HYDRO
ENVIRONMENTAL
TECHNOLOGIES, INC.

SUBSURFACE INVESTIGATION REPORT

2203 & 2227 Mariner Square Loop
Alameda, CA

Prepared by:

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.
2363 Mariner Square Drive, Suite 243
Alameda, California 94501
HETI Job No. 7-284

Prepared for:

MARINER DEVELOPMENT COMPANY
2236 Mariner Square Drive
Alameda, CA 94501

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1.0 INTRODUCTION

1.1 Purpose and Scope

The purpose of this report is to present the results of field activities conducted by Hydro-Environmental Technologies, Inc. (HETI) at 2203 and 2227 Mariner Square Loop located in Alameda, California (Figure 1). The purpose of this preliminary investigation is to assess the presence or absence of contamination on-site in relation to previously existing potential sources, both on-site and off-site. The field tasks performed for this investigation included the following:

- Necessary well installation permits were obtained.
- Four soil borings were drilled and logged. Soil samples were collected for laboratory analysis.
- Four monitoring wells were installed in the soil borings.
- The monitoring wells were developed and surveyed.
- The depth to ground water in the monitoring wells was gauged.
- Ground water samples were collected from the wells for laboratory analysis.

1.2 Site Location and Description

The subject site is located in Alameda, California in an area of commercial and military usage immediately adjacent to the Alameda Naval Supply Center. The site is occupied by Mariner Square Athletic Club which consists of one large building housing a swimming pool, fitness center, dining area and other facilities. A day-care center is also located in this building. Also occupying the site is a smaller building operated as Denim and Diamonds, a restaurant and dance club. All field work was conducted in the parking lot and associated property utilized by these facilities (Figure 2). The site is located approximately 1,300 feet from Oakland Inner Harbor. The local geology consists of fine grained fill over fine grained estuarine and marsh

sediments derived from the East Bay Hills. Regional ground water flow is predominantly westerly, towards San Francisco Bay.

1.3 Background

The site was reclaimed from marshlands in the late 1920's. Available maps indicate tidal channels present in the former marshland now occupied by the site. From approximately 1930 to 1960, the San Francisco Airdrome hanger occupied the site. The hanger used to serve as an operations base for commercial and privately owned planes. The hanger housed shop facilities, offices and passenger waiting rooms. Transformers and a steam heating plant were located near the west end of the hanger. In 1960, the hanger building was cut in half and reassembled on Navy Annex (Naval Supply Center) property located west of the site. Discussions with the consultant (Versar) for the Naval Supply Center indicate the primary contaminants for the center are benzene, motor oil and naphthalene. Sources for these compounds have reportedly been located on the center. Naphthalene and associated polynuclear aromatic compounds have been reported as associated with industrial activity (refineries) operating on the Alameda west end in the late 1800's.

2.0 FIELD ACTIVITIES

2.1 Borehole Drilling and Soil Sampling

All drilling and soil sampling was performed according to standard HETI protocol which is consistent with ACDEH and San Francisco Bay Regional Water Quality Control Board (RWQCB) recommended guidelines and procedures. A copy of the HETI Drilling, Well Construction and Sampling protocol is included as Appendix A.

HETI conducted a safety briefing with Bayland Drilling personnel prior to the start of drilling. All personnel present on-site reviewed and signed a copy of the Site Health and Safety Plan prepared for this site. The Site Health and Safety Plan is included as Appendix B.

On June 14, 1994, Bayland Drilling of Menlo Park, California, supervised by HETI, used a CME 50 hollow-stem auger drill rig to drill four soil borings at the site. The

borings were designated B-1, B-2, B-3 and B-5. Borings B-1 and B-2 were drilled to a depth of 14 feet below grade and B-3 and B-5 were drilled to a depth of 15 feet below grade. A California-modified split-spoon sampler, lined with brass tubes, was used to collect soil samples. The soil sample collected nearest to the water table in each borehole was retained for laboratory analysis. Soil cuttings generated during drilling were stored at the site on and under plastic sheeting pending future removal by a licensed waste hauler. Subsurface concrete was encountered during the drilling of boring B-5. A concrete pad encountered beneath the surface asphalt prevented the completion of boring proposed B-4. Proposed boring B-6 was not completed due to access constraints, debris in fill, and proximity to subsurface utilities.

All collected soil samples were described using the Unified Soil Classification System and were screened for the presence of volatile hydrocarbons using a Thermo-Environmental Model 500B organic vapor meter (OVM). OVM readings are not a quantitative determination of hydrocarbon concentrations in the soil samples, but they are useful in determining the relative magnitude of hydrocarbon concentrations. OVM readings for specific soil samples, as well as complete soil sample descriptions, are presented on the Boring Logs/Well Construction Diagrams in Appendix C.

All soil samples submitted for laboratory analysis were analyzed for total petroleum hydrocarbons as gasoline (TPHg) using EPA Method 8015 (DHS-modified), total petroleum hydrocarbons as diesel (TPHd) using EPA Method 3550/8015, benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Method 8020 (DHS-modified), total recoverable petroleum hydrocarbons (TRPH) using EPA Method 418.1, volatile organic compounds (VOCs) using EPA Method 8240, polynuclear aromatic hydrocarbons (PNAs) using EPA Method 8270, polychlorinated biphenyls (PCBs) using EPA Method 8080 and CAM 17 metals using EPA Method 7000 series. Soil sample analyses were performed by Trace Analysis Laboratory, Inc. (Trace), a state DHS-certified laboratory located in Hayward, California.

On July 19, 1994, Bayland Drilling, using a modified Minuteman 60000 limited access drill rig, attempted to drill boring B-6 in a new location close to that originally proposed. An incorrectly marked utility was encountered during drilling and prevented completion of the boring.

On August 8, 1994, Bayland Drilling, attempted to drill boring B-6 at a third location. Completion was prevented by utilities and a laterally continuous layer of broken concrete, rebar, asphalt and other debris encountered at approximately 3.5 feet below grade surface.

2.2 Monitoring Well Installation, Development and Survey

On June 14, 1994, Bayland drilling installed a monitoring well in each of the borings B-1, B-2, B-3 and B-5. The monitoring wells were designated MW-1, MW-2, MW-3, and MW-5, respectively. Monitoring well locations are shown on Figure 2.

All monitoring wells were all constructed of two-inch diameter Schedule 40 PVC well casing coupled to machine slotted 0.020-inch Schedule 40 PVC well screen. The annulus around the well screen was filled with clean #2/12 sand. A layer of bentonite pellets was placed above the sand pack and hydrated to form a seal. The remainder of each borehole was grouted to the surface, and traffic-rated road boxes were concreted in place, flush with the ground surface. Well construction diagrams and copies of the well installation permits are included in Appendix C.

On June 15, 1994, HETI gauged each monitoring well for depth to water and depth to bottom using an electronic interface probe. No separate-phase petroleum was detected in any of the wells. The wells were then developed by a combination of surging and bailing of at least ten well volumes. Development water was stored on-site in 55-gallon drums. **Development of MW-1 and MW-2 could not be completed due to the very slow ground water recharge in these wells.** On August 10, 1994, HETI completed development of MW-1 and MW-2. Well development information is presented on the Well Water Development Data Sheet in Appendix D.

On August 15, 1994, the elevations of top-of-casing of the monitoring wells were surveyed relative to an arbitrary benchmark. Survey data is presented on the Site Survey Data Sheet in Appendix D.

2.3 Ground Water Gauging, Sampling and Analysis

On August 11, 1994, the depth to water in each of the wells was gauged to the nearest hundredth of a foot using an interface probe. Gauging data is included in Table 2 and on the Monitoring Well Gauging Data Sheet in Appendix D. Following gauging, the monitoring wells were purged of a minimum of three well volumes until pH, temperature and conductivity stabilized. Purging data is included on the Monitoring Well Purge/Sample Sheets in Appendix D.

Following recovery of water levels to at least 80% of their original levels, ground water samples were collected from the monitoring wells using dedicated polyethylene bailers. Samples were then labeled, documented on a chain-of-custody form, and stored in a chilled cooler for transport to the analytical laboratory. All water samples submitted for laboratory analysis were analyzed for TPHg, TPHd, BTEX, TRPH, VOCs, PNAs, PCBs and CAM 17 metals. Water sample analyses were performed by Trace.

3.0 RESULTS OF INVESTIGATION

3.1 Site Stratigraphy

Sediments encountered during the drilling of borings B-1, B-2, B-3 and B-5 consisted primarily of clay with gravel and sand fill material overlying sand with silt to clay fill material in turn underlain by fat clay with sand gravel and shell fragments (bay mud). The deepest samples collected from all borings except B-3 consisted of fat clay. Ground water was first encountered at approximately five to nine feet below grade and equilibrated to approximately two to five feet below grade.

3.2 Results of Soil Sample Analysis

Readings of samples collected for OVM head space analysis ranged from 0.0 to 3773 parts per million (ppm). Neither TPHg, BTEX nor TRPH were detected in concentrations exceeding method detection limits in the soil samples collected from the borings for wells MW-1 and MW-3. Benzene was not reported in any sample from the borings. TPHd was detected in all samples at a concentrations ranging from

3,600 ppb to 16,000 ppb. TPHg was detected in the sample collected from MW-2 only, at a concentration of 19,000 ppb. Xylenes were reported at 93 ppb in samples collected from MW-2. TRPH was detected in the samples collected from MW-2 and MW-5 at concentrations of 71,000 and 180,000 ppb, respectively. No PCBs, VOCs nor PNAs were detected at concentrations exceeding the compounds respective method detection limits. No CAM 17 metals were detected in concentrations exceeding typical background levels for the San Francisco Bay Area as defined in U.S.G.S. Professional Paper 1270. These analytical results are summarized on Table 1. A copy of the soil sample analytical laboratory report and chain of custody is attached in Appendix E.

3.3 Ground Water Gradient

On August 11, 1994, the depth to ground water in each of the wells ranged from 2.63 to 7.30 feet below grade. The depth to water measurements were combined with the top-of-casing elevation data to calculate ground water elevation contours. These contours are shown on Figure 3, the Ground Water Contour Map. Figure 3 shows ground water flow to be predominantly to the west at an approximate gradient of 0.024 or 2.4%. A ground water mound appears to exist around MW-3, though current data is insufficient to completely evaluate ground water conditions at the site.

3.4 Results of Ground Water Sample Analysis

Excepting CAM 17 metals, none of the subject compounds were detected in concentrations exceeding respective method detection limits in the ground water samples collected from MW-3 and MW-5. The ground water sample collected from MW-2 contained TRPH, at a concentration of 1,200 ppb. The ground water sample collected from MW-1 contained constituents that included benzene at a concentration of 2.2 ppb, TPHg at a concentration of 390 ppb and TPHd at a concentration of 15,000 ppb. PNAs were also detected in the MW-1 sample at concentrations ranging from 13 ppb to 89 ppb. No TRPH was detected in this sample. All ground water samples collected contained chromium or thallium in concentrations exceeding U.S. Environmental Protection Agency (EPA) primary and/or secondary Maximum Contaminant Levels. The analytical results are summarized on Tables 2 and 3 and selected parameters are shown on Figure 4, the

Hydrocarbon Concentration Map. A copy of the ground water sample analytical laboratory report and chain of custody is attached in Appendix E.

4.0 SUMMARY OF RESULTS

- Four soil borings were drilled and converted to monitoring wells (MW-1, MW-2, MW-3 and MW-5) on June 14, 1994.

- Sediments encountered during drilling consisted of clay with gravel over sand with silt fill materials underlain by fat clay (bay mud) in the deepest samples collected from three of the borings. A former tidal channel is reported crossing the center of the site.

- Concentrations of TPHg, xylenes, TPHd and TRPH were reported in the soil samples collected. TPHd was reported in all the samples collected.

- The ground water flow direction was found to be westerly at an approximate gradient of 0.024 or 2.4%.

- Excepting CAM 17 metals, no hydrocarbon compounds were detected in the ground water samples collected from monitoring wells MW-3 and MW-5 and only TRPH was detected in the ground water sample collected from MW-2. The ground water sample collected from MW-1 contained detectable concentrations of TPHg, TPHd, BTEX, VOCs, PNAs, and CAM 17 metals.

- Concentrations above MCLs were reported for benzene in well MW-1, chromium in wells MW-1 and MW-2 and thallium in wells MW-2, MW-3 and MW-5.

- The compounds reported on site are similar to compounds reported at the Naval Supply Center. The naphthalene and associated compounds are reported to be associated with former tidal channels, of which a former channel appears to cross under the site. The gradient direction appears to indicate that the observed compounds are from an on-site source, however, both wells are adjacent to the Naval Supply Center.

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5.0 CERTIFICATION

This report was prepared under the supervision of a registered geologist. All statements, conclusions and recommendations are based solely upon field observations and analytical analyses performed by a state-certified laboratory related to the work performed by Hydro-Environmental Technologies, Inc.

It is possible that variations in the soil or ground water conditions exist beyond the points explored in this investigation. Also, site conditions are subject to change at some time in the future due to variations in rainfall, temperature, regional water usage, or other factors.

The service performed by Hydro-Environmental Technologies, Inc. has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the area of the site. No other warranty, expressed or implied, is made.

Hydro-Environmental Technologies, Inc. includes in this report chemical analytical data from a state-certified laboratory. These analyses are performed according to procedures suggested by the U.S. EPA and the State of California. Hydro-Environmental Technologies, Inc. is not responsible for laboratory errors in procedure or result reporting.

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

Prepared by:

Ruary Allan
Staff Geologist

Reviewed by:

Gary Pischke
Senior Geologist

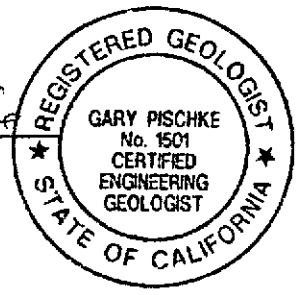


Table 1

SOIL SAMPLE ANALYTICAL RESULTS

Mariner Development
2203 and 2227 Mariner Square Loop
Alameda, CA

Sample I.D. #	Sampling Depth (feet)	Sampling Date	TPHg (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	TPHd (ppb)	TRPH (ppb)
MW-1	4.5 - 5.5	6/14/94	ND<500	ND<5.0	ND<5.0	ND<5.0	ND<15	16,000	ND<50,000
MW-2	4.5 - 5.5	6/14/94	19,000 (19ppm)	ND<7.3	ND<9.0	ND<9.3	93	6,000 (6ppm)	71,000 (71ppm)
MW-3	5.0 - 6.0	6/14/94	ND<500	ND<5.0	ND<5.0	ND<5.0	ND<15	3,600	ND<50,000
MW-5	6.0-6.5/7.5-8.0	6/14/94	ND<500	ND<5.0	ND<5.0	ND<5.0	ND<15	4,300	180,000 (180ppm ?)

Notes:

TPHg: Total petroleum hydrocarbons as gasoline by EPA Method 8015 (DHS-modified)
BTEX: Benzene, toluene, ethylbenzene and total xylenes by EPA Method 8020 (DHS-modified)
TPHd: Total petroleum hydrocarbons as diesel by EPA Method 3550/8015
TRPH: Total Recoverable Petroleum Hydrocarbons by EPA Method 418.1
ppb: Parts per billion
ND: Not detected in concentrations exceeding method detection limits

? Smelling other than gas released

Table 2

GROUND WATER ELEVATONS AND SAMPLE ANALYTICAL RESULTS - TPHg, BTEX, TPHd AND TRPH

Mariner Development
2203 and 2227 Mariner Square Loop
Alameda, CA

Well I.D. #	Sampling Date	TOC (feet)	DTW (feet)	GWE (feet)	TPHg (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	TPHd (ppb)	TRPH (ppb)
MW-1	8/11/94	98.43	7.30	91.13	390	2.2	0.91	2.1	7.8	15,000	ND<1,000
MW-2	8/11/94	96.68	4.59	92.09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<50	1200
MW-3	8/11/94	96.58	2.63	93.95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<50	ND<1,000
MW-5	8/11/94	98.78	5.14	93.64	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<50	ND<1,000

Notes:

TOC : Top of well casing referenced to arbitrary elevation. Benchmark elevation aproximately 11' above sea level.
DTW : Depth to water
GWE : Ground water elevation
TPHg : Total petroleum hydrocarbons as gasoline by EPA Method 8015 (modified)
BTEX : Benzene, toluene, ethylbenzene and total xylenes by EPA Method 8020
TPHd: Total petroleum hydrocarbons as diesel by EPA Method 8015 (modified)
TRPH: Total Recoverable Petroleum Hydrocarbons by EPA Method 418.1
ppb : Parts per billion
ND: Not detected

Table 3

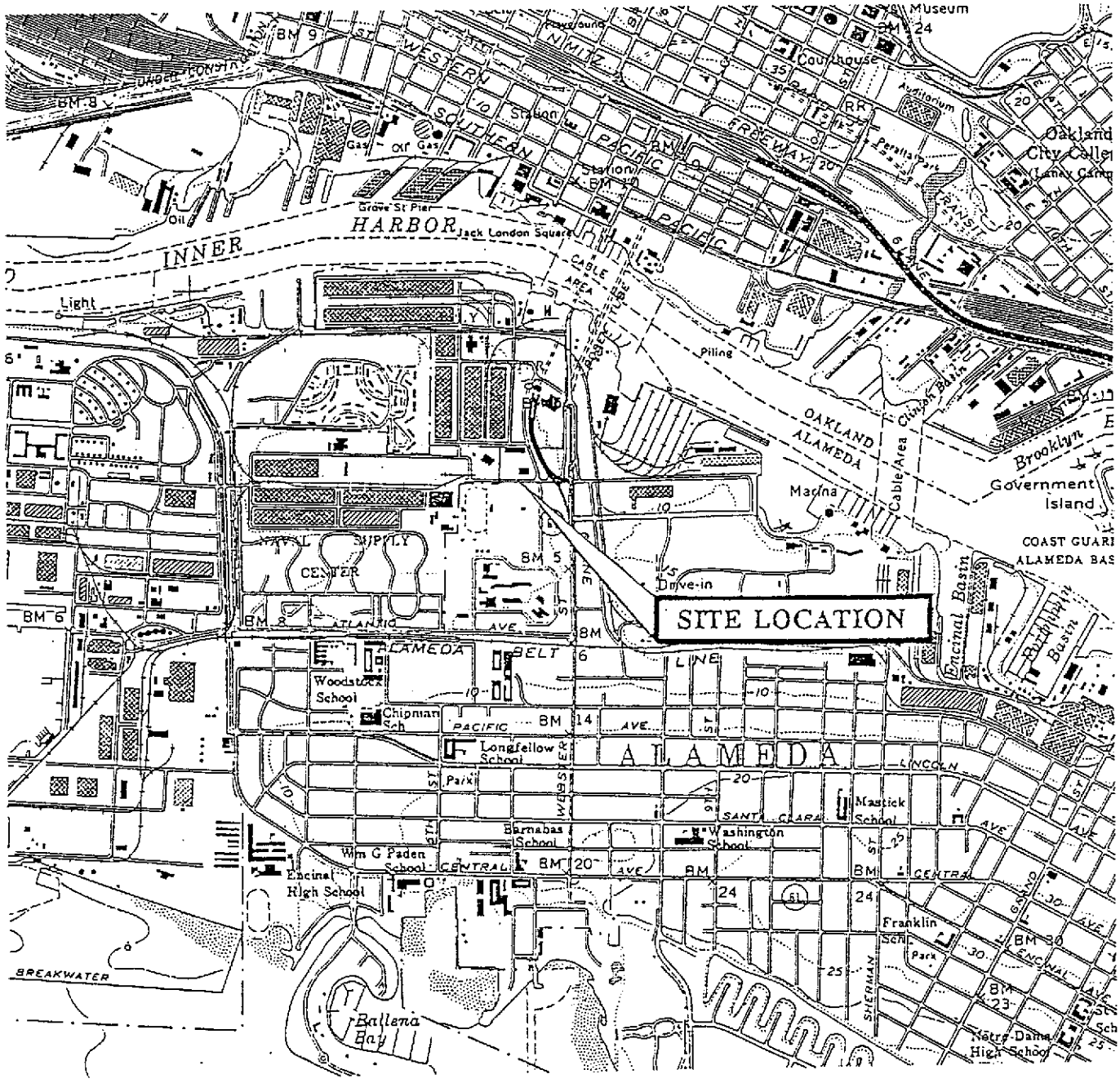
GROUND WATER SAMPLE ANALYTICAL RESULTS - VOC's, PNA's AND METALS

Mariner Development
2203 and 2227 Mariner Square Loop
Alameda, CA

Sample I.D. #	Sampling Depth (feet)	Sampling Date	VOC 1) (ppb)	PNA 1) (ppb)	Metals 2) (ppb)
MW-1	4.5 - 5.5	8/11/94	Xylenes - 19	O-Cresol - 13, 2,4-Dimethylphenol - 69, Naphthalene - 19, Acenaphthene - 78, Fluorene - 50, Anthracene - 89, Fluoranthene- 28, Pyrene - 22.	Chromium - 55 (50)
MW-2	4.5 - 5.5	8/11/94	ND	ND	Chromium - 69 (50), Thallium - 150 (1 to 2)
MW-3	5.0 - 6.0	8/11/94	ND	ND	Thallium - 450 (1 to 2)
MW-5	6.0-6.5/7.5-8.0	8/11/94	ND	ND	Thallium - 150 (1 to 2)

Notes:

VOC:	Volatile Organic Compounds by EPAMethod 8240
PNA:	Polynuclear Aromatic Hydrocarbons by EPA Method 8270
Metals:	CAM 17 Metals by EPA Method 6010/7000
ppb:	Parts per billion
ND:	Not detected in concentrations exceeding method detection limits
1)	Only those analytes detected in concentrations exceeding method detection limits are tabulated.
2)	Only those analytes detected in concentrations exceeding U.S. E.P.A. primary or secondary maximum contaminant levels (MCLs) are tabulated.
(50)	U.S.E.P.A. MCL



