

2140 WEST WINTON AVENUE HAYWARD, CALIFORNIA 94545

(510) 352-4800

52 mg 23 23 23

July 2, 1992

County of Alameda Department of Environmental Health Hazardous Materials Division 80 Swan Way, Room 200 Oakland, California 94621

Attention:

Mr. Dennis Byrne

Certified Mail

Reference:

ARCO Service Station #2169 889 West Grand Avenue Oakland, California 94607

Mr. Byrne:

As requested by ARCO Products Company, we are forwarding a copy of the Well Installation Report dated June 30, 1992 for the above referenced location. The report documents the installation of four ground-water monitoring wells, one ground-water recovery well, and presents analytical results of related soil and ground-water sampling.

If you have any questions or comments, please call.

Sincerely,

John F. Vargas

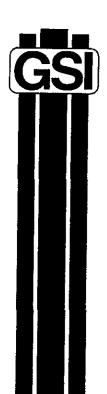
JFV/rcm

Enclosure

cc: Mr. Michael Whelan, ARCO Products Company

Mr. H. C. Winsor, ARCO Products Company

Mr. Lester Feldman, Regional Water Quality Control Board (Certified Mail)



WELL INSTALLATION REPORT

ARCO Service Station No. 2169 889 West Grand Avenue Oakland, California



2140 WEST WINTON AVENUE HAYWARD, CALIFORNIA 94545

(510) 352-4800

June 30, 1992

ARCO Products Company P.O. Box 5811 San Mateo, California 94402

Attn:

Mr. Michael Whelan

Re:

WELL INSTALLATION REPORT ARCO Service Station No. 2169

889 West Grand Avenue Oakland, California

Gentlemen:

INTRODUCTION

This Well Installation Report was prepared by GeoStrategies Inc. (GSI) and presents well installation activities and ground-water sampling results for the above referenced location (Plate 1). Between March 16 and 25, 1992, five exploratory soil borings were drilled and completed as ground-water monitoring wells A-1 through A-4 and recovery well AR-1. Well locations are shown on Plate 2. Field work was performed to comply with current State of California Water Resources Control Board (SWRCB) and local agency guidelines. Field Methods and Procedures were presented in the GSI Work Plan dated October 29, 1991.

SITE BACKGROUND

On May 14, 1991, GSI drilled figures as documented in a GSI Preliminary Tank Replacement Report dated July 1, 1991. Four soil borings were drilled adjacent to the underground storage tank (UST) complex (A-B through A-E) and one soil boring (A-A) was drilled in the proposed UST complex location. Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline) and as Diesel (TPH-Diesel) and Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) were detected in soil samples from each boring collected from 5.5 to 11.0 feet below grade. In addition

ARCO Products Company June 30, 1992 Page 2

In February and March 1992, the underground storage tanks at the site were removed and replaced. The former tank complex was composed of four steel tanks: one 12,000 gallon tank (unleaded), one 8,000 gallon tank (regular), and two 6,000 gallon tanks (diesel and super unleaded). The present tank complex is composed of the former and present tank complexes are shown on Plate 2. A report documenting the tank removal is forthcoming.

FIELD ACTIVITIES AND PROCEDURES

Five on-site exploratory borings were drilled on March 1902, using a truck-mounted, hollow-stem auger drilling rig. Borings A-1 through A-4 and AR-1 drilled to total depths ranging from 26.5 to 30.0 feet below grade. Soil samples were collected at five-foot intervals using a modified California split-spoon sampler fitted with stainless steel sample tube liners. A GSI geologist observed the drilling, described the soil samples using the Unified Soil Classification System and Munsell Soil Color Chart, and prepared a lithologic log for each boring. Exploratory boring logs are presented in Appendix A.

Soil Sampling

An Organic Vapor Monitor (OVM) photoionization detector was used to perform head-space analysis on soils from each sampled interval, as a reconnaissance-level test for the presence of Volatile Organic Compounds (VOCs) in the soil. Head-space analysis results are presented on each boring log in Appendix A.

Soil samples retained for chemical analyses were collected in clean stainless steel liners and sealed on both ends with aluminum foil and plastic end caps. Samples were labeled, entered onto a Chain-of-Custody form, and transported in a cooler with blue ice to Sequoia Analytical (Sequoia), a State-certified environmental laboratory located in Redwood City, California.

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Monitoring Well Installation

Borings A-1, A-2, A-3, and A-4 were drilled using 8-inch-diameter and 10inch-diameter augers. Monitoring Wells A-1, A-2, A-3, and A-4 were installed to depths of 25.0, 25.0, 29.5, and 28.0 feet below existing ground surface, respectively. Bentonite was placed in the lower portions of Borings A-1, A-2, A-3, and A-4 at thicknesses of 5.0, 1.5, 0.5, and 2.0 feet, respectively. The wells were constructed using 3-inch-diameter Schedule 40 PVC well casing with 0.020-inch machine-slotted well screen. Well screen extends from 9 to 25 feet in well A-1, from 10 to 25 feet in well A-2, from 9 to 29.5 feet in well A-3, and from 8 to 28 feet in well A-4. Lonestar #2/12 graded sand was placed in the annular space across the entire screened interval and extends one-foot above the top of the well screen. A one-foot thick bentonite seal was placed above the sandpack in each well and then hydrated with clean water. A neat cement seal was placed from the top of the bentonite to approximately 1.0-foot below ground surface in each well. A water-proof underground vault box, set in concrete, was installed over the top of each well, and a water-proof locking well cap and lock were placed on each well casing.

Recovery Well Installation

Boring AR-1 was installed using 8-inch-diameter and 12-inch-diameter augers. Recovery Well AR-1 was installed to a depth of 28.0 feet below grade. Bentonite was placed in the lower 2.0 feet of Boring AR-1 as a bottom seal. The recovery well was constructed using 6-inch-diameter Schedule 40 PVC blank well casing and 0.020-inch continuous wrap, carbon steel well screen. Well screen extends from 8 to 28 feet in well AR-1. Lonestar #2/12 graded sand was placed across the entire screened interval and extends one-foot above the top of the well screen. A one-foot thick bentonite seal was placed above the sandpack and then hydrated with clean water. A neat cement seal was placed from the top of the bentonite to approximately 1.0-foot below ground surface. A waterproof underground vault box was installed over the top of the well and a waterproof locking well cap and lock were placed on the well casing. Well completion details are presented with the Exploratory Boring Logs in Appendix A.

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HYDROGEOLOGIC CONDITIONS

Regional Setting

The site is located in Oakland, California at the base of the Berkeley Hills approximately 1/2-mile east of the San Francisco Bay. The site is situated on alluvial-fan deposits of the Temescal Formation comprised of interfingering lenses of clayey gravel, sandy silty clay, and sand-clay-silt mixtures (Radbruch, D.H., 1957). Local topography suggests ground-water flows to the west toward San Francisco Bay.

Local Setting

Based on exploratory boring data, the local subsurface lithology appears to consist of clay, sand, silt, and minor gravel to the total depth explored of 30.0 feet below ground surface. Clay was observed in each boring from ground surface to between 8 (AR-1) and 16.5 (A-2) feet below grade. The clay was underlain by interbedded sand, clayey sand, silt, and clay to the total depths of the borings. Minor interbedded gravel lenses were also observed in Borings AR-1 and A-3. Each boring was terminated in soil composed of either clay or silt, which may represent a local aquitard. Groundwater was first encountered in each boring at depths ranging from 10 to 18.5 feet below grade. Water-levels stabilized after completion of the wells at depths ranging from 9.5 to 11 feet below grade.

SOIL CHEMICAL ANALYTICAL RESULTS

Soil samples were analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline) and as Diesel (TPH-Diesel) according to EPA Method 8015 (Modified) and Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) according to EPA Method 8020. Chemical analyses were performed at Sequoia in Redwood City, California.

ARCO Products Company June 30, 1992 Page 5

Soil chemical analytical data are summarized in Table 1. Six soil samples from Borings A-1 through A-4, collected at depths ranging between 4 and 10 feet below grade, were selected for chemical analysis. Soil samples from Boring AR-1 were not analyzed due to fill material being encountered from ground surface to first encountered water. TPH-Gasoline was detected in the soil sample collected from Boring A-1, at a depth of 10 feet, at a concentration of 2.2 parts per million (ppm). Benzene was identified in soil samples from Boring A-1 at depths of 4.5 and 10.0 feet, at concentrations of 0.024 ppm and 0.13 ppm, respectively. TPH-Diesel was detected in the 4.0-foot soil sample from Boring A-2 at a concentration of 14 ppm. TPH-Gasoline and BTEX were reported as not detected (ND) for soil samples from Borings A-2, A-3, and A-4. TPH-Diesel was reported as ND for soil samples from Borings A-1, A-3, and A-4. The Sequoia chemical analytical report and Chain-of-Custody form are presented in Appendix B.

GROUND-WATER MONITORING RESULTS

Depths to water-levels were measured in each monitoring well prior to sampling. Static ground-water levels were measured from the surveyed top of each well box and recorded to the nearest ± 0.01 foot. Water-level measurements were referenced to Mean Sea Level (MSL) datum and used to construct a potentiometric map (Plate 2). Potentiometric data indicate that groundwater flows to the northwest at a calculated hydraulic gradient of 0.004.

Each well was inspected for the presence of floating product. Floating product was not observed in any well. Depth-to-groundwater and floating product measurements are presented in Table 2 (Field Monitoring Data).

GROUND-WATER CHEMICAL ANALYTICAL RESULTS

Groundwater samples were collected by Gettler-Ryan Inc. (G-R) from Wells A-1 through A-4 and AR-1 on April 3, 1992. Groundwater samples were analyzed for TPH-Gasoline and TPH-Diesel according to EPA Method 8015 (Modified) and BTEX according to EPA Method 8020. Chemical analyses were performed by Sequoia in Redwood City, California.

TPH-Gasoline was detected in samples from Wells A-1, A-3, A-4, and AR-1 at concentrations ranging between 35 parts per billion (ppb) and 34,000 ppb. TPH-ranging between 85 ppb and 12,000 ppb. Benzene was identified in Wells A-1, A-3, and AR-1 at concentrations A-3, and AR-1 at concentrations of 6200 ppb, 0.79 ppb, and 310 ppb, respectively. A chemical concentration map for TPH-Gasoline and benzene is Table 3. The Sequoia analytical report and Chain-of-Custody form are presented in Appendix C.

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SUMMARY

The results of this investigation are summarized below:

- o Five exploratory soil borings were drilled on March 16, 17, and 25, 1992 and completed as ground-water monitoring wells A-1 through A-4 and recovery well AR-1.
- o Lithology beneath the site consists primarily of clay and interbedded sand, silt, clay, and minor gravel to the maximum depth explored of 30.0 feet.
- o Ground water-levels were initially encountered at depths between 10.0 and 18.0 feet below grade. Water-levels stabilized at depths ranging from 9.5 to 11 feet below grade.
- o Potentiometric data indicate that groundwater flows to the northwest at a calculated hydraulic gradient of 0.004.
- o TPH-Gasoline was detected in the soil sample from Boring A-1 at 10.0 feet at a concentration of 2.2 ppm. TPH-Diesel was identified in Boring A-2 at 4.0 feet at a concentration 14 ppm. TPH-Gasoline and TPH-Diesel were not detected in the 10.0 foot samples from Borings A-3 and A-4.
- TPH-Gasoline was identified in ground-water samples from Wells A-1, A-3, A-4, and AR-1 at concentrations ranging between 35 ppb and 34,000 ppb. Benzene was detected in Wells A-1, A-3, and AR-1 at concentrations ranging between 0.79 ppb and 6200 ppb. TPH-Gasoline and benzene were reported as not detected (ND) for Well A-2. TPH-Diesel was detected in Wells A-1, A-3, A-4, and AR-1 at concentrations of between 85 ppb and 12,000 ppb.

CONCLUSIONS

Based on the results of this investigation, petroleum hydrocarbons have impacted soil and groundwater beneath the site. Soil contamination appears to be primarily present in the vicinity of the former tank complex. Contamination

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PLANNED SITE ACTIVITIES

The following are activities planned for the site for the third quarter of 1992:

- o An aquifer test will be performed to estimate hydraulic properties and evaluate potential hydrocarbon pathways in the upper-most aquifer beneath the site.
- o Research properties in the site vicinity for potential up-gradient sources of hydrocarbon contamination.
- o The proposed vapor extraction/monitoring wells and groundwater extraction well, within the new tank complex, have been installed. In addition, a vapor extraction test has been conducted. A report documenting the results of these field activities is forthcoming.
- o Perform groundwater sampling and monitoring for the third quarter of 1992.

ARCO Products Company June 30, 1992 Page 8

If you have any questions, please call.

GeoStrategies Inc. by,

Robert C. Mallory

Geologist

John F. Vargas

Senior Geologist

R.G. 5046

RCM/JFV/shl

Plate 1. Vicinity Map

Site Plan/Potentiometric Map Plate 2.

TPH-G/Benzene Concentration Map Plate 3.

Exploratory Boring Logs and Well Construction Details Appendix A: Soil Analytical Report and Chain-of-Custody Form Appendix B:

NO. 5046

Groundwater Analytical Report and Chain-of-Custody Form Appendix C:

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References Cited

Dorothy H. Radbruch, 1957, Areal and Engineering Geology of the Oakland West Quadrangle, California, U.S. Geological Survey Map I-239.

TABLE 1

SOIL ANALYSES DATA

| SAMPLE ID | SAMPLE DATE | ANALYZED DATE | TPH-G (PPM) | BENZENE (PPM) | TOLUENE (PPM) | ETHYLBENZENE (PPM) | XYLENES (PPM) | TPH-D (PPM) |
|--------------|----------------|------------------|----------------|------------------|------------------|-----------------------|------------------|----------------|
| A-1-4.5 | 16-Mar-92 | 01-Apr-92 | <1.0 | 0.024 | 0.014 | 0.009 | 0.034 | <1.0 |
| A-1-10.0 | 16-Mar-92 | 01-Apr-92 | 2.2 | 0.13 | 0.051 | 0.023 | 0.71 | <1.0 |
| A-2-4.0 | 16-Mar-92 | 01-Apr-92 | <1.0 | <0.0050 | 0.0050 | <0.0050 | <0.0050 | 14 |
| A-2-10.0 | 16-Mar-92 | 01-Apr-92 | <1.0 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0 |
| A-3-10.0 | 17-Mar-92 | 01-Apr-92 | <1.0 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0 |
| A-4-10.0 | 17-Mar-92 | 01-Apr-92 | <1.0 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0 |

TPH-G = Total petroleum hydrocarbons calculated as gasoline

TPH-D = Total petroleum hydrocarbons calculated as diesel

PPM = Parts Per Million

NOTES: 1. All data shown as <X are reported as ND (None Detected)

2. The last number of the sample I.D. corresponds to the depth the sample was taken.

TABLE 2

FIELD MONITORING DATA

| WELL NO. | MONITORING DATE | CASING DIA. (IN) | TOTAL WELL DEPTH (FT) | WELL ELEV. (FT) | DEPTH TO WATER (FT) | PRODUCT THICKNESS (FT) | STATIC WATER | PURGED WELL VOLUMES | рΉ | TEMPERATURE (F) | CONDUCTIVITY (u MHOS/CM) |
|-------------|--------------------|---------------------|--------------------------|--------------------|------------------------|------------------------|--------------|------------------------|------|--|--|
| A-1 | 03-Apr-92 | 3 | 24.5 | 14.75 | 10.35 | · | 4.40 | ≠========= 5 | 7.13 | ====================================== | ====================================== |
| A-2 | 03-Apr-92 | 3 | 25.2 | 15.16 | 10.97 | | 4.19 | 5 | 7.50 | 67.0 | 1031 |
| A-3 | 03-Apr-92 | 3 | 29.0 | 16.38 | 11.70 | • | 4.68 | 5 | 7.73 | 66.2 | 920 |
| A-4 | 03-Apr-92 | 3 | 28.0 | 15.89 | 10.84 | | 5.05 | 5 | 7.60 | 66.1 | 1015 |
| AR-1 | 03-Apr-92 | 6 | 28.0 | 15.71 | 11.07 | *** | 4.64 | 5 | 7.70 | 67.2 | 880 |

Notes: 1. Static water elevations referenced to Mean Sea Level (MSL).

