

May 2, 2000
RGA Job # HSHI4089
Report 0164.R4

ENVIRONMENTAL
PROTECTION
00 MAY -8 AM 9: 28

RECEIVED

MAY 03 2000

HARDAGE CONST. CORP

Mr. Roger England
Hardage Construction Corporation Site
5800 Shellmound Street
Emeryville, CA 94608

RE: WELL INSTALLATION REPORT
Hardage Construction Corporation Site
5800 Shellmound Street
Emeryville, CA 94608

Dear Mr. England:

RGA Environmental, Inc. (RGA) is pleased to present this report documenting the permitting and destruction of two groundwater monitoring wells, and the permitting, installation, and development of three groundwater monitoring wells. This work was performed in accordance with RGA's Work Plans 0164.W3 and 0164.W4, dated March 3, 1999 and November 22, 1999, respectively. A Site Location Map (Figure 1) and a Site Plan showing the drilling locations (Figure 2) are attached with this report.

All work was performed under the direct supervision of an appropriately registered professional. This report is prepared in accordance with guidelines set forth in the document "Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites" dated August 10, 1990 and "Appendix A - Workplan for Initial Subsurface Investigation" dated August 20, 1991.

BACKGROUND

A summary of investigations performed at the subject site is provided in RGA's "Environmental Site Assessment Update Report" dated December 11, 1997. A total of seven groundwater monitoring wells were installed at the site by others during previous subsurface investigations. Based on discussions with Ms. Susan Hugo at the Alameda County Department of Environmental Health (ACDEH), the seven groundwater monitoring wells were determined to be adequate to characterize groundwater conditions at the subject site.



4701 Doyle Street
Suite 14
Emeryville, CA 94608

510 547 7771
FAX 547 1983

One of the wells (ATD4) was destroyed so as not to be located inside the footprint of the new hotel at the site. One previously existing well located outside the footprint of the new hotel (ATD2) was destroyed because the wellhead had been removed and the well had filled with gravel.

Installation of three wells was performed to restore the site groundwater monitoring network to a total of seven wells. A total of three wells were installed for the following reasons.

- One of the wells (ATD1) appears to have been previously destroyed by others. This well was replaced with a well designated as ATD1A.
- One of the wells (ATD2) had filled with gravel. A replacement well designated as ATD2A was placed in the borehole previously occupied by well ATD2 after well ATD2 had been destroyed by overdrilling.
- One of the wells (ATD4) was destroyed so as not to be located within the footprint of the site hotel. This well was replaced with a well designated as ATD4A.

FIELD ACTIVITIES

On March 4, 1999, RGA personnel oversaw the destruction of one groundwater monitoring well (monitoring well ATD4) and the installation of two groundwater monitoring wells, designated as ATD1A and ATD4A. Additionally, on January 14, 2000, RGA personnel oversaw the destruction of monitoring well ATD2 and the installation of a replacement groundwater monitoring well (designated ATD2A) in the same borehole where ATD2 had been destroyed. The locations of the monitoring wells are shown on Figure 2.

Prior to performing field work, the work plans were submitted to the ACDEH and approved by Ms. Susan Hugo, permits were applied for and approved by Mr. Alvin Kan of the Alameda County Public Works Agency (ACPWA), Underground Safety Alert was notified for buried utility location, and a site health and safety plan was prepared.

Monitoring Well ATD4 Destruction

On March 4, 1999, RGA oversaw the destruction of well ATD4 by pressure grouting performed by Exploration Geoservices, Inc. (EGI) of San Jose, California. Prior to pressure grouting the well, the well was sounded to ensure that no obstructions were present. The total depth of the well was measured to be approximately 10 feet below grade, which corresponded to the as-built diagram for the well.

Monitoring Well ATD1A and ATD4A Installation and Soil Sampling

On March 4, 1999, RGA oversaw the drilling of the borings and installation of groundwater monitoring wells ATD1A and ATD4A by Exploration Geoservices, Inc. (EGI) using a truck-mounted 10-inch outside diameter hollow stem auger drilling equipment. The borings for monitoring wells ATD1A and ATD4A were each drilled to a total depth of 10.0 feet. Groundwater was encountered during drilling in boring ATD1A at a depth of approximately 4.5 feet below grade, and in boring ATD4A at a depth of approximately 6.0 feet below grade.

Soil samples were collected from the boreholes at a maximum of five foot intervals using a California modified split spoon sampler lined with brass tubes driven by a 140 pound hammer falling 30 inches. Blow counts were recorded every six inches. The soil samples were classified lithologically in the field in accordance with standard geologic field techniques and the Unified Soil Classification System. The soil samples were not retained for laboratory analysis. Copies of the boring logs for ATD1A and ATD4A are attached with this report.

