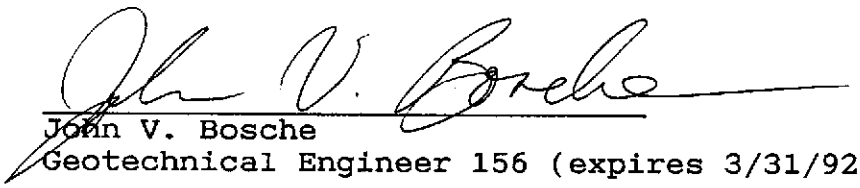
**PHASE II HYDROCARBON
CONTAMINATION ASSESSMENT
AND REMEDIATION WORK PLAN
DIGNITY HOUSING WEST
15TH AND CASTRO STREETS
OAKLAND, CALIFORNIA
SCI 615.002**

May 16, 1991

Prepared for:

Dignity Housing West
c/o Mr. Willie Pettus
Pyatok Associates
339 15th Street, Suite 212
Oakland, California 94612

By:



John V. Bosche
Geotechnical Engineer 156 (expires 3/31/92)

R. William Rudolph
Geotechnical Engineer 741 (expires 12/31/92)

Subsurface Consultants, Inc.
171 12th Street, Suite 201
Oakland, California 94607
(415) 268-0461

May 16, 1991

I INTRODUCTION

This report presents the results of the Phase II hydrocarbon contamination assessment and a remediation work plan prepared by Subsurface Consultants, Inc. (SCI) at the Dignity Housing West Project in Oakland, California. The property is situated at the northeast corner of the intersection of 15th and Castro Streets, as shown on the Site Plan, Plate 1. SCI previously prepared a Preliminary Environmental Assessment for the property, the results of which are summarized in our report dated May 8, 1991.

As outlined in our Proposal dated March 12, 1991, our assessment was conducted to evaluate the lateral and vertical extent of hydrocarbon contamination. This report presents our conclusions and recommendations regarding:

1. Soil and groundwater conditions;
2. Groundwater flow direction and gradient;
3. Presence of contaminants in the samples tested;
4. The significance of contaminant levels with respect to local and state criteria;
5. The proposed methods for site soil remediation; and
6. The scope of future monitoring.

In addition, we prepared a work plan and a guideline health and safety plan for remediation.

II BACKGROUND

In November 1987, two underground fuel storage tanks containing gasoline were removed from the site. At that time site remediation consisted of removing contaminated soil. Sampling and analyses was conducted by others at the time of tank removal and contaminated soil excavation. The previous analytical test results are presented in Table 1. Unauthorized release reports, hazardous waste manifests and laboratory test reports previously generated are attached in Appendix A.

Table 1
Previous Analytical Test Results For Soils
Below Previous Tanks

Sample Location	Sampling Date	TPH[1] (mg/kg)[2]
Pit - West End	11/12/87	2400
Pit - East End	11/12/87	5600
Pit - North End	01/15/88	<50
Pit - South End	01/15/88	<50
Pit - East End	01/15/88	<50
Pit - West End	01/15/88	<50
Pit - Bottom	01/15/88	760
Pit - North End	02/12/88	960
Pit - South End	02/12/88	490
Pit - East End	03/15/88	<50
Pit - West End	03/15/88	89

[1] TPH = Total Petroleum Hydrocarbons
[2] mg/kg = milligrams per kilogram

The excavation was backfilled with clean imported fill in March

1988. Subsurface Consultants, Inc. was retained on January 20, 1991 to conduct a geotechnical investigation and an environmental assessment of the site. SCI detected elevated levels of gasoline and fuel constituents (BTXE) in soil samples from 2 of the (8) borings drilled. The soil contamination was detected beneath the tank backfill.

III FIELD INVESTIGATION

15 borings
3 mw's

To evaluate the lateral and vertical limits of soil contamination, we drilled seven additional test borings, numbered 9 through 15. Borings 1 through 8 were drilled during our previous investigation. Logs of all borings are presented in Appendix B. Test Borings 9, 11 and 15 were completed as groundwater monitoring wells and are designated MW1 through MW3. The boring and well locations are shown on the Site Plan.

A level survey was performed to determine the top of casing (TOC) elevation for each well. Well elevations were referenced to the project datum established by Bates and Bailey on the land survey and topographic plan of February 25, 1991. The bench mark was a cut cross in the sidewalk at the corner of 15th and Castro Streets (Elevation = 28.38 feet). The depth to groundwater, below the top of the well casing was measured. A summary of the groundwater elevation data is presented below in Table 2.

Table 2
Summary of Groundwater Elevation Data

Well	Date	TOC (Top of casing)	Depth (ft)	Elevation (ft)
MW-1	5/8/91	26.82	27.62	0.80
MW-2	5/8/91	26.88	27.97	1.09
MW-3	5/8/91	28.54	29.90	1.31

Standardized protocols were followed during our field investigation. A detailed discussion of our field procedures is provided in Appendix B.

IV ANALYTICAL TESTING

Selected soil and groundwater samples were analyzed by Curtis & Tompkins, Ltd. a laboratory certified by the DHS for hazardous waste and water testing.

The soil samples were analyzed for the petroleum hydrocarbons previously detected. Water samples were analyzed for petroleum hydrocarbons and those organic chemicals most likely to be present from off-site sources of contamination. The analyses included:

1. Total volatile hydrocarbons (TVH),
2. Total extractable hydrocarbons (TEH),
3. Hydrocarbon oil and grease (O&G),
4. Purgeable halocarbons by EPA method 8010,
5. Lead, and
6. Benzene, toluene, ethylbenzene, and xylene (BTEX).

Summaries of the analytical test results (including previous test results) are presented in Tables 3, 4 and 5. Descriptions of the sample preparation and analytical test methods, analytical test reports and Chain-of-Custody records are presented in Appendix C.

Table 3
Heavy Metals and Cyanide
Concentrations in Soil

Boring	Depth (ft.)	Cadmium (ppm)[1]	Chromium (ppm)	Lead (ppm)	Nickel (ppm)	Zinc (ppm)	Cyanide
1	1.0	ND[2]	17	21	5.1	24	ND
2	1.0	ND	20	25	6.9	18	ND
3	1.0	1.2	29	36	26	48	ND
4	1.0	0.6	24	ND	8.7	31	ND
12	26.0	--[3]	--	ND	--	--	--
12	31.0	--	--	ND	--	--	--

[1] ppm = parts per million = mg/kg
[2] ND = None detected, chemicals not present at concentrations above detection limits
[3] -- = Test not requested

Table 4
Petroleum Hydrocarbons and BTXE Concentrations in Soil

Boring	Depth (ft.)	TVH[1] (ppm)[3]	TEH[2] (ppm)	Benzene (ppb)[4]	Toluene (ppb)	Ethyl Benzene (ppb)	Total Xylenes (ppb)	Oil & Grease (ppm)
5	7.5	ND[5]	ND	ND	ND	ND	ND	ND
8	13.0	750	720	55	1,300	14,000	38,000	ND
8	19.5	25	58	40	110	170	910	ND
9	26.0	ND	ND	ND	ND	ND	ND	--[6]
10	26.0	2.4	ND	ND	ND	ND	ND	--
12	26.0	ND	ND	ND	ND	ND	ND	--
12	31.0	ND	ND	ND	ND	ND	12	--
13	26	ND	ND	ND	ND	ND	ND	--

---

[1] TVH = Total volatile hydrocarbons, quantified as gasoline
[2] TEH = Total extractable hydrocarbons, quantified as Stoddard Solvent (diesel not detected in these analysis)
[3] ppm = mg/kg = milligrams per kilogram
[4] ppb = ug/kg = micrograms per kilogram
[5] ND = None detected, chemicals not present at concentrations above detection limits
[6] -- = Test not requested

Table 5
Concentrations of Organic Chemicals in Water

Sample	TVH[1] (ppb)[6]	TEH[2] (ppb)	Chloroform (ppb)	PCE[3] (ppb)	Other EPA 8010 Chemicals[4]	EPA 8020 Chemicals[5]
MW-1	ND[7]	ND	1.2	2.5	ND	ND
MW-2	ND	ND	ND	1.1	ND	ND
MW-3	ND	ND	ND	1.1	ND	ND
Boring 14	--[8]	--	ND	ND	ND	ND

1 TVH = Total volatile hydrocarbons
2 TEH = Total extractable hydrocarbons
3 PCE = Tetrachloroethene
4 For a complete list of chemicals analyzed for in the EPA 8010 test method, refer to analytical laboratory test report presented in Appendix C.
5 For a complete list of chemicals analyzed for in the EPA 8020 test method, refer to analytical laboratory test report presented in Appendix C.
6 ppb = parts per billion = ug/l
7 ND = None detected, chemicals not present at concentrations above the detection limits
8 -- = Test not requested

V SITE CONDITIONS

A. Site Geology

The site is situated within the northern California Coast Ranges Geomorphic Province. Locally the site is mapped[1] as being underlain by Merritt Sand. This Quaternary age deposit consists primarily of fine-grained silty and clayey sand deposited by wind and water as beach and near shore deposits. The Merritt Sand

[1] Radbruch, "Aerial and Engineering Geology of the Oakland West Quadrant, California," 1957, US Geologic Survey Map I-239

overlies the Alameda Formation, also deposited in Quaternary time. The Alameda Formation consists of continental and marine sediment deposited in the valley of the San Francisco Bay.

B. **Site Conditions**

The site encompasses a relatively level, nearly square lot with maximum plan dimensions of 115 by 117 feet. At the time of our reconnaissance, the property was vacant with the exception of a portable stage platform currently stored on the north side of the site. The site is relatively level, fenced and void of vegetation except for weeds and grasses. The top of a former brick lined water well was observed in the northeast corner of the property. The well was approximately 5 to 6 feet in diameter and has been filled with rubble and debris. The concrete sidewalk has been replaced with asphaltic concrete south of the property line on 15th Street near the middle of the site.

C. **Subsurface Conditions**

Our test borings indicate that subsurface conditions at the site are relatively uniform. The surface of the site is covered with a layer of loose to medium dense sand or sandy gravel. The surface layer extends to depths of between approximately 2 and 4 feet and represents either fill or natural soils which were disturbed during demolition of the former structure. The surface layer is underlain by dense silty and clayey sand of the Merritt Sand formation. These materials extended to the maximum depths explored of 35 feet.

Borings 5 through 13 were drilled near the former tank. Borings 5, 6, 8 and 12 were drilled through the former tank excavation backfill. In those borings, the backfill extended to depths of from 6.5 to 12.5 feet. The backfill was underlain by natural sands. In Borings 5 and 12, the natural sands were visibly discolored and smelled of gasoline. Cross sections A-A' and B-B' are presented on Plate 2 and graphically illustrate subsurface conditions in the former tank area.

D. Groundwater Conditions

Groundwater levels were measured on May 8, 1991 using a well sounder. Water level readings are summarized in Table 2. This data was used to determine the groundwater flow direction and gradient. Groundwater contours for the May 8, 1991 readings are presented on Plate 1. The data indicate that groundwater flows toward the west at a gradient of about 0.6 percent. Groundwater levels in the area may be controlled by permanent dewatering along Highway 980.

VI DISCUSSIONS AND CONCLUSIONS

A. Soil Remediation

Review of the analytical data generated during our investigation indicates that soils contaminated with significant concentrations of stoddard solvent, gasoline, and its constituents, benzene, toluene, ethylbenzene, and total xylenes (BTEX), are present below the former tanks and imported backfill. Borings drilled near the center of the former tank excavation detected

concentrations of gasoline up to from 750 mg/kg. Stoddard solvent was detected at a concentration up to 720 mg/kg. Significantly elevated concentrations of gasoline and stoddard solvent were not detected in soil below 20 feet in any of the borings. The data suggests that the soil contamination is associated with a gasoline release of limited quantity. Although the contaminants were quantified as both gasoline and stoddard solvent, we suspect the reported stoddard solvent may actually consist of older gasoline which has weathered such that its chromatograph is similar to that of stoddard solvent.

We judge that the most cost-effective and appropriate measures to remediate the contaminated soils will involve (1) excavating the contaminated materials, (2) treating the contaminated soils by on-site aeration or by bioremediation at an approved off-site location, (3) disposing of the treated soils at a Class III landfill, and (4) backfilling the excavation.

B. Groundwater

Our investigation indicates that groundwater has not been impacted by gasoline or stoddard solvent. The volatile organic compound tetrachloroethene (PCE) was present in groundwater from each monitoring well at concentrations ranging from 1.1 to 2.5 ppb ~~mg/l~~. Additionally, chloroform was present in Monitoring Well 1 at a concentration of 1.2 ~~mg/l~~ ug/l ppb. Because the PCE was detected in all three wells, we conclude that the source of the PCE contamination in groundwater is off-site. ?

The drinking water, maximum contaminant level[2] for PCE is 5 ug/l. On this basis we consider the PCE contamination detected does not represent a significant degradation of groundwater. Similar, very low levels of chloroform such as that detected in MW-1 have been detected in several other monitoring wells in the area. The source of the chloroform is currently unknown. However, it appears to be a regional problem and likely does not represent significant degradation of groundwater quality.

Given the facts that (1) contaminant concentrations in groundwater are very low, (2) the PCE and chloroform contamination are from off-site source(s), and (3) groundwater is not currently or likely to be used in the area, we conclude that groundwater remediation will likely not be required by the regulatory agencies.

---

[2] State of California Administrative Code Title 26, Register 89, No. 26-7/1/89, 22-64444.5, Maximum Contaminant Levels

VII SOIL REMEDIATION AND GROUNDWATER MONITORING WORK PLAN

A. General

We anticipate that site remediation will consist of the following steps:

1. Site clearing,
2. Clean soil excavation,
3. Contaminated soil excavation,
4. Contaminated soil aeration and/or bioremediation,
5. Contaminated soil disposal,
6. Excavation backfilling, and
7. Future groundwater monitoring.

The work will be performed in general compliance with the guidelines and protocol established by the Alameda County Health Care Services Agency (ACHCSA), the Bay Area Air Quality Management District (BAAQMD), and the Regional Water Quality Control Board (RWQCB). Details of the proposed work are described below.

B. Site Clearing

The project area will be stripped and cleared. The stripped materials will be removed from the site. The groundsurface exposed by site stripping and clearing operations will be leveled and compacted to provide a smooth uniform surface.

C. **Clean Soil Excavation**

Soil excavation will be directed by our engineer using an organic vapor meter (OVM) to screen the excavated soils. Uncontaminated or "clean" soil will initially be excavated to expose the contaminated materials. The clean soil consists of imported baserock backfill and is generally about 8 to 12 feet thick. The clean soil will be excavated and stockpiled on-site, away from the area that will be used for stockpiling, contaminated soil.

D. **Contaminated Soil Excavation**

Contaminated soil will be removed and stockpiled on-site. The soils will be stockpiled on plastic sheeting and securely covered pending the results of analytical testing. It is anticipated, based on our previous studies, that the contaminated soils typically exist between depths of about 10 and 20 feet, within the area shown on Plates 2 and 3. The actual extent of the contaminated soils to be removed will be determined during excavation by analytically testing soil samples obtained from the sides and bottom of the excavation.

E. **Soil Sampling and Analysis**

Soil samples will be analyzed by Curtis and Tompkins, Ltd., a laboratory certified by the California Department of Health Services (DHS). The samples will be retained in steam-cleaned brass liners, sealed with duct tape, and promptly refrigerated on-site. The soil samples will remain refrigerated until delivered to the analytical laboratory. Chain-of-Custody documents will accompany the samples to the laboratory.

The testing program will include the following:

1. Total volatile hydrocarbons (TVH), sample preparation and analysis using EPA Methods 5030 (purge and trap) and 8015 (modified gas chromatography coupled to a flame ionization detector);

2. Purgeable aromatic hydrocarbons (BTXE), sample preparation and analysis using EPA Methods 5030 (purge and trap) and 8020 (gas chromatography and mass spectrometer);

3. Total extractable hydrocarbons (TEH), sample preparation using EPA methods 3550 (sonication)/8015 (gas chromatograph coupled to a flame ionization detector).

Along the side walls of the excavation, samples will be obtained from locations situated from each sidewall but no less than every 20 lineal feet around the excavation, and at depths of approximately 5, 10, 15 and 20 feet. On the bottom of the excavation, at least 2 samples will be obtained. If the results of the analyses indicate that hydrocarbon concentrations exceed 100 mg/kg, additional excavation will be completed to remove the contaminated soils. Analytical tests will be performed until all soil with hydrocarbon concentrations greater than 100 mg/kg has been removed.

