Ground-Water Investigations
Former Ransome Property
Yerba Buena Project Site
4030 Hollis Street
Emeryville, California

August 4, 1992
1649.07

Prepared for:

Catellus Development Corporation
201 Mission Street, Suite 250
San Francisco, California 94105

LEVINE·FRICKE

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

August 4, 1992

LF 1649.07

Mr. Dennis Byrne
Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, California 94621

Subject: Ground-Water Investigations Report
Former Ransome Property
Yerba Buena Project Site
Emeryville, California

Dear Mr. Byrne:

The enclosed report presents results of ground-water investigations conducted for the Former Ransome Property located in Emeryville and Oakland, California.

The investigation was conducted and this report is submitted in accordance with the April 15, 1992 "Work Plan for Ground-Water Investigations, Former Ransome Property," prepared by Levine•Fricke and approved by the Alameda County Health Care Services Agency.

If you have any questions or comments concerning this report, please call either of the undersigned or Cynthia Barclay.

Sincerely,

James D. Levine, P.E.
President

Jenifer J. Beatty
Senior Staff Hydrogeologist

Enclosure

cc: Ric Notini, Catellus
Don Marini, Catellus
Pat Cashman, Catellus
Lester Feldman, RWQCB

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CONTENTS

LIST OF TABLES

LIST OF FIGURES

August 4, 1992 LF 1649.07

GROUND-WATER INVESTIGATIONS
FORMER RANSOME PROPERTY
YERBA BUENA PROJECT SITE
4030 HOLLIS STREET
EMERYVILLE, CALIFORNIA

1.0 INTRODUCTION

This report, prepared on behalf of Catellus Development Corporation ("Catellus"), summarizes and evaluates recent soil and ground-water data gathered during additional hydrogeologic investigations conducted by Levine·Fricke, Inc. ("Levine·Fricke"), during May 1992 for the former Ransome Property, located at 4030 Hollis Street, in Emeryville, California ("the Property"; Figure 1). The activities conducted were described in the April 15, 1992 Levine·Fricke document entitled "Work Plan for Ground-Water Investigations, Former Ransome Property, Yerba Buena Project Site, Emeryville, California" approved by the Alameda County Water District (ACWD).

1.1 Objective and Summary of Activities

The investigative activities summarized below were conducted to assess the possible impact of petroleum-affected soil at the Property on shallow ground water beneath the Property. Additionally, ground-water monitoring well W-3, installed during previous investigations by Aqua Resources Inc. (ARI), an environmental consultant, was properly abandoned under the supervision of a Levine·Fricke geologist.

The following activities were conducted at the Property in May 1992:

- Drilling of five soil borings and the collection of soil samples from each boring for lithologic description.
- Installation and development of five on-site ground-water monitoring wells (LF-24, LF-25, LF-26, LF-27, and LF-28) in the five completed soil borings.
- Survey of the newly installed wells.

- Collection of water-level measurements from existing well LF-16 and the newly installed wells.

- Collection of ground-water samples for chemical analyses from the five newly installed wells and from existing well LF-16. The samples were analyzed for total petroleum hydrocarbons as gasoline (TPH[g]) and diesel (TPH[d]), benzene, toluene, ethylbenzene, and total xylenes (BTEX), oil and grease (O & G), and for total recoverable hydrocarbons (TRH).

- Abandonment of ground-water monitoring well W-3.

2.0 BACKGROUND AND PREVIOUS INVESTIGATIONS

The Ransome Construction Company ("Ransome") operated a former asphalt batch plant at the Property for more than 50 years. An initial investigation of the Property was included in a Phase I investigation of the Yerba Buena Project Site performed by Levine·Fricke (Levine·Fricke, 1990). The Property yard contained seven structures, including an office, a machine/maintenance shop, four sheds, a steam-cleaning shed, and a lavatory. Four underground fuel storage tanks (USTs), one waste-oil tank that was partially underground, and an aboveground liquid asphalt oil tank were located on the Property at the time of the Phase I investigation. Oil stains on soil and site surfaces were observed across the Property, especially in the machine shop area, in the vicinity of the oil storage shed, near the waste-oil tank, and near the liquid asphalt oil tank. The USTs were removed in December 1989 by Kennedy/Jenks/Chilton, at which time petroleum hydrocarbon staining of the underlying soil was observed and reported.

Additional environmental investigations at the Property were conducted by Ransome and by ARI, who was working on behalf of Ransome (ARI, 1991). These investigations indicated the presence of petroleum hydrocarbon compounds and associated constituents in the soil.

ARI installed three ground-water monitoring wells (W-1, W-2, and W-3) in November 1990 (Figure 2A). The reported depth to ground water was approximately 8.5 feet to 11 feet below ground surface (bgs) and the shallow ground-water flow direction was reportedly toward the southwest (ARI, 1991). Chemical analytical results of ground-water samples collected from two wells (W-1 and W-2) indicated the presence of TPH(g) at concentrations up to 0.460 parts per million (ppm), benzene at concentrations up to 0.270 ppm, and toluene, ethylbenzene,

and total xylenes, each at concentrations up to 0.260 ppm. Concentrations of oil and TPH(d) ranged from 0.400 ppm to 1.7 ppm and 0.082 ppm to 1.9 ppm, respectively.

Because these concentrations were at levels of regulatory concern, ARI initiated contaminated soil removal activities at the Property at Ransome's request, including the excavation of petroleum-affected soil on site. ARI's work also included transporting diesel- and oil-affected soils off site for treatment and disposal. Gasoline-affected soils were left on site for possible aeration and reuse as backfill in excavations.

In the March 9, 1991 Right-of-Entry Permit Agreement (Environmental Remediation) (referred to hereafter as "the Agreement"), Ransome entered into a cleanup program under Catellus's oversight to clean up the Property to levels approved by the Alameda County Health Care Services Agency (ACHA) in its letter dated February 4, 1991.

Contrary to its commitment in the Agreement, Ransome directed that ARI stop work at the Property in September 1991 after completing only a small portion of the soil remediation. In October 1991, Levine·Fricke, on behalf of Catellus, continued on-site soil removal activities in accordance with the January 16, 1991 Work Plan prepared by ARI and approved by the ACHA. Approximately 25,000 cubic yards of TPH-affected soil are currently stockpiled and covered on the Property. Completed excavations have been backfilled with either imported clean fill or excavated soil successfully aerated to levels below the backfill criteria established by the ACHA.

3.0 HYDROGEOLOGICAL INVESTIGATION

A ground-water investigation was conducted to assess the possible impact of petroleum-affected soils on shallow ground water beneath the Property. Investigative activities conducted at the Property are described below.

3.1 Soil Boring and Ground-Water Monitoring Well Installation

In accordance with the April 15, 1992 Work Plan verbally approved by the Regional Water Quality Control Board (RWQCB) and the ACHA in a meeting on June 22, 1992, five on-site soil borings were drilled using a hollow-stem auger drill rig and completed as ground-water monitoring wells by Gregg Drilling of Concord, California, on May 5 and 6, 1992. Soil samples were collected during drilling for lithologic description.

Appendix A describes procedures for soil sampling and monitoring well installation. Table 1 summarizes well construction data. Ground water was first encountered in the borings between approximately 5 feet bgs to 13 feet bgs. Monitoring wells were installed to depths ranging between 16.5 feet bgs and 20 feet bgs. Well LF-25 was installed in a former excavation that was backfilled to approximately 3 feet to 4 feet bgs; therefore, its depth is approximately 15 feet below the existing ground surface (approximately 19 feet bgs).

Soils encountered during drilling are described in Section 4.1. Lithologic illustrations and well construction data are presented in Appendix B.

3.2 Water-Level Measurements, Well Development and Ground-Water Sampling

Prior to well development and ground-water sampling, water-level measurements were collected from the newly installed wells and existing well LF-16 using an electric water-level sounding probe.

Newly installed wells were developed on May 14, 1992, by purging approximately 11 to 25 well casing volumes of ground water from each well using a centrifugal pump and clean hose. During development, observations of the purged water's quantity, clarity, pH, temperature, and specific conductance were recorded on water-quality sampling sheets and are included in Appendix C.

On May 14, 1992, following well development, ground-water samples were collected from the newly installed monitoring wells and existing well LF-16 for chemical analyses. The wells were allowed to equilibrate for 2 weeks and a second round of water-level measurements and ground-water sampling was conducted on May 28, 1992.

Field procedures for well development and sampling are included in Appendix A. Water-quality sampling sheets are presented in Appendix C.

Ground-water samples were submitted to Quanteq Laboratories, a California state-certified laboratory located in Pleasant Hill, California, for analyses for TPH(g) using Modified EPA Method 8015, BTEX using EPA Method 8020, and for O & G and TRH using EPA Method 5520. In addition to the aforementioned tests, the ground-water samples collected on May 28, 1992, were analyzed for TPH(d) using Modified EPA Method 8015. Results of chemical analyses are discussed in Section 4.3.

3.3 Abandonment of Well W-3

During grading at the Property conducted by Ransome and ARI, soil was deposited in the vicinity of monitoring well W-3 (installed by ARI during previous investigations; Figure 2A), burying the well and concealing its location. On May 4, 1992, a backhoe, operated by Plant Reclamation of Richmond, California, was used to move soils in the approximate location of well W-3 to expose the well. Following well location, a Levine·Fricke geologist inspected the well for damage. The well was visibly damaged and appeared to be filled with dirt.

On May 6, 1992, the well was abandoned using hollow-stem auger drilling equipment. Well destruction involved drilling out the well materials (PVC casing, sandpack, bentonite, and cement grout) by placing 8-inch-diameter hollow-stem augers around the well and drilling to the total depth of the well (24 feet bgs). As drilling proceeded, fragments of well materials were brought to the surface. The evacuated boring was sealed by pumping a cement-bentonite slurry through a tremie pipe from the bottom of the boring to the ground surface.

4.0 RESULTS OF RECENT HYDROGEOLOGIC INVESTIGATIONS

4.1 Site Geology

Sediments encountered during drilling of wells LF-24, LF-26, LF-27, and LF-28 generally consisted of gravelly silty clays or silty clays. A gravelly, silty sand was encountered in boring LF-26 between 12 feet bgs and 18 feet bgs. Boring LF-25 was installed through backfill in the former northern excavation (Figure 2A). A clayey silt fill was encountered in LF-25 to about 4 feet below the current ground surface (approximately 3 feet bgs to 4 feet bgs as discussed in Section 3.1) and gravel fill was encountered between 4 feet and 10 feet below the current ground surface. Native sediments (gravelly silty clay) were encountered in LF-25 at approximately 11 feet below the current ground surface to the complete depth of the boring (15 feet below the current ground surface). Lithologic logs for soil borings LF-24, LF-25, LF-26, LF-27, and LF-28 are presented in Appendix B.

4.2 Ground-Water Elevations and Flow Direction

On May 18, 1992, newly installed monitoring wells LF-24, LF-25, LF-26, LF-27, and LF-28 were surveyed to the nearest 0.01 foot, based on the National Vertical Geodetic Datum, by a state-licensed surveyor. Table 2 summarizes depth-to-water measurements and ground-water elevation data collected at the Property in May 1992. Depth to ground water ranged from 7.02 feet bgs to 12.87 feet bgs on May 14, 1992, and from 7.34 feet bgs to 13.10 feet bgs on May 28, 1992. Ground-water elevation data for May 14 and May 28, 1992, and ground-water elevation contours are presented in Figures 2A and 2B, respectively. These data generally indicate a westerly to southwesterly ground-water flow direction with a gradient of approximately 0.01 ft/ft. The May 1992 results are consistent with the general ground-water flow direction previously reported for other portions of the Yerba Buena Project Site.

4.3 Results of Ground-Water Analyses

Ground-water samples were collected for chemical analyses from newly installed wells LF-24, LF-25, LF-26, LF-27, and LF-28 and existing well LF-16 on May 14 and 28, 1992. Results of chemical analyses are presented in Table 3 and in Figure 3. Laboratory data sheets and chain-of-custody forms are presented in Appendix D.

Chemical analytical results for ground-water samples collected on May 14 and May 28, 1992, generally indicate low to nondetectable concentrations of petroleum hydrocarbons. No TPH(g) was detected in any well sampled during either sampling round. During the first sampling round, benzene and toluene were detected at concentrations of 0.0004 ppm and less than 0.0003 ppm, respectively, in wells LF-25 and LF-26. Total xylenes were detected at 0.002 ppm in well LF-27. Toluene was detected at a concentration of 0.002 ppm in the ground-water sample collected from well LF-26 during the second sampling round (May 28, 1992). No other BTEX compounds were detected in samples collected on May 28, 1992.

O & G and TRH were detected in ground-water samples collected from wells LF-16 and LF-25 on May 14, 1992, at concentrations of 6.6 ppm or less. Results from the second sampling round did not indicate the presence of O & G or TRH in well LF-16, and indicated concentrations of O & G and TRH at concentrations of 2 ppm or less in well LF-25. As discussed in Section 3.2, ground-water samples collected on May 28, 1992, were additionally analyzed for TPH(d) using Modified EPA

Method 8015. Diesel was detected in all six wells sampled at concentrations of 0.98 ppm (well LF-24) or less.

5.0 DISCUSSION OF RESULTS

Based on analytical results, shallow ground water at the Property does not appear to be significantly impacted by petroleum compounds originating from the Property. Ground-water quality results do not indicate the presence of gasoline, BTEX, oil and grease, or diesel at levels of regulatory concern. Based on these results and analytical results of soil sampling and excavations conducted at the Property by Levine·Fricke and ARI, the soil types (i.e., clay, silty clay, clayey silts) present at the Property may have mitigated the migration of petroleum hydrocarbons in soils to the shallow ground water.

