Harding Lawson Associates

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November 5, 1990

3457,008.04

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

Attention: Mr. Scott Seery

Gentlemen:

Enclosed is one (1) copy of our final report titled "Preliminary Report, San Francisco Water District Sunol Yard, 505 Paloma Way, Sunol, California" dated November 5, 1990.

If you have any questions, please call.

Yours very truly,

HARDING LAWSON ASSOCIATES

Jeffrey F. Ludlow
Project Geologist

JFL/msj/A9387-CT40

A Report Prepared for

Public Utilities Commission
City and County of San Francisco
949 Presidio Avenue
San Francisco, California 94115

Maintenance Yard

PRELIMINARY REPORT
SAN FRANCISCO WATER DISTRICT SUNOL YARD
505 PALOMA WAY
SUNOL, CALIFORNIA

HLA Job No. 3457,008.04 Nov. 5, 1990

by

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November 5, 1990

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I INTRODUCTION

Harding Lawson Associates (HLA) has prepared this Preliminary Report (PR) to perform a soil and groundwater quality assessment for the City and County of San Francisco Public Utilities Commission (PUC) at the San Francisco Water District Sunol Yard, 505 Paloma Way, Sunol, California. Plates 1 and 2 illustrate the site location. The purpose of this investigation is to meet groundwater monitoring requirements discussed in two letters from the Alameda County Department of Environmental Health (ACDEH). The ACDEH letters dated July 9, 1990 and July 13, 1990 were addressed to the City and County of San Francisco Utilities Engineering Bureau, and the City and County of San Francisco Department of Public Health, respectively. In the July 9 letter, the ACDEH requested that a preliminary report (PR) be prepared and a soil and groundwater quality investigation be performed in the area of three former underground storage tanks at the Sunol yard. In the July 13 letter, the ACDEH additionally requested a PR and soil and groundwater quality investigation be performed in a former oil spill area of the Sunol yard.

This PR presents the following:

- Summary of previous investigations completed at the former UST and oil spill locations
- A description of the geologic setting of the region and site
- Results and of a water well survey and regulatory agency file review
- HLA's proposed work plan for a soil and groundwater assessment.

The results of the assessment will be presented in a Problem Assessment Report (PAR).

II SITE DESCRIPTION

The Sunol yard is located in the western half of the San Francisco Water District's watershed surrounding the Sunol Valley. The main features of this valley are Highway 680, gravel pits approximately 2.5 miles south of the site, nurseries, and walnut orchards adjacent to the site. The yard itself contains various office buildings, maintenance shops, garages, a superintendent's house, and a guest house for servicing the watershed. The three former USTs and oil spill areas are located in the southern part of the Sunol yard. Plate 3 illustrates the Sunol yard.

III PREVIOUS INVESTIGATIONS

A. Underground Storage Tanks

On May 15 and 16, 1990, three USTs were removed from the Sunol yard by the joint venture of Stacy and Witbeck, and Rogers and Jenner. Details regarding this were included in the ACDEH July 9, 1990 letter. The USTs included one 550-gallon regular gasoline UST, one 1,000-gallon unleaded gasoline UST, and one 550-gallon diesel UST. The excavated soil was stockpiled on site. Once the USTs were removed, four soil samples were collected at approximately 2 feet into the native soil beneath the former USTs, approximately 10 feet below grade. The samples were analyzed at Precision Analytical Laboratories, Inc. in Richmond, California for total petroleum hydrocarbons (TPH) as gasoline and diesel using EPA Method 5030 and DHS Extraction Method; and for benzene, toluene, ethyl benzene, and xylene (BTEX) using EPA Method 8020. The results of the analysis indicate that TPH as gasoline and TPH as diesel were present in one of the samples at 7.6 parts per million (ppm) and 40 ppm, respectively. BTEX were detected in three of the four samples at concentrations up to 1.7 ppm. Table 1 presents a summary of the soil sample analytical results. The laboratory report of this data contains a discrepancy in the identification of sample number two and four, as discussed in Table 1.