F. Contaminated Soil Treatment

Four representative soil samples will be collected for every 50 cubic yards of material to evaluate the soil for disposal at a Class III landfill. If necessary, the soils will be aerated and/or treated prior to disposal. The selected samples will be composited and analyzed for petroleum hydrocarbons, pH, RCI (reactivity, corrosivity and ignitability), and heavy metals by a DHS-certified

analytical laboratory. Based on the analytical results, estimated costs and timing requirements of the project, the contaminated soils will be either aerated on-site, removed to an off-site biotreatment facility or taken directly to a Class III landfill. If required, the allowable rate of aeration of contaminated soil will be determined based upon the requirements of the BAAQMD.

If necessary, aeration will consist of removing soils from the contaminated stockpile and spreading the soils in a layer approximately 6 to 12 inches thick in the soil aeration area. The soil will be mixed and turned until TPH concentrations are reduced to levels acceptable to the Class III landfill or the off-site biotreatment facility. If necessary, off-site biotreatment will be used to reduce the concentration of contaminants to allow disposal at a Class III landfill.

G. Groundwater Remediation and Monitoring

Based upon the direction of groundwater flow at the site, Monitoring Well MW-1 will be used for groundwater monitoring. We propose that the groundwater be sampled and analyzed quarterly for one year.

Prior to sampling, the well will be purged of at least 3 casing volumes by bailing. Pre-cleaned Teflon bailers will be used to purge and sample the well. The samples will be placed in appropriate pre-cleaned containers and refrigerated until delivery to the analytical laboratory. Samples will be accompanied by Chain-of-Custody Records.

The groundwater samples will be analytically tested for TVH, TEH and organic chemicals of the EPA 8010 and 8020 test methods.

If the test results indicate no detectable gasoline or stoddard solvent hydrocarbons for four consecutive sampling events, a request to cease monitoring will be filed with the ACHCSA.

H. Excavation Backfilling

Upon completion of confirmation testing, the excavation will be backfilled with clean imported material. Imported fill will have a liquid limit less than 40 percent and a plasticity index less than 15 percent. All fill will be compacted to at least 90 percent relative compaction, in accordance with the ASTM D1557 test procedure. Fill will be placed and compacted in layers not exceeding 8 inches in loose thickness.

I. Reporting

A written report will be submitted at the completion of remediation to document site activities. The report will describe the work performed and summarize the analytical test results. In addition, a groundwater monitoring report will be submitted following each monitoring event.

VIII HEALTH AND SAFETY PLAN

A Guideline Health and Safety Plan is attached in Appendix D. This plan is provided to assist the contractor in preparing a Health and Safety Plan for site remediation activities.

List of Attachments

Plate 1	Site Plan
Plate 2	Cross Sections AA' and BB'
Plates 3	Estimated Limits of Soil Remediation

Appendix

A	Unauthorized Release Reports, Tank Disposal Hazardous Waste Manifests and Previous Analytical Laboratory Test Reports
B	Investigation Protocol and Boring Logs
C	Analytical Testing, Laboratory Test Reports and Chain-of-Custody Documents
D	Guideline Health and Safety Plan

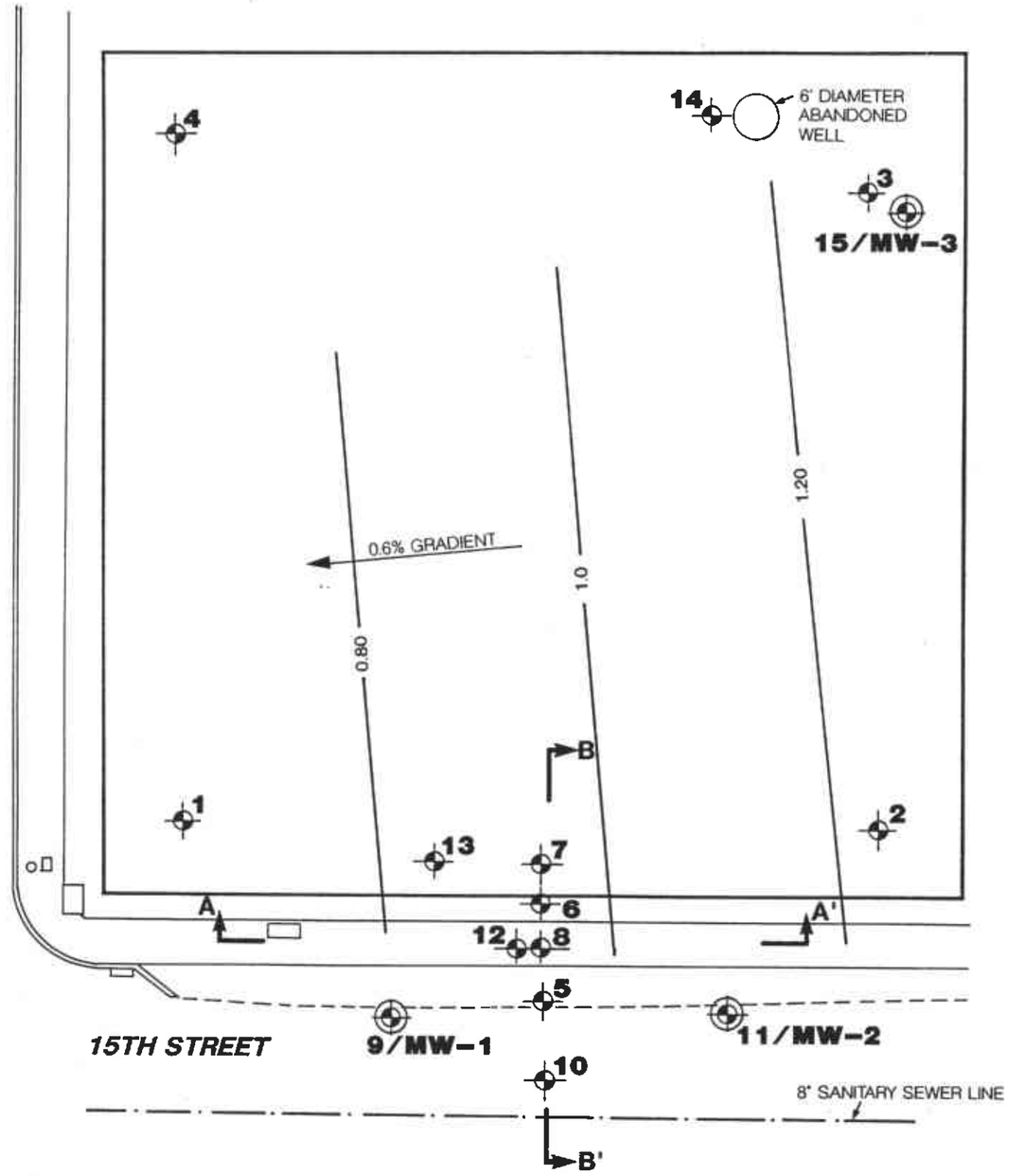
Distribution

6 copies: Dignity Housing West
c/o Mr. Willie Pettus
Pyatok Associates
339 15th Street, Suite 212
Oakland, California 94612

1 copy: Mr. Ariu Levi
Alameda County Health Care Services Agency
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, California 94621

1 copy: Mr. Lester Feldman
Regional Water Quality Control Board
San Francisco Bay Region
1800 Harrison Street, 7th Floor
Oakland, California 94612

JVB:RWR:JPB:sld



VICINITY MAP

- TEST BORING/MONITORING WELL
- TEST BORING
- A A' CROSS SECTION
- EDGE OF PAVEMENT
- 1.0 GROUNDWATER GRADIENT CONTOUR

N

APPROXIMATE SCALE (feet)

0 20 40

REFERENCE: TOPOGRAPHIC MAP PREPARED BY BATES AND BAILEY,LAND SURVEYORS ENTITLED "PROPERTY AT 690 15TH STREET, OAKLAND", DATED FEBRUARY 1991.

Subsurface Consultants

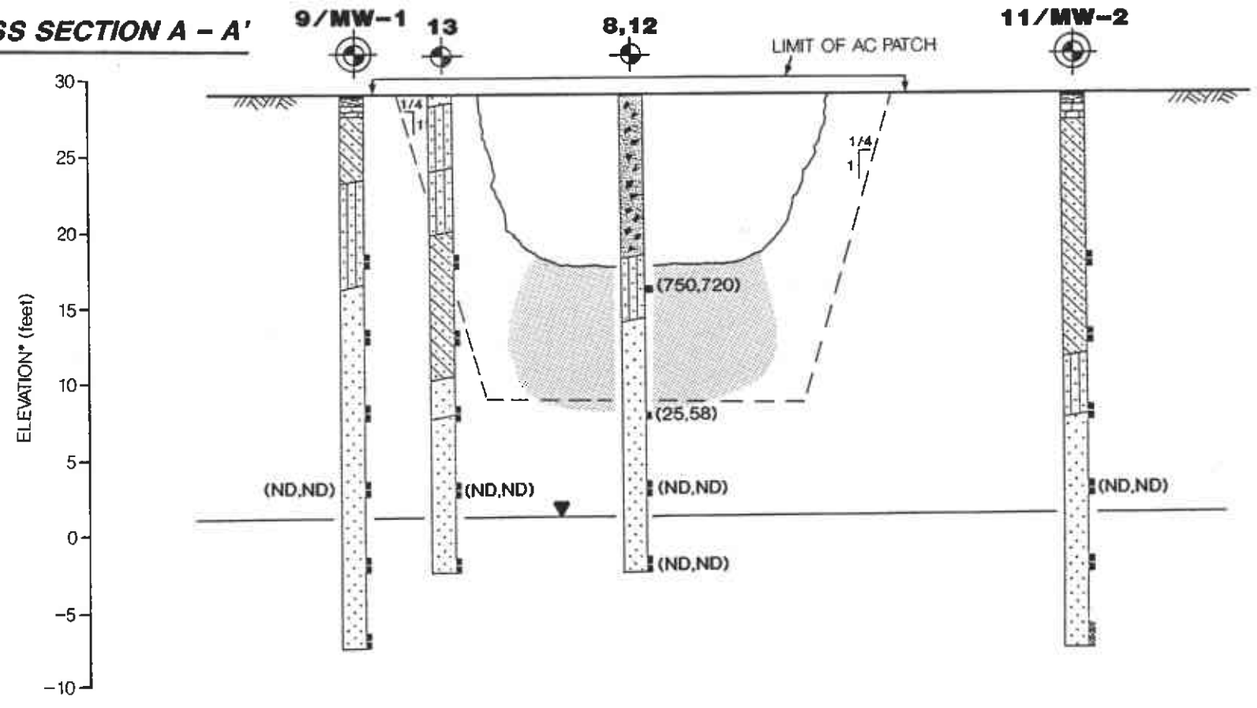
SITE PLAN

DIGNITY HOUSING WEST – OAKLAND, CA

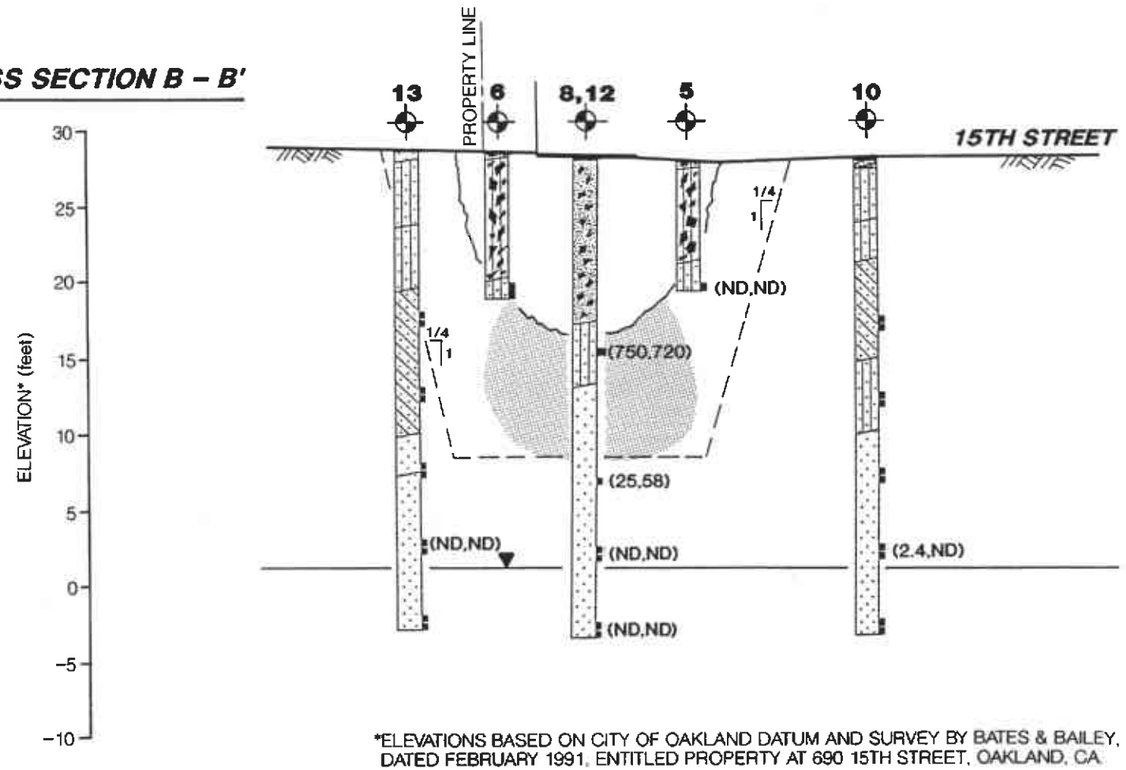
JOB NUMBER	DATE	APPROVED
615.002	5/20/91	JVB

PLATE 1

CROSS SECTION A – A'



CROSS SECTION B – B'



*ELEVATIONS BASED ON CITY OF OAKLAND DATUM AND SURVEY BY BATES & BAILEY, DATED FEBRUARY 1991, ENTITLED PROPERTY AT 690 15TH STREET, OAKLAND, CA.

ZONE OF CONTAMINATED SOIL

TEST BORING/MONITORING WELL

TEST BORING

SAMPLE LOCATION

(750,720)
- TEH
- TVH

ND NONE DETECTED

APPROXIMATE LIMIT OF SOIL REMOVAL

HORIZONTAL SCALE: 1" = 20'

CROSS SECTIONS A–A' & B–B'

Subsurface Consultants

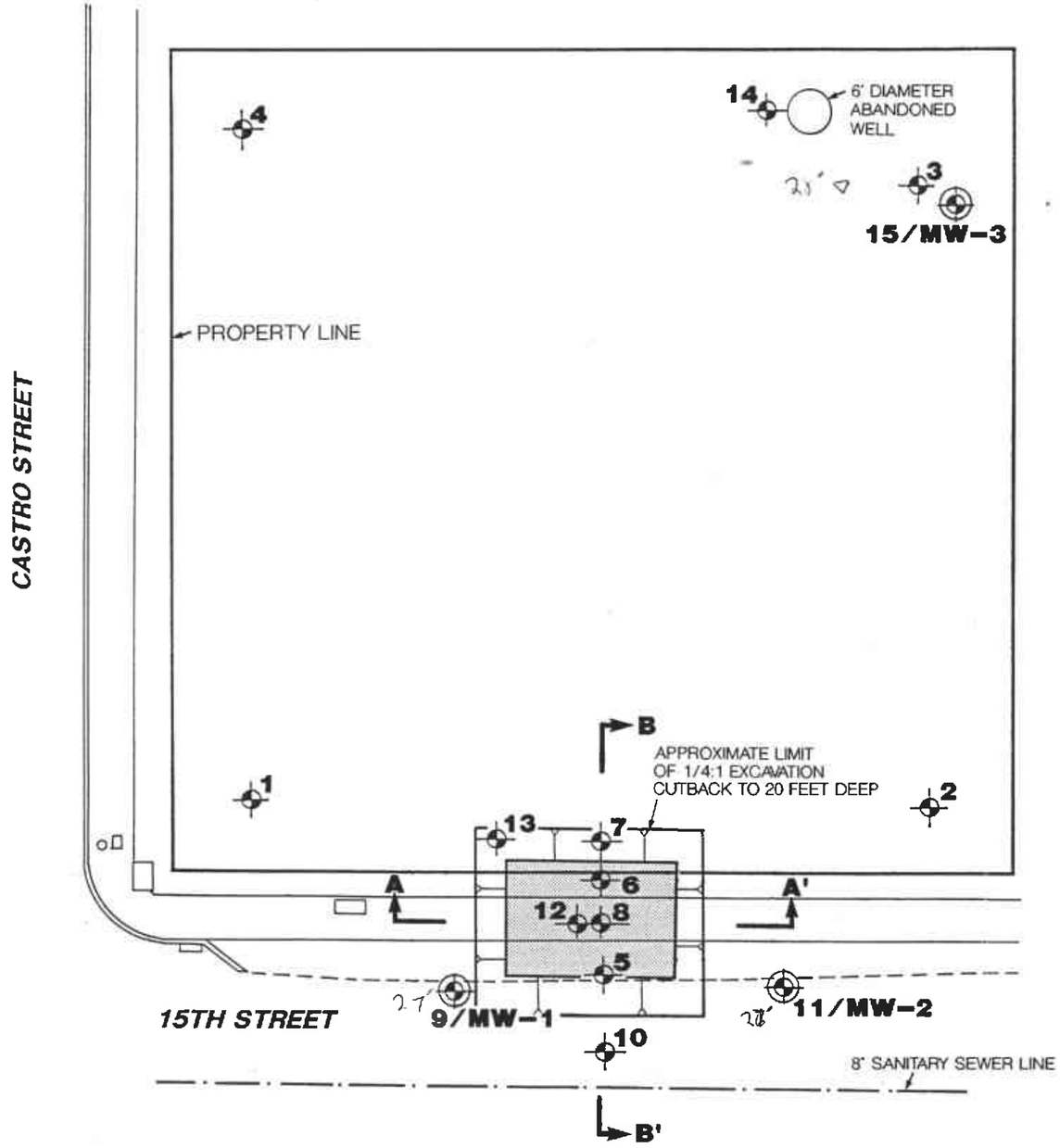
DIGNITY HOUSING WEST – PHASE II

JOB NUMBER	DATE	APPROVED
615.002	5/10/91	JVB

PLATE 2

VICINITY MAP

- TEST BORING/MONITORING WELL
- TEST BORING
- A A' CROSS SECTION
- EDGE OF PAVEMENT
- APPROXIMATE ZONE OF CONTAMINATED SOILS



APPROXIMATE SCALE (feet)
0 20 40

REFERENCE: TOPOGRAPHIC MAP PREPARED BY BATES AND BAILEY,LAND SURVEYORS ENTITLED "PROPERTY AT 690 15TH STREET, OAKLAND", DATED FEBRUARY 1991.