6.0 RECOMMENDATIONS

In a meeting on June 22, 1992, with Mr. Lester Feldman of the RWQCB and Mr. Dennis Byrne of ACHA, Mr. Feldman requested a sixth well be installed near former well W-1 to evaluate the concentrations of petroleum compounds, if any, in the vicinity of USTs formerly located in this area and removed by Ransome in 1989.

In accordance with the RWQCB's Tri-Regional Recommendations (California RWQCB, 1990), a quarterly ground-water monitoring program is also recommended for the Property for 1 year, beginning with the fourth quarter of 1992 (October through December), to monitor the possible future impact of petroleum-affected soil on shallow ground water beneath the Property. Following 1 year of monitoring, hydrogeologic data for the Property will be evaluated to assess whether semiannual or annual monitoring may be appropriate for the Property or whether monitoring can be discontinued.

7.0 REFERENCES

Aqua Resources, Inc. 1991. Remedial investigation and closure plan for former corporation yard site, 4030 Hollis Street, Emeryville, California, prepared for Ransome Company, Inc. January.

California Regional Water Quality Control Board. 1990. Tri-regional board staff recommendations for preliminary evaluation and investigation of underground tank sites. August 10.

Kennedy/Jenks/Chilton. 1989. Baseline environmental assessment report, prepared for the Ransome Company. October.

Levine·Fricke, Inc. 1990. Phase I and Phase II environmental investigation, Yerba Buena project site, Emeryville, California. Report. Emeryville, California. August.

———. 1992. Work plan for ground-water investigations, former Ransome property, Yerba Buena project site, Emeryville, California. Report. Emeryville, California. April 15.

TABLE 1
WELL CONSTRUCTION DATA
FORMER RANSOME PROPERTY
YERBA BUENA PROJECT SITE
EMERYVILLE, CALIFORNIA

Well Number	Well Elevation from TOC (msl)	Boring Depth (feet)	Well Depth (feet)	Screened Depth Interval (feet)	Gravel Pack Depth Interval (feet)	Well Casing Diameter (inches)
LF-24	21.97	20	20	7 - 20	6 - 20	2
LF-25	23.01	15	15	5 - 15	4 - 15	2
LF-26	26.84	20	20	8 - 20	7 - 20	2
LF-27	22.77	20	20	8 - 20	6.5 - 20	2
LF-28	20.55	20	20	7 - 20	6 - 20	2

Notes:

TOC = Top of Casing
msl = mean sea level

TABLE 2

GROUND-WATER ELEVATION DATA
FORMER RANSOME COMPANY PROPERTY
YERBA BUENA PROJECT SITE
EMERYVILLE, CALIFORNIA
(all elevations in feet above mean sea level [msl])

Well Number	Well Elevation from TOC (msl)	May 14, 1992		May 28, 1992	
		Depth to Water	Ground-Water Elevation	Depth to Water	Ground-Water Elevation
LF-16	17.56	6.46	11.10	6.52	11.04
LF-24	21.97	9.75	12.22	9.86	12.11
LF-25	23.01	7.02	15.99	7.34	15.67
LF-26	26.84	10.55	16.29	10.87	15.97
LF-27	22.77	12.87	9.90	13.10	9.67
LF-28	20.55	9.00	11.55	9.02	11.53

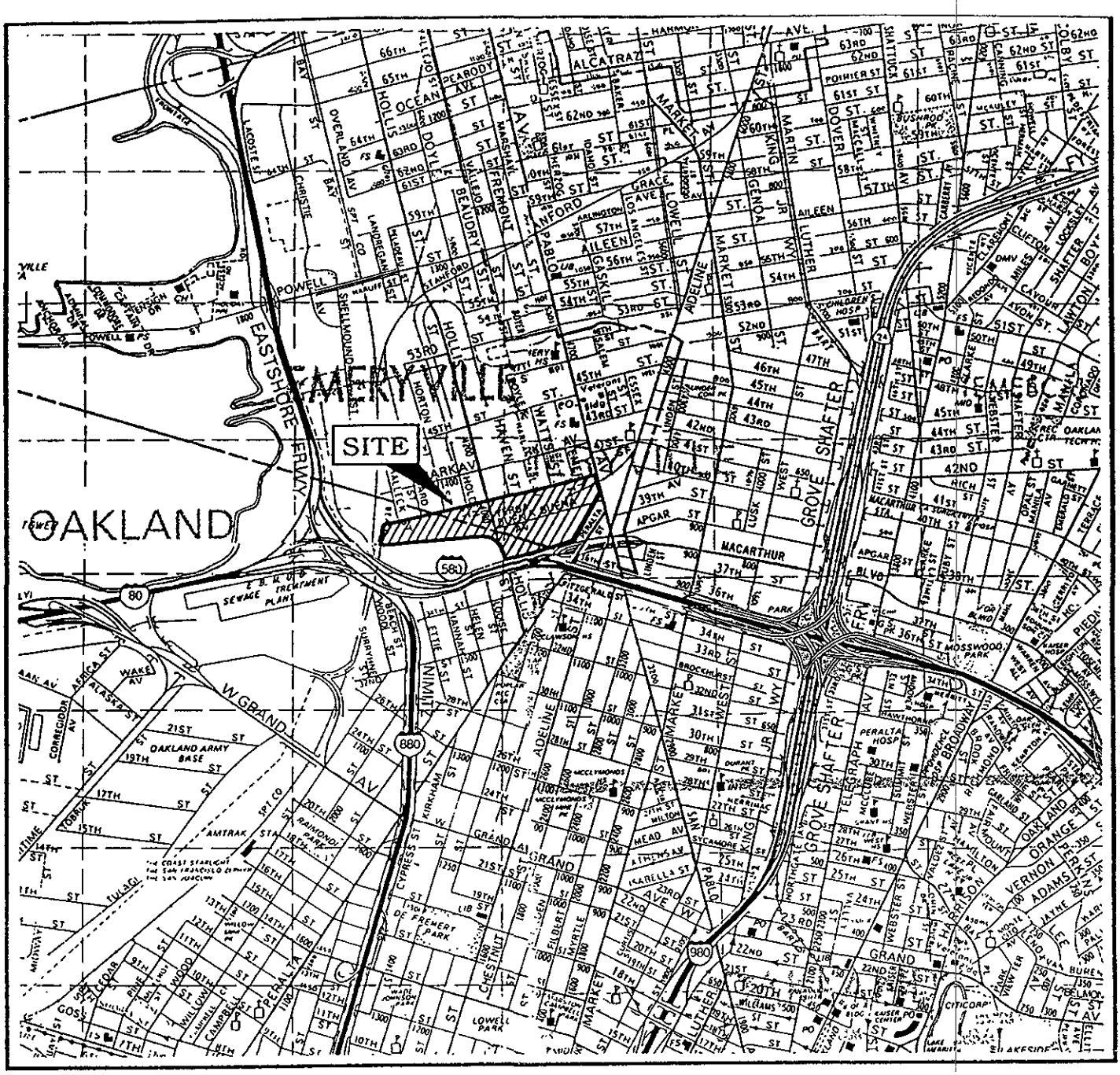
Notes:

TOC - top of casing
msl - mean sea level

TABLE 3
GROUND-WATER QUALITY DATA
FORMER RANSOME PROPERTY
YERBA BUENA PROJECT SITE
EMERYVILLE, CALIFORNIA
(concentrations expressed in parts per million [ppm])

Well Number	Date	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Oil and Grease	Hydrocarbons	Diesel
LF-16	14-May-92	<0.05	<0.0003	<0.0003	<0.0003	<0.001	6.6	6.3	NA
	28-May-92	<0.05	<0.0003	<0.0003	<0.0003	<0.001	<0.5	<0.5	0.05
LF-24	14-May-92	<0.05	<0.0003	<0.0003	<0.0003	<0.001	<0.5	<0.5	NA
	28-May-92	<0.05	<0.0003	<0.0003	<0.0003	<0.001	<0.5	<0.5	0.98
LF-25	14-May-92	<0.05	0.0004	0.0004	<0.0003	<0.001	4	2	NA
	duplicate	<0.05	0.0004	0.0004	<0.0003	<0.001	5.6	3	NA
	28-May-92	<0.05	<0.0003	<0.0003	<0.0003	<0.001	2	1	0.2
	duplicate	<0.05	<0.0003	<0.0003	<0.0003	<0.001	NA	NA	NA
LF-26	14-May-92	<0.05	<0.0003	<0.0003	<0.0003	<0.001	<0.5	<0.5	NA
	28-May-92	<0.05	<0.0003	0.002	<0.0003	<0.001	<0.5	<0.5	0.1
LF-27	14-May-92	<0.05	0.0004	0.002	<0.0003	0.002	<0.5	<0.5	NA
	28-May-92	<0.05	<0.0003	<0.0003	<0.0003	<0.001	<0.5	<0.5	0.1
LF-28	14-May-92	<0.05	<0.0003	<0.0003	<0.0003	<0.001	<0.5	<0.5	NA
	28-May-92	<0.05	<0.0003	0.001	<0.0003	<0.001	<0.5	<0.5	0.3
LF-25-FB	14-May-92	<0.05	<0.0003	<0.0003	<0.0003	<0.001	NA	NA	NA
	28-May-92	<0.05	<0.0003	<0.0003	<0.0003	<0.001	NA	NA	NA

Notes:
NA - not analyzed
TPHg - Total petroleum hydrocarbons as gasoline.
Samples were analyzed by Quanteq Laboratories of Pleasant Hill, California.



MAP SOURCE
Alameda & Contra Costa Counties,
Thomas Bros. map, 1990 Edition

Figure 1 : SITE LOCATION MAP
YERBA BUENA PROJECT SITE

Project No. 1649

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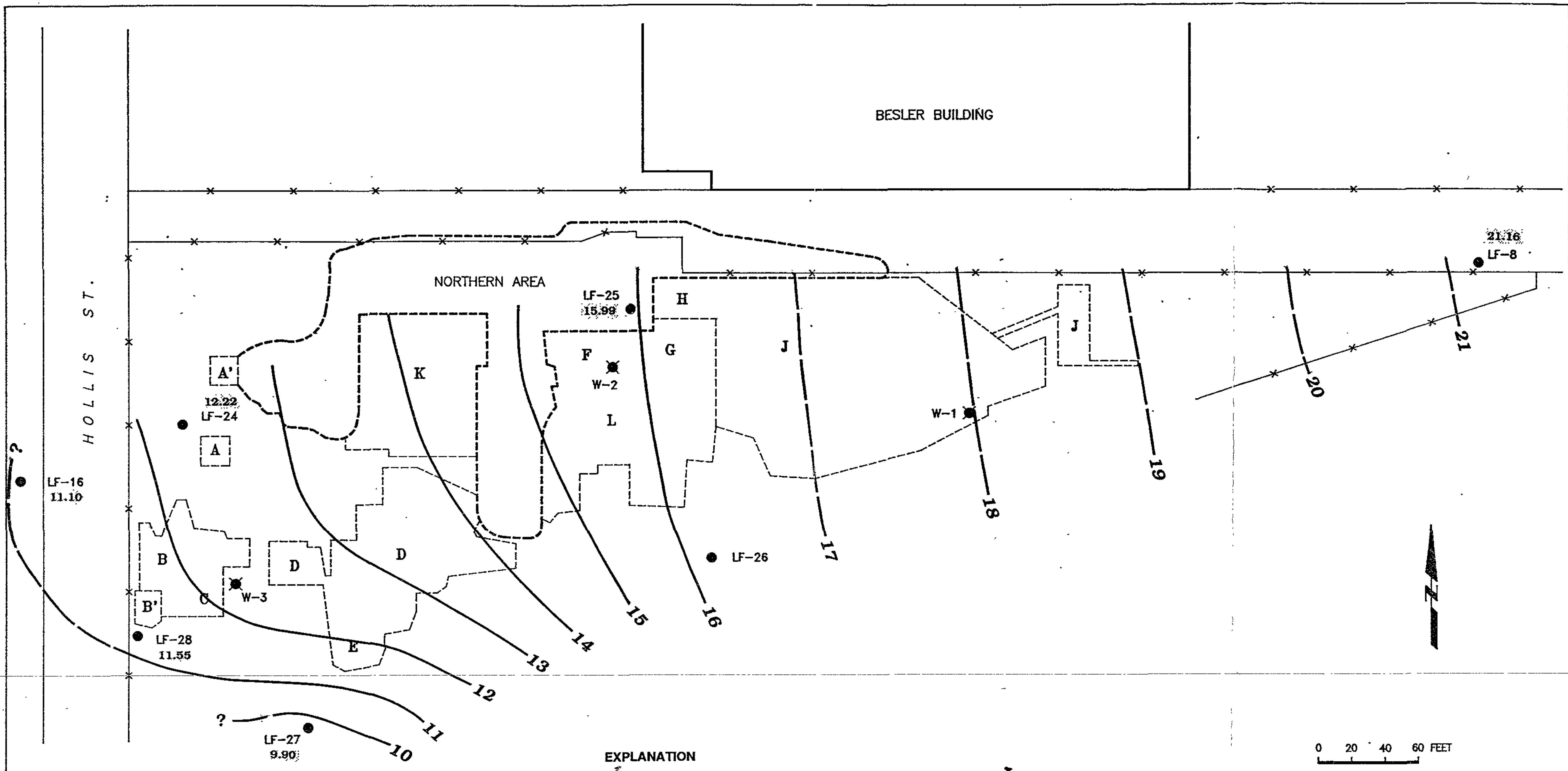
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1649ALS-SITE91-rvr



EXPLANATION

- - - - - Northern area excavation boundary completed by Levine•Fricke

[A] Excavation completed by Aqua Resources Inc

Abandoned shallow monitoring wells installed by Aqua Resources, Inc

● Shallow monitoring well location

12.22 Ground-water elevation (feet)

~12 Ground-water elevation contour (feet), (dashed where inferred)

Figure 2A:

