aqua science engineers inc.

8.5

December 6, 2000

REPORT
of
SENSITIVE RECEPTORS SURVEY
and
AREA WELL SURVEY
for
2221 Union Street
Oakland, CA

Submitted by:
AQUA SCIENCE ENGINEERS, INC.
208 West El Pintado
Danville, CA 94526
(925) 820-9391

1.0 INTRODUCTION

This report presents Aqua Science Engineers Inc. (ASE)'s sensitive receptor survey and area well survey at 2221 Union Street Oakland California *(Figure 1)*. This survey was requested by the Alameda County Health Care Services Agency (ACHSCA).

2.0 SCOPE OF WORK

ASE's scope of work for this project was as follows:

1) Review all available records from the California Department of Water Resources (DWR) and the Alameda County Public Works Agency (ACPWA) to determine the location, use and construction of any wells located within a 1,000-foot radius of the site.

2) Contact the City of Oakland and public utility companies to locate any underground utilities within the 1,000-foot radius that could possibly act as conduits for groundwater contamination.

3) Prepare maps and tables showing the locations and construction of wells in the site vicinity.

4) Prepare maps showing the location of underground utilities in the site vicinity.

3.0 RECORD SEARCH

3.1 DWR and ACPWA

All available records at the DWR office in Sacramento and the ACPWA were reviewed for township, range, and sections within the vicinity of the site. A total of twenty-five (25) Water Well Drilling Reports were on file that are located within the 1,000-foot radius of the site. The locations of all the wells within the 1,000-foot radius are presented on *Figure 2* and detailed in *Table One*. The DWR reports for the wells located within the 1,000-foot radius are presented in *Appendix A*.

4.0 UNDERGROUND UTILITY SEARCH

4.1 City of Oakland, Public Works Department

ASE reviewed the storm and sewer sheets at the City of Oakland Public Works Department offices. The locations of the storm and sewer lines within the 1,000-foot radius of the site and are presented as *Figure 3*. The depth of these conduits ranges between approximately 5-10-feet below ground surface (bgs) approximately

4.2 Pacific Gas and Electric Company (PG&E)

ASE reviewed the natural gas and underground electric conduit maps at PG&E. The locations of the natural gas and electric conduits within the 1,000-foot radius of the site and are presented as *Figures 4 and 5* respectively.

4.3 East Bay Municipal Utility District (EBMUD)

ASE reviewed the water conduit locations at EBMUD. The locations of the water conduits within the 1,000-foot radius of the site are located on *Figure 6*.

5.0 SUMMARY OF WELLS SURROUNDING SITE

A total of twenty-five (25) wells are located to be within a 1,000-foot radius of the site. Fourteen (14) of the located wells are used for monitoring purposes. Nine (9) of the wells are peizometers and one (1) well is used for industrial purposes. Three (3) other wells were reported as being destroyed. The location of all the wells identified are shown on *Figure 2*, and known details of the wells are tabulated in *Table One*. It should be noted that there were no municipal or domestic drinking water wells located within the 1,000-foot radius of the site.

6.0 GROUNDWATER ELEVATION AND GRADIENT

The annual fluctuation of groundwater at the site is between 3.06 and 8.81-feet bgs, and the average depth to groundwater at the site is 5.2-feet bgs. The depth to water and groundwater elevation data are presented in *Table Two*. The groundwater flow at the site has fluctuated from the west to northeast with a predominant flow to the northeast at an average gradient of 0.024 feet/foot. A groundwater elevation (potentiometric surface) map and rose diagram are presented as *Figure 7*.

7.0 SUMMARY OF POTENTIAL IMPACT TO RECEPTORS WITHIN THE SITE VICINITY

There are no domestic/municipal drinking water wells or bodies of surface water (potential sensitive receptors) within the site vicinity.

The depth of the storm and sewer lines ranges between 5-10-feet bgs approximately. The depth of the electric and gas lines ranges between 3-5-feet bgs. The depth of the water lines ranges between 3-7-feet bgs.

The exact location of the site's subsurface utilities are unknown because the site is almost completely surfaced with reinforced concrete making it difficult to locate these on-site underground utilities. Based on the average depth to water and gradient at the site, and the depth range of the individual utility conduits, ASE believes that it is possible that some downgradient conduits lie below the water table.

8.0 REPORT LIMITATIONS

This sensitive receptors survey and area well survey presents all data available to ASE at the time this survey was completed. It is possible that other wells may exist within the study area which could not be located and that some records may exist that were not made available to ASE. This report was completed to meet the requirements outlined in the scope of work. It does not appear to be possible to obtain additional details of the well construction of the wells presented in this report without physically opening the individual wells and conducting tests on the wells.

Aqua Science Engineers appreciates the opportunity to assist Mr. Kendall with their environmental needs. Should you have any questions or comments, please feel free to call us at (925) 820-9391.

Respectfully submitted,

AQUA SCIENCE ENGINEERS, INC.

Ian Reed
Associate Geologist

Robert E. Kitay, R.G., R.E.A.
Senior Geologist

Attachments: Figures 1 to 7
Appendix A

TABLE ONE
AREA WELL SURVEY
1,000-FOOT RADIUS
2221 UNION STREET
OAKLAND, CA

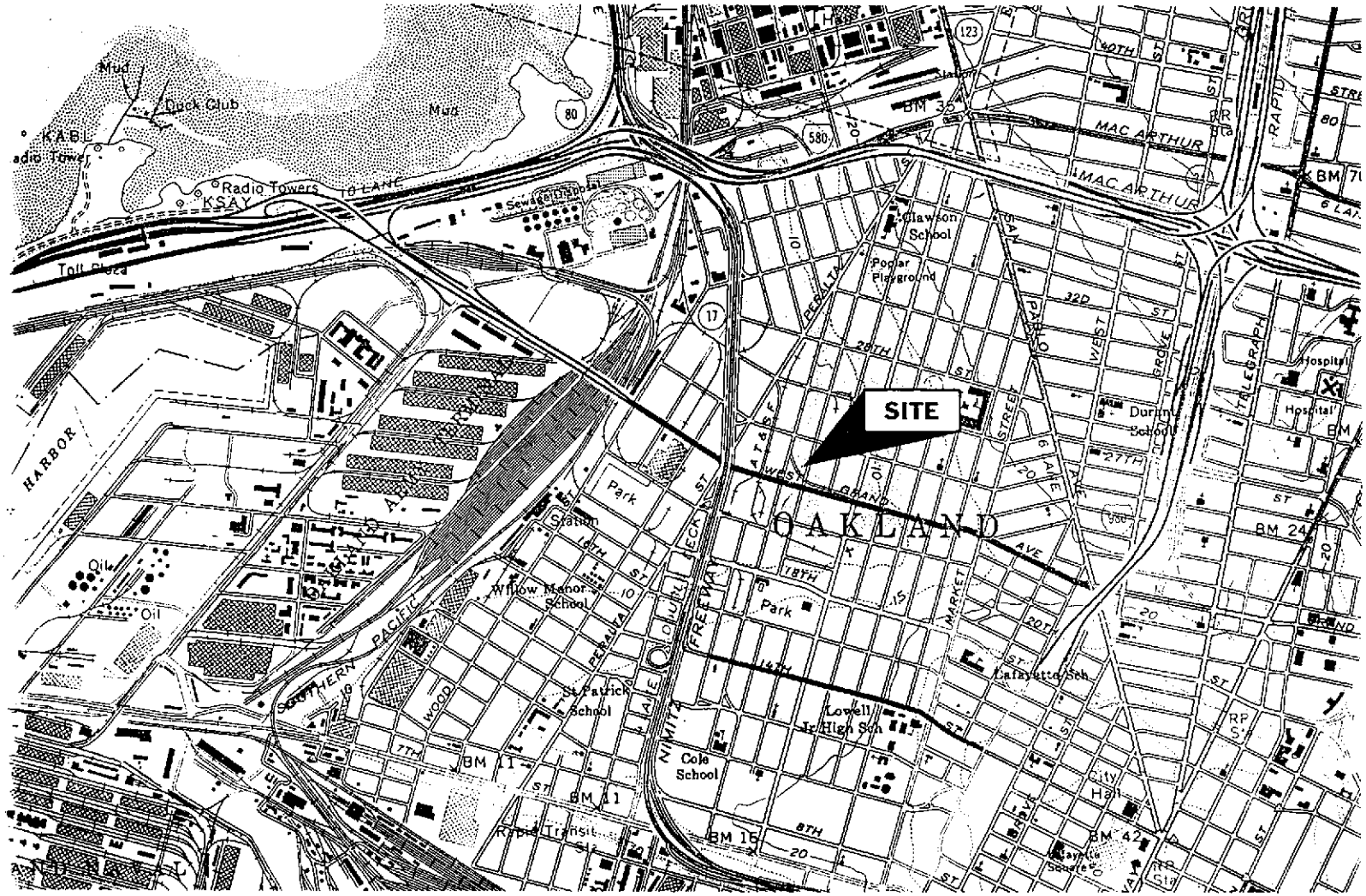
ADDRESS	WELL USE	OWNER	DATE INSTALLED	DEPTH OF WELL (FEET)	FIGURE 2 REFERENCE NUMBER
1218 24TH Street	Monitoring	Tim Williams	03/01/89	30	1
1218 24th Street	Monitoring	Northwestern Venetian Blind	03/01/89	25	1
1218 24th Street	Monitoring	Northwestern Venetian Blind	10/01/89	26	1
1218 24th Street	Monitoring	Northwestern Venetian Blind	10/01/89	26	1
2210 Union Street	Monitoring	Alex Guidotti	09/01/90	Unknown	2
2311 Adeline Street	Monitoring	Ned Clyde Construction	01/01/89	17	3
2311 Adeline Street	Monitoring	Ned Clyde Construction	01/01/89	17	3
2311 Adeline Street	Piezometer	Ned Clyde Construction	03/01/89	Unknown	3
2311 Adeline Street	Piezometer	Ned Clyde Construction	03/01/89	Unknown	3
2311 Adeline Street	Piezometer	Ned Clyde Construction	03/01/89	Unknown	3
2311 Adeline Street	Piezometer	Ned Clyde Construction	04/01/89	Unknown	3
2311 Adeline Street	Piezometer	Ned Clyde Construction	05/01/89	Unknown	3
2311 Adeline Street	Piezometer	Ned Clyde Construction	05/01/89	Unknown	3
2311 Adeline Street	Piezometer	Ned Clyde Construction	05/01/89	Unknown	3
2311 Adeline Street	Industrial	Ned Clyde Construction	05/01/89	Unknown	3
2311 Adeline Street	Monitoring	Ned Clyde Construction	01/01/89	17	3
2311 Magnolia Street	Destroyed	Aldo Guidotti	11/01/92	15	4
2311 Magnolia Street	Destroyed	Aldo Guidotti	11/01/92	15	4
2311 Magnolia Street	Destroyed	Aldo Guidotti	11/01/92	15	4
2433 Poplar Street	Monitoring	Findley Adhesive	03/01/95	10	5
2433 Poplar Street	Monitoring	Findley Adhesive	03/01/95	8	5
2452 Magnolia Street	Monitoring	Bonta Collins	09/01/89	21	6
2452 Magnolia Street	Monitoring	Bonta Collins	02/01/89	20	6
2730 Peralta Street	Monitoring	Custom Alloy	10/01/90	Unknown	7
2730 Peralta Street	Monitoring	Custom Alloy	10/01/90	Unknown	7

TABLE TWO

Groundwater Elevation Data

2221 Union Street, Oakland, California

WELL ID	DATE OF MEASUREMENT	TOP OF CASING ELEVATION IN FEET (MSL)	DEPTH TO WATER (feet)	GROUNDWATER ELEVATION IN FEET (MSL)
MW-1	9/2/99	15.00	8.81	6.19
	11/2/99		5.94	9.06
	11/4/99		7.15	7.85
	11/9/99		4.72	10.28
	2/7/00		3.55	11.45
	5/16/00		3.88	11.12
	8/8/00		**5.79**	**9.21**
MW-2	9/2/99	15.29	6.29	9.00
	11/2/99	15.24	6.01	9.23
	11/4/99		5.94	9.30
	11/9/99		5.28	9.96
	2/7/00		4.12	11.12
	5/16/00		4.24	11.00
	8/8/00		**5.68**	**9.56**
MW-3	9/2/99	15.15	6.26	8.89
	11/2/99	15.17	5.74	9.43
	11/4/99		6.09	9.08
	11/9/99		5.64	9.53
	2/7/00		3.06	12.11
	5/16/00		3.80	11.37
	8/8/00		**3.54**	**11.63**
MW-4	11/2/99	15.21	5.86	9.35
	11/4/99		5.85	9.36
	11/9/99		4.56	10.65
	2/7/00		3.66	11.55
	5/16/00		3.89	11.32
	8/8/00		**5.77**	**9.44**

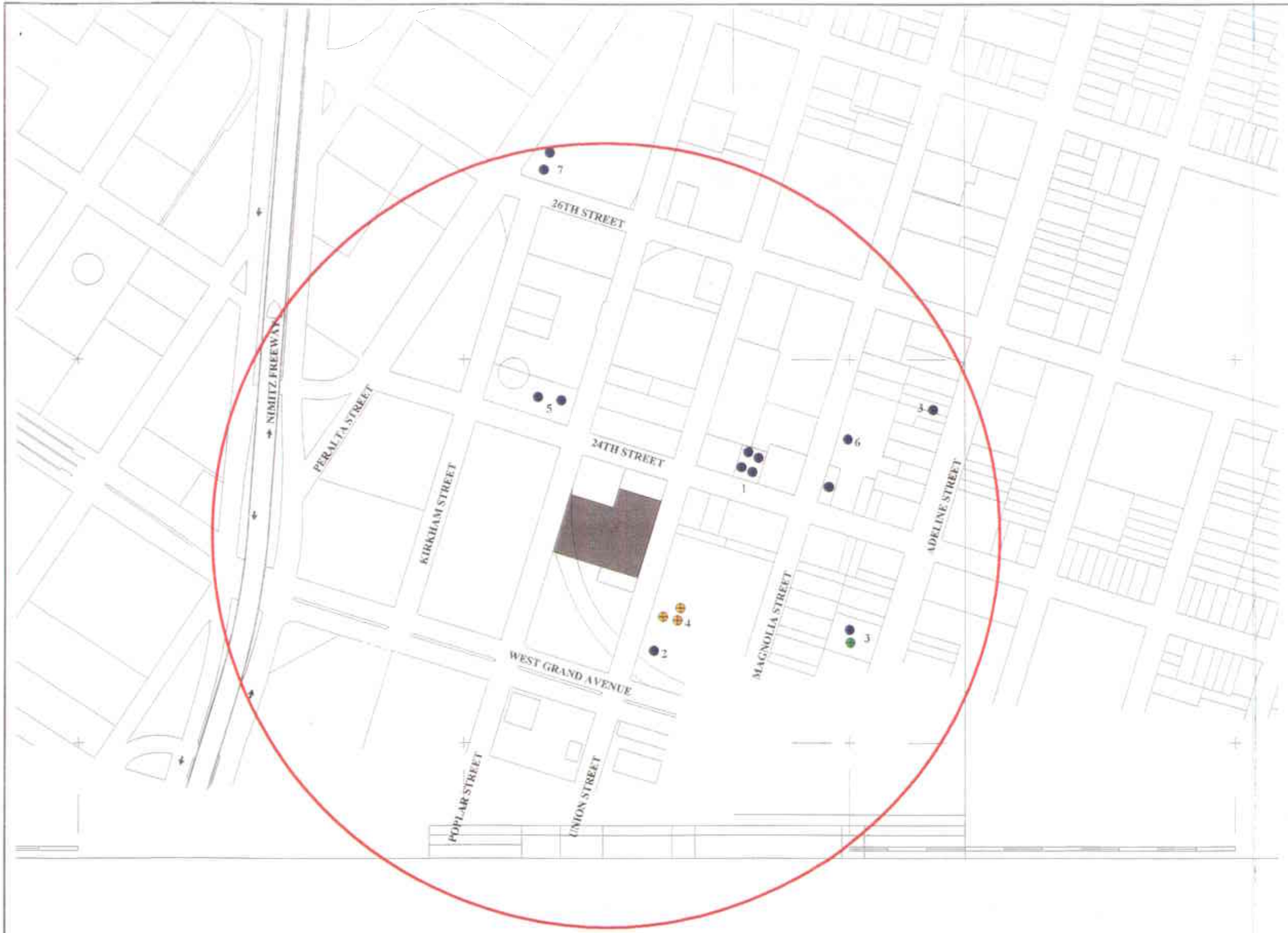


NORTH

LOCATION MAP

2221 Union Street
Oakland, California

AQUA SCIENCE ENGINEERS, INC. | Figure 1



N

WELLS

- Industrial
- Destroyed
- Monitoring
- Peizometer

Locations are Approximate

- Site of Concern
- 1,000 Foot Radius

SCALE

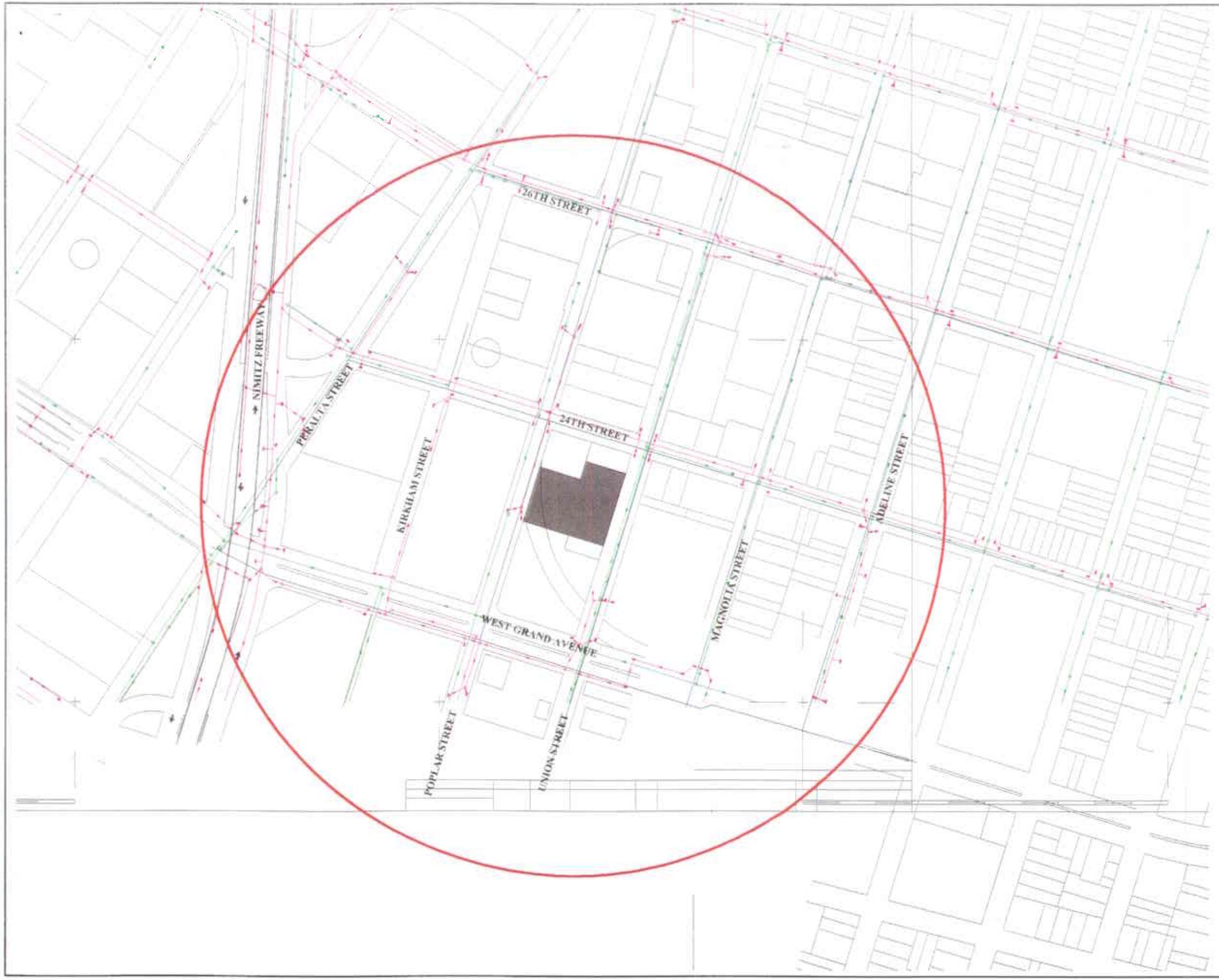
0 100 200 300 400 Feet

AREA WELL SURVEY
1,000 FOOT RADIUS

2221 UNION STREET
OAKLAND, CA

aqua science engineers inc.