REMEDIATION PLAN

Subsurface Consultants

DIGNITY HOUSING WEST – OAKLAND, CA

JOB NUMBER	DATE	APPROVED
615.002	5/10/91	JVB

PLATE 3

Appendix A

Unauthorized Fuel Release Reports
Tank Hazardous Waste Disposal Manifests
Previous Analytical Laboratory Test Reports

UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE REPORT

EMERGENCY [ ] YES [ ] NO

HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED ? [ ] YES [X] NO

FOR LOCAL AGENCY USE ONLY
I HEREBY CERTIFY THAT I AM A DESIGNATED GOVERNMENT EMPLOYEE AND THAT I HAVE REPORTED THIS INFORMATION TO LOCAL OFFICIALS PURSUANT TO SECTION 25180.7 OF THE HEALTH AND SAFTY CODE.

SIGNED ____ DATE ____

REPORT DATE: M M D D Y Y

CASE #

REPORTED BY

NAME OF INDIVIDUAL FILING REPORT: Leroy C. Rudd

PHONE: (707) 554-8282

SIGNATURE: LeRoy C Rudd

REPRESENTING: [ ] OWNER/OPERATOR [ ] REGIONAL BOARD [ ] LOCAL AGENCY [X] OTHER contractor

COMPANY OR AGENCY NAME: L.C. Rudd & Sons, Inc.

ADDRESS: 2500 Green Island Rd. (STREET) Vallejo (CITY) Calif. (STATE) 94589 (ZIP)

RESPONSIBLE PARTY

NAME: Office of Community Development [ ] UNKNOWN

CONTACT PERSON: Michele Davis

PHONE: (415) 273-3502

ADDRESS: 1417 Clay St. (STREET) Oakland (CITY) Calif. (STATE) 94612 (ZIP)

SITE LOCATION

FACILITY NAME (IF APPLICABLE): -

OPERATOR: Office of Community Develop.

PHONE: (415) 273-3502

ADDRESS: 690 - 15TH St. (STREET) Oakland (CITY) Alameda (COUNTY) 94612 (ZIP)

CROSS STREET: Castro

TYPE OF AREA: [ ] COMMERCIAL [ ] INDUSTRIAL [ ] RURAL [ ] RESIDENTIAL [X] OTHER mixed use

TYPE OF BUSINESS: [ ] RETAIL FUEL STATION [ ] FARM [X] OTHER vacant

IMPLEMENTING AGENCIES

LOCAL AGENCY / AGENCY NAME: Alameda County Health Care Services

CONTACT PERSON: Storm Goranson

PHONE: (415) 874-7233

REGIONAL BOARD

PHONE: ( )

SUBSTANCES INVOLVED

	NAME	QUANTITY LOST (GALLONS)
(1)	Fuel Hydrocarbons	[X] UNKNOWN
(2)		[ ] UNKNOWN

DISCOVERY/ABATEMENT

DATE DISCOVERED: 1 1 1 0 8 7 (M M D D Y Y)

HOW DISCOVERED: [ ] INVENTORY CONTROL [ ] SUBSURFACE MONITORING [ ] NUISANCE CONDITIONS [ ] TANK TEST [X] TANK REMOVAL [ ] OTHER

DATE DISCHARGE BEGAN: M M D D Y Y [X] UNKNOWN

METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY): [ ] REMOVE CONTENTS [ ] REPLACE TANK [ ] CLOSE TANK [ ] REPAIR TANK [ ] REPAIR PIPING [ ] CHANGE PROCEDURE [X] OTHER remove tank

HAS DISCHARGE BEEN STOPPED ? [ ] YES [ ] NO IF YES, DATE M M D D Y Y

SOURCE/CAUSE

SOURCE OF DISCHARGE: [X] TANK LEAK [ ] UNKNOWN [ ] PIPING LEAK [ ] OTHER

TANKS ONLY/CAPACITY: 2/500 gal. GAL; AGE ____ YRS; [X] UNKNOWN

MATERIAL: [ ] FIBERGLASS [X] STEEL [ ] OTHER

CAUSE(S): [ ] OVERFILL [ ] RUPTURE/FAILURE [X] CORROSION [ ] UNKNOWN [ ] SPILL [ ] OTHER

CASE TYPE

CHECK ONE ONLY: [X] UNDETERMINED [ ] SOIL ONLY [ ] GROUNDWATER [ ] DRINKING WATER - (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)

CURRENT STATUS

CHECK ONE ONLY: [ ] SITE INVESTIGATION IN PROGRESS (DEFINING EXTENT OF PROBLEM) [X] CLEANUP IN PROGRESS [ ] SIGNED OFF (CLEANUP COMPLETED OR UNNECESSARY) [ ] NO ACTION TAKEN [ ] POST CLEANUP MONITORING IN PROGRESS [ ] NO FUNDS AVAILABLE TO PROCEED [ ] EVALUATING CLEANUP ALTERNATIVES

REMEDIAL ACTION

CHECK APPROPRIATE ACTION(S) (SEE BACK FOR DETAILS): [ ] CAP SITE (CD) [X] EXCAVATE & DISPOSE (ED) [ ] REMOVE FREE PRODUCT (FP) [ ] ENHANCED BIO DEGRADATION (IT) [ ] CONTAINMENT BARRIER (CB) [ ] EXCAVATE & TREAT (ET) [ ] PUMP & TREAT GROUNDWATER (GT) [ ] REPLACE SUPPLY (RS) [ ] TREATMENT AT HOOKUP (HU) [ ] NO ACTION REQUIRED (NA) [ ] OTHER (OT)

COMMENTS

UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE REPORT

EMERGENCY ☐ YES ☐ NO

HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED? ☐ YES ☒ NO

FOR LOCAL AGENCY USE ONLY
I HEREBY CERTIFY THAT I AM A DESIGNATED GOVERNMENT EMPLOYEE AND THAT I HAVE REPORTED THIS INFORMATION TO LOCAL OFFICIALS PURSUANT TO SECTION 25180.7 OF THE HEALTH AND SAFETY CODE.
SIGNED: Storm Goranson DATE: 1/21/88

REPORT DATE: m m d d y y

CASE #:

REPORTED BY

NAME OF INDIVIDUAL FILING REPORT: Leroy C. Rudd
PHONE: (707) 554-8282
SIGNATURE: [signature]

REPRESENTING: ☐ OWNER/OPERATOR ☐ REGIONAL BOARD ☐ LOCAL AGENCY ☒ OTHER contractor

COMPANY OR AGENCY NAME: L.C. Rudd & Sons, Inc.

ADDRESS: 2500 Green Island Rd. (STREET) Vallejo (CITY) Calif. (STATE) 94589 (ZIP)

RESPONSIBLE PARTY

NAME: Office of Community Development ☐ UNKNOWN
CONTACT PERSON: Michele Davis
PHONE: (415) 273-3502

ADDRESS: 1417 Clay St. (STREET) Oakland (CITY) Calif. (STATE) 94612 (ZIP)

SITE LOCATION

FACILITY NAME (IF APPLICABLE):
OPERATOR: Office of Community Develop.
PHONE: (415) 273-3502

ADDRESS: 690 - 15TH St. (STREET) Oakland (CITY) Alameda (COUNTY) 94612 (ZIP)

CROSS STREET: Castro

TYPE OF AREA: ☐ COMMERCIAL ☐ INDUSTRIAL ☐ RURAL ☐ RESIDENTIAL ☒ OTHER mixed use

TYPE OF BUSINESS: ☐ RETAIL FUEL STATION ☐ FARM ☒ OTHER vacant

IMPLEMENTING AGENCIES

LOCAL AGENCY / AGENCY NAME: Alameda County Health Care Services
CONTACT PERSON: Storm Goranson
PHONE: (415) 874-7237

REGIONAL BOARD:
PHONE: ( )

SUBSTANCES INVOLVED

	NAME	QUANTITY LOST (GALLONS)
(1)	Fuel Hydrocarbons	☒ UNKNOWN
(2)		☐ UNKNOWN

DISCOVERY/ABATEMENT

DATE DISCOVERED: 1 1 1 0 8 7 (m m d d y y)

HOW DISCOVERED: ☐ INVENTORY CONTROL ☐ SUBSURFACE MONITORING ☐ NUISANCE CONDITIONS ☐ TANK TEST ☒ TANK REMOVAL ☐ OTHER

DATE DISCHARGE BEGAN: m m d d y y ☒ UNKNOWN

METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY): ☐ REMOVE CONTENTS ☐ REPLACE TANK ☐ CLOSE TANK ☐ REPAIR TANK ☐ REPAIR PIPING ☐ CHANGE PROCEDURE ☒ OTHER remove tank

HAS DISCHARGE BEEN STOPPED? ☐ YES ☐ NO IF YES, DATE m m d d y y

SOURCE/CAUSE

SOURCE OF DISCHARGE: ☒ TANK LEAK ☐ UNKNOWN ☐ PIPING LEAK ☐ OTHER

TANKS ONLY/CAPACITY: 2/500 gal. GAL.
AGE: YRS ☒ UNKNOWN

MATERIAL: ☐ FIBERGLASS ☒ STEEL ☐ OTHER

CAUSE(S): ☐ OVERFILL ☐ RUPTURE/FAILURE ☒ CORROSION ☐ UNKNOWN ☐ SPILL ☐ OTHER

CASE TYPE

CHECK ONE ONLY: ☒ UNDETERMINED ☐ SOIL ONLY ☐ GROUNDWATER ☐ DRINKING WATER - (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)

CURRENT STATUS

CHECK ONE ONLY: ☐ SITE INVESTIGATION IN PROGRESS (DEFINING EXTENT OF PROBLEM) ☒ CLEANUP IN PROGRESS ☐ SIGNED OFF (CLEANUP COMPLETED OR UNNECESSARY) ☐ NO ACTION TAKEN ☐ POST CLEANUP MONITORING IN PROGRESS ☐ NO FUNDS AVAILABLE TO PROCEED ☐ EVALUATING CLEANUP ALTERNATIVES

REMEDIAL ACTION

CHECK APPROPRIATE ACTION(S) (SEE BACK FOR DETAILS)

☐ CAP SITE (CD) ☒ EXCAVATE & DISPOSE (ED) ☐ REMOVE FREE PRODUCT (FP) ☐ ENHANCED BIO DEGRADATION (IT)
☐ CONTAINMENT BARRIER (CB) ☐ EXCAVATE & TREAT (ET) ☐ PUMP & TREAT GROUNDWATER (GT) ☐ REPLACE SUPPLY (RS)
☐ TREATMENT AT HOOKUP (HU) ☐ NO ACTION REQUIRED (NA) ☐ OTHER (OT)

COMMENTS

shallow groundwater (7-10') [illegible]

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-88)
Please print or type. (Form designed for use on elite (12-pitch) typewriter).

Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAC000483631 Manifest Document No. 1651
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address **
L.C. RUDD
1500 Green Island Rd. napa
4. Generator's Phone (707) 554-5282

A. State Manifest Document Number 87616321
B. State Generator's ID

5. Transporter 1 Company Name: H&H Ship Service
6. US EPA ID Number: CAD004771168
C. State Transporter's ID 800848
D. Transporter's Phone (415) 543-4835

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
H&H Ship Service
220 China Basin St.
San Francisco cal. 94107
10. US EPA ID Number: CAD004771168
G. State Facility's ID 38-001-78
H. Facility's Phone (415) 543-4835

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Empty Gasoline Tank, waste Flammable Liquid UN 1203	001	TP	1	500 G	State 512 EPA/Other
b. Empty Gasoline Tank, waste Flammable Liquid UN 1203	001	TP	1	1000 G	State 512 EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
Empty underground gas storage Tanks

K. Handling Codes for Wastes Listed Above
a. 01 b. c. d.

15. Special Handling Instructions and Additional Information
NONE

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: John Adams | Signature: [signature] | Month Day Year: 1 1 2 87

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Tony Schlapia | Signature: Tony Schlapia | Month Day Year: 1 1 2 87

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month Day Year

19. Discrepancy Indication Space
** Generator should be: City of Oakland 906 Gladys Hoo...
1414 Clay Street
Oakland, CA. (415) 273-3502

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Cleveland Valley | Signature: [signature] | Month Day Year: 1 1 2 87

GENERATOR / TRANSPORTER / FACILITY

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-86) Previous editions are obsolete.

Yellow: TSDF SENDS THIS COPY TO GENERATOR WITHIN 30 DAYS

INSTRUCTIONS ON THE BACK

Form Approved OMB No. 2050—0039 (Expires 9-30-88)

Please print or type. (Form designed for use on elite (12-pitch typewriter).

Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAC000483163 | Manifest Document No. 76070 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: CITY OF OAKLAND c/o GLADYS MOORE, 1414 CLAY ST., OAKLAND, CALIFORNIA

4. Generator's Phone (415) 273-3502

A. State Manifest Document Number: 87615070

B. State Generator's ID:

5. Transporter 1 Company Name: H & H Ship Service | 6. US EPA ID Number: CAD004771168 | C. State Transporter's ID: 800857 | D. Transporter's Phone: (415) 543-4835

7. Transporter 2 Company Name | 8. US EPA ID Number | E. State Transporter's ID | F. Transporter's Phone

9. Designated Facility Name and Site Address: H & H Ship Service, 220 CHINA BASIN, SAN FRANCISCO, CA. | 10. US EPA ID Number: CAD004771168 | G. State Facility's ID: 38-001-78 | H. Facility's Phone: (415) 543-4835

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. WASTE, HAZARDOUS WASTE NOS ORM-E NA 9189	001	TT	156		State 134 / EPA/Other
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above: TANK Bottom WASTE WATER

K. Handling Codes for Wastes Listed Above: a. 01 | b. | c. | d.

15. Special Handling Instructions and Additional Information: Gloves / Goggles

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Lt. Roy C Rudd | Signature: Roy C Rudd | Month 1 Day 1 Year 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Rick Scalia | Signature: Rick Scalia | Month 1 Day 1 Year 87

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: Cleveland Valley | Signature | Month 1 Day 1 Year 87

DHS 8022 A (1/87)

EPA 8700—22 (Rev. 9-86) Previous editions are obsolete.