SOURCE: USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)
TITLED: OAKLAND WEST QUADRANGLE
PHOTOREVISED 1980

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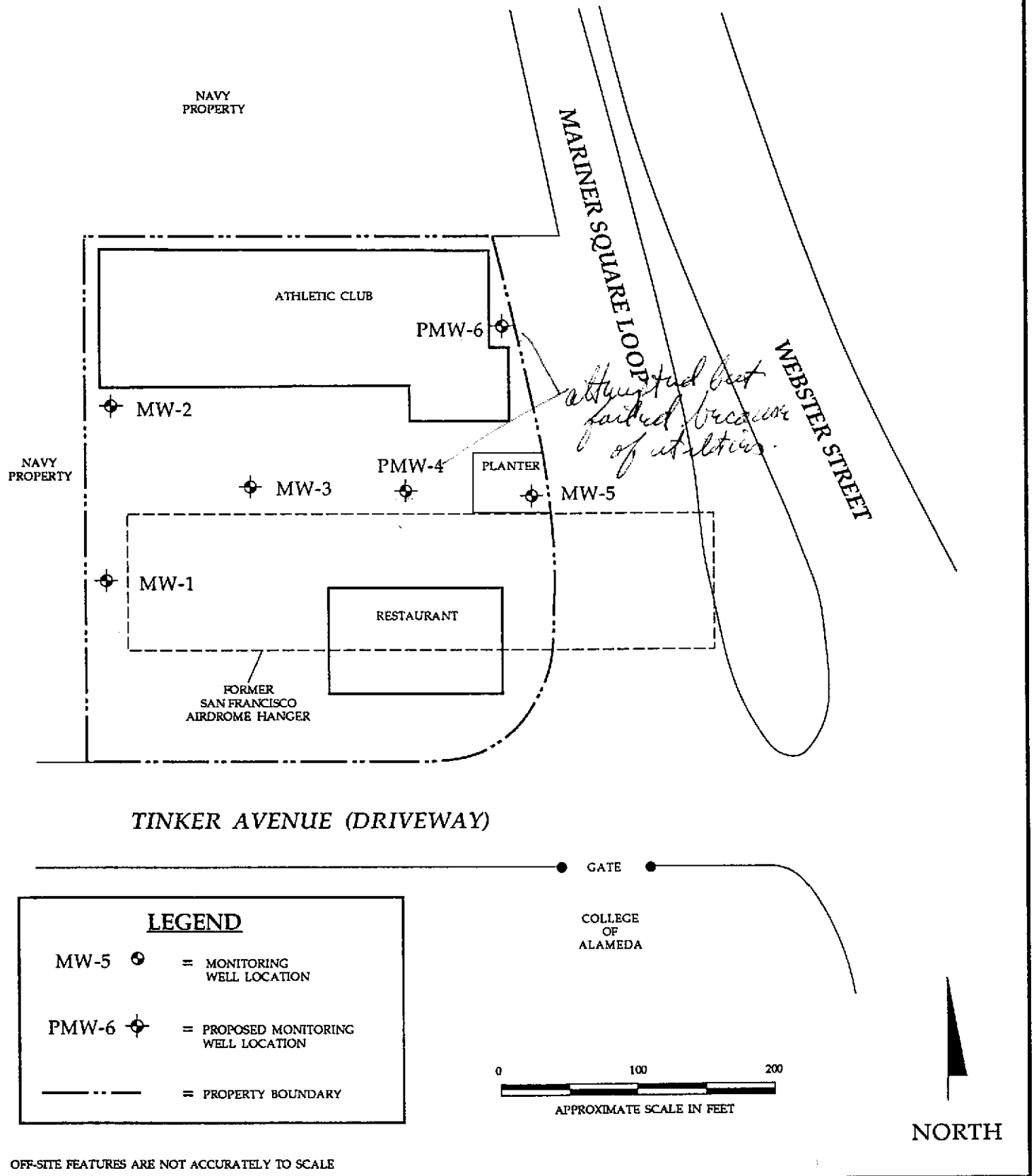
SITE LOCATION MAP
Mariner Development Company
2203 and 2227 Mariner Square Loop
Alameda, California

Figure
1

7-284 1/94



OFF-SITE FEATURES ARE NOT ACCURATELY TO SCALE

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

SITE PLAN
Mariner Development Company
2203 and 2227 Mariner Square Loop
Alameda, California

Figure 2

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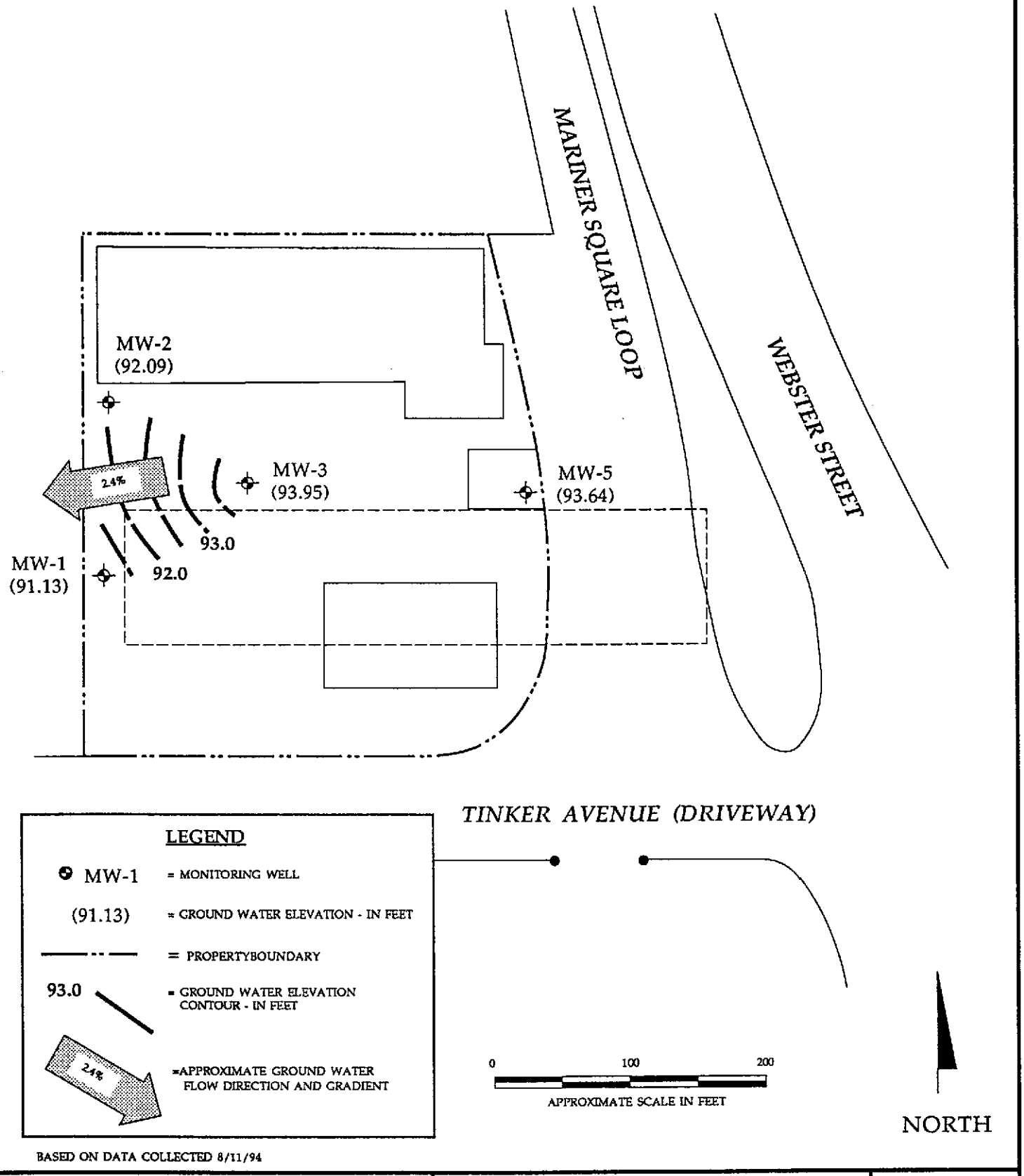

BASED ON DATA COLLECTED 8/11/94

HYDR◆-
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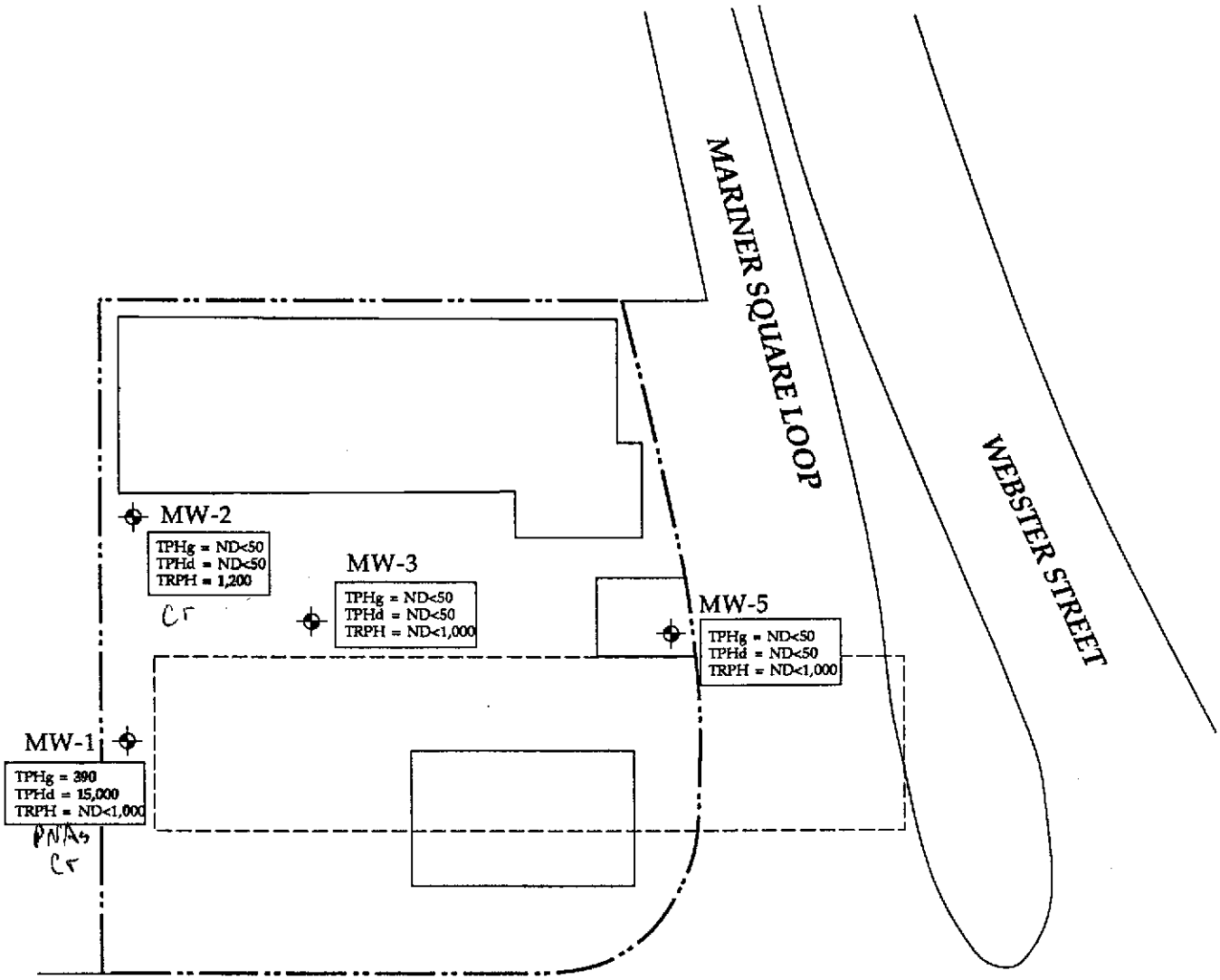
TECHN◆LOGIES, INC.

GROUND WATER CONTOUR MAP

Mariner Development Company
2203 and 2227 Mariner Square Loop
Alameda, California

Figure 3

7-284 9/94



LEGEND

- MW-1 = MONITORING WELL
- = PROPERTY BOUNDARY
- TPHg = ND, TPHd = ND, TRPH = ND = CONCENTRATIONS OF TOTAL PETROLEUM HYDROCARBONS AS GASOLINE (TPHg), AS DIESEL (TPHd) AND TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (TRPH) IN GROUNDWATER SAMPLES - IN PPB

0 100 200

APPROXIMATE SCALE IN FEET

NORTH

BASED ON DATA COLLECTED 8/11/94

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HYDROCARBON CONCENTRATION MAP

Mariner Development Company
2203 and 2227 Mariner Square Loop
Alameda, California

Figure 4

7-284 9/94

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.
CALIFORNIA

DRILLING
WELL CONSTRUCTION
AND
SAMPLING PROTOCOLS

November 1992

DRILLING, WELL CONSTRUCTION, AND SAMPLING PROTOCOLS

Drilling Protocol

Prior to any drilling activities, Hydro-Environmental Technologies, Inc. (HETI) will verify that necessary drilling permits have been secured.

Prior to drilling, underground and above ground utilities will be located using Underground Service Alert (USA) and site reconnaissance. To the extent possible, drilling will be conducted so that disruptions of normal business activities at the project site are minimized. HETI shall obtain and review available public data on subsurface geology and, if warranted, the location of wells within a quarter mile of the project site will be identified. Drilling equipment will be inspected for suitability and integrity prior to performing work.

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

Shallow soil borings will be drilled dry 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 of 3-inches nominal outside diameter (O.D.) for borings not to be completed as wells. The auger size will be a minimum of 8-inches nominal O.D. for borings to be completed as wells. No drilling fluids will be used during this drilling method. All augers and drill rods will initially be thoroughly steam cleaned before arriving on-site, to prevent the introduction of contaminants from off-site, and augers and drill rods which are used will be steam cleaned between borings away from boring locations. Working components of the drilling rig (subs, collars and all parts of the rig chassis near the borehole) will also be steam cleaned. Cleaned augers, rods and other tools, if required, will be stored and covered when not in use. Decontamination of drilling equipment will consist of steam cleaning, and/or trisodium phosphate wash. Cleaning operations will be observed and supervised by a representative of HETI. The drilling rig will also be inspected by a representative of HETI to ensure that no fluids (hydraulic or lubricant) are leaking from the equipment.

Soil Sampling Protocol

Soil samples are typically collected at 5-foot intervals, from the ground surface to the total depth of the boring, with a California Modified split-spoon sampler driven 18 to 24 inches ahead of the lead auger by a 140-pound hammer falling a minimum of 30 inches. The sampler will be lined with clean brass or stainless steel tubes. The number of blows necessary to drive the sampler will be recorded on the boring log and well construction diagram (Plate A-1) to help evaluate the consistency of the materials encountered. Additional soil samples may be collected based on significant lithologic changes and/or potential chemical content. All equipment that contacts soil samples will be thoroughly cleaned prior to arrival at the project site and between each individual sample collection point on-site. New and used split-spoon samplers will be steam cleaned or washed with a trisodium phosphate or Alconox solution, rinsed with tap water, air dried or wiped dry with a clean towel. Soil removed from the top two liners (typically each 4 to 6 inches in length) and the end cone will be used for visual logging purposes and disposed with cuttings produced during the drilling operations. The bottom liner, if suitable, will be preserved for laboratory analysis. Soil samples from each sampling interval will be lithologically described, consistent with the Unified Soil Classification System, by a HETI geologist. The exact depth of all borings to the nearest 1/2-

foot will be determined in the field. Exploratory boring logs shall be prepared under the direction of a Registered Geologist or Professional Engineer.

Head-space analysis will be performed in the field to check for the presence of volatile organic compounds. Head-space analysis will be performed using an organic vapor meter (either flame-ionization or photo-ionization). The method used will be consistent with the method described by Fitzgerald (1989). Organic vapor concentrations will be recorded on the HETI Soil Boring Log (Figure 1). The selection of soil samples for chemical analysis are typically based on the following criteria:

a. Soil discoloration
b. Soil odors
c. Visual confirmation of chemical in soil
d. Depth with respect to underground tanks
e. Depth with respect to groundwater
f. Organic vapor meter reading

The soil sampler and liners will be cleaned with a trisodium-phosphate or Alconox solution, rinsed with clean tap water and air dried or wiped dry with a clean towel prior to each sampling event. Soil samples (full liners) selected for chemical analyses will be covered with aluminum foil or teflon tape and the ends will be sealed with plastic end caps. The end caps will then be taped to ensure a more secure seal. The samples will then be labeled and entered onto a Chain-of-Custody document, and placed in a cooler on blue ice (hard shell) for transport to a state certified analytical laboratory.

Where copper and zinc contamination are the subject of the investigation, stainless steel liners will be used in lieu of brass liners. Stainless steel liners will also be used when the client, additional sampling protocol or regulatory agencies require.

Soil borings will be backfilled (sealed) to the ground surface using either a neat cement or cement-bentonite grout mixture in accordance with appropriate local regulations.

Pending the outcome of the results of the laboratory analyses, excess drill cuttings will remain on-site and, when deemed necessary, covered with a plastic tarp or drummed. Confirmed uncontaminated soils may be appropriately disposed of on-site by the client. Soils found to contain concentrations of contaminants above applicable local or state limits will be placed in appropriately labeled 55-gallon D.O.T. drums or in a hazardous materials drop bin and left on-site for proper disposal by the client. At the clients request, HETI will act as the client's agent by assisting in the disposal of the contained material. In no case will HETI personel sign a Hazardous Waste Manifest.

Well Construction

Monitoring wells shall be installed using a truck-mounted hollow-stem auger drilling rig or an air or mud-rotary drilling rig. Typically, the hollow stem rig will be used for the installation of wells up to 100 feet deep, if subsurface conditions prove favorable. Wells greater than 100 feet in depth will typically be drilled using air or mud-rotary equipment. Mud-rotary equipment will typically be used when alternate methods have failed or proven ineffective.

Monitoring well casing and screen shall be constructed of a minimum of Schedule 40, flush joint, threaded, polyvinylchloride (PVC) pipe. The well screen will be factory mill-slotted. The screen length shall be determined in the field and shall be placed with the intent of setting the screened interval adjacent to the aquifer material. The screen length shall also be set with the intent of placing the top of the screened interval a minimum of 2 feet above the static water

level. All screens and casings used will be in a contaminant-free condition when placed in the ground. No thread lubrication shall be used, other than teflon tape or distilled water, during the connection of individual lengths of screened and solid well casing. Screen shall not be placed in a borehole that creates hydraulic interconnection of two or more distinctly separate aquifer units. Screen slot size will be chosen to be compatible with the encountered aquifer materials. The screen slot size will be chosen to retain a high percentage of the filter pack or natural formation. The remainder of the well casing, above the screened interval, shall be of solid riser casing. A sand pack shall be placed in the remaining anular space surrounding the well casing to a minimum of 1 foot above the screened interval. Sand pack shall not be placed such that it interconnects two or more distinctly separate aquifer units. Sand pack shall be chosen to be compatible with both the aquifer materials and the screen slot size. Sand pack shall consist of clean, washed, kiln dried silica sand. A minimum 1-foot thick bentonite pellet or bentonite slurry seal shall be placed above the sand pack. All bentonite shall be hydrated by either formation water or steam-distilled water. The remaining annular space above the bentonite seal shall be grouted with a neat cement or bentonite-neat cement mixture and shall be placed from the top of the bentonite pellet seal to within 6 inches of the top of the well. If used, the bentonite content of the mixture shall not exceed 5 percent by weight. Sand pack, bentonite, and cement seal levels will be confirmed during construction by measuring the remaining anular space with a calibrated weighted tape. If shallow water table conditions prevail, the screen interval will be placed such that the screen height above the static water level is reduced and a maximum possible surface seal can be achieved. A field boring log and well construction diagram (Plate A-1) shall be prepared by a representative of HETI for each well completed. Monitoring and extraction wells shall be constructed with Class-A cement/bentonite grout or bentonite pellets tremied into position as a base for the well casing if necessary. The well casing will be set within the aquifer according to the proposed function of the well and the chemistry of the potential contaminants.

In the event a monitoring well is required to be installed in an aquifer unit underlying an existing, shallower aquifer, the well will be completed in the lower aquifer such that only water from the lower aquifer is drawn into the well. The upper aquifer will be sealed by installing a steel conductor casing which extends to the base of the shallow aquifer. The steel casing will be tremied into position with an annular neat cement or cement-bentonite grout seal placed between the outside wall of the casing and the wall of the borehole. The cement grout will be allowed a minimum of 72 hours to set prior to advancing the boring beyond the sealed conductor casing and into the next aquifer. After 72 hours, the boring will be advanced below the seal and completed as a well as described above but within the steel conductor casing.

The tops of all well casings will be sealed and placed in a vandal resistant, traffic rated box to prevent entry of surface contamination, unauthorized entry and tampering.

Monitoring wells will be surveyed to obtain north-end casing elevations to the nearest $\pm$ 0.01 foot. Water level measurements will be recorded with an interface probe to the nearest $\pm$ 0.01 foot and referenced to either a project datum or mean sea level (MSL). A project site datum is typically chosen such that it will remain in the event the project site undergoes a physical change as a result of construction or other cultural disturbance. Where required, the wells will be surveyed by a licensed land surveyor relative to the nearest bench mark and relative to mean sea level. Typically, the establishment of a known, on-site reference by a licensed survey, is enough to allow for the remaining well top elevations to be determined using a survey level and rod. Unless directed otherwise by local regulatory agencies, the well top elevations will be established in this manner.

Well Development

After installation, all monitoring wells shall be developed to remove fine grained sediments from the well and to stabilize sand, gravel and disturbed aquifer materials in the annular area around the screened interval. Well development will be accomplished by air-lift pump, suction-lift pump, submersible pump, bladder pump, surge block, bailer or any combination of the above. All well development equipment will be decontaminated prior to development using a steam cleaner and/or trisodium-phosphate solution wash, clean water rinse, and steam distilled water rinse. Well development will continue until each well is relatively free of turbidity. The adequacy of well development will be assessed by a HETI geologist. Where appropriate, indicator parameters (pH, specific conductance, temperature, and turbidity) will be monitored during well development. Field instrument calibrations will be performed prior to use according to manufacturers specifications.

Well Head Completion and Site Clean-up

Monitoring wells shall be completed below grade unless special conditions exist that require above grade design. Monitoring well casing (including the well locking seal and cap) will be completed approximately two inches below the vandal resistant traffic rated road box cover. Except in areas where snow plows might be used, the road box cover shall be completed approximately one inch above the existing grade surface to allow for precipitation runoff. All concrete work, both inside and outside the road box, shall be completed with a smooth finish.

Above ground completions will be set inside a 2 to 3 foot tall locking steel protective casing. If traffic conditions dictate, three 4-inch diameter steel pipes will be set in concrete in a triangular pattern to act as bumper posts. The posts will be set 2 feet deep and will be filled with concrete. A four foot square, 3-inch thick concrete pad which slopes away from the well will be set around each well. Both the protective steel well casing and the bumper posts will be painted yellow.

The project site shall be left as clean as possible. All soils and excess concrete produced from each monitoring well will be placed in appropriate areas to be disposed as previously described. All monitoring well locations will either be broomed or washed down such that staining of the existing surface cover is minimized.

GROUNDWATER SAMPLING AND ANALYSIS

Quality Assurance/Quality Control Objectives

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

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

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

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

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

5. Representativeness - the degree to which a sample or group of samples reflect the characteristics of a media at a given sampling point. Also includes the degree to which a sampling point represents the actual parameter variations which are under study.