FIGURE 2



N

Sewer Conduits

Storm Conduits

Locations are Approximate

Site of Concern

1,000 Foot Radius

SCALE

0 100 200 300 400 Feet

LOCATION OF SEWER AND STORM CONDUITS

2221 UNION STREET OAKLAND, CA

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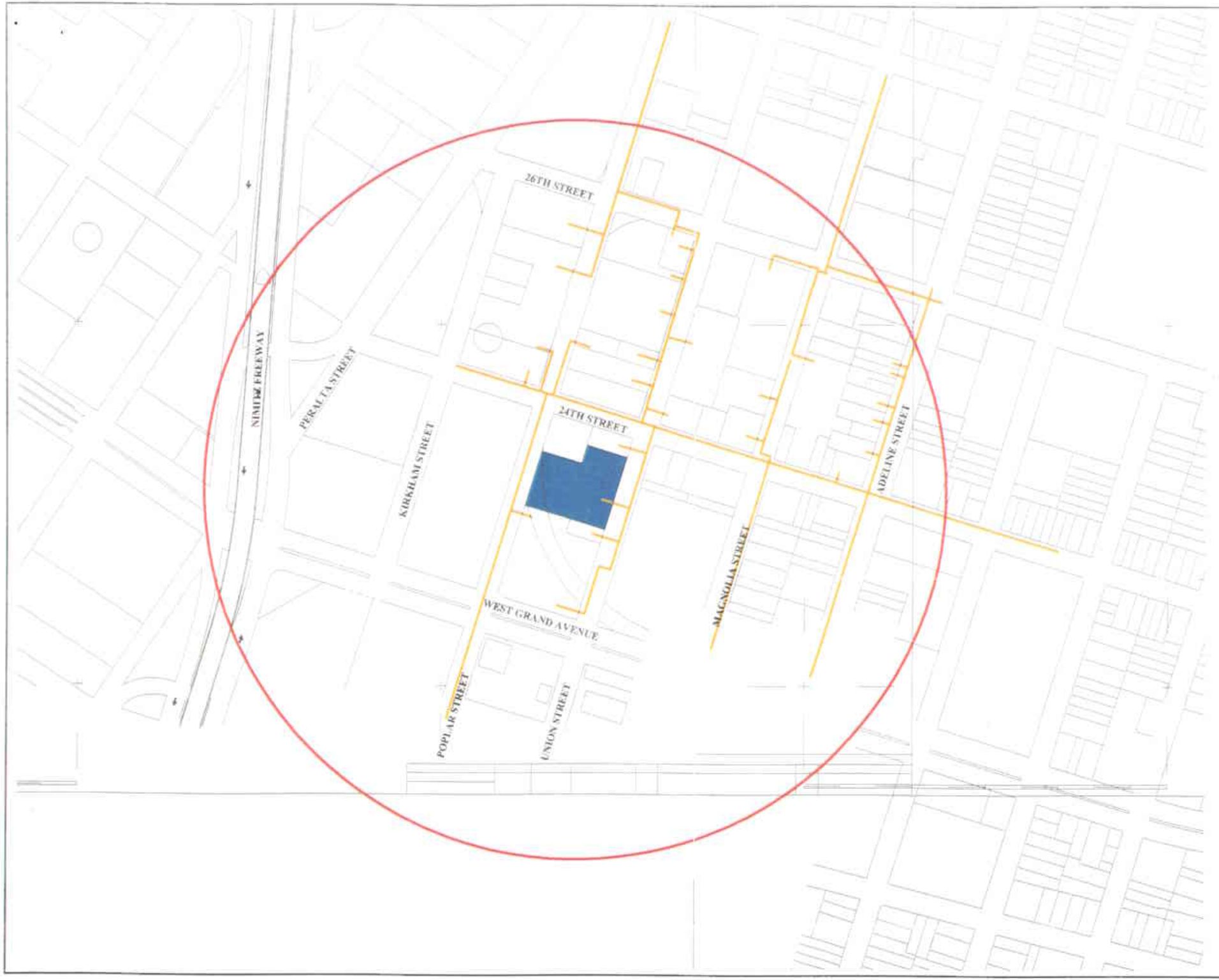
FIGURE 3



N

Gas Conduits

Locations are Approximate

Site of Concern

1,000 Foot Radius

SCALE

0 100 200 300 400 Feet

LOCATION OF GAS CONDUITS

2221 UNION STREET OAKLAND, CA

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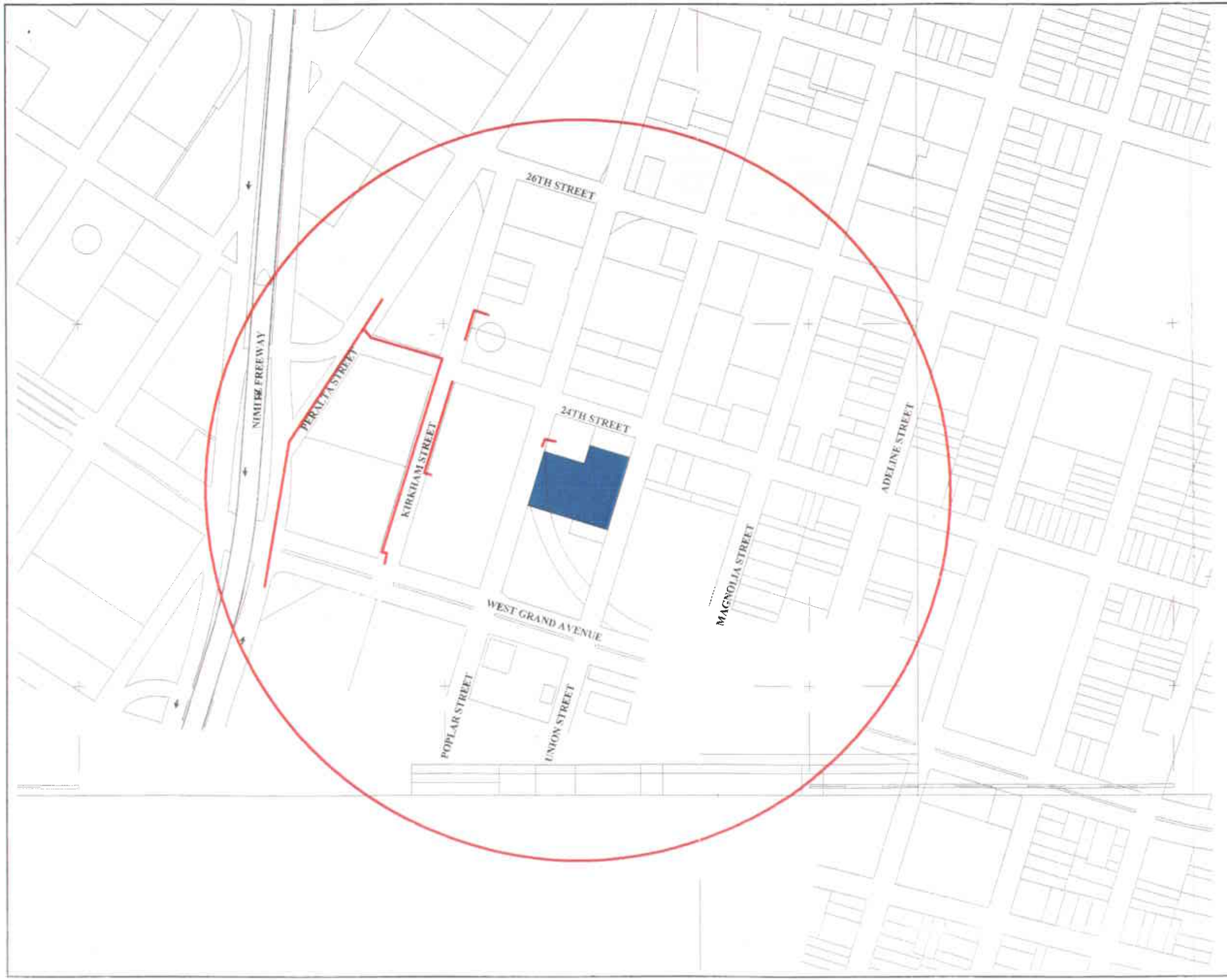
FIGURE 4



N

Electric Conduits

Locations are Approximate

Site of Concern

1,000 Foot Radius

SCALE

0 100 200 300 400 Feet

LOCATION OF ELECTRIC CONDUITS

2221 UNION STREET OAKLAND, CA

aqua science engineers inc.

FIGURE 5

N

Water Conduits

Locations are Approximate

Site of Concern

1,000 Foot Radius

SCALE

0 100 200 300 400 Feet

LOCATION OF WATER CONDUITS

2221 UNION STREET OAKLAND, CA

aqua science engineers inc.

FIGURE 6

NEIGHBORING PROPERTY

FENCED-IN,
DIRT SURFACE
YARD

FENCE

OIL / WATER SEPARATOR

MW-1
(11.12')

OUTDOOR DRAIN

MW-2
(11.00')

MW-4
(11.32')

BUILDING

SIDEWALK

UNION STREET

SIDEWALK

FENCE

11.1'

11.2'

11.3'

MEZZANINE

BUILDING

SIDEWALK

MW-3
(11.37')

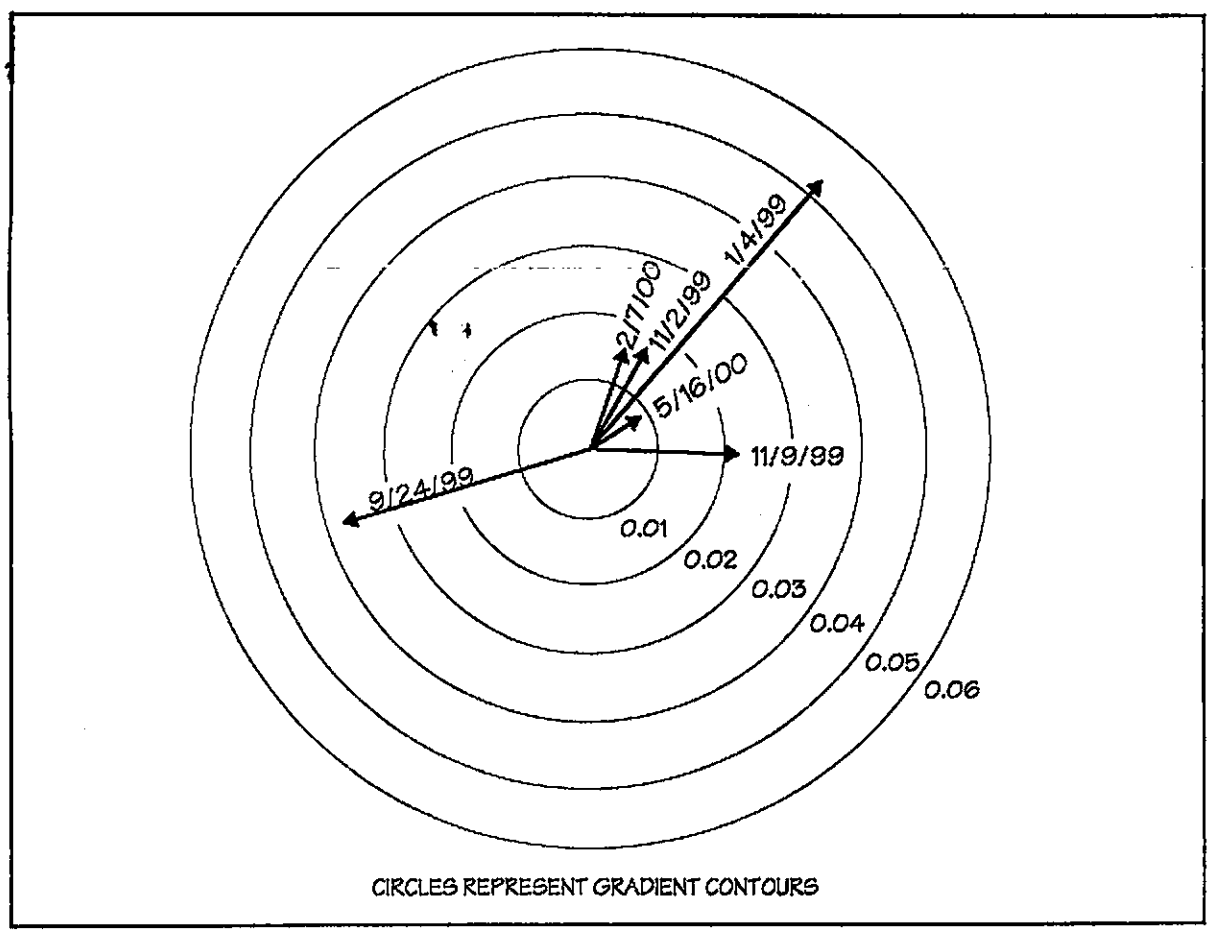
PARTS CLEANING BINS

NEIGHBORING PROPERTY

0 30 60 90

SCALE IN FEET

NORTH



CIRCLES REPRESENT GRADIENT CONTOURS

LEGEND

MW-4
(11.32')
ASE Monitoring Well with groundwater elevation in feet based on site datum referenced to regional topographic map

11.3'
Potentiometric Surface Elevation of Groundwater

Groundwater Flow Direction

POTENTIOMETRIC SURFACE MAP - MAY 16, 2000

VACANT PROPERTY
2221 UNION STREET
OAKLAND, CALIFORNIA

AQUA SCIENCE ENGINEERS, INC. | FIGURE 7

APPENDIX A

DWR Report for Area Well Survey
Radius of Site

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

01-421N-Q 1S/4W27H1

Oakland City Center
500 12th Street
Suite 100
Oakland, CA 94607-4014
(415) 893-3600

Woodward-Clyde Consultants

1S 4W 27 H
2 Borings
Inv
Add

April 7, 1989

Alameda County Flood Control
And Water Conservation District
5997 Parkside Drive
Pleasanton, California 94566

Attention: Permits Department

Gentlemen:

Subject: Well Construction Report, Permits 89028 and 89133, Location 1S/4W 27H80

This Well Construction Report transmits information required by Groundwater Protection Ordinance, Permits 89028 for the installation of one monitoring well and two soil borings and Permit 89133 for the destruction of the monitoring well.

The well and borings were installed at 2311 Adeline Street (see Figures 1 and 2) on January 27, 1989. No free water was encountered in the soil borings at time of drilling and they were backfilled immediately after drilling with compacted cuttings. The monitoring well was constructed using 2-in. diameter PVC casing, backfilled with clean sand, sealed with 1 foot of bentonite pellets and a 4-foot surface seal of cement/bentonite grout. The monitoring well was abandoned by drilling out the casing and sand pack and grouting with cement/bentonite grout on March 10, 1989. Because the water bearing formation produces water very slowly at this site, the drilled-out monitoring well was virtually dry at time of abandonment and did not require a tremie pipe to backfill. Logs of the monitoring well and borings are attached in Appendix A.

If you have any question concerning the installation or abandonment of these soil borings and monitoring well please call Stan Clarke at 874-3096.

Sincerely,

Woodward-Clyde Consultants

Stanton L. Clarke, P.E.
Project Engineer

01-421N-CONST.
Ø-ABAND.
Inv/AddJ 15/4W 27H1

Woodward-Clyde Consultants

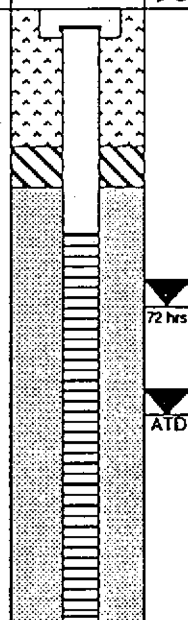
PROJECT NAME NED CLYDE NO. 8910023A

BORING LOCATION	MW - 1	ELEVATION AND DATUM	N/A
DRILLING AGENCY	ENSCO	DRILLER	J.R. Richards
DATE STARTED / DATE FINISHED	January 27 ,1989		
DRILLING EQUIPMENT	Diedrich D - 25 (Skid Rig)	COMPLETION DEPTH	16.5'
SAMPLER	2.5" Modified California Type		
DRILLING METHOD	8" Hollow Stem Augers	DRILL BIT	8" Auger
NO. OF SAMPLES	DIST. N/A	UNDIST. 6	
SIZE AND TYPE OF CASING	2" PVC	WATER LEVEL	FIRST 11' / COMPL. N/A / 72 HRS. 7.94
TYPE OF PERFORATION	0.020" Factory slot	FROM 6 TO 16 ft.	
SIZE AND TYPE OF PACK	#2/12 Lonestar Monterey Sand	FROM 4.9 TO 16.5 ft.	
TYPE OF SEAL NO. 1	Bentonite Pellets	FROM 3.9 TO 4.9 ft.	
TYPE OF SEAL NO. 2	Neat Cement	FROM 0.5 TO 3.9 ft.	
LOGGED BY:	C. Parten	CHECKED BY:	S. Clarke

DEPTH (feet)	DESCRIPTION	Drive Number	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0–4.5	Silty Clay w/ sand (CL) -brown -no sand below 1' -medium stiff -black with gray mottling (below 1') -damp			40 ppm Hnu Reading
5	Clayey Silt (ML) -tan and gray mottling - stiff -damp	1	6, 7, 12	90 ppm Hnu Readings Gas / Hydrocarbon Odor
10	Clayey Silt w/sand (ML) -tan with gray mottling decreasing -stiff -damp	2	7, 11, 14	120ppm Hnu Reading Gas Odor
15	Clayey Sand w/ gravel (SC) in top of sampler -gray -medium dense -saturated -gravel to 1" diameter Clayey Silt (ML) in the bottom of the sampler -tan and gray mottling -medium -damp	3	4, 4, 5	70 ppm Hnu Reading No Odor

Water level: 72 hrs; ATD

Bottom of Boring at 16.5'



Piezometer Legend
- Slottet Well Screen
- Sand Pack
- Bentonite Pellets
- Cement / Bentonite Grout

FIELD LOG OF BORING NO MW - 1 SHEET 1 OF 1

01-4211 Inv Addv 1S/4W 27 A

Woodward-Clyde Consultants

PROJECT NAME NED CLYDE NO. 8910023A

BORING LOCATION	B-1			ELEVATION AND DATUM	N/A
DRILLING AGENCY	ENSCO	DRILLER	J.R. Richards	DATE STARTED / DATE FINISHED	January 27 ,1989
DRILLING EQUIPMENT	Diedrich D - 25 (Skid Rig)			COMPLETION DEPTH 16.5'	SAMPLER 2.5" Modified California Type
DRILLING METHOD	8" Hollow Stem Augers	DRILL BIT	8" Auger	NO. OF SAMPLES DIST. N/A	UNDIST. 6
SIZE AND TYPE OF CASING	N/A			WATER LEVEL FIRST 12	COMPL. N/A 24 HRS. N/A
TYPE OF PERFORATION	N/A	FROM N/A TO N/A Ft.		LOGGED BY: C. Parten	CHECKED BY: S. Clarke
SIZE AND TYPE OF PACK	N/A	FROM N/A TO N/A Ft.			
TYPE OF SEAL NO. 1	N/A	FROM N/A TO N/A Ft.			
NO. 2	N/A	FROM N/A TO N/A Ft.			

