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CLEARWATER
G R O U P, I N C.
Environmental Services

Mr. Barney Chan
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

June 13, 1997

Re: **Workplan for Remediation Services**
(Application of Oxygen Release Compound)
Hertz Facility
1 Airport Drive, Oakland, California

Monitor
1,4,6,9

Dear Mr. Chan,

Clearwater Group, Inc. (Clearwater) is pleased to submit this workplan on behalf the Hertz Corporation (Hertz) for remedial services to be conducted at the Hertz facility located at the Oakland, California International Airport. Specifically, Clearwater proposes to use the patented Regenesis oxygen release compound (ORC) to stimulate *in situ* bioremediation of dissolved gasoline constituents in the area of the fuel dispenser, which is apparently the source of the contaminants.

In a letter dated March 28, 1997 the Alameda County Environmental Health Services (EHS) indicated that active remediation of the groundwater near monitoring well MW-4 would facilitate closure of the site. During the February 1997 sampling event, samples from monitoring well MW-4 contained 19,000 parts per billion (ppb) total petroleum hydrocarbons as gasoline (TPHg) and 3,300 ppb benzene (Table 1). Contaminant concentrations approximately 100 feet downgradient of MW-4 are significantly lower, suggesting that the plume is quite limited in areal extent (Figures 1 and 2).

Soil samples previously collected from the area adjacent to the fuel dispenser island contained up to 1,300 parts per million TPHg (see Appendix). However, removal of the source (excavation of contaminated soil in the vicinity of the fuel dispensers) would likely require demolition of the dispenser island and possibly the canopy covering the fueling area. Because there are no other fuel dispensers at this site, soil removal would have a significant impact on business at this car rental facility. In order to minimize disruption of the business, Clearwater proposes to use ORC as a method of remediating groundwater in the vicinity of the fuel dispensers.



ORC Technology

ORC is a patented magnesium peroxide compound that, upon hydration, releases oxygen to naturally occurring microbes. These microbes will degrade petroleum hydrocarbons if an adequate supply of oxygen, water, and nutrients (such as phosphorous and nitrogen) are available. The additional oxygen provided by ORC stimulates aerobic microbial growth and activity.

Site Characteristics

The appropriate application of ORC was determined by evaluating the characteristics of soil, groundwater, and contaminant distribution beneath the site. The following assumptions were made regarding the subsurface characteristics:

- Monitoring well MW-4 is 8 feet deep with 5 feet of screen in the lower portion of the well
- Groundwater gradient is west-southwest at approximately 0.019 foot/foot
- The dissolved hydrocarbon plume is approximately 80 feet long and 40 feet wide (on the basis of the lateral extent of benzene concentrations greater than 1 ppb)
- The upper water-bearing zone (to a depth of at least 8 feet) consists of fine-grained silty sand; the effective porosity of this material is assumed to be 30-35%
- Thickness of the saturated zone is approximately 13 feet
- Depth to water in MW-4 has fluctuated from 3.5 to 5.2 feet bgs during the past five years
- Hydraulic conductivity in the upper water-bearing zone is approximately 1.4 foot/day
- Groundwater velocity is approximately 0.13 ft/day.

The thickness of the water-bearing zone was estimated on the basis of boring log information from a site located at the intersection of Airport Drive and

Neil Armstrong Way, approximately 0.5 mile from the Hertz facility. Wells at this location were drilled to a depth of approximately 20 feet bgs, and a silty clay unit was encountered at approximately 16 feet bgs. A sandy soil sample collected from a depth of 15.5 feet was analyzed using a falling head permeability test (ASTM D5084); test results indicated an average permeability of 5×10^{-4} cm/sec (1.4 foot/day) and a total porosity of 38%. The water-bearing zone at the Hertz site consists of silty sand; therefore, the effective porosity is assumed to be 30-35%.

Additional estimates of the hydraulic conductivity (in the general vicinity) were based on a 1989 report by ERM-West which published data from a General Electric plant located near the Oakland Inner Harbor and tidal channel. On the basis of slug tests and laboratory evaluations, silty sand at the General Electric plant was estimated to have a horizontal permeability of 1.4 foot/day, which is consistent with the permeability estimate obtained from the soil sample collected near the Hertz facility.

Proposed ORC Application

no borings

- 1) socks
- 2) grant substance
- 3) backfill

Clearwater proposes to advance soil probes to a depth of approximately 10 feet below ground surface at 13 locations shown on Figure 3. The borings will be filled with a slurry comprised of Regenesis ORC compound. Because there is a concrete slab approximately 7 inches thick beneath the canopy, we propose to install the ORC borings upgradient and downgradient of the slab (in areas that are surfaced with asphalt). The west-southwest direction of groundwater flow should distribute the ORC to the source area, as well as to the groundwater plume extending beyond the source area (Figures 2 and 3).

On the basis the site characteristics listed above, the proposed application of ORC is:

- Install ten 1.25 inch-diameter soil borings at a spacing of 8-10 feet apart on the east (upgradient) end of the fuel dispensers
- Install three 1.25 inch-diameter soil borings at a spacing of approximately 10 feet apart on the west (downgradient) end of the canopy area
- Inject ORC slurry into each boring (approximately 60 pounds of ORC in each upgradient boring and approximately 40 pounds of ORC in each downgradient boring).

up to 20 ppm
O₂



Soil probes will be advanced using a Geoprobe or other direct-push equipment. Figure 3 presents the proposed locations, but the actual locations should be selected in the field to maintain a safe distance from the underground utilities and active product lines. In borings located immediately adjacent to the product lines, gravity filling with ORC slurry may be preferable to slurry injection.