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

GUIDANCE AND REFERENCE DOCUMENTS USED TO COLLECT GROUNDWATER SAMPLES

U.S.E.P.A. - 339/9-51-002	NEIC Manual for Groundwater/ Subsurface Investigation at Hazardous Waste Sites
U.S.E.P.A. - 503/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. - SW-846#, 3rd Edition	Test Methods for Evaluating Solid Waste - Physical/Chemical Methods (November, 1986) and latter additions
40 CFR 136.3e Table II	Required Containers, Preservation Techniques, and Holding Times
Resources Conservation and Recovery 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)
California 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 Board	Leaking Underground Fuel Tank Control (LUFT) Field Manual (May, 1988), and LUFT Field Manual Revision (April, 1989)

State of California Water Resources 85), Control Board	Title 23 (Register #85.#33-8-17- Subchapter 16: Underground Tank Regulations; Article 3, Sections 2632 and 2634; Article 4, Section 2647 (October, 1986)
Santa Clara Valley Water District	Guidelines for Investigating Fuel Leaks (March, 1989)
Santa Clara Valley Water District	Guidelines for Preparing or Reviewing Sampling Plans for Soil and Groundwater Investigation of Fuel Contamination Sites (January, 1989)
Alameda County Water District	Groundwater Protection Program: Guidelines for Groundwater and Soil Investigations at Leaking Underground Fuel Tank Sites (most recent revision)
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 2212-18,December, 1983
American Petroleum Institute Environmental Affairs Dept., June, 1983	Groundwater Monitoring & Sample Bias
The Bay Area Air Quality Management District	Regulation 8 - Rule 40 & Rule 48

Because groundwater samples collected by HETI are analyzed in the parts per billion (ppb) range for many analytes, care is exercised to prevent contamination of samples. When volatile or semivolatile organic compounds are included for analysis, HETI sampling crew members will adhere to the following precautions in the field:

1. A new pair of clean, disposable, latex (or comparable material) gloves are to be worn for each well to be sampled.

2. When possible, samples will first be collected from wells known or suspected to contain the fewest contaminants, followed by wells in increasing order of degree of contamination.

3. All sample bottles and equipment are to be kept away from fuels and solvents. When possible, gasoline (used in generators and water pumps) is to be shipped to the project site in separate compartments of the same vehicle or in a separate vehicle as that in which sample bottles are shipped.

4. Sampling bailers are to be composed of polyethylene (when dedicated to the well), Teflon or stainless steel. Other materials, such as acrylic, may contain phthalate esters which can interfere with gas chromatography (GC) analyses. Well purging may be performed with PVC bailers.

5. Volatile organic groundwater 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 is screwed on tightly. The sample is then inverted and lightly tapped while the sampler inspects the contents of the bottle for an air bubble. The absence of an air bubble indicates a successful seal. If a bubble is evident, the cap is removed and more water is added to the sample. The inspection procedure is repeated and if bubbles persist, the vial is discarded in a container designated for used and broken vials and bottles and the sample filling procedure is repeated with another vial.

6. Extra vials shall be available for use in the event of dropped bottles and/or caps. Any bottle which has come in contact with the ground shall be considered contaminated and shall not be used. When replacing septa, or if septa become inverted, care shall be taken to assure that the Teflon seal faces the interior of the bottle.

7. All preservatives shall be provided by the contract analytical laboratory.

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

1. Trip Blank - Used for purgable organic compounds only; QC samples shall be collected in 40 milliliter (ml) sample vials filled in the analytical laboratory with organic free water. Trip blanks should be sent to the project site, and travel with the samples from the project site. Trip blanks are <u>not</u> opened, and are returned from the project site with the samples from the project site for analysis.

2 Field Blank - Prepared in the field using steam-distilled water. Field blank QC samples shall accompany project site samples to the laboratory and shall be analyzed for the same chemical parameters as those samples taken from the project site.

3. Equipment Blank - Equipment Blank QC samples shall be prepared in the field using field equipment rinsate between two different wells after the equipment has been washed and rinsed. The equipment blank will consist of deionized water retained in the sampling equipment. These QC samples will only be taken when a dedicated bailer is not used for sampling.

4. Duplicates - Duplicate QC samples shall be collected "second samples" from a selected well and project site. Duplicates shall be collected as either split samples or second-run samples (i.e. later date) from the same well.

The number and types of QC samples shall be determined by HETI on a site-specific basis.

GROUNDWATER SAMPLE COLLECTION

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

1. Collect groundwater samples which are representative of the sampled matrix.

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

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

Decontamination Procedures

All physical parameter measuring and sampling equipment shall be decontaminated prior to measurement and sample collection using a trisodium phosphate or Alconox solution wash, followed by two separate rinses in tap water, followed by one rinse in steam-distilled water. Any sampling equipment surfaces or parts that might absorb specific contaminants, such as plastic pump valves, impellers, etc., are to be cleaned in the same manner.

Sample bottles, bottle caps, and septa used for sampling volatile organics are thoroughly pre-cleaned in either the laboratory or the factory. All appropriate measures shall be taken to assure continued sterility of the containers issued by the contract laboratory prior to usage at the project site.

During field sampling, equipment which has been placed in a well shall be decontaminated by washing with a trisodium-phosphate or Alconox solution followed by two rinses in tap water and one rinse in steam-distilled water.

Water Level Measurements

Prior to purging and sampling any wells, the static-water level shall be measured by use of an electronic sounder and/or calibrated portable oil-water interface probe. Both static water level and separate phase product thickness shall be measured and noted to the nearest ± 0.01 foot. Interface probe results shall be confirmed by sampling the top of the water column with a clear bailer and measuring any floating product thickness to the nearest ± 0.01 foot with an engineers scale tape. In all cases a clear bailer sample will be taken from each well to check for color, sheen and undetected floating product. If floating product of any measureable thickness is observed, no sampling will be performed for that well. If visible product sheen is observed, sampling shall proceed under normal protocols.

The line used to lower the bailer shall be discarded after each use to preclude the possibility of cross contamination. Field observations (e.g., well integrity, product odor, turbidity, water color, odors, etc.) shall be recorded on the HETI Purge/Sample Sheet (Plate A-2). Before and after the use of the electric sounder, interface probe, non-dedicated bailer, or any other down well equipment, each will be decontaminated by washing in a trisodium phosphate or Alconox solution, followed by a double rinse with tap water, followed by a rinse with steam-distilled water.

Well Purging

Before sampling commences, well casing storage water and interstitial water in the artificial sand pack shall be purged from the well using: (1) a positive displacement bladder pump constructed of inert non-wetting Teflon and stainless steel; (2) a pneumatic-airlift pumping system; (3) a centrifugal pumping system; or (4) a PVC, Teflon or stainless steel bailer. Methods of purging will be assessed based on the well size, location, depth, accessibility, and known chemical conditions. Individual well purge volumes are calculated from the casing volumes. In general, a minimum of 3 to 5 casing volumes will be purged. Wells which dewater or demonstrate slow recharge capacities (i.e., low yield wells which only recover to 70 percent of initial water column height after 1 hour) during purging activities may be sampled after fewer than 3 to 5 purging cycles. If a low yield well is to be sampled, sampling shall not take place until at least 70 percent of the previously measured water column has been replaced by recharge. Monitoring wells shall be purged according to the protocol flowchart presented in Plate A-3. Water removed from the wells will either be disposed or stored in 55-gallon DOT drums for future disposal according to proceedures outlined for contaminated soil cuttings in the Soil Sampling Protocol section above. Where appropriate, physical parameters (pH, specific conductance, and temperature) will be monitored by HETI field crew during well purging operations. If necessary, purging may continue until all three physical parameters have stabilized. Stability shall be defined as a change of less than 0.2 pH units, less than 10 percent in micro mhos, and less than 1.0 degree Centigrade. The pH meters shall be read to the nearest $\pm$ 0.1 pH units. Specific conductance meters shall be read to the nearest $\pm$ 10 micro-mhos per centimeter. Both types of meters shall be calibrated daily to manufacturer's specifications. Temperature shall be read to the nearest $\pm$ 0.1 degree centigrade. Field data collected while developing, purging and sampling the wells will be entered onto the HETI Purge/Sample Sheet (Plate A-2). Copies of the Purge/Sample Sheets will be reviewed for accuracy and completeness for each well sampled.

DOCUMENTATION

Sample Container Labels

Each sample container shall be labeled immediately after the sample is collected and sealed. The label shall include:

- Company Name (HETI)
- Source (i.e., well number or code)
- Sampler's identification
- Project number
- Date and time of collection
- Type of preservation (if any) used

Field Sampling Data Sheets

In the field, the HETI sampling crew will record the following information on the Purge/Sample Sheet (Plate A-2) for each well sampled:

- Project number
- Client
- Location
- Source (i.e., well number or code)
- Time and date of development, purging and sampling
- Well accessibility and integrity
- Pertinent well data (e.g., total depth, product thickness, static water level)
- Physical parameters when appropriate (e.g., specific conductance, pH, temperature) - may be more than one reading
- Gallons and well casing volumes purged

Chain-of-Custody

A chain-of-custody record shall be completed and will accompany every shipment of samples to the analytical laboratory in order to establish documentation tracing sample possession from the time of collection until delivery to the laboratory. The record will contain the following information:

- Sample or station number or code (ID)
- Signature of the collector, sampler, or recorder
- Date and time of collection
- Place of collection (project address and name of business)
- Sample type (soil or water)
- Type of analysis requested
- Signatures of persons involved in chain of possession (in chronological order)
- Dates and times of individual possession (inclusive)
- Laboratory comments regarding the sample receptacle conditions

Samples will always be accompanied by a Chain-of-Custody record. When transferring the samples, the individuals relinquishing and receiving the samples will sign, date and note the time on the Chain-of-Custody record.

Sample Collection, Handling, Storage and Transport

All water samples will be collected in an order such that those parameters most sensitive to volatilization will be sampled first. A general order of collection for some common groundwater parameters is as follows:

- Volatile Organic Compounds (VOC's)
- Total Organic Halogens (TOH)
- Total Organic Carbon (TOC)
- Extractable Organics
- Total Metals
- Dissolved Metals
- Phenols
- Sulfate and Chloride
- Nitrate and Ammonia
- Turbidity

All samples from the same well shall be collected immediately after purging or when the well recovers to 70 percent of the original water column height. All samples from one sampling set from a single well should be collected on the same day.

All chemical sample handling and storage will be conducted under the direction of HETI's consulting analytical chemist. All laboratory chemical testing will be accomplished by a state approved analytical laboratory.

All water samples will be held at 4°C by packing them in a water-tight container inside an ice chest and covering with hard shelled "blue ice™". In no event shall the time between sample collection and delivery to the contract laboratory be greater than 72 hours. Preservatives will not be added to any sample by the sampling crew, unless instructed by the consulting analytical chemist. If added in the field, preservatives shall be supplied by the contract analytical laboratory. No one will open the samples other than laboratory personnel who will perform the specified chemical analyses.

If it is necessary for samples or sample ice chests to leave the immediate control of the sampling crew prior to delivery to the laboratory or laboratory courier, such as shipment by a common carrier (e.g., UPS™), a custody seal will be placed on each sample container and/or sample chest. Custody seals will be placed to ensure that the samples have not been tampered with during shipment and will contain the samplers signature, the date and time the seal was emplaced.

TABLE A-1

SAMPLE ANALYSIS METHODS, CONTAINERS, PRESERVATIVES, AND HOLDING TIMES

Parameter	Analytical Method	Reporting Units	Container*	Preservation†	Maximum Holding Time
Total Petroleum Hydrocarbons (low to med. b.p. i.e. gasoline)	EPA 8015 (DHS modified)	ppb ug/l	40ml glass vial, Teflon lined septum	4°C HCl to pH<2**	14 days
Benzene Toluene Ethylbenzene Xylenes (BTEX)	EPA 8020	ppb ug/l	40ml glass vial, Teflon lined septum	4°C HCl to pH<2**	7 days(w/o preservative) 14 days (w/preservative)
Oil & Grease	SM 503A&E	ppb ug/l	1L glass jar, Teflon lined cap	4°C H2SO4 to pH<2	28 days
Total Petroleum Hydrocarbons (high. b.p. i.e. diesel)	EPA 8015 (DHS modified)	ppb ug/l	1L glass jar, Teflon lined cap	4°C	14 days
Halogenated Volatile Organics (chlorinated solvents)	EPA 8010	ppb ug/l	40ml glass vial, Teflon lined septum	4°C	14 days
Non-Chlorinated Solvents	EPA 8020	ppb ug/l	as above	4°C	14 days
Volatile Organics (GC/MS)	EPA 8240	ppb ug/l	as above	4°C	14 days
Semi-Volatile Organics (GC/MS)	EPA 8270	ppb ug/l	as above	4°C	14 days
Metals	ICP-EPA 200.7 or A.A.EPA-	ppb ug/l	100 ml	4°C HNO3 to pH<2	6 months

* Containers listed are for water - soil containers are to be brass or stainless steel tubes with plastic end caps.

† Applies only to liquid samples.

** May vary depending on lab requirements.

SITE/LOCATION	BEGUN	BORING DIAMETER	ANGLE/BEARING	BORING NO
DRILLING CONTRACTOR	COMPLETED	FIRST ENCOUNTERED WATER DEPTH		
OPERATOR	LOGGED BY	STATIC WATER DEPTH/DATE		
DRILL MAKE & MODEL	SAMPLING METHOD			BOTTOM OF BORING
WELL MATERIAL	SLOT SIZE FILTER PACK	BORING SEAL		WELL NO.

BLOWS/FOOT	FIELD HEAD-SPACE *	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
		1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30					

*PID (ppm)

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE:

APPROVED BY:

SOIL BORING LOG
AND
WELL CONSTRUCTION DIAGRAM
MW-4

PLATE
A-1

JOB NO.

PURGED/SAMPLED BY: _____ DATE: _____

GAUGING DATA:

Depth to bottom: _____ ft.

Depth to water: _____ ft.

Saturated Thickness: _____ ft.

Conversion	
diam.	gals/ft.
2 in.	x 0.16
4 in.	x 0.65
6 in.	x 1.44

Well casing volume _____ gallons

volumes to purge x_____ vols.

*Total volume to purge = _____ gallons

* unless chemical parameters stabilize earlier

PURGING DATA:

Purge method: PVC bailer/ Submersible pump/ Suction lift pump/ _____
(circle one)

Time	Volume (gallons)	Temp. (°F)	Conductivity (mS/cm)	pH

Color: _____ Turbidity: _____

Recharge: _____ SPP_____ft.

SAMPLING DATA:

Sampling method: Dedicated bailer /_____

Sample for: (circle)

TPHg/BTEX	METALS	TOG	8010	
TPHd	O-Pb	TEL	8020	
TPH mo	Total Pb	EDB	8240	
601	602	Nitrates	8260	8270

Other: _____

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

PURGE/SAMPLE SHEET

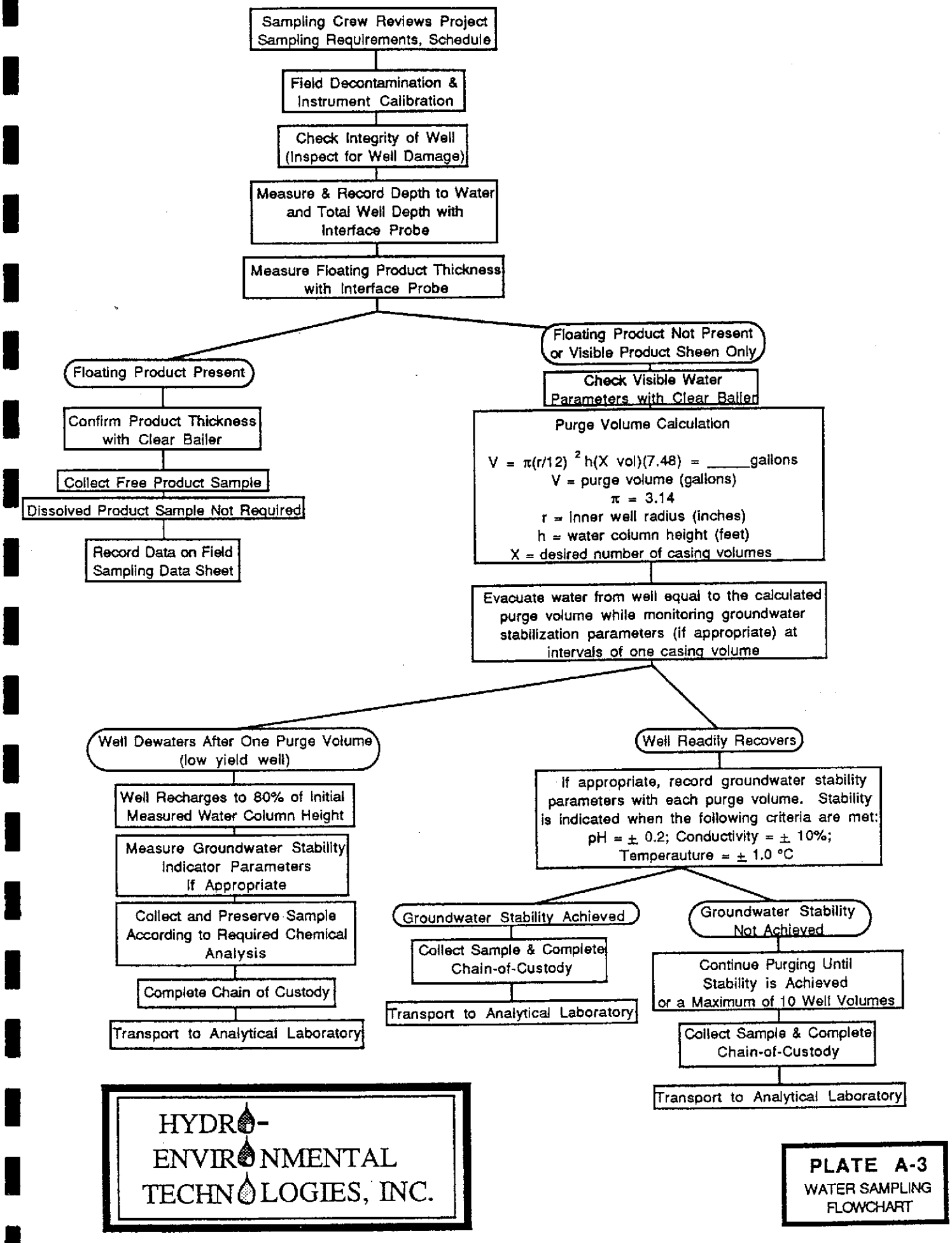
WELL # _____

LOCATION: _____

Job No.

SHEET

of



HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

PLATE A-3
WATER SAMPLING FLOWCHART

SITE SAFETY PLAN

FOR

CLIENT: Mariner Development Company (a California Limited Partnership)

SITE: Alameda, CA Job No: 7-284

ADDRESS: 2203 and 2227 Mariner Square Loop, Alameda California

SCOPE OF WORK (Check all that apply):

Soil Excavation.....	☐	Soil Stockpile Sampling.....	☐
Drilling.....	☑	Monitoring Well Sampling.....	☑
Testing		System Installation	
Aquifer.....	☐	Ground Water.....	☐
Vapor Extraction.....	☐	Vapor Extraction.....	☐
Air Sparging.....	☐	Air Sparging.....	☐
System Operation and Maintenance...	☐		

PURPOSE AND SCOPE

This Site Safety Plan (SSP) establishes the basic safety guidelines and requirements for the above scope(s) of work at the above site (see Site Location Map - Figure 1). This SSP addresses the expected potential hazards that may be encountered during this project.

The provisions set-forth in this SSP will apply to Hydro-Environmental Technologies, Inc. (HETI) employees and any subcontractors working for HETI at the job site. All personnel working for HETI, including subcontractors, at the job site must read this SSP, and sign the attached Compliance Agreement (Appendix A) before entering the work area.

I. SITE HISTORY / WORKPLAN

Site History:

The site was reclaimed from marshlands in the late 1920's. From approximately 1930 to 1960, the San Francisco Airdrome hanger occupied the site. The hanger used to serve as an operations base for commercial and privately owned planes. The hanger housed shop facilities, offices and passenger waiting rooms. Transformers and a steam heating plant were located near the west end of the hanger. In 1960, the hanger building was cut in half and reassembled on Navy Annex property located west of the College of Alameda. The site is now occupied by a restaurant and dance club, and also an athletic club (Figure 2).

Workplan for Preliminary Site Assessment:

In anticipation of refinancing, the property owner requested that HETI conduct a preliminary site investigation. The purpose of this preliminary investigation is to assess the presence or absence of contamination on-site in relation to previously existing potential sources.

Prior to drilling, HETI will obtain monitoring well installation permits. Six 2-inch diameter monitoring wells will be installed under the supervision of a HETI geologist, and will be completed at a depth of approximately 15 feet below ground surface. The borings will be drilled using a hollow-stem auger drill rig, and soil samples will be collected every five feet, at significant changes in lithology, or in areas of obvious contamination. Only those soil samples collected from above the water table will be analyzed. At least 24 hours following well installation, all monitoring wells will be surveyed relative to an arbitrary benchmark, then developed through a combination of surging and bailing of at least ten well volumes. At least 24 hours following well development, ground water samples will be collected from all monitoring wells.
Soil and ground water samples collected will be analyzed for:

- Polynuclear aromatic hydrocarbons (PNA) by EPA Method 8270
- Volatile organic compounds (VOC) by EPA Method 8240
- Total extractable hydrocarbons as diesel (TPHd) by EPA Method 8015 (modified)
- Total volatile hydrocarbons as gasoline (TPHg) by EPA Method 8015 (modified)
- Polychlorinated biphenyls (PCB) by EPA Method 8080
- Total recoverable petroleum hydrocarbons (TRPH) by EPA Method 418.1
- Title 22 Metals

Within 60 days of completion of field work, HETI will prepare a brief report summarizing field activities and results of the investigation. This report will include soil boring logs and well construction diagrams, tables of sampling data, and maps showing the ground water gradient, flow direction and contaminant distribution.

II. KEY SAFETY PERSONNEL AND RESPONSIBILITIES

All personnel working for HETI at the job site are responsible for project safety. Specific individual responsibilities are listed below:

Project Manager: GARY PFISHKE

The Project Manager is responsible for preparation of this SSP. He/she has the authority to provide for the auditing of compliance with the provisions of this SSP, suspend or modify work practices, and to report to the Regional Manager any individuals whose conduct does not meet the provisions presented in this SSP. The Project Manager can be reached at (510) 521-2684.

Site Safety Officer: _____

The Site Safety Officer (SSO) is responsible for the dissemination of the information contained in this SSP to all HETI personnel working at the job site, and to the responsible representative(s) of each subcontractor firm working for HETI at the job site.

The SSO is responsible for ensuring the following items are adequately addressed:

- Inspection of tools, drilling equipment and safety equipment
- Safety supplies & equipment inventory
- Site-specific training/hazard communication
- Accident/incident reporting
- Decontamination/contamination reduction procedures

The Site Safety Officer shall be responsible to take necessary steps to ensure that employees are protected from physical hazards, which could include;

- Falling objects such as tools or equipment
- Falls from elevations
- Tripping over hoses, pipes, tools, or equipment
- Slipping on wet or oily surfaces
- Insufficient or faulty protective equipment
- Insufficient or faulty operations, equipment, or tools
- Noise

The SSO has the authority to suspend work anytime he/she determines the safety provisions set-forth in this SSP are inadequate to ensure worker safety. The SSO or Project Manager must be present during all phases of the site work.

SSO Pager Number: ( )_____

III. JOB HAZARD ANALYSIS / SITE CHARACTERIZATION

CHEMICAL HAZARDS:

The hazardous chemicals which may be encountered at the site are petroleum hydrocarbons, including benzene, toluene, ethylbenzene, and xylene. A summary of relevant chemical, physical and toxicological properties for each chemical hazard associated with aircraft fuel is discussed below:

Benzene:

Colorless liquid with an aromatic odor.

Vapor pressure	75 mm Hg @ 68 °F
Flash point	12 °F
Hazard classification	flammable liquid
Permissable exposure limit (PEL)	~~none~~ 1.0 ppm

Benzene is recognized by the National Institute of Occupational Safety and Health (NIOSH) as a potential human carcinogen.