B. Oil Spill Area

In November 1989, American Environmental Management Corporation (AEMC) supervised for the City and County of San Francisco Department of Public Health the oil-contaminated soil excavation at the oil spill area approximately 100 feet southwest of the former UST locations at the east end of a shop. Approximate 225 square feet of soil was excavated to 5 to 7-1/2 feet deep.

During excavation, soil samples were collected at depths where the soil was observed to be the most contaminated. Analysis of these soil samples indicated the presence of total oil and grease at concentrations up to 31,000 ppm using EPA Method 9074, and various volatile organic compounds (VOCs) at 0.3 to 3.2 ppm using EPA Method 8240. Bottom and sidewall confirmation soil samples were collected. Analytical results of these samples indicated that total recoverable hydrocarbons using EPA Method 418.1 were present at 290 ppm in the bottom of the excavation approximately 7 feet below grade and at 12,000 ppm at the sidewall of the excavation beneath the concrete foundation slab of the shop at approximately 3 feet below grade. The excavation was deepened to approximately 7-1/2 feet, where additional confirmation soil samples were collected. The results of these analysis indicate that total oil and grease using Standard Method 503E were present at 120 ppm. The excavation was not deepened underneath the concrete foundation. The excavated soil was stockpiled at the Sunol yard for future bioremediation. Table 2 presents a summary of soil sample analytical results from the former oil stain area. The soil samples were analyzed at the AEMC Laboratory in Sacramento, California and by Curtis and Tompkins Analytical Laboratory in Berkeley, California.

IV GEOLOGIC SETTING

A. Regional Geology and Hydrogeology

The site is at the head of Niles Canyon, which is part of the Sunol Valley within the Mt. Diablo Range. The sediments in this valley accumulated as alluvial fans and stream deposits, and are generally characterized as silts, sands, and gravels. Alameda Creek and Arroyo de la Laguna are the two main creeks that drain the Sunol Valley, with the latter flowing perennially according to the SFWD. Groundwater in the valley generally flows in a west-northwesterly direction, toward the confluence of these two creeks.

B. Site Geology and Hydrogeology

Based on the log of an exploratory boring drilled by the Alameda County Water District (ACWD), the site is generally underlain by a silt layer to a depth of about 10 feet. The silt layer is underlain by a sequence of sandy silty gravel, sandy clayey gravel, and sandy gravelly clay units to the maximum depth explored of approximately 100 feet. Groundwater in this boring was encountered at approximately 17 feet below grade. On August 23, 1990, the water table was measured by HLA at 20 feet below grade in the ACWD well B-1. This well is approximately 75 feet south of the former oil spill area indicated on Plate 3.

V RESULTS OF DATA SEARCH

A. Water Well Survey

Two groundwater wells were observed by HLA southeast of Arroyo de la Laguna within 1 mile of this site. Plate 2 and 3 illustrates these well locations. Mr. Dick Tanaka, manager of the Land Section for the San Francisco Water District, stated that the wells were installed by the Alameda County Water District and are used for measuring water levels and analyzing groundwater samples for pesticides. He stated that pesticides had not been detected in groundwater samples from these wells. Well construction details and chemical analysis reports were not reviewed. Mr. Tanaka stated that no other wells exist within this area which is managed by the Water District.

B. Regulatory Agency Review

Since the site is in a rural setting and is surrounded by the San Francisco Water District watershed, no other sources of groundwater contamination by petroleum hydrocarbons are suspected southeast of Arroyo de la Laguna within 1/4-mile of this site.

VI PROPOSED WORK PLAN

A. Groundwater Monitoring Well Installation

To assess groundwater quality in the former USTs area and the former oil spill area, HLA proposes to install three groundwater monitoring wells. Based on an assumed groundwater gradient in a northwesterly direction towards Arroyo de la Laguna, approximately 500 feet from the site, one groundwater monitoring well will be installed at the northwest corner of the former UST excavation and at the northwest corner of the former oil spill area excavation. A third groundwater monitoring well will be installed downgradient of these two sites at the northwest corner of the maintenance shop. The proposed groundwater monitoring well locations are illustrated on Plate 3.