Following placement of the ORC slurry, groundwater monitoring should be continued on a quarterly basis to monitor the effect of *in situ* bioremediation. Assuming that the groundwater velocity at the site is approximately 0.13 foot/day, the effects of the ORC slurry may be observed within approximately 100 days of its emplacement.

Please do not hesitate to contact the undersigned at 510-893-5160 (extension 15) if you have questions regarding this workplan. Upon receiving your approval, Clearwater will prepare a cost estimate for its implementation.

Sincerely,
CLEARWATER GROUP, INC.

A handwritten signature in black ink, appearing to read "Jeanna S. Hudson".

Jeanna S. Hudson, R.G.
Senior Geologist

Attachments:

cc: Ms. Patricia Woods, the Hertz Corporation
Mr. Jeff Rubin, Port of Oakland, Environmental Health & Safety
Compliance

Table 1
GROUNDWATER ELEVATIONS AND ANALYTICAL RESULTS

Hertz Service Center
1 Airport Drive
Oakland, California

MW-No.	Date	TOC (feet)	DTW (feet)	GWE (feet)	TPHg (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	TPHd (ppb)
MW-1	8/20/91	7.45	5.15	2.30	ND	ND	ND	ND	ND	--	ND
	11/12/91	7.45	4.39	3.06	ND	ND	ND	ND	ND	--	ND
	2/18/92	7.45	4.39	3.06	ND	ND	ND	ND	ND	--	ND
	5/13/92	7.45	4.52	2.93	ND	ND	ND	ND	ND	--	--
	9/1/92	7.45	4.90	2.55	ND	ND	ND	ND	ND	--	--
	11/5/92	7.45	5.06	2.39	ND	ND	ND	ND	ND	--	--
	2/3/93	7.45	4.11	3.34	ND	ND	ND	ND	ND	--	--
	5/27/93	7.45	4.14	3.31	ND	ND	ND	ND	ND	--	ND
	12/2/93	7.45	4.54	2.91	ND	ND	ND	ND	ND	--	ND
	9/17/96	7.45	4.09	3.36	--	--	--	--	--	--	--
	11/27/96	7.45	3.82	3.63	--	--	--	--	--	--	--
2/14/97	7.45	3.29	4.16	--	--	--	--	--	--	--	
MW-2	8/20/91	8.09	4.00	4.09	ND	ND	ND	ND	ND	--	ND
	11/12/91	8.09	4.23	3.86	ND	ND	ND	ND	ND	--	52
	2/18/92	8.09	4.23	3.86	ND	ND	ND	ND	ND	--	ND
	5/13/92	8.09	3.43	4.66	ND	ND	ND	ND	ND	--	--
	9/1/92	8.09	3.94	4.15	56	2.0	3.0	0.8	3.1	--	--
	11/5/92	8.09	4.04	4.05	ND	ND	ND	ND	ND	--	--
	2/3/93	8.09	3.25	4.84	ND	ND	ND	ND	ND	--	--
	5/27/93	8.09	3.27	4.82	ND	ND	ND	ND	ND	--	ND
	12/2/93	8.09	3.65	4.44	ND	ND	ND	ND	ND	--	ND
	9/17/96	8.09	3.35	4.74	--	--	--	--	--	--	--
	11/27/96	8.09	3.18	4.91	--	--	--	--	--	--	--
2/14/97	8.09	2.65	5.44	--	--	--	--	--	--	--	
MW-3	8/20/91	7.66	4.60	3.06	ND	ND	ND	ND	ND	--	ND
	11/12/91	7.66	4.74	2.92	ND	ND	ND	ND	ND	--	ND
	2/18/92	7.66	4.74	2.92	ND	ND	ND	ND	ND	--	ND
	5/13/92	7.66	4.02	3.64	ND	ND	ND	ND	ND	--	--
	9/1/92	7.66	4.45	3.21	ND	1.1	1.6	ND	1.9	--	--
	11/5/92	7.66	4.59	3.07	ND	ND	ND	ND	ND	--	--
	2/3/93	7.66	3.63	4.03	ND	ND	ND	ND	ND	--	--
	5/27/93	7.66	3.82	3.84	ND	ND	ND	ND	ND	--	55