SHALLOW GROUND-WATER ELEVATION CONTOUR MAP, MAY 14, 1992
FORMER RANSOME COMPANY PROPERTY

Project No. 1649.07

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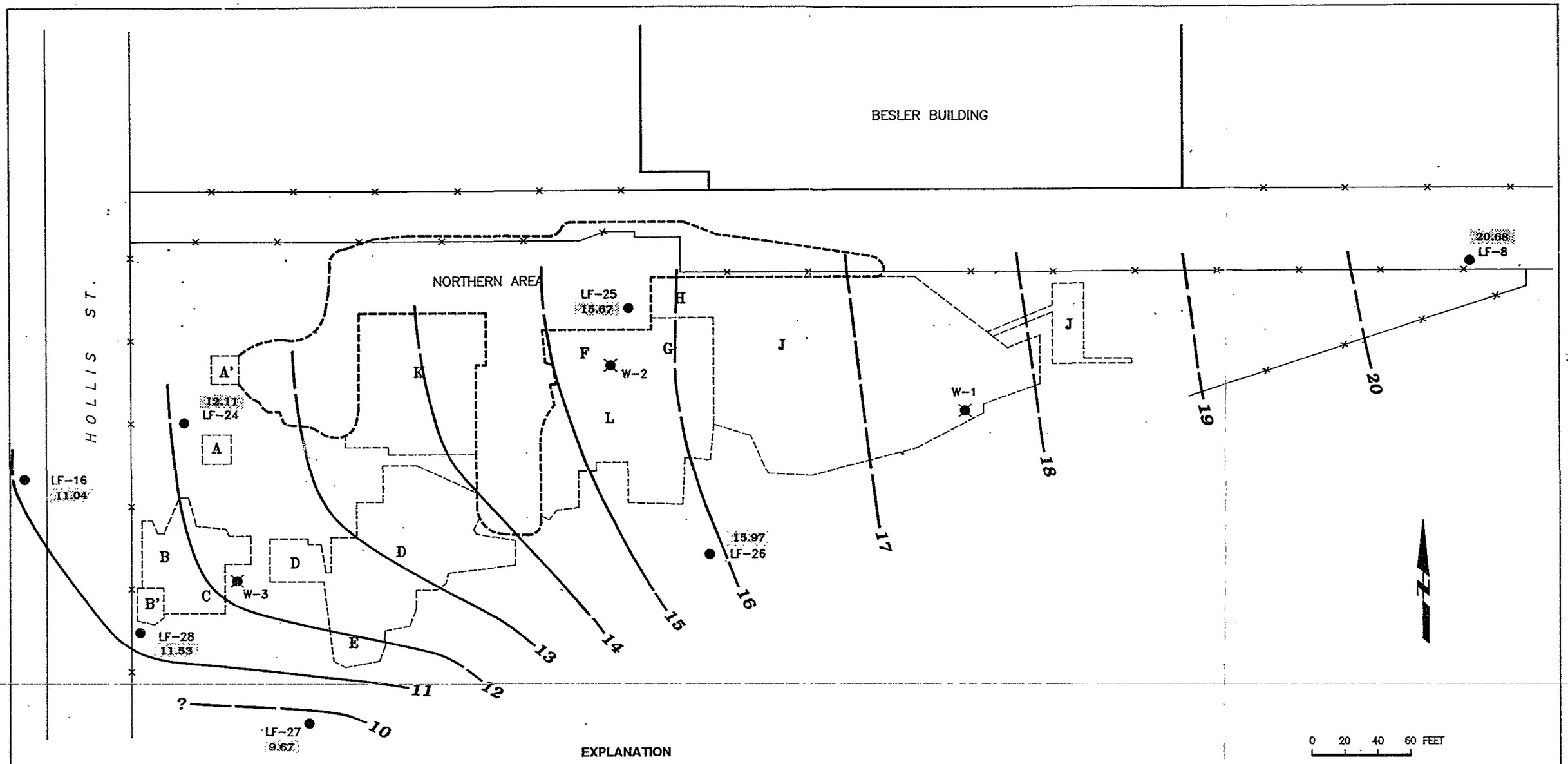

Figure 2B :

SHALLOW GROUND-WATER ELEVATION
CONTOUR MAP, MAY 28, 1992
FORMER RANSOME COMPANY PROPERTY

Project No. 1649 07

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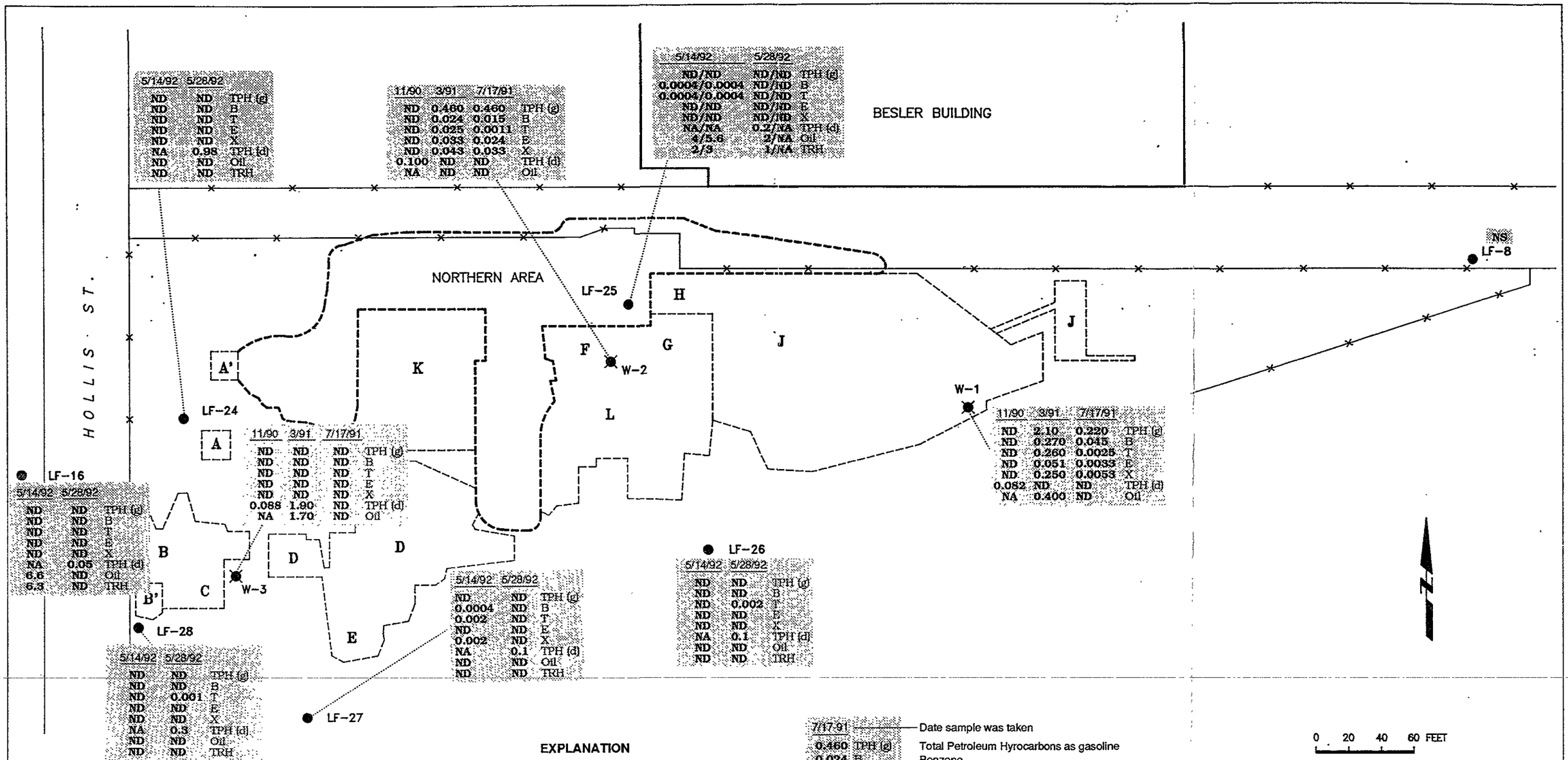

EXPLANATION

- Northern area excavation boundary completed by Levine•Fricke
- A — Excavation completed by Aqua Resources, Inc.
- Abandoned shallow monitoring wells installed by Aqua Resources, Inc
- Shallow monitoring well location
- 0.0004/0.0004 — Duplicate sample

7/17-91 — Date sample was taken

0.460	TPH (g)	Total Petroleum Hyrocarbons as gasoline
0.024	B	Benzene
0.025	T	Toluene
0.033	E	Ethylbenzene
0.043	X	Xylenes
ND	TPH (d)	Total Petroleum Hydrocarbons as diesel
ND	Oil	Oil
ND	TRH	Total Recoverable Hydrocarbons

Chemical compound

Concentration in parts per million (ppm)

- ND — Not detected above method detection limits
- NA — Not analyzed
- NS — Not Sampled

Figure 3 :

HISTORICAL GROUND-WATER QUALITY DATA (ppm)
FORMER RANSOME COMPANY PROPERTY

Project No. 1649.07

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ENGINEERS HYDROGEOLOGISTS & APPLIED SCIENTIS

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APPENDIX A

PROCEDURES USED DURING SOIL BORING AND MONITORING WELL INSTALLATION, DEVELOPMENT, AND SAMPLING

CONTENTS

PROCEDURES USED DURING SOIL BORING AND MONITORING WELL INSTALLATION, DEVELOPMENT, AND SAMPLING

A-1.0 SOIL BORING AND SAMPLING

On May 5 and 6, 1992, Gregg Drilling of Concord, California, a licensed well-drilling contractor, drilled five soil borings (LF-24, LF-25, LF-26, LF-27, and LF-28) under the direction of a Levine·Fricke geologist. Soil borings were drilled using a truck-mounted drill rig equipped with nominal 4.25-inch-inside-diameter hollow-stem augers to depths ranging between 16 feet bgs and 20 feet bgs.

During drilling, soil samples were collected for lithologic description by pushing a 5-foot-long, 6-inch-diameter, continuous-core sampling barrel ahead of the auger into undisturbed soil. Soil cores were described using the Unified Soil Classification System and recorded on lithologic logs presented in Appendix B. A field organic vapor meter (OVM) was used to help select samples for possible chemical analyses. Based on low or nondetect OVM measurements recorded in the field, no soil samples were submitted for chemical analyses. OVM measurements are presented on the lithologic log for each well (Appendix B).

All drilling and sampling equipment was steam cleaned using a laboratory-grade detergent prior to use at each soil boring location. Soil cuttings from each borehole were stockpiled on site.

A-2.0 MONITORING WELL INSTALLATION

Ground-water monitoring wells were installed in each boring by inserting 2-inch-diameter, flush-threaded, solid and slotted well casing through the hollow-stem auger. Wells were installed to depths ranging between 16 feet bgs and 20 feet bgs. The screened interval extends from 7 feet bgs to 20 feet bgs for well LF-24; from 5 feet bgs to 15 feet bgs for well LF-25; from 8 feet bgs to 20 feet bgs for well LF-26; from 8 feet bgs to 20 feet bgs for well LF-27; and from 7 feet bgs to 20 feet bgs for well LF-28. Depth to ground water during drilling ranged from 5 feet bgs to 19.5 feet bgs in the five borings.

A filter pack consisting of Number 3 Monterey sand was poured into the annular space between the hollow-stem auger and the slotted polyvinyl chloride (PVC) well casing as the auger was

gradually removed from the borehole. The filter pack was installed to approximately 1 foot to 1.5 feet above the top of the slotted casing. A 0.5-foot to 1.5-feet-thick layer of bentonite was placed on top of the filter pack and the remainder of the annular space was sealed with neat cement grout containing approximately 3 percent bentonite. At the ground surface, a 5-foot-long by 6-inch-wide square, steel "stovepipe" well box was installed to approximately 2 feet above ground surface to ensure well integrity. Well construction details are presented on the lithologic logs presented in Appendix B.

On May 18, 1992, elevation of the top of the PVC casing for each well was surveyed to the nearest 0.01 foot relative to a known reference point by Nolte and Associates of San Jose, California, a licensed surveyor.

A-3.0 WELL DEVELOPMENT AND GROUND-WATER SAMPLING

A-3.1 Well Development and Initial Ground-Water Sampling

On May 14, 1992, newly installed wells LF-24, LF-25, LF-26, LF-27, and LF-28 were developed to remove fine particles near the slotted casing and improve hydraulic communication between the slotted casing and the surrounding formation.

Wells were developed by purging approximately 11 to 25 well volumes from the well using a centrifugal pump and clean hose. Wells were purged until indicator parameters (specific conductance, pH, and temperature) had stabilized, thereby indicating complete removal of static water from the well. During purging, indicator parameters were recorded on water-quality sampling sheets (included in Appendix C). After indicator parameters stabilized, ground-water samples were collected in accordance with procedures described below.

A-3.2 Second Round of Ground-Water Sampling

Newly installed wells LF-24, LF-25, LF-26, LF-27, and LF-28 and existing well LF-16 were sampled on May 14, 1992, following well development. A second round of ground-water samples was collected on May 28, 1992. Newly installed wells were purged on May 28, 1992, by removing 3 well casing volumes from each well using a centrifugal pump and clean hose. Wells were purged until indicator readings had stabilized.

After purging, ground-water samples were collected from each well using a clean Teflon bailer and poured directly into two

40-milliliter, HCL-preserved, glass volatile organic analysis (VOA) vials, and into two 1-liter amber bottles preserved with H_2SO_4. Before the ground-water sample was collected, one field blank per sampling event (LF-25FB) was collected for quality control/quality assurance (QA/QC) purposes by pouring laboratory-supplied distilled water into a clean Teflon bailer and filling two 40-milliliter VOA bottles with the water from the bailer. Additionally, a duplicate sample was collected for chemical analysis from well LF-25 (labeled LF-125) for QA/QC purposes.