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	Water Content	Piezometer Data	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	Silty Clay w/gravel (CL) -brown									
	Silty Clay (CL) -black, gray mottling									
5	Clayey Silt (ML) -gray w/ slight tan mottling -medium -damp				5	1			5 6 9	170 ppm to 140 ppm Hnu Readings Slight Odor
10	Clayey Silt w/sand (ML) -tan w/ gray mottling -medium -damp			ATD	10	2			6 8 10	110 ppm Hnu Reading Gas Odor
15	Gravelly Clayey Sand (SC) -tan and gray -medium dense -saturated -gravel to 1" diameter				15	3			5 8 10	70 ppm Hnu Reading Slight Odor
	Bottom of Boring at 16.5'									
20					20					
25					25					
30					30					
35					35					

FIELD LOG OF BORING NO B-1 SHEET 1 OF 1

01-421Q Inv Add'l 15/4W 27 H

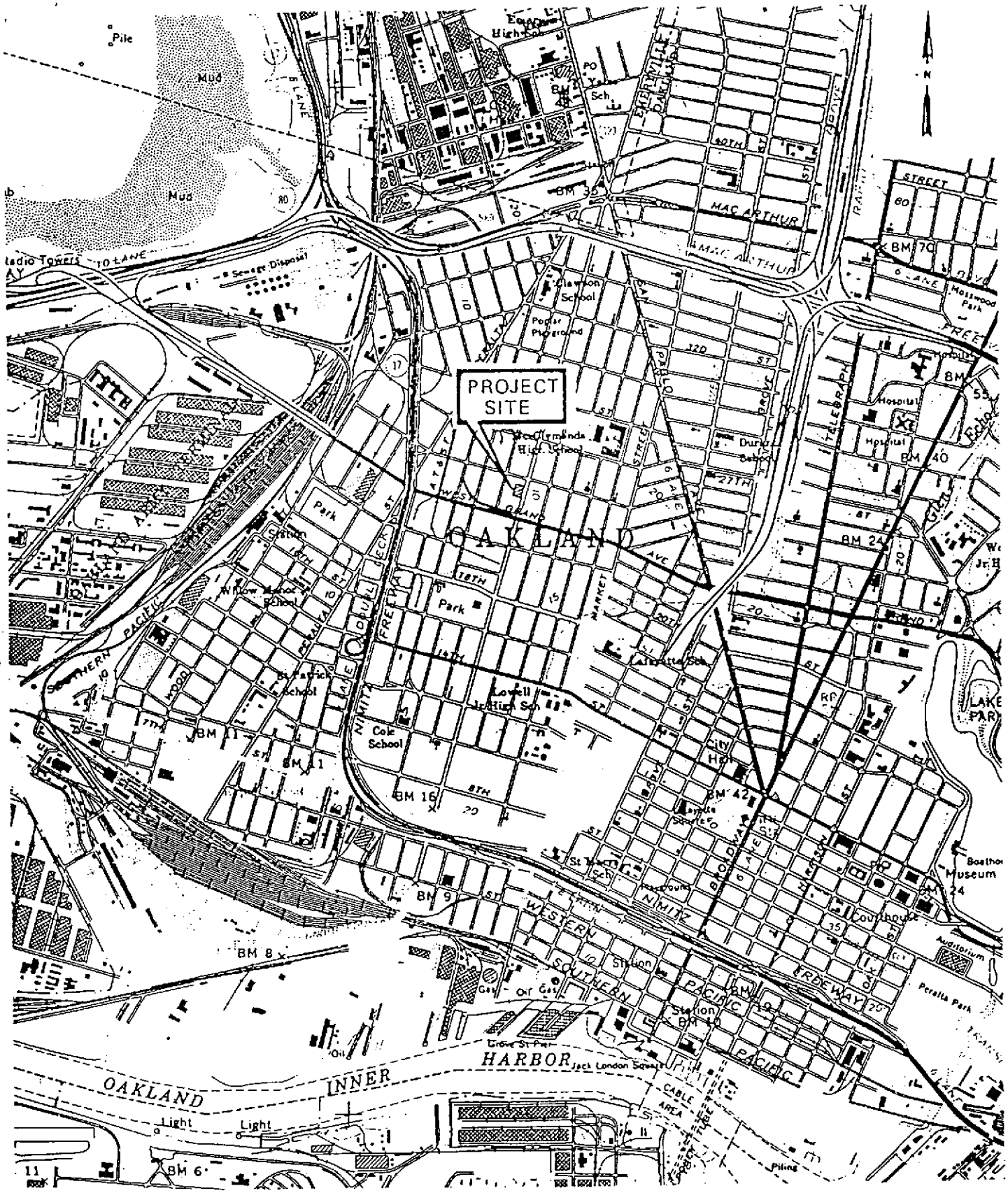
Woodward-Clyde Consultants

PROJECT NAME NED CLYDE NO. 8910023A

BORING LOCATION B-2		ELEVATION AND DATUM N/A	
DRILLING AGENCY ENSCO	DRILLER J.R. Richards	DATE STARTED / DATE FINISHED January 27, 1989	
DRILLING EQUIPMENT Diedrich D-25 (Skid Rig)		COMPLETION DEPTH 16.5'	SAMPLER 2.5" Modified California Type
DRILLING METHOD 8" Hollow Stem Augers	DRILL BIT 8" Auger	NO. OF SAMPLES DIST. N/A	UNDIST. 6
SIZE AND TYPE OF CASING N/A		WATER LEVEL FIRST 9 1/2	COMPL. N/A / 24 HRS. N/A
TYPE OF PERFORATION N/A	FROM N/A TO N/A Ft.	LOGGED BY: C. Parten	CHECKED BY: S. Clarke
SIZE AND TYPE OF PACK N/A	FROM N/A TO N/A Ft.		
TYPE OF SEAL NO. 1 N/A	FROM N/A TO N/A Ft.		
NO. 2 N/A	FROM N/A TO N/A Ft.		

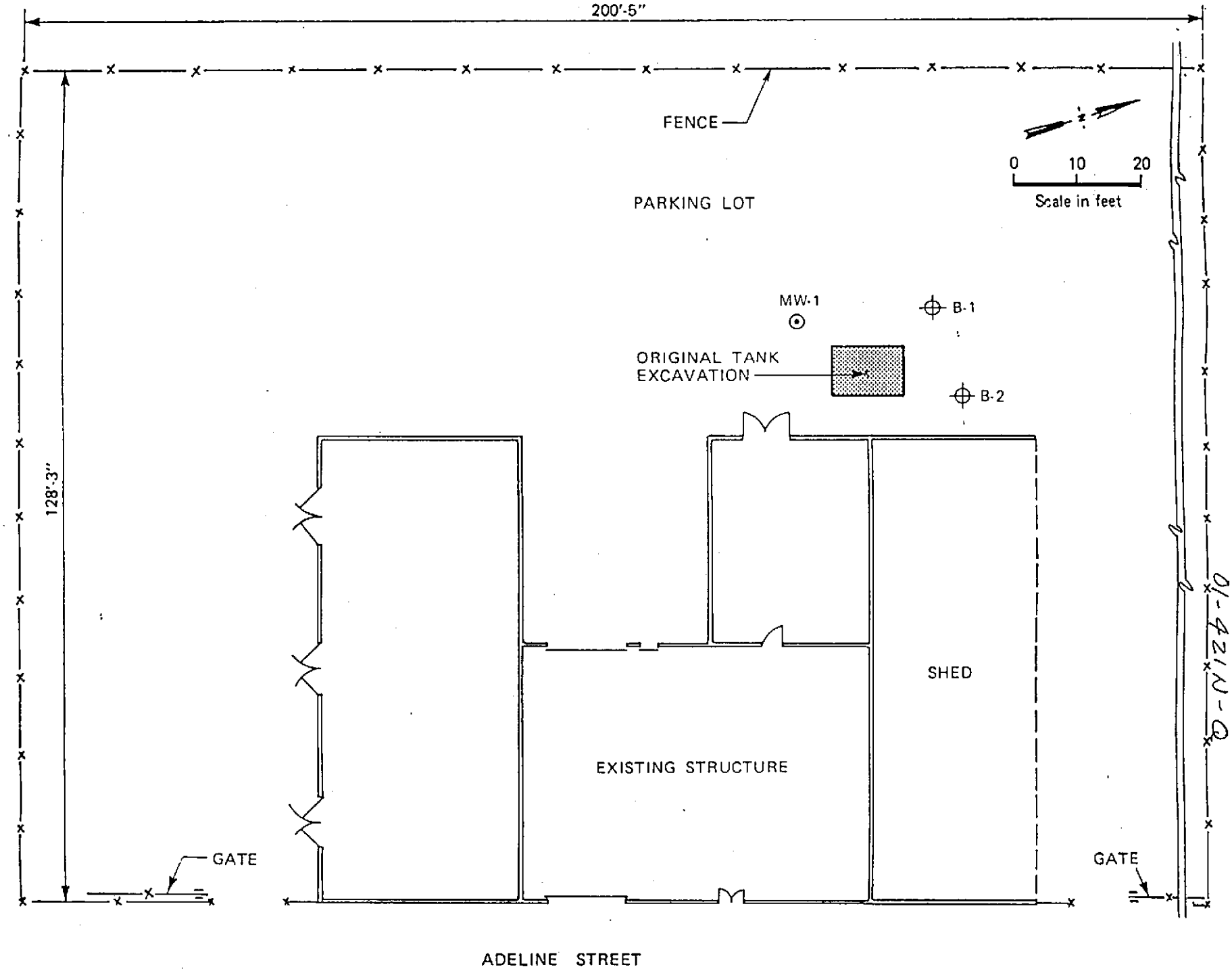
DEPTH (feet)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	Water Content	Piezometer Data	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	Silty Clay w/gravel (CL) -brown -black									
5	Clayey Silt (ML) w/ sand lenses -gray w/ tan mottling -medium -damp					1			5 6 10	250 ppm Hnu Readings Gas Odor
10	Clayey Silt w/sand (ML) -tan w/ gray mottling -medium -moist			ATD		2			4 7 7	175ppm Hnu Reading Gas Odor
15	Clayey Sand w/ gravel (SC) -gray -medium dense -saturated -gravel to 1" diameter					3			6 12 13	160 ppm Hnu Reading Slight Odor
20	Bottom of Boring at 16.5'									
25										
30										
35										

FIELD LOG OF BORING NO B-2 SHEET 1 OF 1



Reference USGS Oakland West, California
1959, Revised 1980

Project No. 8910023A	NED CLYDE CONSTRUCTION	SITE LOCATION MAP	Figure 1
Woodward-Clyde Consultants			



Project No. 8910023A

NED CLYDE CONSTRUCTION

Woodward-Clyde Consultants

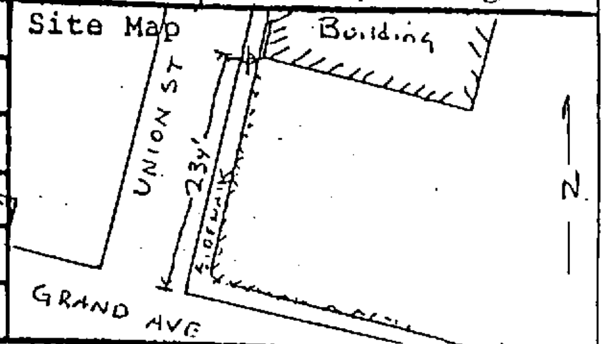
SITE PLAN
2311 ADELINE STREET

Figure 2

01-421N-Q

Client Guidott
Date 9.27.90
Location 2210 Union St, Oakland Ca.
Driller Aqua Science #487000
Method 8" Hollow Stem Auger Mobile Drill B57
Sampler Calif. 2" 140# w/ 30" Fall
Logger B. Halsted
Inspector

Site Map



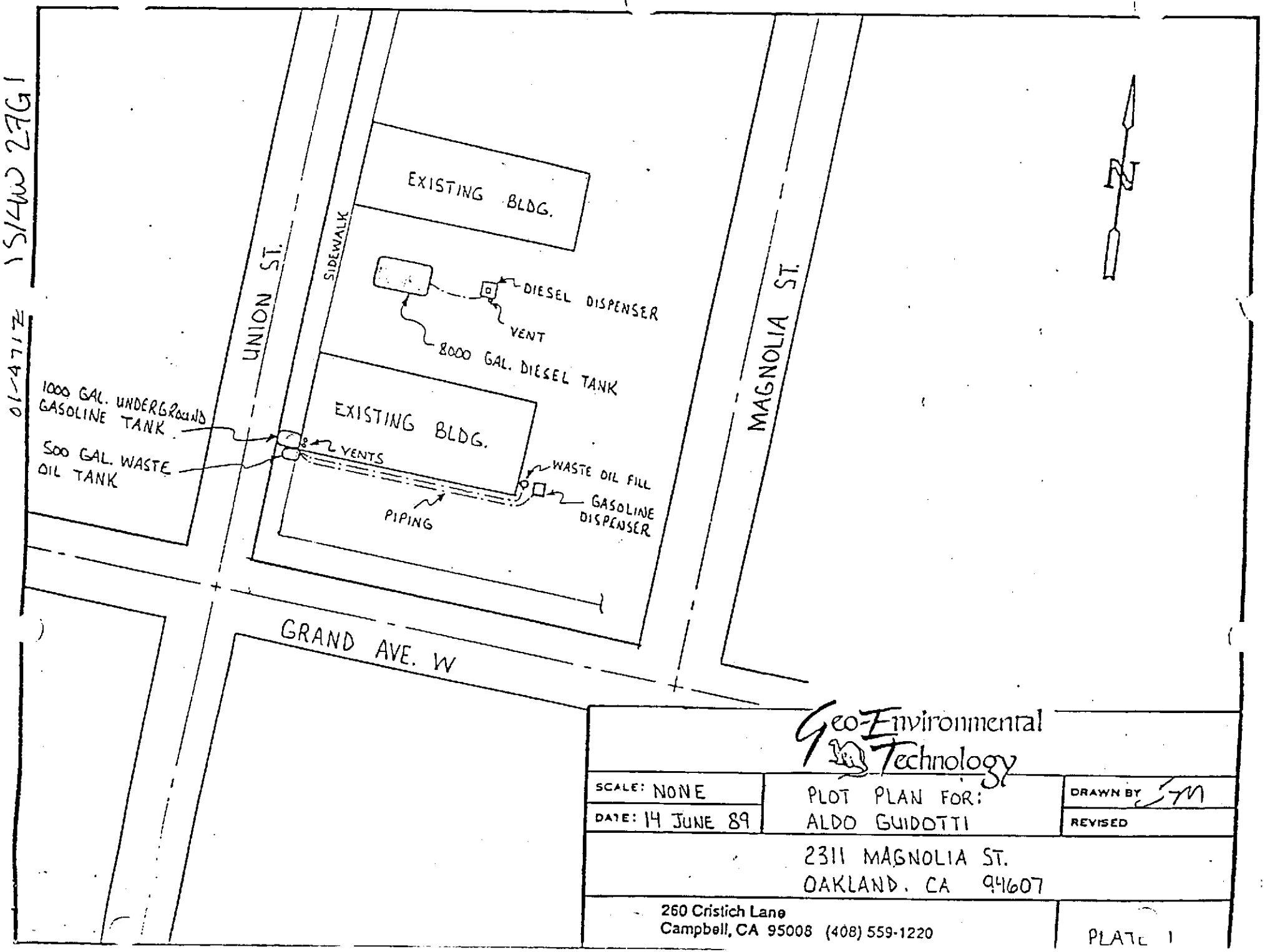
Sample Number	Depth	Blows/ft	Moisture	Depth	USCS	Description of Subsurface Materials
						Concrete
						Backfill; Import soil
				5	OH	BAY MUD NO ODOR
				6.5		WATER LEVEL
SB-1	8½-10		WET	10	OH	BAY MUD No ODOR
SB-2	13½-15		WET	15	OH	
SB-3	19½-21		WET	20	GC	GRAVEL/SAND/MUD
						BOH @ 21'

Blows/ft column note: DUE TO LOW OVERHEAD ELECTRIC LINE, DRILLED W/ MAST DOWN, UNABLE TO DRIVE SAMPLER W/ HAMMER, DROVE SAMPLER HYDRAULICLY

Completion Data Univ. Water Co. Geo Stone 2" E.P. Lock

- Portland Cement Sanitary Seal; 2" PVC Blank Triloc
- 3½–4½ Bentonite
- #3 RMC Lone Star Lapis Lustre Sand Pack
- Triloc 2" .020 Screen PVC 15'
- Slip cap 19½
- 21 Bentonite

Total Depth 19.5'
Water Level 6.5'
Sanitary Seal 3.5' Portland Cement
Permit # 90577
Agency Alameda Co. Flood Control & Water Conservation Dist Zone 7



Geo-Environmental Technology

SCALE: NONE	PLOT PLAN FOR:	DRAWN BY JM
DATE: 14 JUNE 89	ALDO GUIDOTTI	REVISED
	2311 MAGNOLIA ST. OAKLAND. CA 94607	

260 Cristich Lane
Campbell, CA 95008 (408) 559-1220

PLATE 1

screened interval, and extended to approximately 1 foot above the screen. A bentonite and concrete seal was placed from the top of the sand pack to the ground surface. A locking cap and protective traffic-rated vault box was installed on the top of the well.

Potentially contaminated soil cuttings and samples not retained for chemical analysis were contained in secured 55 gallon storage on-site. The storage drums were properly sealed and labeled. All drilling and sampling equipment was steam-cleaned upon completion of well installation.

Groundwater Sampling Procedure

Groundwater sampling was performed by GET using techniques approved by the Environmental Protection Agency (EPA), and the California Regional Water Quality Control Board, (RWQCB). These techniques require that:

1. Wells will be developed until the water is free of fine-grained sediments and/or until field measurements of pH, electrical conductivity, and temperature stabilize. Approximately four to ten well volumes of water will be removed during development of the well.

2. Equipment inserted into the well during development will be decontaminated by washing or steam cleaning prior to and after its use.