The groundwater monitoring wells were each constructed using two-inch diameter Schedule 40 PVC pipe with 5 feet of 0.010-inch factory slot placed in the bottom of the borehole between the depths of 5 and 10 feet below grade. A #2/16 Lonestar sack sand was placed into the annular space surrounding the PVC pipe to one foot above the top of the slotted interval. A one-foot thick layer of bentonite pellets was placed above the sand and hydrated. The remaining annular space was filled with a neat cement grout to the ground surface.

The top of the PVC well pipe for both wells was secured with a watertight locking plug and enclosed in a watertight Christy box. Well construction specifications are provided in the Well Construction Detail diagrams for wells ATD1A and ATD4A attached with this report. A California Department of Water Resources Well Completion Report was completed for each well and forwarded to the Department under separate cover.

Soil cuttings generated during drilling activities were stored onsite on a sheet of visqueen and covered with visqueen pending appropriate disposal.

Monitoring Well ATD2 Destruction and Replacement

On January 14, 2000, RGA oversaw the destruction by overdrilling and the replacement of monitoring well ATD2. The new monitoring well was designated monitoring well ATD2A, and was installed in the former borehole of well ATD2. Gregg Drilling and Testing, Inc. (Gregg) overdrilled and replaced the well using a truck-mounted 10-inch outside diameter hollow stem auger. The boring was drilled to a total depth of 10.0 feet. Because well ATD2 had been filled with gravel, it was not possible to sound the well prior to destruction by

overdrilling. Review of the well construction diagram for well ATD2 indicates that the well was constructed to a total depth of 9.5 feet below grade. Wet fill and debris were generally encountered during drilling activities, and it was not possible to determine a precise depth to first encountered groundwater during the overdrilling of the borehole.

Soil samples were not collected during drilling activities, as the cuttings consisted mostly of cement, PVC piping, and fill material. A copy of the boring log for well ATD2A is attached with this report.

The groundwater monitoring well was constructed using four-inch diameter Schedule 40 PVC pipe with 5 feet of 0.010-inch factory slot placed in the bottom of the borehole between the depths of 4.5 and 9.5 feet below grade. A #2/16 Lonestar sack sand was placed into the annular space surrounding the PVC pipe to one foot above the top of the slotted interval. A one-foot thick layer of bentonite pellets was placed above the sand and hydrated. The remaining annular space was filled with a neat cement grout to the ground surface.

The top of the PVC well pipe was secured with a watertight locking plug and enclosed in a watertight Christy box. Well construction specifications for ATD2A are provided in a Well Construction Detail diagram. A California Department of Water Resources Well Completion Report was completed for wells ATD2 and ATD2A and forwarded to the Department under separate cover.

Soil cuttings generated during drilling activities were stored onsite in a DOT-approved 55-gallon drum pending appropriate disposal.

Monitoring Well Development

Well ATD4A was developed on August 17, 1999, by surging and over-pumping until the water discharged from the well was relatively clear. Prior to development, the well was monitored for depth to water using an electric water level indicator. The measured depth to groundwater in ATD4A prior to development on August 17, 1999 was 5.38 feet. Depth to water was measured relative to the top of the PVC well casing. Because of the slow recharge rate for well ATD4A, only approximately 7.5 gallons total were removed from the well during development. Water removed from the well during development was stored on site in a 20,000 gallon Baker tank, pending appropriate discharge.

Well ATD1A was developed on August 19, 1999, by surging and over-pumping until the water discharged from the well was relatively clear. Prior to development, the well was monitored for depth to water using an electric water level indicator. The measured depth to groundwater in ATD1A prior to development on August 19, 1999 was 3.28 feet. Depth to

water was measured relative to the top of the PVC well casing. A total of approximately 45 gallons were removed from the well during development. Water removed from the well during development was stored on site in a 20,000 gallon Baker tank, pending appropriate discharge.

Well ATD2A was developed on March 16, 2000 by over-pumping until the water discharged from the well was relatively clear. Prior to development, the well was monitored for depth to water using an electric water level indicator. The measured depth to groundwater in ATD2A prior to development on March 16, 2000 was 2.89 feet. Depth to water was measured relative to the top of the PVC well casing. A total of approximately 55 gallons were removed from the well during development. Water removed from the well during development was stored on site in a DOT-approved 55-gallon drum pending appropriate discharge.

GEOLOGY AND HYDROGEOLOGY

Based on review of regional geologic maps from U. S. Geological Survey Professional Paper 943, "Flatland Deposits - Their Geology and Engineering Properties and Their Importance to Comprehensive Planning," by E. J. Helley and K. R. Lajoie, 1979, the subject site is underlain by Bay Mud (Qhbm). The deposits are described as typically consisting of unconsolidated water-saturated dark, carbonaceous clay and silty clay rich in organic material, which locally contains lenses and stringers of well-sorted silt and sand as well as beds of peat.

