

October 25, 2000  
RGA Job # HSHI5835  
Report 0164.R6

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

**RE: MONITORING WELL REPLACEMENT 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, destruction, replacement, and development of one groundwater monitoring well at the subject site. This work was performed in accordance with RGA's Work Plan 0164.W4, dated November 22, 1999, and RGA's Letter 0164.L29, dated September 13, 2000. A Site Location Map (Figure 1) and a Site Plan showing the drilling location (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 of 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. One of the wells installed by others (ATD1) appeared to have been destroyed by others, and was subsequently replaced with a well designated as ATD1A. Another one of the wells installed by others (ATD2) was destroyed and replaced with well ATD2A because the wellhead had been removed during construction and the well had filled with gravel. Another one of the wells (ATD4) was destroyed and replaced with well ATD4A so as not to be located within the footprint of the new hotel at the site. Installation of the three wells



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was performed to restore the site groundwater monitoring network to a total of seven wells. Documentation of replacement of the wells is provided in RGA's report 0164.R4, "Well Installation Report," dated May 2, 2000.

Recent quarterly monitoring and sampling activity revealed that one well in the system (ATD1A, shown on the attached Figure 1 – Site Plan) was partially full of sand. Documentation of attempts to flush and purge the sand out of ATD1A with clean water can be found in RGA's Report 0164.R5, "Quarterly Monitoring and Sampling Report," dated September 6, 2000. The sand in the well was the sand used for construction of the well filter pack. Based upon repeated attempts to remove the sand, it was determined that well replacement was appropriate. A Monitoring Well Replacement Work Plan (Letter 0164.L29) dated September 13, 2000 was submitted to the ACDEH for review and approval. The work plan was verbally approved by Ms. Susan Hugo of the ACDEH on September 19, 2000.

### **FIELD ACTIVITIES**

On October 2, 2000, RGA personnel oversaw the destruction of one groundwater monitoring well (monitoring well ATD1A) and installation of one replacement groundwater monitoring well, designated as ATD1B, in the same borehole. The locations of all of the monitoring wells at the subject site are shown on Figure 2.

Prior to performing field work, a work plan was submitted to the ACDEH and approved by Ms. Susan Hugo, permits were applied for and approved by the Alameda County Public Works Agency (ACPWA), and a site health and safety plan was prepared.

### **Monitoring Well ATD1A Destruction and Replacement**

On October 2, 2000, RGA oversaw the destruction by overdrilling and the replacement of monitoring well ATD1A. The new monitoring well was designated monitoring well ATD1B, and was installed in the former borehole of well ATD1A. Gregg Drilling and Testing, Inc. (Gregg) overdrilled and replaced the well using a truck-mounted 8-inch outside diameter hollow stem auger. The boring was drilled to a total depth of 10.0 feet. Because well ATD1A had been filled with sand, it was not possible to sound the well prior to destruction. Review of the well construction diagram for well ATD1A indicates that the well was constructed to a total depth of 10.0 feet below grade. Wet fill and debris were generally encountered during drilling activities. Groundwater was first encountered during the overdrilling at approximately 8.0 feet below grade.

Soil samples were not collected during drilling activities. The cuttings consisted mostly of cement, PVC pipe, and fill material. A copy of the boring log for well ATD1B is attached with this report.

The groundwater monitoring well was 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 5.0 and 10.0 feet below grade. A #2/16 Lonestar sack sand was placed into the

annular space surrounding the PVC pipe to 1.5 feet 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 ATD1B are provided in a Well Construction Detail diagram. A California Department of Water Resources Well Completion Report was completed for destruction of well ATD1A and construction of well ATD1B and forwarded to the Department of Water Resources 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 ATD1B was developed on October 17, 2000 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 ATD1B prior to development on October 17, 2000 was 3.47 feet. Depth to water was measured relative to the top of the PVC well casing. A total of approximately 50 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 boring ATD1B consisted of fill material to a depth of approximately 8.0 feet below grade, which was underlain by gray clayey silt to the total depth explored of 10.0 feet below the ground surface.

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**

Well ATD1A was destroyed by overdrilling using a hollow stem auger drill rig. A replacement well, designated as ATD1B, was constructed in the borehole where well ATD1A was destroyed. The new well was subsequently developed by surging and overpumping. RGA recommends that the well be monitored and sampled during the next quarterly monitoring and sampling event.

