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#5914

February 19, 1999
Via US Mail

Patrick Murray
McMorgan & Company
One Bush Street
Suite 800
San Francisco, CA 94104

Re: Quarterly Groundwater Monitoring Work Plan, 444 Hegenberger Road, Oakland, CA.; NWE Project No. 05-001594-1

Dear Mr. Murray:

Northwest Envirocon, Inc. (NWE) is pleased to present the following Work Plan for conducting quarterly groundwater monitoring at 444 Hegenberger Road, Oakland, California (Site). The Work Plan has been prepared in accordance with the Scope of Work prepared by NWE, dated December 21, 1998.

INTRODUCTION

The Quarterly Groundwater Monitoring Work Plan presented herein has been prepared in accordance with the methodology required by the State of California Water Resources Control Board's Leaking Underground Fuel Tank (LUFT) Manual for quarterly monitoring and reporting groundwater conditions, status of soil and groundwater assessment and remediation activities at sites undergoing closure of underground storage tanks.

This document is divided into four sections. Section 1 is an introduction and describes the content of the document. Section 2 presents a description of the Site. Section 3 describes the conduct and results of soil and groundwater contamination assessment activities previously undertaken at the Site. Section 4 presents the Quarterly Groundwater Monitoring Work Plan.

BACKGROUND

The Site is located in northwest Alameda County, approximately ¼ mile south of the Interstate 80 and Hegenberger Road interchange, and approximately 1 mile east of Oakland International Airport. Plate 1 (Appendix A) illustrates the location of the Site. The Site is a rectangular shaped parcel situated at the southeast corner of the intersection of Hegenberger Road and Hegenberger Loop. Plate 2 (Appendix A) illustrates the configuration of the Site. The western portion of the Site was previously occupied by a retail gasoline service station.

April 1997 Soil and Groundwater Assessment

In April 1997, four soil borings were drilled at the Site to collect soil and groundwater "grab" samples. Plate 2 (Appendix A) illustrates the locations of the soil borings (SB-1 through SB-4). Soil sample analytical results detected total petroleum hydrocarbons as gasoline (TPHg) at concentrations ranging from 1.7 to 260 milligrams/kilogram (mg/kg), total petroleum hydrocarbons as diesel (TPHd) at concentrations ranging from 2.1 to 120 mg/kg, and oil and grease at concentrations ranging from 93 to 220 mg/kg. Groundwater "grab" sample analytical results detected benzene at concentrations ranging from 35 to 1,600 micrograms/liter (µg/l). Concentrations of methyl-tertiary-butyl-ether (MTBE) were not detected in the soil or groundwater grab samples at or greater than the analytical detection limit.

July - October 1997 Soil and Groundwater Assessment

On the basis of these results, an additional investigation was performed at the Site in July and October 1997, including a subsurface geophysical survey (July 24, 1997), exploratory trenching (October 8, 1997) in the northwest corner of the Site, and drilling soil borings to collect soil and groundwater "grab" samples (October 6, 7 and 8, 1997). Plate 2 (Appendix A) illustrates the locations of the geophysical survey, exploratory trenching and soil borings (SB-5 through SB-16). The results of the geophysical survey and exploratory trenching identified metal debris (discarded piping, auto parts, and scrap metal) beneath the surface at the Site but did not indicate the presence of underground storage tanks (USTs).

Twelve soil borings were drilled and sampled to depths of 10 to 12 feet below ground surface (bgs). Soil sample analytical results detected TPHg at concentrations ranging from 1.1 to 930 mg/kg, and oil and grease at concentrations ranging from 13 to 780 mg/kg. TPHd was not detected at concentrations at or greater than the analytical reporting limit. Groundwater "grab" sample analytical results detected TPHg at concentrations ranging from 0.190 to 52 milligrams/liter (mg/l), benzene concentrations ranging from 4.5 to 12,000 µg/l, toluene concentrations ranging from 1.1 to 1,800 µg/l, ethylbenzene concentrations ranging from 40 to 6,000 µg/l, and total xylenes concentrations ranging from 1.4 to 7,400 µg/l. Volatile organic compounds (solvents) were not detected in any of the four groundwater samples analyzed for these constituents at or greater than their respective analytical reporting limits. Concentration of TPHd was detected in one groundwater sample at 0.130 mg/l. Concentrations of total petroleum hydrocarbons as motor oil (TPHmo) ranged from 0.130 to 0.890 mg/l. Concentrations of MTBE were not detected in the soil or groundwater "grab" samples at or greater than the analytical detection limit.