The subsurface materials encountered in borings ATD1A and ATD4A consisted of fill material to the total depth explored of 10 feet below the ground surface. In borehole ATD1A, the materials consisted of base rock and brown clayey fill with brick fragments to a depth of 2.5 feet, below which was black gravel and sand to a depth of 4.0 feet, underlain by black silty clay to a depth of 7.5 feet, which in turn was underlain by black fine to medium sand with gravel up to 2 inches in diameter to the total depth explored of 10.0 feet below grade. The subsurface materials encountered in boring for well ATD4A consisted of base rock to a depth of 3.0 feet, below which was gray-black silty clay with wood fragments to the total depth explored of 10.0 feet below grade.

Based on review of historical water level information, the depth to groundwater at the site has historically ranged from approximately 4 to 6 feet below the ground surface. The groundwater flow direction at the site has historically been reported to be to the west or southwest.

DISCUSSION AND RECOMMENDATIONS

RGA recommends beginning the quarterly monitoring and sampling program approved by the ACDEH for the site.

LIMITATIONS

This report was prepared solely for the use of Hardage Construction Corporation. The content and conclusions provided by RGA in this assessment are based on information collected during our investigation, which may include, but not be limited to, visual site inspections; interviews with site owner, regulatory agencies and other pertinent individuals; review of available public documents; subsurface exploration and our professional judgement based on said information at the time of preparation of this document. Any subsurface sample results and observations presented herein are considered to be representative of the area of investigation; however, geological conditions may vary between borings and may not necessarily apply to the general site as a whole. If future subsurface or other conditions are revealed which vary from these findings, the newly revealed conditions must be evaluated and may invalidate the findings of this report.

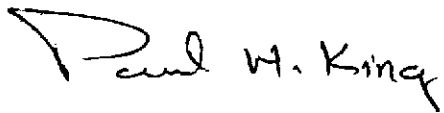
This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information contained herein is brought to the attention of the appropriate regulatory agencies, where required by law. Additionally, it is the sole responsibility of the owner to properly dispose of any hazardous materials or hazardous wastes left onsite, in accordance with existing laws and regulations.

This report has been prepared in accordance with generally accepted practices using standards of care and diligence normally practiced by recognized consulting firms performing services of a similar nature. RGA is not responsible for the accuracy or completeness of information provided by other individuals or entities which is used in this report. This report presents our professional judgement based upon data and findings identified in this report and interpretation of such data based upon our experience and background, and no warranty, either express or implied, is made. The conclusions presented are based upon the current regulatory climate and may require revision if future regulatory changes occur.

Should you have any questions, please do not hesitate to call us at (510) 547-7771.

Sincerely,

RGA Environmental



Paul H. King
California Registered Geologist
Registration No.: 5907
Expires: 12/31/01



Steff Steiner
Project Manager

Attachments: Site Location Map (Figure 1)
Site Plan showing Well Locations (Figure 2)
Boring Log (3)
Well Construction Detail Diagram (3)

PHK/gmb
0164.R4

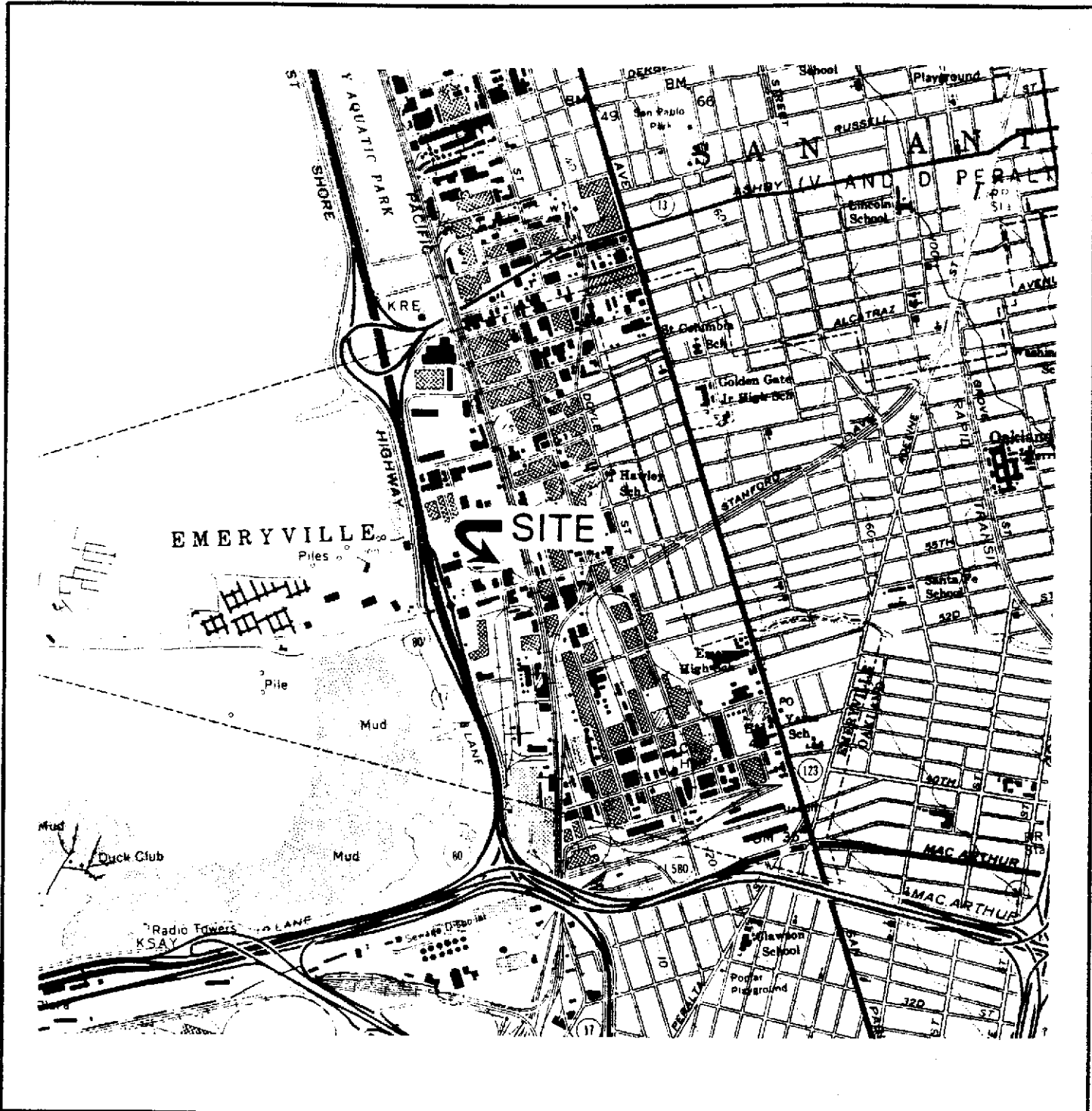
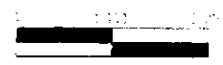


