkowski & Associates 6400 Hollis St., Ste. 4 Emeryville CA., 94608 Project: Golden Gate Petroleum, Hayward

Project Number: L98184 Project Manager: J. Springer S212158 Reported: 02/13/03 16:48

Notes and Definitions

HC-12 Hydrocarbon pattern is present in the requested fuel quantitation range but does not resemble the pattern of the requested fuel.

QM-4X The spike recovery was outside of control limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.

§-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds

present in the sample extract.

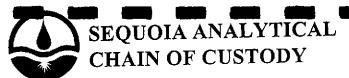
DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

RPD Relative Percent Difference



_	1455 McDowell Ever, Suite 5 • Peter ma, 495 (107) 15 865 (107) 792 6343 819 Striker Ave., Suite 8 • Sacramento, CA 95834 • (916) 921-9600 • FAX (916) 921-0100 1551 Industrial Road • San Carlos, CA 94070 • (650) 232-9600 • FAX (650) 232-9612 404 N. Wiget Lane • Walnut Creek, CA 94598 • (925) 988-9600 • FAX (925) 988-9673
_	Project: 1908U GCD HAVINGA

				<u> </u>	I. Wiget Lanc	D!-	_4.	190	27.1	G-C P	272132/	NOOF	`				
Company Name: BONKOWSKE ASSOCIATES								Project: L-98184 GGP HAYWARD Billing Address (if different):									
Mailing Address: 6400	DHOULS STREET	I, STE	<u> </u>			Dimin	y Addre	, , , , , , , , , , , , , , , , , , ,	111010111	·/·							
City: EMER	YVILLE	State: 📿	<u> </u>	p Code: 946	,0 %	P.O.	#·										
Telephone: 5/0-4	Fax #: 510-450-0801																
Report To: JAMES SPRINGER		E-mail Address: mail@bonkowski, com					Sequoia's Work Order #										
Sampler:					ATORY:									e method)			
Turnaround ☐ 10-15 Working Days Time: (Standard TAT) ☐ 7 Working Days		72 Hours MA		SD	 SDWA (Drinking Water) 			er) / 100 /									
							Ste) RILO (SID) RILO (SID)										
☐ 5 Working Days						Comments/ Temp.(If required)											
	Date / Time	Matrix	# of	Container	Sequoia's		MAN	×7/ 29	y_{k_n}	}	$\sqrt{}$				Comme Temp.(If req		
Client Sample I.D.	Sampled	Desc.	Cont.	Туре_	Sample #	<u> </u>	Z^{\sim}		<u> </u>	- V 1					/ Teltip.(II jed	Juli Ca)	
	12/4/2	W	3×40	WA AMBER	521215801	\times	X	$ \times $	×	$ \times $							
W. 298184-MW-1	1115		IXIL	AIMOCI C		. ,	\	1	X	X						į	
W. L98184-MW-Z	12/4/2 1055	W	1		\o2	×	<u> </u>	X		· ·	-\			-			
	12/4/2	W			-03	×	×	\times	*_	X		\					
18/L98184-MW-3	12/4/2		 	 - 		×	X	×	又	$ \times $		$ \cdot $				ļ	
4.WL98184-MW-Y	1230	W		<u> </u>	-04	 		<u> </u>				-\-					
	12/4/2	W			-05	\times	\times	X	\times	\times							
5. WZ98784-MW-5	1305	1) 4	+ +	 -	 	×	1	X	×	X)	\	.			
6.WL98184-MW-6	1015	W			-06		×		 				\				
1	12/4/2	W			-07	\×	\times	\times	X	X_	ļ		-\	<u> </u>			
7. WL98184-MW-7	0940														i		
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Were Samples Received	I in Good Conditio	n? 🗆 Ye	es 🗀 N	lo Sample	s on Ice?	ęs u	เพบ	METHOO	Or Ormp								

White: Sequoia

Yellow: Sequoia

Pink: Client

Groundwater Monitoring and Sampling Protocols

Prior to purging and sampling a well, the static water level is measured to the nearest 0.01 feet with an electronic water sounder. After measuring the depth to water and checking for floating product, the monitor wells are purged and a sample collected from each well. The pH, temperature, and conductivity of the purge water are measured during well purging. Groundwater is sampled after three consecutive pH, temperature, and conductivity readings have been measured to within 15% of one another or until approximately three casing volumes have been purged. Reading are taken at least three minutes apart. Groundwater samples are then collected using new, disposable polyethylene bailers or by using low flow sampling techniques with new, disposable tubing (flow rates < 0.5 liters per minute). Care is taken to minimize volatilization when transferring groundwater into appropriately preserved sample containers for volatile organic compounds. After labeling, samples are placed in a cooler containing ice and transported using chain-of-custody procedures to a state certified analytical laboratory.