Benzene can enter the body through all four routes of exposure: (1) inhalation; (2) adsorption; (3) ingestion; and (4) injection. Target organs are the blood, central nervous system, skin, bone marrow, eyes, and respiratory system. Acute exposure effects include irritation of the eyes, nose, and respiratory system as well as headache, nausea, staggered gait, depression, and abdominal pain. The chronic effect of over-exposure is the potential for cancer.

Toluene:

Colorless liquid with an aromatic odor.

Vapor pressure	22 mm Hg @ 68 °F
Flash point	40 °F
Hazard classification	flammable liquid
Permissable exposure limit (PEL)	50 ppm

Toluene can enter the body through all four routes of exposure: (1) inhalation; (2) adsorption; (3) ingestion; and (4) injection. Target organs are the central nervous system, liver, kidneys, and skin. Acute exposure effects include fatigue, dizziness, headache, euphoria, dilated pupils, paralysis.

Ethylbenzene:

Colorless liquid with an aromatic odor.

Vapor pressure	7.1 mm Hg @ 68 °F
Flash point	55 °F
Hazard classification	flammable liquid
Permissable exposure limit (PEL)	100 ppm

Ethylbenzene can enter the body through all four routes of exposure: (1) inhalation; (2) adsorption; (3) ingestion; and (4) injection. Target organs are the eyes, upper respiratory system, skin and central nervous system. Acute exposure effects include

irritation of the eyes and mucous membranes, nose, and respiratory system as well as headache, nausea, staggered gait, headache, dermatitis, narcosis and coma.

Xylenes: Colorless liquid with an aromatic odor.

Vapor pressure	8 mm Hg @ 68 °F
Flash point	63° F to 81 °F
Hazard classification	flammable liquid
Permissable exposure limit (PEL)	100 ppm

Xylenes can enter the body through all four routes of exposure: (1) inhalation; (2) adsorption; (3) ingestion; and (4) injection. Target organs are the central nervous system, eyes, gastrointestinal tract, blood, liver, kidneys and skin. Acute exposure effects include dizziness, excitement, drowsiness, incoordination, abdmominal pain, vomiting, and irritation of the eyes, nose and throat.

Trichloroethylene (TCE)

Colorless liquid with a mild, chloroform-like odor.

Vapor pressure	58 mm Hg @ 68 °F
Flash point	90°F
Hazard classification	Class IC Flammable liquid
Permissable exposure limit (PEL)	1000 ppm

TCE can enter the body through all four routes of exposure: (1) inhalation; (2) adsorption; (3) ingestion; and (4) injection. Target organs are the central nervous system, upper respiratory system, eyes, heart, liver, and kidneys. Acute exposure effects include dizziness, nausea, drowsiness, incoordination, abdmominal pain, vomiting, and irritation of the eyes, skin, nose and throat.

Naphthalene Colorless to brown solid with an odor of mothballs.

Vapor pressure	0.08 mm Hg @ 68 °F
Flash point	174°F
Hazard classification	Combustible solid
Permissable exposure limit (PEL)	500 ppm

Naphthalene can enter the body through all four routes of exposure: (1) inhalation; (2) adsorption; (3) ingestion; and (4) injection. Target organs are the central nervous system, eyes, blood, liver, skin, and kidneys. Acute exposure effects include dizziness, nausea, drowsiness, incoordination, abdmominal pain, vomiting, and irritation of the eyes, headhache and confusion.

The controls to limit potential for exposure to the above chemical hazards is addressed below:

- o Inhalation of contaminants will be controlled by See Section V, VI.

- o Ingestion of contaminants will be controlled by prohibiting eating, drinking, smoking, and chewing in the work area. In addition, workers shall wash their hands and face before engaging in any of the above activities.

- o Absorption of contaminants will be controlled by See Section VI.

- o Injection of contaminants will be controlled by wearing work gloves in the work area.

FIRE HAZARDS:

The potential for fire or explosion exists whenever flammable liquids or vapors are present above lower explosions limit (LEL) concentrations and sufficient oxygen is present to support combustion. These potential fire hazards are addressed below:

- o The potential exists for petroleum hydrocarbon vapors to exceed LEL concentrations within the wells. However, well-gas generally does not contain sufficient oxygen to support combustion.

- o Other potential fire hazards associated with the scope of work have been mitigated by: N/A

- o In addition to the above, the HETI truck shall have an operative fire extinguisher on board. All personnel shall be familiar with its location and use.

ELECTRICAL HAZARDS:

The potential electrical hazards expected on the job site are addressed below:

- o Expected voltages: N/A
- o No electrical enclosures will be opened unless power is disconnected. Power will be verified disconnected with a meter prior to working on any circuits.

PHYSICAL HAZARDS:

The potential physical hazards expected at the job site are addressed below:

- o The potential for physical injury exists from the operation of moving equipment such as drill rigs, forklifts and trucks. Use of steel toe boots, hard hats, and safety glasses will be required when in the work area. Backup alarms are required on all trucks and forklifts.
- o The potential for physical injury exists from public traffic on the site. The site is ☐ is not ☐ open to public vehicles. Work will ☐ will not ☑ be performed in the public right-of-way. If work is performed in the public right-of-way, orange vests shall be worn, a traffic control plan is attached and an encroachment permit from the appropriate government agency shall be obtained.
- o The potential for burns from hot surfaces exist from the operation of an internal combustion engine ☐, an air compressor ☐. Compressed air piping is hot. All hot surfaces shall be allowed to cool and/or be handled with thick cloth work gloves.
- o The potential for noise hazards exist at the site from the operation of Drill rig. It is not expected that noise levels will exceed the acceptable CAL-OSHA permissible exposure level of 90 dB. However, workers should be aware of the presence of these hazards and take steps to avoid them. Ear / noise protection, though not required, shall be available to all personnel within the job site in the event noise levels exceed worker comfort or protection levels.
- o Personnel should be cognizant of the fact that when protective equipment such as respirators, gloves, and/or protective clothing are worn, visibility, hearing, and manual dexterity are impaired.

HEAT STRESS:

The anticipated weather conditions will be: Sunny 80°F.

The potential for heat stress is present if the temperature exceeds 80°F. Some signs and symptoms of heat stress are presented below:

- Heat rash may result from continuous exposure to heat or humid air.

- Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include: muscle spasms, heavy sweating, dizziness, nausea and fainting.

- Heat exhaustion occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include: pale, cool, moist skin; heavy sweating; dizziness; nausea and fainting.

- Heat stroke is the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occurs. Competent medical help must be obtained. Signs and symptoms are: red, hot, unusually dry skin; lack of or reduced perspiration; nausea; dizziness and confusion; strong, rapid pulse and coma.

Preventing heat stress is particularly important because once someone suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat injuries. To avoid heat stress the following steps shall be taken whenever the ambiant temperature is over 80 °F:

1) Field personnel shall have a work/rest cycle of 2 hours work, 15 minutes rest.

2) The Site Safety Officer shall mandate work slowdowns as needed.

IV. JOB HAZARD SUMMARY

In summary, the expected potential hazards to personnel working in the work area are (Check all that apply):

(1) Over exposure to chemical contaminants ☐

(2) Physical injury from equipment being operated at job site ☑

(3) ublic traffic ☑

(4) Hot surfaces ☐

(5) Heat stress ☐

(6) Fire ☐

(7) Electrical shock or Power poles @ PMW-6 ☑

(8) Other ☐

As described in Section III - Job Hazard Analysis, these potential hazards have been mitigated for the protection of both the worker health and safety. The proposed work does not appear to present any potential health risk to workers, the surrounding community, or the environment.

V. EXPOSURE MONITORING PLAN

Periodic monitoring for organic vapors is ☑ is not ☐ required. The Site Safety Officer shall monitor the ambient air in the work area with an organic vapor photoionization meter (Thermo Environmental Model 580B OVM, or equivalent) should their presence be detected by odor. If the meter indicates petroleum hydrocarbon concentrations in the area exceed 300 ppm, the Site Safety Officer shall require personnel in the work area to wear respirators with organic vapor cartridges (MSA 464046, or equivalent).

The manufacturer's calibration procedures for the Model 580B OVM are located within the instrument case. Field calibration shall be performed daily during use.

All personnel working for HETI at the job site shall be monitored for heat stress. Because workers at the job site are expected to be wearing permeable clothing (e.g. standard cotton or synthetic work clothes), monitoring for heat stress will consist of personnel constantly observing each other for any of the heat stress symptoms discussed in Section III.

Field personnel shall be cautioned to inform each other of non-visual effects of the presence of toxins, such as: headaches, dizziness, nausea, blurred vision, cramps, irritation of eyes, skin, or respiratory tract, changes in complexion or skin discoloration, changes in apparent motor coordination, changes in personality or demeanor, excessive salivation or changes in pupillary response or hanges in speech ability or pattern.

VI. PERSONAL PROTECTIVE EQUIPMENT

Level D personal protection equipment is expected to be the highest protective level required to complete the field activities for this project. Modified Level C protection may also be required at the discretion of the Site Safety Officer. The following lists summarize the personal protective equipment that shall be available to all field personnel working in the work area:

Level D Protection (shall be worn at all times)

- Boots, steel toe
- Safety glasses, chemical splash goggles, or face shield
- Hard hat
- Work gloves required ☑ optional ☐
- Long leg trousers
- Long sleeves required ☑ optional ☐

Modified Level C Protection (available at all times.)

- Half-face or full face air purifying respirator with organic vapor cartridges to be used should organic vapor concentrations exceed 300 ppm as discussed in Section V of this SSP.
- Hearing protection

VII. SITE CONTROL

The exclusion, contamination reduction, and support zones are shown in Figure 2. these zones shall be marked with natural barriers, cones or tape as appropriate. Personnel without the proper training, personal protective equipment or who have not agreed to follow this SSP shall not be allowed into the exclusion or contamination reduction zones.

VIII. DECONTAMINATION MEASURES

Field personnel shall wash hands and face before entering a clean area. Additional decontamination measures are discussed under General Safe Work Practices (section IX).

IX. GENERAL SAFE WORK PRACTICES

The project operations shall be conducted with the following minimum safety requirements employed:

- Eating, drinking, and smoking shall be restricted to a designated support zone.
- All personnel shall wash hands and face before eating, drinking, or smoking.

X. SANITATION

The location of the nearest running water source and toilet is @ the office

A portable potable water cooler or other source of drinking water shall be maintained on site.

XI. STANDARD OPERATING PROCEDURES

The following HETI protocols apply to this scope of work:

- Drilling, Well Construction and Sampling Protocols ☑
- Soil Vapor Extraction Protocol ☐
- Air sparging Protocol ☐

XII EMERGENCY RESPONSE PLAN

In the event of an accident resulting in physical injury, first aid will be administered and the injured worker will be transported to

Alameda Hospital, 2070 Clinton Ave

In the event of a fire or explosion, local fire or response agencies will be called by dialling 9-1-1. The Project Manager shall also be notified.

Emergency Telephone Numbers:

Fire and Police **911**
Hospital ..... (510) 523-4357

Directions to Hospital: See Figure 3

From Marriner Sq. Loop, take a RIGHT onto Webster St., take a LEFT onto to Central Ave. Branch to the RIGHT onto Encinal Ave. Take a RIGHT onto Chestnut St., then take a LEFT onto Clinton Ave. Hospital on right

A fire extinguisher, located in the HETI vehicle will be located on-site during all installation, testing and servicing activities.

Additional Contingency Telephone Numbers:

HETI ..... **(510) 521-268**
All cases where an accident has occurred will require filling out an incident / accident report and submitting it within 48 hours of the accident.

XIII. TRAINING REQUIREMENTS

All site personnel will be required to have completed the 40 hours of basic OSHA-SARA training for personnel assigned to hazardous waste sites in compliance with OSHA Standard 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response, and all are required to participate in the annual OSHA-SARA 8-hour refresher courses.

XIV. MEDICAL SURVEILLANCE PROGRAM

HETI personnel and subcontractors engaged in field operations shall be participants in their company Medical Surveillance program, and must be cleared by the examining physician(s) to wear respiratory protection devices and protective clothing for working with hazardous materials. The applicable requirements under California Administrative Code (CAC) Title 8, Section 5216, which is available at the HETI office for review, shall be observed. Project-specific medical surveillance is ☐ is not ☑ required.

XV. DOCUMENTATION

All personnel shall sign the compliance agreement (Appendix A).

Daily documentation shall be provided by a daily log, completed by the Site Safety Officer in his/her field notebook. The Site Safety Officer shall record the names of all personnel working for HETI and any site visitor(s). (S)he shall also record accidents, illness and other safety related matters. In the case of an accident, or injury, during field operations, (s)he will prepare and submit an Incident/Accident Report.

In case air monitoring is implemented, OVM readings (including times) shall be recorded in the daily log.

SSP Prepared by: _____ Date: 6/3/94

SSP Approved by: _____ Date: 6/6/94

Project Manager

COMPLIANCE AGREEMENT

I have read and understand the Site Safety Plan.

I will comply with the minimum safety requirements set forth in this Site Safety Plan. I agree to notify the responsible employee of HETI should any unsafe acts be witnessed by me while I am on this site.

Print Name	Company	Signature	Date
Jonathan Martiny	BLD		6/14/94
SMILIN STEVE SMITH	BLD.		6/14/94
RUARY ALLAN	HETI		6/14/94
SmilinSteve — BLD			7/25/94
Rob Slagle	BLD		7/25/94
RUARY ALLAN	HETI		7-25-94
Dave Steurer	BLD		8-8-94
Kurt Voss	BLD		8-8-94
RUARY ALLAN	HETI		8-8-94

SCALE 1:24000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CALIF

QUADRANGLE LOCATION

SOURCE: USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)
TITLED: OAKLAND WEST QUADRANGLE
PHOTOREVISED 1980

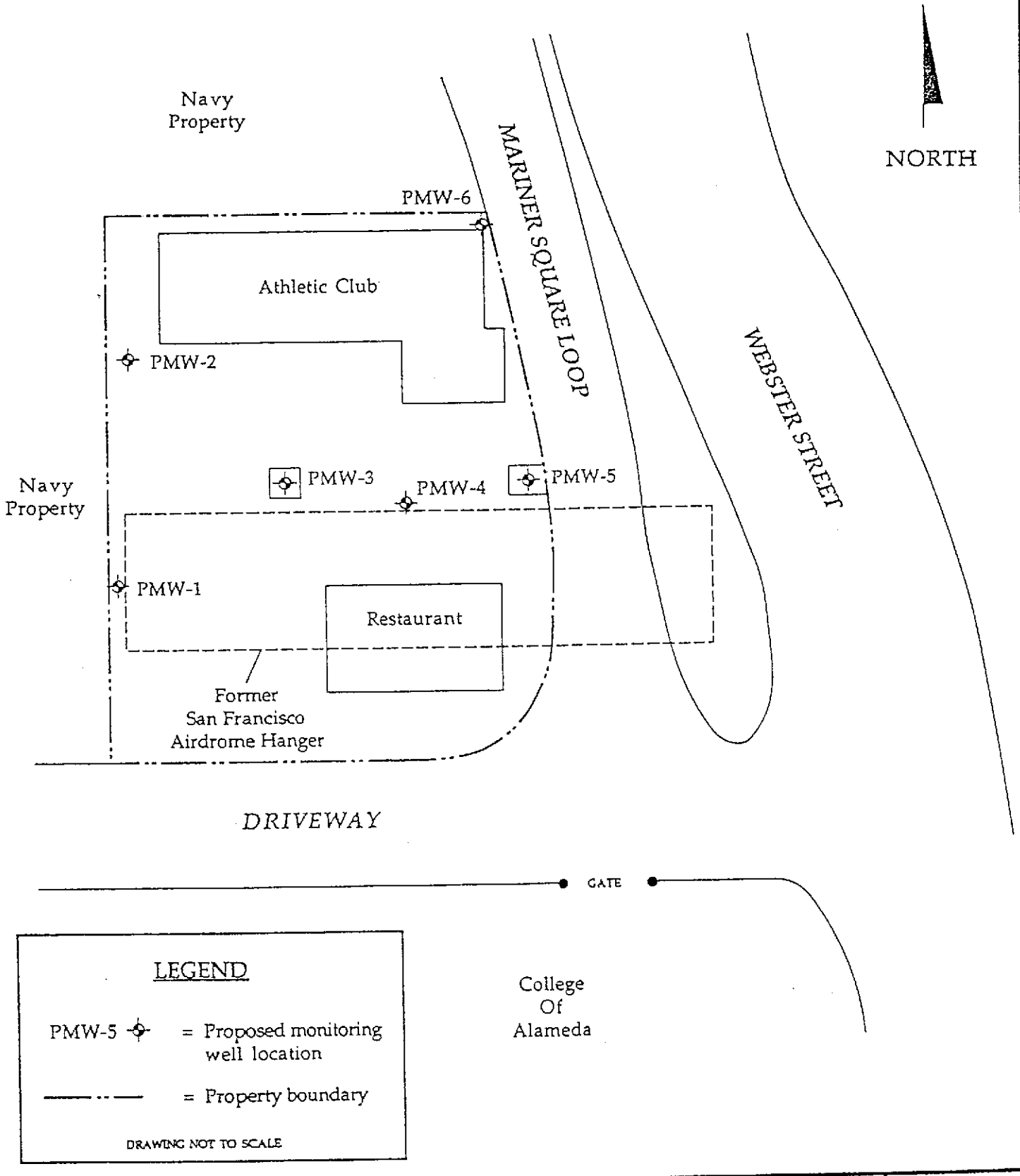
NORTH

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

SITE LOCATION MAP
Mariner Development Company
2203 and 2227 Mariner Square Loop
Alameda, California

Figure 1

7-284 6/94

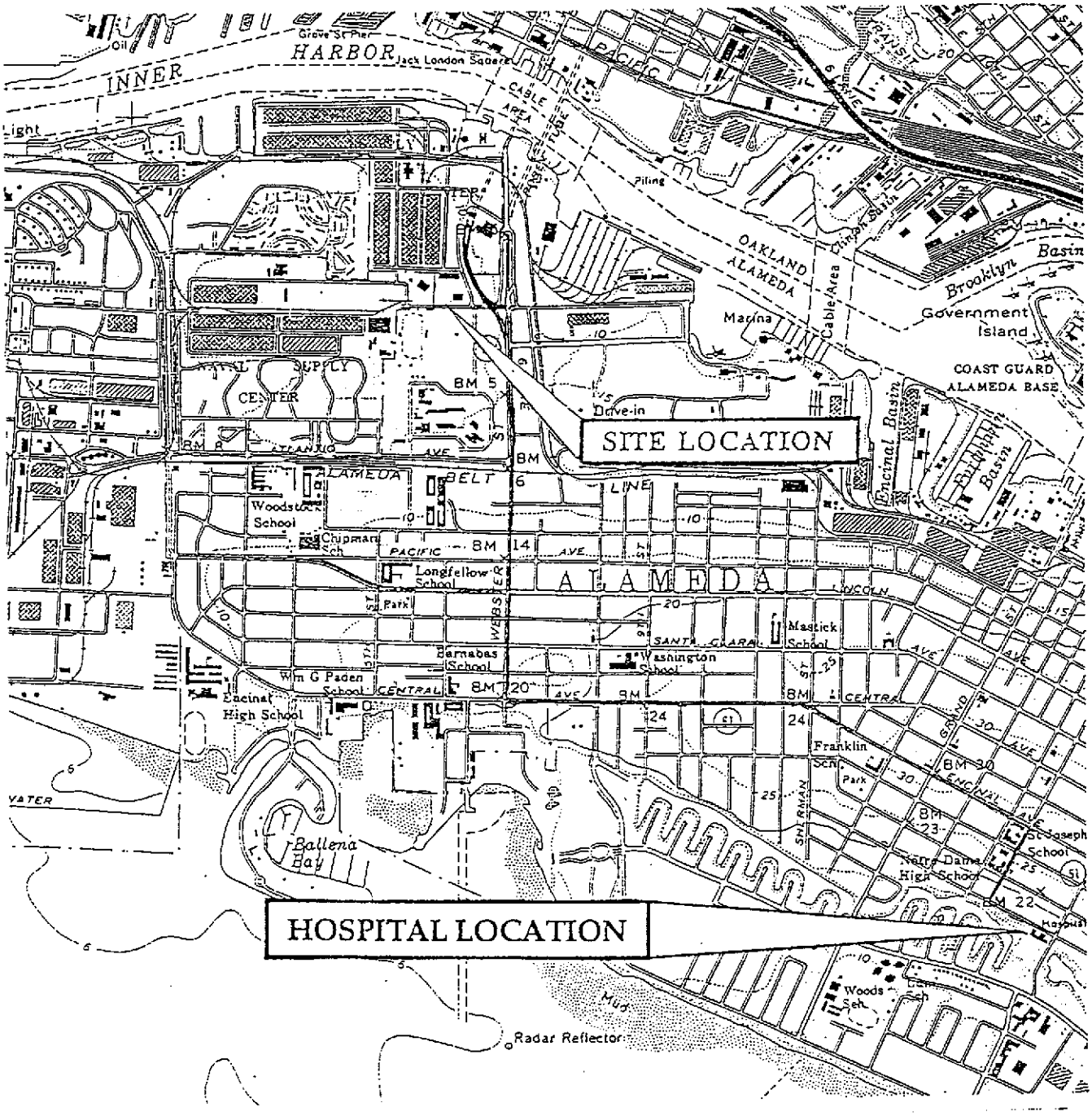


HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

PROPOSED WELL LOCATIONS
Mariner Development Company
2203 and 2227 Mariner Square Loop
Alameda, California

Figure 2

7-284 2/94



SCALE 1:24000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CALIF

QUADRANGLE LOCATION

SOURCE: USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)
TITLED: OAKLAND WEST QUADRANGLE
PHOTOREVISED 1980

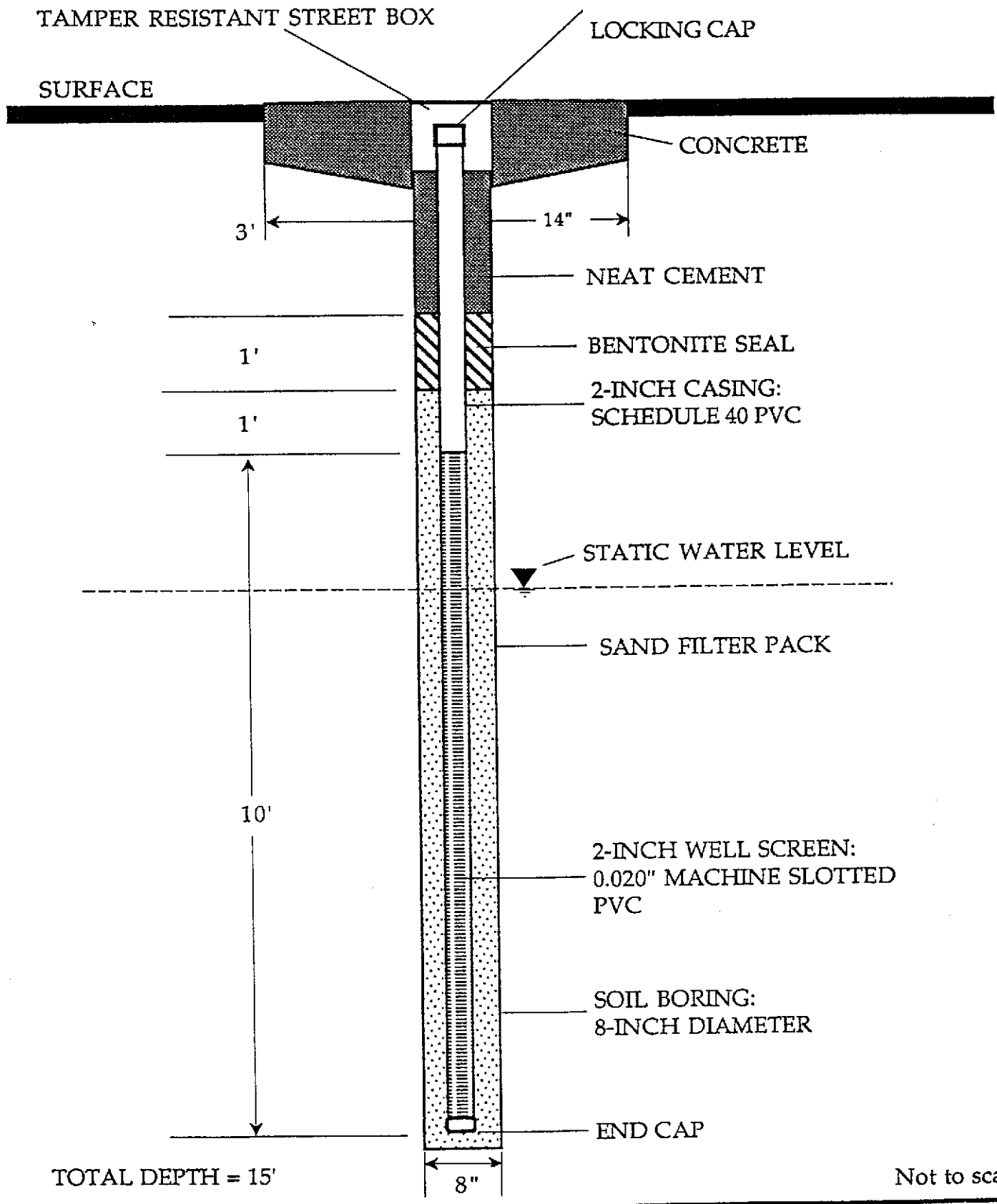
NORTH

HYDRO-
ENVIRONMENTAL
TECHNOLOGIES, INC.