November 1998 Supplemental Soil and Groundwater Assessment

On November 23 and 24, 1998, NWE drilled five borings at the Site which were converted into groundwater monitoring wells (MW1, MW2, MW3, MW4 and MW5). The locations of the monitoring wells are illustrated on Plate 3 (Appendix A). These wells were constructed of 2-inch-diameter, Schedule 40 PVC casing. All five wells were constructed with perforations from 5 to 20 feet bgs. Saturated soils inferring the presence of groundwater were encountered during borehole drilling between approximately 15 and 17 feet bgs in granular material (gravels and sands). The relative

elevations of the five groundwater monitoring wells were survey-controlled using as a benchmark the top of casing (TOC) for monitoring Well MW-4 (assumed 100.00 feet). The TOC elevation of the remaining monitoring wells was surveyed to the benchmark. Depth to groundwater was measured in the developed wells between 2.20 and 4.61 feet below TOC. The groundwater gradient beneath the Site was determined to be approximately 0.00091 ft/ft with a groundwater flow direction slightly south of west across the Site.

Elevated concentrations of TPHg and BTEX were detected in soil samples collected from Wells MW-2, MW-4 and MW-5 between 8.5 and 10 feet bgs. The highest TPHg and BTEX concentrations were detected in soil samples collected from Boring MW-1 between 8.5 and 10 feet bgs. Low TPHg concentrations were detected in soil samples collected from Boring MW-3 between 8.5 and 10 feet bgs, and Boring MW-4 between 10 and 13.5 feet bgs. The lowest TPHg and BTEX concentrations were detected in soil samples collected from Boring MW-4 between 13.5 and 15 feet bgs. Concentrations of TPHg and BTEX were not detected in soil samples collected from Boring MW-1 above the analytical reporting limit. In general, concentrations of TPHg and BTEX in soil decreased with increasing depth. The soil samples were not analyzed for MTBE.

The highest concentrations of TPHg were detected in groundwater samples collected from Well MW-3. Low concentrations of TPHg were detected in the groundwater sample collected from Well MW-4. The remaining groundwater samples collected from Wells MW-1, MW-2, and MW-5 did not contain concentrations of TPHg at or above the analytical reporting limit. Low concentrations of TPHd were detected in samples collected from Wells MW-2, MW-3, MW-4 and MW-5. Elevated concentrations of BTEX were detected in groundwater samples collected from Wells MW-3, and MW-4. The highest concentrations were detected in groundwater samples collected from Well MW-3. Low BTEX concentrations were detected in groundwater samples collected from Wells MW-2 and MW-5. Concentrations of BTEX were not detected in groundwater samples collected from Well MW-1. Concentrations of MTBE were not detected in the groundwater samples at or greater than the analytical detection limit.

QUARTERLY GROUNDWATER MONITORING WORK PLAN

The purpose of the Quarterly Groundwater Monitoring Work Plan is to present methods and procedures for measuring groundwater surface elevations and collecting, managing, preserving, and analyzing groundwater samples; a time schedule for conducting the quarterly groundwater monitoring; and a format for reporting the results of each quarterly monitoring event. A Site Safety Plan was previously prepared by NWE for the Site and will again be used for this Work Plan. all NWE field employees will possess the necessary 40-hour OSHA health and safety training to perform the various project tasks. NWE will contact the client prior to scheduling each monitoring event. Additionally, NWE will contact the Alameda County Environmental Health Services at least five days in advance of each monitoring event.

Field Methods and Sampling Procedures

Quarterly groundwater monitoring will consist of measuring groundwater surface elevations and collecting groundwater samples for analyses from five monitoring wells located on the Site as

illustrated on Plate 3 (MW-1, MW-2, MW-3, MW-4 and MW-5), and containing well purge and decontamination water generated during each quarterly event. Table 1 (Appendix B) lists the construction details for each monitoring well.