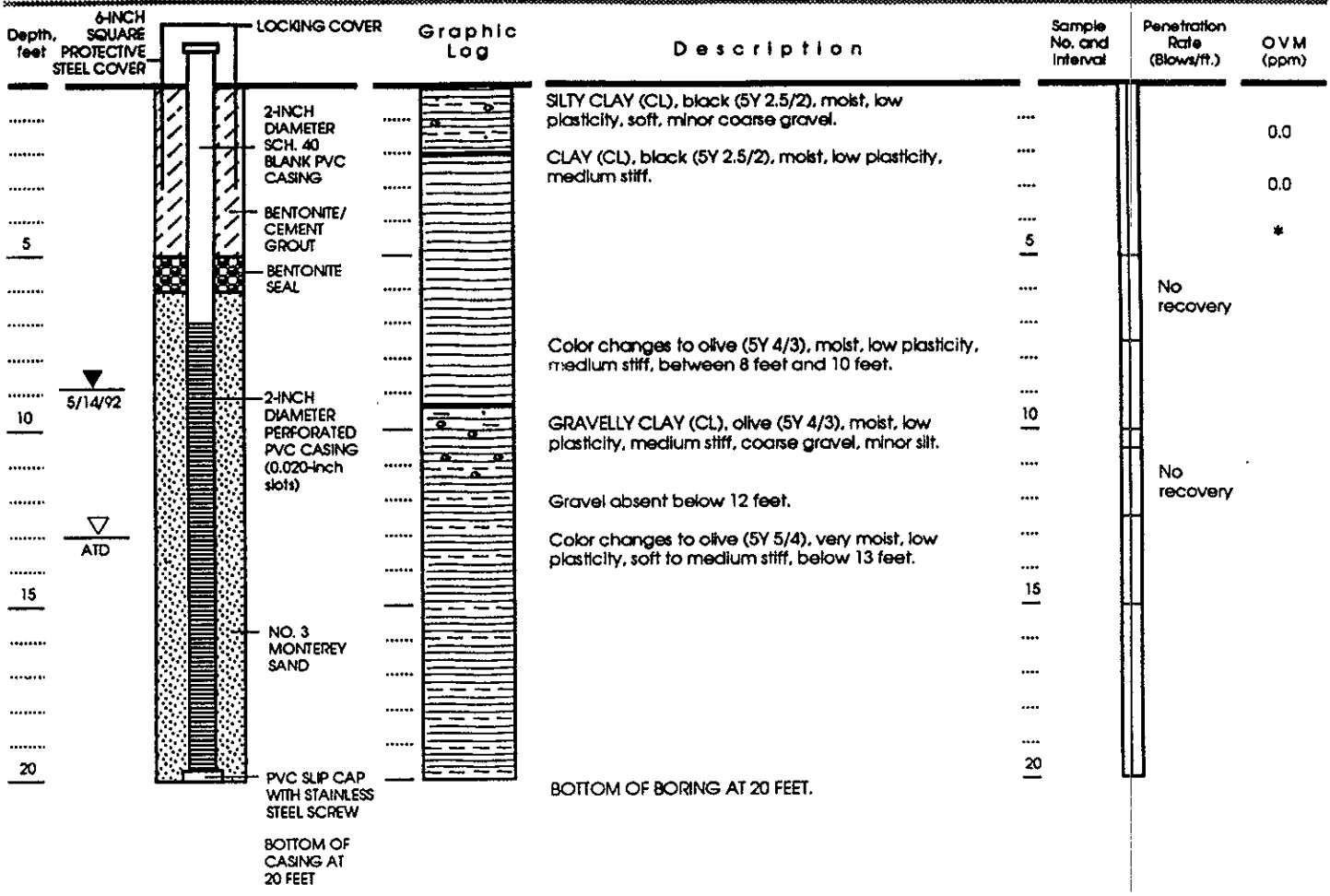
Immediately after collection, samples were labeled and placed in an ice-chilled cooler. Ground-water samples were delivered under strict chain-of-custody protocol to Quanteq Laboratories of Pleasant Hill, California. Ground-water samples were analyzed for TPH(g) using Modified EPA Methods 8015, for BTEX using EPA Method 8020, and for oil and grease and hydrocarbon compounds using EPA Method 5520. Ground-water samples collected on May 28, 1992 were additionally analyzed for diesel using Modified EPA Method 8015. Copies of the laboratory certificates are presented in Appendix D.

The Teflon bailers were washed with Alconox, a laboratory-grade detergent, and water, rinsed, and steam cleaned before use in each well. Centrifugal pump hoses were also steam cleaned before use in each well.

Purged water (generated during well development and sample collection) was stored in labeled, 55-gallon drums on site until an appropriate disposal method can be determined based on chemical analytical results of ground-water samples.

APPENDIX B

LITHOLOGIC WELL LOGS AND WELL CONSTRUCTION DATA FOR MONITORING WELLS LF-24, LF-25, LF-26, LF-27, and LF-28



EXPLANATION

- Clay
- Silt
- Sand
- Gravel

Date well drilled: May 5, 1992
Date Water Level measured: May 14, 1992
Drilling method: Hollow Stem Auger
Hammer weight and drop:
LF Geologist: William Madison

- Continuous Core Sampler
- * OVM readings not collected below 5 feet bgs due to error
- Static water level
- Water-level at time of drilling

Approved by: R.G #5106

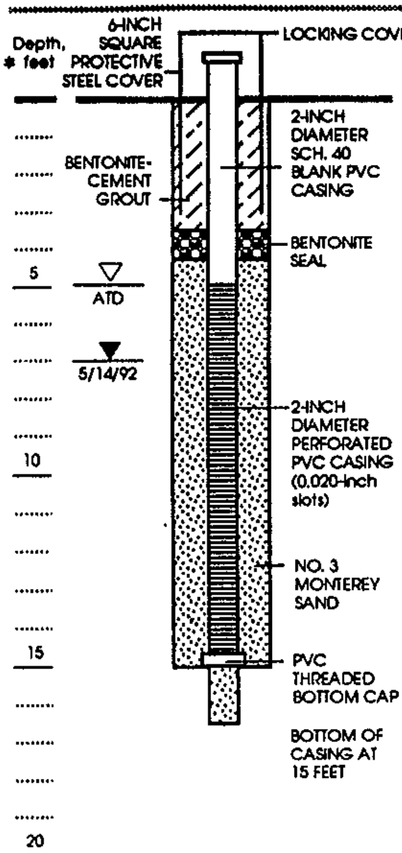
Figure B-1 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-24

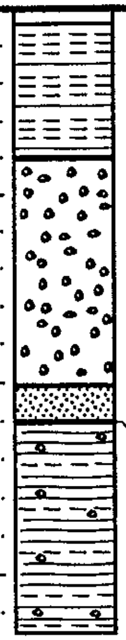
Project No. 1649.07

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

WEM07JUL92JSC/MP

WELL CONSTRUCTION | LITHOLOGY | SAMPLE DATA





Depth (feet)	Description	Sample No. and Interval	Penetration Rate (Blows/ft.)	OVM (ppm)
0–4	CLAYEY SILT (ML) FILL, very dark grayish brown (2.5Y 3/2), very moist, low plasticity, soft, trace amount of coarse gravel.			0.0
4–10	GRAVEL (GP) FILL, wet, coarse gravel.			**
10–11	SAND (SW), dark grayish brown (2.5Y 4/2), wet, fine to coarse sand, loose.			
11–16.5	SILTY CLAY (CL), olive (5Y 5/3), very moist, low plasticity, soft, trace amount of sand, minor gravel.			0.0
15	BOTTOM OF BORING IS AT 15 FEET.		7,17,26/43	
16.5	BOTTOM OF SAMPLE BORING IS AT 16.5 FEET.			

EXPLANATION

Clay
Silt
Sand
Gravel

Date well drilled: May 6, 1992
Date Water Level measured: May 14, 1992
Drilling method: Hollow Stem Auger
Hammer weight and drop: 140 lb.
LF Geologist: William Madison

Continuous Core Sampler
Modified California Sampler
Static water level
Water-level at time of drilling

* Depths are from top of boring. Top of well is 3'-4' below grade of site

** OVM reading not collected

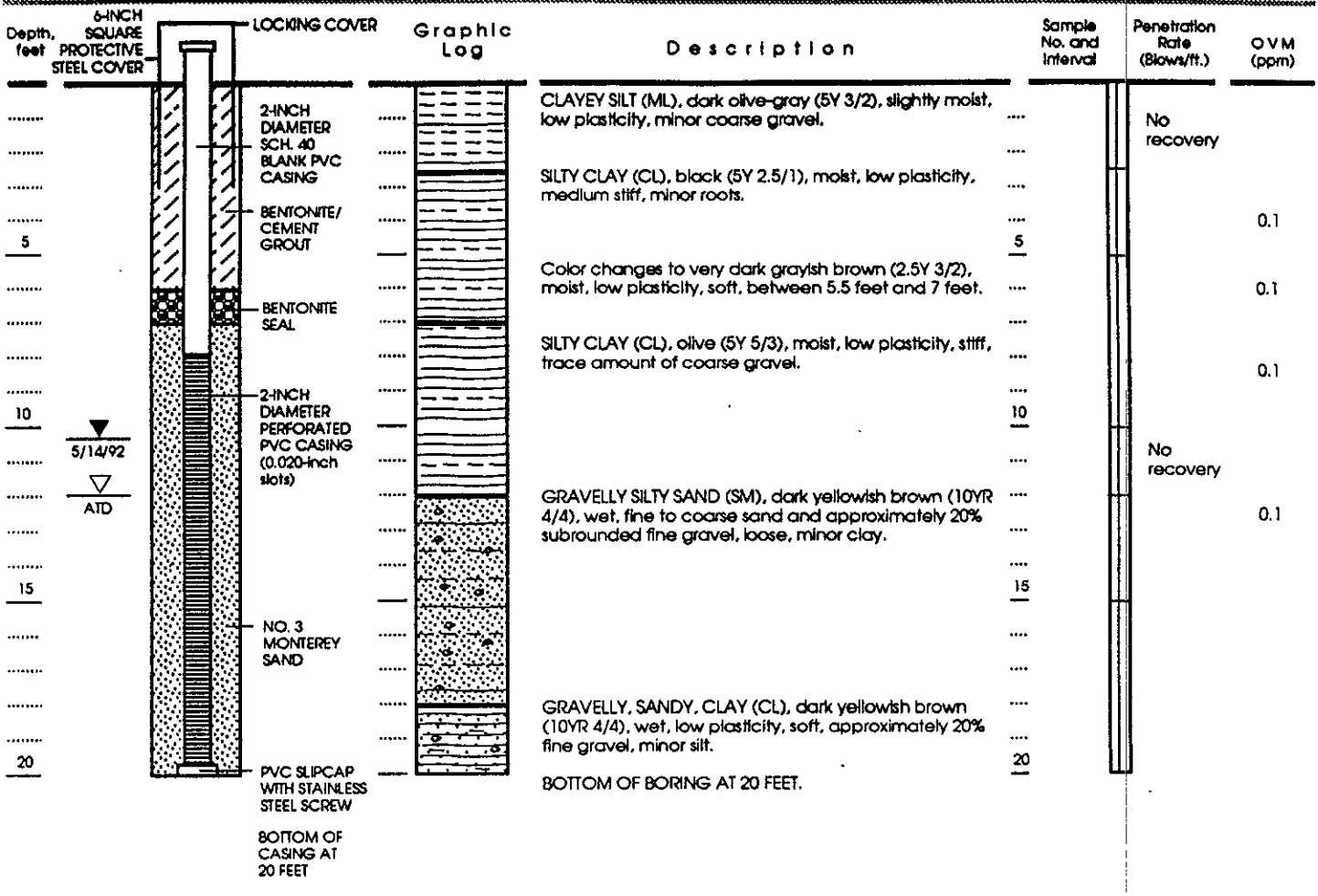
Approved by: *[signature]* R.6 # 5106

Figure B-2 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-25

Project No. 1649.07

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

WEM07JUL92JSC/MP



EXPLANATION

Clay
Silt
Sand
Gravel

Date well drilled: May 6, 1992
Date Water Level measured: May 14, 1992
Drilling method: Hollow Stem Auger
Hammer weight and drop: -
LF Geologist: William Madison