^{2.} Physical parameter measurements represent stabilized values.

TABLE 3

HISTORICAL GROUND-WATER QUALITY DATABASE

| WELL NO. | SAMPLE DATE | ANALYZED DATE | TPH-G (PPB) | BENZENE (PPB) | TOLUENE (PPB) | ETHYLBENZENE (PPB) | XYLENES (PPB) | TPH-DIESEL (PPB) |
|-------------|----------------|------------------|----------------|------------------|------------------|-----------------------|------------------|------------------|
| A-1 | 03-Apr-92 | 10-Apr-92 | 34000 | 6200 | 3900 | 410 | 3100 | 6100 |
| A-2 | 03-Apr-92 | 10-Apr-92 | <30 | <0.30 | <0.30 | <0.30 | <0.30 | <50 |
| A-3 | 03-Apr-92 | 10-Apr-92 | 200 | 0.79 | 0.65 | 4.4 | <0.30 | 130 |
| A - 4 | 03-Apr-92 | 10-Apr-92 | 35 | <0.30 | <0.30 | <0.30 | <0.30 | 85 |
| AR-1 | 03-Apr-92 | 10-Apr-92 | 17000 | 310 | 1400 | 320 | 3000 | 12000 |

CURRENT REGIONAL WATER QUALITY CONTROL BOARD MAXIMIM CONTAMINANT LEVELS

Benzene 1. ppb Xylenes 1750. ppb Ethylbenzene 680. ppb

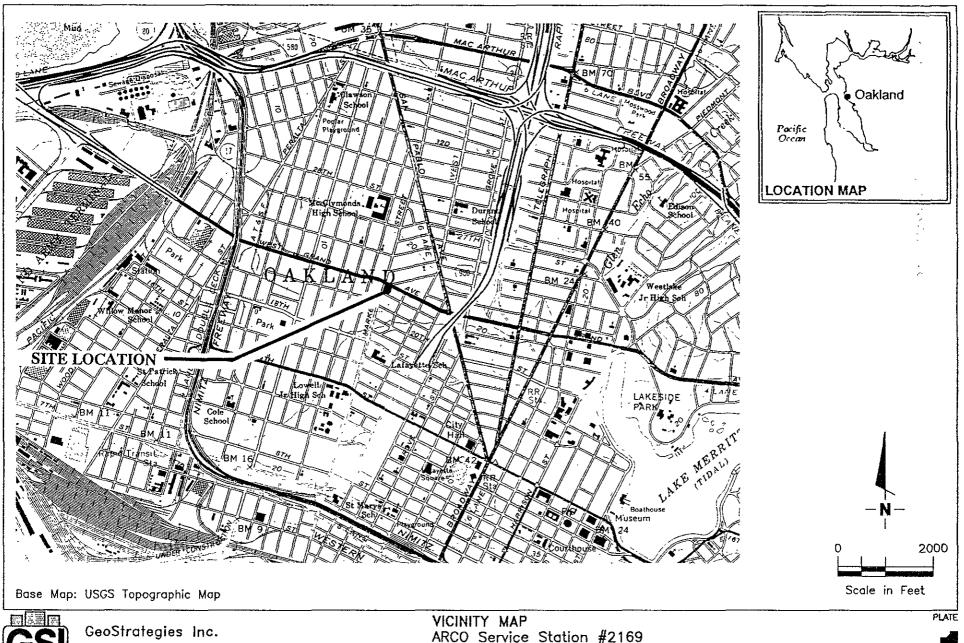
CURRENT DHS ACTION LEVELS
Toluene 100.0 ppb

TPH·G = Total Petroleum Hydrocarbons calculated as Gasoline
PPB = Parts Per Billion

Notes: 1. DHS Action levels and MCL's are subject to change pending State of California review.

2. All data shown as <X are reported as ND (none detected).

ILLUSTRATIONS



JOB NUMBER

7927

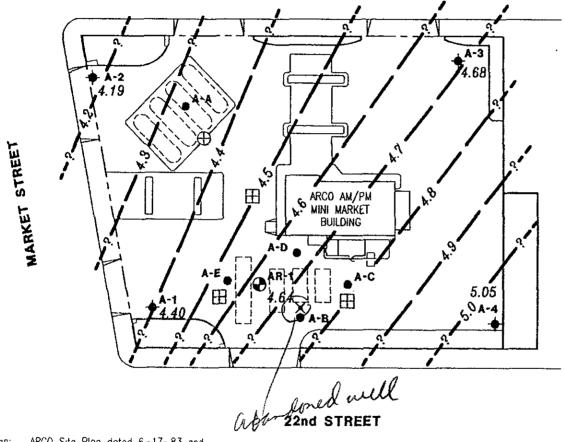
ARCO Service Station #2169 889 West Grand Avenue Oakland, California

DATE 5/91

REVISED DATE

REVIEWED BY

WEST GRAND AVENUE



EXPLANATION

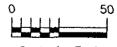
- Ground-water monitoring well
- Ground-water recovery well
- Soil Boring

99.99

- × Abandoned well
- \blacksquare Proposed vapor extraction well
- **(H)** Proposed ground-water recovery well
 - Ground-water elevation contour. Approximate Gradient = 0.004
 - Ground-water elevation in feet referenced to Mean Sea Level (MSL) measured on April 3. 1992

Contours may be influenced by irrigation practices and/or site NOTES: 1. construction activities.





Scale in Feet

PLATE

Base Map

ARCO Site Plan dated 6-17-83 and ARCO Tank & Line Replacement Site Plan dated 4-22-91

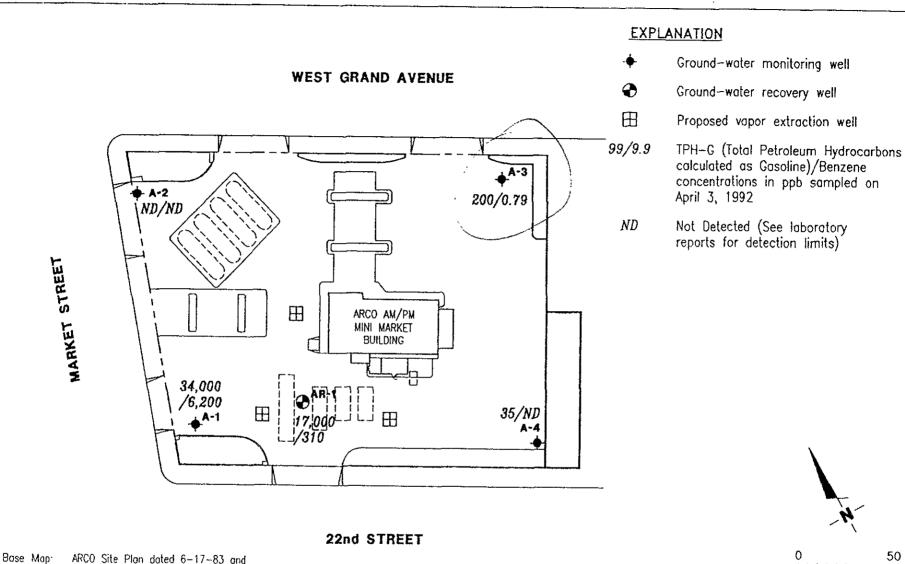
GeoStrategies Inc.

SITE PLAN/POTENTIOMETRIC MAP ARCO Service Station #2169 889 West Grand Avenue Oakland, California

DATE 5/92 REVISED DATE

JOB NUMBER 792705-3

REVIEWED BY Rcm





TPH-G/BENZENE CONCENTRATION MAP ARCO Service Station #2169

889 West Grand Avenue Oakland, California

DATE 5/92

JOB NUMBER 792705-3

REVIEWED BY rom

ARCO Tank & Line Replacement Site Plan dated 4-22-91

REVISED DATE

50

PLATE

Scale in Feet

APPENDIX A EXPLORATORY BORING LOGS WELL CONSTRUCTION DETAILS

| | MAJOR DIVI | SIONS | | TYPICAL NAMES |
|--|--|------------------------------|----|--|
| ĒVĒ | | CLEAN GHAVELS WITH LITTLE | GW | WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES |
| 3 0. 200 SIE | GRAVELS | OR NO FINES | GP | POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES |
| COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEYE | COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE | GRAVELS WITH | GM | SILTY GRAVELS, SILTY GRAVELS WITH SAND |
| GRAINE | | OVER 15% FINES | GC | CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND |
| OARSE HALF IS (| | CLEAN SANDS WITH LITTLE | sw | WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES |
| C IE THAN | SANDS MORE THAN HALF | OR NO FINES | SP | POORLY GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES |
| MOM | COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE | SANDS WITH | SM | SILTY SANDS WITH OR WITHOUT GRAVEL |
| | | OVER 15% FINES | sc | CLAYEY SANDS WITH OR WITHOUT GRAVEL |
| SIEVE | | | ML | INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS |
| 1[_S 4 NO. 200 | SILTS AN | ID CLAYS 50% OR LESS | CL | INORIGANIC CLAYS OF LOW TO MEDIUM PLASTICITY CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS |
| NED SO | | | OL | ORGANIC SILTS OR CLAYS OF LOW PLASTICITY |
| E-GRAI | | , | МН | INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS, FINE SANDY OR SILTY SOILS, ELASTIC SILTS |
| FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE | SILTS AN LIQUID LIMIT GRE | | СН | INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS |
| MORE | | | ОН | ORGANIC SILTS OR CLAYS OF MEDIUM TO HIGH PLASTICITY |
| | HIGHLY ORG | ANIC SOILS | PT | PEAT AND OTHER HIGHLY ORGANIC SOILS |

LL Ы - Liquid Limit (%)

- Plastic Index (%)

PID

MA

- Volatile Vapors in ppm

- Particle Size Analysis

2.5 YR 6/2

- Soil Color according to Munsell Soil Color Charts (1975 Edition)

5 GY 5/2

- GSA Rock Color Chart



- No Soil Sample Recovered



- "Undisturbed" Sample



- Bulk or Classification Sample



- First Encountered Ground Water Level





- Piezometric Ground Water Level

Penetration

- Sample drive hammer weight - 140 pounds falling 30 inches. Blows required to drive sampler 1 foot are indicated on the logs



GeoStrategies Inc.

Unified Soil Classification - ASTM D 2488-85 and Key to Test Data

| | cation of | | | | | | | Project No 792705 Date: 3/16/92 Boring |
|--|------------------------------------|--|--|-------------|-----------|----------|-----------------------------|---|
| | | (| See Pla | ate 2) | | | | Client: ARCO Products Company SS#2169 Location: 889 W. Grand Avenue A |
| | | , | | | | | | City: October 1 |
| | | | | | | | | Loggod by DOM |
| | | | | | | | | Logged by: RCM Driller: Bayland of Casing installation data: |
| | method: | Hollow | Stem / | \uger | | *** | | |
| lole dia | meter: | 8" conv | erted to | 0 10" | | | | Top of Box Elevation: 14.75' Datum: MSL |
| | . 8 | | 1 | | | | Soil Group Symbol (USCS) | Water Level 13.5' 10.8' |
| PP (ppm) | Blows/ft.* or Pressure (psi) | Type of Sample | Sample | Depth (ft.) | Sample | Well | 2 S | Time 9:40 11:10 |
| - <u>5</u> | esse. | ₽S | 8 3 | 8 | 8 | ×8 |) log | Date 3/16/92 3/16/92 |
| | <u> </u> | | | | <u> </u> | | Š | Description |
| | | | - | \dashv . | - | | | PAVEMENT SECTION - 0.75 feet. |
| | | | - | _ 1 | | 4 | | |
| | | | - | 2 | - | - | | |
| | | } | | ⊣ ~ | - | | $Y//\lambda$ | |
| · | | | <u> </u> | 3 | | 7 | $Y//\lambda$ | |
| | | | | | | 7 | | CLAY (CL) - olive (5Y 5/4); medium stiff; damp; 90% |
| | 250 | S&H | A-1- | 4 | | | | 10% silt; trace fine sand. |
| 54.0 | 250 | <u> </u> | 4.5 | | |] | | |
| | 350 | | <u> </u> | _ 5 | Δ | _ | | |
| | <u> </u> | | | վ _ | | 1 | | |
| | <u>-</u> - | <u> </u> | | 6 | ļ | _ | | |
| | | | | ⊣ _ | <u></u> | 1 | | |
| | | | - | 7 | } | - | | |
| | | | ļ | 8 | - | - | | |
| | | | | ⊣ " | - | - | | |
| | | S&H | <u> </u> | 9 | | - | | Veny stiff trace organic matter at the office |
| | | | A-1- | 7 | | 1 | | Very stiff, trace organic matter at 10.0 feet. |
| 82 | 17 | | 10.0 |] 10 | |] | 1// | |
| | | | _ | ╣ | <u></u> | <u> </u> | 1// | |
| | i | S&H | ļ | 11 | . | Ĭ₩ | 1/// | CLAYEY SAND (SC) - light olive brown, (2.5Y S/Y); |
| 74 | 11 | <u> </u> | A-1- 12.5 | - | | - | | medium dense; moist; 60% find sand; 40% clay; trace |
| - | | | 12.5 | 12 | . | | | fine gravel. |
| | | | | 13 | | | /// | |
| - | | | _ | ⊣ '` | | | 1// | Saturated at 13.5 feet. |
| | i | S&H | | 14 | | Ϋ́ | 1/// | Caturated at 13.5 reet. |
| | | | A-1- | 1 | | | 11/1 | |
| 2.4 | 12 | | 15.0 |] 15] | | | 1.77 | SAND WITH CLAY (SP-SC) - dark greenish grey (5GY |
| | | | |] [| | İ | 1.1. | 4/1); medium dense; saturated; 90% fine to medium |
| - | | | | 16 | | | | sand; 10% clay; trace fine gravel. |
| $-\!\!\!\!+$ | | | | 1} | | | | X |
| -+ | | | | 17 | _ | | | |
| - | | · · · · · · · · · · · · · · · · · · · | | 10 | | | 1// | |
| j - | | - | | 18 | | | 1.1. | CLAVEY OAND (OC) |
| | | S&H | | 19 | - | | //// | CLAYEY SAND (SC) - light olive brown (2.5Y 5/4) |
| | | | A-1- | ' | \vdash | | //// | medium dense; saturated; 60% fine to coarse sand, 30 |
| .5 | 25 | | 20.0 | 20 | | | /// | clay; 10% fine to medium angular gravel. |
| narks: | | | | <u> ~ _</u> | | ······· | K. K. K. | |
| | | | | | | | | |