The monitoring wells will be installed to a total depth of approximately 30 feet below ground surface, approximately 10 feet below the water table, using truck-mounted hollow-stem auger drilling equipment. Soil samples will be collected approximately every 5 feet to the total depth drilled using a 2-1/2-inch-inside-diameter Sprague and Henwood sampler lined with three 6-inch-long stainless steel tubes. One tube of soil will be sealed with aluminum foil, plastic caps, and tape, labeled, and placed in an ice cooler for delivery to the analytical laboratory. The soil samples will be described using the ASTM/Unified Soil Classification System, visually observed for hydrocarbon staining, and analyzed in the field with an organic vapor analyzer (OVA) for the presence of organic vapors.

The groundwater monitoring well will be constructed using 4-inch-diameter Schedule 40 flush-threaded PVC pipe. The bottom 15 feet of the well casing will be perforated with 0.02-inch slots. The slotted portion of the casing will extend to approximately 5 feet above the static water table measured in the soil boring. The annulus will be filled with No. 3 Lonestar sand from the bottom of the boring to a

depth approximately two feet above the top of the screen interval. Approximately 2 feet of bentonite pellets will be placed on top of the sand and hydrated using deionized water. The remainder of the annular space will be filled with the neat cement-bentonite slurry. The monitoring well will be secured with a slip cap and completed with a locking above-ground steel pipe well cover.

The drilling and sampling equipment will be steam-cleaned and/or washed with an Alconox solution and rinsed with deionized water between borings and sampling intervals. Soil cuttings generated during the drilling will be contained in 55-gallon drums and stored on-site.

B. Groundwater Monitoring Well Development and Sampling

The groundwater monitoring wells will be developed using a surge block/bailer technique and pumped until the water is relatively free of fines. Pumping will continue until approximately ten well volumes of groundwater have been removed and temperature, conductivity, and pH parameters have stabilized. The wells will then stabilize for at least 24 hours prior to purging and sampling.

Prior to groundwater sampling, approximately three to five well volumes of groundwater will be purged using a bailer or sump pump while measuring temperature, conductivity, and pH parameters. Once these parameters have stabilized, a groundwater sample will be collected using a stainless steel or Teflon bailer and placed in appropriate containers for chemical analysis. The containers will be labeled and placed in an ice cooler for delivery to the analytical laboratory.

All groundwater purged during the development and sampling will be contained in 55-gallon drums and stored on-site. All groundwater purging and sampling equipment will be decontaminated with an Alconox solution and rinsed with deionized water before sampling each monitoring well.

C. Soil and Groundwater Sample Analysis

The soil and groundwater samples will be delivered under chain-of-custody procedures to a state-certified laboratory for chemical analysis. Chemwest Analytical Laboratories in Sacramento, California is expected to perform the analysis. One soil sample collected from 1 to 2 feet above the water table in the borings drilled next to the former UST and oil spill areas will be analyzed. The sample from next to the former USTs will be analyzed for TPH as gasoline and diesel using EPA Method 8015 and for BTEX using EPA Method 8020. The sample collected from next to the former oil spill area will be analyzed for TOG using Standard Method ~~503E~~ 5520 B+F and for VOCs using EPA Method 8240.

The groundwater sample collected from the well next to the former USTs will be analyzed for TPH as gasoline and diesel using EPA Method 8015 and BTEX using EPA Method 8020. The groundwater sample from next to the former oil spill area will be analyzed for TOG using Standard Method ~~503E~~ 5520C+F and VOCs using EPA Method 8240. The groundwater sample collected further downgradient will be analyzed for all the previously mentioned compounds.