Yellow: TSDF SENDS THIS COPY TO GENERATOR WITHIN 30 DAYS

INSTRUCTIONS ON THE BACK

IN CASE OF AN EMERGENCY OR SPILL CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802 WITHIN CALIFORNIA CALL 1-800-852-7550

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E87-11-368

Received: 12 NOV 87
Reported: 13 NOV 87

Mr. Leroy Rudd
L. C. Rudd & Son, Inc.
2500 Green Island Road
Vallejo, California 94589

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
11-368-1	Pit - West End	12 NOV 87
11-368-2	Pit - East End	12 NOV 87

PARAMETER	11-368-1	11-368-2
Total Fuel Hydrocarbons, mg/kg	2400	5600

Linda Black FOR
D. A. McLean, Laboratory Director

BROWN AND CALDWELL LABORATORIES

1255 POWELL STREET EMERYVILLE CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E87-12-454

Received: 17 DEC 87
Reported: 28 DEC 87

Mr. Leroy Rudd
L. C. Rudd & Son, Inc.
2500 Green Island Road
Vallejo, California 94589

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, AQUEOUS SAMPLES	DATE SAMPLED
12-454-1	15th and Castro Excavation Water	17 DEC 87

PARAMETER	12-454-1
Benzene,Toluene,Xylene Isomers	
Benzene, mg/L	<0.05
Toluene, mg/L	<0.05
Total Xylene Isomers, mg/L	<0.05
Total Fuel Hydrocarbons, mg/L	<1

Project # 4505592

Fee Paid $450.00

Date 1-20-88

Linda Black for
Steve Fisher, Laboratory Director

12/29

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E88-01-302

Received: 15 JAN 88
Reported: 19 JAN 88

Mr. Leroy Rudd
L. C. Rudd & Son, Inc.
2500 Green Island Road
Vallejo, California 94589

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
1-302-1	15th and Castro N End	15 JAN 88
1-302-2	15th and Castro S End	15 JAN 88
01-302-3	15th and Castro E End	15 JAN 88
01-302-4	15th and Castro W End	15 JAN 88
1-302-5	15th and Castro Bottom	15 JAN 88

PARAMETER	01-302-1	01-302-2	01-302-3	01-302-4	01-302-5
ydrocarbons by IR, mg/kg	<50	<50	<50	<50	760

BROWN AND CALDWELL LABORATORIES
1256 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E88-01-302

Received: 15 JAN 88
Reported: 19 JAN 88

Mr. Leroy Rudd
L. C. Rudd & Son, Inc.
2500 Green Island Road
Vallejo, California 94589

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
		15 JAN 88
-302-6	Pile 1	15 JAN 88
-302-7	Pile 2	15 JAN 88
01-302-8	Pile 3	

RAMETER	01-302-6	01-302-7	01-302-8
ydrocarbons by IR, mg/kg	<50	<50	130

Steve Fisher, Laboratory Director

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E88-02-570
Received: 12 FEB 88
Reported: 24 FEB 88

Mr. Leroy Rudd
L. C. Rudd & Son, Inc.
2500 Green Island Road
Vallejo, California 94589

REPORT OF ANALYTICAL RESULTS

G NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
70-1	15th and Castro N. End	12 FEB 88
570-2	15th and Castro S.End	12 FEB 88

METER	02-570-1	02-570-2	
drocarbons by IR, mg/kg	960	490	

Linda Black for
ue Fisher, Laboratory Director

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: B88-03-403

Received: 15 MAR 88
Reported: 21 MAR 88

Mr. Leroy Rudd
L. C. Rudd & Son, Inc.
2500 Green Island Road
Vallejo, California 94589

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
-403-1	15th And Castro East End	15 MAR 88
-403-2	15th And Castro West End	15 MAR 88

ARAMETER	03-403-1	03-403-2
Hydrocarbons by IR, mg/kg	<50	89

erbal results reported 3.18.88 to L.Rudd.

Linda Brack Fox
Steve Fisher, Laboratory Director

Appendix B

Investigation Protocol
Logs of Borings 1 through 15

APPENDIX B
INVESTIGATION PROTOCOL

A. Test Borings

The test borings were drilled using a truck-mounted drill rig equipped with 8-inch diameter hollow stem augers. Our field engineer observed drilling operations, prepared detailed logs of the test borings and obtained undisturbed samples of the materials encountered. Test boring logs and monitoring wells are presented on Plates B1 through B14 . Soils are classified in accordance with the Unified Soil Classification System described on Plate B15.

A California Drive Sampler having an outside diameter of 2.5 inches and an inside diameter of 2.0 inches was used to obtain soil samples. The number of blows required to drive the sampler the final 12 inches of each 18-inch penetration was recorded and are presented on the test borings logs. Drilling and sampling equipment was thoroughly steam-cleaned prior to each use to reduce the likelihood of cross-contamination between samples and/or borings.

Soil samples were retained in 2.0-inch diameter brass liners. Teflon sheeting was placed over the ends of the soil liners; the liners were subsequently capped and sealed with duct tape. The shoe sample from each drive was retained in a plastic bag and screened for volatile organics using an Organic Vapor Meter (OVM). OVM measurements are recorded on the logs of the test borings. The sealed liners were placed in ice-filled coolers and remained iced until delivery to the analytical laboratory. Chain-of-Custody

records accompanied the samples. Copies of the Chain-of-Custody documents are presented in Appendix C.

B. Groundwater Monitoring Wells

At the completion of drilling, a monitoring wells MW-1, MW-2 and MW-3 were installed in Test Borings 9, 11 and 15. Well schematics are shown on the respective test boring logs. In general, the wells consist of 2-inch diameter, Schedule 40 PVC pipe having flush-threaded joints. The pipe was steam-cleaned prior to being placed in the borehole. The lower 15 feet of each well consists of machine-slotted well screen having 0.02-inch slots. The remaining portion of the wells consist of blank pipe. The wells were provided with a bottom cap and locking top cap. The well screen is encased in a filter composed of Lonestar No. 3 washed sand. The filter sand was placed by carefully pouring it through the annulus between the hollow stem of the auger and the well casing. Periodically, the augers were raised to allow the sand to fill the annulus between the casing and the borehole. The filter extends from just below the bottom of the well to at least one foot above the top of the screened section. A one-foot thick bentonite pellet seal was placed above the sand filter. The annulus above the seal was backfilled with cement grout. The grout mixture consists of portland cement mixed with clean water. It was placed in a manner similar to the sand filter. The monitoring well was completed below grade and is protected by a traffic-rated valve box clearly marked as "Monitoring Well".

The wells were developed at least 24 hours after the grout seal was placed to allow for proper set up. Initially, the depth

to water was measured below the top of the well casing using an electric sounder. The wells were then developed by removing water with a Teflon bailer. After the wells were allowed to recharge to within 80 percent of its initial level, they were purged of about gallons of water and then sampled with a precleaned dedicated Teflon sampling device. Well development and purge water was placed in drums which are stored on-site for later disposal by others. A "grab" groundwater sample was obtained from boring 14 at the time of drilling through the hollow stem augers.

Groundwater samples were retained in chilled, pre-cleaned containers supplied by the laboratory. The type of containers used is dependent on the type of analysis to be performed. A summary of containers used is presented below.

Groundwater Sample Containers

Analysis	Container
TVH, EPA 8015, modified	Glass, VOA
TEH EPA 8015 modified	Glass, liter
TOG, SMWW 5520	Glass, liter
Purgeable halocarbons and aromatics EPA 8010/8020	Glass, VOA

Water samples were placed in ice-filled coolers and remained iced until delivery to the analytical laboratory. Chain-of-custody records accompanied the samples to the laboratory.

LOG OF TEST BORING 1

EQUIPMENT 6" Solid Flight Auger
DATE DRILLED 2/19/91
ELEVATION --

LABORATORY TESTS	MOISTURE CONTENT %	DRY DENSITY (PCF)	DEPTH (FT)	SAMPLE	BLOWS PER FOOT	
-200 = 28%	7.6	91	0		18 *	BROWN SILTY SANDY GRAVEL (GM) medium dense, moist, contains silt
	14.9	115			76	DARK BROWN SILTY SAND (SM) medium dense, moist
	8.3	105	5		83	MOTTLED BROWN CLAYEY SAND (SC) dense, moist
			10		60	
			15		86	
			20		78 *	BROWN SAND (SP) dense, moist
			25		78 +	GROUNDWATER NOT ENCOUNTERED DURING DRILLING
			30			
			35			
			40			

-200 = % Passing #200 Sieve

SAMPLER TYPE:
MODIFIED CALIFORNIA DRIVE
O.D.: 3.0 inches
I.D.: 2.5 inches

*CALIFORNIA DRIVE
O.D.: 2.5 inches
I.D.: 2.0 inches

+STANDARD PENETRATION TEST
O.D.: 2.0 inches
I.D.: 1.4 inches

HAMMER WEIGHT: 140 pounds
HAMMER DROP: 30 inches

Subsurface Consultants

DIGNITY HOUSE WEST - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
615.001	2/10/91	JVB

PLATE B-1

LOG OF TEST BORING 2

EQUIPMENT 6" Solid Flight Auger
DATE DRILLED 2/19/91
ELEVATION --

LABORATORY TESTS	MOISTURE CONTENT %	DRY DENSITY (PCF)	DEPTH (FT)	SAMPLE	BLOWS PER FOOT	
-200 = 28%	6.2	93	0		10*	BROWN SILTY SAND (SM) loose to medium dense, moist
	12.7	116	5		36	MOTTLED BROWN CLAYEY SAND (SC) dense, moist
					75	
	10.9	124	10		58	
			15		53	BROWN SILTY SAND (SM) dense, moist
			20		55*	GROUNDWATER NOT ENCOUNTERED DURING DRILLING
			25			
			30			
			35			
			40			

Subsurface Consultants

DIGNITY HOUSE WEST - OAKLAND, CA

JOB NUMBER 615.001 | DATE 2/20/91 | APPROVED JVB

PLATE B-2

LOG OF TEST BORING 3

EQUIPMENT 6" Solid Flight Auger
DATE DRILLED 2/19/91
ELEVATION --

LABORATORY TESTS	MOISTURE CONTENT %	DRY DENSITY (PCF)	DEPTH (FT)	SAMPLE	BLOWS PER FOOT	
-200 = 34%	10.8	99	0		7 *	BROWN SILTY GRAVELLY SAND (SM) loose, moist
	11.3	114			77	BROWN CLAYEY SAND (SC) dense, moist
	12.9	117	5		79	BROWN SILTY SAND (SM) dense, moist
			10		61	
					77	
			15			
					70 *	BROWN SAND (SP) dense, moist
			20			
			25		70 +	
			▼			GROUNDWATER LEVEL DURING DRILLING
			30			
			35		50/+ 5"	
			40			

Subsurface Consultants

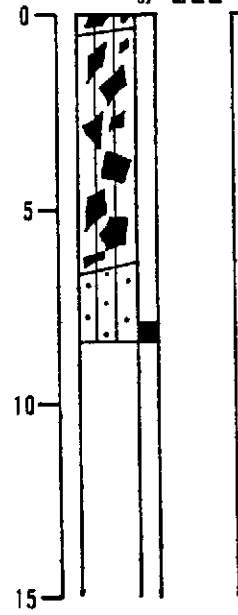
DIGNITY HOUSING WEST - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
615.001	2/20/91	JVB

PLATE B-3

LOG OF TEST BORING 5

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 2/19/91
ELEVATION --

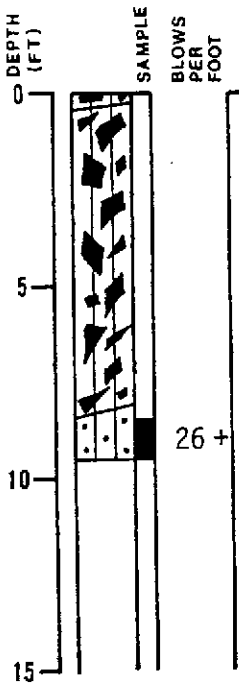


BROWN SANDY GRAVEL (GM)
loose, dry
GRAY SANDY GRAVEL (GM)
loose to medium dense, moist
3/4" crushed rock tank backfill

MOTTLED BLUISH GRAY SILTY SAND (SM)
dense, moist, with petroleum hydrocarbon smell
GROUNDWATER NOT ENCOUNTERED DURING DRILLING

LOG OF TEST BORING 6

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 2/19/91
ELEVATION --



BROWN SANDY GRAVEL (GM)
medium dense, dry
GRAY SANDY GRAVEL (GM)
loose to medium dense, moist
3/4" crushed rock tank backfill

BROWN SILTY SAND (SM)
medium dense, moist
GROUNDWATER NOT ENCOUNTERED DURING DRILLING

Subsurface Consultants

DIGNITY HOUSING WEST - OAKLAND, CA

JOB NUMBER 615.001 | DATE 2/20/91 | APPROVED JVB

PLATE B-5

LOG OF TEST BORING 7

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 2/19/91
ELEVATION --

LABORATORY TESTS	MOISTURE CONTENT %	DRY DENSITY (PCF)	DEPTH (FT)	SAMPLE	BLOWS PER FOOT	
			0			BROWN SANDY GRAVEL (GM) loose, dry
						DARK BROWN SILTY SAND (SM) medium dense, moist
			5			GRAY BROWN SILTY SAND (SM) dense, moist
						GROUNDWATER NOT ENCOUNTERED DURING DRILLING
			10			
			15			

Subsurface Consultants

DIGNITY HOUSING WEST - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
615.001	2/20/91	JVB

PLATE B-6

LOG OF TEST BORING 8

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 2/19/91
ELEVATION --

LABORATORY TESTS	MOISTURE CONTENT %	DRY DENSITY (PCF)	DEPTH (FT)	SAMPLE	BLOWS PER FOOT	
			0			ASPHALTIC CONCRETE - 3" thick GRAY SANDY GRAVEL (GM) loose to medium dense, moist 3/4" crushed rock tank backfill
			5			
			10		27* 16*	
			15		9*	MOTTLED BLUISH GRAY SILTY SAND (SM) medium dense, moist, with petroleum hydrocarbon smell color change to gray
			20		65*	GROUNDWATER NOT ENCOUNTERED DURING DRILLING
			25			
			30			
			35			
			40			

Subsurface Consultants

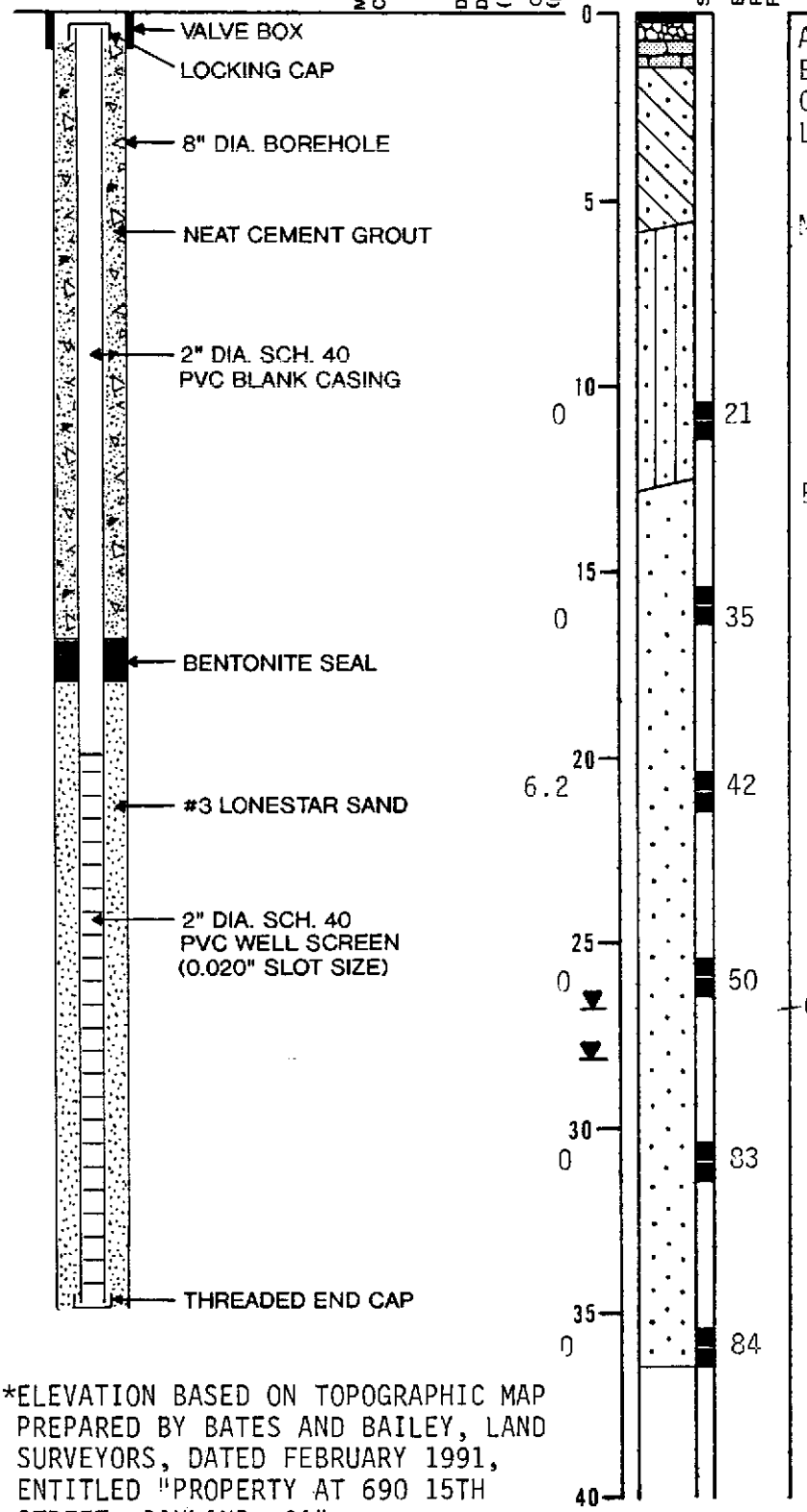
DIGNITY HOUSING WEST - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
615.001	2/20/91	JVB