GeoStrateg

A-1

JOB NUMBER REVIEWED BY ROICEG DATE REVISED DATE REVISED DATE REVISED DATE
792705 3/92

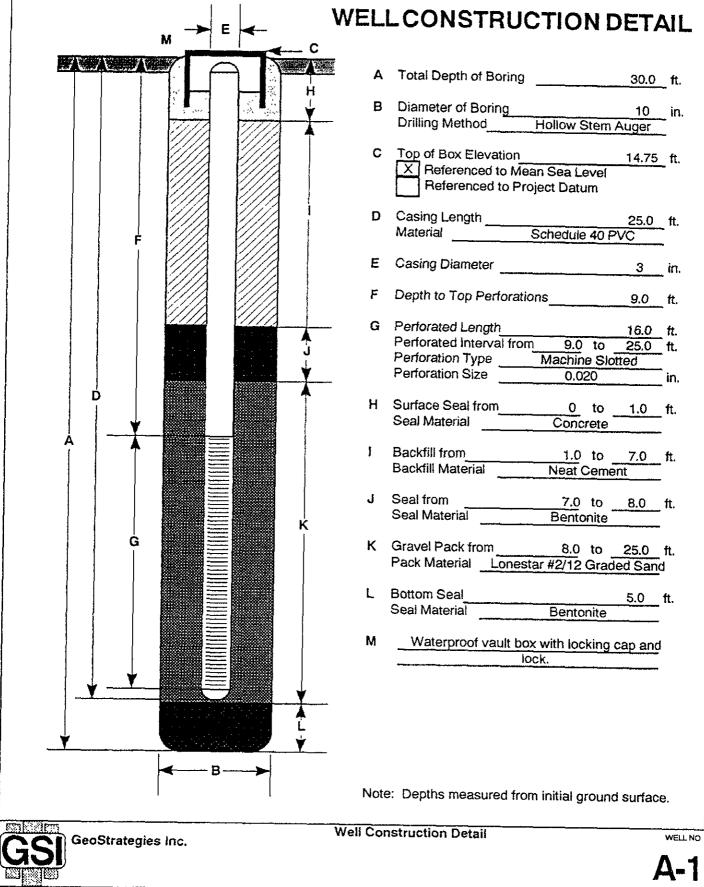
| / | PARON OF | boring. | | | | | | Project No.: Client: | 792705 | Date: | 3/16/92 | Bonng | No: |
|-------------------|------------------------------------|-------------------|---------------------------------------|----------------|----------------------|------|-----------------------------|---------------------------------------|----------------|---|---------------------------------------|-------------|-----------------|
| | | (3 | See Plat | e 2) | | | | Location: | 889 W. Gra | nd Augnus | any SS#2169 | A | ı-1 |
| | | ` | | , | | | | City: | Oakland | na Avenue | | İ | |
| | | | | | | | | Logged by: | RCM | Driller: | D1- | Sheet | _2 |
| | | | | | | | | Casing insta | | ! Diner; | Bayland | of | 2 |
| Drilling | | Hollow | Stem Au | ıger | | | | 1 | | | | | |
| Hole dis | meter: | 8", con | verted to | 0 10" | | • | | Top of Box E | levation | ······································ | Datum: | | |
| | ্ ন্ত | | | 1 | | | gg. | Water Level | | | | | |
| PlO (ppm) | Blows/ft." or Pressure (psi) | Type of Sample | Sample | Depth (ft.) | Semple | Well | Soil Group Symbol (USCS) | Time | | | | | |
| - 5 | 8 8 | 1≥ % | S Z | 8 | 8 | ≥8 |) | Date | | | - | | |
| | ; L | ļ | ! | ! - | | | 8 | | | Description | | | |
| | | | | 21 | ļ | | 1/// | | | | | | |
| | | | · · · · · · · · · · · · · · · · · · · | 21 | $\vdash\vdash\vdash$ | | 1/// | | | | | | |
| | | | | 22 | | | | | | | ~ | | |
| | <u> </u> | | | | | | | | | | | · | · |
| | | | | 23 | \square | | · · · · · · | | | | | | |
| | | | |] | | | $[\cdot,\cdot,\cdot]$ | SAND (| SW) - dark ve | ellowish hro | νη (10 YR 4/4 | 1 1000 | |
| | <u> </u> | S&H | | 24 | | | ' ' ; ; | saturate | ed; 95% fine t | o coarse sa | nd; 5% fines; | race fi | ine |
| | | <u></u> | A-1- | | | | <u> : : : : </u> | gravei. | | | | | |
| 0 | 9 | | 25.0 | 25 | | | Y/Z | CLAY (| CL) - dark gre | enish gray | (5G 4/1); stiff; | moist: | 959 |
| | | <u></u> | ├── | 20 | | | | clay; 5% | sand, trace | fine gravel. | · · · · · · · · · · · · · · · · · · · | | |
| | | | | 26 | | | | <u>.</u> | | | | | |
| | | | | 27 | | | | | | | | | _ |
| | | | | - | | | | | | | | | |
| | | | | 28 | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | S&H | | 29 | | | | SANDY | SILT (ML) - c | live gray (5) | Y 4/2) stiff; mo | iot: 700 | 0/ |
| 2.5 | | | A-1- | | | | | fines; 20 | % sand; 10% | fine gravel | · 4/2/ Stitt, 1110 | 151, 70 | 76 |
| | 11 | | 30.0 | 30 | | | | | | ······································ | | | |
| | | | - - | 31 | | | | | | | | | - |
| | | | | 31 | | | | Bottom o | of boring 30.0 | feet. | | | |
| | | | | 32 | | | | 3/16/92 | | | | | |
| | | | | - | - | | | | | | | | |
| | | 1 | $\neg \neg$ | 33 | | | | | · | | | | ~- <u></u> |
| | | | | Ĺ | | | | | | | | | |
| | | <u>_</u> | | 34 | | |) F | | | | | | |
| | | | | [| | | | | | | | · | |
| | | | | 35 | | | | | | | | | |
| | | | | 36 | | | - | | | | | | |
| | | + | | 30 L | \dashv | | | | | | | | |
| | | + | | 37 | { | | - | | | | | · | ~ |
| | | | | - j- | - | | - | | | *************************************** | | | |
| | | | | 38 | | | - | | | ···· | | | |
| | | | | | | | - | | | · · · · · · · · · · · · · · · · · · · | | · | ~~~~ |
| | | | | 39 🔼 | | | | | | · · · · · · · · · · · · · · · · · · · | - | | |
| | | | | | _ | | | | | | | | |
| emarks: | <u> </u> | | | 40 | 1 | | | | | | | · | · |
| | | | | | | | | | | | | | |
| 772 DO: 3 c serve | - | | | | | | · | · · · · · · · · · · · · · · · · · · · | | | | | |
| | ÷ ~ ~ | | | | | 1 | Log of Bo | orina | | | | BORINI | |

JOB NUMBER 792705

REVIEWED BY RG/CEG

DATE 3/92

REVISED DATE



JOB NUMBER 792705

REVIEWED BY RG/CEG

DATE

REVISED DATE

REVISED DATE

3/92

| Field to | cation of | boring. | | | | | | Project No.: 792705 Date: 3/16/92 Boring No.: |
|-------------|--|-------------------|--|--------------|--------------|----------|-----------------------------|---|
| | | , | 'A Di- | | | | | Client: ARCO Products Company SS#2169 |
| } | | (| See Pla | ite 2) | | | | Location: 889 W. Grand Avenue A-2 |
| | | | | | | | | City: Oakland Sheet 1 |
| | | | | | | | | Logged by: RCM Driller: Bayland of 2 |
| Drilling | method: | Hollow | Stem A | uner | | | | Casing installation data: |
| Hole di | | | verted t | | | | | Top of Box Elevation: 15.16' Datum: MSI |
| | ৱ | | i | | i | T | (S) | Top of Box Elevation: 15.16' Datum: MSL Water Level 18.5' 11.5' |
| Q (mdd) | Blows/ft.* or Pressure (psi) | Type of Sample | p de | Depth (ft.) | 를 | ₹ 5 | Soil Group Symbol (USCS) | Time 14:20 15:01 |
| 4 5 | Blow | £.8€ | Sample | To see | Sample | Well | (5 g | Date 3/16/92 3/16/92 |
| | 4 | <u> </u> | | - | | · | S. A. | Description |
| | ļ | | <u> </u> | | | | | PAVEMENT SECTION - 0.75 feet. |
| | 1 | ļ | ļ | _ | <u></u> | Ĵ | | |
| | 1 | ļ | | | | _ | | |
| | | ļ | - | _ 2 | <u></u> | _ | | CLAY (CL) - very dark gray (10 YR 3/1); medium stiff; |
| | | | ╂ | ٦. | - | 1 | V// | damp; 85% clay; 15% sand; trace brick fragments (fill). |
| | } | | | 3 | - | 4 | V// | |
| Ō | 200 | S&H | A-2- 4.0 | 4 | | 4 | | |
| | 200 | Juli | 4.0 | ⊣ * | 7 | - | Y// | |
| | 200 | | | 5 | / | 1 | | |
| | | ļ | | \dashv $$ | | ┪ | | |
| | | ļ ——— | † | 6 | <u> </u> | - | Y// | |
| | i | | | ┪ | | | | |
| | | | | 7 | \vdash | | | |
| | | | | 7 | | | 1// | |
| | | | | 8 | <u> </u> | 1 | | |
| | | | | | |] | | |
| | | S&H | | 9 | | | | COLOR CHANGE TO greenish gray (5GY 5/1); increase |
| 00 | 44 | | A-2- | ╣ | | | | fine to coarse sand to 35%; stiff at 8.5 feet. |
| 2.2 | 11 | | 10.0 | _] 10 | | | | |
| | | | <u> </u> | ا ا | | | | |
| | | | | 11 | | | V// | |
| | | | <u> </u> | 12 | | ፟፟፟፟. | | 00,000 |
| | | S&H | <u> </u> | { '~ } | | | V// | COLOR CHANGE TO yellowish brown (10 YR 5/8) |
| | | | A-2- | 13 | | | Y// | greenish gray (5GY 5/1) medium stiff; discoloration in |
| 3.9 | 9 | | 13.5 | վ ՝ ഁ | | | Y// | rootholes at 12.0 feet. |
| | | S&H | | 14 | | | Y// | |
| | | | A-2- | 1 | | | 1// | COLOR CHANGE TO olive yellow (2.5 Y 6/6) at 14.5 feet. |
| 1.5 | 7 | | 15.0 | 15 | | | 1// | 2.5 1 0/0) at 14.5 feet. |
| | | | |] [| | | 1// | |
| <u>_</u> | | | | 16 | | | | |
| | | | | ┤_ _├ | | | // | |
| | | | | 17 | | | [:::] | |
| | | | | 10 | \dashv | | .··· | |
| | | | | 18 | | | :::: | |
| | | S&H | | 19 | . | 立 | - | CAND ON THE |
| | | ~~. | A-2- | 13 | H | - | ···- - | SAND (SW) - olive brown (2.5 Y 4/4) medium dense; |
| 3.1 | 17 | | 20.0 | 20 | | | ::::- - | saturated; 95% fine to coarse sand; 5% fine. |
| | | ted to er | guivaler | nt sta | ndai | d pene | tration blo | ws/Ht |
| | | | , | | | - p-0/10 | ·· ~LIOI I DIO | ** W/ 11. |
| | 9 | <u> </u> | | | | | Log of Bo | oring . |
| 20 | Geos | Stratoni | ec Inc | | | | -og or be | Dring BORING NO. |

GeoStrategies II

A-2

JOB NUMBER 792705

REVIEWED BY RG/CEG

DATE 3/92

REVISED DATE

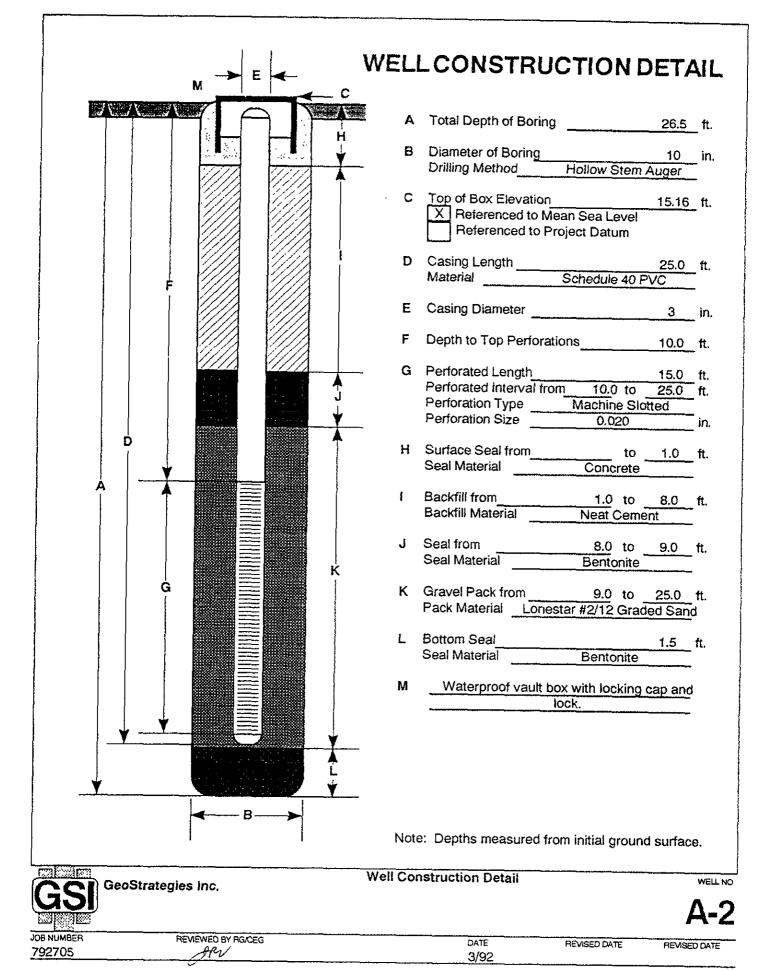
| THEID IOC | auon of | poring: | | | | | | Project No Client: | 792705 | Date: | 3/16/92 | Boring No: |
|---------------|-----------------------------------|-------------------|--|-------------|-------------|------|--|-----------------------|---------------------------------|---------------|-----------------|-----------------|
| | | 19 | See Plate | e 2) | | | | Location: | 889 W. Grai | ucts Comp | any SS#2169 | A-2 |
| ļ | | ,- | , ,,,,,,, | | | | | City: | Oakland | io Avenue | | |
| j | | | | | | | | Logged by: | BCM | Driller: | Bayland | Sheet 2 of 2 |
| L | | | | | | | | Casing instal | | , 5,,,,,,,, | Baylario | 1 0, 2 |
| Drilling | | Hollow | Stem Au | ıger | | | ······································ | 1 | | | | |
| Hole dia | meter: | 8", conv | erted to | 10" | | | | Top of Box E | levation: | | Datum: | |
| ļ | · 8 | 1 | | 1 - | _ | | Soil Group Symbol (USCS) | Water Level | i . | | | |
| Ord Cypm) | ws.ft | Type of Sample | Sample | Dopth (ft.) | Sample | Well | Groun | Time | | | | |
| - 5 | Blows/ft. or Pressure (psi) | 1≥8 | 82 | र्व | S. | > 0 | Solf | Date | ì | | | |
| | ļ | | ! | 1 | | | | | | Description | | |
| | | | | 21 | - | | | | · | | · | |
| | | | | | | | ::::: | | | | | |
| | | | | 22 | | | | | | | | |
| | | | |] | | | ' ; ; ' | | | | | |
| | <u> </u> | | | 23 | | | | Increas | e fine subang | ular gravel | to 20% at 23. | 5 feet. |
| | | 0011 | <u></u> | | | | | | | | | |
| | | S&H | A-2- | 24 | | | | | | | | |
| 0.4 | 19 | | 25.0 | 25 | | | 77 | CLAV | ^ \ | n ara: /=0 : | -/4\ | |
| ₩ 1-₹ | | SPT | ~3.0 | 1 | | | Y/// | 20% fin | oc) - greenisi e sand interb | r gray (50 5 | 5/1) stiff; dam | p; 80% clay; |
| | | | | 26 | | | | 2070 1111 | e sand interp | euveu iairiji | iae. | |
| 0 | 15 | | | 1 | | | | to return to the real | | | | |
| | | | | 27 | | | | | | | | |
| | | | |] . | | | j | | | | | |
| | | | | 28 | | | | ····- | | | | |
| | | ļ | | 00 | \vdash | |] | Bottom | of boring 26. | 5 feet. | | |
| | <u> </u> | | | 29 | | | | 3/16/92 | | | | |
| | | | | 30 | | | | · | | | | |
| | | | | | | | | 111/2000 | | | | |
| | | | | 31 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | — | 32 | | | | | | | | |
| | | | | 33 | - | | | | | | | |
| - | | | | 33 | | | | | · | | | |
| | | - | | 34 | | | 1 | | ······ | | | - |
| | | | | | | | 1 | | | <u></u> | | |
| | | | | 35 | | | | | | | | |
| | / | | | | | | 1 | | | | | |
| | | | | 36 | | | | | | | | |
| | | | | 37 | | | 1 | | | | | |
| | | | | · | \dashv | | - | | | | | |
| | | | | 38 | | | 1 | | | | | |
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| | | | | 39 | | | | | | | | , |
| | | ! | | 40 | | | [| | | | | |
| Remarks: | | | <u> </u> | 40 | | | | | | | | |
| | | | | | | | | | | | | |
| ron as in | 579 | | | | | | 10==5 | | | | | |
| 77777 W.C. 1D | | . | | | | | Log of B | oring | | | | BORING NO |