HOSPITAL LOCATION MAP
Mariner Development Company
2203 and 2227 Mariner Square Loop
Alameda, California

Figure
3

7-284 6/94

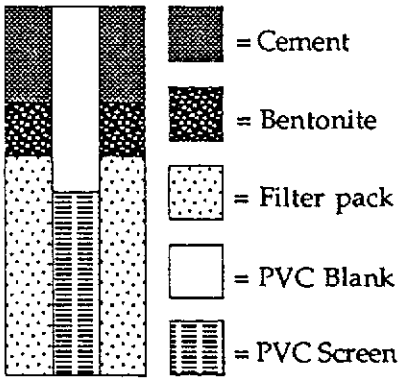


HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.	PROPOSED MONITORING WELL CONSTRUCTION DETAILS Mariner Development Company 2203 and 2227 Mariner Loop Alameda, California	Figure 4 7-284 6/94

UNIFIED SOIL CLASSIFICATION SYSTEM - VISUAL CLASSIFICATION OF SOILS
(ASTM D-2488)

MAJOR DIVISIONS		GROUP SYMBOL	GROUP NAME	DESCRIPTION
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	GW	Well-graded gravel Well-graded gravel with sand	Well-graded gravels or gravel-sand mixtures, little or no fines.
		GP	Poorly-graded gravel Poorly-graded gravel with sand	Poorly-graded gravels or gravel sand mixture, little or no fines.
		GM	Silty gravel Silty gravel with sand	Silty gravels, gravel-sand-silt mixtures.
		GC	Clayey gravel Clayey gravel with sand	Clayey gravels, gravel-sand-clay mixtures.
	SAND AND SANDY SOILS	SW	Well-graded sand Well-graded sand with gravel	Well-graded sands or gravelly sands, little or no fines.
		SP	Poorly-graded sand Poorly-graded sand with gravel	Poorly-graded sands or gravelly sands, little or no fines.
		SM	Silty sand Silty sand with gravel	Silty sands, sand-silt mixtures.
		SC	Clayey sand Clayey sand with gravel	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS	SILTS AND CLAYS	ML	Silt; Silt with sand; Silt with gravel; Sandy silt; Sandy silt with gravel; Gravelly silt; Gravelly silt with sand	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
		CL	Lean clay; Lean clay with sand; Lean clay with gravel Sandy lean clay; Sandy lean clay with gravel Gravelly lean clay; Gravelly lean clay with sand	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	ELASTIC SILTS AND CLAYS	MH	Elastic silt; Elastic silt with sand; Elastic silt with gravel Sandy elastic silt; Sandy elastic silt with gravel Gravelly elastic silt; Gravelly elastic silt with sand	Inorganic silts, micaceous or diatamaceous fine sandy or silty soils, elastic silts.
		CH	Fat clay; Fat clay with sand; Fat clay with gravel Sandy fat clay; Sandy fat clay with gravel Gravelly fat clay; Gravelly fat clay with sand	Inorganic clays of high plasticity, fat clays.
HIGHLY ORGANIC SOILS		OL/OH	Organic soil; Organic soil with sand; Organic soil with gravel Sandy organic soil; Sandy organic soil with gravel Gravelly organic soil; Gravelly organic soil with sand	Organic silts and organic silt-clays of low plasticity Organic clays of medium to high plasticity.
		Pt	Peat	Peat and other highly organic soils.
BEDROCK		Br	Bedrock	Igneous, metamorphic and sedimentary rocks

WELL CONSTRUCTION DETAILS



NOTE: Blow count represents the number of blows of a 140-lb hammer falling 30 inches per blow required to drive a sampler through the last 12 inches of an 18-inch penetration.

No warranty is provided as to the continuity of soil strata between borings. Logs represent the soil section observed at the boring location on the date of drilling only.

S = Sampler sank into medium under the weight of the hammer (no blow count)
P = Sampler was pushed into medium by drilling rig (no blow count)
NR = No Recovery
S-3 = Denotes that sample was sent for laboratory analysis.

Approximate first encountered water level

Approximate stabilized water level

Retained for Analysis { S-3 } Sample Interval

SANDS & GRAVELS	BLOWS/FT
VERY LOOSE	0 - 5
LOOSE	5 - 12
MED. DENSE	12 - 37
DENSE	37 - 62
VERY DENSE	OVER 62

SILTS & CLAYS	BLOWS/FT
SOFT	0 - 5
FIRM	5 - 10
STIFF	10 - 20
VERY STIFF	20 - 40
HARD	OVER 40

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

SOIL BORING AND WELL CONSTRUCTION LOG LEGEND

APPENDIX C

PLATE C-1

SITE/LOCATION	BEGUN	BORING DIAMETER	ANGLE/BEARING	BORING NO
Mariner development	6/14/94	8 inches	90 degrees	B-1
DRILLING CONTRACTOR	**COMPLETED**	**FIRST ENCOUNTERED WATER DEPTH**		**BOTTOM OF BORING**
Bayland	6/14/94	5 feet		14 (15.5) feet
DRILL MAKE & MODEL	**OPERATOR**	**LOGGED BY**	**STATIC WATER DEPTH/DATE**	**WELL NO.**
CME 50	Steve smith	R. Allan	7.30 feet, 8/11/94	MW-1
WELL MATERIAL	**SLOT SIZE**	**SAMPLING METHOD**		**BOTTOM OF WELL**
Sched. 40 PVC	0.02 inches	CA-modified split-spoon		14 feet
FILTER PACK	**WELL SEAL**			**PLANNED USE**
Monterey sand #2/12	Grout over hydrated bentonite pellets			Monitoring

BLOWS/FOOT	PID FIELD HEADSPACE (ppm)	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
		1					CLAY with some gravel (CL); lean, brown, soft, low plasticity clay; well graded, subangular gravel; dry.
		2					
		3					
		4					
		MW-1 4.5' - 5.5' 5		▽			
1 1 1	3773	6					CLAY and SILT (CL); lean, grey, soft, low plasticity; damp.
		7		▼			
		8					
		9					
		10					As above.
1 1 0	26	11					
		12					CLAY with trace sand, gravel, shell fragments and plant debris (CH); fat, dark grey streaked black, stained red-brown, soft, high plasticity clay; trace coarse sand and well graded, subrounded to rounded gravel.
		13					
		14					
		15					
1 0 0	26	16					
		17					
		18					
		19					
		20					

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: 9/16/94

APPROVED BY: Gary Pischke

SOIL BORING LOG AND WELL CONSTRUCTION DIAGRAM

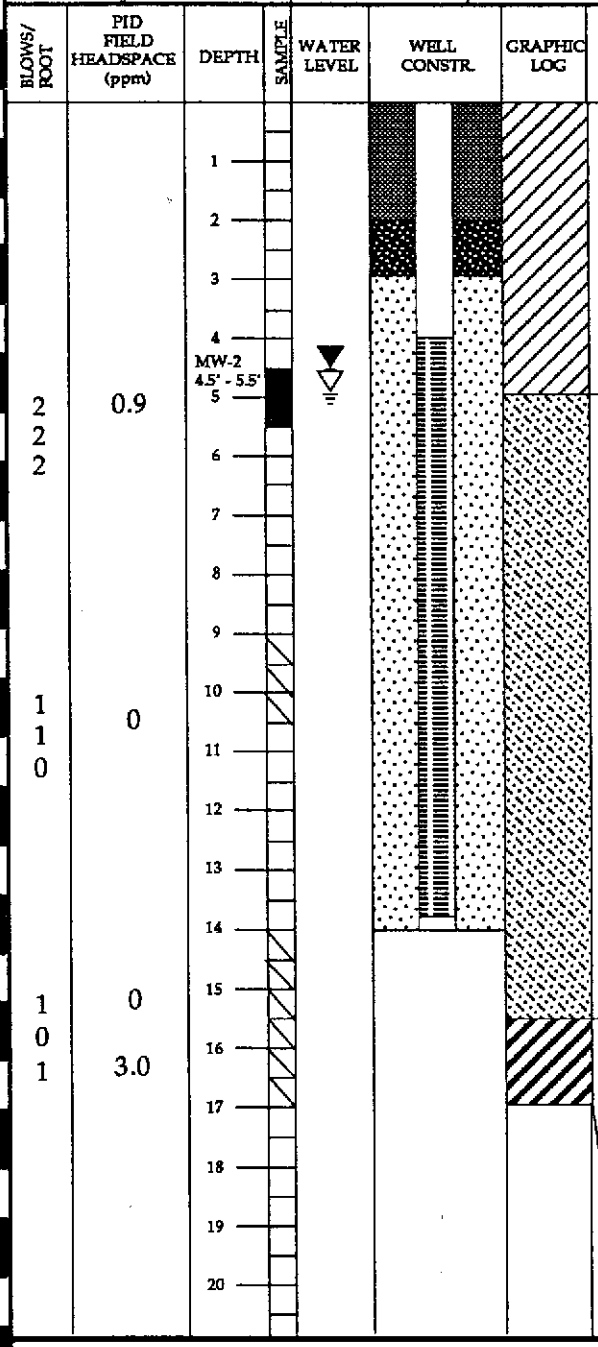
Mariner Development
2203 & 2227 Mariner Square Loop
Alameda, CA

PLATE C-2

SHEET 1 OF 1

JOB NO. 7-284

SITE/LOCATION		BEGUN	BORING DIAMETER	ANGLE/BEARING	BORING NO
Mariner development		6/14/94	8 inches	90 degrees	B-2
DRILLING CONTRACTOR		COMPLETED	FIRST ENCOUNTERED WATER DEPTH		BOTTOM OF BORING
Bayland		6/14/94	5 feet		14 (17) feet
DRILL MAKE & MODEL	OPERATOR	LOGGED BY	STATIC WATER DEPTH/DATE		WELL NO.
CME 50	Steve smith	R. Allan	4.59 feet, 8/11/94		MW-2
WELL MATERIAL	SLOT SIZE	SAMPLING METHOD			BOTTOM OF WELL
Sched. 40 PVC	0.02 inches	CA-modified split-spoon			14 feet
FILTER PACK	WELL SEAL				PLANNED USE
Monterey sand #2/12	Grout over hydrated bentonite pellets				Monitoring



MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION

CLAY with some gravel and little sand (CL); brown, soft, moderate plasticity clay; well graded, sub-angular gravel; mostly coarse grained, sub-angular to sub-rounded sand; dry.

SAND with some silt and trace gravel (SM); grey, soft, fine grained sand; low plasticity silt; trace coarse sand and gravel; damp.

As above.

CLAY with trace sand, gravel, shell fragments and plant debris (CH); fat, dark grey streaked black, stained red-brown, soft, high plasticity clay; trace coarse sand and well graded,subrounded to rounded gravel.

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: 9/16/94

APPROVED BY: Gary Pischke

SOIL BORING LOG AND WELL CONSTRUCTION DIAGRAM

Mariner Development
2203 & 2227 Mariner Square Loop
Alameda, CA

PLATE C-3
SHEET 1 OF 1

JOB NO. 7-284

SITE/LOCATION		BEGUN	BORING DIAMETER	ANGLE/BEARING	BORING NO
Mariner development		6/14/94	8 inches	90 degrees	B-3
DRILLING CONTRACTOR		COMPLETED	FIRST ENCOUNTERED WATER DEPTH		BOTTOM OF BORING
Bayland		6/14/94	5 feet		15 (16.5) feet
DRILL MAKE & MODEL	OPERATOR	LOGGED BY	STATIC WATER DEPTH/DATE		WELL NO.
CME 50	Steve smith	R. Allan	2.63, 8/11/94		MW-3
WELL MATERIAL	SLOT SIZE	SAMPLING METHOD			BOTTOM OF WELL
Sched. 40 PVC	0.02 inches	CA-modified split-spoon			14 feet
FILTER PACK	WELL SEAL				PLANNED USE
Monterey sand #2/12	Grout over hydrated bentonite pellets				Monitoring

BLOWS/FOOT	PID FIELD HEADSPACE (ppm)	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
		1–4		▼			CLAY with some gravel and little sand (CL); brown, soft, moderate plasticity clay; well graded, sub-angular gravel; mostly coarse grained, sub-angular to sub-rounded sand; dry.
1 1 0	0	5 MW-3 5.0' - 6.0' 6		▽			SAND with some silt and trace gravel (SM); grey, soft, fine grained sand; low plasticity silt; trace coarse sand and gravel; damp.
1 1 0	0	7–11					As above.
1 1 0		12–16					As above, moderate plasticity.
		17–20					

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: 9/16/94

APPROVED BY: Gary Pischke

SOIL BORING LOG AND WELL CONSTRUCTION DIAGRAM

Mariner Development
2203 & 2227 Mariner Square Loop
Alameda, CA

PLATE C-4

SHEET 1 OF 1

JOB NO. 7-284

SITE/LOCATION: Mariner development		BEGUN: 6/14/94	BORING DIAMETER: 8 inches	ANGLE/BEARING: 90 degrees	BORING NO: B-5
DRILLING CONTRACTOR: Bayland		COMPLETED: 6/14/94	FIRST ENCOUNTERED WATER DEPTH: 5 feet		BOTTOM OF BORING: 15 (16.5) feet
DRILL MAKE & MODEL: CME 50	OPERATOR: Steve smith	LOGGED BY: R. Allan	STATIC WATER DEPTH/DATE: 5.14 feet, 8/11/94		WELL NO.: MW-5
WELL MATERIAL: Sched. 40 PVC	SLOT SIZE: 0.02 inches	SAMPLING METHOD: CA-modified split-spoon			BOTTOM OF WELL: 14 feet
FILTER PACK: Monterey sand #2/12	WELL SEAL: Grout over hydrated bentonite pellets				PLANNED USE: Monitoring

BLOWS/FOOT	PID FIELD HEADSPACE (ppm)	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
1 1 0	0	1 2 3 4 5 6 MW-5 6.0' - 6.5' 7 MW-5 7.5' - 8.0' 8 9 10		▽			CLAY with some gravel and little sand (CL); brown, soft, moderate plasticity clay; well graded, sub-angular gravel; mostly coarse grained, sub-angular to sub-rounded sand; dry. Logged from cuttings. No returns: 4.0 - 5.5 feet.
1 1 0	0	11 12 13 14 15 16 17 18 19 20					SAND with some silt and trace gravel (SM); grey, soft, fine grained sand; low plasticity silt; trace coarse sand and gravel; damp. Partial returns. As above. Partial returns. CLAY with few shell debris and trace sand (CH); grey, streaked black, soft, plastic, few shell fragments, trace sand; slight anoxic odor; damp. Half-inch thick stringer; sand and clay (SC); fine to medium grained sand; clay same as host sediment; damp.

HYDR◆-
ENVIR◆NMENTAL
TECHN◆LOGIES, INC.

DATE: 9/16/94

APPROVED BY: Gary Pischke

SOIL BORING LOG
AND
WELL CONSTRUCTION DIAGRAM

Mariner Development
2203 & 2227 Mariner Square Loop
Alameda, CA

PLATE
C-5
SHEET 1 OF 1

JOB NO.
7-284

7-284
Permit file

RECEIVED
MAY 27 1994
ZONE 7, ACFC&WCD

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE ♦ PLEASANTON, CALIFORNIA 94566 ♦ (415) 484-2600

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 2203 & 2227 Mariner Square Loop, Alameda, Calif.

CLIENT
Name Mariner Development Company
Address 2236 Mariner Sq. Phone (510) 523-0377
City Alameda, CA Zip 94501

APPLICANT
Name Hydro-Environmental Tech.
Address 2363 Mariner Sq. Dr Phone (510) 521-2684
City Alameda, CA Zip 94501

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	___	General	___
Water Supply	___	Contamination	___
Monitoring	X	Well Destruction	___

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

DRILLER'S LICENSE NO. C57 - 374152

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 15 ft.
Surface Seal Depth 3 ft. Number 6

GEOTECHNICAL PROJECTS
Number of Borings ___ Maximum
Hole Diameter ___ in. Depth ___ ft.

ESTIMATED STARTING DATE June 14, 1994
ESTIMATED COMPLETION DATE June 17, 1994

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE [signature] Date 5/26/94

FOR OFFICE USE

PERMIT NUMBER 94480
LOCATION NUMBER ___

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 13 Aug 94
Wyman Hong

5/1091

MONITORING WELL GAUGING DATA SHEET

GAUGED BY: R. Allan DATE: 8-10-94

GAUGED USING: MMC I/P, ORS I/P, Solinst: (#1,) #2, #3

Monitoring Well I.D.	Depth to Water (feet)	Depth to Bottom (feet)	Separate-phase hydrocarbons thickness (feet)	Replaced parts	Condition/ Comments
MW-1	7.30	14.15	ϕ	No	None
MW-2	4.59	14.11	ϕ	↓	↓
MW-3	2.63	14.07	ϕ		
MW-5	5.14	13.96	ϕ		

HYDRO-
ENVIRONMENTAL
TECHNOLOGIES, INC.

LOCATION: MARINER DEVELOPMENT
MARINER SQ LOOP
ALAMEDA, CA

Job No.
7-284
SHEET
1 of 1

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

WELL WATER DEVELOPMENT DATA

Location: Mariner Development, Mariner Sq. Loop

Date: 6-15-94

MW No.	DTW	DTB	Date Developed	Well Gallons Removed	Well Volume Removed	Remarks/Observations
1	5.7*	14.15	6-15-94	10	10	Turb mod-high unchanged. Unable to complete due to v. slow recharge.
2	3.92	13.95	↓	10	6	Turb still high. Unable to complete due to v. slow recharge.
3	2.22	13.99	↓	19	10	Turbidity from v. high to mod. Went dry three times (10-15min recharge)
5	4.72	13.95	↓	15	10	Turbidity from v high to mod. Sand pack probably too fine Went dry three times -20+ min recharge
	*Probably not equil'd.					
					cumulative TOTAL volume	8-10-94
MW-1			8-10-94	6	16	Turb mod-high well dry.
MW-2			8-10-94	8	11	Turbidity high Well went dry.

DTW = Depth to Water from T. C. (Top of PVC Casing — North Edge)

DTB = Depth to Bottom of Monitoring Well

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC. 8-15-94

SITE SURVEY DATA SHEET

Location: MARINER DEVELOPMENT, ALAMEDA

Client: MARINER DEVELOPMENT Job No. T-284

Station No.	Backshot	Height of Instrument	Foreshot	Well No.	Elevation of Top of Casing	Description of Backshot
1	5.515	105.52	6.74	5	98.78	To center of top
			8.94	3	96.58	surface of fire
			8.84	2	96.68	hydrant on Mar.
			7.09	1	98.43	Sq. Loop (E) side
	5.51					of health club.
	5.51		6.74	5		
			8.95	3		reading incorrect
			8.87	2		by using "replicate"
			7.10	1		value
			8.94	3		correct reading
			8.84	2		
			7.09	1		
	5.51					

TOC = Top of PVC Casing – North Edge

All measurements in feet & hundredths

TBM (Temporary Benchmark)

_____ ft. arbitrary datum =

LOCATION & DESCRIPTION:

_____

_____

PURGED/SAMPLED BY: R. Allan DATE: 8-17-94

GAUGING DATA:

Depth to bottom: 14.15 ft.

Depth to water: 7.30 ft.

Saturated Thickness: 6.85 ft.

Conversion	
diam.	gals/ft.
2 in.	x 0.16
4 in.	x 0.65
6 in.	x 1.44

Well casing volume 1.1 gallons

volumes to purge x 3 vols.

*Total volume to purge = 3½ gallons

* unless chemical parameters stabilize earlier

PURGING DATA:

Purge method: (PVC bailer) / Submersible pump / Suction lift pump / _____ (circle one)

Time	Volume (gallons)	Temp. (°F)	Conductivity (mS/cm)	pH
4.15	1½	75.8	19.49	7.81
	2½	75.1	off scale	7.49
	3½	74.0	off scale	7.33
4.20	4½	73.5	off scale	7.48

Color: grey

Turbidity: mod - high

Recharge: poor

SPP 4 ft.

SAMPLING DATA:

Sampling method: (Dedicated bailer) / _____

Sample for: (circle)

(TPHg) BTEX (METALS) TOC 9010

(TPHd) O-Pb TEL 8020

TPH mo Total Pb EDB (8240)

601 602 Nitrates 8260 (8270)

Other: TRPH, PCBs

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

MONITORING WELL PURGE/SAMPLE SHEET

WELL # MW-1

LOCATION Macmar Development

Job No. 7-284

SHEET 1 of 1

PURGED/SAMPLED BY: R. Allan DATE: 8-11-94

GAUGING DATA:

Depth to bottom: 14.11 ft.

Depth to water: 4.59 ft.

Saturated Thickness: 9.52 ft.

Conversion	
diam.	gals/ft.
2 in.	x 0.16
4 in.	x 0.65
6 in.	x 1.44

Well casing volume 1.52 gallons

volumes to purge x 3 vols.