PLATE B-7

LOG OF TEST BORING 9/MW-1

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 5/2/91
ELEVATION 27.9 feet*



ASPHALTIC CONCRETE - 3" thick
BASE ROCK - 6" thick
COBBLESTONE - very hard
LIGHT BROWN CLAYEY SAND (SC)
medium dense, moist

MOTTLED BROWN SILTY SAND (SM)
dense, moist

BROWN SAND (SP)
very dense, moist, fine grained

GROUNDWATER LEVEL 5/8/91
GROUNDWATER LEVEL DURING DRILLING

SAMPLER TYPE:
CALIFORNIA DRIVE
I.D.: 2.0 inches
O.D.: 2.5 inches

HAMMER WEIGHT: 140 pounds
HAMMER DROP: 30 inches

*ELEVATION BASED ON TOPOGRAPHIC MAP PREPARED BY BATES AND BAILEY, LAND SURVEYORS, DATED FEBRUARY 1991, ENTITLED "PROPERTY AT 690 15TH STREET, OAKLAND, CA".

Subsurface Consultants

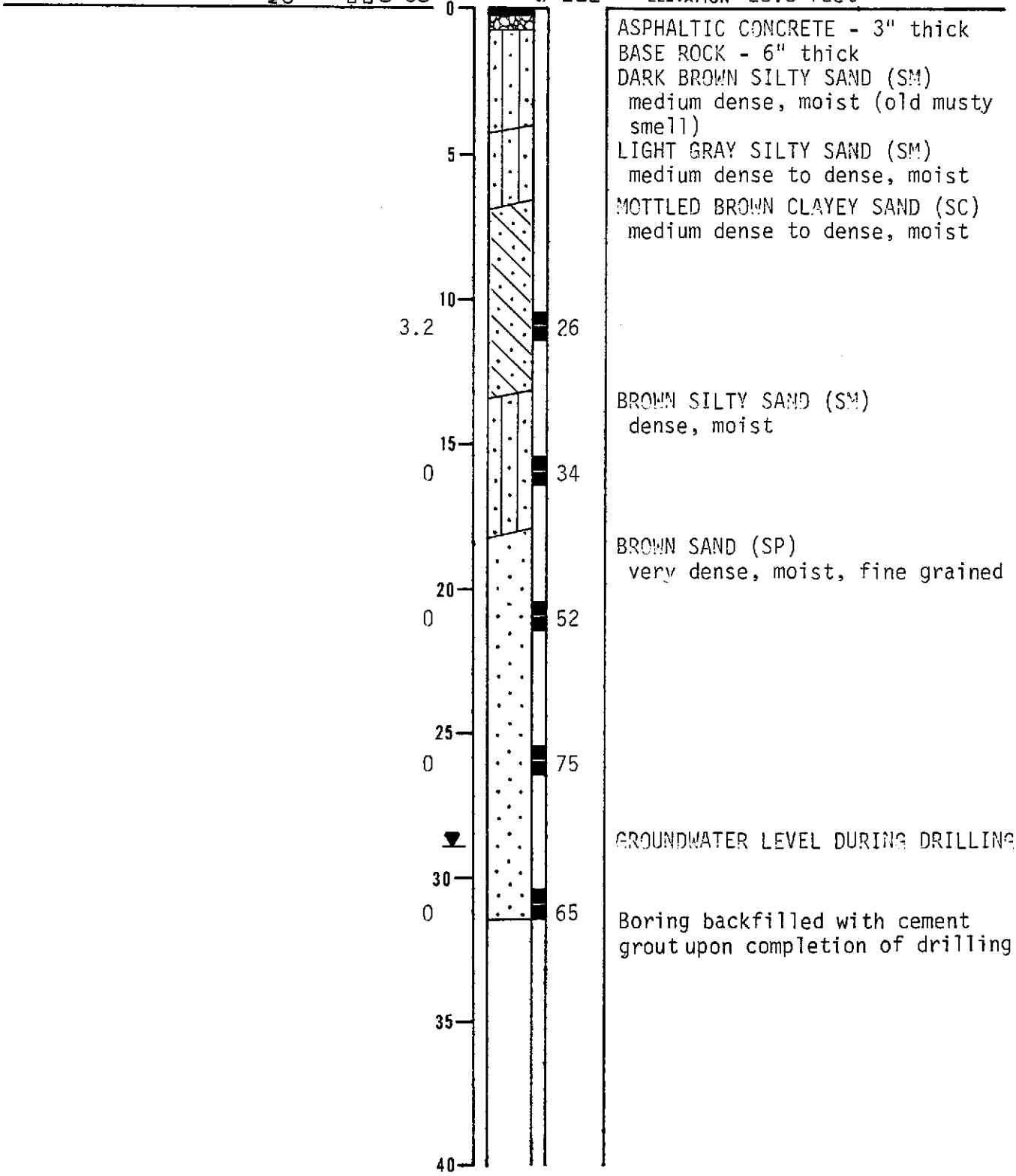
DIGNITY HOUSING WEST - PHASE II

JOB NUMBER	DATE	APPROVED
615.002	5/9/91	JVB

PLATE B-8

LOG OF TEST BORING 10

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 5/2/91
ELEVATION 28.8 feet



Subsurface Consultants

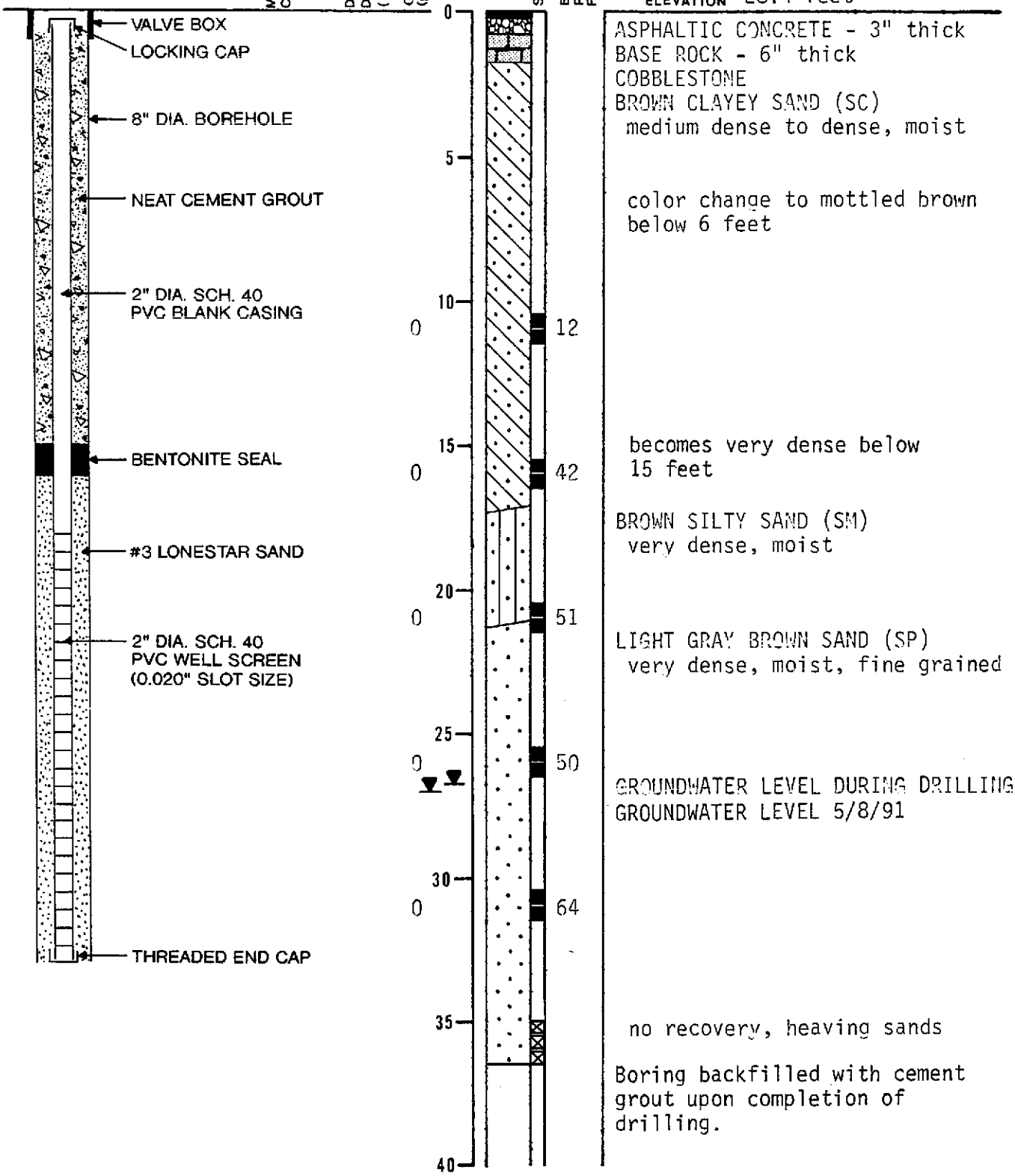
DIGNITY HOUSING WEST - PHASE II

JOB NUMBER	DATE	APPROVED
615.002	5/9/91	JVB

PLATE B-9

LOG OF TEST BORING 11/MW-2

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 5/2/91
ELEVATION 28.4 feet



ASPHALTIC CONCRETE - 3" thick
BASE ROCK - 6" thick
COBBLESTONE
BROWN CLAYEY SAND (SC)
medium dense to dense, moist

color change to mottled brown below 6 feet

becomes very dense below 15 feet

BROWN SILTY SAND (SM)
very dense, moist

LIGHT GRAY BROWN SAND (SP)
very dense, moist, fine grained

GROUNDWATER LEVEL DURING DRILLING
GROUNDWATER LEVEL 5/8/91

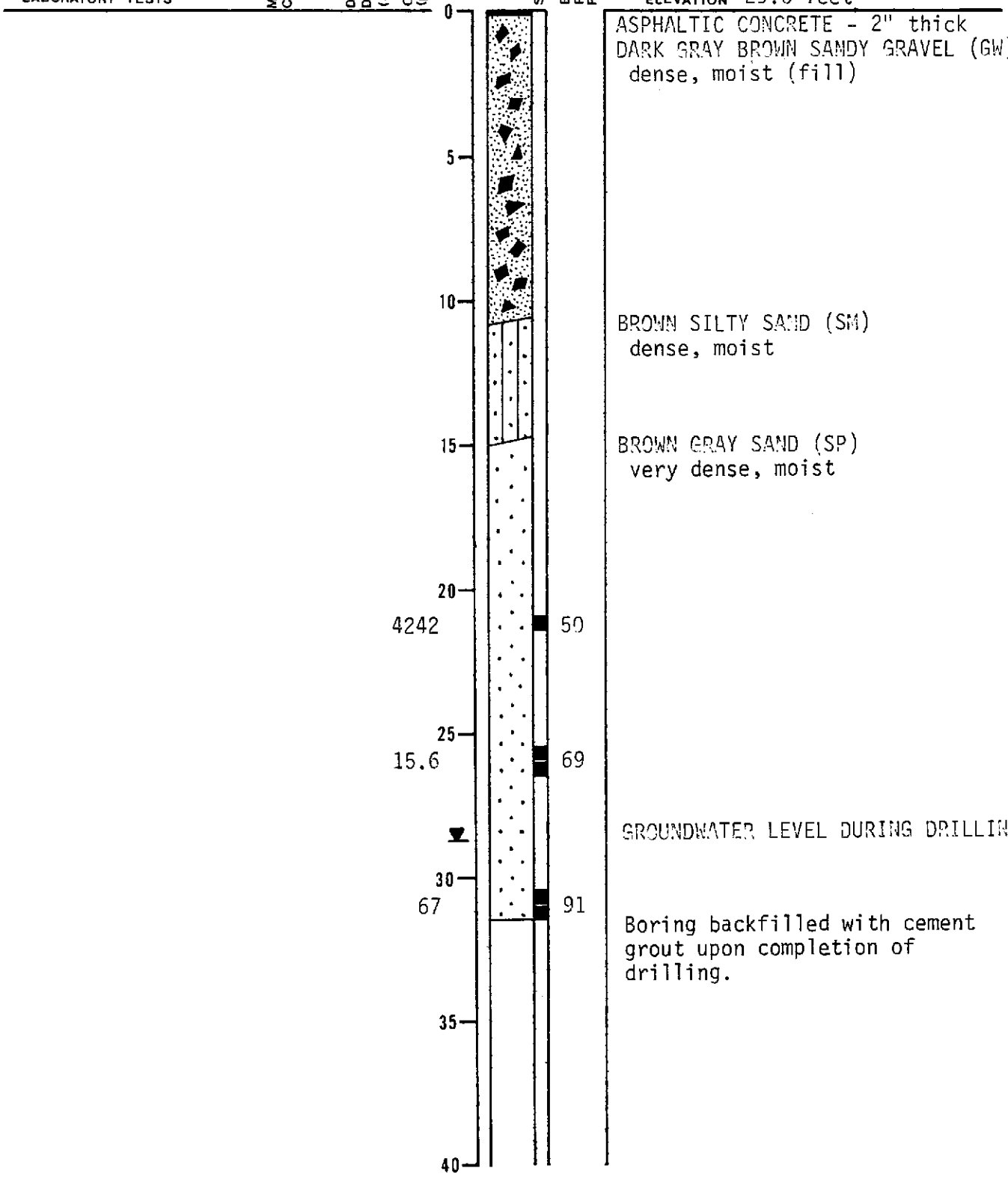
no recovery, heaving sands

Boring backfilled with cement grout upon completion of drilling.