FIGURE 1
SITE LOCATION MAP
 Hardage Construction Corporation Site
 5800 Shellmound Street
 Emeryville, California



Source:
 U.S. Geological Survey
 Oak and West, California
 7.5 Minute Quadrangle
 Photorevised, 1980

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 Emeryville, California 94608



SCALE IN FEET

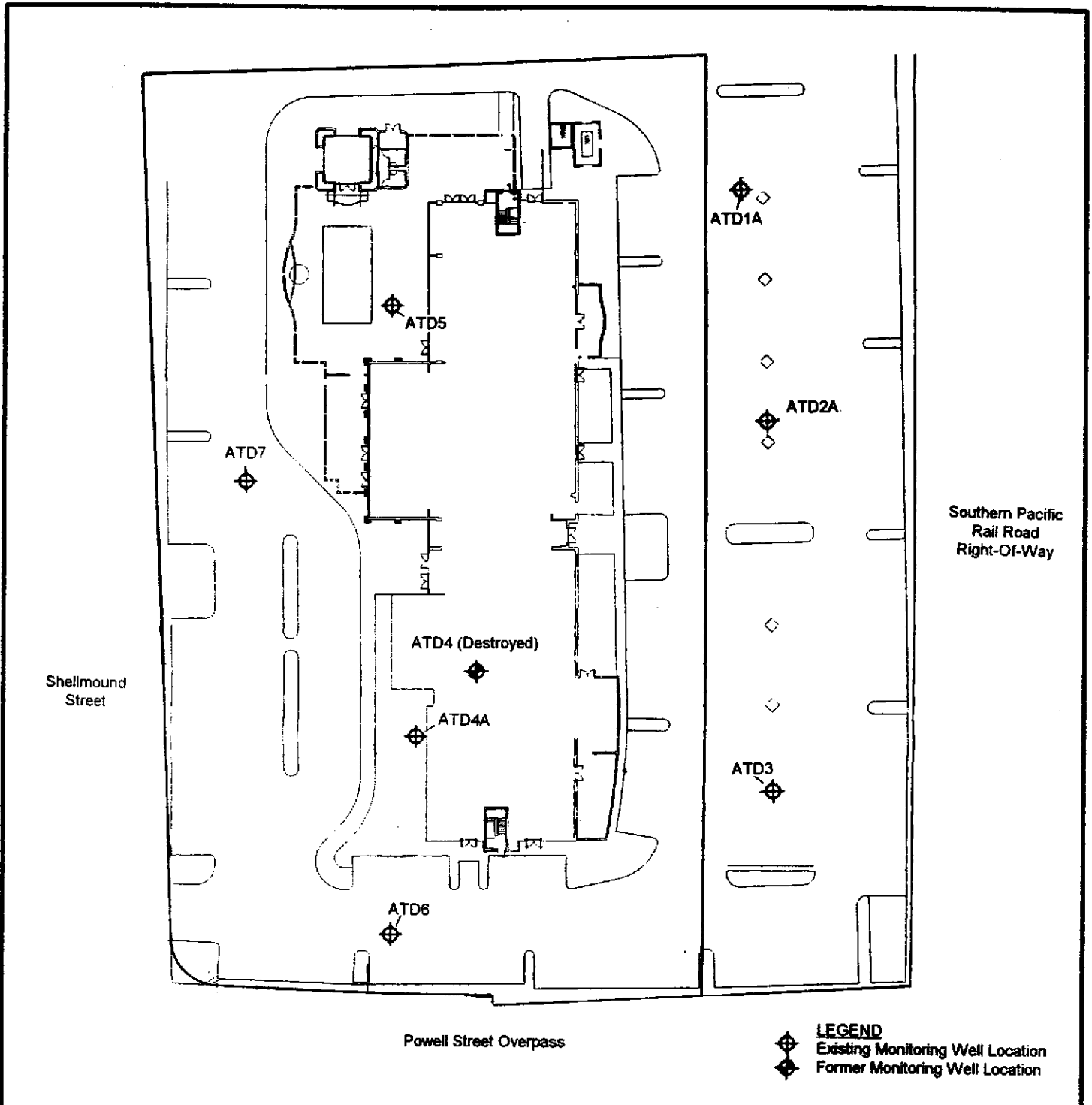


FIGURE 2
SITE PLAN
 Hardage Construction Corporation Site
 5800 Shellmound Street
 Emeryville, California



LEGEND
 Existing Monitoring Well Location
 Former Monitoring Well Location

Source:
 Santina & Thompson, Inc.
 Woodfin Suite Hotel
 Monitoring Well Location and Elevation Map
 March, 1999

RGA Environmental, Inc.
 4701 Doyle Street, Suite 14
 Emeryville, California 94608



BORING NO.: ATDIA		PROJECT NO.: HSHI4089		PROJECT NAME: HARDAGE CONSTRUCTION CORP.		
BORING LOCATION: CONSTRUCTION SITE			ELEVATION AND DATUM: TOP OF CASING = 8.74 FEET MEAN SEA LEVEL			
DRILLING AGENCY: Exploration Geoservices, Inc.		DRILLER: DAN & DANNY		DATE & TIME STARTED:	DATE & TIME FINISHED:	
DRILLING EQUIPMENT: MOBIL B56		10" OD HOLLOW STEM AUGER		3/4/99	3/4/99	
COMPLETION DEPTH: 10.0 FEET		BEDROCK DEPTH: NONE ENCOUNTERED		LOGGED BY:	CHECKED BY:	
FIRST WATER DEPTH: 4.5 FEET		NO. OF SAMPLES: 0		PHK		
DEPTH (FT.)	DESCRIPTION	GRAPHIC COLUMN	WELL CONSTRUCTION LOG	BLOW COUNT PER 8"	PID/ppm	REMARKS
0	Gray Silty Sandy Gravel (baserock)		See Attached Diagram			
	Brown Clayey fill with brick fragments, moist. No Petroleum Hydrocarbon (PHC) odor.	FILL				