D. Problem Assessment Report

HLA will present a summary of the work performed in a problem assessment report (PAR). Included in this report will be a summary of the data collected, procedures used, and conclusions and recommendations for additional work, if needed. The PAR will be submitted to the ACDEH within seven weeks of their approval of this PR and work plan.

Table 1

Summary Stacy & Witback and Rogers & Genner May 1990

Soil Sample Analytical Results

Former UST Location

Sample #	TPH-G	TPH-D	Benzene	Toluene	Ethyl Benzene	Xylene
WD 2022-1	7.6	40	0.70	1.7	0.12	0.80
WD 2022-2	<0.50	NA	0.018*	0.12*	<0.015*	0.14*
WD 2022-3	<0.50	NA	<0.015	0.06	<0.015	0.048
WD 2022-4	<0.50	NA	0.07	0.21	<0.015	0.13

Notes:

Concentrations are in milligams per kilograms
NA= Not Analyzed
TPH-G= Total petroleum hydrocarbons as gasoline
TPH-D= total petroleum hydrocarbons as diesel
<0.50= Not detected at or above the indicated laboratory detection limit
*=Laboratory report indicates that sample ID is WD 2022-4
HLA interprets it to be WD 2022-2

Table 2

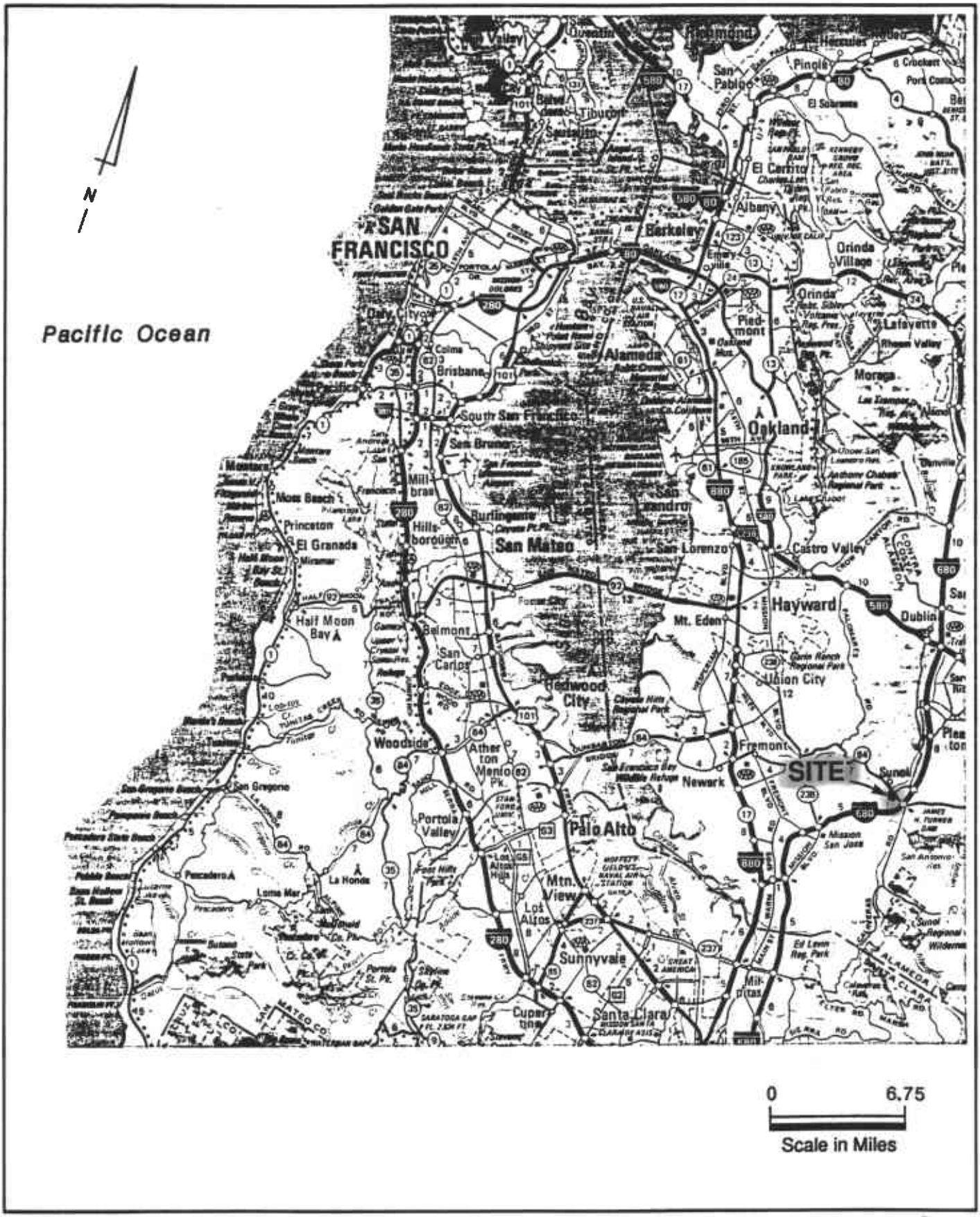
Summary American Environmental Management Corp. September 1989