Continuous Core Sampler
Static water level
Water-level at time of drilling

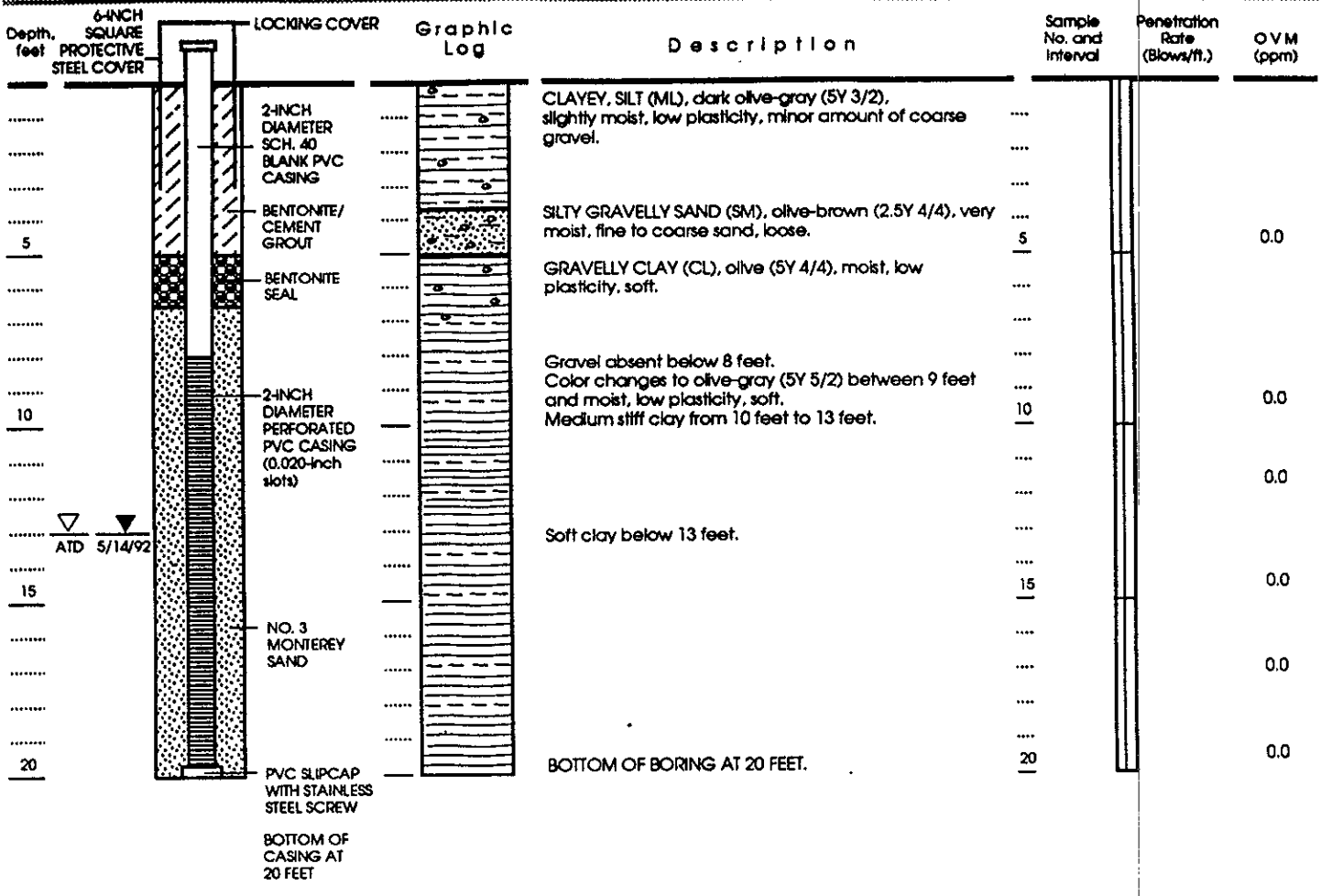
Approved by: Kathleen R. Hamm R.G. #5106

Figure B-3 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-26

Project No. 1649.07

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

WEM07JUL92JSC/MP



EXPLANATION

Clay
Silt
Sand
Gravel

Date well drilled: May 5, 1992
Date Water Level measured: May 5, 1992
Drilling method: Hollow Stem Auger
Hammer weight and drop:
LF Geologist: William Madison

Continuous Core Sampler
Static water level
Water-level at time of drilling

Approved by: Kathleen R. Farmer R.G. #5106

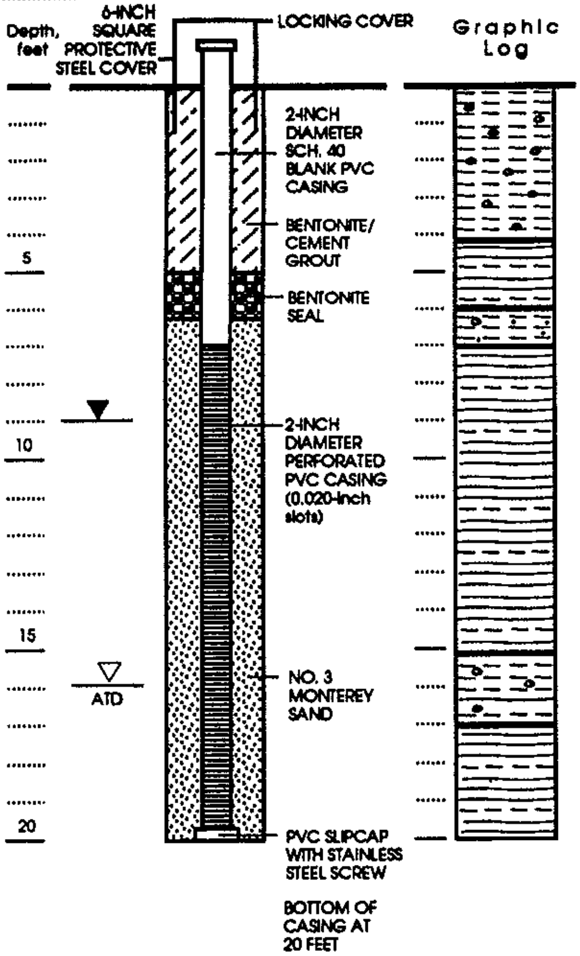
Figure B-4 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-27

Project No. 1649.07

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

WEM07JUL92JSC/MP

WELL CONSTRUCTION	LITHOLOGY	SAMPLE DATA



Description

GRAVELLY SILT (ML) FILL, dark grayish brown (2.5Y 4/2), slightly moist, low plasticity, approximately 30% coarse gravel.

SILTY CLAY (CL), olive-gray (5Y 5/2), moist, low plasticity, soft, trace amount of gravel.

SANDY, CLAYEY, SILT (ML), dark yellowish brown (10YR 5/6), moist, low plasticity, approximately 20% fine to coarse sand, minor gravel.

SILTY CLAY (CL), light olive-brown (2.5Y 5/4), moist, low plasticity, soft, mottled reddish brown and dark brown.

Color changes to yellowish brown (10YR 5/4), very moist, low plasticity, soft.

GRAVELLY, CLAYEY, SILT (ML), yellowish brown (10YR 5/4), wet, very soft, low plasticity, approximately 20% fine gravel.

SILTY CLAY (CL), yellowish brown (10YR 5/4), very moist, low plasticity, soft.

BOTTOM OF BORING AT 20 FEET.

Depth (feet)	Sample No. and Interval	Penetration Rate (Blows/ft.)	OVM (ppm)
0–5		No recovery	
5			0.0
10			0.0
15			0.0
20			0.0

EXPLANATION

Clay
Silt
Sand
Gravel

Date well drilled: May 5, 1992
Date Water Level measured: May 14, 1992
Drilling method: Hollow Stem Auger
Hammer weight and drop:
LF Geologist: William Madison

Continuous Core Sampler
Static water level
Water-level at time of drilling

Approved by: Nathaniel Ahearn(?) R.G. #5106

Figure B-5 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-28

Project No. 1649.07

LEVINE·FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

WEM07JUL92JSC/MP

APPENDIX C

WATER-QUALITY SAMPLING SHEETS

LEVINE•FRICKE

WATER-QUALITY SAMPLING INFORMATION

Project Name Yerba Buena — Project No. 1649.07

Date 5.14.92 — Sample No. LF.16

Samplers Name SCH JCK

Sampling Location Emeryville

Sampling Method Cent. pump / Teflon bail

Analyses Requested EPA 8015/8020; EPA 5520

Number and Types of Sample Bottles used 3 VOA/HCL; 2 amber H2SO4

Method of Shipment Courier

19.40
6.44
12.96
.65
6480
7776
8.4140

LOCATION MAP

GROUND WATER

Well No. LF.16

Well Diameter (in.) 4

Depth to Water, Static (ft) 6.44

Water in Well Box NO

Well Depth (ft) 19.40

Height of Water Column in Well 12.96

Water Volume in Well 8.41 = 9

SURFACE WATER

Stream Width

Stream Depth

Stream Velocity

Rained recently ?

Other

2-inch casing = 0.16 gal/ft

4-inch casing = 0.65 gal/ft

5-inch casing = 1.02 gal/ft

6-inch casing = 1.47 gal/ft

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
1649								Start
1650		9	19.5	6.95	776			Clear
1652	18.5							
1654		18	20.5	6.98	812			Mod. turbid/Stop p/p
1706								Start
1707		23						off
1720								Start
1721		27	19.6	7.05	751			Mod turbid/off
1725								Sample LF.16
1731	15.55							

Suggested Method for Purging Well

LEVINE•FRICKE

WATER-QUALITY SAMPLING INFORMATION

Project Name: Yerba Buena — Project No. 164907
Date: 5/28/92 — Sample No. LF-16
Samplers Name: WBM
Sampling Location: LF-16
Sampling Method: Cent. pump w/teflon bailer
Analyses Requested: 8015/8020; 5520 c+F
Number and Types of Sample Bottles used: 2 VOA vials + 2-1-liter bottles
Method of Shipment: Cooler via courier

GROUND WATER

Well No.: LF-16
Well Diameter (in.): 4
Depth to Water, Static (ft): 6.54
Water in Well Box: No
Well Depth (ft): 19.44
Height of Water Column in Well: 12.90
Water Volume in Well: 8.39 2.8.5

SURFACE WATER

Stream Width: /
Stream Depth: /
Stream Velocity: /
Rained recently ?: /
Other: /

2-inch casing = 0.16 gal/ft
4-inch casing = 0.65 gal/ft
5-inch casing = 1.02 gal/ft
6-inch casing = 1.47 gal/ft

LOCATION MAP

19.44
-6.54
1290

19.44
-10.32
(9.12)

12.90
x.65
6450
7740
8385.0

12.90
x.80
0000
10320
80% → 10.320

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
4:04								Start
4:05		9	20.3	6.86	639			Clear
4:08		16						pump off - possibly dry
4:11								pump on
4:13		18	20.6	6.98	618			
4:14	[illegible]	19						pump off - dry
4:19	[illegible] 18							
4:19	17							
6:00	6.84							
6:05								Sample LF-16
6:13	7.38							

Suggested Method for Purging Well

LEVINE•FRICKE

WATER-QUALITY SAMPLING INFORMATION

Project Name YERBA BUENA

Project No. ~~1674~~. 1649.07

Date 5/14/92

Sample No. HLF-24

Samplers Name JCK SCH

Sampling Location LF-24

Sampling Method CENT PUMP/TEFLON BAILER

Analyses Requested EPA 8015/8020 EPA 5520

Number and Types of Sample Bottles used 2 VOA 2L. GLASS

Method of Shipment COURIER

GROUND WATER

Well No. LF-24

Well Diameter (in.) 2

Depth to Water, Static (ft) 8.74

Water in Well Box

Well Depth (ft) 22.0

Height of Water Column in Well 13.26

Water Volume in Well 2.12

RECOVERY RATE 1.3'/hr

SURFACE WATER

Stream Width

Stream Depth

Stream Velocity

Rained recently ?

Other

2-inch casing = 0.16 gal/ft

4-inch casing = 0.65 gal/ft

5-inch casing = 1.02 gal/ft

6-inch casing = 1.47 gal/ft

22.00
8.74
13.26
.16
7956
1326
2.12

LOCATION MAP

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
15:41								PUMP ON
1542		4	19.8	7.17	1246			TURBID
15:45		8	19.0	7.08	1177			TURBID
15:45	BOTTOM	12	18.9	6.98	1166			TURBID/PUMP OFF
15:48								PUMP ON
15:49		16	19.8	6.88	1074			TURBID
15:50	BOTTOM	20	18.6	6.80	1017			TURBID/PUMP OFF
15:54								PUMP ON
15:55		24	18.5	6.78	997			TURBID
15:57		28						PUMP OFF
1608	10.64							

PUMPED DRY, ALLOWED TO RECHARGE

Suggested Method for Purging Well

LEVINE•FRICKE

WATER-QUALITY SAMPLING INFORMATION

Project Name Yerba Buena - ~~[illegible]~~ wm Project No. 1649.07

Date 5/29/92 Sample No. LF-24

Samplers Name WEM

Sampling Location LF-24

Sampling Method Cent. pump + teflon bailer

Analyses Requested 8015/8020 ; 5520 C+F

Number and Types of Sample Bottles used 2 VOA vials ; 2 1-liter bottles

Method of Shipment ~~Courier~~ ~~[illegible]~~ wm Cooler w/ courier

GROUND WATER

Well No. LF-24

Well Diameter (in.) 2

Depth to Water, Static (ft) 9.86

Water in Well Box NO

Well Depth (ft) 22.05

Height of Water Column in Well 12.19

Water Volume in Well 1.95 x 2

SURFACE WATER

Stream Width /

Stream Depth /

Stream Velocity /

Rained recently ? /

Other /

2-inch casing = 0.16 gal/ft

4-inch casing = 0.65 gal/ft

5-inch casing = 1.02 gal/ft

6-inch casing = 1.47 gal/ft

22.05
− 9.86
12.19

12.19
x.16
7314
1219
1.9504

LOCATION MAP

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
2:55								Start
2:56		2	23.5	6.80	993			turbid
2:57		4	21.0	6.79	916			turbid
2:58		wm ~~8~~ 7.5	19.1	6.79	917			turbid - pump off
3:10								Sample LF-24
3:22	10.13							

Suggested Method for Purging Well

LEVINE•FRICKE

WATER-QUALITY SAMPLING INFORMATION

Project Name Yerba Buena — Project No. 1649.07

Date 5.14.92 — Sample No. LF.25 / LF.25.FB

Samplers Name SCH JCK

Sampling Location Emeryville

Sampling Method Cent. pump/Teflon bail

Analyses Requested EPA 8015/8020; EPA 5520 (oil)

Number and Types of Sample Bottles used 9 VOA/HCL; 4 amber L/H2SO4

Method of Shipment Courier

LF.125

17.10
7.01
10.09
16
6054
10090
1614

LOCATION MAP

GROUND WATER

Well No. LF.25

Well Diameter (in.) 2

Depth to Water, Static (ft) 7.01

Water in Well Box NO

Well Depth (ft) 17.10

Height of Water Column in Well 10.09

Water Volume in Well 1.61 ≈ 2

SURFACE WATER

Stream Width

Stream Depth

Stream Velocity

Rained recently?