JOB NUMBER 792705

REVIEWED BY ROCEG

DATE 3/92

REVISED DATE



| ation of t | oring: | | | | | | Project No.: | | roducte | Date: | 3/17/92 | Boring No: |
|-------------|--|--|---|------------------------------|---|---|---|--|--|--|--|---|
| | (9 | oo Plate | 2) | | | | | | | | 11y 55#2109 | A-3 |
| | (3 | oo riac | / | | | | | | | ende | | Sheet 1 |
| | | | | | | | | | | Driller: | Bayland | of 2 |
| | | | | | | | | | | | <i>Day</i> land | |
| nethod: | Hollow S | Stem Au | iger | | | | - | | | | | |
| meter: | 8", conv | erted to | 10" | | | | Top of Box El | evation: | 16.38' | | Datum: MSI | |
| ন্ত | | | 1 | | | (8) | Water Level | 12.0 | 1 | | | |
| # £ € | e of | e de | £ | 활 | frait | Sinu (US) | Time | 9:15 | | | | |
| Blow | r _Z -§ | 8 2 | Dep | 8 | ≥≊ | Soul (| Date | 3/17/9 | | | | <u></u> |
| 4 | | | <u> </u> | <u> </u> | <u> </u> | Š | | | | | | |
| | ļ | | ┧. | | _ | | PAVEM | ENTSEC | TION - C |).75 feet | <u> </u> | |
| | | | 1 | - | 4 | | | | · | | | |
| | | | - | - | - | | CLAY (| 211 | dorkor | (40.) | (D 0/4) modii | una atiff. |
| | | - | 12 | | ┥ | | | | | | | |
| | | <u> </u> | 2 | | ┨ | V// | | | 15% 5110 | , 5% 1111 | ie sariu, trace | DITCK |
| | | | վ ՝ | | ┥ | V// | iraginei | its (i m). | | | | |
| 150 | S&H | Δ-3- | 4 | | ┪ | | | | | | • | |
| | | | ┪ ~ | | 1 | V// | Trace fir | ne gravel | : organic | matter | at 4.5 feet | |
| | | 1 | 1 5 | 7 | 1 | | | <u> 3 </u> | , -, 5 | | | |
| | | | † | | 1 | | | | | · | | |
| | | | 6 | | † | | | | | | | |
| | 1 | | 1 | | 1 | V// | | | | | | |
| | 1 | | 7 | | 1 | Y/// | | | | | | |
| | | | 1 | - | 1 | Y/// | | | | | | |
| | I | | 8 [| |] | | | | | | | |
| | S&H_ | |] | |] | Y// | | | | | | |
| | | | 9 | | _ | Y/// | | | | | | |
| 19_ | <u> </u> | 10.0 | ╡ | | - | | | | | | | se fine |
| | ļ | | 10 | | 4 | 1/// | sand to | 25%; ver | y stiff at | 8.5 teet | 4 | |
| | | | ۱., | | 4 | | | | | | | |
| ļ | <u> </u> | | - 1 | | - | | | | | | | |
| | | | 12 | | - | | Saturate | ad: modiu | m ctiff a | 120fc | not | |
| | SPT | <u> </u> | ┤ '~ | | ₹ | | Jaruran | ou, media | · · · · · · · · · · · · | 12.0 18 | 761. | |
| | 2 | | 1.3 | | - | | | - | ···· | | | |
| 4 | | | ՝ ՝ | | 1 | 444 | | | | | | |
| · · · · · · | S&H | | 14 | | 1 | 1/// | CLAYE' | Y SAND (| SC) - bro | own (10 | YR 5/3) - sat | urated: |
| | 1 | A-3- | 1 | | 1 | /// | | | | | | |
| 9 | | 15.0 | 15 | | 1 | /// | | ···· | <u> </u> | <u></u> | | |
| | | | 1 | |] | 1// | | | | | | |
| | | |] 16 | | | 1// | | | | | | |
| | | | | | | 1/1/ | | | | | | |
| | | | 17 | |] | 1/// | | | | | | |
| | | | | |] | Y// | | | | own (2. | 5 Y 5/4) very | stiff; moist |
| | | | 18 | | _ | Y// | 80% cla | y; 20% fir | ne sand. | | | |
| | | } | | | _ | Y// | GRAVE | L with SA | ND (GV | /) - light | olive brown | (2.5 Y 5/4) |
| | S&H | | 19 | | 1 | 7 / | | | | | | |
| | | | | | 4 | <i>y</i> . <i>y</i> | | | ub-angu | lar grav | vel; 30% fine | to coarse |
| 28 | <u> </u> | 20.0 | <u> </u> | | <u> </u> | 1.4. | sand; 59 | % tines. | | | | |
| | | | | | | | | | | | | |
| י ו | 150 250 250 | nethod: Hollow Smeter: 8", conv | See Plate See | (See Plate 2) See Plate 2 | (See Plate 2) See Plate 2 See Plate 3 See Plate 3 See Plate 4 See Plate 4 See Plate 5 See | (See Plate 2) See Plate 2 See Plate 3 See | (See Plate 2) See Plate 2 See Plate 3 See | Client: Location: City: Location: City: Location: City: Location: City: Casing install: Casing ins | (See Plate 2) Client: ARCO P Location: B39 W. Colleged by: RCM Casing installation data: Colleged by: RCM Casing installation data: Top of Box Elevation: Top o | Client: ARCO Products Location: 889 W. Grand Av City: Oakland Logged by: RCM Casing installation data: Comment Clear: ARCO Products Compa Location: 889 W. Grand Avenue City: Oakland Logged by: RCM Driller: Oakland Logged by: RCM Driller: Casing installation data: Top of lox Elevation: 16.38 Water Level 12.07 Time 9:15 Date 3/17/92 Description PAVEMENT SECTION - 0.75 fee CLAY (CL) - very dark gray (10 \) damp; 80% clay; 15% slit; 5% fin fragments (Fill). Trace fine gravel; organic matter S&H A-3- 9 Trace fine gravel; organic ma | Client: ARCO Products Company SS#2169 Location: B89 W. Grand Avenue City: Oakland Logged by: RCM Driller: Bayland Casing installation data: Casing installation data: Top of Box Elevation: 16,38' Datum: MSI Water Level 12,0' Datum: MSI Water Level 12,0' Description PAVEMENT SECTION - 0.75 feet CLAY (CL) - very dark gray (10 YR 3/1) medit damp; 80% clay; 15% slit; 5% fine sand; trace fragments (Fill). Trace fine gravel; organic matter at 4.5 feet. Trace fine gravel; organic matter at 4.5 feet. SpT 13 |

GSI

GeoStrategies Inc.

A-3

JOB NUMBER REVISED BY RICCEG DATE REVISED DATE REVISED DATE 792705 3/92

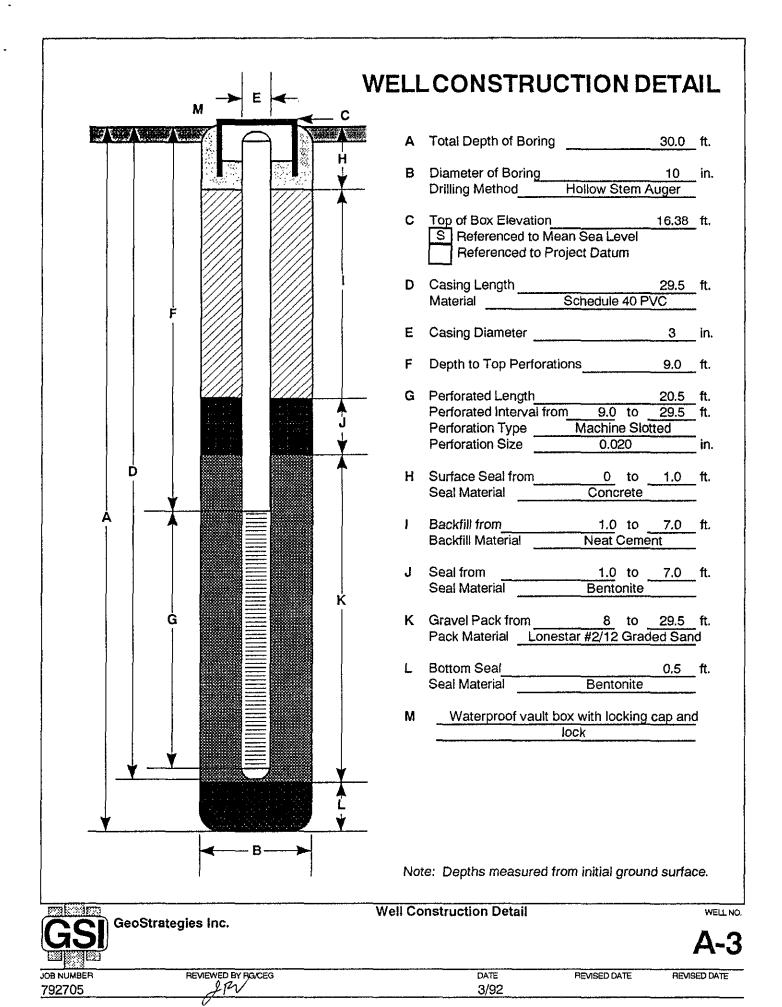
| Field loc | ation of t | oring: | | | | | | Project No.: | | Date: | 3/17/92 | Boring No: |
|----------------|--|--|--------------|-------------|-------------------------------|------|-----------------------------|----------------|-----------------|--------------|----------------|--|
| | | | | | | | | Client: | | | any SS#2169 | A-3 |
| F | | (8 | See Plate | 2) | | | | Location: | 889 W. Gran | nd Avenue | | |
| | | | | | | | | City: | Oakland | | | Sheet 2 |
| | | | | | | | | Logged by: | | Driller: | Bayland | of 2 |
| | | | | | | | | Casing install | ation data: | | | |
| Drilling | method: | Hollow S | Stem Au | ger | | | | | | | | |
| Hole dia | meter: | 8", conv | verted to | 10" | | | | Top of Box E | levation: | | Datum: | |
| | র | |] | | | | I R | Water Level | | | | |
| οĒ | Blows/ft. or Pressure (psi) | p of | Sample | Depth (ft.) | ple | = = | Soil Group Symbol (USCS) | Time | | | | ************************************** |
| Ord Opm) | No Sour | Type of Sample | E E | l de | Sample | Well | 5 5 | Date | | | | |
| | | | | ۵ | | | S w | - <u></u> | | Description | | <u> </u> |
| | i | | | | | | 4 4 | | | | | · · · · · · · · · · · · · · · · · · · |
| | · · · · · · · · · · · · · · · · · · · | | | 21 | | | | | | | | |
| | | - | | ┤ ̄` | | | | | ···· | | | |
| | | | | 22 | | | | <u>-</u> | | | | |
| | | - | | 1 | \Box | | | | | | | |
| - | | | | 23 | \vdash | | | <u> </u> | | | | |
| | | | | 120 | | | A. A. A. | | | ······ | | |
| | | S&H | | 24 | | | | CLAY (| CI) - greenie | h aray (5GV | 5/1) very stif | f moiet |
| | | - 5011 | A-3- | ~~ | | | 777 | 90% dis | y, 10% fine s | and | 3/1/ Very Stil | i, itioist, |
| 0 | 30 | | 25.0 | 25 | | | | 90 % CIE | ly, 10% line s | ailu. | | ······································ |
| | 30 | SPT | 23.0 | 2.5 | | | 11,000 | CAND (| CD) pline (F | V 4/2) done | Sou poturatodi | 1000/ fine |
| | | SF I | | 26 | | | | | | 1 4/3) Gens | se; saturated; | 100% line |
| | 40 | | | 20 | | | | sanu, tr | ace fines. | | | |
| | 43 | | | | - | | | | | | | |
| | | | | 27 | - | | 1 | | | | | |
| | <u> </u> | <u> </u> | ļ | | | | 1:::: | | | | | |
| Í | | | | 28 | | | 1 | | | | | |
| | | | | | | | | | | | | |
| | ļ | S&H | | 29 | | | | COLOF | CHANGE TO | O dark gree | nish gray (5G | 4/1) at 28.5 |
| <u> </u> | | ļ <u>.</u> . | А3- | | . | | | feet. | | | | |
| 0 | 36 | | 30.0 | 30 | | | | CLAY (| CL) dark gree | enish gray (| 5G 4/1) moist; | hard; 75% |
| _ | | | <u> </u> | | | | | clay, 25 | % silt; trace t | ine to coars | se sand. | |
| | | | | ∫ 31 ∫ | | | | · | | | · | |
| | | | | 1 | | | | | | | | |
| | | <u> </u> | | 32 | | | | | | | | |
| | | | |] | <u></u> | | | | | | | |
| | | | | 33 | | | | Bottom | of boring 30. | 0 feet. | | |
| | | | |] ; | | | | 3/17/92 | | | | |
| | | | L | 34 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | 35 | | | | | | | | |
| | | | | | | | | | | | | ····· |
| | | | | 36 | | | | | | | **** | |
| | | | | 1 | | | | | | | | · · · · · · · · · · · · · · · · · · · |
| | | | | 37 | | | | | ····· | | | |
| | 1 | | | 1 | | | | | | | | |
| | | | | 38 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | 39 | $\vdash \vdash \vdash$ | | | | | | | |
| | | | - | | $\vdash \vdash \vdash \vdash$ | | | | | | • | |
| | | - | | 40 | $\vdash \vdash \vdash$ | | | | · | | | |
| Remarks | : | | <u> </u> | | | | <u> </u> | · | | | | |
| | | | | | | | | | | | | I |
| | | | | | | | | | | | | |
| 180 St 180 Mil | P**63 | | | | | | Log of E | CARINA | | | | BORING NO. |

GSI

GeoStrategies Inc.