*Total volume to purge = 5 gallons

* unless chemical parameters stabilize earlier

PURGING DATA:

Purge method: PVC bailer/ Submersible pump/ Suction lift pump/ _____
(circle one)

Time	Volume (gallons)	Temp. (°F)	Conductivity (mS/cm)	pH
3.30	2	78.3	off scale	7.24
	3½	73.6	↓	6.94
	5	71.8	↓	6.88

Color: grey

Turbidity: mod-high

Recharge: poor

SPP 0 ft.

SAMPLING DATA:

Sampling method: Dedicated bailer / _____

Sample for: (circle)

(TPHg)	BTEX	(METALS)	TOG	8010
(TPHd)		O-Pb	TEL	8020
TPH ext		Total Pb	EDB	(8240)
601		602	Nitrates	8260 (8270)

Other: TRPH, PCBs

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

MONITORING WELL PURGE/SAMPLE SHEET

WELL # MW-2

LOCATION MARINER DEVELOPMENT

Job No. 7-284

SHEET 1 of 1

PURGED/SAMPLED BY: R. Allan DATE: 8-11-94

GAUGING DATA:

Depth to bottom: 14.07 ft.

Depth to water: 2.63 ft.

Saturated Thickness: 11.44 ft.

Conversion	
diam.	gals/ft.
2 in.	x 0.16
4 in.	x 0.65
6 in.	x 1.44

Well casing volume 1.83 gallons

volumes to purge x 3 vols.

*Total volume to purge = 5½ gallons

* unless chemical parameters stabilize earlier

PURGING DATA:

Purge method: PVC bailer/ Submersible pump/ Suction lift pump/ _____ (circle one)

Time	Volume (gallons)	Temp. (°F)	Conductivity (mS/cm)	pH
2.20	2	79.9	7.81	6.99
	4	76.7	7.80	6.80
	5½	75.4	8.04	6.71
2.30	7	75.4	7.80	6.97

Color: greenish - grey Turbidity: mod

Recharge: poor - mod SPP 0 ft.

SAMPLING DATA:

Sampling method: Dedicated bailer/ _____

Sample for: (circle)

TPH-g/BTEX	METALS	TOG	8010
TPHd	O-Pb	TEL	8020
TPH ino	Total Pb	EDB	8240
601	602	Nitrates	8260
			8270

Other: TRPH, PCBs

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

MONITORING WELL PURGE/SAMPLE SHEET

WELL # MW-3

LOCATION Mariner Development

Job No. 7-254

SHEET 1 of 1

PURGED/SAMPLED BY: R. Allan DATE: 8-11-94

GAUGING DATA:

Depth to bottom: 13.96 ft.

Depth to water: 5.14 ft.

Saturated Thickness: 8.82 ft.

Conversion	
diam.	gals/ft.
2 in.	x 0.16
4 in.	x 0.65
6 in.	x 1.44

Well casing volume 1.41 gallons

volumes to purge x 3 vols.

*Total volume to purge = 4½ gallons

* unless chemical parameters stabilize earlier

PURGING DATA:

Purge method: PVC bailer / Submersible pump / Suction lift pump / _____ (circle one)

Time	Volume (gallons)	Temp. (°F)	Conductivity (mS/cm)	pH
1.20	1½	82.0	5.45	7.40
	3½	78.3	6.30	7.20
	5½	76.7	8.19	7.02
1.30	6½	75.8	8.09	7.30

Color: gray

Turbidity: mod

Recharge: mod

SPP ~~0~~ ft.

SAMPLING DATA:

Sampling method: Dedicated bailer / _____

Sample for: (circle)

TPHg / BTEX / METALS / TOG / 8010

TPHd / O-Pb / TEL / 8020

TPH mo / Total Pb / EDB / 8240

601 / 602 / Nitrates / 8260 / 8270

Other: TRPH, PCBs

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

MONITORING WELL PURGE/SAMPLE SHEET

WELL # MW-5

LOCATION Mariner Development

Job No. 7-284

SHEET 1 of 1

Trace Analysis Laboratory, Inc.
3423 Investment Boulevard, #8 • Hayward, California 94545
Telephone (510) 783-6960
Facsimile (510) 783-1512

TAL

July 12, 1994

Mr. Gary Pischke
Hydro-Environmental Technologies, Inc.
2363 Mariner Square Drive, Suite 243
Alameda, California 94501

Dear Mr. Pischke:

Trace Analysis Laboratory received four soil samples on June 15, 1994 for your Project No. 7-284, Mariner Development (our custody log number 4509).

These samples were analyzed according to your chain of custody. Our analytical report and the completed chain of custody form are enclosed for your review.

Trace Analysis Laboratory is certified under the California Environmental Laboratory Accreditation Program. Our certification number is 1199.

If you should have any questions or require additional information, please call me.

Sincerely yours,

Scott T. Ferriman
Project Specialist

Trace Analysis Laboratory, Inc.
3423 Investment Boulevard, #8 • Hayward, California 94545
Telephone (510) 783-6960
Facsimile (510) 783-1512

TAL

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/94
DATE EXTRACTED: 06/24/94
DATE ANALYZED: 06/28/94
DATE REPORTED: 07/12/94

CUSTOMER: Hydro-Environmental Technologies, Inc.

REQUESTER: Gary Pischke

PROJECT: No. 7-284, Mariner Development

Sample Type: Soil

Method and Constituent:	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
EPA Method 8080 for PCB:							
Aroclor 1016	ug/kg	ND	33	ND	190	ND	33
Aroclor 1221	ug/kg	ND	33	ND	190	ND	33
Aroclor 1232	ug/kg	ND	33	ND	190	ND	33
Aroclor 1242	ug/kg	ND	33	ND	190	ND	33
Aroclor 1248	ug/kg	ND	33	ND	190	ND	33
Aroclor 1254	ug/kg	ND	33	ND	190	ND	33
Aroclor 1260	ug/kg	ND	33	ND	190	ND	33

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/94
DATE EXTRACTED: 06/24/94
DATE ANALYZED: 06/28/94
DATE REPORTED: 07/12/94
PAGE: Two

Sample Type: Soil

Method and Constituent:	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
EPA Method 8080 for PCB:					
Aroclor 1016	ug/kg	ND	84	ND	33
Aroclor 1221	ug/kg	ND	84	ND	33
Aroclor 1232	ug/kg	ND	84	ND	33
Aroclor 1242	ug/kg	ND	84	ND	33
Aroclor 1248	ug/kg	ND	84	ND	33
Aroclor 1254	ug/kg	ND	84	ND	33
Aroclor 1260	ug/kg	ND	84	ND	33

QC Summary:

% Recovery: 90
% RPD: 5.6

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/94
DATE EXTRACTED: 06/16/94
DATE ANALYZED: 06/27/94
DATE REPORTED: 07/12/94
PAGE: Three

Sample Type: Soil

Method and Constituent:	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
EPA Method 8240:							
Chloromethane	ug/kg	ND	60	ND	60	ND	60
Bromomethane	ug/kg	ND	60	ND	60	ND	60
Dichlorodifluoromethane	ug/kg	ND	60	ND	60	ND	60
Vinyl Chloride	ug/kg	ND	120	ND	120	ND	120
Chloroethane	ug/kg	ND	120	ND	120	ND	120
Iodomethane	ug/kg	ND	1,200	ND	1,200	ND	1,200
Methylene Chloride	ug/kg	ND	1,200	ND	1,200	ND	1,200
Acetone	ug/kg	ND	1,200	ND	1,200	ND	1,200
Carbon Disulfide	ug/kg	ND	1,200	ND	1,200	ND	1,200
Trichlorofluoromethane	ug/kg	ND	120	ND	120	ND	120
1,1-Dichloroethene	ug/kg	ND	60	ND	60	ND	60
Allyl Chloride	ug/kg	ND	60	ND	60	ND	60
1,1-Dichloroethane	ug/kg	ND	60	ND	60	ND	60
Trans-1,2-Dichloroethene	ug/kg	ND	60	ND	60	ND	60
Chloroform	ug/kg	ND	60	ND	60	ND	60
2-Butanone (MEK)	ug/kg	ND	1,200	ND	1,200	ND	1,200
1,2-Dichloroethane	ug/kg	ND	60	ND	60	ND	60
Dibromomethane	ug/kg	ND	60	ND	60	ND	60
1,1,1-Trichloroethane	ug/kg	ND	60	ND	60	ND	60
Carbon Tetrachloride	ug/kg	ND	60	ND	60	ND	60

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/94
DATE EXTRACTED: 06/16/94
DATE ANALYZED: 06/27/94
DATE REPORTED: 07/12/94
PAGE: Four

Sample Type: Soil

Method and Constituent	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
EPA Method 8240 (Continued):							
Vinyl Acetate	ug/kg	ND	600	ND	600	ND	600
Bromodichloromethane	ug/kg	ND	60	ND	60	ND	60
1,2-Dichloropropane	ug/kg	ND	60	ND	60	ND	60
Cis-1 3-Dichloropropene	ug/kg	ND	60	ND	60	ND	60
Bromoacetone	ug/kg	ND	1,200	ND	1,200	ND	1,200
Trichloroethene	ug/kg	ND	60	ND	60	ND	60
Benzene	ug/kg	ND	60	ND	60	ND	60
Chlorodibromomethane	ug/kg	ND	60	ND	60	ND	60
1,1,2-Trichloroethane	ug/kg	ND	60	ND	60	ND	60
Trans-1 3-Dichloropropane	ug/kg	ND	60	ND	60	ND	60
1 2-Dibromoethane (EDB)	ug/kg	ND	60	ND	60	ND	60
2-Chloroethylvinyl Ether	ug/kg	ND	120	ND	120	ND	120
Acrolein	ug/kg	ND	1,200	ND	1,200	ND	1,200
Bromoform	ug/kg	ND	60	ND	60	ND	60
1,1,1,2-Tetrachloroethane	ug/kg	ND	60	ND	60	ND	60
4-Methyl-2-Pentanone (MIBK)	ug/kg	ND	600	ND	600	ND	600
2-Hexanone	ug/kg	ND	600	ND	600	ND	600
1,2,3-Trichloropropane	ug/kg	ND	60	ND	60	ND	60
1,1,2,2-Tetracholorethane	ug/kg	ND	60	ND	60	ND	60
Tetrachloroethene	ug/kg	ND	60	ND	60	ND	60
Toluene	ug/kg	ND	60	ND	60	ND	60
Chlorobenzene	ug/kg	ND	60	ND	60	ND	60
Ethyl Benzene	ug/kg	ND	60	ND	60	ND	60

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/94
DATE EXTRACTED: 06/16/94
DATE ANALYZED: 06/27/94
DATE REPORTED: 07/12/94
PAGE: Five

Sample Type: Soil

Method and Constituent	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
EPA Method 8240 (Continued):							
1,2-Dibromo 3-Chloropropane	ug/kg	ND	1,200	ND	1,200	ND	1,200
Benzyl Chloride	ug/kg	ND	1,200	ND	1,200	ND	1,200
Styrene	ug/kg	ND	60	ND	60	ND	60
Xylenes	ug/kg	ND	180	ND	180	ND	180
1,3-Dichlorobenzene	ug/kg	ND	60	ND	60	ND	60
1,2-Dichlorobenzene	ug/kg	ND	60	ND	60	ND	60
1,4-Dichlorobenzene	ug/kg	ND	60	ND	60	ND	60
Surrogate % Recovery							
1,2-Dichloroethane-d4		91		98		94	
Toluene-d8		117		18		17	
4-Bromofluorobenzne		77		77		74	

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/94
DATE EXTRACTED: 06/16/94
DATE ANALYZED: 06/27/94
DATE REPORTED: 07/12/94
PAGE: Six

Sample Type: Soil

Method and Constituent:	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
EPA Method 8240:					
Chloromethane	ug/kg	ND	60	ND	60
Bromomethane	ug/kg	ND	60	ND	60
Dichlorodifluoromethane	ug/kg	ND	60	ND	60
Vinyl Chloride	ug/kg	ND	120	ND	120
Chloroethane	ug/kg	ND	120	ND	120
Iodomethane	ug/kg	ND	1,200	ND	1,200
Methylene Chloride	ug/kg	ND	1,200	ND	1,200
Acetone	ug/kg	ND	1,200	ND	1,200
Carbon Disulfide	ug/kg	ND	1,200	ND	1,200
Trichlorofluoromethane	ug/kg	ND	120	ND	120
1,1-Dichloroethene	ug/kg	ND	60	ND	60
Allyl Chloride	ug/kg	ND	60	ND	60
1,1-Dichloroethane	ug/kg	ND	60	ND	60
Trans-1,2-Dichloroethene	ug/kg	ND	60	ND	60
Chloroform	ug/kg	ND	60	ND	60
2-Butanone (MEK)	ug/kg	ND	1,200	ND	1,200
1,2-Dichloroethane	ug/kg	ND	60	ND	60
Dibromomethane	ug/kg	ND	60	ND	60
1,1,1-Trichloroethane	ug/kg	ND	60	ND	60
Carbon Tetrachloride	ug/kg	ND	60	ND	60

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/94
DATE EXTRACTED: 06/16/94
DATE ANALYZED: 06/27/94
DATE REPORTED: 07/12/94
PAGE: Seven

Sample Type: Soil

Method and Constituent	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
EPA Method 8240 (Continued):					
Vinyl Acetate	ug/kg	ND	600	ND	600
Bromodichloromethane	ug/kg	ND	60	ND	60
1,2-Dichloropropane	ug/kg	ND	60	ND	60
Cis-1 3-Dichloropropene	ug/kg	ND	60	ND	60
Bromoacetone	ug/kg	ND	1,200	ND	1,200
Trichloroethene	ug/kg	ND	60	ND	60
Benzene	ug/kg	ND	60	ND	60
Chlorodibromomethane	ug/kg	ND	60	ND	60
1,1,2-Trichloroethane	ug/kg	ND	60	ND	60
Trans-1 3-Dichloropropane	ug/kg	ND	60	ND	60
1 2-Dibromoethane (EDB)	ug/kg	ND	60	ND	60
2-Chloroethylvinyl Ether	ug/kg	ND	120	ND	120
Acrolein	ug/kg	ND	1,200	ND	1,200
Bromoform	ug/kg	ND	60	ND	60
1,1,1,2-Tetrachloroethane	ug/kg	ND	60	ND	60
4-Methyl-2-Pentanone (MIBK)	ug/kg	ND	600	ND	600
2-Hexanone	ug/kg	ND	600	ND	600
1,2,3-Trichloropropane	ug/kg	ND	60	ND	60
1,1,2,2-Tetracholorethane	ug/kg	ND	60	ND	60
Tetrachloroethene	ug/kg	ND	60	ND	60
Toluene	ug/kg	ND	60	ND	60
Chlorobenzene	ug/kg	ND	60	ND	60
Ethyl Benzene	ug/kg	ND	60	ND	60

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/94
DATE EXTRACTED: 06/16/94
DATE ANALYZED: 06/27/94
DATE REPORTED: 07/12/94
PAGE: Eight

Sample Type: Soil

Method and Constituent	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
EPA Method 8240 (Continued):					
1,2-Dibromo 3-Chloropropane	ug/kg	ND	1,200	ND	1,200
Benzyl Chloride	ug/kg	ND	1,200	ND	1,200
Styrene	ug/kg	ND	60	ND	60
Xylenes	ug/kg	ND	180	ND	180
1,3-Dichlorobenzene	ug/kg	ND	60	ND	60
1,2-Dichlorobenzene	ug/kg	ND	60	ND	60
1,4-Dichlorobenzene	ug/kg	ND	60	ND	60
Surrogate % Recovery					
1,2-Dichloroethane-d4		96		93	
Toluene-d8		17		119	
4-Bromofluorobenzne		74		76	

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/94
DATE EXTRACTED: 06/24/94
DATE ANALYZED: 06/26/94
DATE REPORTED: 07/12/94
PAGE: Nine

Sample Type: Soil

Method and Constituent:	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
EPA Method 8270:							
Pyridine	ug/kg	ND	3,600	ND	3,600	ND	3,600
N-Nitrosodimethylamine	ug/kg	ND	660	ND	660	ND	660
Phenol	ug/kg	ND	660	ND	660	ND	660
Bis (2-Chloroethyl) Ether	ug/kg	ND	660	ND	660	ND	660
2-Chlorophenol	ug/kg	ND	660	ND	660	ND	660
1,3-Dichlorobenzene	ug/kg	ND	660	ND	660	ND	660
1,4-Dichlorobenzene	ug/kg	ND	660	ND	660	ND	660
1,2-Dichlorobenzene	ug/kg	ND	660	ND	660	ND	660
Bis (2-Chloroisopropyl) Ether	ug/kg	ND	660	ND	660	ND	660
N-Nitroso-Di-N-Propylamine	ug/kg	ND	660	ND	660	ND	660
Acetophenone	ug/kg	ND	660	ND	660	ND	660
2-Methylphenol (O-Cresol)	ug/kg	ND	660	ND	660	ND	660
Hexachloroethane	ug/kg	ND	660	ND	660	ND	660
Nitrobenzene	ug/kg	ND	660	ND	660	ND	660
Isophorone	ug/kg	ND	660	ND	660	ND	660
2-Nitrophenol	ug/kg	ND	660	ND	660	ND	660
2,4-Dimethylphenol	ug/kg	ND	660	ND	660	ND	660
Bis(2-Chloroethoxy) Methane	ug/kg	ND	660	ND	660	ND	660
2,4-Dichlorophenol	ug/kg	ND	660	ND	660	ND	660
1,2,4-Trichlorobenzene	ug/kg	ND	660	ND	660	ND	660
Naphthalene	ug/kg	ND	660	ND	660	ND	660
Hexachlorobutadiene	ug/kg	ND	660	ND	660	ND	660

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/94
DATE EXTRACTED: 06/24/94
DATE ANALYZED: 06/26/94
DATE REPORTED: 07/12/94
PAGE: Ten

Sample Type: Soil

Method and Constituent	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
EPA Method 8270 (Continued):							
3-Methylphenol and 4-Methylphenol (m-Cresol and p-Cresol)	ug/kg	ND	1,300	ND	1,300	ND	1,300
4-Chloro-3-Methyl-phenol	ug/kg	ND	1,300	ND	1,300	ND	1,300
Hexachlorocyclo-pentadiene	ug/kg	ND	660	ND	660	ND	660
2,4,6-Trichlorophenol	ug/kg	ND	660	ND	660	ND	660
2,4,5-Trichlorophenol	ug/kg	ND	660	ND	660	ND	660
2-Chloronaphthalene	ug/kg	ND	660	ND	660	ND	660
Benzoic Acid	ug/kg	ND	3,600	ND	3,600	ND	3,600
Dimethylphthalate	ug/kg	ND	660	ND	660	ND	660
Acenaphthylene	ug/kg	ND	660	ND	660	ND	660
Acenaphthene	ug/kg	ND	660	ND	660	ND	660
2,4-Dinitrophenol	ug/kg	ND	3,600	ND	3,600	ND	3,600
4-Nitrophenol	ug/kg	ND	3,600	ND	3,600	ND	3,600
2,4-Dinitrotoluene	ug/kg	ND	660	ND	660	ND	660
2,6-Dinitrotoluene	ug/kg	ND	660	ND	660	ND	660
Diethylphthalate	ug/kg	ND	660	ND	660	ND	660
4-Chlorophenyl-phenyl-ether	ug/kg	ND	660	ND	660	ND	660
Fluorene	ug/kg	ND	660	ND	660	ND	660
N-Nitrosodiphenylamine	ug/kg	ND	660	ND	660	ND	660
4-Bromophenyl-phenyl-ether	ug/kg	ND	660	ND	660	ND	660
Hexachlorobenzene	ug/kg	ND	660	ND	660	ND	660
Pentachlorophenol	ug/kg	ND	3,600	ND	3,600	ND	3,600
Phenanthrene	ug/kg	ND	660	ND	660	ND	660
Anthracene	ug/kg	ND	660	ND	660	ND	660

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/94
DATE EXTRACTED: 06/24/94
DATE ANALYZED: 06/26/94
DATE REPORTED: 07/12/94
PAGE: Eleven

Sample Type: Soil

Method and Constituent:	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
EPA Method 8270 (Continued):							
Di-N-Butylphthalate	ug/kg	ND	660	ND	660	ND	660
1,2,4,5-Tetrachlorobenzene	ug/kg	ND	660	ND	660	ND	660
4,6-Dinitro-2-Methylphenol	ug/kg	ND	660	ND	660	ND	660
Pentachloronitrobenzene	ug/kg	ND	660	ND	660	ND	660
Fluoranthene	ug/kg	ND	660	ND	660	ND	660
Benzidine	ug/kg	ND	660	ND	660	ND	660
Pyrene	ug/kg	ND	660	ND	660	ND	660
Butylbenzylphthalate	ug/kg	ND	660	ND	660	ND	660
3,3'-Dichlorobenzidine	ug/kg	ND	1,300	ND	1,300	ND	1,300
Benzo(a)Anthracene	ug/kg	ND	660	ND	660	ND	660
Bis(2-Ethylhexyl) Phthalate	ug/kg	ND	660	ND	660	ND	660
Chrysene	ug/kg	ND	660	ND	660	ND	660
Di-N-Octylphthalate	ug/kg	ND	660	ND	660	ND	660
Benzo(b)Fluoranthene	ug/kg	ND	660	ND	660	ND	660
Benzo(k)Fluoranthene	ug/kg	ND	660	ND	660	ND	660
Benzo(a)Pyrene	ug/kg	ND	660	ND	660	ND	660
3-Methylcholanthrene	ug/kg	ND	660	ND	660	ND	660
Indeno(1,2,3-cd)Pyrene	ug/kg	ND	660	ND	660	ND	660
Dibenzo(a,h)Anthracene	ug/kg	ND	660	ND	660	ND	660
Benzo(g,h,i)Perylene	ug/kg	ND	660	ND	660	ND	660
Surrogate % Recovery:							
2-Fluorophenol		109		100		120	
Phenol d6		68		65		69	
Nitrobenzene d5		64		65		64	
2-Fluorobiphenyl		103		100		121	
2,4,6-Tribromophenol		52		41		61	
p-Terphenyl d14		180		150		227	

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/94
DATE EXTRACTED: 06/24/94
DATE ANALYZED: 06/26/94
DATE REPORTED: 07/12/94
PAGE: Twelve

Sample Type: Soil

Method and Constituent:	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
EPA Method 8270:					
Pyridine	ug/kg	ND	3,600	ND	3,600
N-Nitrosodimethylamine	ug/kg	ND	660	ND	660
Phenol	ug/kg	ND	660	ND	660
Bis (2-Chloroethyl) Ether	ug/kg	ND	660	ND	660
2-Chlorophenol	ug/kg	ND	660	ND	660
1,3-Dichlorobenzene	ug/kg	ND	660	ND	660
1,4-Dichlorobenzene	ug/kg	ND	660	ND	660
1,2-Dichlorobenzene	ug/kg	ND	660	ND	660
Bis (2-Chloroisopropyl) Ether	ug/kg	ND	660	ND	660
N-Nitroso-Di-N-Propylamine	ug/kg	ND	660	ND	660
Acetophenone	ug/kg	ND	660	ND	660
2-Methylphenol (O-Cresol)	ug/kg	ND	660	ND	660
Hexachloroethane	ug/kg	ND	660	ND	660
Nitrobenzene	ug/kg	ND	660	ND	660
Isophorone	ug/kg	ND	660	ND	660
2-Nitrophenol	ug/kg	ND	660	ND	660
2,4-Dimethylphenol	ug/kg	ND	660	ND	660
Bis(2-Chloroethoxy) Methane	ug/kg	ND	660	ND	660
2,4-Dichlorophenol	ug/kg	ND	660	ND	660
1,2,4-Trichlorobenzene	ug/kg	ND	660	ND	660
Naphthalene	ug/kg	ND	660	ND	660
Hexachlorobutadiene	ug/kg	ND	660	ND	660