Table 1
GROUNDWATER ELEVATIONS AND ANALYTICAL RESULTS

Hertz Service Center
1 Airport Drive
Oakland, California

MW-No.	Date	TOC (feet)	DTW (feet)	GWE (feet)	TPHg (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	TPHd (ppb)
MW-3	12/2/93	7.66	4.06	3.60	ND	ND	ND	ND	ND	--	ND
	9/17/96	7.66	3.76	3.90	--	--	--	--	--	--	--
	11/27/96	7.66	3.58	4.08	--	--	--	--	--	--	--
	2/14/97	7.66	3.01	4.65	--	--	--	--	--	--	--
MW-4	2/18/92	7.11	3.68	3.43	6,600	910	1,900	280	1,700	--	ND
	5/13/92	7.11	3.54	3.57	62,000	3,400	5,200	990	5,200	--	--
	9/1/92	7.11	3.97	3.14	120,000	8,800	14,000	2,100	11,000	--	--
	11/5/92	7.11	5.23	1.88	24,000	2,600	3,300	510	2,100	--	--
	2/3/93	7.11	4.22	2.89	50,000	4,700	5,000	1,500	6,600	--	--
	5/27/93	7.11	4.33	2.78	48,000	6,300	7,200	1,600	6,800	--	4,900
	12/2/93	7.11	4.72	2.39	21,000	3,500	3,800	640	2,000	--	770
	9/17/96	7.11	4.38	2.73	16,000	4,300	1,900	750	1,900	100	220
	11/27/96	7.11	4.20	2.91	14,000	5,100	2,600	1,300	2,500	ND<300	ND<200
2/14/97 (b,c)	7.11	3.58	3.53	19,000	3,300	3,100	980	2,600	150	210	
MW-5	11/5/92	7.76	4.76	3.00	ND	ND	ND	ND	ND	--	170
	2/3/93	7.76	--	--	--	--	--	--	--	--	--
	5/27/93	7.76	3.88	3.88	ND	ND	ND	ND	ND	--	75
	12/2/93	7.76	4.36	3.40	ND	ND	ND	ND	ND	--	60
	9/17/96	7.76	3.99	3.77	--	--	--	--	--	--	--
	11/27/96	7.76	3.80	3.96	--	--	--	--	--	--	--
	2/14/97 (b)	7.76	3.16	4.60	100	1.2	ND<0.5	0.8	ND<2	95	860
MW-6	11/5/92	7.17	5.28	1.89	820	250	ND	5.9	ND	--	--
	2/3/93	7.17	4.27	2.90	330	120	2.8	19	5.3	--	--
	5/27/93	7.17	4.35	2.82	1,300	370	ND	87	19	--	960
	12/2/93	7.17	4.81	2.36	280	11	1.0	65	3.0	--	700
	9/17/96	7.17	4.39	2.78	ND<50	1.0	0.5	ND<0.5	ND<2.0	ND<5	270
	11/27/96	7.17	4.23	2.94	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<2.0	7	ND<50
	2/14/97 (b)	7.17	3.57	3.60	50	0.9	ND<0.5	ND<0.5	ND<2.0	9	600
MW-7	5/27/93	6.93	4.58	2.35	ND	ND	ND	ND	ND	--	76
	12/2/93	6.93	4.78	2.15	ND	ND	ND	ND	ND	--	ND

Table 1
GROUNDWATER ELEVATIONS AND ANALYTICAL RESULTS

Hertz Service Center
1 Airport Drive
Oakland, California

MW-No.	Date	TOC (feet)	DTW (feet)	GWE (feet)	TPHg (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	TPHd (ppb)
MW-7	9/17/96	6.93	4.52	2.41	--	--	--	--	--	--	--
	11/27/96	6.93	4.35	2.58	--	--	--	--	--	--	--
	2/14/97 (b)	6.93	3.70	3.23	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<2	ND<5	140
MW-8	5/27/93	6.75	4.84	1.91	ND	ND	ND	ND	ND	--	91
	12/2/93	6.75	5.44	1.31	ND	ND	ND	ND	ND	--	54
	9/17/96 (a)	6.75	--	--	--	--	--	--	--	--	--
	11/27/96 (a)	6.75	--	--	--	--	--	--	--	--	--
	2/14/97 (a)	6.75	--	--	--	--	--	--	--	--	--
MW-9	5/27/93	6.55	4.97	1.58	ND	ND	ND	ND	ND	--	72
	12/2/93	6.55	5.53	1.02	ND	ND	ND	ND	ND	--	72
	9/17/96	6.55	4.95	1.60	--	--	--	--	--	--	--
	11/27/96	6.55	--	--	--	--	--	--	--	--	--
	2/14/97 (b)	6.55	4.16	2.39	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<2	ND<5	130

Notes:

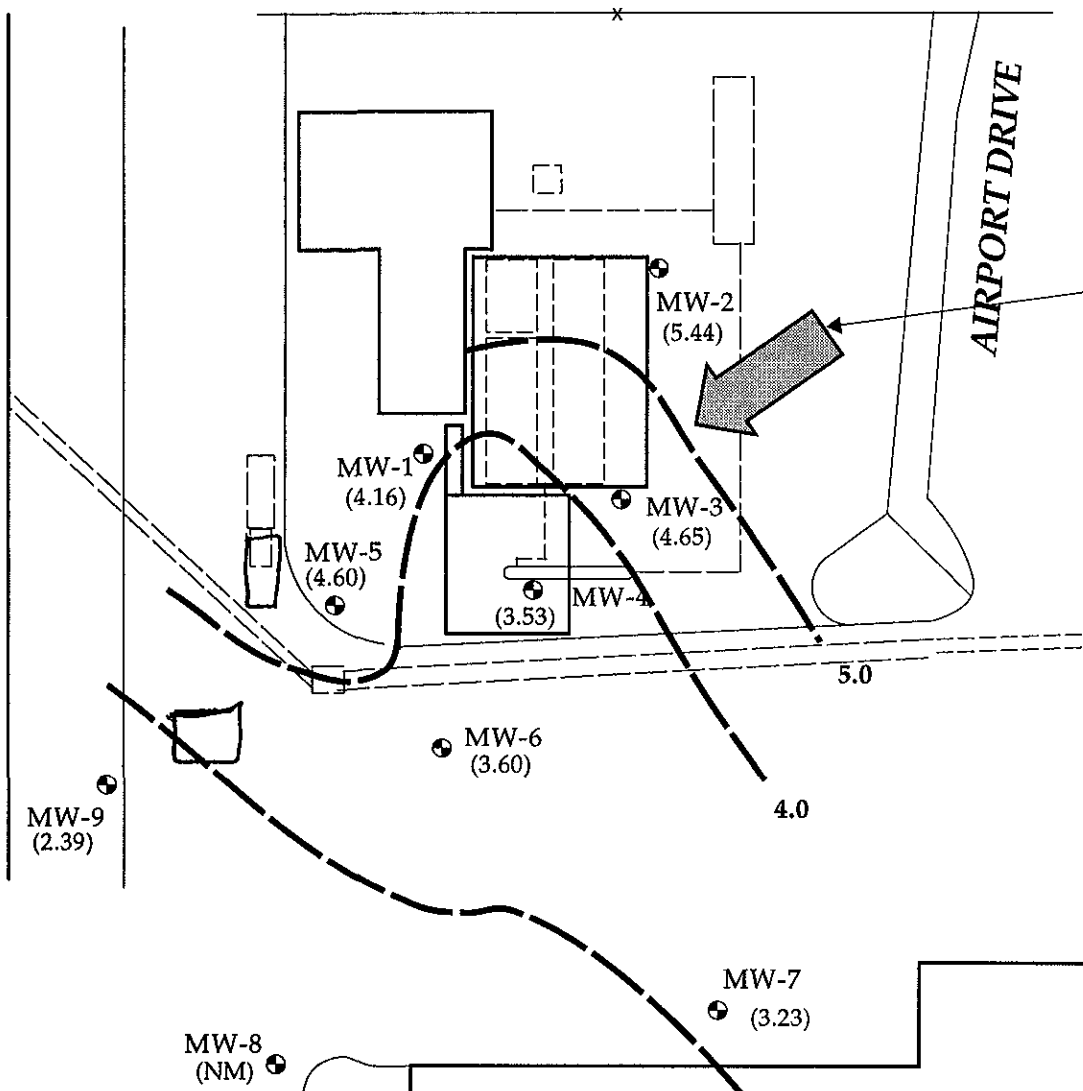
- TOC Elevation at the north side of the top of the well casing referenced to mean sea level (wells were surveyed by others)
- DTW Depth to water
- GWE Groundwater elevation
- TPHg Total petroleum hydrocarbons as gasoline using EPA Method 8015 (modified)
- TPHd Total petroleum hydrocarbons as diesel fuel using EPA Method 8015 (modified)
- BTEX Benzene, toluene, ethylbenzene and total xylenes using EPA Method 8020 (modified)
- MTBE Methyl ter butyl ether using EPA Method 8020 (modified)
- ppb Parts per billion (micrograms per liter)
- Not tested, not measured
- ND Not detected in concentrations at or above laboratory reporting limit (indicated if available).
- (a) MW-8 could not be located (well may have been paved over)
- (b) Laboratory chromatograms indicate that samples may contain weathered diesel fuel or a light oil
- (c) Reporting limits elevated because of high levels of target compounds; MTBE included in gasoline result

Analytical results prior to September 17, 1996 were taken from the *Report of Findings, Fourth Quarter 1993 Ground Water Monitoring* by Environmental Science & Engineering (January 4, 1994). Analytical results for metals, oil and grease, halogenated volatile compounds, and semi-volatile organics are not included in this table.


ALAN SHEPARD WAY

AIRPORT DRIVE


GENERALIZED DIRECTION OF GROUNDWATER FLOW



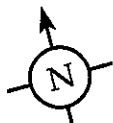
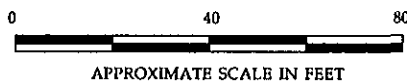
EXPLANATION

- 
 GROUNDWATER MONITORING WELL
- MW-2
 (2.41)

GROUNDWATER ELEVATION (IN FEET) - REFERENCED TO MEAN SEA LEVEL
- NM

GROUNDWATER ELEVATION NOT MEASURED
- 4.0 
 GROUNDWATER ELEVATION CONTOUR - CONTOUR INTERVAL 1.0 FEET

SITE PLAN BASED ON MAP BY ESE, INC.
JANUARY 4, 1994



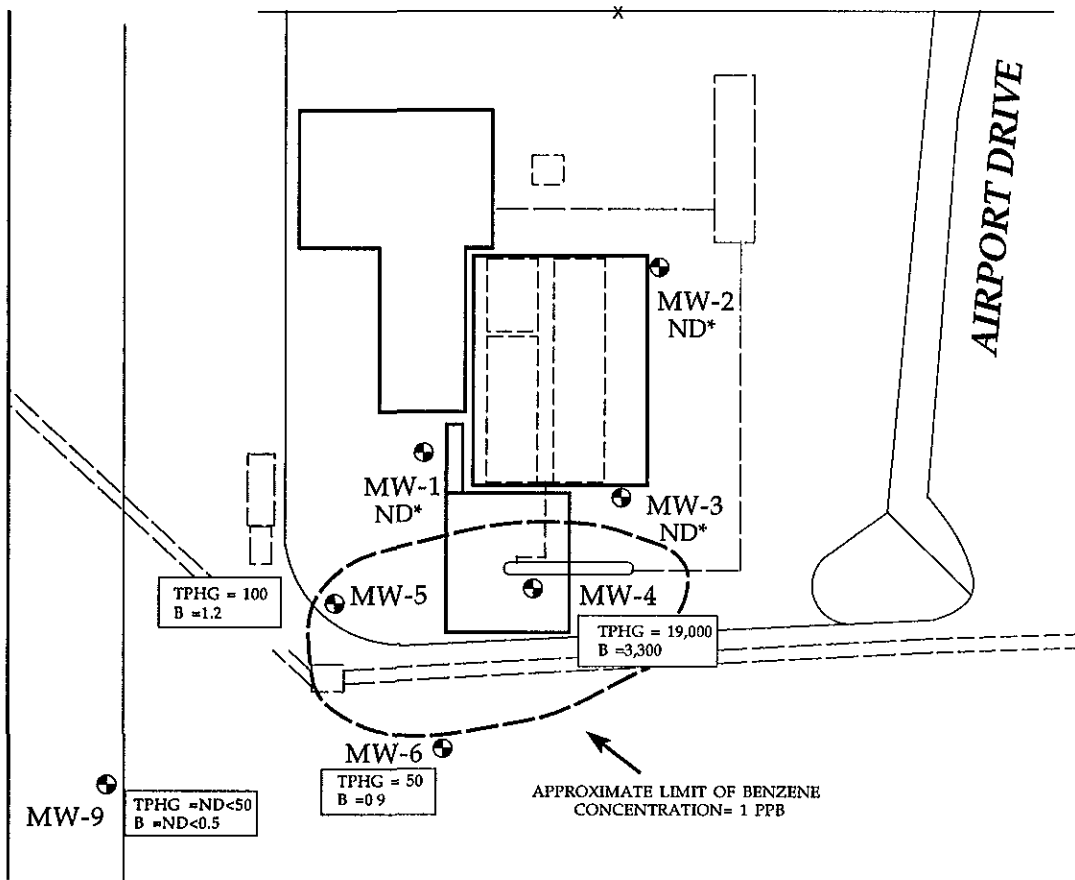
GROUNDWATER CONTOUR MAP- 2/14/97
Hertz Service Center,
1 Airport Drive,
Oakland, California