A-3

JOB NUMBER REVISED BY RG/CEG DATE REVISED DATE REVISED DATE 792705 3/92



| Field loc | ation of i | boring: | | | | | | Project No.: Client: | |) al. | Date: | 3/17/92 | Boring | No: |
|--------------|------------------------------------|-------------------|----------|--------------|----------|----------------|-----------------------------|-------------------------|---------------|--------|------------------------|--|--------------------|--------------|
| | | 19 | ee Plate | 2) | | | | | | | icts Compa d Avenue | any SS#2169 | A | -4 |
| | | (5 | ee mate | <i>- -</i>) | | | | | Oakland | | AAGIIUG | | Sheet | 1 |
| | | | | | | | | | RCM | | Driller: | Bayland | | 2 |
| | | | | | | | | Casing installa | | | | Daylaria | | |
| Drilling | method: | Hollow S | Stem Au | ger | | | | i - | | | | | | |
| Hole dis | meter: | 8", conv | | | | | • | Top of Box El | evation: | 15.8 | 9' | Datum: MS | _ | |
| | ্ দ্ৰ | | | | | | ୃ | Water Level | 13.5 | ,' | | | | |
| PiO (pbm) | 5 × 8 | Type of Sample | Sample | Depth (ft.) | Sample | Welf Detail | §2 | Time | 13:59 | | | | | |
| ۾ ۾ | Blows/ft.* Or Pressure (psi) | Se T | 8 5 | a de | 8 | گ گ | Soit Group Symbol (USCS) | Date | 3/17/9 | 92 | | | ļ | |
| · · · · · · | ď. | | | 1 | ļ | ļ | Ś | | | | Description | | | |
| | | ļ | | ١, | | 4 | | PAVEM | ENT SEC | STIO | N - 0.75 fee | <u>et. </u> | | |
| | | | | 1 | | - | | | | | | | | |
| | | | | ۱, | - | - | | CLAY (| 21.) | , dor | (aray (40) | VD 2/4) at #f. a | | 200/ |
| | <u> </u> | | | 2 | | - | | CLAT (C | or) - very | y uan | ro sand: tr | YR 3/1) stiff; d ace brick frag | amp; e | 30% |
| | | | | 3 | | - | | Clay, 20 | 70 SHL, LIC | 306 11 | ile Saliu, li | ace blick frag | ments | · |
| | | - | | ┨Ŭ | | 1 | | | | | · | | | |
| | 200 | S&H | | 4 | | 1 | V// | | ···· | | •• | | ····· | |
| | 200 | | A-4- | 1 | | 1 | Y// | | | | | | | |
| 0 | 250 | | 5.0 | 5 | | 1 | Y// | | - | | | | | |
| | | | | 7 | | 1 | Y/// | | | | , <u>-</u> | | | |
| | | | | 6 | |] | Y/// | | | | | | | |
| | | | |] | |] | Y/// | | | | | | | |
| | | | | 7 | | ļ | Y/// | | | | | | | |
| | | | | | <u> </u> | ļ | 1/// | | | | | | | |
| | | | | 8 | | 4 | | | 0114410 | | N II alak a II. sa | 10.51 | = 7.4\ | |
| | | S&H | | 1 | | 4 | | | | ie IC |) light olive | brown (2.5 Y | 5/4), v | ery |
| | ļ <u>.</u> | SαΠ | A-4- | 9 | | - | | stiff at 8. | .5 ieel. | | | T. T. T. T. T. T. T. T. T. T. T. T. T. T | · · · · · · | |
| 0 | 23 | | 10.0 | 10 | | - | | | | | | | | |
| | | | 70.0 | ╡∵ | - | 1 | | SAND (S | SW) - ve | llowis | sh brown (1 | 10 YR 5/4) me | dium | *** |
| | | | | 11 | | 1 | | | | | | e sand; 20% s | | ındec |
| | | | | 1 | | 1 | | | ıngular fir | | | | | |
| | | | | 12 | |] | 1. 1 | | | | | | | |
| | | | |] | |] | 1/// | | | | | | | |
| | | | | 13 | | _ | 1// | | | | | | | |
| | 1 | 0000 | | ا ا | | Δ̈ | 1/// | | | | | brown; (2.5 Y | | |
| | | S&H | | 14 | | ↓ ₹ | 1/// | medium | dense; s | satur | ated; 70% | fine sand; 30% | 6 clay. | |
| | 40 | | A-4- | 4- | | 4 | 1/// | | ···· | | | | | |
| 0 | 10 | | 15.0 | 15 | . | - | 1// | | | | | | | |
| | - | | | 16 | | 1 | 1/// | ····· | | | | | | |
| | | | | ۱۰۱ | - | { | 1// | | | | | | | |
| | | | | 17 | | 1 | ///·· | | | | | | | |
| | <u> </u> | | | 1 | | 1 | | | | | | · · · · · · · · · · · · · · · · · · · | | |
| | | 1 | | 18 | | 1 | ::: • • | SAND (S | SW) - da | rk ve | llowish bro | wn (10 YR 4/6 | 3) med | ium |
| | | | | 1 | | 1 | | | | | | arse sand; 5% | | |
| | | S&H | | 19 | |] | F:: • • • | trace fin | | | | | ····· · | : |
| | | | A-4- |] | |] | ::::: | CLAY (C | CL) - gree | | gray (5GY | 5/1) stiff; moi | st; 90% | 6 |
| 0 | 15 | | 20.0 | 20 | | | 1777 | clay; 10° | % fine sa | and. | | | | |
| Remarks | | | | | | | | | | | | . — | | |
| | | erted to e | quivaler | nt Sta | and | ard Pen | etration b | lows/ft. | | | | | | |
| | | | | | | | Log of i | 3oring | | | | | BOI | RING NO |

REVIEWED BY RG/CEG JOB NUMBER 792705

DATE 3/92

REVISED DATE

| Field loc | ation of | oring: | | | | | | Project No.: | | Date: | 3/17/92 | Boring No: |
|---|------------------------------------|---|--------------|-------------|------------------------|----------------|-----------------------------|---------------------------------------|------------------|---------------------------------------|------------------|--|
| | | | | | | | | Client: | | | iny SS#2169 | A-4 |
| } | | (S | ee Plate | 2) | | | | Location: | 889 W. Gran | d Avenue | | Į. |
| | | | | | | | | City: | Oakland | D-91 | B. J. J | Sheet 2 |
| | | | | | | | | Logged by: Casing install | | Driller: | Bayland | of 2 |
| Drilling I | method: | Hollow S | Stom A. | 001 | | | | Casing install | auon daia: | | | |
| Hole dia | | 8", conv | erted to | yeı 10" | | | | Top of Box E | levation: | | Datum: | |
| | | J , CONT | 5,150 10 | | | | <i>₽</i> | Water Level | 1 | | | |
|) <u>_</u> | 1 Les | 2 8 | 9 5 | £ | 용 | = 3 | d SS | Time | | | | |
| 6 (mdd) | Blows/ft." or Pressure (psi) | Type of Sample | Sample | Depth (ft.) | Sample | Well Detail | Soil Group Symbol (USCS) | Date | | | | |
| | n å | | | | | | Sym | | | Description | | <u>' </u> |
| | | | |] | | | 7// | | | | | |
| | | | | 21 | <u> </u> | | Y/// | | | | | |
| <u> </u> | <u></u> | <u> </u> | | | <u> </u> | | | | | | | |
| <u> </u> | ļ <u> </u> | | | 22 | | | | | | | | |
| | | | | 23 | | l | | | | | | |
| | | | | 23 | \vdash | | | SILT (M | II.) = Olive (5V | 5/3): stiff: m | noist; 70% silt | · 20% fine |
| | | S&H | | 24 | | | | sand: 1 | 0% clay. | 5,0 ₁ , 5mi, 11 | IOIOC FO /O BIIL | 1 EU/0 IIII0 |
| | | | A-4- | - ' | | | | | <u> </u> | <u> </u> | | |
| 0 | 26 | | 25.0 | 25 | | | | | | | | |
| | | | |] | | | | SAND (| SP) - greenis | h gray (5G | 5/1) dense; sa | aturated; |
| | | | | 26 | | | | 95% fin | e sand; 5% fi | nes. | | |
| | | | | | | | | | | | | |
| | | | <u> </u> | 27 | | | 1:1:1 | | | | | |
| | | | | 00 | \vdash | l | | · · · · · · · · · · · · · · · · · · · | | | | · · · · · · · · · · · · · · · · · · · |
| | | | | 28 | | | | | | · | | |
| ļ | | S&H | | 29 | | | | | | | | |
| | | , , , , , , , , , , , , , , , , , , , | A-4- | - | | l | | SILT (M | L) - dark gre | enish grav (| 5G 4/1) stiff; (| damp: 80% |
| 0 | 13 | 1 | 30.0 | 30 | | | | silt; 20% | 6 clay; trace | fine sand; ro | otholes. | |
| | | | | | | | | | | | | |
| | | | | 31 | | ' | 1 | | | | | |
| | | | | | | | | | | | | |
| | | ļ | | 32 | | | | | | | | |
| [| | | | 90 | <u> </u> | ı | | D -44 | of horizon CO | O foot | | |
| | ļ | - | - | 33 | ├ | | | 00ποm | of boring 30. | u teet | | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, |
| | | | | 34 | \vdash | | | 3/17/92 | | | | |
| [| 1 | - | | • | \vdash | | | | | | | |
| | | | | 35 | | | | | | | · | ···· |
| | | | | 1 | | | | | | | | |
| | | | | 36 | | | 1 | | | · · · · · · · · · · · · · · · · · · · | | |
| | | | | | | | | | | | | |
| | | | | 37 | | | 1 | | | | | |
| | | <u> </u> | | | | | 1 | | | | | |
| | ļ | ļ | | 38 | ļ . | | | | | | | |
| | ļ <u>.</u> | | | 20 | | | | | | | | |
| _ | | | | 39 | $\vdash \vdash \vdash$ | | 1 | | ···· | · · · · · · · · · · · · · · · · · · · | | |
| | | | | 40 | \vdash | | | | | | | |
| Remarks | : | | | , | <u> </u> | | .l | | | | | |
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| [[7][8][8][8][8][8][8][8][8][8][8][8][8][8] | हुच्य | | | | | | Log of I | Roring | | | | BORING NO |
| | Ge | Strateg | ies Inc. | | | | Log or I | Joinig | | | | BOINING NO |

JOB NUMBER 792705

REVIEWED BY RG/CEG

DATE 3/92

REVISED DATE

| | | | A | Total Depth of Boring | 30.0 | _ f |
|----------|----------|--------------|----------|---|-------------------------|----------------|
| | | | B | Diameter of Boring Drilling Method Hollow S | 10 | _ ir |
| | | | T | | | |
| | | | C | Top of Box Elevation X Referenced to Mean Sea L Referenced to Project Date | evel | _ [†] |
| | | | l D | Casing Length | 28.0 | f |
| | | | | Casing Length Schedule | 40 PVC | - ´ |
| | | | E | Casing Diameter | 3 | - i |
| | | | F | Depth to Top Perforations | 8.0 | _ 1 |
| | | | G | Perforated Length Perforated Interval from 8.0 | 20.0 | _ f |
| | | | T | Perforated Interval from 8.0 Perforation Type Machin | to 28.0 | _ f |
| | | | | Perforation Size 0.0 |)20 | _ i |
| | Ď ↓ | | Н | Surface Seal from 0 Seal Material Cone | to 1.0 crete | _ f |
| | | | I | Backfill from 1.0 Backfill Material Neat | to <u>6.0</u> Cement | _ fi |
| | | | J | Seal from 6.0 Seal Material Bent | to <u>7.0</u> | _ ft |
| | G | | K | Gravel Pack from 7.0 | | |
| | | | K | Pack Material Lonestar #2/12 | Graded Sar | <u>.</u> d |
| | | | L | Bottom Seal Seal Material Bent | 2.0 onite | _ fi |
| | | | М | Waterproof vault box with lo | | <u>_</u> |
| - | <u> </u> | | | lock. | | - |
| | | | <u> </u> | | | |
| <u>—</u> | - 1-11 | ← B → | No | te: Depths measured from initial | ground surfa | ce |

JOB NUMBER REVIEWED BY RG/CEG DATE REVISED DATE REVISED DATE 792705 3/92

| Field loca | ation of t | oring: | | | | | | Project No.: | | Date: | 3/25/92 | Boring No: |
|--------------|--|-------------------|------------------|----------------|----------------|----------------|---|---------------|---------------|----------------|---------------------------------------|---------------------------------------|
| | | | | | | | | Client: | | ducts Compa | iny SS #2169 | AR-1 |
| | | (S | ee Plate | 2) | | | | Location: | | and Avenue | | |
| 1 | | | | | | | | City: | Oakland | | | Sheet 1 |
| | | | | | | | | Logged by: | | Driller: | Bayland | of 2 |
| 5 | | | | | | | | Casing instal | lation data: | | | |
| Drilling r | | Hollow S | | | | | | Top of Box E | lavation di | / | Datum: MO | |
| Hole dia | т | 8", conv | επεα το | 12" | | τ | 1 6 | | | 5.71′ | Datum: MS | <u> </u> |
| _ | Blows/IL* or Pressure (psi) | - 0 | .e | £ | | | Soil Group Symbol (USCS) | Water Level | 10.0' 9:50 | | | |
| (wdd) Old | 1 5 6 E | Type of Sample | Sample Number | Depth (ft.) | Sample | Well Detail | 5.5 5.5 | Time Date | 3/25/92 | | | |
| - 9 | 19 % | F°ŏ | σž | 8 | , w | | S de V | Date | 3/25/92 | Description | | 1 |
| | _ | <u> </u> | | | | | 0) | STOCK | (PILED SOI | | | , 1.781 L.A. |
| | | | | 1 | | } | | 0.001 | d ILLD OOM | 0,0 it. | | |
| | | ļ | | ┪ ' | | 1 | | | | | | |
| | | | | 2 | | 1 | | | | | | |
| | | <u> </u> | | 7 | - | 1 | | | | | | |
| | | | | 3 | | 1 | V// | | | | | |
| | <u> </u> | | | 1 - | | 1 | | | | | | |
| | | | † | 4 | | 1 | Y// | <u> </u> | | | · · · · · · · · · · · · · · · · · · · | |
| | · · · · · · · · · · · · · · · · · · · | | | 1 | | 1 | | | | | T | |
| | | | | 5 | | 1 | Y// | GRAVE | LLY CLAY | (CL) - dark gr | ay (5Y 4/1) st | iff; moist; |
| | | S&H | AR-1- | 1 | | 1 | | 60% cla | ay, 25% fine | gravel; 15% | sand (fill). | |
| 1.5 | <u> </u> | 1 | 6.0 | 6 | | 1 | | | | | · · · · · · · · · · · · · · · · · · · | |
| | 8 | | | 1 | \overline{Z} | 1 | | | | | | · · · · · · · · · · · · · · · · · · · |
| | | | | 7 | | 1 | | | | | | |
| | | | | 1 | ***** | 1 | | | | | | |
| | | Ì | | 8 | |] | V//. | | | | · · · · · · · · · · · · · · · · · · · | |
| | | 1 | | | | 1 | /// | | | | | |
| | | | | 9 | | | // | | | | | |
| | | | |] | |] | 7. 7. 7 | | | | | |
| | | | | 10 | | Δ̈́ | | | | | | |
| | | S&H | | j | | · | | GRAVE | EL (GW) - g | reenish gray | (5 G 5/1) med | lium dense; |
| | | | |] 11 | <u></u> | Ì | | saturat | ed; 95% fine | e to coarse gr | avel; 5% san | d (fill). |
| | 11 | | |] | | _ | | | | | | |
| | | | | 12 | |] | | | | | | |
| | | | | | | | , , , , , , | | | | | |
| | | | - | 13 | | _ | | | | | | na |
| | | ļ | <u> </u> | | | | 1/: | | | | · · · · · · · · · · · · · · · · · · · | |
| | <u> </u> | | <u> </u> | 14 | | 1 | <i>v</i> | | | | | |
| | ļ | ļ | <u> </u> | ↓ | | 1 | | | (mm) | | (=(4) | |
| | | <u> </u> | 1 | 15 | | 1 | | SAND | (SP) - greer | ish gray (5G) | y 5/1) mediun | n dense; |
| | ļ | S&H | <u> </u> | ١ | | 4 | | saturat | ed; 95% fine | sand; 5% fir | nes. | |
| | | ļ | AR-1- | 16 | . | ļ | ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; | | | | · | |
| 131.3 | 14 | ļ | 16.5 | ļ <u>, </u> | | _ | /// | | 111100 | <u> </u> | 0.7(2) = (0,1) | |
| -x - 1 1 2 | | 1 | | 17 | | 1 | V// | GHAVE | LLY CLAY | (CL) brown (1 | U YH 5/3) stif | r; saturated |
| | | ļ | <u> </u> | | | 1 | V// | 55% cla | ay; 30% tine | to medium g | raver; 15% fir | ne to coarse |
| | | ļ | ļ | 18 | | 4 | 1// | | | (10YR 3/1) m | oπling and bli | uish gray |
| | | ļ | ļ | | | 4 | // | (5B 5/1 |) discolorat | ion. | ····· | |
| | | ļ | | 19 | <u></u> | 1 | / | | | | | |
| | | ļ | | | <u> </u> | | | | | | | |
| 5 | <u> </u> | <u> </u> | <u> </u> | 20 | <u> </u> | <u> </u> | 1:::- | | | | | |
| Remarks | | | | | _ | | | | | | | |
| | | erted to e | quivaler | nt st | anda | ard pen | etration b | | | | | |
| | S 24 | | | | | | Log of I | 3oring | | | | BORING N |

GSI

GeoStrategies Inc.