GET's sampling procedure consisted of first measuring the water level in the well and then checking for the presence of floating petroleum product using a clear teflon bailer. Because no free product was detected, the well was purged of four casing volumes of water. In order to ensure that a representative sample was obtained, the pH, electrical conductivity and temperature were monitored and documented on a well sampling field sheet. (See Figure 4). Using a teflon bailer, two samples entitled 9070-1 and 9070-2 were collected on 10/26/90 at 1:30 pm. They had a pH of_7.4_an electrical conductivity of .01, and a temperature of 65 degrees.___Samples were placed into appropriate EPA-approved containers, labeled, logged onto chain-of-custody documents, and transported to the laboratory. All sampling equipment was properly decontaminated with a trisodiumphosphate, (TSP), solution followed with a tap water rinse. A field blank sample (9070-2) was prepared for quality control purposes, prior to collection of groundwater samples. Potentially contaminated purge water and decontaminant rinsate was contained in secured 55-gallon storage drums on-site. The drums were properly sealed and labeled.

01-4712

15/4W 27G1

Site Description

A site map showing the current layout of the site is presented in Figure 2. This figure shows the locations of existing structures and the former underground storage tanks, as well as adjacent streets. Site sketch maps showing the sources of the samples are shown in figures 3 and 4

Well Installation

In order to determine if site operations have impacted groundwater, GET installed one groundwater monitoring well within the tank pit excavation area. The well is within five feet of the former waste oil storage tank location in the estimated downgradient direction. The well location is shown on Figure 2 entitled Site Map and Soil Sample Plot Plan and on Figure 3 entitled Boring Log MW-1.

The soils boring was drilled using an 8-inch diameter continuous-flight hollow-stem B-57 mobile drill augur. The boring was logged by a Professional Engineer using the Unified Soil Classification System and standard geologic techniques. (See Appendix A) Soil samples for logging and chemical analysis were collected at 9', 14', and 20' depths and were entitled SB-1 ,SB-2 and SB-3 respectively. These samples were collected by advancing a California-modified split-spoon sampler with brass liners into undisturbed soil beyond the tip of the auger. The sampler was driven 18 inches, using a 140-pound hammer with a 30" drop. Soil samples above groundwater were retained in brass liners, capped with aluminum foil and plastic end caps, and sealed in clean glass containers for possible chemical analysis. The samples were placed on ice and transported to the laboratory accompanied by the appropriate chain-of-custody documentation. All drilling and sampling equipment was thoroughly steam-cleaned prior to utilization.

The boring for the monitoring well (appendix A) penetrated 14.5 feet through the water bearing zone to a depth of 21 feet. Permeable sand and gravel was encountered at 19.5 feet. As a result, the boring was stopped and bentonite used to seal the well between 19.5 and 21 feet. The boring was then converted to a groundwater monitoring well with the installation of a 2-inch diameter, flush-threaded Schedule 40 PVC casing and 0.020-inch factory slotted Triloc screen. 13 feet of screen was placed through the entire saturated section extending to two feet above the static water level in order to account for fluctuations in groundwater elevation. A 2 X 12 graded #3 RMC Lone Star Lapis Lustre sand pack was placed in the annular space across the

1 of 5

01-547R-T

MW-4 01S04W27G02
MW-5 01-894 G03
MW-6 G04

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE ♦ PLEASANTON, CALIFORNIA 94566 ♦ (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Pacific Cryogenics
2311 Magnolia Street
Oakland, CA 94607

CLIENT
Name Aldo Guidotti / Estate of Jean Josephine
Address 1 Bates Blvd #300 Phone
City Orinda Zip 94536

APPLICANT
Name Hageman-Aguiar, Inc.
3732 Mt Diablo Blvd
Address Suite 372 Phone (510)284-1661
City Lafayette Zip 94549

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection		General	
Water Supply		Contamination	
Monitoring	X	Well Destruction	

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD: excavation backfill wells
Mud Rotary ___ Air Rotary ___ Auger ___
Cable ___ Other X

DRILLER'S LICENSE NO. NONE (excavation backfill wells) 66

WELL PROJECTS
Drill Hole Diameter ___ in. Maximum
Casing Diameter 4 in. Depth 15 ft.
Surface Seal Depth 3 ft. Number 3

GEOTECHNICAL PROJECTS
Number of Borings ___ Maximum
Hole Diameter ___ in. Depth ___ ft.

ESTIMATED STARTING DATE 11/19/92
ESTIMATED COMPLETION DATE 11/19/92

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Hagemann Aguiar Date 11/18/92

FOR OFFICE USE

PERMIT NUMBER 92607
LOCATION NUMBER

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as arrive at the Zone 7 office five days prior proposed starting date.
2. Submit to Zone 7 within 60 days after completi of permitted work the original Department Water Resources Water Well Drillers Report equivalent for well projects, or drilling lo and location sketch for geotechnical projects.
3. Permit is void if project not begun within days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal a industrial wells or 20 feet for domestic an irrigation wells unless a lesser depth specially approved. Minimum seal depth f monitoring wells is the maximum depth practicab or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cu tings or heavy bentonite and upper two feet with co pacted material. In areas of known or suspect contamination, tremied cement grout shall be used place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concre placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 19 Nov 9:
Wyman Hong

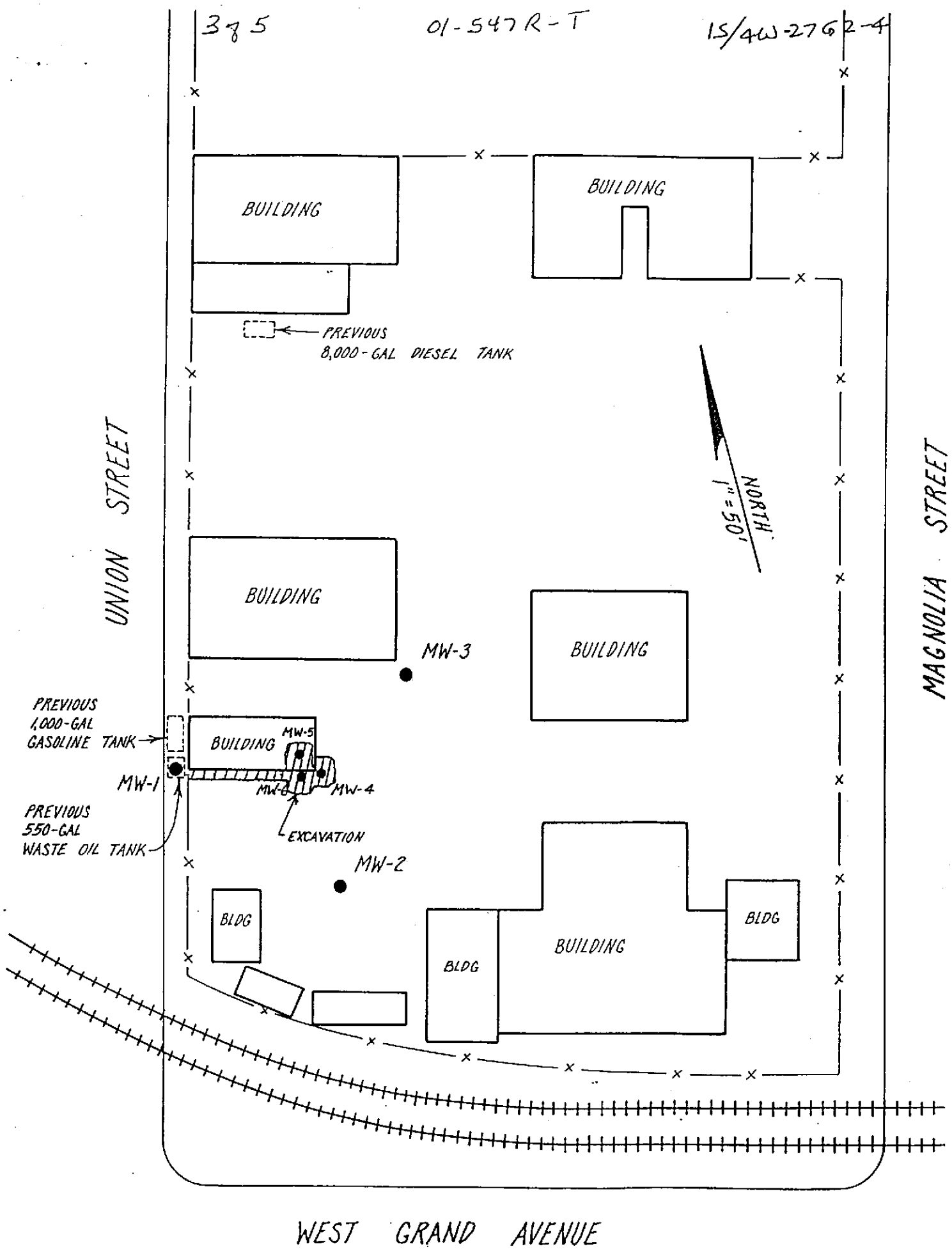
121989

66


SCALE 1:24 000
1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
CONTOUR INTERVAL 20 FEET
DOTTED LINES REPRESENT 5-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929
15/4W 27G2-4
SITE
OAKLAND
MACARTHUR
Clawson School
Poplar Playground
Durant School
Willow Manor School
St Patrick School
Lowell Jr High Sch
Lafayette Sch
City Hall
St Marys Sch
LAKESIDE PARK
Boathouse
Museum
Courthouse
Auditorium
Peralta Park
Westlake Jr High Sch
Hospital
Station
Gas
Oil
Grove St Pier
Jack London Square
OAKLAND INNER HARBOR
Light
Beacon
NAVAL SUPPLY CENTER
Piling
Radio Towers
KSAY
Mud
Sewage Disposal
Park

FIGURE 1.
Site Location Map.

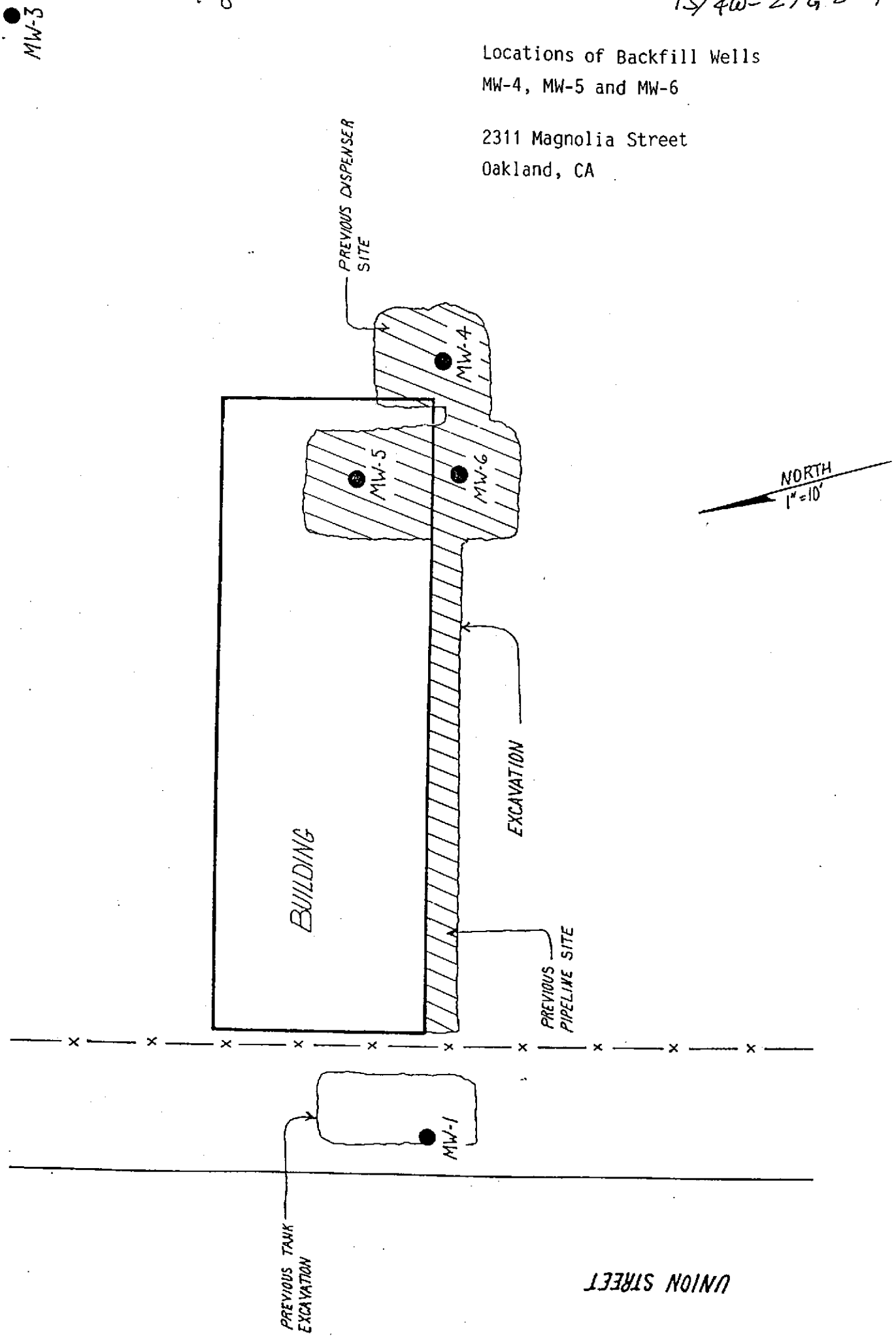
Owner : ALDO GUIDOTTI


385
01-547R-T
1S/4W-27G2-4
BUILDING
BUILDING
PREVIOUS
8,000-GAL DIESEL TANK
NORTH
1" = 50'
UNION STREET
MAGNOLIA STREET
BUILDING
MW-3
BUILDING
PREVIOUS
1,000-GAL
GASOLINE TANK
BUILDING
MW-5
MW-1
MW-4
EXCAVATION
PREVIOUS
550-GAL
WASTE OIL TANK
MW-2
BLDG
BLDG
BUILDING
BLDG
WEST GRAND AVENUE

4g5 OL-547 R-T 1S/4W-27G2-4

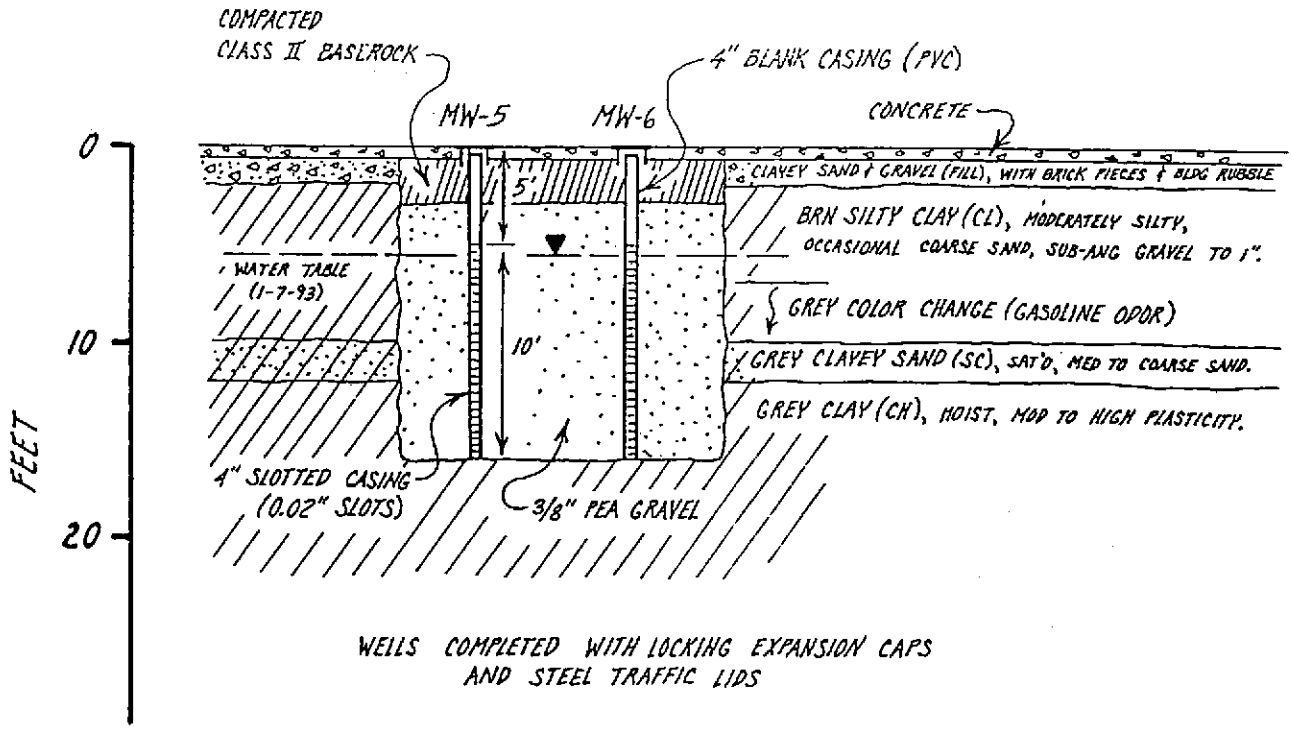
Locations of Backfill Wells
MW-4, MW-5 and MW-6

2311 Magnolia Street
Oakland, CA



575 01-547R-T 1S/4W-27G2-4

A A'



WELLS COMPLETED WITH LOCKING EXPANSION CAPS AND STEEL TRAFFIC LIDS

SCALE
HORIZ: 1"=10'
VERT: 1"=10'

2311 Magnolia Street
Oakland, California

MW-4, MW-5, MW-6 all have similar data

Were excavations - backfilled

01-033A-EP

Oakland City Center
500 12th Street
Suite 100
Oakland, CA 94607-4014
(415) 893-3600

Woodward-Clyde Consultants

Inv ✓
Add ✓

1S/4W 27H 2-9
1S/4W 27H
9 Borings

RECEIVED
JUN - 5 1989
ZONE 7, ACFC&WCD

June 2, 1989

Alameda County Flood Control
And Water Conservation District
5997 Parkside Drive
Pleasanton, California 94566

Attention: Permits Department

Gentlemen:

Subject: Well Construction Report, Permits 89146, 89176, 89213, 89241, and 89310.

This Well Construction Report transmits information required by Groundwater Protection Ordinance, Permits 89146, 89176, 89213, 89241, and 89310 for the installation of several monitoring wells, piezometers, and soil borings and for the destruction of the piezometers. The wells, piezometers, and borings were installed at 2311 Adeline Street (see Figure 1) during the period of March 11 through May 11, 1989.

Three piezometers (P-N, P-SE, and P-SW) were installed under permit 89146 on March 11 in locations shown on Figure 2. The piezometers were installed according to the well logs attached in Appendix 1. Piezometer P-N was drilled to 30 ft depth and backfilled with cement/bentonite grout to 14 ft depth prior to installation of the piezometer casing. The hole was backfilled immediately after drilling and had about 1 foot of water in the bottom at the time of grouting. The upper seals were installed above the water table with bentonite pellets and cement/bentonite grout. Grout was installed by shoveling into the hole. Water levels were periodically measured in the piezometers and on April 11 the depth below top of casing were 6.36 ft, 11.21 ft, and 11.14 ft for P-N, P-SE, and P-SW, respectively.

The piezometers were abandoned on May 11 under permit 89310. Each piezometer was drilled out to the bottom of the sand pack using an 8-inch diameter auger and then immediately backfilled with cement/bentonite grout. Because the water bearing formation at this site produces water very slowly and because the borings were relatively shallow (less than 30 feet), the drilled-out piezometers accumulated between 0 and 2 feet of water prior to backfilling at time of abandonment. Grouting was done by tailgating from a cement truck.