CLEARWATER GROUP, INC.

Project No. C-156	Figure Date 3/97	Figure 1
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ALAN SHEPARD WAY

AIRPORT DRIVE



MW-9
TPHG = ND < 50
B = ND < 0.5

MW-6
TPHG = 50
B = 0.9

MW-4
TPHG = 19,000
B = 3,300

MW-5
TPHG = 100
B = 1.2

MW-7
TPHG = ND < 50
B = ND < 0.5

MW-8
ND*

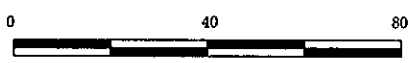
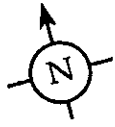
EXPLANATION

MW-2
GROUNDWATER MONITORING WELL

TPHG = 50
B = 0.9
CONCENTRATIONS OF TOTAL PETROLEUM HYDROCARBONS AS GASOLINE (TPHG) & BENZENE (B) DETECTED IN GROUNDWATER SAMPLES - IN PARTS PER BILLION SAMPLES COLLECTED ON 2/14/97. ND=COMPOUND NOT DETECTED.

ND*
TPHG AND BENZENE CONCENTRATIONS NOT DETECTABLE (ON THE BASIS OF HISTORICAL ANALYTICAL DATA)

APPROXIMATE EXTENT OF BENZENE GROUNDWATER CONCENTRATION = 1 PPB



APPROXIMATE SCALE IN FEET

SITE PLAN BASED ON MAP BY ESE, INC. JANUARY 4, 1994

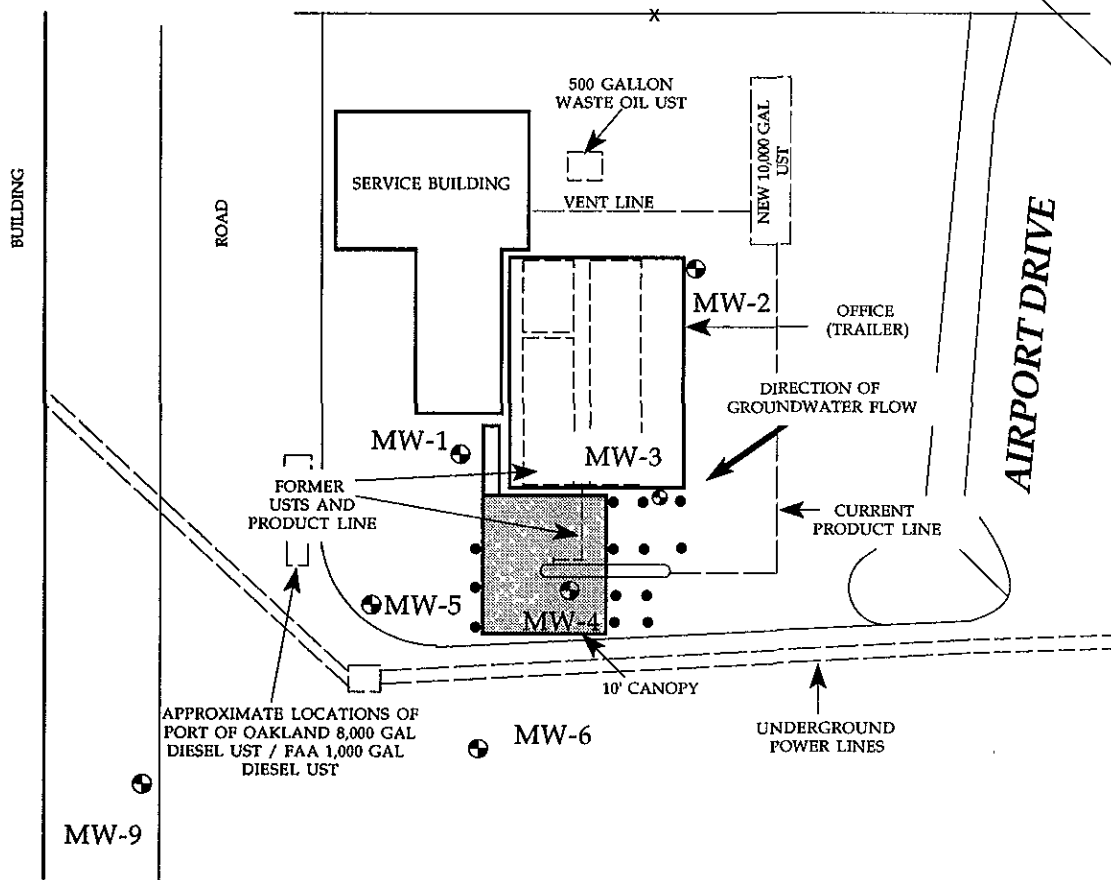
HYDROCARBON DISTRIBUTION MAP
2/14/97

Hertz Service Center,
1 Airport Drive,
Oakland, California

CLEARWATER GROUP, INC.





Project No. C-156	Figure Date 6/97	Figure 2
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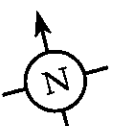
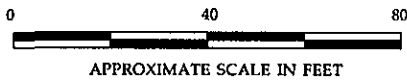
ALAN SHEPARD WAY



APPROXIMATE LOCATIONS OF
PORT OF OAKLAND 8,000 GAL
DIESEL UST / FAA 1,000 GAL
DIESEL UST

EXPLANATION

-  GROUNDWATER MONITORING WELL
-  MW-2
-  AREA OF 10-FT. CANOPY OVER
CONCRETE SLAB (7 INCHES THICK)
-  PROPOSED SOIL PROBE LOCATION (10 FT. DEEP)
FILLED WITH ORC SLURRY



SITE PLAN BASED ON MAP BY ESE, INC.
JANUARY 4, 1994

SITE PLAN
Hertz Service Center,
1 Airport Drive,
Oakland, California

CLEARWATER GROUP, INC.

Project No. C-156	Figure Date 6/97	Figure 3
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APPENDIX

2.0 FEBRUARY 1992 QUARTERLY SAMPLING AND INVESTIGATION ACTIVITIES

2.1 Well Installation and Soil Sampling Procedures

On February 13, 1992, ESE installed ground-water monitoring well MW-4 at the site downgradient of soil sample location B2, near the pump islands (Figure 1 - Site Plan). Because of an overhead canopy which restricted access of a typical truck-mounted drilling rig, the well boring was drilled with a 4-inch diameter hand-auger to a depth of 8 feet. Soil cuttings were inspected in the field for hydrocarbons by site, odor, and with a Photoionization Detector (PID). Soil samples were collected at depths of 4.5 and 5.5 feet below grade from the bucket of the auger. The samples were collected in 6-inch brass tubes and labeled, capped, sealed, and stored on ice for possible laboratory analysis. The other tubes were emptied into plastic bags, logged by an ESE geologist and checked on site for hydrocarbons by sight and odor.