Subsurface Consultants	DIGNITY HOUSING WEST - PHASE II			PLATE
	JOB NUMBER 615.002	DATE 5/9/91	APPROVED JVB	B-10

LOG OF TEST BORING 12

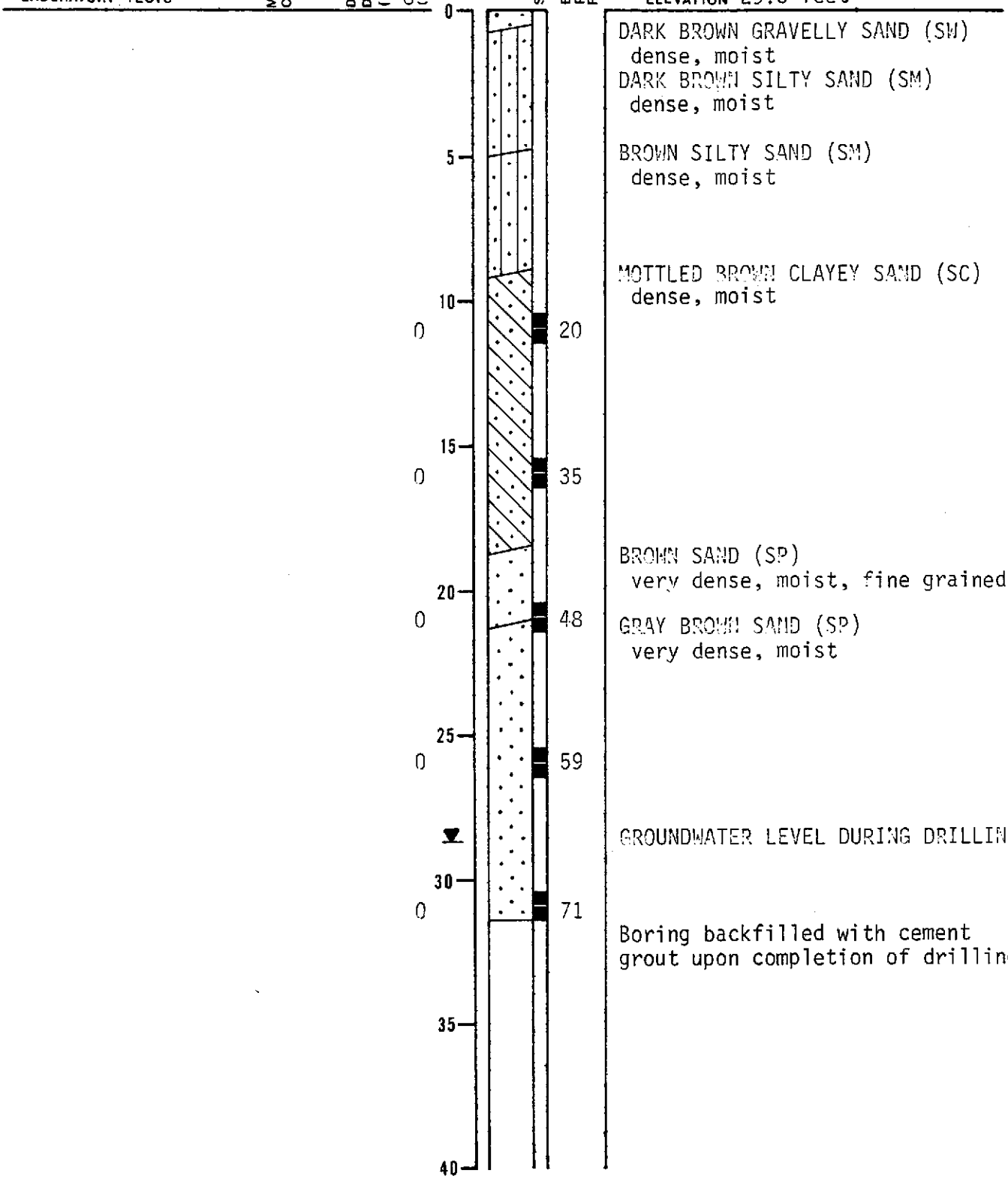
EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 5/3/91
ELEVATION 29.0 feet



Subsurface Consultants	DIGNITY HOUSING WEST - PHASE II			PLATE
	JOB NUMBER 615.002	DATE 5/9/91	APPROVED JVB	B-11

LOG OF TEST BORING 13

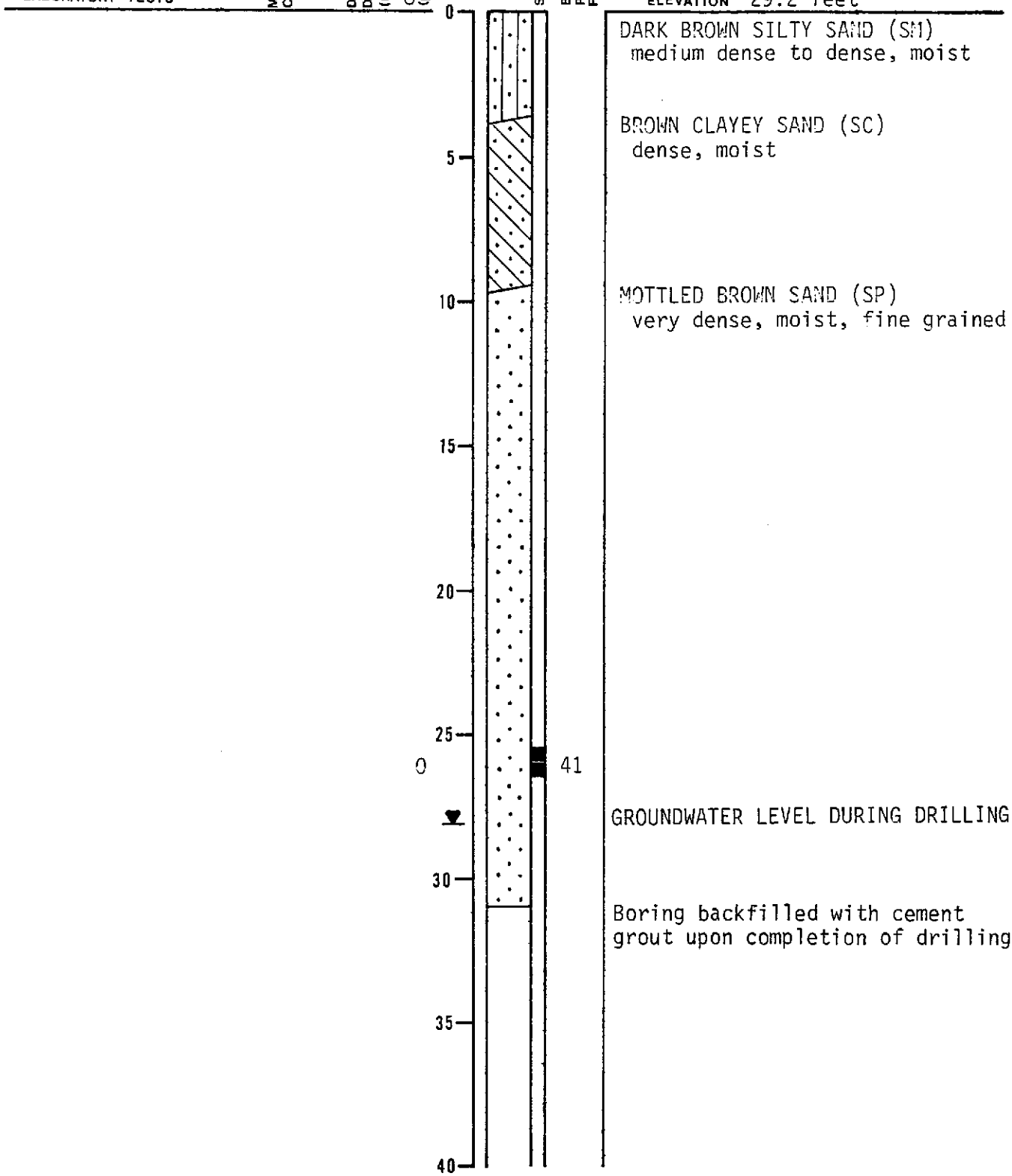
EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 5/3/91
ELEVATION 29.5 feet



Subsurface Consultants	DIGNITY HOUSING WEST - PHASE II			PLATE
	JOB NUMBER 615.002	DATE 5/9/91	APPROVED JVB	B-12

LOG OF TEST BORING 14

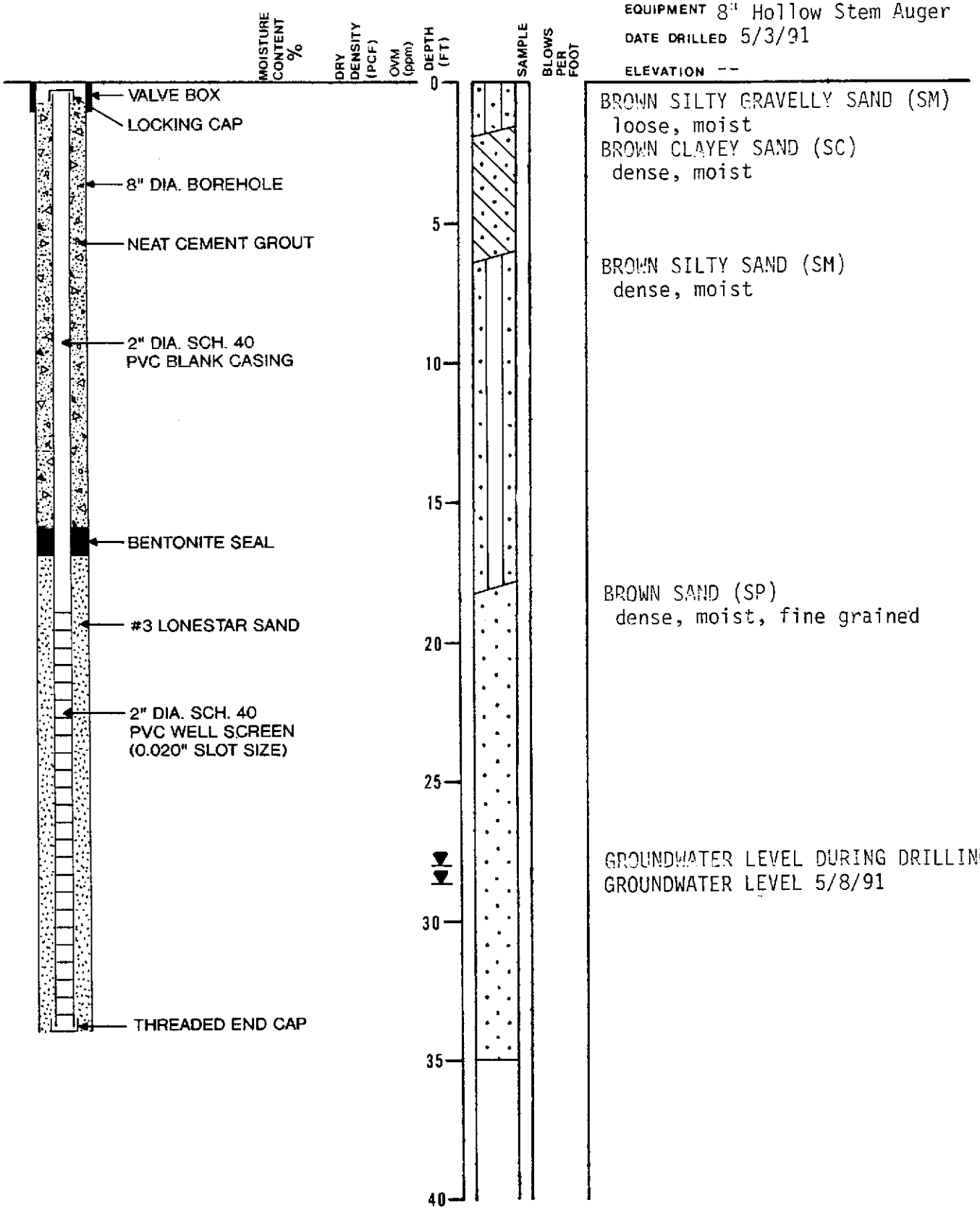
EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 5/3/91
ELEVATION 29.2 feet



Subsurface Consultants	DIGNITY HOUSING WEST - PHASE II			PLATE
	JOB NUMBER 615.002	DATE 5/9/91	APPROVED JVB	B-13

LOG OF TEST BORING 15/MW-3

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 5/3/91
ELEVATION --



Subsurface Consultants	DIGNITY HOUSING WEST - PHASE II			PLATE
	JOB NUMBER	DATE	APPROVED	B-14
	615.002	5/9/91	JVB	

GENERAL SOIL CATEGORIES			SYMBOLS		TYPICAL SOIL TYPES
COARSE GRAINED SOILS More than half is larger than No. 200 sieve	GRAVEL More than half coarse fraction is larger than No. 4 sieve size	Clean Gravel with little or no fines	GW		Well Graded Gravel, Gravel-Sand Mixtures
			GP		Poorly Graded Gravel, Gravel-Sand Mixtures
		Gravel with more than 12% fines	GM		Silty Gravel, Poorly Graded Gravel-Sand-Silt Mixtures
			GC		Clayey Gravel, Poorly Graded Gravel-Sand-Clay Mixtures
	SAND More than half coarse fraction is smaller than No. 4 sieve size	Clean sand with little or no fines	SW		Well Graded Sand, Gravelly Sand
			SP		Poorly Graded Sand, Gravelly Sand
		Sand with more than 12% fines	SM		Silty Sand, Poorly Graded Sand-Silt Mixtures
			SC		Clayey Sand, Poorly Graded Sand-Clay Mixtures
FINE GRAINED SOILS More than half is smaller than No. 200 sieve	SILT AND CLAY Liquid Limit Less than 50%		ML		Inorganic Silt and Very Fine Sand, Rock Flour, Silty or Clayey Fine Sand, or Clayey Silt with Slight Plasticity
			CL		Inorganic Clay of Low to Medium Plasticity, Gravelly Clay, Sandy Clay, Silty Clay, Lean Clay
			OL		Organic Clay and Organic Silty Clay of Low Plasticity
	SILT AND CLAY Liquid Limit Greater than 50%		MH		Inorganic Silt, Micaceous or Diatomaceous Fine Sandy or Silty Soils, Elastic Silt
			CH		Inorganic Clay of High Plasticity, Fat Clay
			OH		Organic Clay of Medium to High Plasticity, Organic Silt
HIGHLY ORGANIC SOILS			PT		Peat and Other Highly Organic Soils

UNIFIED SOIL CLASSIFICATION SYSTEM

Subsurface Consultants

DIGNITY HOUSING WEST - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
615.001	2/20/91	JVB

PLATE B-15

Appendix C

Analytical Test Methods
Analytical Laboratory Test Reports
Chain-of-Custody Documents

APPENDIX C
ANALYTICAL TESTING

Analytical testing of soil and groundwater was provided by Curtis & Tompkins, Ltd., a State of California Department of Health Services (DHS) certified laboratory. The analytical tests were performed on individual samples. A summary of sample preparation and test methods are presented below.

Test Analysis	Sample Preparation Method	Analysis Method
Total Volatile Hydrocarbons	EPA 5030	EPA 8015 Mod.
Total Extractable Hydrocarbons	EPA 3550	EPA 8015 Mod.
Total Oil and Grease	EPA 3550	SMWW17:5520F
Purgeable Halocarbons	EPA 5030	EPA 8010
BTEX	EPA 5030	EPA 8020

A summary of the analytical results is presented in Table 5 in the report text. Analytical test reports and Chain-of-Custody records are presented in Appendix C.

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 02/20/91
DATE REPORTED: 02/27/91

LAB NUMBER: 103045

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: SEVEN SOIL SAMPLES

PROJECT ID: 615.001
LOCATION: DIGNITY HOUSING WEST (DHW)

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103045
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 615.001

DATE RECEIVED: 02/20/91
DATE ANALYZED: 02/26/91
DATE REPORTED: 02/27/91

ANALYSIS: CADMIUM
ANALYSIS METHOD: EPA 6010

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
103045-1	1@1.0	ND	mg/Kg	0.5
103045-2	2@1.0	ND	mg/Kg	0.5
103045-3	3@1.0	1.2	mg/Kg	0.5
103045-4	4@1.0	0.6	mg/Kg	0.5

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	6
RECOVERY, %	85

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103045
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 615.001

DATE RECEIVED: 02/20/91
DATE ANALYZED: 02/26/91
DATE REPORTED: 02/27/91

ANALYSIS: CHROMIUM
ANALYSIS METHOD: EPA 6010

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
103045-1	1@1.0	17	mg/Kg	0.5
103045-2	2@1.0	20	mg/Kg	0.5
103045-3	3@1.0	29	mg/Kg	0.5
103045-4	4@1.0	24	mg/Kg	0.5

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	89

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103045
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 615.001

DATE RECEIVED: 02/20/91
DATE ANALYZED: 02/26/91
DATE REPORTED: 02/27/91

ANALYSIS: LEAD
ANALYSIS METHOD: EPA 7420

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
103045-1	1@1.0	21	mg/Kg	2.5
103045-2	2@1.0	2.5	mg/Kg	2.5
103045-3	3@1.0	36	mg/Kg	2.5
103045-4	4@1.0	ND	mg/Kg	2.5

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	6
RECOVERY, %	81

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103045
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 615.001

DATE RECEIVED: 02/20/91
DATE ANALYZED: 02/26/91
DATE REPORTED: 02/27/91

ANALYSIS: NICKEL
ANALYSIS METHOD: EPA 6010

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
103045-1	1@1.0	5.1	mg/Kg	0.5
103045-2	2@1.0	6.9	mg/Kg	0.5
103045-3	3@1.0	26	mg/Kg	0.5
103045-4	4@1.0	8.7	mg/Kg	0.5

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	84

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103045
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 615.001

DATE RECEIVED: 02/20/91
DATE ANALYZED: 02/26/91
DATE REPORTED: 02/27/91

ANALYSIS: ZINC
ANALYSIS METHOD: EPA 6010

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
103045-1	1@1.0	24	mg/Kg	0.5
103045-2	2@1.0	18	mg/Kg	0.5
103045-3	3@1.0	48	mg/Kg	0.5
103045-4	4@1.0	31	mg/Kg	0.5

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	86

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103045
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 615.001

DATE RECEIVED: 02/20/91
DATE ANALYZED: 02/26/91
DATE REPORTED: 02/27/91

ANALYSIS: CYANIDE
ANALYSIS METHOD: EPA 335.2 (Modified)

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
103045-1	1@1.0	ND	mg/Kg	0.3
103045-2	2@1.0	ND	mg/Kg	0.3
103045-3	3@1.0	ND	mg/Kg	0.3
103045-4	4@1.0	ND	mg/Kg	0.3

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	89

Curtis & Tompkins, Ltd.