Other

2-inch casing = 0.16 gal/ft

4-inch casing = 0.65 gal/ft

5-inch casing = 1.02 gal/ft

6-inch casing = 1.47 gal/ft

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
1326								Start
1327		10	19.2	8.40	1049			V. turbid/gray/[illegible]
1328 *		14	18.9	8.04	1003			" / "
1329:30		24	18.8	7.63	983			turbid/stop
1331								Start
1333		42	18.8	7.89	924			turbid/off
1340								LF.25.FB
1350								Sample LF25
1415								Dup. LF.125
1400	7.04							

Suggested Method for Purging Well

* pump slowed down

10-30-89
LEVINE•FRICKE

WATER-QUALITY SAMPLING INFORMATION

Project Name: Yerba Buena - ~~[illegible]~~ [illegible]
Project No.: 1649.07
Date: 5/28/92
Sample No.: LF-25, LF-25-FB, LF-125
Samplers Name: WEM
Sampling Location: LF-25
Sampling Method: Cent. Pump w/ Teflon Bailer
Analyses Requested: EPA 8015/8020, 5520 (C+F)
Number and Types of Sample Bottles used: 2 Amber glass liter bottles, 6 VOA vials
Method of Shipment: Cooler w/ Courier

GROUND WATER

Well No.: LF-25
Well Diameter (in.): 2
Depth to Water, Static (ft): 7.34
Water in Well Box: no
Well Depth (ft): 17.10
Height of Water Column in Well: 9.76
Water Volume in Well: 1.56 ≈ 2

SURFACE WATER

Stream Width: ___
Stream Depth: ___
Stream Velocity: ___
Rained recently ? ___
Other: ___

2-inch casing = 0.16 gal/ft
4-inch casing = 0.65 gal/ft
5-inch casing = 1.02 gal/ft
6-inch casing = 1.47 gal/ft

17.10
- 7.34
9.76

9.76
x.16
5856
976
1.5616

LOCATION MAP

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
10:56								start
10:56		2	19.8	7.41	951			turbid
10:58		4	20.3	7.27	950			turbid
11:00		6	20.6	7.23	944			turbid - ~~pump off~~
11:00		7.5						pump off
11:45								Sampled LF-25FB (Field Blank)
12:00								LF-25 sample
12:01	7.34							
8:00								Sampled LF-125

Suggested Method for Purging Well ___

LEVINE•FRICKE

WATER-QUALITY SAMPLING INFORMATION

Project Name: Yerba Buena — Project No.: 1649.07

Date: 5.14.92 — Sample No.: LF·26

Samplers Name: SCH JCK

Sampling Location: Emeryville

Sampling Method: Cent. pump/ Teflon bail

Analyses Requested: EPA 8015/8020, EPA

Number and Types of Sample Bottles used: 3 VOA/HCL; 2 amber L/H2SO4 16

Method of Shipment: Courier

21.80
10.58
11.22
6732
11220
1.795

GROUND WATER

Well No.: LF·26

Well Diameter (in.): 2

Depth to Water, Static (ft): 10.58

Water in Well Box: NO

Well Depth (ft): 21.80

Height of Water Column in Well: 11.22

Water Volume in Well: 1.79 ≅ 2

SURFACE WATER

Stream Width

Stream Depth

Stream Velocity

Rained recently?

Other

2-inch casing = 0.16 gal/ft

4-inch casing = 0.65 gal/ft

5-inch casing = 1.02 gal/ft

6-inch casing = 1.47 gal/ft

LOCATION MAP

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
1240								start
1241		4	19.6	6.79	1044			V. turbid
1243		10	19.1	6.71	915			"
1244		14	18.9	6.70	912			"
1246		18	20.1	6.91	887			"
1246:45		22	18.6	6.72	872			" turbid
1247:30		26	18.5	6.68	838			" /stop
		— Surging Hose —						
1249:30								start
1250:30		30	19.3	6.72	854			turbid
1251:30		36	18.7	6.67	837			"
1252		40	18.5	6.65	826			" /stop

Suggested Method for Purging Well

10-30-97
LEVINE•FRICKE

WATER-QUALITY SAMPLING INFORMATION

Project Name _____ Project No. 1649.07

Date SEE PAGE 1 Sample No. LF·26

Samplers Name _____

Sampling Location _____

Sampling Method _____

Analyses Requested _____

Number and Types of Sample Bottles used _____

Method of Shipment _____

GROUND WATER

Well No. LF·26

Well Diameter (in.) 2

Depth to Water, Static (ft) SEE PAGE 1

Water in Well Box _____

Well Depth (ft) _____

Height of Water Column in Well _____

Water Volume in Well _____

SURFACE WATER

Stream Width _____

Stream Depth _____

Stream Velocity _____

Rained recently ? _____

Other _____

2-inch casing = 0.16 gal/ft

4-inch casing = 0.65 gal/ft

5-inch casing = 1.02 gal/ft

6-inch casing = 1.47 gal/ft

LOCATION MAP

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
1254								start
1255		50	18.4	6.68	824			turbid/stop
								sample LF·26
1305								
1311	10.70							

Suggested Method for Purging Well _____

LEVINE•FRICKE

WATER-QUALITY SAMPLING INFORMATION

Project Name: Yerba Buena - Ransome
Project No.: 1649.07
Date: 5/28/92
Sample No.: LF-26
Samplers Name: WEM
Sampling Location: LF-26
Sampling Method: Cent. pump w/ Teflon bailer
Analyses Requested: 8015/8020; 5520 C+F
Number and Types of Sample Bottles used: 2 VOA vials, 2-1 liter bottles
Method of Shipment: Cooler via courier

21.90
-10.88
11.02

11.02
x.16
6612
11 02
1.7632

GROUND WATER

Well No.: LF-26
Well Diameter (in.): 2
Depth to Water, Static (ft): 10.88
Water in Well Box: NO
Well Depth (ft): 21.90
Height of Water Column in Well: 11.02
Water Volume in Well: 1.76 ≈ 2

SURFACE WATER

Stream Width:
Stream Depth:
Stream Velocity:
Rained recently ?:
Other:

2-inch casing = 0.16 gal/ft
4-inch casing = 0.65 gal/ft
5-inch casing = 1.02 gal/ft
6-inch casing = 1.47 gal/ft

LOCATION MAP

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
1:32								Start pump
1:37		2	24.2	6.77	775			turbid
1:40		4	23.0	6.61	782			turbid ~~pump~~
1:43		6	22.6	6.57	768			turbid
1:44		8	21.4	6.55	750			turbid pump off
2:05								Sample LF-26
2:15	10.91							

Suggested Method for Purging Well:

LEVINE•FRICKE

WATER-QUALITY SAMPLING INFORMATION

Project Name VERA BUENA. Project No. 1649.07

Date 5/12/92 Sample No. LF-27

Samplers Name JCR SCH

Sampling Location LF-27

Sampling Method CENT PUMP / TEFLON BAILER

Analyses Requested 8015/TPHg; 8020/BTEX; 5520/oil

Number and Types of Sample Bottles used 3 VOA HCl / 1 amber L./H2SO4

Method of Shipment COURIER

21.92
12.92
9.00
.16
5400
900
1.4400

GROUND WATER

Well No. LF-27

Well Diameter (in.) 2

Depth to Water, Static (ft) 12.92

Water in Well Box N/O

Well Depth (ft) 21.92

Height of Water Column in Well 9.00

Water Volume in Well 1.44

SURFACE WATER

Stream Width

Stream Depth

Stream Velocity

Rained recently ?

Other

2-inch casing = 0.16 gal/ft

4-inch casing = 0.65 gal/ft

5-inch casing = 1.02 gal/ft

6-inch casing = 1.47 gal/ft

LOCATION MAP

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
1040:45								Start
1041:30		1.5	20.1	7.25	1329			V. turbid / muddy
1043:45	Bottom	4.5	20.5	7.34	1418			" / "
1044:45		6.0	20.8	7.21	1267			" / "
1045:45		9.0	22.6	7.31	1152			" / "
1049		12.0	23.6	7.41	1158			" / " Off
1050								Start
1054		15.0	23.6	7.33	1049			turbid
1056	↓	16.0						off
		Recharge Rate =			0.9'/min			
1106	14.66							
	<SEE PAGE 2>							

Suggested Method for Purging Well

LEVINE•FRICKE

WATER-QUALITY SAMPLING INFORMATION

Project Name _____ Project No. 164907

Date _____ Sample No. LF-27

Samplers Name _____

Sampling Location _____

Sampling Method _____

Analyses Requested _____

Number and Types of Sample Bottles used _____

Method of Shipment _____

GROUND WATER

Well No. LF-27

Well Diameter (in.) 2

Depth to Water, Static (ft) SEE PAGE 1

Water in Well Box _____

Well Depth (ft) _____

Height of Water Column in Well _____

Water Volume in Well _____

SURFACE WATER

Stream Width _____

Stream Depth _____

Stream Velocity _____

Rained recently ? _____

Other _____

2-inch casing = 0.16 gal/ft

4-inch casing = 0.65 gal/ft

5-inch casing = 1.02 gal/ft

6-inch casing = 1.47 gal/ft

LOCATION MAP

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
1108								start
1108:30		18	23.6	6.98	991			turbid
1109:30		20	22.5	6.94	996			turbid/off
1116								start
1117		22.5	22.0	6.93	960			turbid/off
1125								sample LF-27
1133	14.06							

Suggested Method for Purging Well _____

10-30-

LEVINE•FRICKE

WATER-QUALITY SAMPLING INFORMATION

Project Name Yerba Buena ~~[illegible]~~ Inn Project No. 1649.07

Date 5/28/92 Sample No. LF-27

Samplers Name WERA

Sampling Location LF27

Sampling Method Cent. pump w/ Teflon Bailer

Analyses Requested 8015/8020; 5520 C+F

Number and Types of Sample Bottles used 2 VOA vials, 2 liter bottles

Method of Shipment cooler via courier

GROUND WATER

Well No. LF-27

Well Diameter (in.) 2

Depth to Water, Static (ft) 13.12

Water in Well Box no

Well Depth (ft) 21.90

Height of Water Column in Well 8.78

Water Volume in Well 1.4 ≈ 2

SURFACE WATER

Stream Width

Stream Depth

Stream Velocity

Rained recently ?

Other

2-inch casing = 0.16 gal/ft

4-inch casing = 0.65 gal/ft

5-inch casing = 1.02 gal/ft

6-inch casing = 1.47 gal/ft

LOCATION MAP

21.90
-13.12
8.78

8.78
x.16
.5268
878
1.4048

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
12:31								Start pump
12:32		2	22.5	6.95	876			turbid
12:33		4	21.2	6.91	863			turbid
12:34		6	20.2	6.84	811			turbid pump off
12:35		8	20.3	6.75	795			pump on - turbid
12:36								pump off
12:34								pump on
12:39		10	21.0	6.77	813			turbid - pump off
12:55								Sample - LF-27
1:03	14.08							

Suggested Method for Purging Well

PAGE 1/2

LEVINE•FRICKE

WATER-QUALITY SAMPLING INFORMATION

Project Name YERBA BUENA — Project No. 1649.07

Date ~~Test # 5~~ 5/14/92 — Sample No. LF-28

Samplers Name JCK SCH

Sampling Location LF-28

Sampling Method CENT PUMP/TEFLON BAILER

Analyses Requested EPA 8015/8020

Number and Types of Sample Bottles used 3 VOA 2L. GLASS

Method of Shipment COURIER

21.70
8.90
12.80
.16
7680
1280
20480

LOCATION MAP

GROUND WATER

Well No. LF-28

Well Diameter (in.) 2

Depth to Water, Static (ft) 8.90

Water in Well Box NO

Well Depth (ft) 21.70

Height of Water Column in Well 12.80

Water Volume in Well 2.05

SURFACE WATER

Stream Width

Stream Depth

Stream Velocity

Rained recently?

Other

2-inch casing = 0.16 gal/ft

4-inch casing = 0.65 gal/ft

5-inch casing = 1.02 gal/ft

6-inch casing = 1.47 gal/ft

RECOVERY = 1.1"/MIN

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
14:22								Pump On
14:23	BOTTOM	2	22.2	7.24	1680			THICK, BROWN, TURBID
14:24		4	20.8	7.33	1822			" " "
14:25		6	20.6	7.25	1708			" " "
14:26		8	20.5	7.23	1664			THICK BROWN
14:27	↓	10	21.0	7.23	1600			" " / PUMP OFF
1440	12.60							
1441								Start
1444		16	20.0	6.98	1282			Thick, turbid / stop / DI
1453								Pump On
1454		20	19.7	6.90	1156			TURBID
1455		22						PUMP OFF

Suggested Method for Purging Well

LEVINE • FRICKE

WATER-QUALITY SAMPLING INFORMATION

Project Name _____ Project No. 1649.07

Date 5/14/92 Sample No. LF-28

Samplers Name _____

Sampling Location _____

Sampling Method _____

Analyses Requested _____

Number and Types of Sample Bottles used _____

Method of Shipment _____

GROUND WATER

Well No. _____

Well Diameter (in.) _____

Depth to Water, Static (ft) _____

Water in Well Box _____

Well Depth (ft) _____

Height of Water Column in Well _____

Water Volume in Well _____

SURFACE WATER

Stream Width _____

Stream Depth _____

Stream Velocity _____

Rained recently ? _____

Other _____

2-inch casing = 0.16 gal/ft

4-inch casing = 0.65 gal/ft

5-inch casing = 1.02 gal/ft

6-inch casing = 1.47 gal/ft

LOCATION MAP

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
15:07								Pump On
15:09		26	19.7	6.84	992			Pump OFF
15:15	12.42							SAMPLE

Suggested Method for Purging Well _____

LEVINE • FRICKE

WATER-QUALITY SAMPLING INFORMATION

Project Name: Yerba Buena — Project No.: 1649.07

Date: 5/29/92 — Sample No.: LF-28

Samplers Name: WEM

Sampling Location: LF-28

Sampling Method: 8015/8020; 5520 C+F

Analyses Requested: Cent. pump w/ Teflon bailer

Number and Types of Sample Bottles used: 2 VOA vials, 2-1-liter bottles

Method of Shipment: cooler w/ courier

GROUND WATER

Well No.: LF-28

Well Diameter (in.): 2

Depth to Water, Static (ft): 9.02

Water in Well Box:

Well Depth (ft): 21.92

Height of Water Column in Well: 12.90

Water Volume in Well: 2.06 ≈ 2

SURFACE WATER

Stream Width:

Stream Depth:

Stream Velocity:

Rained recently?