	Black Gravel and Sand (SW); moist to wet, medium dense. No PHC odor.	SW		10		
5	Black Silty Clay (CL); moist to saturated. No PHC odor.	CL	▽	10 7	0	Groundwater first encountered at 4.5 feet.
	Black fine to medium Sand (SW); gravel up to 2 inches diameter, loose, saturated. No PHC odor.	SW		5 4 4	0	
10						Borehole terminated at 10.0 feet.
						Borehole converted to groundwater monitoring well.
15						
20						
25						
30						

BORING NO.: ATD4A		PROJECT NO.: HSHI4089		PROJECT NAME: HARDAGE CONSTRUCTION CORP.		
BORING LOCATION: CONSTRUCTION SITE			ELEVATION AND DATUM: TOP OF CASING = 8.45 FEET MEAN SEA LEVEL			
DRILLING AGENCY: Exploration Geoservices, Inc.		DRILLER: DAN & DANNY		DATE & TIME STARTED:	DATE & TIME FINISHED:	
DRILLING EQUIPMENT: MOBIL B56		10" OD HOLLOW STEM AUGER		3/4/99	3/4/99	
COMPLETION DEPTH: 10.0 FEET		BEDROCK DEPTH: NONE ENCOUNTERED		LOGGED BY:	CHECKED BY:	
FIRST WATER DEPTH: 6 FEET		NO. OF SAMPLES: 0		PHK		
DEPTH (FT.)	DESCRIPTION	GRAPHIC COLUMN	WELL CONSTRUCTION LOG	BLOW COUNT PER 6"	PID/ppm	REMARKS
0	Gray Silty Sandy baserock, moist. No Petroleum Hydrocarbon (PHC) odor.	FILL	See Attached Diagram			
5	Gray black Silty Clay (CL); wood fragments, moist to saturated, stiff. No PHC odor.	CL	▽	10 6 6	0	Groundwater first encountered at 6 feet. Area immediately north of ATD4A was dewatered.
10				6 4 9	0	Borehole terminated at 10.0 feet. Borehole converted to groundwater monitoring well.
15						
20						
25						
30						