Eight soil borings (B-3 through -10) were drilled on April 10, 11, and 12 under permit 89213 in locations identified on Figure 2. This is two borings more than were initially requested under permit

89213. The borings were logged and sampled and the boring logs are presented in Appendix 1. The borings were backfilled immediately after drilling with cement/bentonite grout. The holes had very little water in them (between 0 and 2 feet) at time of backfilling so it was not necessary to tremie grout into the holes. Boring B-10 was a hand augered dry hole to 5 feet and was backfilled with tamped in cuttings.

One monitoring well (MW-2) was installed on April 10 under permit 89176 (and also mistakenly under permit 89213) and four additional monitoring wells (MW-3 through -6) were installed on May 11 under permit 89241 in locations shown on Figure 3. Each well was logged and installed with sand packs and seals as shown on the monitoring well logs attached in Appendix 1. Each well was sealed above the groundwater table by bentonite pellets and end-dumped cement/bentonite grout. The wells are being monitored for TPH (gasoline) and BTE&X on a quarterly basis and the results of the monitoring are available from the Alameda County Health Care Services. On May 23, the wells were sounded and their water levels were 9.37 ft, 8.38 ft, 11.08 ft, 9.73 ft, and 10.58 ft depth below top of casing for MW-2 through -6, respectively.

If you have any question concerning the installation or abandonment of these soil borings, monitoring wells, or piezometers, please call Stan Clarke at 874-3096.

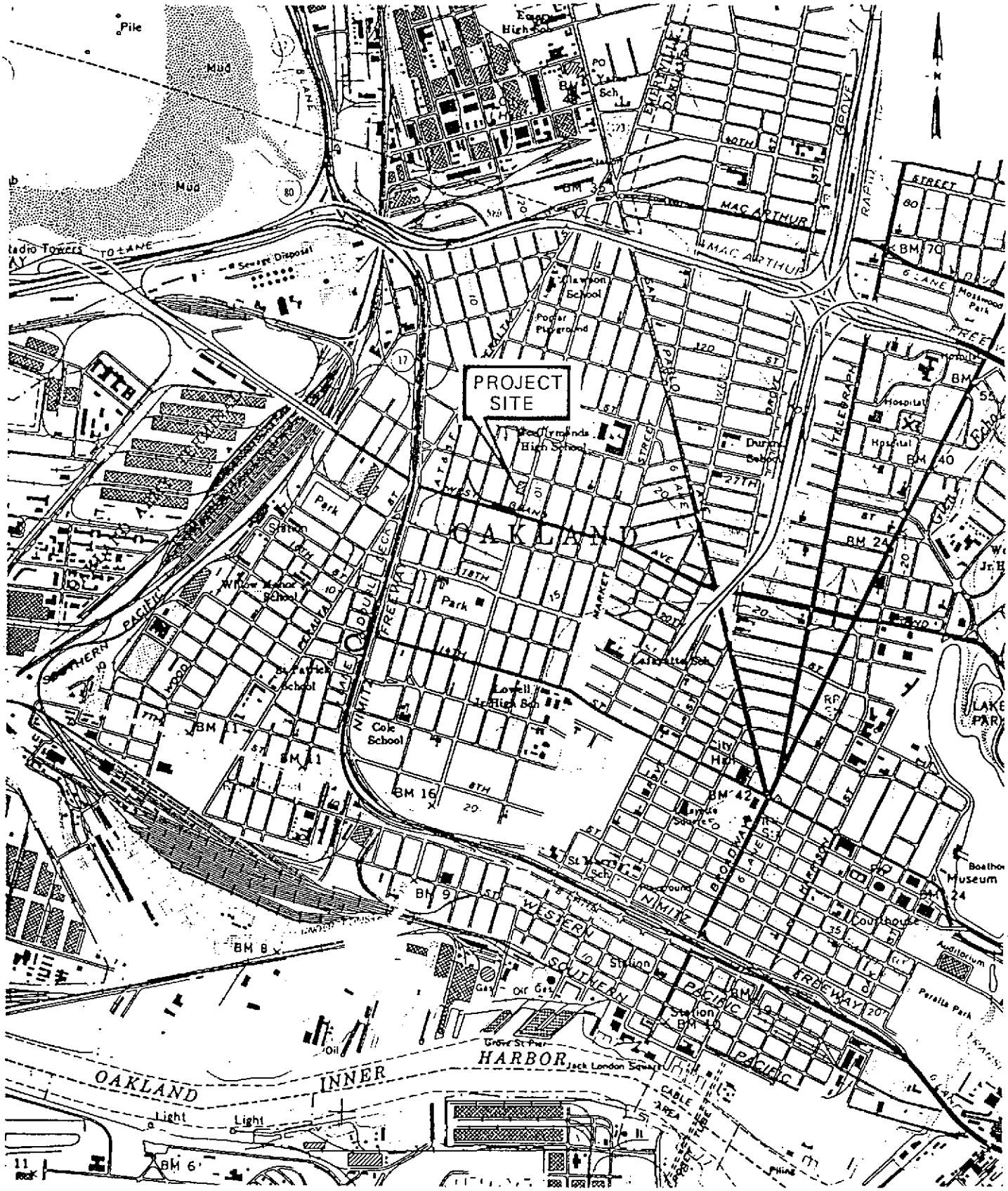
Sincerely,

Woodward-Clyde Consultants

Stanton L. Clarke, P.E.
Project Engineer

cc Ned Clyde Construction

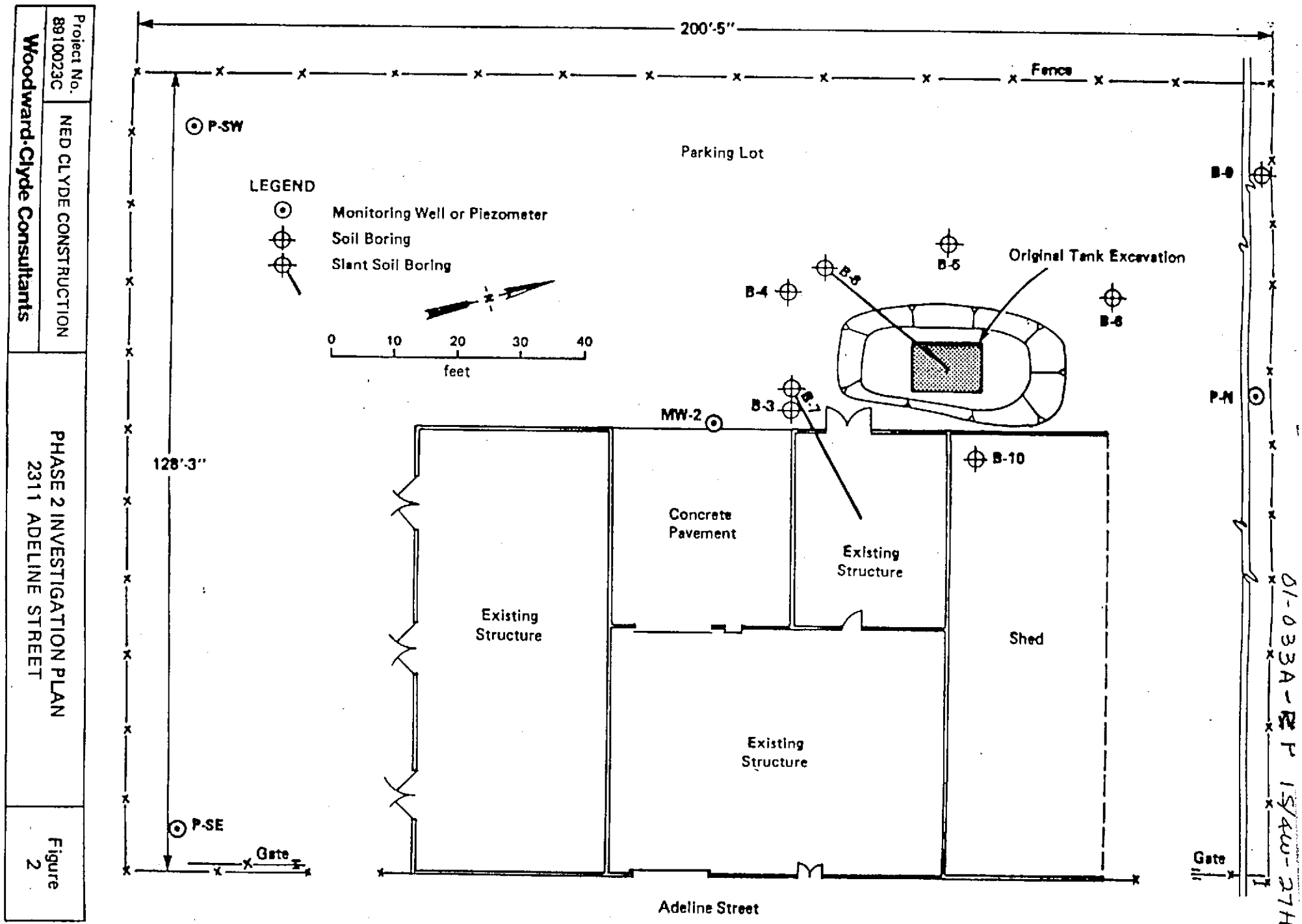
1S/4W-27H
01-033A-RP



Reference USGS Oakland West, California
1959, Revised 1980

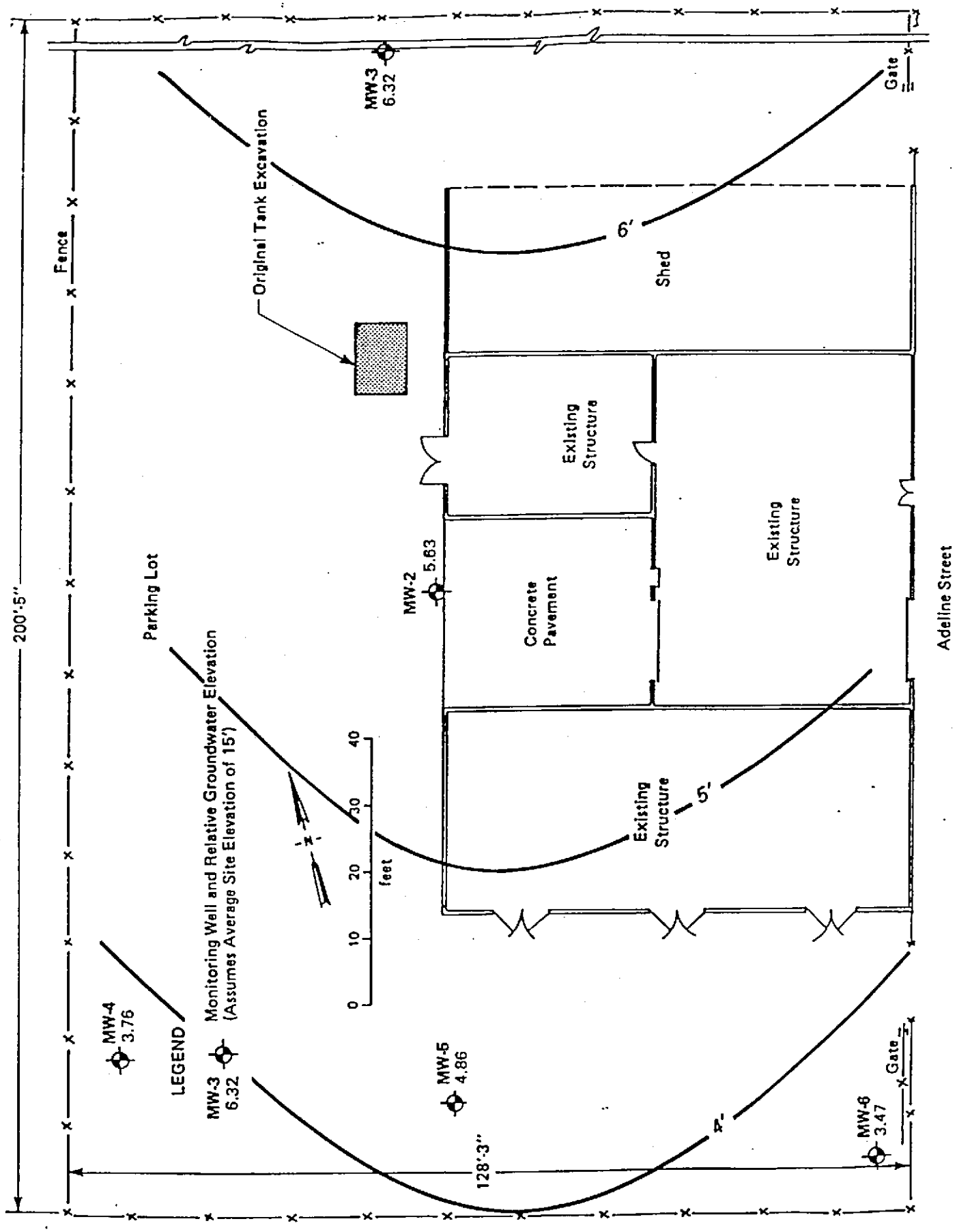
0 100 200 300
Scale in feet

Project No. 8910023A	NED CLYDE CONSTRUCTION	SITE LOCATION MAP	Figure 1
Woodward-Clyde Consultants			



01-033A-R2 P 15/4W-27H

01-033A-R 1S/4W-27H



Project No. 8910023B	NED CLYDE CONSTRUCTION	MAY 23, 1989 RELATIVE GROUNDWATER ELEVATIONS 2311 ADELINE STREET	Figure 3
Woodward-Clyde Consultants			

01-033A-EP
15/40-27H

APPENDIX A

LOGS OF BORINGS

Add'l Inv'l 15/14W 27H 2

Woodward-Clyde Consultants

PROJECT NAME NED CLYDE GW MONITORING No. 8910023B

BORING LOCATION P-N North side of Property		ELEVATION AND DATUM N/A	
DRILLING AGENCY ENSCO	DRILLER G. Nunes	DATE STARTED / DATE FINISHED March 10, 1989	
DRILLING EQUIPMENT Mobile B-34		COMPLETION DEPTH 16'	SAMPLER N/A
DRILLING METHOD 8" Hollow-stem Auger	DRILL BIT 8" Auger	NO. OF SAMPLES DIST. N/A	UNDIST. N/A
SIZE AND TYPE OF CASING 2" Schedule 40 PVC		WATER LEVEL FIRST N/A	COMPL. N/A 24 HRS. N/A
TYPE OF PERFORATION .010" Slotted	FROM 4.0 TO 14.0 Ft.	LOGGED BY: C. Parton and S. Clarke	CHECKED BY:
SIZE AND TYPE OF PACK #2/12 Lonestar Monterey Sand	FROM 3.0 TO 14.0 Ft.		
TYPE OF SEAL NO. 1 Bentonite Pellets	FROM 2.0 TO 3.0 Ft.		
NO. 2 Concrete/Bentonite Grout	FROM 0.0 TO 2.0 and 30.0 TO 14.0 Ft.		

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	Water Content	Piezometer Data	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	Sandy Clay (CL) dark brown, moist									
5	Silty Clay (CH) Moist, light brown									
	Sandy Clay (CL) light brown, moist									
10	Silty Clay (CL) brown, saturated									
15	Gravel layer, to 1/2" diam., becoming wet									
20										
25										
30	Augered to 30', backfilled to 14' with cement bentonite grout									
35										

Peizometer Legend
- Slotted Well Screen
- Sand Pack
- Bentonite Pellets
- Cement/ Bentonite Grout

FIELD LOG OF BORING NO. P-N SHEET 1 OF 1

Add'l Info 1S/4W 27H3

Woodward-Clyde Consultants

PROJECT NAME NED CLYDE GW MONITORING NO. 8910023B

BORING LOCATION	P-SE SE Corner of Property	ELEVATION AND DATUM	N/A
DRILLING AGENCY	ENSCO	DRILLER G. Nunes	DATE STARTED / DATE FINISHED March 10, 1989
DRILLING EQUIPMENT	Mobile B-34	COMPLETION DEPTH 16'	SAMPLER N/A
DRILLING METHOD	8" Hollow-stem Auger	DRILL BIT 8" Auger	NO. OF SAMPLES DIST. N/A / UNDIST. N/A
SIZE AND TYPE OF CASING	2" Schedule 40 PVC	WATER LEVEL FIRST	COMPL. N/A / 24 HRS. N/A
TYPE OF PERFORATION	.010" Slotted	FROM 6.0 TO 16.0 Ft.	LOGGED BY: A. McDonald
SIZE AND TYPE OF PACK	#2/12 Lonestar Monterey Sand	FROM 4.0 TO 16.0 Ft.	CHECKED BY:
TYPE OF SEAL	NO. 1 Bentonite Pellets	FROM 3.0 TO 4.0 Ft.	
	NO. 2 Concrete/Bentonite Grout	FROM 0.0 TO 3.0 Ft.	

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	Water Content	Piezometer Data	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet.)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	Gravel Base Coarse, (Fill) brown, moist									
	Silty Clay (CH) Moist, dark gray									
5										
	Silty Clay (CL) dark brown, moist, very stiff									
10	Clayey Silt (ML) Light brown, fine sand, moist									
	Gravel layer, to 1/2" diam., becoming wet									
15										
	Silty Sand (SM), medium grained, saturated									
	Augered to 18', hole caved to 16'									
20										
25										
30										
35										

Piezometer Legend
- Slotted Well Screen
- Sand Pack
- Bentonite Pellets
- Cement/ Bentonite Grout

FIELD LOG OF BORING NO. P-SE SHEET 1 OF 1

Addv Inv 15/4W 27H 4 01-033C

Woodward-Clyde Consultants

PROJECT NAME NED CLYDE GW MONITORING NO. 8910023B

BORING LOCATION	P-SW SE Corner of Property	ELEVATION AND DATUM	N/A
DRILLING AGENCY	ENSCO	DRILLER G. Nunes	DATE STARTED / DATE FINISHED March 10, 1989
DRILLING EQUIPMENT	Mobile B-34	COMPLETION DEPTH 16'	SAMPLER N/A
DRILLING METHOD	8" Hollow-stem Auger	DRILL BIT 8" Auger	NO. OF SAMPLES DIST. N/A / UNDIST. N/A
SIZE AND TYPE OF CASING	2" Schedule 40 PVC	WATER LEVEL FIRST	COMPL. N/A / 24 HRS. N/A
TYPE OF PERFORATION	.010" Slotted	FROM 6.0 TO 16.0 Ft.	LOGGED BY: A. McDonald
SIZE AND TYPE OF PACK	#2/12 Lonestar Monterey Sand	FROM 4.0 TO 16.0 Ft.	CHECKED BY:
TYPE OF SEAL	NO. 1 Bentonite Pellets	FROM 3.0 TO 4.0 Ft.	
	NO. 2 Concrete/Bentonite Grout	FROM 0.0 TO 3.0 Ft.	