Ground water was found in the boring at a depth of approximately 5.5 feet below grade. The well was constructed as a 2-inch diameter monitoring well. Details of well construction are shown on the boring log in Appendix A.

The well was developed prior to sealing the annulus by surging and bailing until pH, conductivity, and temperature measurements stabilized and the water became relatively clear. Approximately six gallons of water (more than 10 casing volumes) was removed during development. Well development water and soil cuttings from drilling were stored onsite in 55-gallon labeled drums.

2.2 Drilling Results

The boring log for well MW-4 shows that the native soil from approximately 1 to 8 feet below grade consists of poorly-graded, fine-grained, silty sand. Strong hydrocarbon odors and high PID measurements were noted from approximately 2.5 feet to total depth.

2.3 Soil Sampling Analytical Results

The soil sample from a depth of 4.5 feet was selected as representative of the vadose zone soils and was submitted under chain of custody to Coast-to-Coast Analytical, a California state-certified laboratory, for fuel fingerprint analysis using EPA Method 5030/8260, a GC/MS method. This analysis, approved by the California Department of Health Services for fuel leaks, detects TPH as gasoline (TPHg), TPH as diesel (TPHd), BTEX, 1,2-Dichloroethane (EDC), and Ethylene Dibromide (EDB). These latter two compounds are common fuel additives. Table 1 - Summary of Soil Sampling Analytical Results shows that this soil sample contained 86 ppm TPHg, and BTEX concentrations ranging from 0.44 to 13 ppm. These results indicate that weathered gasoline is present in the soil, which is not unexpected since the boring was drilled near a gasoline dispenser.

2.4 Surveying, Ground-Water Measurement and Sampling Procedures

The top of casing height of well MW-4 was surveyed relative to the other wells onsite and mean sea level. Water levels were measured in all wells with an electronic water level meter on February 18, 1992. No free product was detected in any of the wells.

All of the wells were purged by removing three to five casing volumes of water with a bailer until pH, conductivity, and temperature measurements stabilized. After purging and well water level recovery, ground-water samples were collected from each well with a dedicated disposable bailer, and stored on ice in labeled 40 ml VOA vials for laboratory transport. Ground-water samples were submitted to Coast-to Coast Analytical for fuel fingerprint analysis.

All sampling equipment was decontaminated by washing with an Alconox® detergent solution and rinsing with tap water. Purge water was stored on site in drums.