Soil Sample Analytical Results

Former Oil Stain Area

Sample #	Sunol 1	Sunol 2	Sunol 3	Sunol 4	Sunol 5	Sunol 6	Sunol 7	Sunol 8	Sunol 9
Depth (feet)	2.0	2.0	3.0	7.0	6.0	6.0	5.0	7.0	7.5
TOG	31,000	<100	12,000	NA	NA	NA	<100	150	120
TRH	NA	NA	NA	290	<10	<10	NA	NA	NA
TPH	NA	NA	NA	NA	NA	NA	NA	<10	NA
1,1-Dichloroethane	400	NA	NA	<200	NA	NA	<200	NA	NA
1,1,1-Trichloroethane	740	NA	NA	<200	NA	NA	<200	NA	NA
Tetrachloroethane	3200	NA	NA	<200	NA	NA	<200	NA	NA
Toluene	910	NA	NA	<200	NA	NA	<200	NA	NA
Ethyl Benzene	320	NA	NA	<200	NA	NA	<200	NA	NA
Xylenes	2300	NA	NA	<400	NA	NA	<400	NA	NA
Cadmium	<1.0	NA	NA	<1.0	<1.0	NA	<1.0	NA	NA
Chromium	73	NA	NA	79	81	NA	86	NA	NA
Lead	42	NA	NA	11	14	NA	18	NA	NA
Zinc	72	NA	NA	45	41	NA	45	NA	NA

Notes:
TOG, TRH, TPH, and metal concentrations are in milligrams per kilograms; all others are in micrograms per kilograms
NA= Not Analyzed
<100= Compound not detected at or above the indicated laboratory detection limit
TOG= Total oil and grease
TRH= Total recoverable hydrocarbons
TPH= Total petroleum hydrocarbons
Depths are approximate