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	Water Content	Piezometer Data	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	Sandy Clay (CL) dark brown, moist									
	Silty Clay (CH) light brown, moist, very stiff									
5	becoming stiff w/some small gravel									
10	Clayey Sand (SC) light brown, moist									
15	Sand with Clay (SW-SC), dark gray, medium grained, saturated									
	Augered to 16'									
20										
25										
30										
35										

Piezometer Legend
- Slotted Well Screen
- Sand Pack
- Bentonite Pellets
- Cement/ Bentonite Grout

FIELD LOG OF BORING NO. P-SW SHEET 1 OF 1

01-4700 15/4W 27 H10

Woodward-Clyde Consultants

PROJECT NAME NED CLYDE GW MONITORING NO. 8910023B

BORING LOCATION	MW-7 10' E of SW corner of building	ELEVATION AND DATUM	N/A
DRILLING AGENCY	ENSCO	DRILLER Frank	DATE STARTED / DATE FINISHED November 29, 1990
DRILLING EQUIPMENT	Mobile B-51	COMPLETION DEPTH 18'	SAMPLER 2.0" Modified California Type
DRILLING METHOD	8" Hollow-stem Auger	DRILL BIT 8" Auger	NO. OF SAMPLES DIST. 4 / UNDIST. N/A
SIZE AND TYPE OF CASING	2" Schedule 40 PVC	WATER LEVEL FIRST 12'	COMPL. N/A / 24 HRS. N/A
TYPE OF PERFORATION	.020" Slotted	FROM 7.0 TO 17.0 FT	LOGGED BY: T. Ross
SIZE AND TYPE OF PACK	#2/20 Lonestar Monterey Sand	FROM 6.0 TO 17.0 FT	CHECKED BY:
TYPE OF SEAL	NO. 1 Bentonite Pellets	FROM 5.0 TO 6.0 FT	
	NO. 2 Cement	FROM 0.4 TO 5.0 FT	

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	Water Content	Piezometer Data	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	Fill rubble, brick, concrete									
5	Silty Clay (CL) brown to dark brown plastic, moist, some sand					1			6 9 10	
10	CLAY olive, plastic, wet with hydrcarbon sheen, some fine sand with rocks to 1" diameter with 3" bailing wire fragments					2			9 14 17	Hydrocarbon odor detected
15						3			5 5 6	
17	Augered to 17'					4			4 7	
20										
25										
30										
35										

Peizometer Legend
- Slotted Well Screen
- Sand Pack
- Bentonite Pellets
- Cement/ Bentonite Grout

FIELD LOG OF BORING NO. MW-7 SHEET 1 OF 1

phone 415-893 3600

Driller Enseco Environmental
Ensco ?

Woodward-Clyde Consultants

Project No. 89100238

NED CLYDE CONSTRUCTION

NOVEMBER 29, 1990
RELATIVE GROUNDWATER ELEVATIONS
2311 ADELINE STREET

FIGURE 3

IS/HW 27H10

Addv Inv 1S/4W 27H 01-0331

Woodward-Clyde Consultants

PROJECT NAME NED CLYDE PHASE 2 NO. 8910023C

BORING LOCATION B-3		ELEVATION AND DATUM N/A	
DRILLING AGENCY ENSCO	DRILLER G. Nunes	DATE STARTED / DATE FINISHED April 10, 1989	
DRILLING EQUIPMENT Mobile B-53		COMPLETION DEPTH 24.5'	SAMPLER 2.5" Modified California Type
DRILLING METHOD 8" Hollow-stem Auger	DRILL BIT 8" Auger	NO. OF SAMPLES DIST. 4	UNDIST. N/A
SIZE AND TYPE OF CASING N/A		WATER LEVEL FIRST 18'	COMPL. N/A 24 HRS. N/A
TYPE OF PERFORATION N/A	FROM N/A TO N/A Ft.	LOGGED BY: J. Springer	CHECKED BY:
SIZE AND TYPE OF PACK N/A	FROM N/A TO N/A Ft.		
TYPE OF SEAL NO. 1 N/A	FROM N/A TO N/A Ft.		
TYPE OF SEAL NO. 2 N/A	FROM N/A TO N/A Ft.		

DEPTH (feet)	DESCRIPTION	Lithology	Piezometer Installation	Water Content	Piezometer Data	Drive Number	Sample Number	Recov. (Feet)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0–4	Silty Clay (CL-CH) black, plastic, damp									20 ppm HNu Reading; Hydrocarbon Odor
4–16	Clay (CH) dark blue-gray, plastic, damp; becomes olive brown									
8–9.5						1			8 / 15 / 20	250 ppm HNu Reading; Strong Hydrocarbon Odor
13–14.5	Clay (CH) mottled olive brown and light gray, damp, plastic, specs of charcoal					2			10 / 12 / 12	3 ppm HNu Reading; Slight (?) Hydrocarbon Odor
16–24.5	Clay (CH) steel gray, plastic, occasional pebbles, trace of sand					3			8 / 10 / 10	7 ppm HNu Reading
23–24.5	As above					4			7 / 10 / 13	0 ppm HNu Reading
24.5	Bottom of boring at 24.5'									

ADV Inw 1S/4W 27H 01-033E

Woodward-Clyde Consultants

PROJECT NAME NED CLYDE PHASE 2 No. 8910023C

BORING LOCATION B-4		ELEVATION AND DATUM N/A	
DRILLING AGENCY ENSCO	DRILLER G. Nunes	DATE STARTED / DATE FINISHED April 10, 1989	
DRILLING EQUIPMENT Mobile B-53		COMPLETION DEPTH 19.5'	SAMPLER 2.5" Modified California Type
DRILLING METHOD 8" Hollow-stem auger	DRILL BIT 8" Auger	NO. OF SAMPLES DIST. 3	UNDIST. N/A
SIZE AND TYPE OF CASING N/A		WATER LEVEL FIRST N/A	COMPL. N/A / 24 HRS. N/A
TYPE OF PERFORATION N/A	FROM N/A TO N/A Ft.	LOGGED BY: J. Springer	CHECKED BY:
SIZE AND TYPE OF PACK N/A	FROM N/A TO N/A Ft.		
TYPE OF SEAL NO. 1 N/A	FROM N/A TO N/A Ft.		
NO. 2 N/A	FROM N/A TO N/A Ft.		

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	Water Content	Piezometer Data	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	Clay (CH) black, little silt, plastic, damp									2 ppm HNu Reading; Hydrocarbon Odor
5	Clay (CH) olive green, plastic, damp									
	As above					1			8, 12, 12	350 ppm HNu Reading; Strong Hydrocarbon Odor
10	Clay (CH) mottled olive brown and steel gray, little sand					2			10, 10, 18	10 ppm HNu Reading; Hydrocarbon Odor
15	Clay (CH) steel gray, plastic, few pebbles					3			6, 8, 8	0 ppm HNu Reading
20	Bottom of boring at 19.5'									
25										
30										
35										

FIELD LOG OF BORING NO. B-4 SHEET 1 OF 1

Add Inv 15/4W27H 01-033 F

Woodward-Clyde Consultants

PROJECT NAME NED CLYDE PHASE 2 NO. 8910023C

BORING LOCATION B-5		ELEVATION AND DATUM N/A	
DRILLING AGENCY ENSCO	DRILLER G. Nunes	DATE STARTED / DATE FINISHED April 10, 1989	
DRILLING EQUIPMENT Mobile B-53		COMPLETION DEPTH 19.5'	SAMPLER 2.5" Modified California Type
DRILLING METHOD 8" Hollow-stem Auger	DRILL BIT 8" Auger	NO. OF SAMPLES DIST. 3	UNDIST. N/A
SIZE AND TYPE OF CASING N/A		WATER LEVEL FIRST 18'	COMPL N/A / 24 HRS N/A
TYPE OF PERFORATION N/A	FROM N/A TO N/A FL	LOGGED BY: J. Springer	CHECKED BY:
SIZE AND TYPE OF PACK N/A	FROM N/A TO N/A FL		
TYPE OF SEAL NO. 1 N/A	FROM N/A TO N/A FL		
NO. 2 N/A	FROM N/A TO N/A FL		

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	Water Content	Piezometer Data	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	Clay (CH) black to dark green, damp, plastic									4 ppm HNu Reading; Slight Hydrocarbon Odor
5	Clay (CH) olive brown with black streaks									
	as above, damp with product					1			7, 14, 14	300 ppm HNu Reading; Strong Hydrocarbon Odor
10	Clay to Silty Clay (CH) olive brown, little sand					2			6, 6, 10	6 ppm HNu Reading
15	Clay (CH) mottled olive brown and steel gray, little silt, plastic, wet				ATD	3			7, 7, 11	20 ppm HNu Reading
20	Bottom of boring at 19.5'									
25										
30										
35										

FIELD LOG OF BORING NO. B-5 SHEET 1 OF 1

Add'l Info 1S/4W 27H

Woodward-Clyde Consultants

PROJECT NAME NED CLYDE PHASE 2 NO. 8910023C 01-033I

BORING LOCATION B-6		ELEVATION AND DATUM N/A	
DRILLING AGENCY ENSCO	DRILLER G. Nunes	DATE STARTED / DATE FINISHED April 11, 1989	
DRILLING EQUIPMENT Mobile B-53		COMPLETION DEPTH 19.5'	SAMPLER 2.5" Modified California Type
DRILLING METHOD 8" Hollow-stem Auger	DRILL BIT 8" Auger	NO. OF SAMPLES DIST. 3	UNDIST. N/A
SIZE AND TYPE OF CASING N/A		WATER LEVEL FIRST N/A	COMPL. N/A 24 HRS. N/A
TYPE OF PERFORATION N/A	FROM N/A TO N/A FT.	LOGGED BY: J. Springer	CHECKED BY:
SIZE AND TYPE OF PACK N/A	FROM N/A TO N/A FT.		
TYPE OF SEAL NO. 1 N/A	FROM N/A TO N/A FT.		
NO. 2 N/A	FROM N/A TO N/A FT.		

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	Water Content	Piezometer Data	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet.)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	Silty Clay (CL-CH) black, plastic, damp									3.5 ppm HNu Reading; Hydrocarbon Odor
5										
10	Clay (CH) olive green, trace of sand, plastic, damp					1			9, 17, 17	200 ppm HNu Reading; Strong Hydrocarbon Odor
15	as above sandy at top of sample, trace of gravel					2			6, 6, 8	10 ppm HNu Reading
20	Clay (CH) steel gray, little silt, damp					3			7, 7, 12	0 ppm HNu Reading
	Bottom of boring at 19.5'									
25										
30										
35										

FIELD LOG OF BORING NO. B-6 SHEET 1 OF 1

DdV Inv 1S/4W27H

Woodward-Clyde Consultants

PROJECT NAME NED CLYDE PHASE 2 NO. 8910023C 01-035

BORING LOCATION B-7		ELEVATION AND DATUM N/A	
DRILLING AGENCY ENSCO	DRILLER	DATE STARTED / DATE FINISHED April 11, 1989	
DRILLING EQUIPMENT Mobile B-53		COMPLETION DEPTH 31.5'	SAMPLER 2.5" Modified California Type
DRILLING METHOD 8" Hollow-stem Auger	DRILL BIT	NO. OF SAMPLES DIST. 4	UNDIST. N/A
SIZE AND TYPE OF CASING N/A		WATER LEVEL FIRST N/A	COMPL N/A / 24 HRS. N/A
TYPE OF PERFORATION N/A	FROM N/A TO N/A FT.	LOGGED BY: J. Springer	CHECKED BY:
SIZE AND TYPE OF PACK N/A	FROM N/A TO N/A FT.		
TYPE OF SEAL NO. 1 N/A	FROM N/A TO N/A FT.		
NO. 2 N/A	FROM N/A TO N/A FT.		

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	Water Content	Piezometer Data	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	Silty Clay (CH) black, plastic, damp									45 Degree angle boring drift = N80E; 16 ppm HNu Reading; Slight Hydrocarbon Odor
5					5					
	Clay (CH) olive green with black streaks, plastic, damp									
10	Gravelly Sand (SW) gray, little silt, foundation fill (?)				10	1			Push	True vertical depth = 7.1'; 20 ppm HNu Reading; Slight Hydrocarbon Odor
15	Clay (CH) mottled olive brown and gray, plastic, damp				15	2			Push	True vertical depth = 10.6'; 350 ppm HNu Reading; Strong Hydrocarbon Odor
20	Gravelly Sand (SW) with some sandy clay (CH)				20	3			Push	True vertical depth = 14.1'; 120 ppm HNu Reading; Strong Hydrocarbon Odor
	Clay (CH) steel gray, little silt, damp, plastic									
25					25					
30	Sandy Clay (CL) mottled steel gray and olive brown, wet				30	4			Push	True vertical depth = 21.2'; 18 ppm HNu Reading; Hydrocarbon Odor; (Evaporates Quickly)
	Bottom of boring at 31.5'									
35					35					

Add'l Info 15/4W 27H

Woodward-Clyde Consultants

PROJECT NAME NED CLYDE PHASE 2 NO. 8910023C 01-0337

BORING LOCATION B-8		ELEVATION AND DATUM N/A	
DRILLING AGENCY ENSCO	DRILLER G. Nunes	DATE STARTED / DATE FINISHED April 11, 1989	
DRILLING EQUIPMENT Mobile B-53		COMPLETION DEPTH 36.5'	SAMPLER 2.5" Modified California Type
DRILLING METHOD 8" Hollow-stem Auger	DRILL BIT 8" Auger	NO. OF SAMPLES DIST. 5	UNDIST. N/A
SIZE AND TYPE OF CASING N/A		WATER LEVEL FIRST N/A	COMPL. N/A / 24 HRS. N/A
TYPE OF PERFORATION N/A	FROM N/A TO N/A Ft.	LOGGED BY: J. Springer	CHECKED BY:
SIZE AND TYPE OF PACK N/A	FROM N/A TO N/A Ft.		
TYPE OF SEAL NO. 1 N/A	FROM N/A TO N/A Ft.		
NO. 2 N/A	FROM N/A TO N/A Ft.		

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	Water Content	Piezometer Data	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	Silty Clay (CH) black, damp, plastic									45 Degree angle hole drift = N35E 5 ppm HNu Reading Hydrocarbon Odor
10	Silty Sand (SM), black, few pebbles						1		Push	True Depth = 7.1' 14 ppm HNu Reading Slight Hydrocarbon Odor
	Clay (CH) olive green, plastic, damp									
15	Clay (CH) mottled olive brown and green, little silt, damp, plastic						2		Push	True Depth = 10.6' 300 ppm HNu Reading Strong Hydrocarbon Odor
20	Silty Clay (CH) mottled steel gray and olive brown, damp						3		Push	True Depth = 14.1' 14 ppm HNu Reading
25	as above with little silt and trace of sand						4		Push	True Depth = 19.1' 22 ppm HNu Reading
30										
35										True Depth = 24.8'

01-033E

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	Water Content	Piezometer Data	SAMPLES: DRIVE NUMBER	SAMPLES: SAMPLE NUMBER	SAMPLES: Recov. (feet)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
35	Clay (CH) mottled olive brown and steel gray, plastic, moist						5		Push	True Depth = 24.8' 80 ppm HNu Reading Slight Hydrocarbon Odor
	Bottom of boring at 36.5'									
40										
45										
50										
55										
60										
65										
70										
75										
80										

FIELD LOG OF BORING NO. B-8 SHEET 2OF 2

Add ✓ Inv 15/4W 27H 01-033

Woodward-Clyde Consultants

PROJECT NAME NED CLYDE PHASE 2 NO. 8910023C

BORING LOCATION B-9		ELEVATION AND DATUM N/A	
DRILLING AGENCY ENSCO	DRILLER G. Nunes	DATE STARTED / DATE FINISHED April 11, 1989	
DRILLING EQUIPMENT Mobile B-53		COMPLETION DEPTH 7.5'	SAMPLER 2.5" Modified California Type
DRILLING METHOD 8" Hollow-stem Auger	DRILL BIT 8" Auger	NO. OF SAMPLES DIST. 1	UNDIST. N/A
SIZE AND TYPE OF CASING N/A		WATER LEVEL FIRST N/A	COMPL. N/A 24 HRS. N/A
TYPE OF PERFORATION N/A	FROM N/A TO N/A FT.	LOGGED BY: J. Springer	CHECKED BY:
SIZE AND TYPE OF PACK N/A	FROM N/A TO N/A FT.		
TYPE OF SEAL NO. 1 N/A	FROM N/A TO N/A FT.		
NO. 2 N/A	FROM N/A TO N/A FT.		

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	Water Content	Piezometer Data	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	Silty Clay (CH-CL) black, trace of sand, damp									0 ppm HNu Reading
5	Clay (CH) olive green, trace of sand, roots, plastic, damp					1			6 8 12	0 ppm HNu Reading
	Bottom of boring at 7.5'									
10										
15										
20										
25										
30										
35										

A&dU Inv✓ 1S/4W27H01-033B

Woodward-Clyde Consultants

PROJECT NAME NED CLYDE PHASE 2 NO. 8910023C

BORING LOCATION: B-10		ELEVATION AND DATUM: N/A	
DRILLING AGENCY: WCC	DRILLER: J. Springer	DATE STARTED / DATE FINISHED: April 12, 1989	
DRILLING EQUIPMENT: Hand Auger		COMPLETION DEPTH: 7.2'	SAMPLER: 2.5" Modified California Type
DRILLING METHOD: Hand Auger	DRILL BIT: 6" O.D.	NO. OF SAMPLES: DIST. 2	UNDIST. N/A
SIZE AND TYPE OF CASING: N/A		WATER LEVEL: FIRST N/A	COMPL. N/A; 24 HRS. N/A
TYPE OF PERFORATION: N/A	FROM N/A TO N/A ft.	LOGGED BY: J. Springer	CHECKED BY:
SIZE AND TYPE OF PACK: N/A	FROM N/A TO N/A ft.		
TYPE OF SEAL NO. 1: N/A	FROM N/A TO N/A ft.		
TYPE OF SEAL NO. 2: N/A	FROM N/A TO N/A ft.		

DEPTH (feet)	DESCRIPTION	Lithology	Piezometer Installation	Water Content	Piezometer Data	Drive Number	Sample Number	Recov. (Feet)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Sandy Gravel (GW), black, dry									
	Clay (CH), olive green, little silt, damp									Slight Hydrocarbon Odor
	Silty Clay (CH-CL), black, wet									Strong Hydrocarbon Odor
	Clay (CH), black, damp, plastic									Strong Hydrocarbon Odor
5	Clay (CH), dark green, plastic, damp pebbly at 5.8'				5					Strong Hydroicarbon Odor
	Clay (CH), tan to olive green						1			Strong Hydrocarbon Odor 2 grab samples taken at 7.2'
	Bottom of boring at 7.2'									
10					10					
15					15					
20					20					
25					25					
30					30					
35					35					

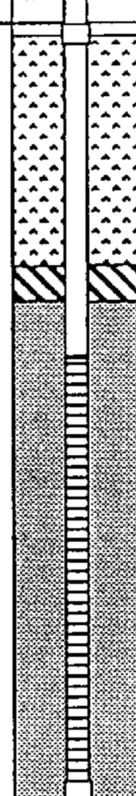
Inv/Add/ 1S/4W27H 5   01-033AL

Woodward-Clyde Consultants   PROJECT NAME NED CLYDE PHASE 2   NO. 8910023C

BORING LOCATION MW-2		ELEVATION AND DATUM N/A	
DRILLING AGENCY ENSCO	DRILLER G. Nunes	DATE STARTED / DATE FINISHED April 10, 1989	
DRILLING EQUIPMENT Mobile B-53		COMPLETION DEPTH 20.9'	SAMPLER 2.5" Modified California Type
DRILLING METHOD 8" Hollow-stem Auger	DRILL BIT 8" Auger	NO. OF SAMPLES — DIST. 3	UNDIST. N/A
SIZE AND TYPE OF CASING 2" Schedule 40 PVC		WATER LEVEL — FIRST 18'	COMPL. N/A — 24 HRS. 8'
TYPE OF PERFORATION .010" Slotted	FROM 10.6 TO 20.6 Ft.	LOGGED BY: J. Springer	CHECKED BY:
SIZE AND TYPE OF PACK #1/20 Lonestar Monterey Sand	FROM 7.5 TO 20.6 Ft.		
TYPE OF SEAL — NO. 1 Bentonite Pellets	FROM 6.5 TO 7.5 Ft.		
TYPE OF SEAL — NO. 2 Concrete	FROM 0.4 TO 6.5 Ft.		