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/94
DATE EXTRACTED: 06/24/94
DATE ANALYZED: 06/26/94
DATE REPORTED: 07/12/94
PAGE: Thirteen

Sample Type: Soil

Method and Constituent	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
EPA Method 8270 (Continued):					
3-Methylphenol and 4-Methylphenol (m-Cresol and p-Cresol)	ug/kg	ND	1,300	ND	1,300
4-Chloro-3-Methyl-phenol	ug/kg	ND	1,300	ND	1,300
Hexachlorocyclo-pentadiene	ug/kg	ND	660	ND	660
2,4,6-Trichlorophenol	ug/kg	ND	660	ND	660
2,4,5-Trichlorophenol	ug/kg	ND	660	ND	660
2-Chloronaphthalene	ug/kg	ND	660	ND	660
Benzoic Acid	ug/kg	ND	3,600	ND	3,600
Dimethylphthalate	ug/kg	ND	660	ND	660
Acenaphthylene	ug/kg	ND	660	ND	660
Acenaphthene	ug/kg	ND	660	ND	660
2,4-Dinitrophenol	ug/kg	ND	3,600	ND	3,600
4-Nitrophenol	ug/kg	ND	3,600	ND	3,600
2,4-Dinitrotoluene	ug/kg	ND	660	ND	660
2,6-Dinitrotoluene	ug/kg	ND	660	ND	660
Diethylphthalate	ug/kg	ND	660	ND	660
4-Chlorophenyl-phenyl-ether	ug/kg	ND	660	ND	660
Fluorene	ug/kg	ND	660	ND	660
N-Nitrosodiphenylamine	ug/kg	ND	660	ND	660
4-Bromophenyl-phenyl-ether	ug/kg	ND	660	ND	660
Hexachlorobenzene	ug/kg	ND	660	ND	660
Pentachlorophenol	ug/kg	ND	3,600	ND	3,600
Phenanthrene	ug/kg	ND	660	ND	660
Anthracene	ug/kg	ND	660	ND	660

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/94
DATE EXTRACTED: 06/24/94
DATE ANALYZED: 06/26/94
DATE REPORTED: 07/12/94
PAGE: Fourteen

Sample Type: Soil

Method and Constituent:	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
EPA Method 8270 (Continued):					
Di-N-Butylphthalate	ug/kg	ND	660	ND	660
1,2,4,5-Tetrachlorobenzene	ug/kg	ND	660	ND	660
4,6-Dinitro-2-Methylphenol	ug/kg	ND	660	ND	660
Pentachloronitrobenzene	ug/kg	ND	660	ND	660
Fluoranthene	ug/kg	ND	660	ND	660
Benzidine	ug/kg	ND	660	ND	660
Pyrene	ug/kg	ND	660	ND	660
Butylbenzylphthalate	ug/kg	ND	660	ND	660
3,3'-Dichlorobenzidine	ug/kg	ND	1,300	ND	1,300
Benzo(a)Anthracene	ug/kg	ND	660	ND	660
Bis(2-Ethylhexyl) Phthalate	ug/kg	ND	660	ND	660
Chrysene	ug/kg	ND	660	ND	660
Di-N-Octylphthalate	ug/kg	ND	660	ND	660
Benzo(b)Fluoranthene	ug/kg	ND	660	ND	660
Benzo(k)Fluoranthene	ug/kg	ND	660	ND	660
Benzo(a)Pyrene	ug/kg	ND	660	ND	660
3-Methylcholanthrene	ug/kg	ND	660	ND	660
Indeno(1,2,3-cd)Pyrene	ug/kg	ND	660	ND	660
Dibenzo(a,h)Anthracene	ug/kg	ND	660	ND	660
Benzo(g,h,i)Perylene	ug/kg	ND	660	ND	660
Surrogate % Recovery:					
2-Fluorophenol		117		104	
Phenol d6		73		67	
Nitrobenzene d5		77		57	
2-Fluorobiphenyl		112		106	
2,4,6-Tribromophenol		59		66	
p-Terphenyl d14		182		213	

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/94
DATE EXTRACTED: 06/29/94
DATE ANALYZED: 06/30/94
DATE REPORTED: 07/12/94
PAGE: Fifteen

Sample Type: Soil

Method and Constituent:	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
EPA Method 418.1:							
Total Recoverable Petroleum Hydrocarbons	ug/kg	ND	50,000	**71,000**	50,000	ND	50,000

Method and Constituent:	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
EPA Method 418.1:					
Total Recoverable Petroleum Hydrocarbons	ug/kg	**180,000**	50,000	ND	50,000

QC Summary:

% Recovery: 101
% RPD: 1.3

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/94
DATE EXTRACTED: 06/17/94
DATE ANALYZED: 07/02/94
DATE REPORTED: 07/12/94
PAGE: Sixteen

Sample Type: Soil

Method and Constituent:	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
DHS Method:							
Total Petroleum Hydrocarbons as Diesel	ug/kg	I6,000	1,000	6,000	1,000	3,600	1,000

Method and Constituent:	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
DHS Method:					
Total Petroleum Hydrocarbons as Diesel	ug/kg	4,300	1,000	ND	1,000

QC Summary:

% Recovery: 85
% RPD: 47

Concentrations reported as ND were not detected at or above the reporting limit.

All of these samples contain compounds eluting later than the diesel standard.

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/94
DATE EXTRACTED: 06/23/94
DATE ANALYZED: 06/24/94
DATE REPORTED: 07/12/94
PAGE: Seventeen

Sample Type: Soil

Method and Constituent:	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
DHS Method:							
Total Petroleum Hydrocarbons as Gasoline	ug/kg	ND	500	19,000	500	ND	500
Modified EPA Method 8020 for:							
Benzene	ug/kg	ND	5.0	ND	7.3	ND	5.0
Toluene	ug/kg	ND	5.0	ND	9.0	ND	5.0
Ethylbenzene	ug/kg	ND	5.0	ND	9.3	ND	5.0
Xylenes	ug/kg	ND	15	93	25	ND	15

Method and Constituent:	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
DHS Method:					
Total Petroleum Hydrocarbons as Gasoline	ug/kg	ND	500	ND	500
Modified EPA Method 8020 for:					
Benzene	ug/kg	ND	5.0	ND	5.0
Toluene	ug/kg	ND	5.0	ND	5.0
Ethylbenzene	ug/kg	ND	5.0	ND	5.0
Xylenes	ug/kg	ND	15	ND	15

QC Summary:

% Recovery: 120
% RPD: 3.7

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/95
DATE EXTRACTED: 06/22/94
DATE ANALYZED: 06/27/94, 06/28/94, and 06/29/94
DATE REPORTED: 07/12/94
PAGE: Eighteen

Sample Type: Soil

Method and Constituent:	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
EPA Method 7040: Antimony	ug/kg	ND	79,000	ND	79,000	ND	79,000
EPA Method 7060: **Arsenic**	**ug/kg**	**4,700**	400	**1,400**	400	**2,600**	400
EPA Method 7080: Barium	ug/kg	ND	50,000	**54,000**	50,000	ND	50,000
EPA Method 7090: Beryllium	ug/kg	ND	120	ND	120	ND	120
EPA Method 7130: Cadmium	ug/kg	ND	250	ND	250	ND	250
EPA Method 7190: **Chromium**	**ug/kg**	**26,000**	1,200	**16,000**	1,200	**19,000**	1,200
EPA Method 7200: Cobalt	ug/kg	ND	12,000	ND	12,000	ND	12,000
EPA Method 7210: **Copper**	**ug/kg**	**33,000**	500	**34,000**	500	**15,000**	500
EPA Method 7420: Lead	**ug/kg**	**21,000**	3,600	**88,000**	3,600	**19,000**	3,600

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/94
DATE EXTRACTED: 06/22/94 and 06/25/94
DATE ANALYZED: 06/23/94, 06/27/94, 06/28/94, and 06/29/94
DATE REPORTED: 07/12/94
PAGE: Nineteen

Sample Type: Soil

Method and Constituent:	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
EPA Method 7471: Mercury	ug/kg	540	120	130	120	150	120
EPA Method 7480: Molybdenum	ug/kg	ND	25,000	ND	25,000	ND	25,000
EPA Method 7520: Nickel	ug/kg	43,000	7,500	17,000	7,500	26,000	7,500
EPA Method 7740: Selenium	ug/kg	ND	250	ND	250	ND	250
EPA Method 7760: Silver	ug/kg	ND	280	310	280	ND	280
EPA Method 7840: Thallium	ug/kg	ND	4,500	ND	4,500	ND	4,500
EPA Method 7910: Vanadium	ug/kg	26,000	5,000	13,000	5,000	16,000	5,000
EPA Method 7950: Zinc	ug/kg	67,000	1,200	60,000	1,200	35,000	1,200

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/95
DATE EXTRACTED: 06/22/94
DATE ANALYZED: 06/27/94, 06/28/94, and 06/29/94
DATE REPORTED: 07/12/94
PAGE: Twenty

Sample Type: Soil

Method and Constituent:	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit	QC Summary % Recovery	QC Summary % RPD
EPA Method 7040: Antimony	ug/kg	ND	79,000	ND	79,000	90*	4.2
EPA Method 7060: **Arsenic**	ug/kg	**3,500**	400	ND	400	62	15
EPA Method 7080: **Barium**	ug/kg	**76,000**	50,000	ND	50,000	74	6.4
EPA Method 7090: Beryllium	ug/kg	ND	120	ND	120	84	4.6
EPA Method 7130: **Cadmium**	ug/kg	**310**	250	ND	250	91	1.4
EPA Method 7190: **Chromium**	ug/kg	**28,000**	1,200	ND	1,200	87	0.5
EPA Method 7200: Cobalt	ug/kg	ND	12,000	ND	12,000	94	2.0
EPA Method 7210: **Copper**	ug/kg	**25,000**	500	ND	500	99	8.9
EPA Method 7420: **Lead**	ug/kg	**42,000**	3,600	ND	3,600	106*	4.2

Concentrations reported as ND were not detected at or above the reporting limit.

* The Recovery is for the Laboratory Control Sample, due to interference in the spiked sample.

TAL Trace Analysis Laboratory, Inc.

LOG NUMBER: 4509
DATE SAMPLED: 06/14/94
DATE RECEIVED: 06/15/94
DATE EXTRACTED: 06/22/94 and 06/25/94
DATE ANALYZED: 06/23/94, 06/27/94, 06/28/94, and 06/29/94
DATE REPORTED: 07/12/94
PAGE: Twenty-One

Sample Type: Soil

Method and Constituent:	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit	QC Summary % Recovery	QC Summary % RPD
EPA Method 7471:							
Mercury	**ug/kg**	**200**	120	ND	120	134	24
EPA Method 7480:							
Molybdenum	ug/kg	ND	25,000	ND	25,000	86	2.8
EPA Method 7520:							
Nickel	ug/kg	**31,000**	7,500	ND	7,500	96	18
EPA Method 7740:							
Selenium	ug/kg	ND	250	ND	250	76	10
EPA Method 7760:							
Silver	ug/kg	ND	280	ND	280	101*	1.0
EPA Method 7840:							
Thallium	ug/kg	ND	4,500	ND	4,500	84	2.4
EPA Method 7910:							
Vanadium	**ug/kg**	**22,000**	5,000	ND	5,000	95	0.2
EPA Method 7950:							
Zinc	ug/kg	**82,000**	1,200	ND	1,200	102	3.9

Concentrations reported as ND were not detected at or above the reporting limit.

* The Recovery is for the Laboratory Control Sample, due to interference in the spiked sample.

Louis W. DuPuis
Quality Assurance/Quality Control Manager

Trace Analysis Laboratory, Inc.
3423 Investment Boulevard, #8 • Hayward, California 94545
Telephone (510) 783-6960
Facsimile (510) 783-1512

TAL

CHAIN OF CUSTODY RECORD

4509

Proj.No.	Project Name	No. of Containers	Analyses: PNA's (EPA Method 8270)	VOC's (EPA Method 8240)	TPHd (8015 mod.)	TPHg (8015 mod.)	PCB (EPA Method 8080)	Title 22 Metals (CAM 17)	TRPH (EPA 418.1)
7-284	Mariner Development								
Company Name and Address: Hydro-Environmental Technologies 2363 Mariner Sq. Dr. Ste 243, Alameda CA 94501									
Project Manager: Gary Pischke									
Sample ID	Date	Time	Site Location						
MW-1	6-14-94	4PM	2415 Mariner Sq Dr., Alameda	2	X	X	X	X	X	X	X
MW-2	↓	2PM	↓	↓	↓	↓	↓	↓	↓	↓	↓
MW-3		9AM									
MW-5		11AM									

Sampled by: (signature)	Date/Time	Relinquished by: (signature)	Date/Time
Ryan Allan	~~1:00 PM~~ 6-15-94	Ryan Allan	6-15-94
Received by: (signature)	Date/Time	Relinquished by: (signature)	Date/Time
Received for Laboratory by: (signature)	Date/Time	TURNAROUND TIME	
Scott T. Fennell	6/15/94 2:00	STANDARD (15 day)	

REMARKS Use either/both of each pair of samples as necessary

Au, soil, 2-BT each, y-3, Rg TAT

Trace Analysis Laboratory, Inc.
3423 Investment Boulevard, #8 • Hayward, California 94545
Telephone (510) 783-6960
Facsimile (510) 783-1512

TAL

CHAIN OF CUSTODY RECORD

Proj.No.	Project Name	No. of Containers	Analyses: PNA's (EPA Method 8270)	VOC's (EPA Method 8240)	TPHd (8015 mod.)	TPHg (8015 mod.)	PCB (EPA Method 8080)	Title 22 Metals (CAM 17)	TRPH (EPA 418.1)
7-284	Mariner Development								
Company Name and Address: Hydro-Environmental Technologies 2363 Mariner Sq. Dr. Ste 243, Alameda CA 94501									
Project Manager: Gary Pischke									
Sample ID	Date	Time	Site Location						
MW-1	6-14-94	4PM	2415 Mariner Sq Dr., Alameda	2	X	X	X	X	X	X	X
MW-2		2PM							
MW-3		9AM							
MW-5		11AM							

Sampled by: (signature)	Date/Time	Relinquished by: (signature)	Date/Time
Ryan Allen	6-15-94	Ryan Allen	6-15-94
Received by: (signature)	Date/Time	Relinquished by: (signature)	Date/Time
Received for Laboratory by: (signature)	Date/Time	TURNAROUND TIME	
Scott Fennell	6/15/94 2:00	STANDARD (15 day)	

REMARKS Use either/both of each pair of samples as necessary

7-284 laboratory data

Trace Analysis Laboratory, Inc.
3423 Investment Boulevard, #8 • Hayward, California 94545
Telephone (510) 783-6960
Facsimile (510) 783-1512

TAL

September 7, 1994

Mr. Gary Pischke
Hydro-Environmental Technologies, Inc.
2363 Mariner Square Drive, Suite 243
Alameda, California 94501

Dear Mr. Pischke:

Trace Analysis Laboratory received four water samples on August 12, 1994 for your Project No. 7-284, Mariner Development (our custody log number 4675).

These samples were analyzed according to your chain of custody. Our analytical report and the completed chain of custody form are enclosed for your review.

Trace Analysis Laboratory is certified under the California Environmental Laboratory Accreditation Program. Our certification number is 1199.

If you should have any questions or require additional information, please call me.

Sincerely yours,

Scott T. Ferriman

Scott T. Ferriman
Project Specialist

Enclosures

Trace Analysis Laboratory, Inc.
3423 Investment Boulevard, #8 • Hayward, California 94545
Telephone (510) 783-6960
Facsimile (510) 783-1512

TAL

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE EXTRACTED: 08/30/94
DATE ANALYZED: 08/31/94
DATE REPORTED: 09/07/94

CUSTOMER: Hydro-Environmental Technologies, Inc.

REQUESTER: Gary Pischke

PROJECT: No. 7-284, Mariner Development

Sample Type: Water

Method and Constituent:	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
EPA Method 418.1: Total Recoverable Petroleum Hydrocarbons	ug/l	ND	1,000	1,200	1,000	ND	1,000

Method and Constituent:	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
EPA Method 418.1: Total Recoverable Petroleum Hydrocarbons	ug/l	ND	1,000	ND	1,000

QC Summary:

% Recovery: 94
% RPD: 5.3

Concentrations reported as ND were not detected at or above the reporting limit.

TAL Trace Analysis Laboratory, Inc.

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE EXTRACTED: 08/18/94
DATE ANALYZED: 09/07/94
DATE REPORTED: 09/07/94
PAGE: Two

Sample Type: Water

Method and Constituent:	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
DHS Method:							
Total Petroleum Hydrocarbons as Diesel	ug/l	15,000	50	ND	50	ND	50

Method and Constituent:	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
DHS Method:					
Total Petroleum Hydrocarbons as Diesel	ug/l	ND	50	ND	50

QC Summary:

% Recovery: 68
% RPD: 13

Concentrations reported as ND were not detected at or above the reporting limit.

Trace Analysis Laboratory, Inc.

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE ANALYZED: 08/24/94
DATE REPORTED: 09/07/94
PAGE: Three

Sample Type: Water

Method and Constituent:	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
DHS Method:							
Total Petroleum Hydrocarbons as Gasoline	ug/l	390	50	ND	50	ND	50
Modified EPA Method 8020 for:							
Benzene	ug/l	2.2	0.50	ND	0.50	ND	0.50
Toluene	ug/l	0.91	0.50	ND	0.50	ND	0.50
Ethylbenzene	ug/l	2.1	0.50	ND	0.50	ND	0.50
Xylenes	ug/l	7.8	1.5	ND	1.5	ND	1.5

Method and Constituent:	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
DHS Method:					
Total Petroleum Hydrocarbons as Gasoline	ug/l	ND	50	ND	50
Modified EPA Method 8020 for:					
Benzene	ug/l	ND	0.50	ND	0.50
Toluene	ug/l	ND	0.50	ND	0.50
Ethylbenzene	ug/l	ND	0.50	ND	0.50
Xylenes	ug/l	ND	1.5	ND	1.5

QC Summary:

% Recovery: 96
% RPD: 5.7

Concentrations reported as ND were not detected at or above the reporting limit.

Trace Analysis Laboratory, Inc.

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE EXTRACTED: 08/15/94
DATE ANALYZED: 08/30/94
DATE REPORTED: 09/07/94
PAGE: Four

Sample Type: Water

Method and Constituent:	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
EPA Method 8080 for PCB:							
Aroclor 1016	ug/l	ND	10	ND	1.0	ND	1.0
Aroclor 1221	ug/l	ND	10	ND	1.0	ND	1.0
Aroclor 1232	ug/l	ND	10	ND	1.0	ND	1.0
Aroclor 1242	ug/l	ND	10	ND	1.0	ND	1.0
Aroclor 1248	ug/l	ND	10	ND	1.0	ND	1.0
Aroclor 1254	ug/l	ND	10	ND	1.0	ND	1.0
Aroclor 1260	ug/l	ND	10	ND	1.0	ND	1.0

Concentrations reported as ND were not detected at or above the reporting limit.

Trace Analysis Laboratory, Inc.

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE EXTRACTED: 08/15/94
DATE ANALYZED: 08/30/94
DATE REPORTED: 09/07/94
PAGE: Five

Sample Type: Water

Method and Constituent:	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
EPA Method 8080 for PCB:					
Aroclor 1016	ug/l	ND	1.0	ND	1.0
Aroclor 1221	ug/l	ND	1.0	ND	1.0
Aroclor 1232	ug/l	ND	1.0	ND	1.0
Aroclor 1242	ug/l	ND	1.0	ND	1.0
Aroclor 1248	ug/l	ND	1.0	ND	1.0
Aroclor 1254	ug/l	ND	1.0	ND	1.0
Aroclor 1260	ug/l	ND	1.0	ND	1.0

QC Summary:

% Recovery: 56
% RPD: 7.1

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE ANALYZED: 08/24/94
DATE REPORTED: 09/07/94
PAGE: Six

Sample Type: Water

Method and Constituent:	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
EPA Method 8240:							
Chloromethane	ug/l	ND	5.0	ND	5.0	ND	5.0
Bromomethane	ug/l	ND	5.0	ND	5.0	ND	5.0
Dichlorodifluoromethane	ug/l	ND	5.0	ND	5.0	ND	5.0
Vinyl Chloride	ug/l	ND	10	ND	10	ND	10
Chloroethane	ug/l	ND	10	ND	10	ND	10
Iodomethane	ug/l	ND	100	ND	100	ND	100
Methylene Chloride	ug/l	ND	20	ND	20	ND	20
Acetone	ug/l	ND	100	ND	100	ND	100
Carbon Disulfide	ug/l	ND	100	ND	100	ND	100
Trichlorofluoromethane	ug/l	ND	10	ND	10	ND	10
1,1-Dichloroethene	ug/l	ND	5.0	ND	5.0	ND	5.0
Allyl Chloride	ug/l	ND	5.0	ND	5.0	ND	5.0
1,1-Dichloroethane	ug/l	ND	5.0	ND	5.0	ND	5.0
Trans-1,2-Dichloroethene	ug/l	ND	5.0	ND	5.0	ND	5.0
Chloroform	ug/l	ND	5.0	ND	5.0	ND	5.0
2-Butanone (MEK)	ug/l	ND	100	ND	100	ND	100
1,2-Dichloroethane	ug/l	ND	5.0	ND	5.0	ND	5.0
Dibromomethane	ug/l	ND	5.0	ND	5.0	ND	5.0
1,1,1-Trichloroethane	ug/l	ND	5.0	ND	5.0	ND	5.0
Carbon Tetrachloride	ug/l	ND	5.0	ND	5.0	ND	5.0

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE ANALYZED: 08/24/94
DATE REPORTED: 09/07/94
PAGE: Seven

Sample Type: Water

Method and Constituent	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
EPA Method 8240 (Continued):							
Vinyl Acetate	ug/l	ND	50	ND	50	ND	50
Bromodichloromethane	ug/l	ND	5.0	ND	5.0	ND	5.0
1,2-Dichloropropane	ug/l	ND	5.0	ND	5.0	ND	5.0
Cis-1 3-Dichloropropene	ug/l	ND	5.0	ND	5.0	ND	5.0
Bromoacetone	ug/l	ND	100	ND	100	ND	100
Trichloroethene	ug/l	ND	5.0	ND	5.0	ND	5.0
Benzene	ug/l	ND	5.0	ND	5.0	ND	5.0
Chlorodibromomethane	ug/l	ND	5.0	ND	5.0	ND	5.0
1,1,2-Trichloroethane	ug/l	ND	5.0	ND	5.0	ND	5.0
Trans-1 3-Dichloropropene	ug/l	ND	5.0	ND	5.0	ND	5.0
1 2-Dibromoethane (EDB)	ug/l	ND	5.0	ND	5.0	ND	5.0
2-Chloroethylvinyl Ether	ug/l	ND	10	ND	10	ND	10
Bromoform	ug/l	ND	5.0	ND	5.0	ND	5.0
1,1,1,2-Tetrachloroethane	ug/l	ND	5.0	ND	5.0	ND	5.0
4-Methyl-2-Pentanone (MIBK)	ug/l	ND	50	ND	50	ND	50
2-Hexanone	ug/l	ND	50	ND	50	ND	50
1,2,3-Trichloropropane	ug/l	ND	5.0	ND	5.0	ND	5.0
1,1,2,2-Tetracholorethane	ug/l	ND	5.0	ND	5.0	ND	5.0
Tetrachloroethene	ug/l	ND	5.0	ND	5.0	ND	5.0
Toluene	ug/l	ND	5.0	ND	5.0	ND	5.0
Chlorobenzene	ug/l	ND	5.0	ND	5.0	ND	5.0
Ethyl Benzene	ug/l	ND	5.0	ND	5.0	ND	5.0