AR-1

JOB NUMBER REVISED BY RG/CEG DATE REVISED DATE
792705 3/92

| Field loca | ation of b | oring: | | | | | | Project No.: | | Date: | 3/25/92 | Boring No: |
|---|------------------------------------|-------------------|--|------------------|------------------------|-------|-----------------------------|---------------------------------------|----------------|--|---|--------------|
| , | | | | | | | | Client: | | | ny SS#2169 | AR-1 |
| 1 | | (S | ee Plate | 2) | | | | Location: | 889 W. Gran | d Avenue | | |
| ľ | | | | | | | | City: | Oakland | | | Sheet 2 |
| | | | | | | | | | | Driller: | Bayland | of 2 |
| | | | | | | | | Casing instal | ation data: | | | |
| Drilling r | | Hollow S | Stem Au | ger | | | _ | | | · · · · · · · · · · · · · · · · · · · | | |
| Hole dia | meter: | 8", conv | vertedto | 12" | | | | Top of Box E | levation: | , | Datum: | |
| ļ | , ক্ল | | | - | | | Soil Group Symbol (USCS) | Water Level | | | | |
| O de d | 7 /K. | Type of Semple | Sample | <u>E</u> | Sample | Weff | l Gg | Time | | | | |
| # \$ | Blows/ft.* or Pressure (psi) | 8.4 | S Z | Depth (ft.) | S | 5 ∆ | 100 PE | Date | | | | |
| | 4 | <u></u> | | | | | S. S. | | | Description | · · · · · · · · · · · · · · · · · · · | |
| | | S&H | <u> </u> | 1 | | | | | | | greenish gra | |
| | | | AR-1- | 21 | | | | | | | ine to coarse | sand; 15% |
| 197.2 | 29 | | 21.5 | ļ | | | 1:// | fine to r | nedium grave | ર્ગ | | |
| | | | | 22 | | | 1: // | | | | rk greenish g | |
| | | | | ļ | | | 1: 1/ | | | | 30% fine to co | parse sand; |
| | | | | 23 | | | 1:// | 10% Cla | ay; 10% fine t | o medium g | ravel. | |
| <u> </u> | | _ | | ١ | <u> </u> | | | | _ | | | |
| | | - | ļ | 24 | | | | | | | · | |
| | <u> </u> | _ | ļ | | | | 1 : : | | | | ···· | |
| | | 0011 | | 25 | | | | 0.415 | (0) 10 | | (***) | |
| | ļ | S&H | 45.4 | - | | | | SAND (| Sw) - dark gi | reenisn gray | (5BG 4/1) ve | ry dense |
| 400 | | | AR-1- | 26 | | | | | | | nd; 5% fine g | |
| 19.9 | 79 | | 26.5 | | | | | | | 4/4) very de | ense; saturate | ea; 95% tine |
| | | | 1 | 27 | | | | sand; 5 | % SIR. | | | |
| <u> </u> | | | | | | | | | <u></u> | | ······································ | |
| . | | | | 28 | | | | | | | | |
| | | | | | | | | | | | | ···· |
| | | S&H | A 50 d | 29 | . | | · · · · · | 011 777 (| DL 437 (OL (M) | V 32 4 | · /50\ | |
| | 10 | | AR-1- | | | | | | | | ish gray (5G\ | |
| 2.5 | 19 | | 30 | 30 | | | | | | 7; 30% Slit; ti | race organic | matter; |
| | | | ļ <u>.</u> | | ļ | | | roothole | 9S | | | |
| ļ | | ļ | | 31 | | İ | 1 | | | | | |
| | ļ | ļ | · | 1 | | | | Dotto | -4 h - in - 00 | 0 (| | |
| | | <u> </u> | | 32 | | | | Bottom | of boring 30. | o teet. | | |
| | ļ | ļ | | 1 | | | | 0/05/00 | | | | |
| • | | | - | 33 | | | | 3/25/92 | | | | |
| ļ | | | | 24 | | | | | | | | |
| | i | | ļ <u></u> - | 34 | $\vdash \vdash \vdash$ | | | · · · · · · · · · · · · · · · · · · · | | | | |
| | | | - | 35 | | | | | | | | |
| | | _ | - | ၂ ၁၁ | i | | | | | | | |
| <u> </u> | | | | 26 | | | | | | | | |
| | ļ | | | 36 | | | • | | | | | |
| ļ | <u> </u> | _ | - | 27 | - | | | | | | | |
| <u> </u> | | - | | 37 | $\vdash \vdash \vdash$ | | | | | | | |
| | ļ | - | <u> </u> | 38 | ļ | | | | | | | |
| <u> </u> | <u> </u> | - | | 30 | ├─┤ | | | | | | | |
| <u> </u> | | <u> </u> | | 39 | $\vdash\vdash\vdash$ | | | | | | | |
| ļ | | | | 39 | $\vdash \vdash \vdash$ | | | | | | | |
| | | | | 40 | $\vdash \vdash \mid$ | | | | | | | |
| Remarks | ! : | <u> </u> | <u> </u> | , 1 0 | | | لـــــل | | | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | , ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | |
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| 100000000000000000000000000000000000000 | 1.79 | | | | | | Log of E | รงกเทส | | | | BORING NO. |

REVIEWED BY RG/CEG JOB NUMBER 792705

DATE 3/92 REVISED DATE

| | WELL CONSTRUCTION DETAIL A Total Depth of Boring 30 ft. B Diameter of Boring 12 in. Drilling Method Hollow Stem Auger C Top of Box Elevation 15.71 ft. X Referenced to Mean Sea Level Referenced to Project Datum D Casing Length 28 ft. Material Sch. 40 PVC & Carbon Steel E Casing Diameter 6 in. |
|--|--|
| | F Depth to Top Perforations 8 ft. |
| | G Perforated Length 20 ft. Perforated Interval from 8 to 28 ft. Perforation Type Continuous wrap Perforation Size 0.020 in. |
| | H Surface Seal from 0 to 1 ft. Seal Material Concrete |
| A | I Backfill from 1 to 6 ft. Backfill Material Neat Cement |
| | J Seal from 6 to 7 ft. Seal Material Bentonite |
| G | K Gravel Pack from 7 to 28 ft. Pack Material Lonestar #2/12 Graded Sand |
| | L Bottom Seal 2 ft. Seal Material Bentonite |
| | M Waterproof vault box with waterproof locking cap and lock. |
| GeoStrategies Inc. | Note: Depths measured from initial ground surface. Well Construction Detail WELL NO. |
| GSI describing in the second s | AR-1 |
| JOB NUMBER REVIEWED BY RG/CEG 792705 | DATE REVISED DATE REVISED DATE 3/92 |

APPENDIX B

SOIL ANALYTICAL REPORT

AND

CHAIN-OF-CUSTODY FORM

Gettler Ryan 2150 W. Winton Avenue Hayward, CA 94545 Attention: John Vargas

Project: 2169-92-2, Arco 2169, Oakland

SPT CPHY AR INC.

Enclosed are the results from 6 soil samples received at Sequoia Analytical on March 20,1992. The requested analyses are listed below:

| 2033682 | Soil, A-1-4.5 | Mar 16-17, 1992 | EPA 3550/8015 EPA 5030/8015/8020 |
|---------|----------------|-----------------|-------------------------------------|
| 2033683 | Soil; A-1-10.0 | Mar 16-17, 1992 | EPA 3550/8015 EPA 5030/8015/8020 |
| 2033684 | Soil, A-2-4.0 | Mar 16-17, 1992 | EPA 3550/8015 EPA 5030/8015/8020 |
| 2033685 | Soll, A-2-10.0 | Mar 16-17, 1992 | EPA 3550/8015 EPA 5030/8015/8020 |
| 2033686 | Soil, A-3-10.0 | Mar 16-17, 1992 | EPA 3550/8015 EPA 5030/8015/8020 |
| 2033687 | Soil, A-4-10.0 | Mar 16-17, 1992 | EPA 3550/8015 EPA 5030/8015/8020 |

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager



32150 W. Winton Avenue Hayward, CA 94545

aran baratan kan mana menandara Tenan Tenan Tenan Menandaran keraharan Perindaran keraharan baratan baratan ba Client Project ID: 2169-92-2, Arco 2169, Oakland

Sampled: Mar 16-17, 1992

Matrix Descript: Analysis Method:

Soil

Received:

Mar 20, 1992

Attention: John Vargas

First Sample #:

EPA 5030/8015/8020 203-3682

Reported:

Analyzed: Mar 25-Apr 1, 1992 Apr 2, 1992

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

| Sample Number | Sample Description | Low/Medium B.P. Hydrocarbons mg/kg (ppm) | Benzene mg/kg (ppm) | Toluene mg/kg (ppm) | Ethyl Benzene mg/kg (ppm) | Xylenes mg/kg (ppm) |
|------------------|-----------------------|---|---------------------------|---------------------------|------------------------------------|---------------------------|
| 203-3682 | A-1-4.5 | N.D. | 0.024 | 0.014 | 0.0090 | 0.034 |
| 203-3683 | A-1-10.0 | 2.2 | 0.13 | 0.051 | 0.023 | 0.71 |
| 203-3684 | A-2-4.0 | N.D. | N.D. | N.D. | N.D. | N.D. |
| 203-3685 | A-2-10.0 | N.D. | N.D. | N.D. | N.D. | N.D. |
| 203-3686 | A-3-10.0 | N.D. | N.D. | N.D. | N.D. | N.D. |
| 203-3687 | A-4-10.0 | N.D. | N.D. | N.D. | N.D. | N.D. |

| Detection Limits: | 1.0 | 0.0050 | 0.0050 | 0.0050 | 0.0050 | |
|-------------------|-----|--------|--------|--------|--------|--|
| | | | | | | |

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard. Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Vickie Taque Project Manager

2033682.GET <1>



े2150 W. Winton Avenue Hayward, CA 94545

∴Attention: John Vargas

Client Project ID:

2169-92-2, Arco 2169, Oakland

Soil Matrix Descript:

Analysis Method:

EPA 3550/8015

First Sample #:

203-3682

Received:

Sampled: Mar 16-17, 1992 Mar 20, 1992;

Extracted: Mar 23, 1992; Mar 24, 1992³ Analyzed:

Reported: Apr 2, 1992 - Communication of the Commun

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

| | nple nber | Sample Description | High B.P. Hydrocarbons mg/kg (ppm) |
|------|--------------|-----------------------|---|
| 203- | 3682 | A-1-4.5 | N.D. |
| 203- | 3683 | A-1-10.0 | N.D. |
| 203- | 3684 | A-2-4.0 | 14 |
| 203- | 3685 | A-2-10.0 | N.D. |
| 203- | 3686 | A-3-10.0 | N.D. |
| 203- | 3687 | A-4-10.0 | N.D. |

Detection Limits:

1.0

High Boiling Point Hydrocarbons are quantitated against a diesel fuel standard. Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Vickie Tague Project Manager

2033682.GET <2>



FIGURE CONTROL Client Project ID: 2169-92-2, Arco 2169, Oakland

\$2150 W. Winton Avenue

Hayward, CA 94545

Attention: John Vargas

QC Sample Group: 203-3682

Reported: Apr 2, 1992

QUALITY CONTROL DATA REPORT

| ANALYTE | Benzene | Toluene | Ethyl Benzene | Xylenes | |
|---|--|--|--|--|--|
| Method: Analyst: Reporting Units: Date Analyzed: QC Sample #: | EPA 8020 A. Maralit mg/kg Apr 1, 1992 GBLK040192 | EPA 8020 A. Maralit mg/kg Apr 1, 1992 GBLK040192 | EPA 8020 A. Maralit mg/kg Apr 1, 1992 GBLK040192 | EPA 8020 A. Maralit mg/kg Apr 1, 1992 GBLK040192 | |
| Sample Conc.: | N.D. | N.D. | N.D. | N.D. | |
| Spike Conc. Added: | 0.20 | 0.20 | 0.20 | 0.60 | |
| Conc. Matrix Spike: | 0.;20 | 0.20 | 0.21 | 0.61 | |
| Matrix Spike % Recovery: | 100 | 100 | 105 | 102 | |
| Conc. Matrix Spike Dup.: | 0.21 | 0.21 | 0.21 | 0.61 | |
| Matrix Spike Duplicate % Recovery: | 105 | 105 | 105 | 102 | |
| Relative % Difference: | 4.9 | 4.9 | 0.0 | 0.0 | |

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Vickie Taque Project Manager

| % Recovery: | Conc. of M.S Conc. of Sample | x 100 | | | |
|------------------------|---------------------------------------|-------|-------------|-----|--|
| | Spike Conc. Added | | | | |
| Relative % Difference: | Conc. of M.S Conc. of M.S.D. | x 100 | | | |
| _ | (Conc. of M.S. + Conc. of M.S.D.) / 2 | | | | |
| | | | 2033682.GET | <3> | |



PARTINE AND PROPERTY OF THE PR Client Project ID: 2169-92-2, Arco 2169, Oakland

2150 W. Winton Avenue

Hayward, CA 94545 "Attention: John Vargas

QC Sample Group: 203-3683

1....

Reported: Apr. 2, 1992

QUALITY CONTROL DATA REPORT

| ANALYTE | Benzene | Toluene | Ethyl Benzene | Xylenes | |
|---|---|---|---|---|--|
| Method: Analyst: Reporting Units: Date Analyzed: QC Sample #: | EPA 8020 E. Cunanan mg/kg Mar 26, 1992 GBLK032592 | EPA 8020 E. Cunanan mg/kg Mar 26, 1992 GBLK032592 | EPA 8020 E. Cunanan mg/kg Mar 26, 1992 GBLK032592 | EPA 8020 E. Cunanan mg/kg Mar 26, 1992 GBLK032592 | |
| Sample Conc.: | N.D. | N.D. | N.D. | N.D. | |
| Spike Conc. Added: | 0.20 | 0.20 | 0.20 | 0.60 | |
| Conc. Matrix Spike: | 0.20 | 0.20 | 0.21 | 0.63 | |
| Matrix Spike % Recovery: | 100 | 100 | 105 | 105 | |
| Conc. Matrix Spike Dup.: | 0.19 | 0.20 | 0.21 | 0.63 | |
| Matrix Spike Duplicate % Recovery: | 95 | 100 | 105 | 105 | |
| Relative % Difference: | 5.1 | 0.0 | 0.0 | 0.0 | |

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Vickie Taque Project Manager

Conc. of M.S. - Conc. of Sample x 100 % Recovery: Spike Conc. Added Relative % Difference: Conc. of M.S. - Conc. of M.S.D. x 100 (Conc. of M.S. + Conc. of M.S.D.) / 2

2033682.GET <4>



Client Project ID: 2169-92-2, Arco 2169, Oakland

:2150 W. Winton Avenue Hayward, CA 94545 Attention: John Vargas

QC Sample Group: 2033684-86

Reported: Apr 2, 1992

QUALITY CONTROL DATA REPORT

| ANALYTE | Benzene | Toluene | Ethyl Benzene | Xylenes | |
|---|---|---|---|---|--|
| Method: Analyst: Reporting Units: Date Analyzed: QC Sample #: | EPA 8020 A. Maralit mg/kg Mar 27, 1992 GBLK032792 | EPA 8020 A. Maralit mg/kg Mar 27, 1992 GBLK032792 | EPA 8020 A. Maralit mg/kg Mar 27, 1992 GBLK032792 | EPA 8020 A. Maralit mg/kg Mar 27, 1992 GBLK032792 | |
| Sample Conc.: | N.D. | N.D. | N.D. | N.D. | |
| Spike Conc. Added: | 0.20 | 0.20 | 0.20 | 0.60 | |
| Conc. Matrix Spike: | 0.22 | 0.22 | 0.23 | 0.67 | |
| Matrix Spike % Recovery: | 110 | 110 | 115 | 112 | |
| Conc. Matrix Spike Dup.: | 0.23 | 0.24 | 0.23 | 0.69 | |
| Matrix Spike Duplicate % Recovery: | 115 | 120 | 115 | 115 | |
| Relative % Difference: | 4.4 | 8.7 | 0.0 | 2.9 | |

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Vickie Tague Project Manager

| % Recovery: | Conc. of M.S Conc. of Sample | x 100 | |
|------------------------|---------------------------------------|-------|--|
| _ | Spike Conc. Added | | |
| Relative % Difference: | Conc. of M.S Conc. of M.S.D. | x 100 | |
| | (Conc. of M.S. + Conc. of M.S.D.) / 2 | | |
| | | | |

2033682,GET <5>



Gettler Ryan Client Project ID: 2169-92-2, Arco 2169, Oakland

2150 W. Winton Avenue

Hayward, CA 94545

QC Sample Group: 203-3687 Reported: Apr. 2, 1992 Attention: John Vargas QC Sample Group: 203-368

QUALITY CONTROL DATA REPORT

| ANALYTE | Benzene | Toluene | Ethyl Benzene | Xylenes | |
|---|---|---|---|---|--|
| Method: Analyst: Reporting Units: Date Analyzed: QC Sample #: | EPA 8020 A. Maralit mg/kg Mar 25, 1992 GBLK032592 | EPA 8020 A. Maralit mg/kg Mar 25, 1992 GBLK032592 | EPA 8020 A. Maralit mg/kg Mar 25, 1992 GBLK032592 | EPA 8020 A. Maralit mg/kg Mar 25, 1992 GBLK032592 | |
| Sample Conc.: | N.D. | N.D. | N.D. | N.D. | |
| Spike Conc. Added: | 0.20 | 0.20 | 0.20 | 0.60 | |
| Conc. Matrix Spike: | 0.21 | 0.22 | 0./22 | 0.66 | |
| Matrix Spike % Recovery: | 105 | 110 | 110 | 110 | |
| Conc. Matrix Spike Dup.: | 0.20 | 0.21 | 0.21 | 0.63 | |
| Matrix Spike Duplicate % Recovery: | 100 | 105 | 105 | 105 | |
| Relative % Difference: | 4.9 | 4.7 | 4.7 | 4.7 | |

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

 ℓ^{\sim} Vickie Tague Project Manager

| % Recovery: | Conc. of M.S Conc. of Sample Spike Conc. Added | x 100 | |
|------------------------|---|-------|--|
| Relative % Difference: | Conc. of M.S Conc. of M.S.D. | x 100 | |
| | (Conc. of M.S. + Conc. of M.S.D.) / 2 | | |

2033682.GET <6>



rarendaren errete berete beretek bilik in in intertet bir 1906 beretek bir intertet beretek betek be Client Project ID: 2169-92-2, Arco 2169, Oakland

2150 W. Winton Avenue

& Hayward, CA 94545

Attention: John Vargas ina paramana a mangalah berata

QC Sample Group: 2033682-87

Reported: Apr 2, 1992

QUALITY CONTROL DATA REPORT

| ANALYTE | High Boiling Point | | | | |
|---------|--------------------|--------------|-------|---|--|
| | Hydrocarbons | <u> </u> | · | · | |

Method:

EPA 8015

Analyst:

R. Lee

Reporting Units:

mg/kg

Date Analyzed: QC Sample #:

Mar 24, 1992 DBLK032392B

Sample Conc.:

N.D.