2.5 Ground-Water Elevations

Depth to ground water in the wells on February 18, 1992 ranged from 3.60 to 4.85 feet below top of well casing, corresponding to ground-water elevations ranging from 2.60 to 4.49

TABLE 1 - SUMMARY OF SOIL SAMPLING ANALYTICAL RESULTS AT
HERTZ/OAKLAND AIRPORT, OAKLAND, CALIFORNIA

SOIL		Sample Depth (feet)	Metals (ppm)				Total Petroleum Hydrocarbons (ppm)							Purgeable Halocarbons (EPA 8010) (ppb)	Semi- Volatile Organics (EPA 8270) (ppb)	
Date	Sample Location		Cd	Cr	Pb	Zn	Oil & Grease (ppm)	as Gasoline	as Kerosene	as Diesel	B	T	E			X
02/13/92	MW-4	4.5	Not Analyzed				--	86	--	ND	0.44	6.2	2.0	13	--	--
12/20/89	MW-1	2	--	19.7	2.5	23.5	--	ND	--	ND	ND	ND	ND	ND	all ND	all ND
	MW-1	5	--	--	--	--	--	ND	--	ND	ND	ND	ND	ND	all ND	all ND
	MW-2	2	--	18.1	1.5	12.3	--	ND	--	ND	ND	ND	ND	ND	all ND	all ND
	MW-2	5	--	--	--	--	--	ND	--	ND	ND	ND	ND	ND	all ND	all ND
	MW-3	2	--	19.8	1.5	11.0	--	ND	--	ND	ND	ND	ND	ND	all ND	all ND
	MW-3	5	--	--	--	--	--	ND	--	ND	ND	ND	ND	ND	all ND	all ND
11/25/88	A1	From Tank	--	--	--	--	ND	ND	--	ND	ND	ND	ND	ND	all ND	--
	A2	Exca-	--	--	--	--	ND	ND	--	ND	ND	ND	ND	ND	--	--
	A3	vation	--	--	--	--	ND	ND	--	ND	ND	ND	ND	ND	--	--
	A4		--	--	--	--	ND	ND	--	ND	ND	ND	ND	ND	--	--
	A5		--	--	--	--	ND	ND	--	ND	ND	ND	ND	ND	--	--
	A6		--	--	--	--	ND	ND	--	ND	ND	ND	ND	ND	--	--
	B-1	Piping	--	--	--	--	ND	ND	--	ND	ND	ND	ND	ND	all ND	all ND
	B-2	Exca-	--	--	--	--	1,300	ND	--	55	51	19	200	ND	--	--
	C1,C2, C3	Composite from soil stockpiled from exca- vation	--	--	--	--	ND	ND	--	ND	ND	ND	ND	ND	all ND	all ND

ND = Not detected.

-- = Not Analyzed or reported.

ppm = parts per million (mg/Kg)

ppb = parts per billion (ug/Kg)

B = Benzene T = Toluene E = Ethylbenzene X = Xylenes

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TABLE 2 - SUMMARY OF GROUND-WATER SAMPLING ANALYTICAL RESULTS AT
HERTZ/OAKLAND AIRPORT, OAKLAND, CALIFORNIA

GROUND WATER		Ground- Water Depth (feet)	Metals (ppm)					Oil & Grease (ppm)	Total Petroleum Hydrocarbons (ppb)							Purgeable Halocarbons (EPA 8010) (ppb)	Semi- Volatile Organics (EPA 8270) (ppb)		
Date	Well		Cd	Cr	Pb	Ni	Zn		as	as	as	B	T	E	X				
																		Gasoline	Kerosene
02/18/92	MW-1	4.85	Not Analyzed					--	ND	--	ND	ND	ND	ND	ND	--	--		
	MW-2	3.60						--	ND	--	ND	ND	ND	ND	ND	ND	ND	--	--
	MW-3	4.15						--	ND	--	ND	ND	ND	ND	ND	ND	ND	--	--
	MW-4	4.80						--	6,600	--	ND	910	1900	280	1700	--	--		
11/12/91	MW-1	4.39	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	all ND	all ND				
	MW-2	4.23	ND	ND	ND	ND	ND	ND	52†	ND	ND	ND	ND	all ND	all ND				
	MW-3	4.74	7.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	all ND	all ND				
08/20/91	MW-1	5.15	a	all ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	all ND	all ND				
	MW-2	4.00	all ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	all ND	all ND				
	MW-3	4.60	all ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	all ND	all ND				
12/22/89	MW-1	4.5 est.	--	--	--	--	ND	--	ND	ND	ND	ND	ND	all ND	all ND*				
	MW-2	4.5 est.	--	--	--	--	ND	--	ND	ND	ND	ND	ND	all ND	all ND*				
	MW-3	5.0 est.	--	--	--	--	ND	--	ND	ND	ND	ND	ND	all ND	all ND*				
11/25/88	Water Sample A5 from excavation						--	7,400	--	--	63	570	250	1900	--	--			

ND = Not detected.

-- = Not Analyzed or reported.

† = Detection limit for TPH as Diesel is 50 ppb. Duplicate sample analyzed contained ND<50 ppb.