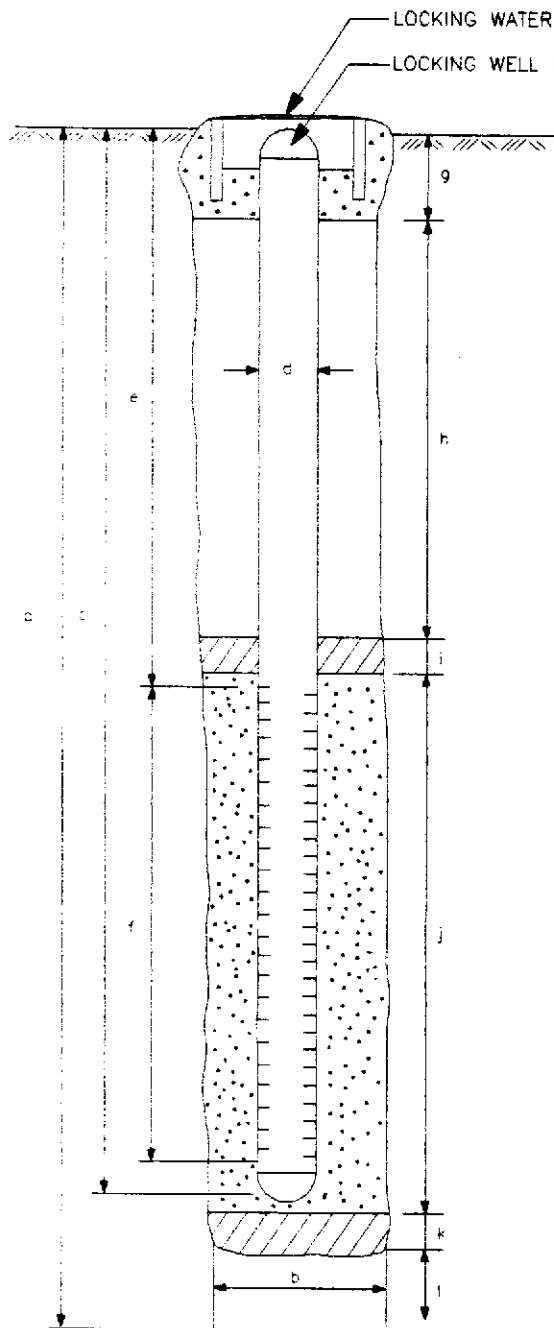
BORING NO.: ATD2A		PROJECT NO.: HSHI4089		PROJECT NAME: HARDAGE CONSTRUCTION CORP.			
BORING LOCATION: SEE MAP				ELEVATION AND DATUM:			
DRILLING AGENCY: GREGG DRILLING AND TESTING, INC.		DRILLER: TREVOR & GERMAN		DATE & TIME STARTED:		DATE & TIME FINISHED:	
DRILLING EQUIPMENT: 10 INCH OUTSIDE DIAMETER HOLLOW STEM AUGER				1/14/00 8:30 AM		1/14/00	
COMPLETION DEPTH: 10 FEET		BEDROCK DEPTH: NONE ENCOUNTERED		LOGGED BY:		CHECKED BY:	
FIRST WATER DEPTH: UNKNOWN		NO. OF SAMPLES: NONE		GMB			
DEPTH (FT.)	DESCRIPTION	GRAPHIC COLUMN	WELL CONSTRUCTION LOG	BLOW COUNT PER 6"	PID	REMARKS	
5	Portland cement, monitoring well and construction debris (FILL), some brown sand, dense, wet.	FILL	See Attached Well Construction Detail Diagram				
10	Brown silt (ML), dense, wet.	ML					
15						Borehole terminated at 10.0 feet.	
20						Borehole converted to groundwater monitoring well.	
25							
30							

RGA ENVIRONMENTAL, INC.

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Telephone (510) 547-7771

WELL CONSTRUCTION DETAILS

PROJECT NUMBER HSHI4089 BORING/WELL NO. ATD1A
 PROJECT NAME Hardage Construction Corp. TOP OF CASING ELEV. 8.45 FEET
 COUNTY Alameda GROUND SURFACE ELEV. UNKNOWN
 WELL PERMIT NO. 98WR327 DATUM MEAN SEA LEVEL
 DATE INSTALLED 3/4/99



EXPLORATORY BORING

a. Total depth 10.0 FT.
 b. Diameter 10.0 IN.
 Drilling method Hollow Stem Auger

WELL CONSTRUCTION

c. Casing length 10 FT.
 Material Schedule 40 PVC
 d. Diameter 2 IN.
 e. Depth to top perforations 5.0 FT.
 f. Perforated length 5 FT.
 Perforated interval from 5 to 10 FT.
 Perforation type Factory Slot
 Perforation size 0.010 Inch
 g. Surface sanitary seal 0.5 FT.
 Seal material Concrete
 h. Sanitary seal 3.0 FT.
 Seal material Neat Cement
 i. Filter pack seal 1.0 FT.
 Seal material Bentonite Pellet
 j. Filter pack length 5.5 FT.
 Filter pack interval from 4.5 to 10 FT.
 Pack material #2/16 Lonestar Sack Sand
 k. Bottom seal 0 FT.
 Seal material
 l. Sluff in bottom of borehole 0 FT.