LAB NUMBER: 103045
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 615.001

DATE RECEIVED: 02/20/91
DATE ANALYZED: 02/26/91
DATE REPORTED: 02/27/91
DATE REISSUED: 03/01/91

ANALYSIS: HYDROCARBON OIL AND GREASE
METHOD: SMWW 17:5520 E&F

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
103045-1	1@1.0	ND	mg/Kg	50
103045-2	2@1.0	ND	mg/Kg	50
103045-3	3@1.0	68	mg/Kg	50
103045-4	4@1.0	ND	mg/Kg	50
103045-5	5@7.5	ND	mg/Kg	50
103045-6	8@13	ND	mg/Kg	50
103045-7	8@19.5	ND	mg/Kg	50

ND = Not detected at or above reporting limit

QA/QC SUMMARY

RPD, %	4
RECOVERY, %	86

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103045
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 615.001
JOB LOCATION: DIGNITY HOUSING WEST (DHW)

DATE RECEIVED: 02/20/91
DATE ANALYZED: 02/22/91
DATE REPORTED: 02/26/91
DATE REISSUED: 03/01/91

Total Volatile Hydrocarbons with BTXE in Soils & Wastes
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (mg/Kg)	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
103045-5	5@7.5	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
103045-6	8@13	750	55	1,300	14,000	38,000
103045-7	8@19.5	25	40	110	170	910

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	87

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103045
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 615.001
LOCATION: DIGNITY HOUSING WEST (DHW)

DATE RECEIVED: 02/20/91
DATE EXTRACTED: 02/22/91
DATE ANALYZED: 02/25/91
DATE REPORTED: 02/27/91
DATE REISSUED: 03/01/91

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	SAMPLE ID	STODDARD SOLVENT (mg/Kg)	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT* (mg/Kg)
103045-5	5@7.5	ND	ND	ND	1
103045-6	8@13	720	ND	ND	10
103045-7	8@19.5	58	ND	**	1

ND = Not Detected at or above reporting limit.

*Reporting limit applies to all analytes.

**Diesel range components are present but quantitation is not possible due to interference from the stoddard solvent.

QA/QC SUMMARY

RPD, %	3
RECOVERY, %	116

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: Dignity Housing West (DHW)

SCI Job Number: 615.001

Project Contact at SCI: John Bosche

Sampled By: Tom Tebb

Analytical Laboratory: Curtis & Tompkins

Analytical Turnaround: 2 Weeks (metals etc) / 1 week (hydrocarbons)

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
1 @ 1.0	S	T	2/19/91		Cd, Cr, Pb, Ni, Zn, TOG	CA (SMWW 5520 F)
2 @ 1.0						
3 @ 1.0						
4 @ 1.0						
(5) A @ 7.5					TVH w/ BTEX TEH TOG	
(6) B @ 13						
(8) D @ 19.5						

* * * * * *

Released by: _____ Received by: _____ Date: 2/20/91

Released by: _____ Received by: _____ Date: _____

Received by Laboratory: _____ Date: 2/20/91

Released by Laboratory: _____ Date: _____

Released by: _____ Date: _____

[1] Sample Type: W = Water, S = Soil, O = Other (specify)
[2] Container Type: V = VOA, P = Plastic, G = Glass, T = Brass Tube, O = Other (specify)

NOTES TO LABORATORY:
- Notify SCI if there are any anomalous peaks on GC or other scans
- Questions/clarifications - Contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: Dignity Housing West (DHW)

SCI Job Number: 615.001

Project Contact at SCI: John Bosche

Sampled By: Tom Tebb

Analytical Laboratory: Curtis & Tompkins

Analytical Turnaround: 2 Weeks (metals etc) / 1 week (hydrocarbons)

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
1 @ 1.0	S	T	2/19/91		Cd, Cr, Pb, Ni, Zn, TOG	CN, (SM4500 E)
2 @ 1.0						
3 @ 1.0						
4 @ 1.0						
A @ 7.5					TVH w/ BTEX TEH TOG	
D @ 13						
D @ 19.5						

* * * * * *

Released by: _____ Received by: _____ Date: 2/20/91

Released by: _____ Received by: _____ Date: _____

Received by Laboratory: _____ Date: 2/20/91

Released by Laboratory: _____ Date: _____

Released by: _____ Date: _____

[1] Sample Type: W = Water, S = Soil, O = Other (specify)
Container Type: V = VOA, P = Plastic, G = Glass, T = Brass Tube, O = Other (specify)

NOTES TO LABORATORY:
- Notify SCI if there are any anomalous peaks on GC or other scans
- Questions/clarifications - Contact SCI at (415) 268-0461

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 05/06/91
DATE REPORTED: 05/10/91

LAB NUMBER: 103725

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 615.002

LOCATION: DIGNITY HOUSING WEST

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103725
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 615.002
LOCATION: DIGNITY HOUSING WEST

DATE RECEIVED: 05/06/91
DATE REQUESTED: 05/07/91
DATE ANALYZED: 05/10/91
DATE REPORTED: 05/10/91

ANALYSIS: SOLUBLE LEAD
EXTRACTION BY WASTE EXTRACTION TEST: CCR TITLE 26 SECTION 22-66700
ANALYSIS METHOD: EPA 7420

LAB ID	CLIENT ID	RESULT	UNITS	REPORTING LIMIT
103725-3	12 @ 26	ND	mg/L	0.06

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	91

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103725
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 615.002
LOCATION: DIGNITY HOUSING WEST

DATE RECEIVED: 05/06/91
DATE REQUESTED: 05/07/91
DATE ANALYZED: 05/08/91
DATE REPORTED: 05/10/91

ANALYSIS: LEAD
ANALYSIS METHOD: EPA 7420
PREP METHOD: EPA 3050

LAB ID	CLIENT ID	RESULT	UNITS	REPORTING LIMIT
103725-3	12 @ 26	ND	mg/Kg	3.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	91

Curtis & Tompkins, Ltd.

VERBAL ADDITIONS / CANCELLATIONS TO ANALYSIS REQUEST SHEET

CLIENT: SCI DATE: 5/7/91

REQUESTED BY: Tom Tebb TIME: _____ am _____ pm

RECORDED BY: NJW

Current Lab ID (Previous Lab ID)	Client ID	Circle matrix	Specify add or cancel	Analysis	Due date
163720 - 4, 5 (-)	12E26 12E31	soil water other		Pb	5/8/91
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			

Original in job jacket. Copies to analytical departments.

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 05/06/91
DATE REPORTED: 05/08/91

LAB NUMBER: 103720

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 615.002

LOCATION: DIGNITY HOUSING WEST

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103720
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 615.002
LOCATION: DIGNITY HOUSING WEST

DATE RECEIVED: 05/06/91
DATE REQUESTED: 05/07/91
DATE ANALYZED: 05/09/91
DATE REPORTED: 05/09/91

ANALYSIS: LEAD
ANALYSIS METHOD: EPA 7420

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
103720-5	12 @ 31	ND	mg/Kg	3.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	3
Recovery, %	99

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103720
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 615.002
LOCATION: DIGNITY HOUSING WEST

DATE RECEIVED: 05/06/91
DATE ANALYZED: 05/07/91
DATE REPORTED: 05/08/91

Total Volatile Hydrocarbons with BTXE in Soils & Wastes
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (mg/Kg)	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
103720-1	9 @ 26	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
103720-2	10 @ 26	2.4	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
103720-3	11 @ 26	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
103720-4	12 @ 26	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
103720-5	12 @ 31	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	12
103720-6	13 @ 26	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	111

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103720
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 615.002
LOCATION: DIGNITY HOUSING WEST

DATE RECEIVED: 05/06/91
DATE EXTRACTED: 05/07/91
DATE ANALYZED: 05/07/91
DATE REPORTED: 05/08/91

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	SAMPLE ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT* (mg/Kg)
103720-1	9 @ 26	ND	ND	1.0
103720-2	10 @ 26	ND	ND	1.0
103720-3	11 @ 26	ND	ND	1.0
103720-4	12 @ 26	ND	ND	1.0
103720-5	12 @ 31	ND	ND	1.0
103720-6	13 @ 26	ND	ND	1.0

ND = Not Detected at or above reporting limit.

*Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	5
RECOVERY, %	92

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103720-7
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 615.002
LOCATION: DIGNITY HOUSING WEST
SAMPLE ID: 14

DATE RECEIVED: 05/06/91
DATE ANALYZED: 05/07/91
DATE REPORTED: 05/08/91

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	REPORTING LIMIT ug/L
chloromethane	ND	2.0
bromomethane	ND	2.0
vinyl chloride	ND	2.0
chloroethane	ND	2.0
methylene chloride	ND	1.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
1,2-dichloroethene (total)	ND	1.0
chloroform	ND	1.0
freon 113	ND	1.0
1,2-dichloroethane	ND	1.0
1,1,1-trichloroethane	ND	1.0
carbon tetrachloride	ND	1.0
bromodichloromethane	ND	1.0
1,2-dichloropropane	ND	1.0
cis-1,3-dichloropropene	ND	1.0
trichloroethylene	ND	1.0
1,1,2-trichloroethane	ND	1.0
trans-1,3-dichloropropene	ND	1.0
dibromochloromethane	ND	1.0
2-chloroethylvinyl ether	ND	2.0
bromoform	ND	1.0
tetrachloroethene	ND	1.0
1,1,2,2-tetrachloroethane	ND	1.0
chlorobenzene	ND	1.0
1,3-dichlorobenzene	ND	1.0
1,2-dichlorobenzene	ND	1.0
1,4-dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	10
RECOVERY, %	94

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103720-7
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 615.002
LOCATION: DIGNITY HOUSING WEST
SAMPLE ID: 14

DATE RECEIVED: 05/06/91
DATE ANALYZED: 05/07/91
DATE REPORTED: 05/08/91

EPA 8020: Volatile Aromatic Hydrocarbons in Water

COMPOUND	RESULT ug/L	REPORTING LIMIT ug/L
Benzene	ND	1.0
Toluene	ND	1.0
Ethyl Benzene	ND	1.0
Total Xylenes	ND	1.0
Chlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	100

Curtis & Tompkins, Ltd.

VERBAL ADDITIONS / CANCELLATIONS TO ANALYSIS REQUEST SHEET

CLIENT: SCI DATE: 5-7-91

REQUESTED BY: Tom Tobb TIME: ____ am ____ pm

RECORDED BY: NW

Current Lab ID (Previous Lab ID)	Client ID	Circle matrix	Specify add or cancel	Analysis	Due date
103720-5 (-)	12@31	soil water other		Pb	ASAP
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			

Original in job jacket. Copies to analytical departments.

Curtis & Tompkins, Ltd.

VERBAL ADDITIONS / CANCELLATIONS TO ANALYSIS REQUEST SHEET

CLIENT: SCT DATE: 5/7/91

REQUESTED BY: Tom Tebb TIME: _____ am _____ pm

RECORDED BY: NJW

Current Lab ID (Previous Lab ID)	Client ID	Circle matrix	Specify add or cancel	Analysis	Due date
163720 - 4, 5 (-)	12@26 12@31	soil water other		Pb	5/8/91
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			

Original in job jacket. Copies to analytical departments.

Subsurface Consultants

103720

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: Dignity Housing West

SCI Job Number: 615.002

Project Contact at SCI: John Bosche

Sampled By: Tom Tebb

Analytical Laboratory: Curtis & Tompkins

Analytical Turnaround: 24-hour

	Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
1	1@26	S	T	5/2/91		BTEX TVH, TEH	
2	10@26			5/2/91			
3	11@26			5/2/91			
4	12@26			5/3/91			add Pb
5	12@31			5/3/91			add Pb
6	13@26			5/3/91			
7	14	W	V, G & P	5/3/91		8010, 8020	

* * * * * *

Released by: J. Thomas Tebb Received by: Jeanne Evans Date: 5-6-91

Released by: _____ Received by: _____ Date: _____

Received by Laboratory: _____ Date: _____

Released by Laboratory: _____ Date: _____

Released by: _____ Date: _____

[1] Sample Type: W = Water, S = Soil, O = Other (specify)
Container Type: V = VOA, P = Plastic, G = Glass, T = Brass Tube,
O = Other (specify)

NOTES TO LABORATORY:
- Notify SCI if there are any anomalous peaks on GC or other scans
- Questions/clarifications - Contact SCI at (415) 268-0461

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 05/08/91
DATE REPORTED: 05/10/91

LAB NUMBER: 103746

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 615.002

LOCATION: DIGNITY HOUSING WEST

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103746-1
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 615.002
LOCATION: DIGNITY HOUSING WEST
SAMPLE ID: MW-1

DATE RECEIVED: 05/08/91
DATE ANALYZED: 05/09/91
DATE REPORTED: 05/10/91

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	REPORTING LIMIT ug/L
chloromethane	ND	2.0
bromomethane	ND	2.0
vinyl chloride	ND	2.0
chloroethane	ND	2.0
methylene chloride	ND	1.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
cis-1,2-dichloroethene	ND	1.0
trans-1,2-dichloroethene	ND	1.0
chloroform	1.2	1.0
freon 113	ND	1.0
1,2-dichloroethane	ND	1.0
1,1,1-trichloroethane	ND	1.0
carbon tetrachloride	ND	1.0
bromodichloromethane	ND	1.0
1,2-dichloropropane	ND	1.0
cis-1,3-dichloropropene	ND	1.0
trichloroethylene	ND	1.0
1,1,2-trichloroethane	ND	1.0
trans-1,3-dichloropropene	ND	1.0
dibromochloromethane	ND	1.0
2-chloroethylvinyl ether	ND	2.0
bromoform	ND	1.0
tetrachloroethene	2.5	1.0
1,1,2,2-tetrachloroethane	ND	1.0
chlorobenzene	ND	1.0
1,3-dichlorobenzene	ND	1.0
1,2-dichlorobenzene	ND	1.0
1,4-dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	83

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103746-1
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 615.002
LOCATION: DIGNITY HOUSING WEST
SAMPLE ID: MW-1

DATE RECEIVED: 05/08/91
DATE ANALYZED: 05/09/91
DATE REPORTED: 05/10/91

EPA 8020: Volatile Aromatic Hydrocarbons in Water

COMPOUND	RESULT ug/L	REPORTING LIMIT ug/L
Benzene	ND	1.0
Toluene	ND	1.0
Ethyl Benzene	ND	1.0
Total Xylenes	ND	1.0
Chlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	94

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103746-2
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 615.002
LOCATION: DIGNITY HOUSING WEST
SAMPLE ID: MW-2

DATE RECEIVED: 05/08/91
DATE ANALYZED: 05/09/91
DATE REPORTED: 05/10/91

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	REPORTING LIMIT ug/L
chloromethane	ND	2.0
bromomethane	ND	2.0
vinyl chloride	ND	2.0
chloroethane	ND	2.0
methylene chloride	ND	1.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
cis-1,2-dichloroethene	ND	1.0
trans-1,2-dichloroethene	ND	1.0
chloroform	ND	1.0
freon 113	ND	1.0
1,2-dichloroethane	ND	1.0
1,1,1-trichloroethane	ND	1.0
carbon tetrachloride	ND	1.0
bromodichloromethane	ND	1.0
1,2-dichloropropane	ND	1.0
cis-1,3-dichloropropene	ND	1.0
trichloroethylene	ND	1.0
1,1,2-trichloroethane	ND	1.0
trans-1,3-dichloropropene	ND	1.0
dibromochloromethane	ND	1.0
2-chloroethylvinyl ether	ND	2.0
bromoform	ND	1.0
tetrachloroethene	1.1	1.0
1,1,2,2-tetrachloroethane	ND	1.0
chlorobenzene	ND	1.0
1,3-dichlorobenzene	ND	1.0
1,2-dichlorobenzene	ND	1.0
1,4-dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	83