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE ANALYZED: 08/24/94
DATE REPORTED: 09/07/94
PAGE: Eight

Sample Type: Water

Method and Constituent	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
EPA Method 8240 (Continued):							
1,2-Dibromo 3-Chloropropane	ug/l	ND	100	ND	100	ND	100
Benzyl Chloride	ug/l	ND	100	ND	100	ND	100
Styrene	ug/l	ND	5.0	ND	5.0	ND	5.0
Xylenes	ug/l	19	15	ND	15	ND	15
1,3-Dichlorobenzene	ug/l	ND	5.0	ND	5.0	ND	5.0
1,2-Dichlorobenzene	ug/l	ND	5.0	ND	5.0	ND	5.0
1,4-Dichlorobenzene	ug/l	ND	5.0	ND	5.0	ND	5.0
Surrogate % Recovery							
1,2-Dichloroethane-d4		116		111		106	
Toluene-d8		99		93		101	
4-Bromofluorobenzene		107		101		100	

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE ANALYZED: 08/24/94
DATE REPORTED: 09/07/94
PAGE: Nine

Sample Type: Water

Method and Constituent:	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
EPA Method 8240:					
Chloromethane	ug/l	ND	5.0	ND	5.0
Bromomethane	ug/l	ND	5.0	ND	5.0
Dichlorodifluoromethane	ug/l	ND	5.0	ND	5.0
Vinyl Chloride	ug/l	ND	10	ND	10
Chloroethane	ug/l	ND	10	ND	10
Iodomethane	ug/l	ND	100	ND	100
Methylene Chloride	ug/l	ND	20	ND	20
Acetone	ug/l	ND	100	ND	100
Carbon Disulfide	ug/l	ND	100	ND	100
Trichlorofluoromethane	ug/l	ND	10	ND	10
1,1-Dichloroethene	ug/l	ND	5.0	ND	5.0
Allyl Chloride	ug/l	ND	5.0	ND	5.0
1,1-Dichloroethane	ug/l	ND	5.0	ND	5.0
Trans-1,2-Dichloroethene	ug/l	ND	5.0	ND	5.0
Chloroform	ug/l	ND	5.0	ND	5.0
2-Butanone (MEK)	ug/l	ND	100	ND	100
1,2-Dichloroethane	ug/l	ND	5.0	ND	5.0
Dibromomethane	ug/l	ND	5.0	ND	5.0
1,1,1-Trichloroethane	ug/l	ND	5.0	ND	5.0
Carbon Tetrachloride	ug/l	ND	5.0	ND	5.0

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE ANALYZED: 08/24/94
DATE REPORTED: 09/07/94
PAGE: Ten

Sample Type: Water

Method and Constituent	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
EPA Method 8240 (Continued):					
Vinyl Acetate	ug/l	ND	50	ND	50
Bromodichloromethane	ug/l	ND	5.0	ND	5.0
1,2-Dichloropropane	ug/l	ND	5.0	ND	5.0
Cis-1 3-Dichloropropene	ug/l	ND	5.0	ND	5.0
Bromoacetone	ug/l	ND	100	ND	100
Trichloroethene	ug/l	ND	5.0	ND	5.0
Benzene	ug/l	ND	5.0	ND	5.0
Chlorodibromomethane	ug/l	ND	5.0	ND	5.0
1,1,2-Trichloroethane	ug/l	ND	5.0	ND	5.0
Trans-1 3-Dichloropropene	ug/l	ND	5.0	ND	5.0
1 2-Dibromoethane (EDB)	ug/l	ND	5.0	ND	5.0
2-Chloroethylvinyl Ether	ug/l	ND	10	ND	10
Bromoform	ug/l	ND	5.0	ND	5.0
1,1,1,2-Tetrachloroethane	ug/l	ND	5.0	ND	5.0
4-Methyl-2-Pentanone (MIBK)	ug/l	ND	50	ND	50
2-Hexanone	ug/l	ND	50	ND	50
1,2,3-Trichloropropane	ug/l	ND	5.0	ND	5.0
1,1,2,2-Tetracholorethane	ug/l	ND	5.0	ND	5.0
Tetrachloroethene	ug/l	ND	5.0	ND	5.0
Toluene	ug/l	ND	5.0	ND	5.0
Chlorobenzene	ug/l	ND	5.0	ND	5.0
Ethyl Benzene	ug/l	ND	5.0	ND	5.0

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE ANALYZED: 08/24/94
DATE REPORTED: 09/07/94
PAGE: Eleven

Sample Type: Water

Method and Constituent	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
EPA Method 8240 (Continued):					
1,2-Dibromo 3-Chloropropane	ug/l	ND	100	ND	100
Benzyl Chloride	ug/l	ND	100	ND	100
Styrene	ug/l	ND	5.0	ND	5.0
Xylenes	ug/l	ND	15	ND	15
1,3-Dichlorobenzene	ug/l	ND	5.0	ND	5.0
1,2-Dichlorobenzene	ug/l	ND	5.0	ND	5.0
1,4-Dichlorobenzene	ug/l	ND	5.0	ND	5.0
Surrogate % Recovery					
1,2-Dichloroethane-d4		116		112	
Toluene-d8		101		101	
4-Bromofluorobenzene		103		95	

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE EXTRACTED: 08/18/94
DATE ANALYZED: 08/29/94
DATE REPORTED: 09/07/94
PAGE: Twelve

Sample Type: Water

Method and Constituent:	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
EPA Method 8270: Pyridine	ug/l	ND	50	ND	50	ND	50
N-Nitrosodimethylamine	ug/l	ND	10	ND	10	ND	10
Phenol	ug/l	ND	10	ND	10	ND	10
Bis (2-Chloroethyl) Ether	ug/l	ND	10	ND	10	ND	10
2-Chlorophenol	ug/l	ND	10	ND	10	ND	10
1,3-Dichlorobenzene	ug/l	ND	10	ND	10	ND	10
1,4-Dichlorobenzene	ug/l	ND	10	ND	10	ND	10
1,2-Dichlorobenzene	ug/l	ND	10	ND	10	ND	10
Bis (2-Chloroisopropyl) Ether	ug/l	ND	10	ND	10	ND	10
N-Nitroso-Di-N-Propylamine	ug/l	ND	10	ND	10	ND	10
2-Methylphenol (O-Cresol)	**ug/l**	**13**	10	ND	10	ND	10
Hexachloroethane	ug/l	ND	10	ND	10	ND	10
Nitrobenzene	ug/l	ND	10	ND	10	ND	10
Isophorone	ug/l	ND	10	ND	10	ND	10
2-Nitrophenol	ug/l	ND	10	ND	10	ND	10
2,4-Dimethylphenol	ug/l	**69**	10	ND	10	ND	10
Bis(2-Chloroethoxy) Methane	ug/l	ND	10	ND	10	ND	10
2,4-Dichlorophenol	ug/l	ND	10	ND	10	ND	10
1,2,4-Trichlorobenzene	ug/l	ND	10	ND	10	ND	10
Naphthalene	ug/l	**19**	10	ND	10	ND	10

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE EXTRACTED: 08/18/94
DATE ANALYZED: 08/29/94
DATE REPORTED: 09/07/94
PAGE: Thirteen

Sample Type: Water

Method and Constituent	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
EPA Method 8270 (Continued):							
Hexachlorobutadiene	ug/l	ND	10	ND	10	ND	10
3-Methylphenol and 4-Methylphenol (m-Cresol and p-Cresol)	ug/l	ND	20	ND	20	ND	20
4-Chloro-3-Methyl-phenol	ug/l	ND	20	ND	20	ND	20
Hexachlorocyclo-pentadiene	ug/l	ND	10	ND	10	ND	10
2,4,6-Trichlorophenol	ug/l	ND	10	ND	10	ND	10
2-Chloronaphthalene	ug/l	ND	10	ND	10	ND	10
Dimethylphthalate	ug/l	ND	10	ND	10	ND	10
Acenaphthylene	ug/l	ND	10	ND	10	ND	10
Acenaphthene	**ug/l**	**78**	10	ND	10	ND	10
2,4-Dinitrophenol	ug/l	ND	50	ND	50	ND	50
4-Nitrophenol	ug/l	ND	50	ND	50	ND	50
2,4-Dinitrotoluene	ug/l	ND	10	ND	10	ND	10
2,6-Dinitrotoluene	ug/l	ND	10	ND	10	ND	10
Diethylphthalate	ug/l	ND	10	ND	10	ND	10
4-Chlorophenyl-phenyl-ether	ug/l	ND	10	ND	10	ND	10
Fluorene	**ug/l**	**50**	10	ND	10	ND	10
N-Nitrosodiphenylamine	ug/l	ND	10	ND	10	ND	10
4-Bromophenyl-phenyl-ether	ug/l	ND	10	ND	10	ND	10
Hexachlorobenzene	ug/l	ND	10	ND	10	ND	10
Pentachlorophenol	ug/l	ND	50	ND	50	ND	50
Phenanthrene	ug/l	ND	10	ND	10	ND	10
Anthracene	**ug/l**	**89**	10	ND	10	ND	10

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE EXTRACTED: 08/18/94
DATE ANALYZED: 08/29/94
DATE REPORTED: 09/07/94
PAGE: Fourteen

Sample Type: Water

Method and Constituent:	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
EPA Method 8270 (Continued):							
Di-N-Butylphthalate	ug/l	ND	10	ND	10	ND	10
4,6-Dinitro-2-Methylphenol	ug/l	ND	10	ND	10	ND	10
Fluoranthene	ug/l	28	10	ND	10	ND	10
Benzidine	ug/l	ND	10	ND	10	ND	10
Pyrene	ug/l	22	10	ND	10	ND	10
Butylbenzylphthalate	ug/l	ND	10	ND	10	ND	10
3,3'-Dichlorobenzidine	ug/l	ND	10	ND	10	ND	10
Benzo(a)Anthracene	ug/l	ND	10	ND	10	ND	10
Bis(2-Ethylhexyl) Phthalate	ug/l	ND	10	ND	10	ND	10
Chrysene	ug/l	ND	10	ND	10	ND	10
Di-N-Octylphthalate	ug/l	ND	10	ND	10	ND	10
Benzo(b)Fluoranthene	ug/l	ND	10	ND	10	ND	10
Benzo(k)Fluoranthene	ug/l	ND	10	ND	10	ND	10
Benzo(a)Pyrene	ug/l	ND	10	ND	10	ND	10
Indeno(1,2,3-cd)Pyrene	ug/l	ND	10	ND	10	ND	10
Dibenzo(a,h)Anthracene	ug/l	ND	10	ND	10	ND	10
Benzo(g,h,i)Perylene	ug/l	ND	10	ND	10	ND	10
Surrogate % Recovery:							
2-Fluorophenol		104		93		92	
Phenol d6		93		94		90	
Nitrobenzene d5		112		87		89	
2-Fluorobiphenyl		96		91		84	
2,4,6-Tribromophenol		77		63		61	
p-Terphenyl d14		91		91		82	

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE EXTRACTED: 08/18/94
DATE ANALYZED: 08/29/94
DATE REPORTED: 09/07/94
PAGE: Fifteen

Sample Type: Water

Method and Constituent:	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
EPA Method 8270: Pyridine	ug/l	ND	50	ND	50
N-Nitrosodimethylamine	ug/l	ND	10	ND	10
Phenol	ug/l	ND	10	ND	10
Bis (2-Chloroethyl) Ether	ug/l	ND	10	ND	10
2-Chlorophenol	ug/l	ND	10	ND	10
1,3-Dichlorobenzene	ug/l	ND	10	ND	10
1,4-Dichlorobenzene	ug/l	ND	10	ND	10
1,2-Dichlorobenzene	ug/l	ND	10	ND	10
Bis (2-Chloroisopropyl) Ether	ug/l	ND	10	ND	10
N-Nitroso-Di-N-Propylamine	ug/l	ND	10	ND	10
2-Methylphenol (O-Cresol)	ug/l	ND	10	ND	10
Hexachloroethane	ug/l	ND	10	ND	10
Nitrobenzene	ug/l	ND	10	ND	10
Isophorone	ug/l	ND	10	ND	10
2-Nitrophenol	ug/l	ND	10	ND	10
2,4-Dimethylphenol	ug/l	ND	10	ND	10
Bis(2-Chloroethoxy) Methane	ug/l	ND	10	ND	10
2,4-Dichlorophenol	ug/l	ND	10	ND	10
1,2,4-Trichlorobenzene	ug/l	ND	10	ND	10
Naphthalene	ug/l	ND	10	ND	10

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE EXTRACTED: 08/18/94
DATE ANALYZED: 08/29/94
DATE REPORTED: 09/07/94
PAGE: Sixteen

Sample Type: Water

Method and Constituent	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
EPA Method 8270 (Continued):					
Hexachlorobutadiene	ug/l	ND	10	ND	10
3-Methylphenol and 4-Methylphenol (m-Cresol and p-Cresol)	ug/l	ND	20	ND	20
4-Chloro-3-Methyl-phenol	ug/l	ND	20	ND	20
Hexachlorocyclo-pentadiene	ug/l	ND	10	ND	10
2,4,6-Trichlorophenol	ug/l	ND	10	ND	10
2-Chloronaphthalene	ug/l	ND	10	ND	10
Dimethylphthalate	ug/l	ND	10	ND	10
Acenaphthylene	ug/l	ND	10	ND	10
Acenaphthene	ug/l	ND	10	ND	10
2,4-Dinitrophenol	ug/l	ND	50	ND	50
4-Nitrophenol	ug/l	ND	50	ND	50
2,4-Dinitrotoluene	ug/l	ND	10	ND	10
2,6-Dinitrotoluene	ug/l	ND	10	ND	10
Diethylphthalate	ug/l	ND	10	ND	10
4-Chlorophenyl-phenyl-ether	ug/l	ND	10	ND	10
Fluorene	ug/l	ND	10	ND	10
N-Nitrosodiphenylamine	ug/l	ND	10	ND	10
4-Bromophenyl-phenyl-ether	ug/l	ND	10	ND	10
Hexachlorobenzene	ug/l	ND	10	ND	10
Pentachlorophenol	ug/l	ND	50	ND	50
Phenanthrene	ug/l	ND	10	ND	10
Anthracene	ug/l	ND	10	ND	10

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE EXTRACTED: 08/18/94
DATE ANALYZED: 08/29/94
DATE REPORTED: 09/07/94
PAGE: Seventeen

Sample Type: Water

Method and Constituent:	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
EPA Method 8270 (Continued):					
Di-N-Butylphthalate	ug/l	ND	10	ND	10
4,6-Dinitro-2-Methylphenol	ug/l	ND	10	ND	10
Fluoranthene	ug/l	ND	10	ND	10
Benzidine	ug/l	ND	10	ND	10
Pyrene	ug/l	ND	10	ND	10
Butylbenzylphthalate	ug/l	ND	10	ND	10
3,3'-Dichlorobenzidine	ug/l	ND	10	ND	10
Benzo(a)Anthracene	ug/l	ND	10	ND	10
Bis(2-Ethylhexyl) Phthalate	ug/l	ND	10	ND	10
Chrysene	ug/l	ND	10	ND	10
Di-N-Octylphthalate	ug/l	ND	10	ND	10
Benzo(b)Fluoranthene	ug/l	ND	10	ND	10
Benzo(k)Fluoranthene	ug/l	ND	10	ND	10
Benzo(a)Pyrene	ug/l	ND	10	ND	10
Indeno(1,2,3-cd)Pyrene	ug/l	ND	10	ND	10
Dibenzo(a,h)Anthracene	ug/l	ND	10	ND	10
Benzo(g,h,i)Perylene	ug/l	ND	10	ND	10
Surrogate % Recovery:					
2-Fluorophenol		91		162	
Phenol d6		87		156	
Nitrobenzene d5		93		129	
2-Fluorobiphenyl		83		141	
2,4,6-Tribromophenol		58		99	
p-Terphenyl d14		80		141	

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE EXTRACTED: 08/15/94
DATE ANALYZED: 08/16/94, 08/17/94, 08/19/94, 08/22/94, and 08/24/94
DATE REPORTED: 09/07/94
PAGE: Eighteen

Sample Type: Water

Method and Constituent:	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
EPA Method 204.1: Antimony	ug/l	ND	3,200	ND	3,200	ND	3,200
EPA Method 206.2: Arsenic	ug/l	15	2.0	ND	2.0	9.6	2.0
EPA Method 208.1: Barium	ug/l	ND	2,000	ND	2,000	ND	2,000
EPA Method 210.1: Beryllium	ug/l	ND	5.0	ND	5.0	ND	5.0
EPA Method 231.1: Cadmium	ug/l	ND	5.0	ND	5.0	ND	5.0
EPA Method 218.1: Chromium	ug/l	55	50	69	50	ND	50
EPA Method 219.1: Cobalt	ug/l	ND	500	ND	500	ND	500
EPA Method 220.1: Copper	ug/l	20	20	30	20	ND	20
EPA Method 239.1: Lead	ug/l	ND	100	ND	100	ND	100

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE EXTRACTED: 08/15/94 and 08/23/94
DATE ANALYZED: 08/16/94, 08/17/94, 08/22/94, 08/23/94, and 08/31/94
DATE REPORTED: 09/07/94
PAGE: Nineteen

Sample Type: Water

Method and Constituent:	Units	MW-1 Concentration	MW-1 Reporting Limit	MW-2 Concentration	MW-2 Reporting Limit	MW-3 Concentration	MW-3 Reporting Limit
EPA Method 245.1:							
Mercury	ug/l	1.2	0.20	0.29	0.20	ND	0.20
EPA Method 246.1:							
Molybdenum	ug/l	ND	1,000	ND	1,000	ND	1,000
EPA Method 249.1:							
Nickel	ug/l	70	40	100	40	ND	40
EPA Method 270.2:							
Selenium	ug/l	ND	10	ND	10	ND	10
EPA Method 272.1:							
Silver	ug/l	ND	10	48	10	ND	10
EPA Method 279.1:							
Thallium	ug/l	ND	100	150	100	450	100
EPA Method 286.1:							
Vanadium	ug/l	ND	200	ND	200	ND	200
EPA Method 289.1:							
Zinc	ug/l	75	5.0	81	5.0	45	5.0

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE EXTRACTED: 08/15/94
DATE ANALYZED: 08/16/94, 08/17/94, 08/19/94, 08/22/94, and 08/24/94
DATE REPORTED: 09/07/94
PAGE: Twenty

Sample Type: Water

Method and Constituent:	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit	QC Suumary % Recovery	QC Suumary % RPD
EPA Method 204.1:							
Antimony	ug/l	ND	3,200	ND	3,200	106	0.0
EPA Method 206.2:							
Arsenic	ug/l	11	2.0	ND	2.0	95	3.3
EPA Method 208.1:							
Barium	ug/l	ND	2,000	ND	2,000	71	3.5
EPA Method 210.1:							
Beryllium	ug/l	ND	5.0	ND	5.0	96	11
EPA Method 231.1:							
Cadmium	ug/l	ND	5.0	ND	5.0	90	4.4
EPA Method 218.1:							
Chromium	ug/l	ND	50	ND	50	91	6.0
EPA Method 219.1:							
Cobalt	ug/l	ND	500	ND	500	113	2.8
EPA Method 220.1:							
Copper	ug/l	ND	20	ND	20	94	1.0
EPA Method 239.1:							
Lead	ug/l	ND	100	ND	100	79	5.0

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 4675
DATE SAMPLED: 08/11/94
DATE RECEIVED: 08/12/94
DATE EXTRACTED: 08/15/94 and 08/23/94
DATE ANALYZED: 08/16/94, 08/17/94, 08/22/94, 08/23/94, and 08/31/94
DATE REPORTED: 09/07/94
PAGE: Twenty-one

Sample Type: Water

Method and Constituent:	Units	MW-5 Concentration	MW-5 Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit	QC Summary % Recovery	QC Summary % RPD
EPA Method 245.1:							
Mercury	ug/l	ND	0.20	ND	0.20	89	0.0
EPA Method 246.1:							
Molybdenum	ug/l	ND	1,000	ND	1,000	86	2.8
EPA Method 249.1:							
Nickel	ug/l	40	40	ND	40	111	5.7
EPA Method 270.2:							
Selenium	ug/l	ND	10	ND	10	92	8.6
EPA Method 272.1:							
Silver	ug/l	ND	10	ND	10	84	11
EPA Method 279.1:							
Thallium	ug/l	150	100	ND	100	94	2.1
EPA Method 286.1:							
Vanadium	ug/l	ND	200	ND	200	80	3.1
EPA Method 289.1:							
Zinc	ug/l	49	5.0	ND	5.0	99	4.2

Concentrations reported as ND were not detected at or above the reporting limit.

Louis W. DuPuis
Quality Assurance/Quality Control Manager

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Trace Analysis Laboratory, Inc.
3423 Investment Boulevard, #8 • Hayward, California 94545
Telephone (510) 783-6960
Facsimile (510) 783-1512

TAL

CHAIN OF CUSTODY RECORD

4675

Proj.No.	Project Name	No. of Containers	Analyses:	REMARKS
7-284	MARINER DEVELOPMENT			

Company Name and Address:
HYDRO-ENVIRONMENTAL TECH. INC.
2363 MARINER SQ DR #243
ALAMEDA CA 94501

Project Manager: GARY Pischke

Sample ID	Date	Time	Site Location	Containers	TPH g (BTEX) (8015 and 8020)	TPH d (8015 mod)	8270 PNAs	8240 VOCs	PCBs 8080	CAM 17 METALS TPH 418.1	REMARKS
MW-1	8-11	3PM	MARINER SQ LOOP	9	X	X	X	X	X	X	X
MW-2	"	"	"	"	"	"	"	"	"	"	X
MW-3	"	"	"	"	"	"	"	"	"	"	X
MW-5	"	"	"	4	"	"	"	"	"	"	X

Sampled by: (signature)	Date/Time	Relinquished by: (signature)	Date/Time
Ruairi Allen	8-11-94 6PM	Ruairi Allen	8-11-94 6PM
Received by: (signature)	**Date/Time**	**Relinquished by: (signature)**	**Date/Time**
[signature]	8/12/94 12:00 pm	[signature]	8/12/94 1:15 pm

Received for Laboratory by: (signature)	Date/Time	TURNAROUND TIME
Scott F. Fennell	8/12/94 1:15 pm	STANDARD (15 day)

REMARKS

p/u, water, 4 VOA HCl each, 4 L each, 1-500ml H2SO4 each, white, Reg TAT
Tray 2