RG ENVIRONMENTAL, INC.

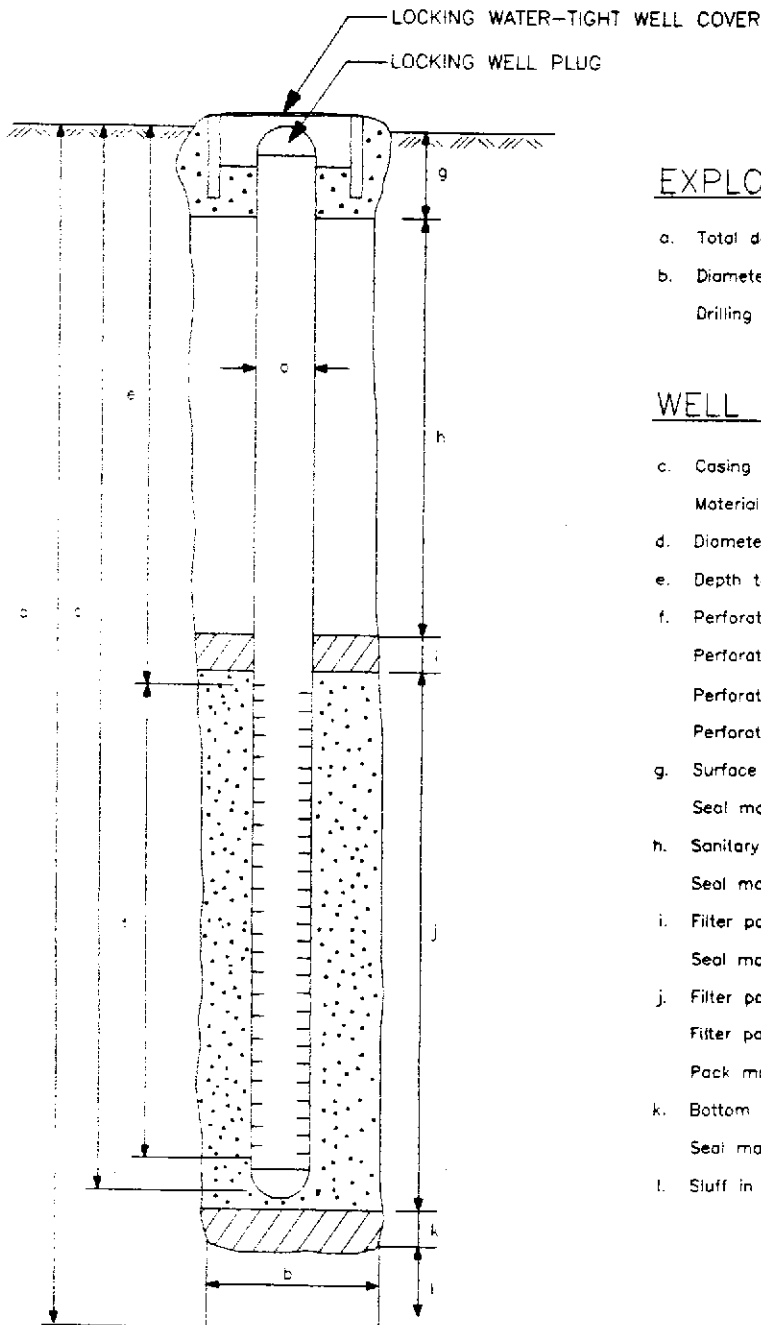
4701 Doyle Street, Suite 14

Emeryville, CA 94608

Telephone (510) 547-7771

WELL CONSTRUCTION DETAILS

PROJECT NUMBER HSHI4089 BORING/WELL NO. ATD4A
 PROJECT NAME Hardage Construction Corp. TOP OF CASING ELEV. 8.74 FEET
 COUNTY Alameda GROUND SURFACE ELEV. UNKNOWN
 WELL PERMIT NO. 98WR327 DATUM MEAN SEA LEVEL
 DATE INSTALLED 3/4/99



EXPLORATORY BORING

a. Total depth 10.0 FT.
 b. Diameter 10.0 IN.
 Drilling method Hollow Stem Auger

WELL CONSTRUCTION

c. Casing length 10 FT.
 Material Schedule 40 PVC
 d. Diameter 2 IN.
 e. Depth to top perforations 5.0 FT.
 f. Perforated length 5 FT.
 Perforated interval from 5 to 10 FT.
 Perforation type Factory Slot
 Perforation size 0.010 Inch
 g. Surface sanitary seal 0.5 FT.
 Seal material Concrete
 h. Sanitary seal 3.0 FT.
 Seal material Neat Cement
 i. Filter pack seal 1.0 FT.
 Seal material Bentonite Pellet
 j. Filter pack length 5.5 FT.
 Filter pack interval from 4.5 to 10 FT.
 Pack material #2/16 Lonestar Sack Sand
 k. Bottom seal 0 FT.
 Seal material _____
 l. Sluff in bottom of borehole 0 FT.