Every quarter each well will be monitored for groundwater surface elevation, purged, and a sample collected for analyses. These procedures are as follows, and conform with the guidelines in the LUFT Manual:

- Water levels in each well will be determined using an electronic water-sensitive measuring device (Solinst). Depth to water or product will be measured to an accuracy of 0.01 foot. The previously surveyed elevations of the well casing rims will be used as the reference point for determining groundwater elevations.
- Prior to sampling, each well will be purged (pre purge) with a ABS submersible purge pump until at least three (3) casing volumes of water have been removed. The purged water will be monitored for temperature, pH, dissolved oxygen (DO), and conductivity. These parameters will be recorded on a hydrologic data sheet. Purging will continue until these parameters have stabilized. Each well will be allowed to recover until 80 percent of the initial water level has been reached or, where water level recovery is slow or the well purged dry, the sample will be collected after enough water is present to fill all sample containers.
- After each well has stabilized, a sample will be collected using a unused, clean, disposable polyethylene bailer. The collected sample will be transferred from the bailer to appropriate sample containers using a bottom emptying device which minimizes the loss of volatile constituents. The samples collected will then be preserved in accordance with the analytical protocol. All sample containers will be filled completely with a convex meniscus so as to eliminate any trapped air or headspace. Each sample container cap will be fitted with a Teflon septa.
- After sampling, the samples will be properly labeled, showing the sample number, well number, date, time, sampler's name, and preservation. The samples will be refrigerated in a cooler containing frozen blue ice until delivery to the laboratory to perform the specified analyses. Chain-of-custody documentation will be maintained from the sampling location to the laboratory. The chain-of-custody will be signed by the sampler and placed in the container holding the samples. Condition of the samples will be noted on the chain-of-custody document by the laboratory.

Groundwater Sample Analyses

The analytical protocol is presented on Table 2 (Appendix B). USEPA Test Methods will be utilized to perform the analyses. All analyses will be conducted by California Laboratory Services, Inc., Rancho Cordova, California (DHS ELAP Certification #1233). All analyses will be conducted on a two-week turnaround basis.

Well Purge and Decontamination Water Handling

Well purge and equipment decontamination rinsate generated during sampling operations will be contained securely and placed in a secure area of the Site in DOT-approved 55-gallon drums pending transport for offsite treatment/disposal. Following each quarterly monitoring and sampling event, each drum will be labeled with date of accumulation, street address, contents of the drum, owner, and a contact phone number. Offsite treatment/disposal will take place within 90 days of the accumulation date.

delivery date ? ~ 45 days

Quarterly Monitoring Report

Quarterly monitoring reports will be prepared in accordance with the State of California Leaking Underground Fuel Tank (LUFT) Manual: Appendix A - Reports; Tri-Regional Board Staff Recommendations for Preliminary Investigation and Evaluation of Underground Tank sites (30 August 1991), and Section 2652(d) of Title 3, Chapter 16, California Code of Regulations (Underground Storage Tank Regulations).

Each quarterly monitoring report will be submitted to the client for review and approval. Following review and approval by the client, the document, along with the client's written approval (commitment letter), will be submitted to oversight personnel at the Alameda County Environmental Health Services. The quarterly monitoring reports will include the following items:

- A description of the methods and procedures used to measure groundwater surface elevations, collect and handle groundwater samples;
- Tabulated results of analyses conducted on the groundwater samples collected;
- Certified analytical reports and chain-of-custody documentation;
- Tabulated results of groundwater surface elevations measured during the quarter;
- Maps illustrating groundwater surface contours and contamination contours based on groundwater surface measurements and the results of analyses conducted on groundwater samples collected during the quarter;
- Interpretation of the analytical and field data; including findings, conclusions and any recommendations;
- Method and location of disposal of the well purge and equipment decontamination rinsate, and any other contaminated soil and groundwater generated during the quarter; and
- Copies of Uniform Hazardous Waste Manifests for transport and disposal of well purge, equipment decontamination rinsate.

Quality Assurance/Quality Control

All field equipment will be cleaned and decontaminated prior to being introduced into the sampling environment. Each sampling point will require either a discrete sampling tool or a recleaned, decontaminated sampling tool. Decontamination will be accomplished by using an environmentally-sensitive, phosphate-free soap (Alconox) and water solution to remove particles adhered to the surface of the sampling tool. The sampling tool will then be rinsed in clean water in a separate bucket. A third rinse will be accomplished using deionized water. Special care will be taken to prevent the cleaned sample tool from becoming contaminated prior to being reintroduced into the sampling environment. If the sampling tool does become contaminated, then the decontamination procedures will be repeated.