DEPTH (feet)	DESCRIPTION	Piezometer Data	Drive Number	Sample Number	Recov. (Feet)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0–5	Clay (CH) black, plastic, little silt, damp						0 ppm HNu Reading
5–6	Clay (CH) olive green, plastic, damp						
6–13	Clay (CH) mottled olive brown and gray	24 hrs (8')	1			7, 15, 18	300 ppm HNu Reading; Strong Hydrocarbon Odor; Lost sample, went back, and drove sampler an additional 6"
13	Clayey Sand (SC), brown, coarse-grained						
13.5–16	Clay (CH) olive brown, plastic, wet		2			15, 10, 8	75 ppm HNu Reading; Hydrocarbon Odor
16–20.9	Clay (CH) mottled olive brown and steel gray, plastic, damp	ATD (18')	3			6, 6, 10	1.2 ppm HNu Reading
20.9	Augered to 20.9'						

GRAPHIC LOG: Lithology / Piezometer Installation; Water Content



Peizometer Legend
- Slotted Well Screen
- Sand Pack
- Bentonite Pellets
- Cement/ Bentonite Grout

FIELD LOG OF BORING NO. MW-2 SHEET 1 OF 1

Add/ Inv/ 15/4W27H6 01-033 M

Woodward-Clyde Consultants

PROJECT NAME NED CLYDE GW MONITORING NO. 8910023B

BORING LOCATION	MW-3 North Side of Property	ELEVATION AND DATUM	N/A
DRILLING AGENCY	ENSCO	DRILLER G. Nunes	DATE STARTED / DATE FINISHED May 11, 1989
DRILLING EQUIPMENT	Mobile B-53	COMPLETION DEPTH 15'	SAMPLER 2.5" Modified California Type
DRILLING METHOD	8" Hollow-stem Auger	DRILL BIT 8" Auger	NO. OF SAMPLES DIST. N/A	UNDIST. 2
SIZE AND TYPE OF CASING	2" Schedule 40 PVC	WATER LEVEL FIRST 11'	COMPL. N/A	24 HRS. N/A
TYPE OF PERFORATION	.010" Slotted	FROM 5.0 TO 15.0 FT.	LOGGED BY: S. Clarke	CHECKED BY:
SIZE AND TYPE OF PACK	#1/20 Lonestar Monterey Sand	FROM 5.0 TO 15.0 FT.		
TYPE OF SEAL	NO. 1 Bentonite Pellets	FROM 4.0 TO 5.0 FT.		
	NO. 2 Concrete/Bentonite Grout	FROM 0.4 TO 4.0 FT.		

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	Water Content	Piezometer Data	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	Silty Clay (CH) Moist, dark gray									
	Becoming gray									
5	Becoming light gray-brown					1		NR	7, 10, 16	
						2			7, 13, 13	
10										
15	Augered to 15'									
20										
25										
30										
35										

Piezometer Legend
- Slotted Well Screen
- Sand Pack
- Bentonite Pellets
- Cement/ Bentonite Grout

FIELD LOG OF BORING NO. MW-3 SHEET 1 OF 1

ADV Inv 1S/4W 27H7 N

Woodward-Clyde Consultants

PROJECT NAME NED CLYDE GW MONITORING NO. 8910023B

BORING LOCATION	MW-4 SW Corner of Property	ELEVATION AND DATUM	N/A
DRILLING AGENCY	ENSCO	DRILLER G. Nunes	DATE STARTED / DATE FINISHED May 11, 1989
DRILLING EQUIPMENT	Mobile B-53	COMPLETION DEPTH 20'	SAMPLER 2.5" Modified California Type
DRILLING METHOD	8" Hollow-stem Auger	DRILL BIT 8" Auger	NO. OF SAMPLES DIST. N/A	UNDIST. N/A
SIZE AND TYPE OF CASING	2" Schedule 40 PVC		WATER LEVEL FIRST N/A	COMPL. N/A | 24 HRS. N/A
TYPE OF PERFORATION	.010" Slotted	FROM 8.0 TO 18.0 Ft.	LOGGED BY: S. Clarke	CHECKED BY:
SIZE AND TYPE OF PACK	#1/20 Lonestar Monterey Sand	FROM 7.0 TO 20.0 Ft.		
TYPE OF SEAL	NO. 1 Bentonite Pellets	FROM 5.0 TO 7.0 Ft.		
	NO. 2 Concrete/Bentonite Grout	FROM 0.4 TO 5.0 Ft.		

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG: Lithology / Piezometer Installation	Water Content	Piezometer Data	SAMPLES: Drive Number / Sample Number / Recov. (Feet) / Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	2" Aggregate Base					
	Silty Clay (CH) Moist, dark gray					
5						
	Silty Clay (CL) Moist,light brown Becoming brown with medium sand					
10	Gravel to 1/2"				1 — 6 / 10 / 15	
	Clayey Sandy Silt (ML) Moist, light brown, fine sand					
15					2 — 5 / 8 / 8	
20	Augered to 20'					
25						
30						
35						

Piezometer Legend
- Slotted Well Screen
- Sand Pack
- Bentonite Pellets
- Cement/ Bentonite Grout

FIELD LOG OF BORING NO. MW-4 SHEET 1 OF 1

Ddd Inv LSHW27H8 01-033

Woodward-Clyde Consultants

PROJECT NAME NED CLYDE GW MONITORING NO. 8910023B

BORING LOCATION	MW-5 South Side of Property	ELEVATION AND DATUM	N/A
DRILLING AGENCY	ENSCO	DRILLER G. Nunes	DATE STARTED / DATE FINISHED May 11, 1989
DRILLING EQUIPMENT	Mobile B-53	COMPLETION DEPTH 20'	SAMPLER 2.5" Modified California Type
DRILLING METHOD	8" Hollow-stem Auger	DRILL BIT 8" Auger	NO. OF SAMPLES DIST. N/A; UNDIST. N/A
SIZE AND TYPE OF CASING	2" Schedule 40 PVC		WATER LEVEL FIRST N/A; COMPL. N/A; 24 HRS. N/A
TYPE OF PERFORATION	.010" Slotted	FROM 8.0 TO 18.0 FT.	LOGGED BY: S. Clarke
SIZE AND TYPE OF PACK	#1/20 Lonestar Monterey Sand	FROM 7.0 TO 18.0 FT.	CHECKED BY:
TYPE OF SEAL	NO. 1 Bentonite Pellets	FROM 5.0 TO 7.0 FT.	
	NO. 2 Concrete/Bentonite Grout	FROM 0.4 TO 5.0 FT.	

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	Water Content	Piezometer Data	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	1' Gravel Base									
	Silty Clay (CH) Moist, dark gray									
5	Silty Clay (CL) Moist,light brown									
	Becoming brown with medium sand									
10	Silty Fine Sand (SM) Medium dense, moist					1			8 10 25	
15	Silty Gravelly Sand (SM) Gravel to 3/4" Less gravel									
20	Augered to 20'									
25										
30										
35										

Piezometer Legend
- Slotted Well Screen
- Sand Pack
- Bentonite Pellets
- Cement/ Bentonite Grout

FIELD LOG OF BORING NO. MW-5 SHEET 1 OF 1

Add'l Info 1S/4W27H9 01-033

Woodward-Clyde Consultants

PROJECT NAME NED CLYDE GW MONITORING NO. 8910023B

BORING LOCATION	MW-6 SE Corner of Property	ELEVATION AND DATUM	N/A
DRILLING AGENCY	ENSCO	DRILLER G. Nunes	DATE STARTED / DATE FINISHED May 11, 1989
DRILLING EQUIPMENT	Mobile B-53	COMPLETION DEPTH 18'	SAMPLER 2.5" Modified California Type
DRILLING METHOD	8" Hollow-stem Auger	DRILL BIT 8" Auger	NO. OF SAMPLES DIST. 1 / UNDIST. N/A
SIZE AND TYPE OF CASING	2" Schedule 40 PVC	WATER LEVEL FIRST 11'	COMPL. N/A / 24 HRS. N/A
TYPE OF PERFORATION	.010" Slotted	FROM 8.0 TO 18.0 Ft.	LOGGED BY: S. Clarke
SIZE AND TYPE OF PACK	#1/20 Lonestar Monterey Sand	FROM 7.0 TO 18.0 Ft.	CHECKED BY:
TYPE OF SEAL	NO. 1 Bentonite Pellets	FROM 5.0 TO 7.0 Ft.	
	NO. 2 Concrete/Bentonite Grout	FROM 0.4 TO 5.0 Ft.	

DEPTH (feet)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Piezometer Installation	Water Content	Piezometer Data	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	Silty Clay (CH) Moist, dark gray									
5	Silty Clay (CL) Gray-brown, moist									
	Sandy Silty Clay (CL) Light brown, fine sand									
10	Sandy Silt (ML) Light brown, fine sand				ATD	1			8 10 15	
	Gravel layer									
15										
	Augered to 18'									
20										
25										
30										
35										

Piezometer Legend
- Slotted Well Screen
- Sand Pack
- Bentonite Pellets
- Cement/ Bentonite Grout

1 of 5

01-547R-T

MW-4 01S04W27G02
MW-5 01-894 G03
MW-6 G04

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE ♦ PLEASANTON, CALIFORNIA 94588 ♦ (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Pacific Cryogenics
2311 Magnolia Street
Oakland, CA 94607

CLIENT
Name Aldo Guidotti / Estate of Jean Josephine
Address 1 Bates Blvd #300 Phone
City Orinda Zip 94536

APPLICANT
Name Hageman-Aguiar, Inc.
3732 Mt Diablo Blvd
Address Suite 372 Phone (510)284-1661
City Lafayette Zip 94549

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	___	General	___
Water Supply	___	Contamination	___
Monitoring	X	Well Destruction	___

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD: excavation backfill wells
Mud Rotary ___ Air Rotary ___ Auger ___
Cable ___ Other X

DRILLER'S LICENSE NO. NONE (excavation backfill wells) 66

WELL PROJECTS
Drill Hole Diameter ___ in. Maximum
Casing Diameter 4 in. Depth 15 ft.
Surface Seal Depth 3 ft. Number 3

GEOTECHNICAL PROJECTS
Number of Borings ___ Maximum
Hole Diameter ___ in. Depth ___ ft.

ESTIMATED STARTING DATE 11/19/92
ESTIMATED COMPLETION DATE 11/19/92

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Gary Aguiar Date 11/18/92

FOR OFFICE USE

PERMIT NUMBER 92607
LOCATION NUMBER

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as arrive at the Zone 7 office five days prior proposed starting date.
2. Submit to Zone 7 within 60 days after completi of permitted work the original Department Water Resources Water Well Drillers Report equivalent for well projects, or drilling lo and location sketch for geotechnical projects.
3. Permit is void if project not begun within days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal a industrial wells or 20 feet for domestic an irrigation wells unless a lesser depth specially approved. Minimum seal depth f monitoring wells is the maximum depth practicab or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cu tings or heavy bentonite and upper two feet with co pacted material. In areas of known or suspect contamination, tremied cement grout shall be used place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concre placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 19 Nov 9
Wyman Hong

121989

66

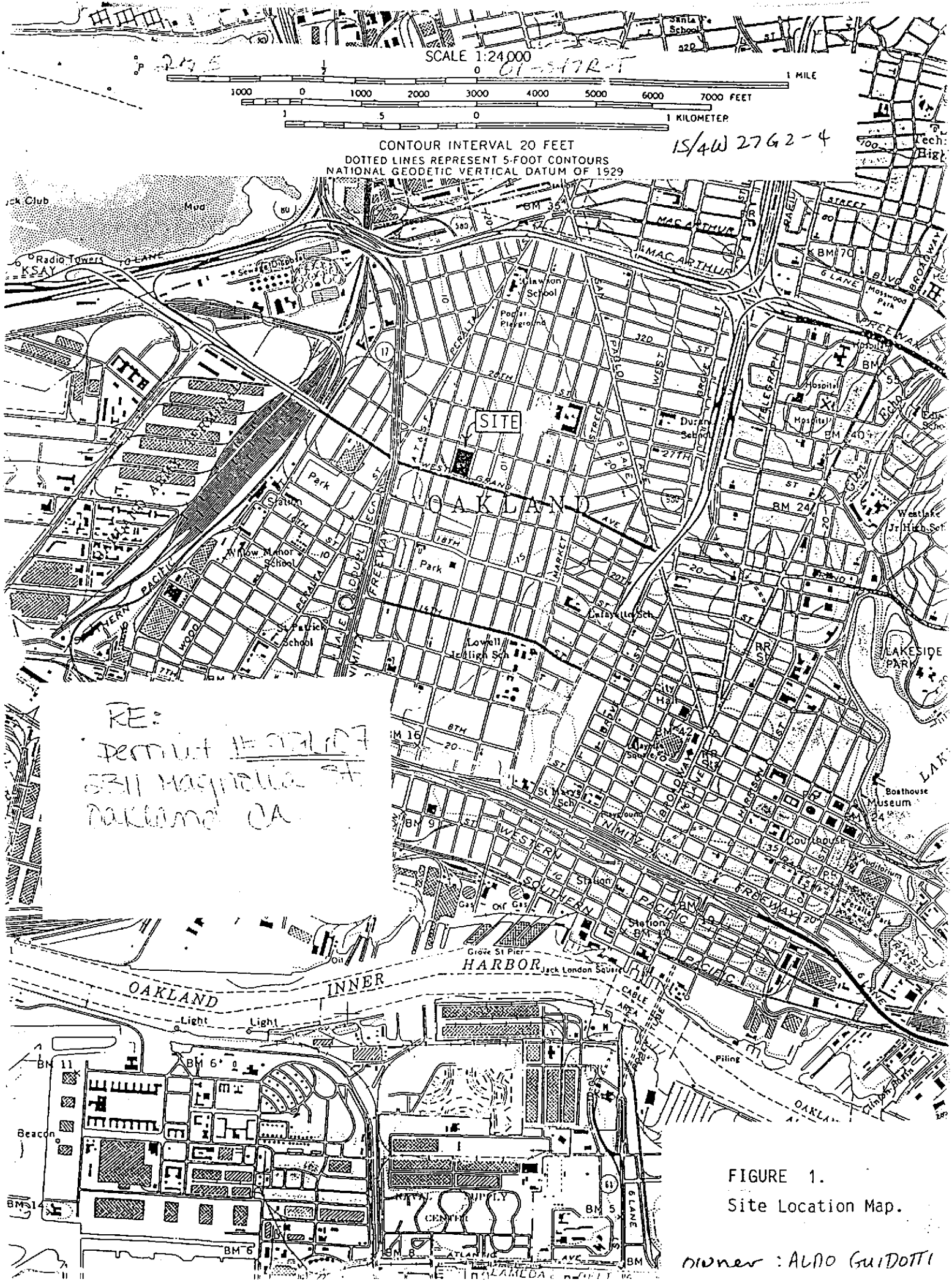
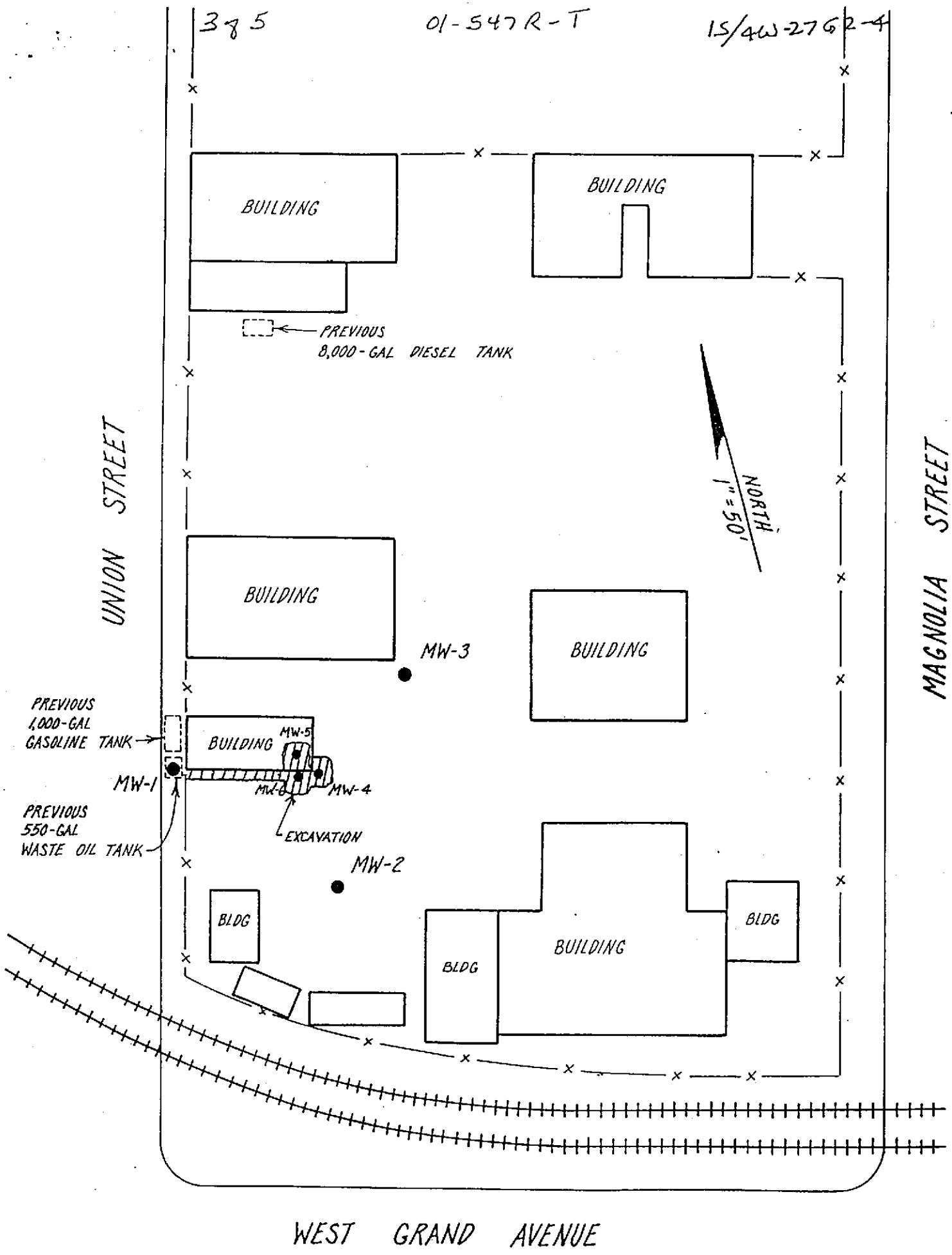


FIGURE 1.
Site Location Map.