Spike Conc.

Added:

15

Conc. Matrix

Spike:

12

Matrix Spike

% Recovery:

80

Conc. Matrix

Spike Dup.:

12

Matrix Spike

Duplicate

% Recovery:

80

Relative

% Difference:

0.0

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Vickie Tague Project Manager

| % Recovery: | Conc. of M.S Conc. of Sample | x 100 | |
|------------------------|---------------------------------------|-------|--|
| | Spike Conc. Added | | |
| Relative % Difference: | Conc. of M.S Conc. of M.S.D. | x 100 | |
| | (Conc. of M.S. + Conc. of M.S.D.) / 2 | | |

2033682.GET <7>

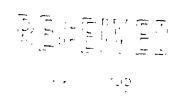
| ARCO I | Divisio | on of Atlan | lic Richfield | Company | | | | Task O | rder No. | ٠٢. | 169 | - 33 | ت ۱۰ س | 2_ | | | | 6 | - ->\ | | | 3/ | bain of Custody |
|----------------|---------|---------------|---------------|----------|----------------|-------|-----------------|----------------------|---------------|----------------------|--|-------------------------------------|---------------------------------|-------------------------|--------------|--------------|--------------|----------------------|------------------------------|--|----------|--|--|
| ARCO Facilii | y no. | 216 | 7 | Cit | ly nellity) | روس | AKK | 2,20 | Ĭ | Project | manaç | jer . | 77.36 | /n.) | VX | 275 6 | F.C 5 | U | | | | | Laboratory name |
| ARCO engine | er (| NEIN | 21€ | 5 | 2.2.1 | MEL | Telepho | ne no. | | Telepho | one no | 5.J- | 557. | Set i | 7 1 | Fax | no. | n (s | <u>-</u> دیاء | 783 | - -/? | <u>, </u> | SCQUOIA Contract number |
| Consultant na | | | | | | s // | | Address (Consulta | | | | | | | | | | ם, זין | 420 | KKi | 1:45 | | Contract number |
| | | | | Matrix | | Prese | rvation | | | | 기 첫 55 55 55 55 55 55 55 55 | स्रिय | | 떭 | | | | Semi VOA | 2007/000 | l | | | Method of shipment |
| Sample 1.D. | Lab no. | Container no. | Soil | Water | Other | Ice | Acid | Sampling date | Sampling trme | 8TEX 602/EPA 8020 | 8ТЕХТРН — С.4.5 EPA M602/8020/8015 | TPH Modified 8015 Gas ☐ Oiesel 🔯 | Oil and Grease 413.1 🗀 413.2 | TPH EPA 418.1/SM503E | EPA 601/8010 | EPA 624/8240 | EPA 625/8270 | TCLP Metals VOA | CAM Majais EPA 6 TTC STLC | Lead Org./DHS L. Lead EPA 7420/7421 C. | | | Courk |
| A-1-4,5 | | | X | | | X | | 3/16/92 | 9:11 | | X | X | | | | | 368 | | | | | | Special detection Limit/reporting |
| 1-1-10.0 | | 1 | x | | | x | | 3/16/92 | 9:22 | | X | X | | | | | | 3 | | | | | inivest |
| 1-2-4.0 | | | 1 | | | X | | 3/16/12 | 13:31 | | X | × | | | | | 9 | 34 | | | | | POSSILLE |
| A-2-10.0 | | 1 | X | | | X | | 3/16/72 | (3:53 | | X | X | | | | | | 85 | | | | | Special QNQC |
| A-3-10.0 | 1 | 1 | X | <u> </u> | | X | | 3/17/12 | 9:08 | | Χ | X | | | | | 8 | 36 | | | | | NOIEMAL |
| A-4 70.0 | | 1 | x | ļ | | X | | 3/17/92 | 1342 | | × | X | | | | \checkmark | 8 | ŝ7 | | | | | 70 0,041, 3, 2 |
| Condition of s | ample | | | pod | | | | | | Tempi | erature | receive | ed: | | 0.0 | -{ | | | | | | | Remarks Lab number Turnaround time Priority Rush 1 Business Day [] |
| Relinguished | ey san | npler // | Vist. | 12 | | (/ - | Date 3 - 20 - 4 | · | Time / 400 | Recei | ved by | 2/1 | ب کر | f. J. | 2/4 | | | | | | | - | Rush 2 Business Days |
| Relinquished | 12 | s To | 011 | J- | | | Date 3-20 | | Time /5-93 | Recei | • | | · 1/ | | | | | | | | | | Expedited 5 Business Days [] |
| Relinquished | by | | | | | | Date | | Time | Recei |) 8 ₀ 0 veq (b) | laborati | ory Lus | | | D | 3 | - عر | | Time | 154 | 2 | Standard 10 Business Days |

Distribution: White copy -- Laboratory; Canary copy -- ARCO Environmental Engineering; Pink copy -- Consultant APPC-3292 (2-91)

GeoStrategies Inc.

APPENDIX C GROUNDWATER ANALYTICAL REPORT AND CHAIN-OF-CUSTODY FORM





Gettler Ryan 2150 W. Winton Avenue Hayward, CA 94545 Attention: Frank Cline

Project: 3927.02, Arco 2126, Oakland

GENTLEPHINAIN INC

Enclosed are the results from 5 water samples received at Sequoia Analytical on April 3,1992. The requested analyses are listed below:

| SAMPLE # | SAMPLE DESCRIPTION | DATE OF COLLECTION | TEST METHOD |
|----------|--------------------|--------------------|-------------------------------------|
| 2040520 | Water, A-1 | 4/3/92 | EPA 3510/8015 EPA 5030/8015/8020 |
| 2040521 | Water, A-2 | 4/3/92 | EPA 3510/8015 EPA 5030/8015/8020 |
| 2040522 | Water, A-3 | 4/3/92 | EPA 3510/8015 EPA 5030/8015/8020 |
| 2040523 | Water, A-4 | 4/3/92 | EPA 3510/8015 EPA 5030/8015/8020 |
| 2040524 | Water, AR-1 | 4/3/92 | EPA 3510/8015 EPA 5030/8015/8020 |

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Vickie Tague Project Manager



*2150 W. Winton Avenue

Hayward, CA 94545

Attention: Frank Cline

CLAS A ENCOR DECENTARISMOS POPULAÇÃOS DE CARROLLAS PRODUCTOS PROPERTOR DE CARROLLAS POPULAÇÃOS PROPERTOR DE C

First Sample #:

Matrix Descript:

Client Project ID: 3927.02, Arco 2126, Oakland

Water

Analysis Method: EPA 5030/8015/8020

204-0520

Sampled: Received:

Apr 3, 1992 Apr 3, 1992

Analyzed:

Apr 9-10, 1992

Reported: Apr 15, 1992

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

| Sample Number | Sample Description | Low/Medium B.P. Hydrocarbons µg/L (ppb) | Benzene μg/L (ppb) | Toluene μg/L (ppb) | Ethyl Benzene µg/L (ppb) | Xylenes μg/L (ppb) |
|------------------|-----------------------|--|--------------------------|---------------------------------|-----------------------------------|---------------------------------|
| 204-0520 | A-1 | 34,000 | 6,200 | 3,900 ^ | 410 | 3,100 |
| 204-0521 | A-2 | N.D. | N.D. | N.D. | N.D. | N.D. |
| 204-0522 | A-3 | 200 | 0.79 | 0.65 | 4.4 | N.D. |
| 204-0523 | A-4 | 35 | N.D. | N.D. | N.D. | N.D. |
| 204-0524 | AR-1 | 17,000 | 310 | 1,400 | 320 | 3,000 |

| Detection Limits: | 30 | 0.30 | 0.30 | 0.30 | 0.30 | |
|-------------------|----|------|------|------|------|--|
| | | | | | | |

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard. Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Vickie Taque Project Manager



SEQUOIA ANALYTICAL

680 Chesapeake Drive . Redwood City, CA 94063 (415) 364-9600 · FAX (415) 364-9233

Gettier Ryan

32150 W. Winton Avenue

Hayward, CA 94545 Attention: Frank Cline Matrix Descript:

Client Project ID: 3927.02, Arco 2126, Oakland

Water

Analysis Method: EPA 3510/8015

First Sample #: 204-0520 CENER/Received:

Sampled: Apr 3, 1992 Apr 3, 1992 Apr 3, 1992

Extracted: Apr 6, 1992

Analyzed: Apr 8, 1992 5 Jun 22, 1992 Amended: la en la la la composition della composition de la composition della # TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

| Sample Number | Sample Description | High B.P. Hydrocarbons μg/L (ppb) |
|------------------|-----------------------|--|
| 204-0520 | A-1 | 6,100 |
| 204-0521 | A-2 | N.D. |
| 204-0522 | A-3 | 130 |
| 204-0523 | A-4 | 85 |
| 204-0524 | AR-1 | 12,000 |

Detection Limits:

50

High Boiling Point Hydrocarbons are quantitated against a diesel fuel standard. Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Please Note:

The above samples do not appear to contain diesel.

Nokowhat D. Herrera Project Manager



Gettler Ryan Client Project ID: 3927.02, Arco 2126, Oakland

\$2150 W. Winton Avenue

Hayward, CA 94545

Attention: Frank Cline QC Sample Group: 2040520-22, 24

24 Reported: Apr 15, 1992

QUALITY CONTROL DATA REPORT

| ANALYTE | Benzene | Toluene | Ethyl Benzene | Xylenes | |
|---|---|---|---|---|--|
| Method: Analyst: Reporting Units: Date Analyzed: QC Sample #: | EPA 8020 L. Laikhtman µg/L Apr 9, 1992 GBLK040992 | EPA 8020 L. Laikhtman μg/L Apr 9, 1992 GBLK040992 | EPA 8020 L. Laikhtman μg/L Apr 9, 1992 GBLK040992 | EPA 8020 L. Laikhtman µg/L Apr 9, 1992 GBLK040992 | |
| Sample Conc.: | N.D. | N.D. | N.D. | ND | |
| Spike Conc. Added: | 10 | 10 | 10 | 30 | |
| Conc. Matrix Spike: | 11 | 11 | 11 | 33 | |
| Matrix Spike % Recovery: | 110 | 110 | 110 | 110 | |
| Conc. Matrix Spike Dup.: | 11 | 11 | 10 | 32 | |
| Matrix Spike Duplicate % Recovery: | 110 | 110 | 100 | 107 | |
| Relative % Difference: | 0.0 | 0.0 | 9.5 | 3.1 | |

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Vickie Tague Project Manager

| % Recovery: | Conc. of M.S Conc. of Sample | x 100 | ····· |
|------------------------|---------------------------------------|-------|-------|
| _ | Spike Conc. Added | | |
| Relative % Difference: | Conc. of M.S Conc. of M.S.D. | x 100 | |
| | (Conc. of M.S. + Conc. of M.S.D.) / 2 | | |



Gettler Ryan Client Project ID: 3927.02, Arco 2126, Oakland

2150 W. Winton Avenue Hayward, CA 94545

Attention: Frank Cline QC Sample Group: 204-0523 Reported: Apr 15, 1992

QUALITY CONTROL DATA REPORT

| ANALYTE | Benzene | Toluene | Ethyl Benzene | Xylenes | |
|---|---|---|---|---|--|
| Method: Analyst: Reporting Units; Date Analyzed: QC Sample #: | EPA 8020 M. Nipp µg/L Apr 10, 1992 GBLK040992 | EPA 8020 M. Nipp µg/L Apr 10, 1992 GBLK040992 | EPA 8020 M. Nipp µg/L Apr 10, 1992 GBLK040992 | EPA 8020 M. Nipp µg/L Apr 10, 1992 GBLK040992 | |
| Sample Conc.: | N.D. | N.D. | N.D. | N.D. | |
| Spike Conc. Added: | 10 | 10 | 10 | 30 | |
| Conc. Matrix Spike: | 9.6 | 9.5 | 9.5 | 28 | |
| Matrix Spike % Recovery: | 96 | 95 | 95 | 93 | |
| Conc. Matrix Spike Dup.: | 10 | 10 | 10 | 30 | |
| Matrix Spike Duplicate % Recovery: | 100 | 100 | 100 | 100 | |
| Relative % Difference: | 4.1 | 5.1 | 5.1 | 6.9 | |

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Vickie Tague Project Manager

| % Recovery: | Conc. of M.S Conc. of Sample | x 100 | |
|------------------------|---------------------------------------|-------|--|
| | Spike Conc. Added | | |
| Relative % Difference: | Conc. of M.S Conc. of M.S.D. | x 100 | |
| | (Conc. of M.S. + Conc. of M.S.D.) / 2 | | |
| | | | |

2040520.GET <4>



Client Project ID: 3927.02, Arco 2126, Oakland

.2150 W. Winton Avenue -Attention: Frank Cline

Hayward, CA 94545

QC Sample Group: 2040520-24

Reported: Apr 15, 1992

2040520.GET <5>

QUALITY CONTROL DATA REPORT

| ANALYTE | High Bolling Point | |
|---------|--------------------|--|
| | Hydrocarbons | |

Method:

EPA 8015

Analyst:

R. Lee

Reporting Units:

µg/L

Date Analyzed:

Apr 7, 1992

QC Sample #:

DBLK040692X

Sample Conc.:

N.D.

Spike Conc.