California Laboratory Services, Inc., certified by the CalEPA's Hazardous Waste Testing Laboratory Certification Program will analyze the samples in accordance with CalEPA's analytical protocols. The methods used by the laboratory are published and approved analytical methods which have built-in QA/QC practices. Other QA/QC practices are part of CalEPA's certification program. All Certified laboratories must keep records of these QA/QC practices. California Laboratory Services, Inc., will

Analytes?

documents will include surrogate recovery data, chromatogram, and analytical charts including those of the spikes and matrix spike duplicates. Copies of these documents will be incorporated into the quarterly monitoring reports.

Project Organization

Mr. Walter H. Kim will be the principal-in-charge for the work. Mr. Lewis B. Leonard, P.E. (#C16565) will be the Senior Project Engineer. Mr. Matthew H. Spielmann will be the Project Manager/Geologist and Site Supervisor/Site Safety Officer. California Laboratory Services Inc., (DHS ELAP Certification #1233) will analyze the groundwater samples collected.

Schedule

Table 3 (Appendix B) presents the time schedule for implementing the Quarterly Groundwater Monitoring Work Plan.

This Quarterly Groundwater Monitoring Work Plan has been prepared under the professional supervision and review of the individual whose name and professional seal appear below. If you have any questions, please feel free to contact Walter Kim at (916) 649-3570.

Sincerely,

Matthew H. Spielmann
Project Manager/Geologist

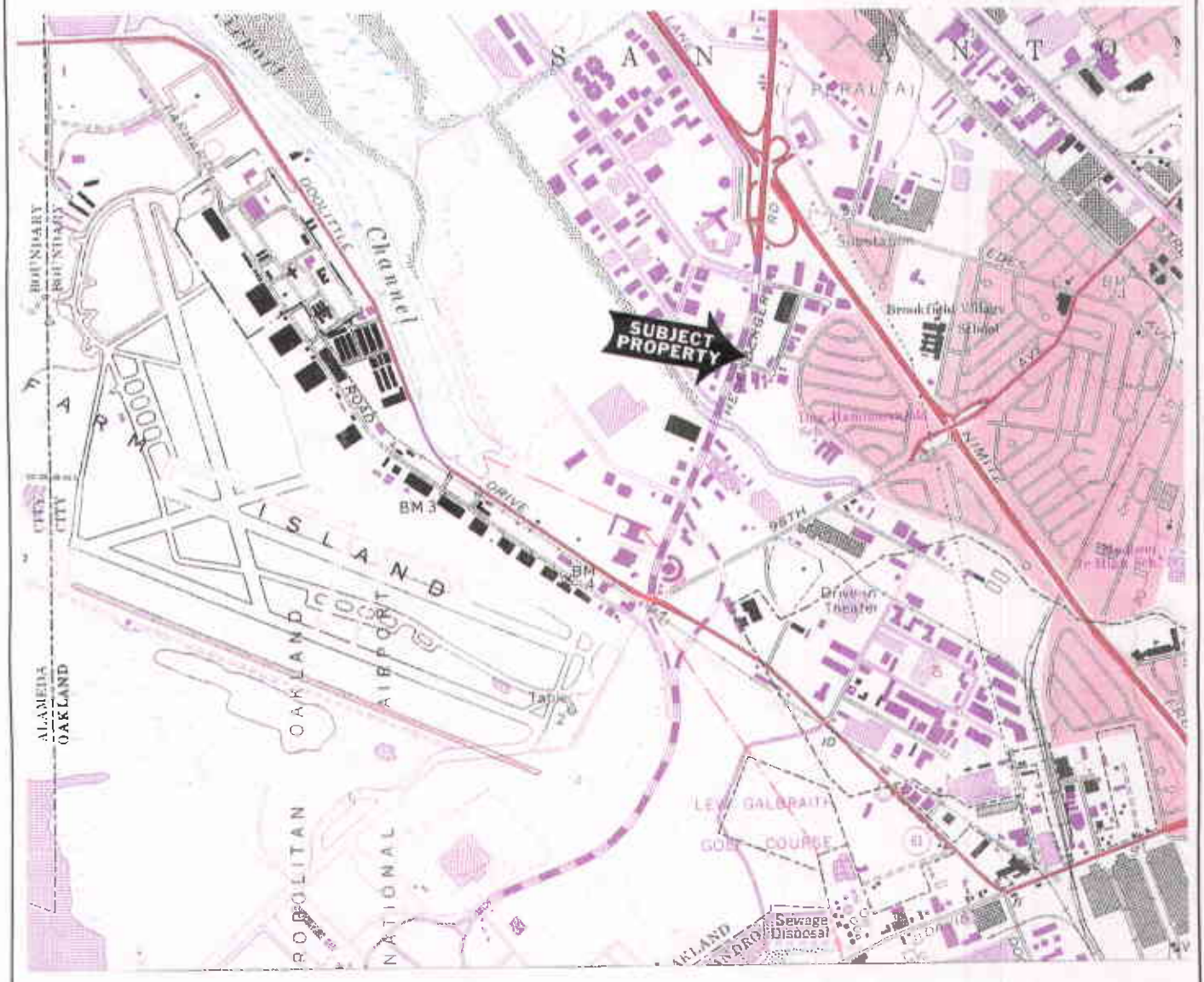
Lewis B. Leonard, P.E.
Senior Project Engineer
Registered Civil Engineer No. C16565, Expiration June 30, 2001