## **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.

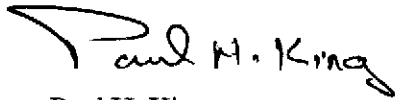
This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information contained herein is brought to the attention of the appropriate regulatory agencies, where required by law. Additionally, it is the sole responsibility of the 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 (Figure 2)  
Boring Log  
Well Construction Detail Diagram

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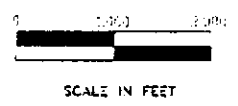


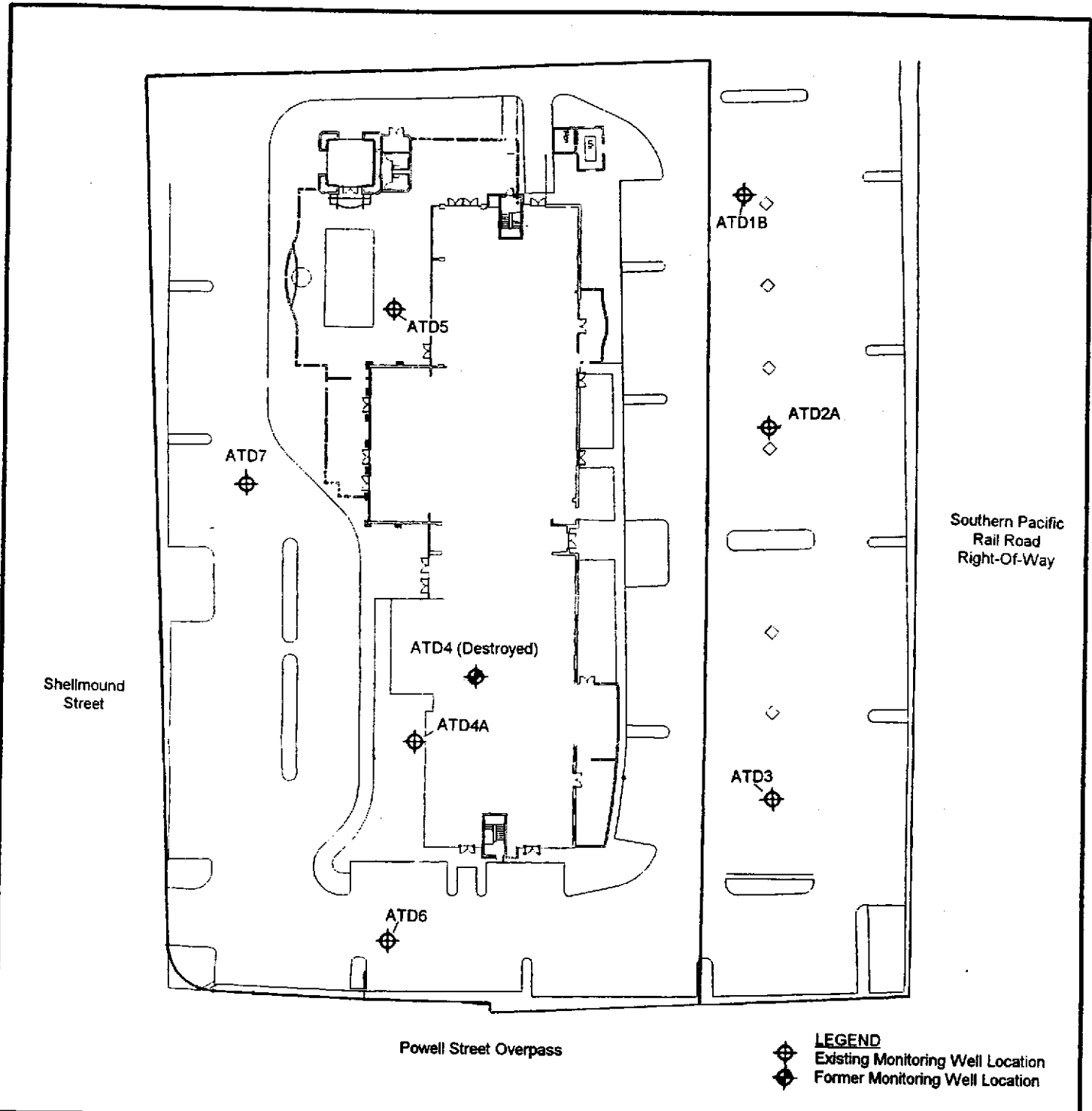
**FIGURE 1**  
**SITE LOCATION MAP**  
 Hardage Construction Corporation Site  
 5800 Shellmound Street  
 Emeryville, California



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

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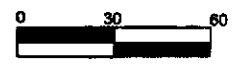




**FIGURE 2**  
**SITE PLAN**  
 Hardage Construction Corporation Site  
 5800 Shellmound Street  
 Emeryville, California