Other:

2-inch casing = 0.16 gal/ft

4-inch casing = 0.65 gal/ft

5-inch casing = 1.02 gal/ft

6-inch casing = 1.47 gal/ft

21.92
- 9.02
12.90

5
12.90
x.16
17740
1290
20640

LOCATION MAP

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
5:01								start
5:03		2	20.7	7.04	880			turbid
5:04		4	20.3	6.99	913			turbid
5:06		6	19.9	6.95	900			turbid
5:07		7.5						pump off
5:25								Sample LF-28
5:35	9.76							

Suggested Method for Purging Well

APPENDIX D

LABORATORY DATA SHEETS AND CHAIN-OF-CUSTODY FORMS FOR GROUND-WATER SAMPLE ANALYSES

DOHS CERTIFICATION NO. E772

AIHA ACCREDITATION NO 332

LEVINE-FRICKE
1900 POWELL ST., 12TH FL.
EMERYVILLE, CA 94608

ATTN: JENNIFER BEATTY

CLIENT PROJ. ID: 1649.07
C.O.C. SERIAL NO: 10924

REPORT DATE: 06/02/92

DATE SAMPLED: 05/14/92

DATE RECEIVED: 05/15/92

QUANTEQ JOB NO: 9205139

ANALYSIS OF: WATER SAMPLES

Client Sample Id.	Quanteq Lab Id.	Oil & Grease (mg/L)	Hydrocarbons (mg/L)
LF-27	01D	ND	ND
LF-26	02D	ND	ND
LF-25	04D	4	2
LF-125	05D	5.6	3
LF-28	06C	ND	ND
LF-24	07C	ND	ND
LF-16	08C	6.6	6.3
Detection Limit		0.5	0.5
Method:		5520C	5520F
Instrument:		IR	IR

Date Extracted: 05/27/92
Date Analyzed: 05/27/92

ND = Not Detected

RECEIVED
JUN - 3 1992

Andrew Bradeen, Manager
Organic Laboratory

Results FAXed 05/29/92

LEVINE-FRICKE

SAMPLE ID: LF-27
CLIENT PROJ. ID: 1649.07
DATE SAMPLED: 05/14/92
DATE RECEIVED: 05/15/92
REPORT DATE: 06/02/92

QUANTEQ LAB NO: 9205139-01A
QUANTEQ JOB NO: 9205139
DATE ANALYZED: 05/19-27/92
INSTRUMENT: F

BTEX AND HYDROCARBONS (WATER MATRIX)
METHOD: EPA 8020, 5030 GCFID

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	71-43-2	0.4	0.3
Toluene	108-88-2	2	0.3
Ethylbenzene	100-41-4	ND	0.3
Xylenes, Total	1330-20-7	2	1
PURGEABLE HYDROCARBONS AS:			
Gasoline		ND mg/L	0.05 mg/L

ND = Not Detected

LEVINE-FRICKE

SAMPLE ID: LF-26
CLIENT PROJ. ID: 1649.07
DATE SAMPLED: 05/14/92
DATE RECEIVED: 05/15/92
REPORT DATE: 06/02/92

QUANTEQ LAB NO: 9205139-02A
QUANTEQ JOB NO: 9205139
DATE ANALYZED: 05/19/92
INSTRUMENT: F

BTEX AND HYDROCARBONS (WATER MATRIX)
METHOD: EPA 8020, 5030 GCFID

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	71-43-2	ND	0.3
Toluene	108-88-2	ND	0.3
Ethylbenzene	100-41-4	ND	0.3
Xylenes, Total	1330-20-7	ND	1
PURGEABLE HYDROCARBONS AS:			
Gasoline		ND mg/L	0.05 mg/L

ND = Not Detected

LEVINE-FRICKE

SAMPLE ID: LF-25-FB
CLIENT PROJ. ID: 1649.07
DATE SAMPLED: 05/14/92
DATE RECEIVED: 05/15/92
REPORT DATE: 06/02/92

QUANTEQ LAB NO: 9205139-03A
QUANTEQ JOB NO: 9205139
DATE ANALYZED: 05/19-27/92
INSTRUMENT: F

BTEX AND HYDROCARBONS (WATER MATRIX)
METHOD: EPA 8020, 5030 GCFID

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	71-43-2	ND	0.3
Toluene	108-88-2	ND	0.3
Ethylbenzene	100-41-4	ND	0.3
Xylenes, Total	1330-20-7	ND	1
PURGEABLE HYDROCARBONS AS:			
Gasoline		ND mg/L	0.05 mg/L

ND = Not Detected

LEVINE-FRICKE

SAMPLE ID: LF-25
CLIENT PROJ. ID: 1649.07
DATE SAMPLED: 05/14/92
DATE RECEIVED: 05/15/92
REPORT DATE: 06/02/92

QUANTEQ LAB NO: 9205139-04A
QUANTEQ JOB NO: 9205139
DATE ANALYZED: 05/19-27/92
INSTRUMENT: F

BTEX AND HYDROCARBONS (WATER MATRIX)
METHOD: EPA 8020, 5030 GCFID

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	71-43-2	0.4	0.3
Toluene	108-88-2	0.4	0.3
Ethylbenzene	100-41-4	ND	0.3
Xylenes, Total	1330-20-7	ND	1
PURGEABLE HYDROCARBONS AS:			
Gasoline		ND mg/L	0.05 mg/L

ND = Not Detected

LEVINE-FRICKE

SAMPLE ID: LF-125
CLIENT PROJ. ID: 1649.07
DATE SAMPLED: 05/14/92
DATE RECEIVED: 05/15/92
REPORT DATE: 06/02/92

QUANTEQ LAB NO: 9205139-05A
QUANTEQ JOB NO: 9205139
DATE ANALYZED: 05/19-27/92
INSTRUMENT: F

BTEX AND HYDROCARBONS (WATER MATRIX)
METHOD: EPA 8020, 5030 GCFID

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	71-43-2	0.4	0.3
Toluene	108-88-2	0.4	0.3
Ethylbenzene	100-41-4	ND	0.3
Xylenes, Total	1330-20-7	ND	1
PURGEABLE HYDROCARBONS AS:			
Gasoline		ND mg/L	0.05 mg/L

ND = Not Detected

LEVINE-FRICKE

SAMPLE ID: LF-28
CLIENT PROJ. ID: 1649.07
DATE SAMPLED: 05/14/92
DATE RECEIVED: 05/15/92
REPORT DATE: 06/02/92

QUANTEQ LAB NO: 9205139-06A
QUANTEQ JOB NO: 9205139
DATE ANALYZED: 05/19-27/92
INSTRUMENT: F

BTEX AND HYDROCARBONS (WATER MATRIX)
METHOD: EPA 8020, 5030 GCFID

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	71-43-2	ND	0.3
Toluene	108-88-2	ND	0.3
Ethylbenzene	100-41-4	ND	0.3
Xylenes, Total	1330-20-7	ND	1
PURGEABLE HYDROCARBONS AS:			
Gasoline		ND mg/L	0.05 mg/L

ND = Not Detected

LEVINE-FRICKE

SAMPLE ID: LF-24
CLIENT PROJ. ID: 1649.07
DATE SAMPLED: 05/14/92
DATE RECEIVED: 05/15/92
REPORT DATE: 06/02/92

QUANTEQ LAB NO: 9205139-07A
QUANTEQ JOB NO: 9205139
DATE ANALYZED: 05/19-27/92
INSTRUMENT: F

BTEX AND HYDROCARBONS (WATER MATRIX)
METHOD: EPA 8020, 5030 GCFID

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	71-43-2	ND	0.3
Toluene	108-88-2	ND	0.3
Ethylbenzene	100-41-4	ND	0.3
Xylenes, Total	1330-20-7	ND	1
PURGEABLE HYDROCARBONS AS:			
Gasoline		ND mg/L	0.05 mg/L

ND = Not Detected

LEVINE-FRICKE

SAMPLE ID: LF-16
CLIENT PROJ. ID: 1649.07
DATE SAMPLED: 05/14/92
DATE RECEIVED: 05/15/92
REPORT DATE: 06/02/92

QUANTEQ LAB NO: 9205139-08A
QUANTEQ JOB NO: 9205139
DATE ANALYZED: 05/19-27/92
INSTRUMENT: F

BTEX AND HYDROCARBONS (WATER MATRIX)
METHOD: EPA 8020, 5030 GCFID

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	71-43-2	ND	0.3
Toluene	108-88-2	ND	0.3
Ethylbenzene	100-41-4	ND	0.3
Xylenes, Total	1330-20-7	ND	1
PURGEABLE HYDROCARBONS AS:			
Gasoline		ND mg/L	0.05 mg/L

ND = Not Detected

QUALITY CONTROL DATA

DATE ANALYZED: 05/19/92
SAMPLE SPIKED: 9205139-01A
CLIENT PROJ. ID: 1649.07

QUANTEQ JOB NO: 9205139
INSTRUMENT: F

MATRIX SPIKE RECOVERY SUMMARY
METHOD 5030 w/GC FID/8020
(WATER MATRIX)

ANALYTE	Spike Conc. (ug/L)	Sample Result (ug/L)	MS Result (ug/L)	MSD Result (ug/L)	Average Percent Recovery	RPD
Benzene	16.0	0.4	15.3	15.3	93.1	0.0
Toluene	52.1	2	53.5	50.7	96.2	5.4
Hydrocarbons as Gasoline	550	ND	512	478	90.0	6.9

CURRENT QC LIMITS (Revised 08/15/91)

Analyte	Percent Recovery	RPD
Benzene	(81.4-115.3)	10.2
Toluene	(85.3-112.4)	9.4
Gasoline	(72.0-119.4)	12.8

MS = Matrix Spike
MSD = Matrix Spike Duplicate
RPD = Relative Percent Difference
ND = Not Detected

QUALITY CONTROL DATA

DATE EXTRACTED: 05/27/92
DATE ANALYZED: 05/27/92
CLIENT PROJ. ID: 1649.07

QUANTEQ JOB NO: 9205139
SAMPLE SPIKED: DI WATER
INSTRUMENT: IR

IR DETERMINATION FOR OIL & GREASE/HYDROCARBONS
METHOD SPIKE RECOVERY SUMMARY
(WATER MATRIX)

ANALYTE	Spike Conc. (mg/L)	Sample Result (mg/L)	MS Result (mg/L)	MSD Result (mg/L)	Average Percent Recovery	RPD
Oil	7.03	ND	6.88	7.03	98.9	2.2

CURRENT QC LIMITS (Revised 01/09/92)

Analyte	Percent Recovery	RPD
Oil	(87-112)	5.4

MS = Matrix Spike
MSD = Matrix Spike Duplicate
RPD = Relative Percent Difference
ND = Not Detected

R-3,5-1

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

9205139

Project No.: 1649.07	Field Logbook No.:
Date: 5/15/92	Serial No.: 10924
Project Name: YERBA BUENA	Project Location: EMERYVILLE, CA.
Sampler (Signature): [signature]	Samplers: JCK SCH

SAMPLES / ANALYSES

SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	EPA 601	EPA 624	EPA 5020/5520	EPA 5520 OIL+GREASE*			HOLD	RUSH	REMARKS
LF-27	5/14	11.25	01A-E	5	H2O			X	X					
LF-26	5/14	13.05	02A-E	|	|			X	X					
LF-25-FB*	5/14	13:40	03A-B	|	|			X	X					*NO AMBERS REC'D NORMAL TAT
LF-25	5/14	13.50	04A-E	|	|			X	X					
LF-125	5/14	14.15	05A-E	|	|			X	X					
LF-28	5/14	15.15	06A-D	4	|			X	X					RESULTS TO JENNIFER
LF-24	5/14	16.00	07A-D	4	|			X	X					BEATY
LF-16	5/14	17.25	08A-D	4	|			X	X					O+F 5520
														* OIL + GREASE + TPH
														Samples rec'd cold — DSH

	DATE	TIME		DATE	TIME
RELINQUISHED BY: (Signature) Matthew Cloud	5/15/92	9:15	RECEIVED BY: (Signature) [signature]	5/15/92	9:15 AM
RELINQUISHED BY: (Signature) [signature]	5/15/92	9:45	RECEIVED BY: (Signature) Gina Gillespie	5-15-92	0945
RELINQUISHED BY: (Signature)			RECEIVED BY: (Signature)		
METHOD OF SHIPMENT:			LAB COMMENTS:		

Sample Collector: LEVINE-FRICKE
1900 Powell Street, 12th Floor
Emeryville, Ca 94608
(415) 652-4500

Analytical Laboratory: QUANTEQ PLEASANT HILL CA

Shipping Copy (White) Lab Copy (Green) File Copy (Yellow) Field Copy (Pink)