REGISTERED PROFESSIONAL ENGINEER LEWIS BENJAMIN LEONARD No. C16565 Exp. 6-30-01 STATE OF CALIFORNIA

MHS\5-1594-1 Quarterly WorkPlan

Enclosures: Appendices A - B

cc: Barney Chan/Alameda County Health Care Agency
Walter Kim/NWE



SCALE 1:24 000

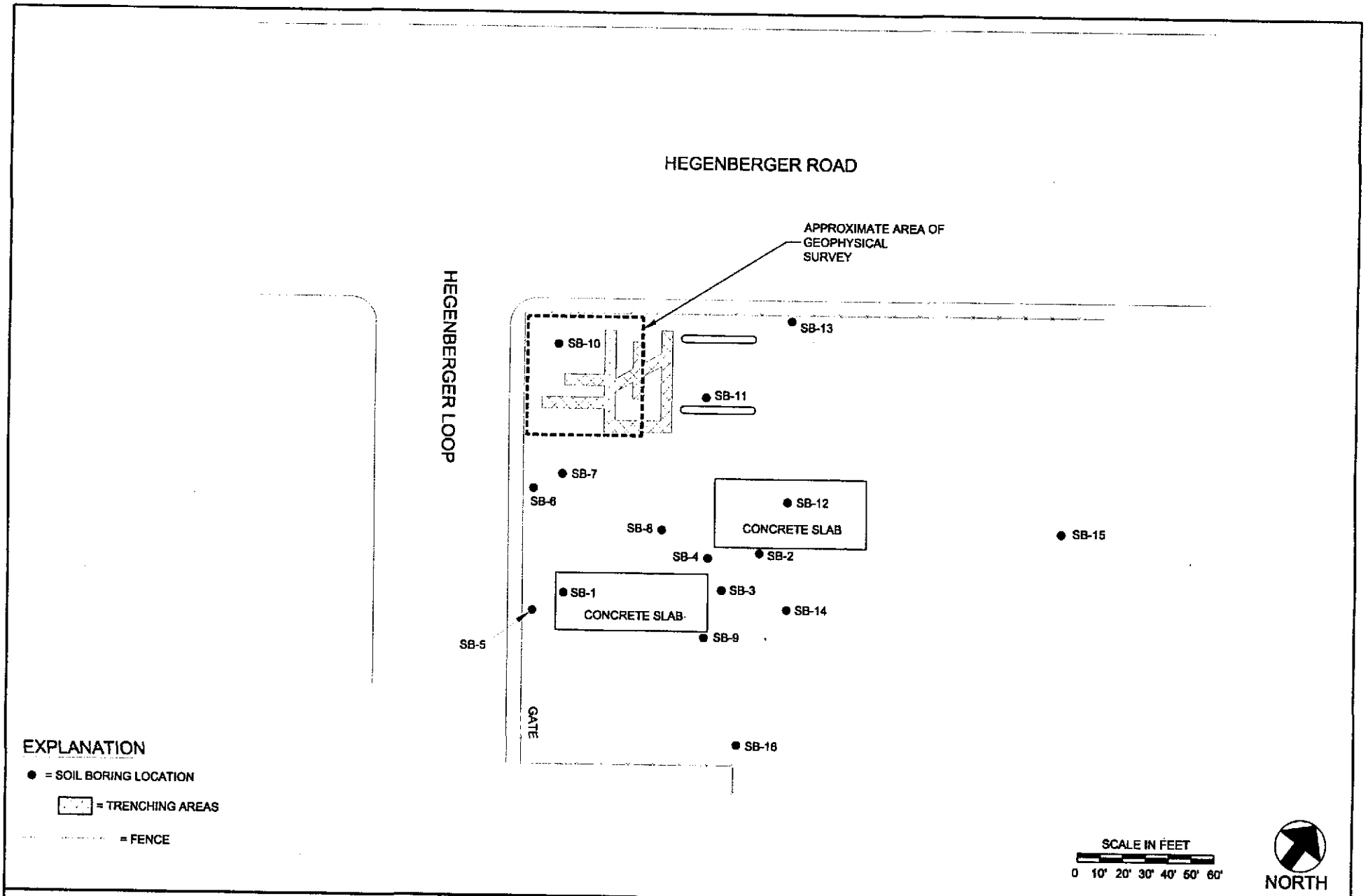
NORTH

1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETER

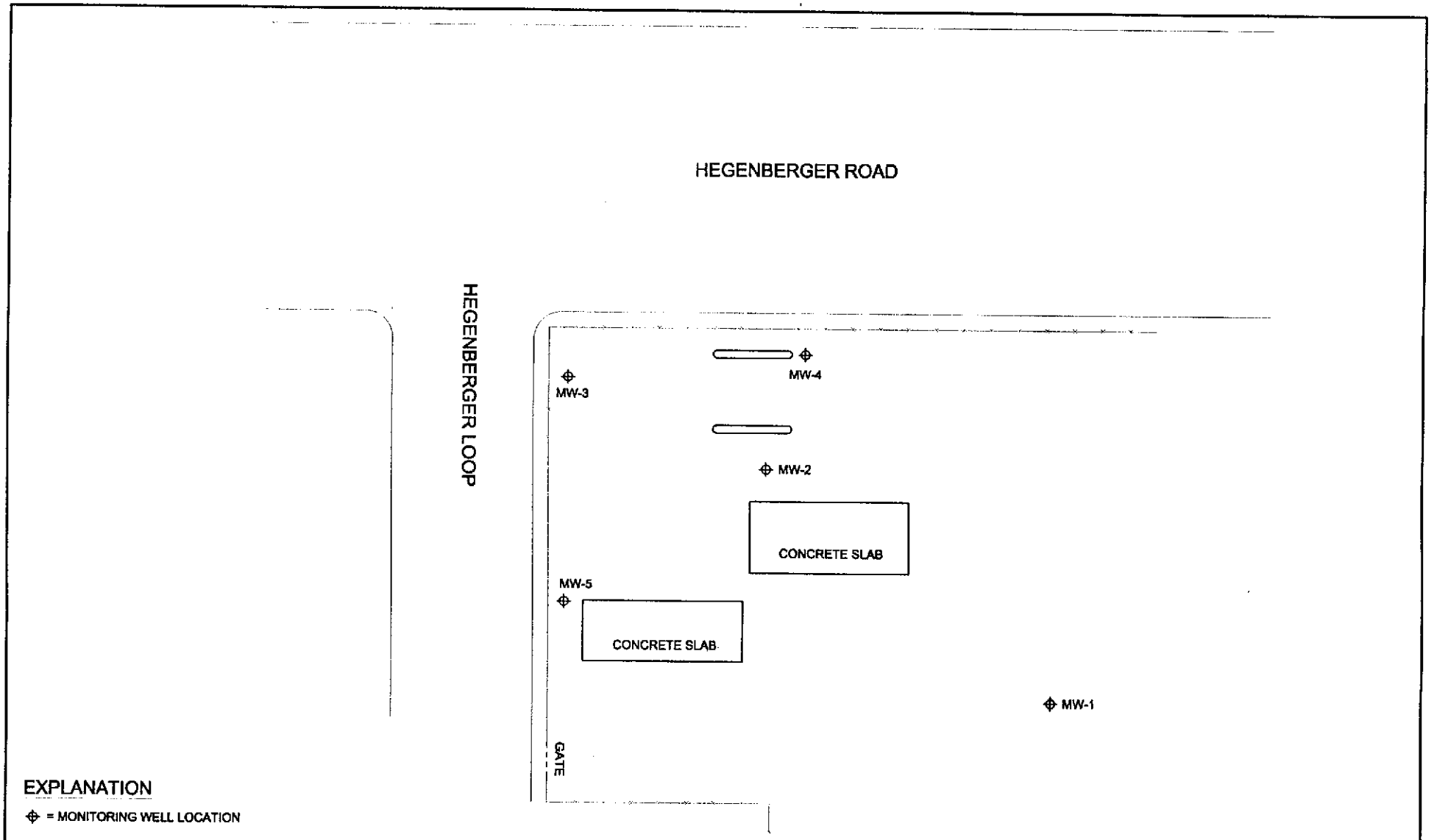
Northwest Envirocon, Inc.
Environmental Consulting