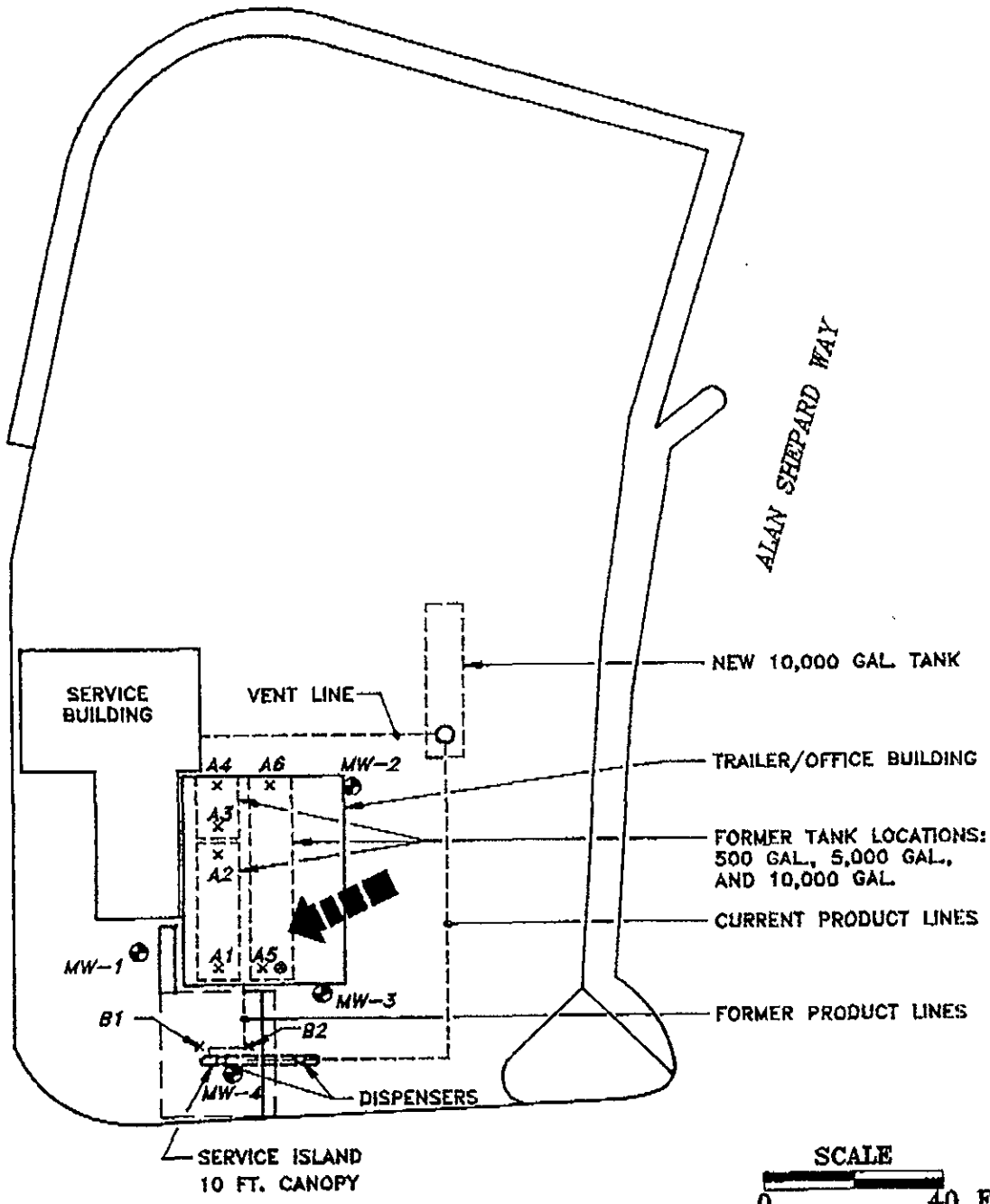
* An open scan reported two "tentatively identified compounds": (iodomethyl) benzene at 30 ppb in MW-1 and 40 ppb in MW-3; and 4-4' butylidenebis [2-(1,1-dimethyl - ethyl) 5-methyl] phenol at 20 ppb in MW-2 and MW-3. The identity and concentrations of these compounds are not considered reliable.

ppm = parts per million (mg/L)

ppb = parts per billion (ug/L)

B = Benzene T = Toluene E = Ethylbenzene X = Xylenes

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ALAN SHEPARD WAY

AIRPORT DRIVE

LEGEND

- ⊙ APPROXIMATE LOCATION OF MONITORING WELLS
- × SOIL SAMPLING LOCATION FROM 11/88 UNDERGROUND TANK AND PIPING EXCAVATION
- ⊕ GROUND-WATER SAMPLE FROM 11/88 UNDERGROUND TANK EXCAVATION
- ←←←← APPROXIMATE GROUND-WATER FLOW DIRECTION - 2/92

		Environmental Science & Engineering, Inc.
HERTZ/OAKLAND AIRPORT OAKLAND, CALIFORNIA		
FIGURE 1 SITE PLAN		
DRAWN BY CVS	APPROVED BY	REVISED DWR 3/82
DATE 8/91	FILE NAME F1SF40	PROJ. NO. 6-01-6226



**Environmental
Science &
Engineering, Inc.**

**BORING LOG AND
WELL COMPLETION SUMMARY**

MW-4

WELL COMPLETION

Completion Depth: 8 Feet

Size/Type	From	To
Casing: 2 in. Dia. Sched. 40 Blank PVC	0'	8'
Screen: 2 in. Dia. (0.02 in. slotted) PVC	3.5'	8'
Filter: #3 Monterey Sand	8'	3'
Seal: Bentonite Pellets	3'	2.5'
Neat cement/Grout	2.5'	0'

Well Cap or Box: 2" Locking well cap, Traffic-proof well box

Project Name: Hertz
Location: #1 Airport Drive
Oakland, California

Project No: 6-91-5226

Driller: Gregg Drilling
Method: Hand Auger
Hole Diameter: 4" OD Total Depth: 8 ft.
Ref. Elevations:
Logged By: Kerry A. Lefever

Page 1 of 1

Dates:
Start: 2/13/92
Finish: 2/13/92