Added:

300

Conc. Matrix

Spike:

210

Matrix Spike

% Recovery:

70

Conc. Matrix

Spike Dup.:

250

Matrix Spike

Duplicate

% Recovery:

83

Relative

% Difference:

17

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Vickie Tague Project Manager % Recovery: Conc. of M.S. - Conc. of Sample x 100 Spike Conc. Added Relative % Difference: Conc. of M.S. - Conc. of M.S.D. x 100 (Conc. of M.S. + Conc. of M.S.D.) / 2

| ARCO Products Company Task Order No. | | | | | | | | | | , | 2/ | 26 | , | 97 | ے ۔۔ | 55/ |) | ((| 2 | | NC | Rain of Custody SEC Contract number |
|--------------------------------------|-------------|---------------|---------------------------------------|----------|----------------|------------|--------------------|----------------------|---------------|--|--------------------------------|------------------------------------|-----------------------------------|-------------------------|--------------|--|--------------|--|--------------------------|---|--|---------------------------------------|
| ARCO Facili | ly no. | 112/ | · · · · · · · · · · · · · · · · · · · | | ly acility) | Oa | Ela | nd | | Project (Consu | manag | ger | Fra | 11 K | - | | 115 | - | | | | poratory name |
| ARCO engin | 99r & | lide | cles | Ĉ | erme | | Telephon (ARCO) | e no. | | Telephi | one no. | 510 | > -7 | हड | -15 | Z Fax | no. | n.5 | 10 | - 183 | 1089 | SECR |
| Consultant n | 9010 027 | riles | R | 49 VI | | 2n0 | | Address (Consulta | int) 2 | 15 | 0 | /,ι | ر. | Wi | n TC | 67 | Ave | <u>.,, ,, ,, , , , , , , , , , , , , , , ,</u> | 14 | Hwar | <u>d</u> | 07-073 |
| | | | | Matrix | | | vation | | | | | | | | | | | | 0001 | | | Method of shipment |
| , | | ПО. | · | <u> </u> | | | | date | iji B | | BTEX/TPH EPA M802/8020/8015 | TPH Moduled 8015 Gas of Diesely | Oil and Grease 413.1 🗀 413.2 🗀 | TPH EPA 418.1/SM503E | | | | TCLP Semi Metais ☐ VOA ☐ VOA ☐ | CAM Melais EPA 6010/7000 | S . | | 618 |
| Sample I.D. | é | Container no. | Soil | Water | Olher | ice | Acid | Sampling date | Sampling time | A 802 | TPH 1602/80 | | Great | 18.1/51 | 01/801 | 24/824 | 25/827 | 0,0 | efals El | 754 127 127 127 127 127 127 127 127 127 127 | | 19/1 |
| Sam. | Lab no | Cant | | |] | | | Samp | Sami | BTEX: 602/EPA 8020 | BTEX/ EPA N | TPH Cass | Oil and 413.1 | TPH EPA 4 | EPA 601/8010 | EPA 624/8240 | EPA 625/8270 | TCLP Metals | 2)E | Lead Org.10HS | | |
| A-1 | | 3 | | | | V | V | 4-3-91 | | | | 4 | | | | Oct | | 3C | | | | Special detection Limit/reporting |
| A-2 | | Ì | | | | 1 | | | |].] | | | | - | | 1 | | 71 | | | | Standar |
| A-3 | | | | | | | | | | \prod | | | | | | | | 22 | | | | |
| A-4 | | | | | | | | | | | | | | | | | | 23 | , , | | | Special QA/QC |
| A=25 | | _ - | | | | - | | | | H^- | | | | | | | | ر ر | | | | 1 |
| A-4 AB-1 | | V | | | | | - | 1 | | | | | | | | + | | 24 | L | | | Standad |
| 7,00 | | 10 | $\overline{}$ | | | | * | | | W. | | X | | | | 4 | | 6 | <u> </u> | | + | |
| TYNA | | 7 \ | <u> </u> | | | | | | | P | | 7 | | | | | | | | | - | Remarks |
| | | | | | | | | | | | | <u> </u> | | | | | | | | | - | \mathcal{L}_{0} |
| | | | | <u> </u> | <u> </u> | | | <u> </u> | | | | | | | | | | | | | _ | OR |
| | | | | | | | | · | | _ | | | | | | | | | <u> </u> | | - | 6k H 3927.02 |
| | | | | | <u> </u> | <u>_</u> : | | | | | _ | | | | | - | _ | | | | - | 292752 |
| | | | | | ļ., | | | | | <u> </u> | | | | | | | | | ļ | | | ' |
| | | | | ļ | | | | | | <u> </u> | | | | | | | | | | | _ | Lab number |
| | | | | | | | • | | | | | | | | | | | | | | | |
| | | : | | | | | | | | | | • | | | | | | | | | | Turnaround time |
| | | | | | | | | | | | | | | | | D | | | | | | Priority Rush 1 Business Day |
| Condition of | | | | | 91 | 07 | | | | Temp | erature | receive | eđ: | | · | 100 | | | | | | Rush |
| Relinguished | by sath | | // | | | | Date 4-3-9 | 7 | Time 17:43 | Recei | ved by | | | _ | | | | | | | | 2 Business Days |
| Relinquished | by | 1/1 | | | | | Date | | Time | Recei | ved by | | | | | | | | | | | Expedited 5 Business Days |
| Dallagestete | | | | | | | Dele | | | B | \bigcirc | laba-A | \subseteq | - (| <u> </u> | | \ | | | Ti | | j i |
| Relinquistied | ру | | | | | | Dale | | Time | Hecei | ved/by | laborat | ory مستر | . # | the | أير | Pale 4 | • | | Time 174 | 3 | Standard 10 Business Days |
| 775-1-1511111111111111 | | | | | | | | naineerina: F | | Consul | / · · · | 1 | | | ~ 7 |) | | | | | | |

APPC-J292 (2-91)

• GETTLER-RYAN INC.

General and Environmental Contractors

WELL SAMPLING FIELD DATA SHEET

| COMPANY | HVC | 2 | JOB # | 3927 |
|---|---|---|---|---|
| LOCATION | | | DATE | |
| CITY | Calla | end. | | |
| Well ID. | A-1 | Well Condi | tion | |
| Well Diameter | 3" | | on Thickness | |
| Total Depth | 2415 | Volume 2' | " = 0.17 6" = 1.5 | 50 12" = 5.80 |
| Depth to Liquid- | 10:35 | ft. (VF) 3 | 0.38 | 10 |
| # of casing volumes | x 14.15 | x(VF) | = (Estimated Purge Volume) | 5,4 27 gal |
| Purging Equipment | | Schetin | | |
| Sampling Equipmen | | .0 | | |
| | | | | |
| Starting Time | 11:46 /Pur | Purging Flow | r Rate | ,5 gpm |
| Purge Volume | gal. / (Fi | ging ow ite | Time |)min. |
| | | | | |
| Time | рН | Conductivity | | Volume |
| Time | рН 7,33 | | Temperature | Volume |
| 11:48 | 7,33 7,2 ° | Conductivity | Temperature | Volume |
| 11:48 | 7,33 | Conductivity | Temperature | |
| 11:48 | 7,33 7,2 ° | 1472 1413 | Temperature /G.5 | Volume 5. Lera 15 1299.15 1715 2215 |
| 11:48, | 7,33 7,2 ° 7,16 | Conductivity 1477 1413 1407 1399 1396 | 79.5 | Volume 5. Cora /5 1299./5 17:5 22:5 27:5 |
| 11:48, 11:50 11:55 | 7,33 7,20 7,16 7,10 | Conductivity 1477 1413 1407 1399 | Temperature 19.5 20.1 | Volume 5. Corn 15 1299.15 1715 |
| 11:48 11:50 11:53 11:55 11:57 12:01 | 7,33 7,21 7,16 7,10 7,10 7,113 | Conductivity 1477 1413 1407 1399 1396 | Temperature 19.5 : | Volume 5. Lera /5 1299./5 17.5 22.5 27.5 29.98/5. |
| 11:50 11:53 11:53 11:57 11:57 12:01 Did well dewater? | 7,33 7,21 7,16 7,10 7,10 7,11 7,113 Mc | Conductivity 1977 1913 1907 1399 1399 | Temperature 19.5 10.1 20.1 20.2 19.9 Volume | Volume 5. Cera /s 1299./s 17.5 22.5 27.5 29.98/s. |
| 1(:46, 1(:50) 11:53 11:57 12:01 Did well dewater? | 7,33 7,21 7,16 7,10 7,10 7,11 7113 Ma 12101 | Conductivity 1977 1913 1907 1399 1399 If yes, time_ | Temperature 19.5 20.1 20.1 20.2 19.9 Volume | Volume 5. Lera /5 1299./5 1715 2215 2715 2998/5. |
| 1(:46) 1(:50) 11:55 11:57 12:61 Did well dewater? Analysis | 7,33 7,21 7,16 7,10 7,10 7,113 Me. 12,01 | Conductivity 1977 1913 1907 1399 1396 1399 If yes, time Weather Condi | Temperature 19.5 10.1 20.1 20.2 19.9 Volumetions es Used | Volume 5. Lera /5 1299/5 22.5 27.5 2998/5. |
| 1(:46) 1(:50) 11:55 11:57 12:61 Did well dewater? Analysis | 7,33 7,21 7,16 7,16 7,10 7,11 7,13 Mc 12,01 | Conductivity | Temperature 19.5 10.1 20.1 20.2 19.9 Volumetions es Used | Volume 5. Lera /5 1299/5 17:5 22:5 27:5 29:95/5. |

• GETTLER-RYAN INC.

General and Environmental Contractors

WELL SAMPLING FIELD DATA SHEET

| COMPANY | Hrco | ··· | JOB # | 3927 |
|---|---------|---------------------------------|--|----------------|
| LOCATION | | | DATE | 3927 4-3-92 |
| CITY | Oatland | | | |
| *************************************** | | | | |
| Well ID. | 1A-2 | Well Cond | ition | |
| Well Diameter | 3" | in. Hydrocarb | on Thickness | f |
| Total Depth | 25.2 | ft. Volume 2 Factor 3 | $6^{\circ} = 0.17$ $6^{\circ} = 1.$ $6^{\circ} = 2.$ | 50 12" = 5.80 |
| Depth to Liquid- | | ft. (VF) 4 | 4" = 0.66 10" = 4. | 10 |
| (# of casing volumes)x | 14.23 | $\mathbf{x}(\mathbf{VF}) = 0.3$ | = (Estimated Purge Volume) | 514 27 ga |
| Purging Equipment_ | | | | |
| Sampling Equipment | | Bailor | | |
| | | | | |
| Starting Time | 1:20 | Purging Flor | w Rate 2,5 | gpr |
| 6-4: 4 - A | / 60 | | gpm. = (Anticipated Purging Time | |
| Purge Volume | Ratio | ė / | Time |)mir |
| Time | pН | Conductivity | | Volume |
| 55:11 | 7.85 | 1049 | 20.9 | 5.4 |
| 11:24 | 7.81 | <u>1043</u> | 2011 | 1055/5 |
| 11:27 | 7.58 | 1031 | 20,4 | 17.5 |
| 11:29 | 7,56 | 1029 | 20,4 | 22,5 |
| 11:32 | 7,50 | 1029 | 2015 | 305als |
| 11:36 | 7,50 | r.e.3/ | 2014 | 315018 |
| Did well dewater? | | If yes, time | Volum | e |
| Sampling Time | 11:39 | Weather Condi | tions | |
| Analysis | | Bottle | es Used | |
| Chain of Custody Nur | nber | | | |
| | | | | |
| CONDIENTS | | | | |

• GETTLER-RYANTING.

General and Environmental Contractors

WELL SAMPLING FIELD DATA SHEET

| COMPANY | HVCC | · | JOB # | 3927 |
|--|----------------------|-------------------------|---|---------------------|
| LOCATION | | | DATE | 4-3-92 |
| CITY | Calcli | and- | | |
| Well ID. | A·3 | Well Condi | tion | |
| Well Diameter | 3" | | on Thickness | |
| Total Depth | 29' | ft. Volume 2' Factor 3' | = 0.17 6" = 1. = 0.38 8" = 2. | 50 12" = 5.80 60 |
| Depth to Liquid- (# of casing volumes) | 11.70 x 17.3 | ft. (VF) 4 | " = 0.66 10" = 4. Estimated Purge Volume | 10 |
| volumes/ Purging Equipment_ | | _ | \ Volume / | / |
| Sampling Equipment | | Λ I - | | |
| g Squaperous | | | | |
| Starting Time /C Estimated Purge Volume | 7; 30 gal. /(Purg | Purging Flow | w Rate | 2. 5 gpr |
| Volume / | Ra | të /———— | Time |) |
| Time | Hq | Conductivity | | Volume |
| 10:38 | 7,9/ | <u>467</u> | 18.6 | Le-6 |
| 10:42 | 8,05 | 908 | 19.0 | 13,2 |
| 10:45 | 7.92 | 909 | 19.1 | 19.8 |
| 10,48 | 7,75 | 918 | i 9·2 | 260.4 |
| 10:51 | 7,73 | 919 | 1912. | 33,0 39 |
| 10.54 | | | <u> </u> | |
| 10:54 Did well dewater? | No | If yes, time | Volum | e |
| Did well dewater? | No 10:54 | | Volum tions | |
| Did well dewater? | 10:54 | Weather Condi | | |
| Did well dewater? Sampling Time Analysis | 16:54 | Weather Condi | tions | |
| | 16:54 | Weather Condi | tions | |

• GETTLER-RYANTING.

FOREMAN___

General and Environmental Contractors

WELL SAMPLING FIELD DATA SHEET

| COMPANY | Arcc | | JOB # | 3927.03 |
|--------------------------------|-----------------------|------------------|----------------------------------|----------|
| LOCATION | | | | 4-392 |
| CITY | Calclaro | J | TIME | |
| | | | | |
| Well ID. | A-4 | Well Condit | cion Olca | |
| Well Diameter | | | n Thickness | |
| Total Depth | 28' f | Factor 3" | = 0.17 6" = 1 = 0.38 8" = 2 | .60 |
| Depth to Liquid- | 10.24 | | = 0.66 10" = 4 | |
| (# of casing yolumes) | : 17.14 | x(VF) | =(Estimated Purge Volume | (32) ga |
| ` Purging Equipment_ | | Saction Bauli | | |
| Sampling Equipment | | Mauli | | |
| à. | | | | |
| Starting Time | 9:55 | Purging Flow | Rate/ | gpr |
| (Estimated) Purge Volume | gal. Purgir Flow Rate | Ag) | gpm. = (Anticipated Purging Time | mir |
| Time | рН | Conductivity | Temperature | Volume |
| 9:59 | 8,50 | 2251 | 18.9 | G.5 5015 |
| 16:03 | 7-78 | 1116 | 18.8 | 13.0 |
| 10:07 | 759 | t03C1022 | 18,9 | 19.5 |
| 10:11 | 7,58 | 1013 | 18.9 | 26-0 |
| 10:15 | 7.59 | 100016 | (9,0 | 32. 5 |
| 10:20 | 9,60 | 1015 | 19.0 | 345=15 |
| | Mo | f yes, time | Volum | 1e |
| Did well dewater? | | | | |
| Did well dewater? | + 5 \ 2 \ 2 \ | Weather Condit | ions | |
| | 10:20 | | | |
| Sampling Time | 10:20 | Bottle | s Used | |
| Sampling Time | 10:20 | Bottle | s Used | |

• GETTLER-RYAN INC.

General and Environmental Contractors

WELL SAMPLING FIELD DATA SHEET

| COMPANY | HVCO | | JOB # | 3927 |
|--------------------------|-----------------------------|-----------------|----------------------------------|---------------------|
| LOCATION | | | DATE | |
| CITY | Oatlan | c [/] | TIME | |
| | | | | |
| Well ID. | AR-1 | Well Condit | ion | |
| Well Diameter | <u>G</u> in | Hydrocarbo | n Thickness | f |
| Total Depth | 28' fi | — Factor 3" | = 0.17 6" = 1. = 0.38 8" = 2. | 50 12" = 5.80 60 |
| Depth to Liquid- | | (VF) 4" | = 0.66 10" = 4 | 10 |
| (# of casing volumes) x | 16.93 | x(VF) | = (Estimated Purge Volume) | 25.4 ga |
| Purging Equipment | | | | (127) |
| Sampling Equipment | · · · | v) 1 | | |
| Starting Time(Estimated | | | Rate (Anticipated | gpr |
| CA4: | 12.15 | | D. (| n |
| Purge Volume | gal. Purgin Flow Rate | ·s)s | pm. = (Anticipated Purging Time |) mir |
| Time | pН | Conductivity | Temperature | Volume |
| 12:19 | 7.80 | 903 . | 17,3 | 245915 |
| 12:23 | 7. Ce9 | <u>e76</u> | 1711 | 48 |
| 12:27 | 7.7C/ | 872 | 17:1 | 72 |
| 12:32 | 7.70 | <u>875</u> | | 102 |
| 12:36 | 7,70 | 6,80 | 17.3 | 12Co |
| Did well dewater? | | | Volum | 140 |
| Sampling Time | | | ions | |
| Analysis | | | | |
| Chain of Custody Num | | | | |
| | | | | |
| COMMENTS | | | | |