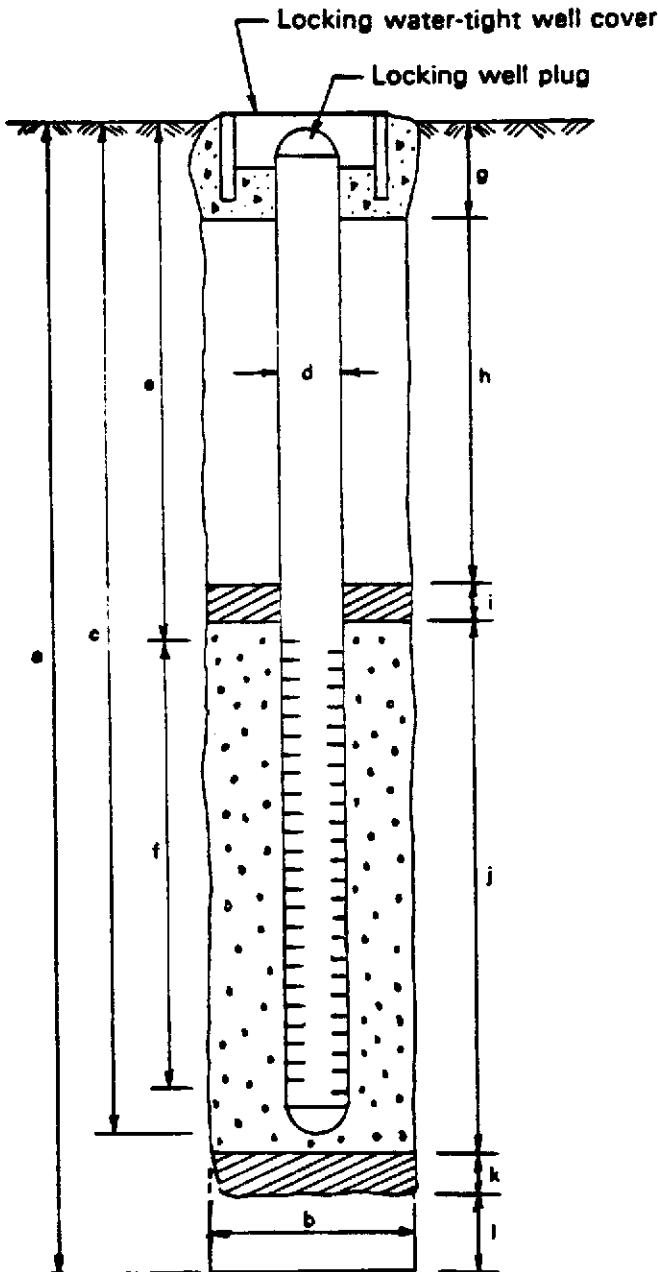
RGA Environmental, Inc.

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Emeryville, California 94608
Telephone: (510) 547-7771

WELL CONSTRUCTION DETAILS

PROJECT NUMBER HSI4089
PROJECT NAME HARDAGE CONSTRUCTION CORP.
COUNTY ALAMEDA
WELL PERMIT NO. 99WR626

BORING/WELL NO. ATD2A
TOP OF CASING ELEVATION TBA
GROUND SURFACE ELEVATION TBA
DATUM TBA



EXPLORATORY BORING

a. Total Depth 10 ft.
b. Diameter 10 in.
Drilling Method Hollow Stem Auger

WELL CONSTRUCTION

c. Casing Length 9.5 ft.
Material Schedule 40 PVC
d. Diameter 4 in.
e. Depth to top perforations 4.5 ft.
f. Perforated length 5 ft.
Perforated interval from 4.5 to 9.5 ft.
Perforation type Factory Slot
Perforation size 0.010 inch
g. Surface sanitary seal 2.5 ft.
Seal material Neat cement grout
h. Sanitary seal 0 ft.
Seal material _____
i. Filter pack seal 1 ft.
Seal material Bentonite pellets
j. Filter pack length 6.5 ft.
Filter pack interval from 3.5 to 10 ft.
Pack material #2/16 Lonestar sand
k. Bottom seal 0 ft.
Seal material _____
l. Slough in bottom of borehole 0 ft.