owner : ALDO GUIDOTTI

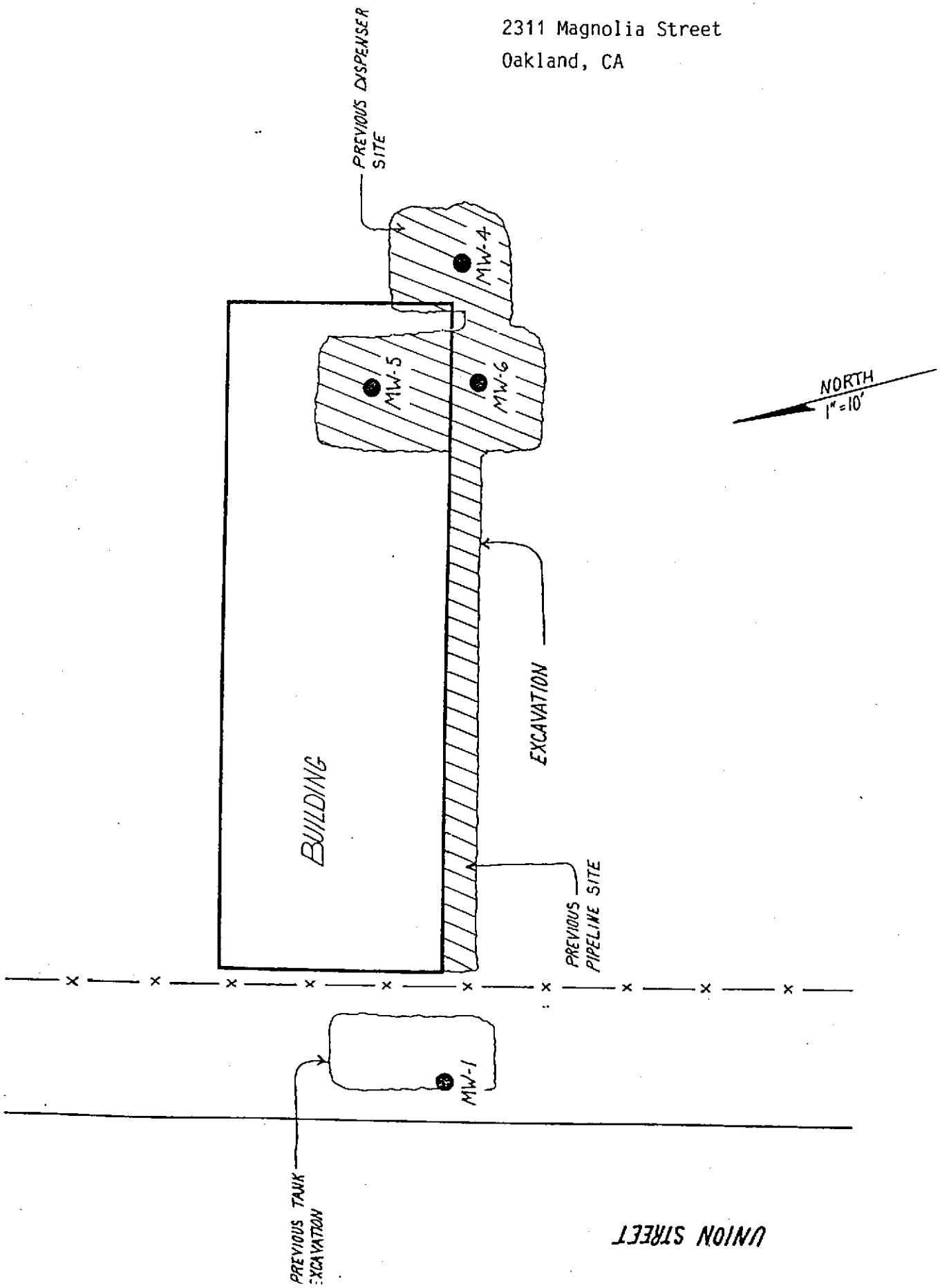

385
01-547R-T
1S/4W-27G2-4
BUILDING
BUILDING
PREVIOUS
8,000-GAL DIESEL TANK
NORTH
1" = 50'
UNION STREET
MAGNOLIA STREET
BUILDING
MW-3
BUILDING
PREVIOUS
1,000-GAL
GASOLINE TANK
BUILDING
MW-5
MW-1
MW-6
MW-4
EXCAVATION
PREVIOUS
550-GAL
WASTE OIL TANK
MW-2
BLDG
BLDG
BUILDING
BLDG
WEST GRAND AVENUE

4/85 01-547 R-T 1S/4W-27G2-4

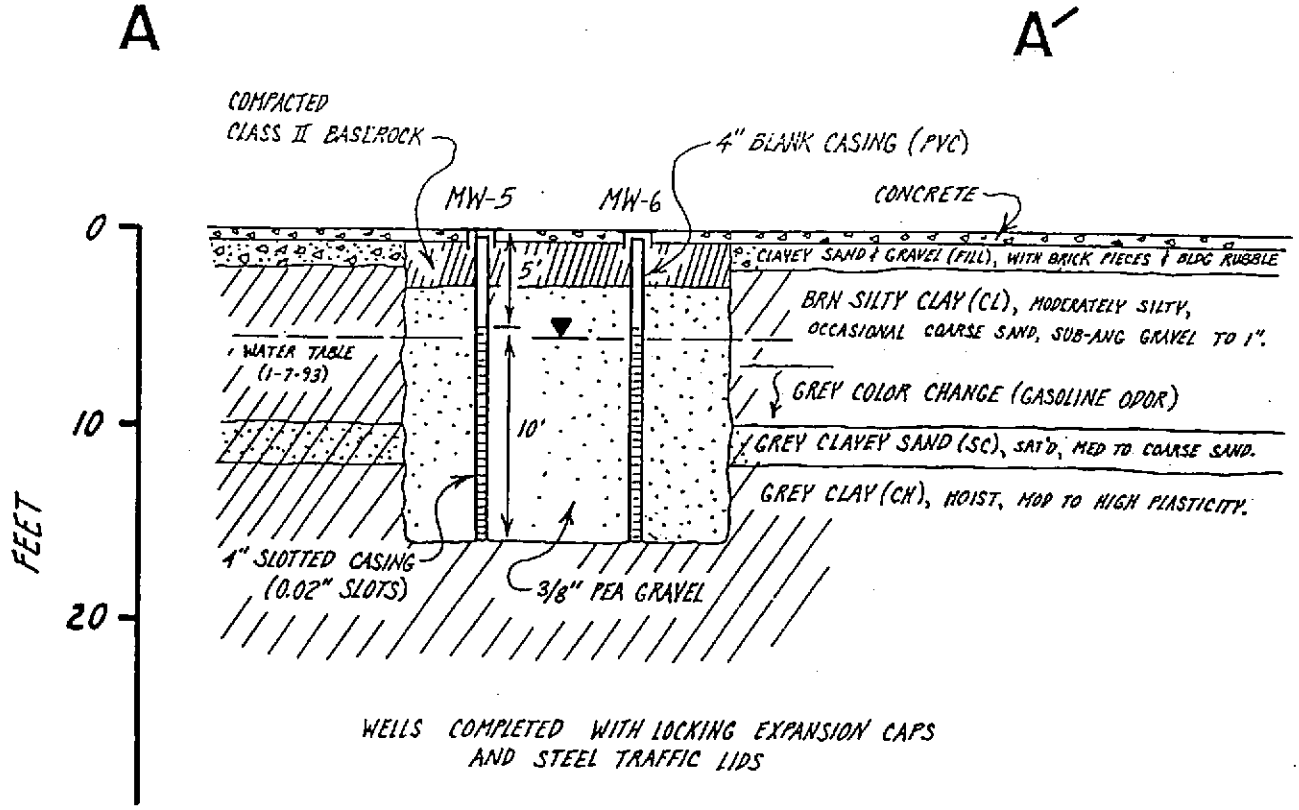
MW-3

Locations of Backfill Wells
MW-4, MW-5 and MW-6

2311 Magnolia Street
Oakland, CA



575 01-547R-T 1S/4W-27G2-9



WELLS COMPLETED WITH LOCKING EXPANSION CAPS AND STEEL TRAFFIC LIDS

SCALE
HORIZ: 1"=10'
VERT: 1"=10'

2311 Magnolia Street
Oakland, California

MW-4, MW-5, MW-6 all have similar data

Were excavations-backfilled

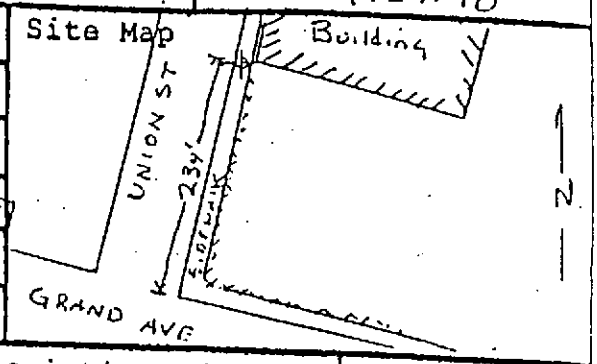
BORING LOG ____ 1S/4W 27G1 01-471Z 1 OF 1

Client Guidotti

Date 9.27.90

Location 2210 Union St
Oakland Ca.

Site Map



Driller Aqua Science #487000

Method 8" Hollow Stem Auger Mobile Drill B57

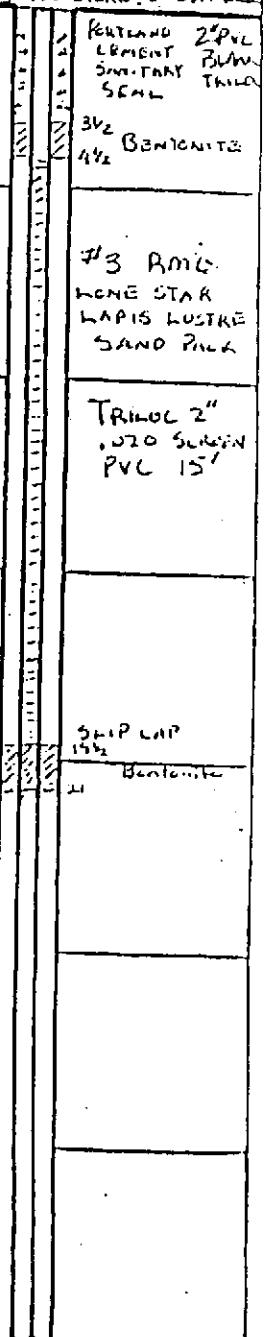
Sampler Calif. 2" 140# w/ 30" Fall

Logger B. Halsted

Inspector

Sample Number	Depth	Blows/ft	Moisture	Depth	USCS	Description of Subsurface Materials
						Concrete
						Backfill; Import soil
		HYDRAULIC		5	OH	BAY MUD NO ODOR
		MAST DOWN DRIVE SAMP.		6.5		WATER LEVEL
SB-1	8½-10		WET	10	OH	BAY MUD NO ODOR
		DRILLED W/ HAMMER,				
SB-2	13½-15		WET	15	OH	
		TRIL LINE, SAMPLER W/				
SB-3	19½-21		WET	20	GL	GRAVEL/SAND/MUD
		HEAD ELEC DRIVE				BOH @ 21'
		LOW OVER. UNABLE TO				
		DUE TO				

Completion Data



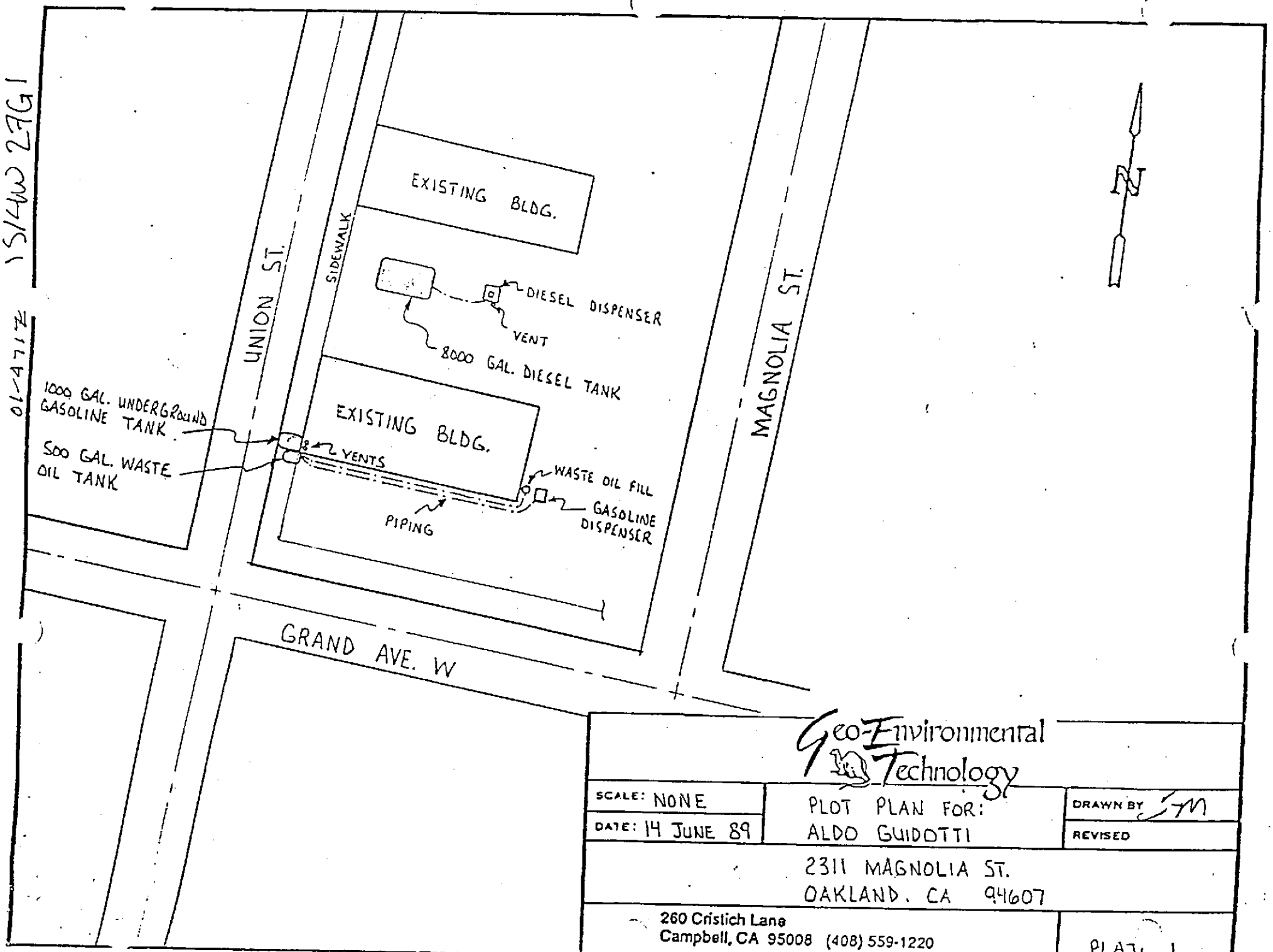
Total Depth 19.5'

Water Level 6.5'

Sanitary Seal PORTLAND CEMENT 3.5'

Permit 90577

Agency Alameda Co. Flood Control & Water Conservation Dist. Zone 7



Geo-Environmental Technology

SCALE: NONE	PLOT PLAN FOR:	DRAWN BY SM
DATE: 14 JUNE 89	ALDO GUIDOTTI	REVISED
	2311 MAGNOLIA ST. OAKLAND, CA 94607	

260 Cristich Lane
Campbell, CA 95008 (408) 559-1220

PLATE 1

screened interval, and extended to approximately 1 foot above the screen. A bentonite and concrete seal was placed from the top of the sand pack to the ground surface. A locking cap and protective traffic-rated vault box was installed on the top of the well.

Potentially contaminated soil cuttings and samples not retained for chemical analysis were contained in secured 55 gallon storage on-site. The storage drums were properly sealed and labeled. All drilling and sampling equipment was steam-cleaned upon completion of well installation.

Groundwater Sampling Procedure

Groundwater sampling was performed by GET using techniques approved by the Environmental Protection Agency (EPA), and the California Regional Water Quality Control Board, (RWQCB). These techniques require that:

1. Wells will be developed until the water is free of fine-grained sediments and/or until field measurements of pH, electrical conductivity, and temperature stabilize. Approximately four to ten well volumes of water will be removed during development of the well.

2. Equipment inserted into the well during development will be decontaminated by washing or steam cleaning prior to and after its use.

GET's sampling procedure consisted of first measuring the water level in the well and then checking for the presence of floating petroleum product using a clear teflon bailer. Because no free product was detected, the well was purged of four casing volumes of water. In order to ensure that a representative sample was obtained, the pH, electrical conductivity and temperature were monitored and documented on a well sampling field sheet. (See Figure 4). Using a teflon bailer, two samples entitled 9070-1 and 9070-2 were collected on 10/26/90 at 1:30 pm. They had a pH of 7.4 an electrical conductivity of .01, and a temperature of 65 degrees. Samples were placed into appropriate EPA-approved containers, labeled, logged onto chain-of-custody documents, and transported to the laboratory. All sampling equipment was properly decontaminated with a trisodiumphosphate, (TSP), solution followed with a tap water rinse. A field blank sample (9070-2) was prepared for quality control purposes, prior to collection of groundwater samples. Potentially contaminated purge water and decontaminant rinsate was contained in secured 55-gallon storage drums on-site. The drums were properly sealed and labeled.

01-471Z
15/4W 27G1

Site Description

A site map showing the current layout of the site is presented in Figure 2. This figure shows the locations of existing structures and the former underground storage tanks, as well as adjacent streets. Site sketch maps showing the sources of the samples are shown in figures 3 and 4

Well Installation

In order to determine if site operations have impacted groundwater, GET installed one groundwater monitoring well within the tank pit excavation area. The well is within five feet of the former waste oil storage tank location in the estimated downgradient direction. The well location is shown on Figure 2 entitled Site Map and Soil Sample Plot Plan and on Figure 3 entitled Boring Log MW-1.

The soils boring was drilled using an 8-inch diameter continuous-flight hollow-stem B-57 mobile drill augur. The boring was logged by a Professional Engineer using the Unified Soil Classification System and standard geologic techniques. (See Appendix A) Soil samples for logging and chemical analysis were collected at 9', 14', and 20' depths and were entitled SB-1 ,SB-2 and SB-3 respectively. These samples were collected by advancing a California-modified split-spoon sampler with brass liners into undisturbed soil beyond the tip of the auger. The sampler was driven 18 inches, using a 140-pound hammer with a 30" drop. Soil samples above groundwater were retained in brass liners, capped with aluminum foil and plastic end caps, and sealed in clean glass containers for possible chemical analysis. The samples were placed on ice and transported to the laboratory accompanied by the appropriate chain-of-custody documentation. All drilling and sampling equipment was thoroughly steam-cleaned prior to utilization.

The boring for the monitoring well (appendix A) penetrated 14.5 feet through the water bearing zone to a depth of 21 feet. Permeable sand and gravel was encountered at 19.5 feet. As a result, the boring was stopped and bentonite used to seal the well between 19.5 and 21 feet. The boring was then converted to a groundwater monitoring well with the installation of a 2-inch diameter, flush-threaded Schedule 40 PVC casing and 0.020-inch factory slotted Triloc screen. 13 feet of screen was placed through the entire saturated section extending to two feet above the static water level in order to account for fluctuations in groundwater elevation. A 2 X 12 graded #3 RMC Lone Star Lapis Lustre sand pack was placed in the annular space across the