QuanteQ Laboratories

An Ecologics Company

FORMERLY MED-TOX

Certificate of Analysis

DOHS CERTIFICATION NO. 1772

AIHA ACCREDITATION NO 332

LEVINE-FRICKE
1900 POWELL STEET
12TH FLOOR
EMERYVILLE, CA 94608
ATTN: JENNIFER BEATTY

CLIENT PROJ. ID: 1649.07
C.O.C. SERIAL NO: 10857

REPORT DATE: 06/15/92

DATE SAMPLED: 05/28/92

DATE RECEIVED: 05/29/92

QUANTEQ JOB NO: 9205314

ANALYSIS OF: WATER SAMPLES

See attached for results

JUN 16 1992

Andrew Bradeen, Manager
Organic Laboratory

Results FAXed 06/09/92

LEVINE-FRICKE

DATE SAMPLED: 05/28/92
DATE RECEIVED: 05/29/92
CLIENT PROJ. ID: 1649.07

REPORT DATE: 06/15/92
QUANTEQ JOB NO: 9205314

Client Sample Id.	Quanteq Lab Id.	Extractable Hydrocarbons as Diesel (mg/L)	Oil & Grease (mg/L)	Hydrocarbons (mg/L)
LF-16	01A	0.05	---	---
LF-16	01B	---	ND	ND
LF-24	02A	0.98	---	---
LF-24	02B	---	ND	ND
LF-25	03A	0.2	---	---
LF-25	03B	---	2	1
LF-26	06A	0.1	---	---
LF-26	06B	---	ND	ND
LF-27	07A	0.1	---	---
LF-27	07B	---	ND	ND
LF-28	08A	0.3	---	---
LF-28	08B	---	ND	ND
Detection limit		0.05	0.5	0.5
Method:		3520 GCFID	5520C	5520F
Instrument:		C	IR	IR
Date Extracted:		06/04/92	06/03,04/92	06/03,04/92
Date Analyzed:		06/05/92	06/04/92	06/04/92

ND = Not Detected

LEVINE-FRICKE

SAMPLE ID: LF-16
CLIENT PROJ. ID: 1649.07
DATE SAMPLED: 05/28/92
DATE RECEIVED: 05/29/92
REPORT DATE: 06/15/92

QUANTEQ LAB NO: 9205314-01C
QUANTEQ JOB NO: 9205314
DATE ANALYZED: 06/01/92
INSTRUMENT: F

BTEX AND HYDROCARBONS (WATER MATRIX)
METHOD: EPA 8020, 5030 GCFID

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	71-43-2	ND	0.3
Toluene	108-88-2	ND	0.3
Ethylbenzene	100-41-4	ND	0.3
Xylenes, Total	1330-20-7	ND	1
PURGEABLE HYDROCARBONS AS:			
Gasoline		ND mg/L	0.05 mg/L

ND = Not Detected

LEVINE-FRICKE

SAMPLE ID: LF-24
CLIENT PROJ. ID: 1649.07
DATE SAMPLED: 05/28/92
DATE RECEIVED: 05/29/92
REPORT DATE: 06/15/92

QUANTEQ LAB NO: 9205314-02C
QUANTEQ JOB NO: 9205314
DATE ANALYZED: 06/01/92
INSTRUMENT: F

BTEX AND HYDROCARBONS (WATER MATRIX)
METHOD: EPA 8020, 5030 GCFID

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	71-43-2	ND	0.3
Toluene	108-88-2	ND	0.3
Ethylbenzene	100-41-4	ND	0.3
Xylenes, Total	1330-20-7	ND	1
PURGEABLE HYDROCARBONS AS:			
Gasoline		ND mg/L	0.05 mg/L

ND = Not Detected

LEVINE-FRICKE

SAMPLE ID: LF-25
CLIENT PROJ. ID: 1649.07
DATE SAMPLED: 05/28/92
DATE RECEIVED: 05/29/92
REPORT DATE: 06/15/92

QUANTEQ LAB NO: 9205314-03C
QUANTEQ JOB NO: 9205314
DATE ANALYZED: 06/01/92
INSTRUMENT: F

BTEX AND HYDROCARBONS (WATER MATRIX)
METHOD: EPA 8020, 5030 GCFID

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	71-43-2	ND	0.3
Toluene	108-88-2	ND	0.3
Ethylbenzene	100-41-4	ND	0.3
Xylenes, Total	1330-20-7	ND	1
PURGEABLE HYDROCARBONS AS:			
Gasoline		ND mg/L	0.05 mg/L

ND = Not Detected

LEVINE-FRICKE

SAMPLE ID: LF-25-FB
CLIENT PROJ. ID: 1649.07
DATE SAMPLED: 05/28/92
DATE RECEIVED: 05/29/92
REPORT DATE: 06/15/92

QUANTEQ LAB NO: 9205314-04A
QUANTEQ JOB NO: 9205314
DATE ANALYZED: 06/01/92
INSTRUMENT: F

BTEX AND HYDROCARBONS (WATER MATRIX)
METHOD: EPA 8020, 5030 GCFID

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	71-43-2	ND	0.3
Toluene	108-88-2	ND	0.3
Ethylbenzene	100-41-4	ND	0.3
Xylenes, Total	1330-20-7	ND	1
PURGEABLE HYDROCARBONS AS:			
Gasoline		ND mg/L	0.05 mg/L

ND = Not Detected

LEVINE-FRICKE

SAMPLE ID: LF-125
CLIENT PROJ. ID: 1649.07
DATE SAMPLED: 05/28/92
DATE RECEIVED: 05/29/92
REPORT DATE: 06/15/92

QUANTEQ LAB NO: 9205314-05A
QUANTEQ JOB NO: 9205314
DATE ANALYZED: 06/01/92
INSTRUMENT: F

BTEX AND HYDROCARBONS (WATER MATRIX)
METHOD: EPA 8020, 5030 GCFID

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	71-43-2	ND	0.3
Toluene	108-88-2	ND	0.3
Ethylbenzene	100-41-4	ND	0.3
Xylenes, Total	1330-20-7	ND	1
PURGEABLE HYDROCARBONS AS:			
Gasoline		ND mg/L	0.05 mg/L

ND = Not Detected

LEVINE-FRICKE

SAMPLE ID: LF-26
CLIENT PROJ. ID: 1649.07
DATE SAMPLED: 05/28/92
DATE RECEIVED: 05/29/92
REPORT DATE: 06/15/92

QUANTEQ LAB NO: 9205314-06C
QUANTEQ JOB NO: 9205314
DATE ANALYZED: 06/01/92
INSTRUMENT: F

BTEX AND HYDROCARBONS (WATER MATRIX)
METHOD: EPA 8020, 5030 GCFID

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	71-43-2	ND	0.3
Toluene	108-88-2	2	0.3
Ethylbenzene	100-41-4	ND	0.3
Xylenes, Total	1330-20-7	ND	1
PURGEABLE HYDROCARBONS AS:			
Gasoline		ND mg/L	0.05 mg/L

ND = Not Detected

LEVINE-FRICKE

SAMPLE ID: LF-27
CLIENT PROJ. ID: 1649.07
DATE SAMPLED: 05/28/92
DATE RECEIVED: 05/29/92
REPORT DATE: 06/15/92

QUANTEQ LAB NO: 9205314-07C
QUANTEQ JOB NO: 9205314
DATE ANALYZED: 06/01/92
INSTRUMENT: F

BTEX AND HYDROCARBONS (WATER MATRIX)
METHOD: EPA 8020, 5030 GCFID

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	71-43-2	ND	0.3
Toluene	108-88-2	ND	0.3
Ethylbenzene	100-41-4	ND	0.3
Xylenes, Total	1330-20-7	ND	1
PURGEABLE HYDROCARBONS AS:			
Gasoline		ND mg/L	0.05 mg/L

ND = Not Detected

LEVINE-FRICKE

SAMPLE ID: LF-28
CLIENT PROJ. ID: 1649.07
DATE SAMPLED: 05/28/92
DATE RECEIVED: 05/29/92
REPORT DATE: 06/15/92

QUANTEQ LAB NO: 9205314-08C
QUANTEQ JOB NO: 9205314
DATE ANALYZED: 06/01/92
INSTRUMENT: F

BTEX AND HYDROCARBONS (WATER MATRIX)
METHOD: EPA 8020, 5030 GCFID

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	71-43-2	ND	0.3
Toluene	108-88-2	1	0.3
Ethylbenzene	100-41-4	ND	0.3
Xylenes, Total	1330-20-7	ND	1
PURGEABLE HYDROCARBONS AS:			
Gasoline		ND mg/L	0.05 mg/L

ND = Not Detected

QUALITY CONTROL DATA

DATE EXTRACTED: 06/03/92
DATE ANALYZED: 06/04/92
CLIENT PROJ. ID: 1649.07

QUANTEQ JOB NO: 9205314
SAMPLE SPIKED: D.I. WATER
INSTRUMENT: IR

IR DETERMINATION FOR OIL & GREASE/HYDROCARBONS
METHOD SPIKE RECOVERY SUMMARY
(WATER MATRIX)

ANALYTE	MS Conc. (mg/L)	Sample Result (mg/L)	MS Result (mg/L)	MSD Result (mg/L)	Average Percent Recovery	RPD
Oil	7.51	ND	7.35	7.35	97.9	0.0

CURRENT QC LIMITS (Revised 01/09/92)

Analyte	Percent Recovery	RPD
Oil	(87-112)	5.4

MS = Matrix Spike
MSD = Matrix Spike Duplicate
RPD = Relative Percent Difference
ND = Not Detected

QUALITY CONTROL DATA

DATE EXTRACTED: 06/05/92
DATE ANALYZED: 06/05/92
CLIENT PROJ. ID: 1649.07

QUANTEQ JOB NO: 9205314
SAMPLE SPIKED: D.I. WATER
INSTRUMENT: C

MATRIX SPIKE RECOVERY SUMMARY
TPH EXTRACTABLE WATER
METHOD 3520 GCFID
(WATER MATRIX; EXTRACTION METHOD)

ANALYTE	Spike Conc. (mg/L)	Sample Result (mg/L)	MS Result (mg/L)	MSD Result (mg/L)	Average Percent Recovery	RPD
Diesel	2.51	ND	2.33	2.34	93.0	0.4

CURRENT QC LIMITS (Revised 08/15/91)

Analyte	Percent Recovery	RPD
Diesel	(49.3-101.4)	29.0

MS = Matrix Spike
MSD = Matrix Spike Duplicate
RPD = Relative Percent Difference
ND = Not Detected

QUALITY CONTROL DATA

DATE ANALYZED: 06/01/92
SAMPLE SPIKED: 9205314-01C
CLIENT PROJ. ID: 1649.07

QUANTEQ JOB NO: 9205314
INSTRUMENT: F

MATRIX SPIKE RECOVERY SUMMARY
METHOD: EPA 8020, 5030 GCFID
(WATER MATRIX)

ANALYTE	Spike Conc. (ug/L)	Sample Result (ug/L)	MS Result (ug/L)	MSD Result (ug/L)	Average Percent Recovery	RPD
Benzene	15.3	ND	15.2	14.3	96.4	6.1
Toluene	51.9	ND	52.0	48.8	97.1	6.4
Hydrocarbons as Gasoline	550	ND	531	502	93.9	5.6

CURRENT QC LIMITS (Revised 05/14/92)

Analyte	Percent Recovery	RPD
Benzene	(81.4-115.3)	10.2
Toluene	(85.3-112.4)	9.4
Gasoline	(72.0-119.4)	12.8

MS = Matrix Spike
MSD = Matrix Spike Duplicate
RPD = Relative Percent Difference
ND = Not Detected

R-1, S-E

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

9205314

Project No.: 1649.07	Field Logbook No.:	Date: 5/28/92	Serial No.: 10857
Project Name: Yerba Buena	Project Location: Emeryville, CA		
Sampler (Signature): [signature]			Samplers: WEA

SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CON-TAINERS	SAMPLE TYPE	EPA 601	EPA 624	EPA 8015	EPA 8020	5520 cf			HOLD	RUSH	REMARKS
LF-16			01A-D					x	x	x					
LF-24			02A-D					x	x	x					
LF-25			03A-D					x	x	x					Results to
LF-25-FB			04AB					x	x						
~~LF-125~~															Jennifer
LF-125			05AB					x	x						
LF-26			06A-D					x	x	x					Beatty
LF-27			07A-D					x	x	x					
LF-28			08A-D					x	x	x					
															8020 FOR BTEX

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
[signature]	5/28/92	1915	Kim Flores	5/29/92	1150
Kim Flores	5/29/92	2:05	Gina Gillespie	5-29-92	1405

METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:

Sample Collector: LEVINE-FRICKE
1900 Powell Street, 12th Floor
Emeryville, Ca 94608
(415) 652-4500

Analytical Laboratory: Quanteq

Shipping C[opy] (White) Lab Copy (Green) File Copy (Yellow) [Fiel]d Copy (Pink) FORM N[o. 8]6/COC/ARF

R-3, S-3
R-1, S-E

CHAIN OF COUSTODY / ANALYSES REQUEST FORM

9205314

Project No.: 1649.07	Field Logbook No.:	Date: 5/28/92	Serial No.: 10857
Project Name: Yerba Buena	Project Location: Emeryville, CA		
Sampler (Signature): [signature]			Samplers: WEA

SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	EPA 601	EPA 624	EPA 8015	EPA 8020	5520 c+f		HOLD	RUSH	REMARKS
LF-16			01A-D					X	X	X				
LF-24			02A-D					X	X	X				
LF-25			03A-D					X	X	X				Results to
LF-25-FB			04AB					X	X					
~~LF-125~~														Jennifer
LF-125			05AB					X	X					
LF-26			06A-D					X	X	X				Beatty
LF-27			07A-D					X	X	X				
LF-28			08A-D					X	X	X				

RELINQUISHED BY: (Signature) [signature]	DATE 5/28/92	TIME 1915	RECEIVED BY: (Signature) Kim Flores	DATE 5/29/31	TIME 11:50
RELINQUISHED BY: (Signature) Kim Flores	DATE 5/29/92	TIME 2:05	RECEIVED BY: (Signature) Gina Gillespie	DATE 5-29-92	TIME 1405
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		

Sample Collector: LEVINE-FRICKE 1900 Powell Street, 12th Floor Emeryville, Ca 94608 (415) 652-4500	Analytical Laboratory: Quanteq

Shipping Copy (White) Lab Copy (Green) File Copy (Yellow) Field Copy (Pink) FORM NO. 86/COC/ARF