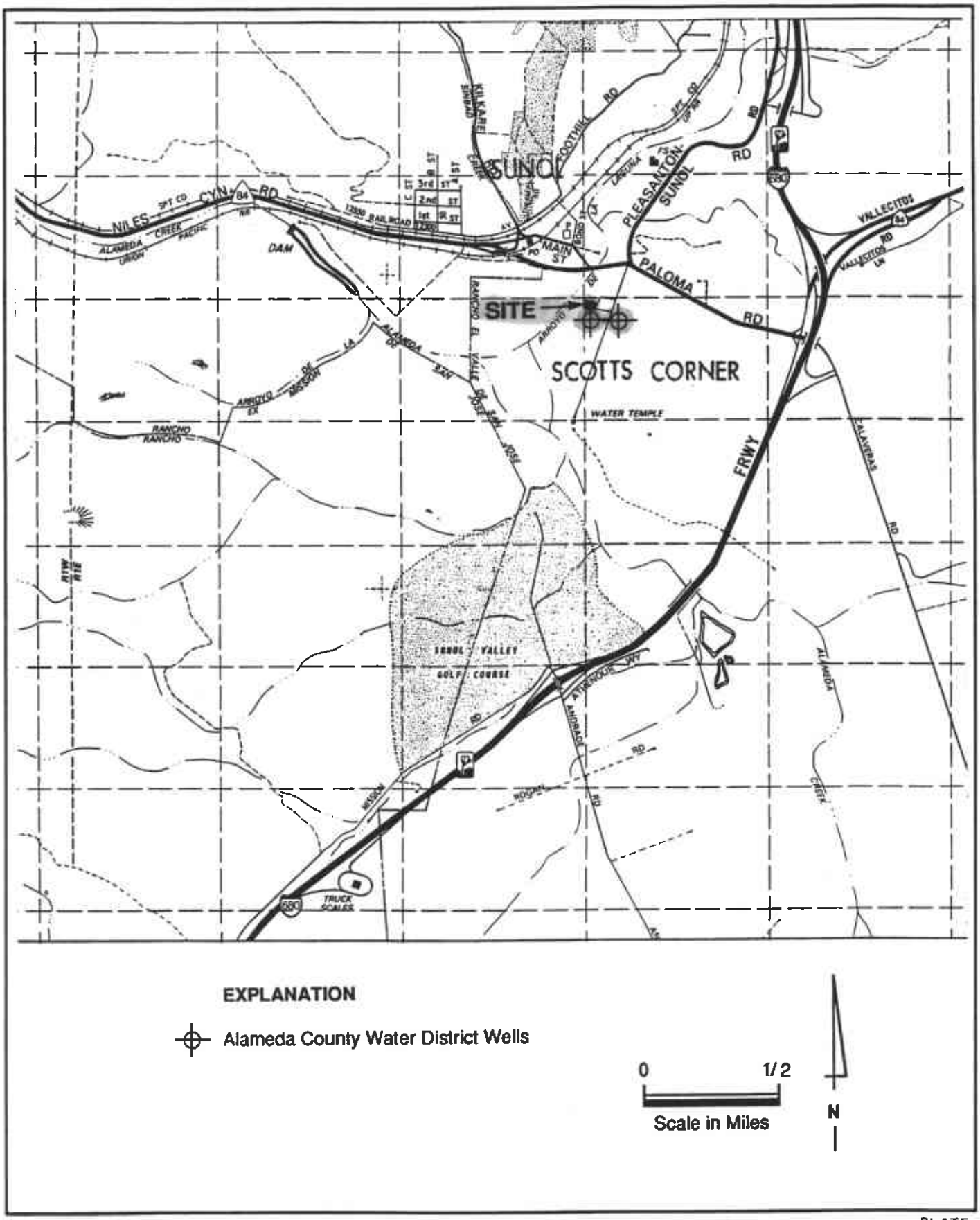


Harding Lawson Associates
Engineering and
Environmental Services

Site Location Map
PUC Sunol
Sunol, California

PLATE
1

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
AM	3457,008.04		10/90	



EXPLANATION

⊕ Alameda County Water District Wells

0 1/2

Scale in Miles

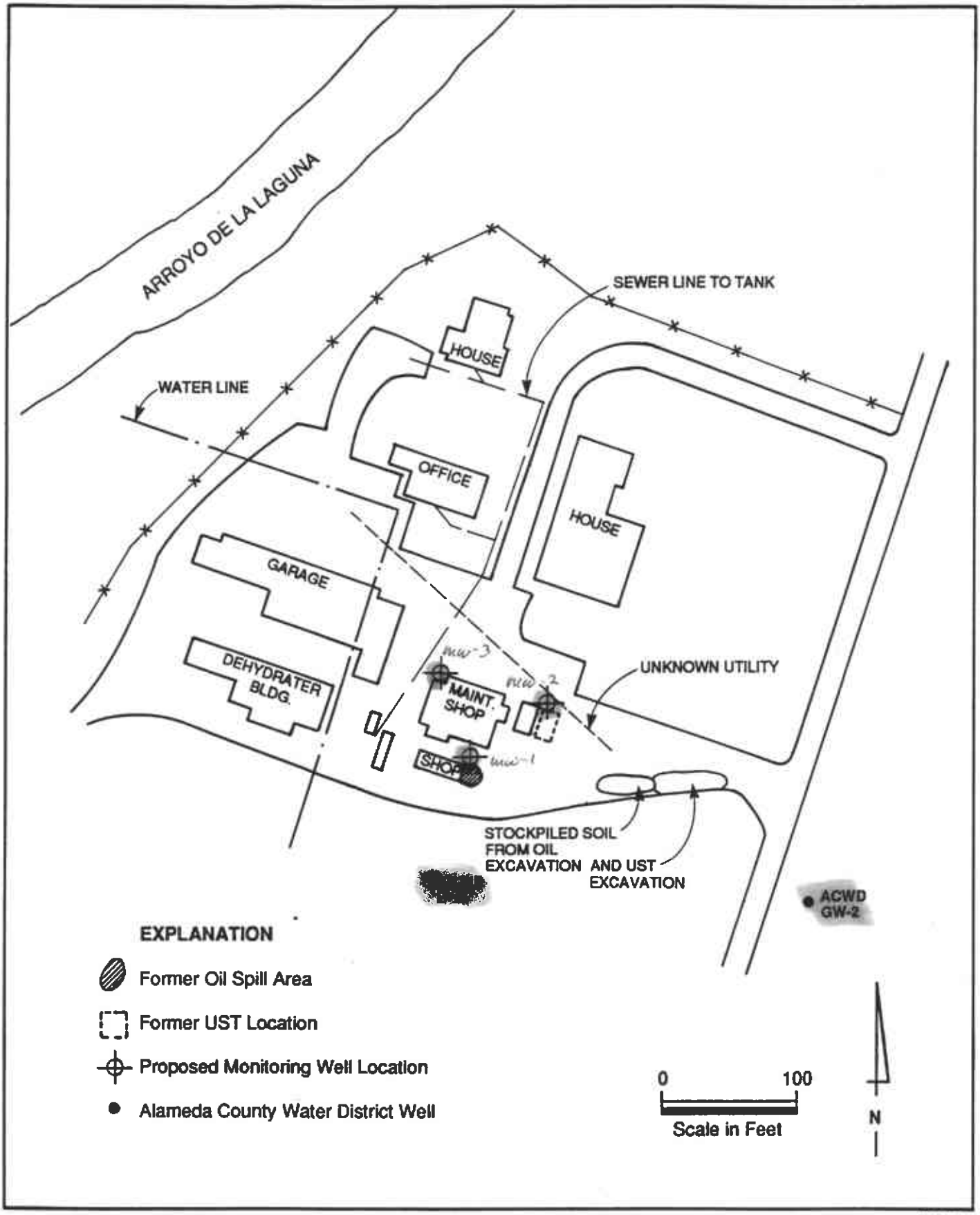
N

Harding Lawson Associates
Engineering and
Environmental Services

Site Vicinity Map
PUC Sunol
Sunol, California

PLATE
2

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
AM	3457,008.04	JR	10/90	



Harding Lawson Associates
Engineering and Environmental Services

Site Plan
PUC Sunol
Sunol, California

PLATE
3

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
AM	3457,008.04	SR	10/90	

DISTRIBUTION

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City and County of San Francisco
949 Presidio Avenue
San Francisco, California 94115
Attention: Mr. Larry James

1 copy: Alameda County Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621
Attention: Mr. Scott Seery

1 copy: Department of Public Health
City and County of San Francisco
101 Grove Street
San Francisco, California 94102
Attention: Mr. David Wells

JFL/JO/dm/B9328-R45

QUALITY CONTROL REVIEWER

Mark G. Filippini
Engineering Geologist