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103746-2
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 615.002
LOCATION: DIGNITY HOUSING WEST
SAMPLE ID: MW-2

DATE RECEIVED: 05/08/91
DATE ANALYZED: 05/09/91
DATE REPORTED: 05/10/91

EPA 8020: Volatile Aromatic Hydrocarbons in Water

COMPOUND	RESULT ug/L	REPORTING LIMIT ug/L
Benzene	ND	1.0
Toluene	ND	1.0
Ethyl Benzene	ND	1.0
Total Xylenes	ND	1.0
Chlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	94

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103746-3
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 615.002
LOCATION: DIGNITY HOUSING WEST
SAMPLE ID: MW-3

DATE RECEIVED: 05/08/91
DATE ANALYZED: 05/09/91
DATE REPORTED: 05/10/91

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	REPORTING LIMIT ug/L
chloromethane	ND	2.0
bromomethane	ND	2.0
vinyl chloride	ND	2.0
chloroethane	ND	2.0
methylene chloride	ND	1.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
cis-1,2-dichloroethene	ND	1.0
trans-1,2-dichloroethene	ND	1.0
chloroform	ND	1.0
freon 113	ND	1.0
1,2-dichloroethane	ND	1.0
1,1,1-trichloroethane	ND	1.0
carbon tetrachloride	ND	1.0
bromodichloromethane	ND	1.0
1,2-dichloropropane	ND	1.0
cis-1,3-dichloropropene	ND	1.0
trichloroethylene	ND	1.0
1,1,2-trichloroethane	ND	1.0
trans-1,3-dichloropropene	ND	1.0
dibromochloromethane	ND	1.0
2-chloroethylvinyl ether	ND	2.0
bromoform	ND	1.0
tetrachloroethene	1.1	1.0
1,1,2,2-tetrachloroethane	ND	1.0
chlorobenzene	ND	1.0
1,3-dichlorobenzene	ND	1.0
1,2-dichlorobenzene	ND	1.0
1,4-dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	83

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103746-3
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 615.002
LOCATION: DIGNITY HOUSING WEST
SAMPLE ID: MW-3

DATE RECEIVED: 05/08/91
DATE ANALYZED: 05/09/91
DATE REPORTED: 05/10/91

EPA 8020: Volatile Aromatic Hydrocarbons in Water

COMPOUND	RESULT ug/L	REPORTING LIMIT ug/L
Benzene	ND	1.0
Toluene	ND	1.0
Ethyl Benzene	ND	1.0
Total Xylenes	ND	1.0
Chlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	94

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103746
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 615.002
LOCATION: DIGNITY HOUSING WEST

DATE RECEIVED: 05/08/91
DATE EXTRACTED: 05/08/91
DATE ANALYZED: 05/09/91
DATE REPORTED: 05/10/91

Extractable Petroleum Hydrocarbons in Aqueous Solutions
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT* (ug/L)
103746-1	MW-1	ND	ND	50
103746-2	MW-2	ND	ND	50
103746-3	MW-3	ND	ND	50

ND = Not detected at or above reporting limit.

*Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	4
RECOVERY, %	96

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103746
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 615.002
LOCATION: DIGNITY HOUSING WEST

DATE RECEIVED: 05/08/91
DATE ANALYZED: 05/09/91
DATE REPORTED: 05/10/91

Total Volatile Hydrocarbons as Gasoline in Aqueous Solutions
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	REPORTING LIMIT (ug/L)
103746-1	MW-1	ND	50
103746-2	MW-2	ND	50
103746-3	MW-3	ND	50

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	101

Subsurface Consultants

Log # 103746

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: Dignity Housing West

SCI Job Number: 615.002

Project Contact at SCI: John Bosche

Sampled By: Charles Pearson

Analytical Laboratory: Curtis & Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
1 W-1	W	3V, 1G, 1P	5/8/91		TEH 8010/8020 TVH [redacted]	5030/8015/8020
2 W-2	↓	↓	↓		↓	
3 W-3						

* * * * * *

Released by: Charles Pearson Received by: _____ Date: 5-8-91

Released by: _____ Received by: _____ Date: _____

Received by Laboratory: Nancy Wan Date: 5/9/91

Released by Laboratory: _____ Date: _____

Released by: _____ Date: _____

[1] Sample Type: W = Water, S = Soil, O = Other (specify)
[2] Container Type: V = VOA, P = Plastic, G = Glass, T = Brass Tube, O = Other (specify)

NOTES TO LABORATORY:
- Notify SCI if there are any anomalous peaks on GC or other scans
- Questions/clarifications - Contact SCI at (415) 268-0461

APPENDIX D

Guideline Health and Safety Plan

GUIDELINE HEALTH AND SAFETY PLAN
CONTAMINATED SOIL REMEDIATION
DIGNITY HOUSING WEST
15TH AND CASTRO STREETS
OAKLAND, CALIFORNIA
SCI 615.002

Prepared for:

Dignity Housing West
c/o Mr. Willie Pettus
Pyatok Associates
339 15th Street, Suite 212
Oakland, California 94612

By:

Subsurface Consultants, Inc.
171 12th Street, Suite 201
Oakland, California 94607
(415) 268-0461

May 15, 1991

I INTRODUCTION

This Guideline Health and Safety Plan has been prepared to outline minimum health and safety standards which should be implemented during site remediation activities. This plan outlines a personnel and work site safety program to minimize the risks of endangering personnel and/or property. This plan should be followed by all personnel and subcontractors during the project.

Site remediation activities will involve (1) excavating, stockpiling, possibly aerating and transporting soil contaminated with petroleum hydrocarbons, (2) backfilling the excavations.

II HEALTH AND SAFETY CONSIDERATIONS

A. Health and Safety Officer

SCI will designate a Health and Safety Officer who will be responsible for planning, implementing and auditing the health and safety program for the project.

B. Hazardous Substance Description

Total petroleum hydrocarbons have been detected in the soil at the site in concentrations ranging up to 1470 ppm.

C. Chemical Distribution

Soil contamination greater than 100 ppm appears to extend to depths of 20 feet or greater.

D. Chemical Hazards - Petroleum Hydrocarbons

Potential chemical hazards include skin and eye contact and inhalation or exposure to potentially toxic concentrations of chemical vapors. The identified toxic compounds that exist at the site are listed below with descriptions of specific effects of each. The list includes the main toxic constituents of light petroleum hydrocarbons (benzene, toluene, xylene and ethylbenzene).

1. **Benzene**

   a. **Characteristics:**
   Clear, colorless, highly flammable liquid with characteristic odor

   b. **High exposure levels may cause:**

   Acute restlessness, convulsions, depression, respiratory failure, suspected carcinogen

   c. **Permissible exposure level in air (PEL) for a time weighted average (TWA) over an eight hour period:**

   10 ppm

2. **Toluene**

   a. **Characteristics:**

   Refractive, flammable liquid with benzene-like odor

   b. **High exposure levels may cause:**

   Headache, nausea, eye irritation, mild macrocytic anemia, but not leukopenia (less toxic than benzene)

   c. **PEL for an 8-hour TWA:**

   200 ppm

3. **Xylene**

   a. **Characteristics:**

   Clear, mobile, flammable liquid

   b. **High exposure levels may cause:**

   Severe eye irritation, skin irritation, narcosis

   c. **PEL for an 8-hour TWA:**

   100 ppm

4. **Ethylbenzene**

a. **Characteristics:**

Colorless liquid, aromatic odor, highly flammable

b. **High exposure levels may cause:**

Skin, nose and eye irritation, dizziness, ataxia, loss of consciousness and respiratory failure

c. **PEL for an 8-hour TWA:**

100 ppm

E. Physical Hazards

Other on-site hazards may include physical injuries due to the proximity of workers to engine-driven heavy equipment and tools. Heavy equipment used during remediation will likely include a backhoe and/or excavator. Only trained personnel will operate machines, tools, and equipment, all of which will be kept clean and in good repair. Safety apparel required around equipment will include a hard hat.

The perimeter of all excavations will be sloped wherever possible to create stable temporary cut slopes. All work will be performed in accordance with OSHA guidelines.

III WORK PLAN INSTRUCTIONS

A. Level of Protection

Regular surveys of the site and knowledge of the anticipated hazards will determine the level of protection and the safety procedures to be employed. The workers coming into contact with the excavated materials will wear rubber boots, disposable latex gloves and a hard hat.

The level of protection for personnel working in the area will be upgraded if organic vapor levels exceed 0.5 ppm above background levels continuously for more than 5 minutes. In this event, personnel protective equipment will include double cartridge respirators for organic vapors, Tyvek coveralls, gloves, and hard hat with safety shield or safety glasses.

B. Combustible Gas and Organic Vapor Monitoring

SCI will monitor ambient levels of combustible gas vapors using a Gastech Hydrocarbon Supersurveyor, and a portable Photo-Ionization Detector (PID). The Health and Safety Officer will be notified if combustible gas vapor levels exceed ambient concentrations in the samples. Excavation will cease, equipment will be shut down, and personnel will be withdrawn from the area if either (1) the organic vapor concentration in the operators' breathing zone exceeds 200 ppm or (2) the combustible gas vapor concentration two feet above the excavation exceeds 2000 ppm or 25 percent of the lower explosive limit. The Health and Safety Officer will determine when personnel may return to the work area.

In the event low levels of organic vapors are detected,

personnel will wear appropriate respirators (using NIOSH approved combination cartridges for organic vapors and dusts).

C. **Site Entry Procedures**

The site will be fenced around all work areas. The entry gate will be locked at the end of each work day. All personnel entering the work zone will be qualified field personnel wearing the proper level of protection. Eating, drinking, smoking and any other practices which increase the probability of combustion or hand-to-mouth transfer will be prohibited in the work zone. A first aid kit and a 20-pound ABC fire extinguisher and potable water will be available at the site.

D. **Decontamination Procedures and Disposal**

All disposable protective clothing will be put into plastic bags and disposed of in a garbage receptacle. In the event of a medical emergency, the injured party will be taken through decontamination procedures, if possible. However, the procedures will be omitted when it may aggravate or cause more harm to the injured party. A member of the work team will accompany the injured party to the medical facility to advise on matters concerning chemical exposures.

IV EMERGENCY MEDICAL CARE

In the event of an injury or suspected chemical exposure, the first responsibility of the Health and Safety Officer will be to prevent further injury. This objective will normally require an immediate end to work until the situation is rectified. The Health and Safety Officer may order an evacuation of the work party.

The Health and Safety Officer's primary responsibility in the event of an accident will be evacuation, first aid, and decontamination of injured team members. The Health and Safety Officer will determine safe evacuation areas and begin first aid. Members of the work party requiring medical treatment will be taken to the Merritt Hospital, Hawthorn Avenue and Webster Street, Oakland. The emergency route to the hospital is shown on the attached Plate.

V EMERGENCY PROCEDURES

A. Response to Emergency

In case of an injury, the Health and Safety Officer will use the appropriate first aid and contact off-site medical help, if appropriate. The Health and Safety Officer/Project Manager will be notified. The telephone number for the Health and Safety Officer is (415) 268-0461.

B. Emergency Contacts

Ambulance, Fire, Police: **911**

Hospital - Emergency Service
Merritt Hospital
Hawthorne Avenue and Webster Street
Oakland, California
(415) 420-6116

Chemical Spills: National Response Center (24 hours)
1 (800) 424-8802

Chemtrec: Chemical Releases (24 hours)
1 (800) 424-9300

Environmental Protection Agency
Emergency Response Section:
1 (415) 974-7511

Poison Control Center (24 hours)
1 (415) 476-6600

Cal-OSHA District Office:
Occupational Injuries
1 (415) 557-1677

Regional Water Quality Control Board:
(415) 464-1255

C. **Acute Exposure Symptoms and First Aid**

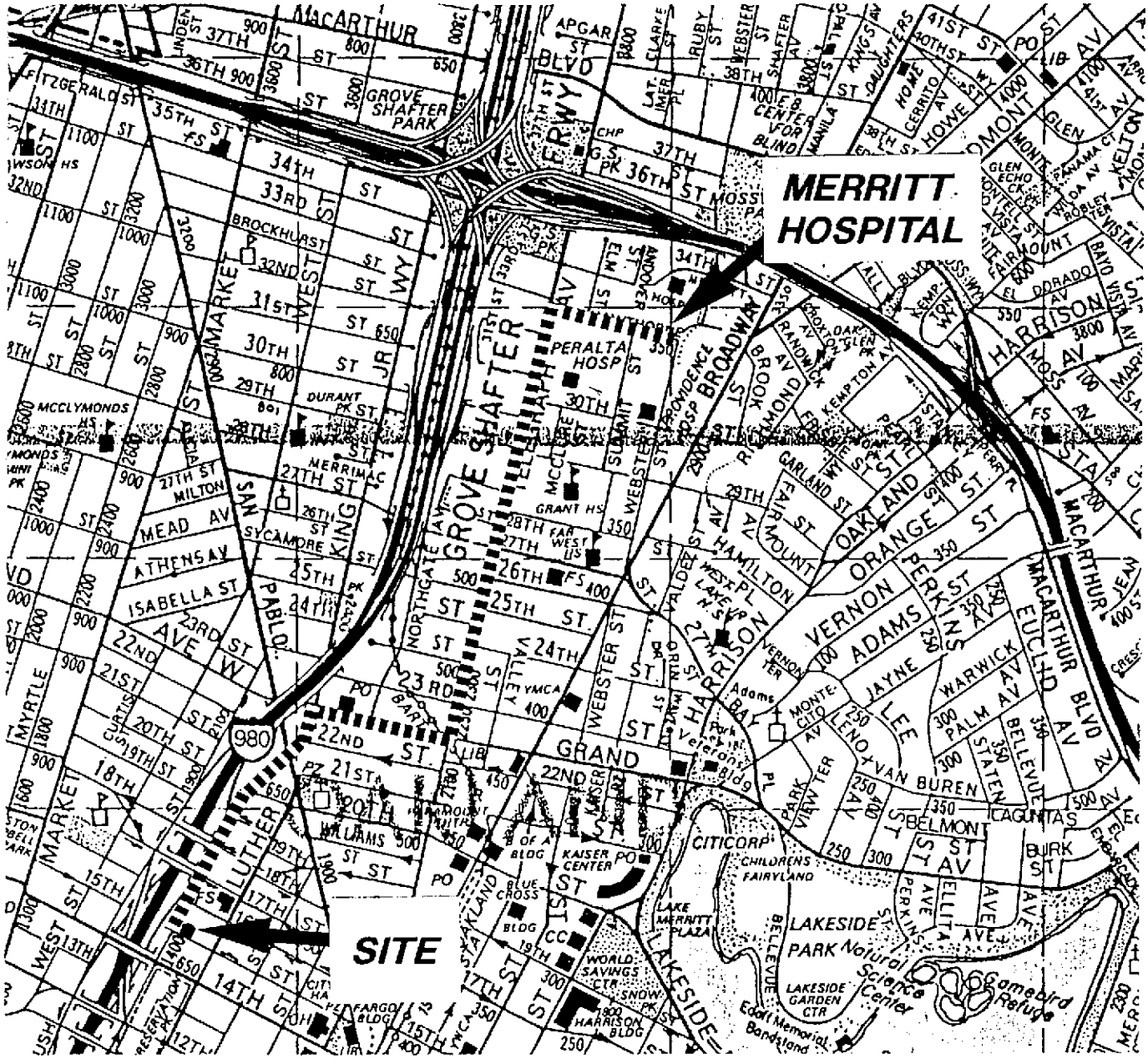
Exposure Route	Symptoms	First Aid
Skin	Dermatitis	Wash immediately with soap and water, contact ambulance if evacuation is necessary
Eye	Irritated Eyes	Flush eyes with water, contact ambulance
Inhalation	Vertigo, tremor	Move person to fresh air, cover source of chemicals
Ingestion	Nausea, vomiting	Call Poison Control Center

D. **Contingency Plan**

The following procedures will be used in case of an unpredictable event:

Fire:	Use fire extinguisher if localized and call the fire department if uncontrolled
Chemical Exposure:	Follow first aid treatment specified previously
Physical Injury:	Provide first aid treatment and contact ambulance for evacuation, if appropriate

JVB:RWR:sld



HOSPITAL ROUTE

Subsurface Consultants

DIGNITY HOUSING WEST - PHASE II

JOB NUMBER	DATE	APPROVED
615.002	5/20/91	

PLATE D-1