USGS 7.5 Minute Topographic Map
San Leandro Quadrangle
444 Hegenberger
Oakland, California

JOB NUMBER:	DATE:	TITLE:	Plate:
05-001594	December, 1998	Site Vicinity Map	1



NORTHWEST ENVIROCON, INC. 1828 TRIBUTE ROAD, SUITE A, SACRAMENTO, CA 95815 (916) 649-3570 FAX: (916) 649-3819	SITE: QUARTERLY MONITORING WORKPLAN 444 HEGENBERGER LOOP OAKLAND, CALIFORNIA		PROJECT#: 05-001594-1		REVISIONS
			DATE: FEBRUARY 1999		
DRAWN: CEB / APPROVED: MHS	CLIENT: McMORGAN AND COMPANY	TITLE: SB LOCATIONS	PLATE: 2	SCALE: 1"=60'	



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DRAWN: CEB	APPROVED: MHS	CLIENT: McMORGAN AND COMPANY	TITLE: MW LOCATIONS	PLATE: 3	SCALE: 1"=60'

TABLE 1

QUARTERLY GROUNDWATER MONITORING WORK PLAN
WELL CONSTRUCTION DETAILS

444 HEGENBERGER ROAD
OAKLNAD, CALIFORNIA

MONITORING WELL	BOREHOLE DIAMETER	BOREHOLE DEPTH	CASING DIAMTER	SCREENED INTERVAL	FILTER PACK INTERVAL	BENTONITE SEAL INTERVAL	CEMENT SEAL INTERVAL	SURVEYED TOP OF CASING
	(inches)	(feet)	(inches)	(feet)	(feet)	(feet)	(feet)	(feet)
MW1	8	20	2	5-20	3-20	2.5-3	1-2.5	100.74
MW2	8	20	2	5-20	3-20	2.5-3	1-2.5	102.44
MW3	8	20	2	5-20	3-20	2.5-3	1-2.5	102.00
MW4	8	20	2	5-20	3-20	2.5-3	1-2.5	100.00
MW5	8	20	2	5-20	3-20	2.5-3	1-2.5	102.22

NOTES:

All depths measured below existing grade

TABLE 2

QUARTERLY GROUNDWATER MONITORING WORK PLAN
ANALYTICAL PROTOCOL

444 HEGENBERGER ROAD
OAKLNAD, CALIFORNIA

ANALYSES	USEPA METHOD	SAMPLE SIZE	CONTAINER SIZE	PRESERVATIVE	HOLDING TIME	REPORTING LIMIT
					(days)	(mg/l)
TPHmo	8015m	1	1 liter	4°C	14	100
TPHg	8015m	1	40 milliliter	4°C/HCL to pH < 2	14	0.05
BTEX	8020	2	40 milliliter	4°C/HCL to pH < 2	14	0.0003

NOTES:

TPHmo Total petroleum hydrocarbons as motor oil
TPHg Total petroleum hydrocarbons as gasoline
B Benzene
T Toluene
E Ethylbenzene
X Total xylenes
HCL Hydrochloric Acid
mg/l Milligrams/liter

TABLE 3

QUARTERLY GROUNDWATER MONITORING WORK PLAN SCHEDULE

444 HEGENBERGER ROAD OAKLNAD, CALIFORNIA

DATE	1/99	2/99	3/99	4/99	5/99	6/99	7/99	8/99	9/99	10/99	11/99	12/99	1/00
EVENT	1ST QUARTER			2ND QUARTER			3RD QUARTER			4th QUARTER			
Monitor/Sample Wells			X			X			X			X	
Sample Analyses			X			X			X			X	
Data Analyses			X			X			X			X	
Submit Quarterly Report				X			X			X			X