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

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SCALE IN FEET

BORING NO.: ATD1B		PROJECT NO.: HSHI5835		PROJECT NAME: HARDAGE CONSTRUCTION CORP.		
BORING LOCATION: SEE MAP			ELEVATION AND DATUM:			
DRILLING AGENCY: GREGG DRILLING AND TESTING, INC.		DRILLER: PAUL & FAUSTO		DATE & TIME STARTED:	DATE & TIME FINISHED:	
DRILLING EQUIPMENT: 8 INCH OUTSIDE DIAMETER HOLLOW STEM AUGER				10/2/00	10/2/00	
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), dense, moist.	FILL	See Attached Well Construction Detail Diagram			Saturated soil at approximately 8 feet.
10	Gray clayey silt (ML), dense, saturated.	ML				
15						Borehole terminated at 10.0 feet.  Borehole converted to groundwater monitoring well, designated ATD1B.
20						
25						
30						



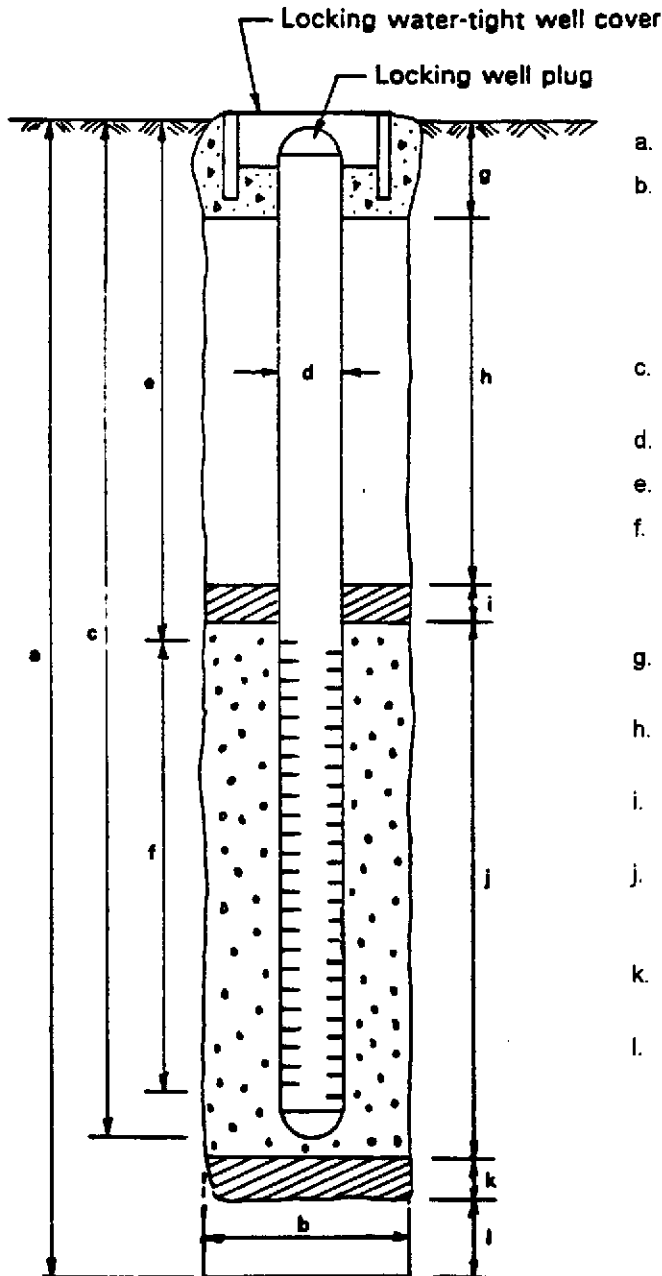
# RGA Environmental, Inc.

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## WELL CONSTRUCTION DETAILS

PROJECT NUMBER HSHI5835  
PROJECT NAME HARDAGE CONSTRUCTION CORP.  
COUNTY ALAMEDA  
WELL PERMIT NO. W00-544

BORING/WELL NO. ATD1B  
TOP OF CASING ELEVATION TBD  
GROUND SURFACE ELEVATION TBD  
DATUM TBD



### EXPLORATORY BORING

a. Total Depth 10 ft.  
b. Diameter 8 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 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 2.5 ft.  
Seal material Neat cement grout  
h. Sanitary seal 0 ft.  
Seal material \_\_\_\_\_  
i. Filter pack seal 1 ft.  
Seal material Bentonite chips  
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.