ERI

ENVIRONMENTAL RESOLUTIONS, INC.

TRANSMITTAL

TO: Mr. Barney Chan
Alameda County Health Care Services Agency
Environmental Health Division
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

DATE: February 18, 2000
PROJECT NUMBER: 200914X
SUBJECT: Former Exxon Service Station 7-0236
6600 East 14th Street
Oakland, California

FROM: James F. Chappell
TITLE: Senior Staff Scientist

WE ARE SENDING YOU:

COPIES	DATED	DESCRIPTION
1	March 17, 1997	Geophysical Investigation at Former Exxon Service Station 7-0236
1	August 20, 1998	Environmental Activities at Former Exxon Service Station 7-0236

THESE ARE TRANSMITTED as checked below:

[X] For review and comment	[ ] Approved as submitted	[ ] Resubmit __ copies for approval
[X] As requested	[ ] Approved as noted	[ ] Submit__ copies for distribution
[ ] For approval	[ ] Return for corrections	[ ] Return __ corrected prints
[X] For your files	[ ] For distribution to regulatory agencies	

REMARKS: At the request of Exxon Company, U.S.A., ERI is forwarding 1 copy each of the above referenced reports. Please call James Chappell at (415) 382-4323 with any questions regarding this project.

James F. Chappell, Senior Staff Scientist

cc: Mr. Darin L. Rouse – Exxon Company, U.S.A.
1 to ERI project file 200914X

ERI

ENVIRONMENTAL RESOLUTIONS, INC.

TRANSMITTAL

TO: Mr. Barney Chan
Alameda County Health Care Services Agency
Environmental Health Division
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

DATE: February 18, 2000
PROJECT NUMBER: 200914X
SUBJECT: Former Exxon Service Station 7-0236
6600 East 14th Street
Oakland, California

FROM: James F. Chappell
TITLE: Senior Staff Scientist

WE ARE SENDING YOU:

COPIES	DATED	DESCRIPTION
1	March 17, 1997	Geophysical Investigation at Former Exxon Service Station 7-0236
1	August 20, 1998	Environmental Activities at Former Exxon Service Station 7-0236

THESE ARE TRANSMITTED as checked below:

[X] For review and comment	[ ] Approved as submitted	[ ] Resubmit __ copies for approval
[X] As requested	[ ] Approved as noted	[ ] Submit__ copies for distribution
[ ] For approval	[ ] Return for corrections	[ ] Return __ corrected prints
[X] For your files	[ ] For distribution to regulatory agencies	

REMARKS: At the request of Exxon Company, U.S.A., ERI is forwarding 1 copy each of the above referenced reports. Please call James Chappell at (415) 382-4323 with any questions regarding this project.

James F. Chappell, Senior Staff Scientist

cc: Mr. Darin L. Rouse – Exxon Company, U.S.A.
1 to ERI project file 200914X

ERI

ENVIRONMENTAL RESOLUTIONS, INC.

TRANSMITTAL

TO: Mr. Barney Chan
Alameda County Health Care Services Agency
Environmental Health Division
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

DATE: February 18, 2000
PROJECT NUMBER: 200914X
SUBJECT: Former Exxon Service Station 7-0236
6600 East 14th Street
Oakland, California

FROM: James F. Chappell
TITLE: Senior Staff Scientist

WE ARE SENDING YOU:

COPIES	DATED	DESCRIPTION
1	March 17, 1997	Geophysical Investigation at Former Exxon Service Station 7-0236
1	August 20, 1998	Environmental Activities at Former Exxon Service Station 7-0236

THESE ARE TRANSMITTED as checked below:

[X] For review and comment	[ ] Approved as submitted	[ ] Resubmit __ copies for approval
[X] As requested	[ ] Approved as noted	[ ] Submit__ copies for distribution
[ ] For approval	[ ] Return for corrections	[ ] Return __ corrected prints
[X] For your files	[ ] For distribution to regulatory agencies	

REMARKS: At the request of Exxon Company, U.S.A., ERI is forwarding 1 copy each of the above referenced reports. Please call James Chappell at (415) 382-4323 with any questions regarding this project.

James F. Chappell, Senior Staff Scientist

cc: Mr. Darin L. Rouse - Exxon Company, U.S.A.
1 to ERI project file 200914X

ENVIRONMENTAL RESOLUTIONS, INC.

March 17, 1997
ERI 200903.L01

Ms. Marla D. Guensler
Exxon Company U.S.A.
P.O. Box 4032
Concord, California 94524-4032

Subject: Geophysical Investigation at Former Exxon Service Station 7-0236, 6630 East 14th Street, Oakland, California.

Ms. Guensler:

At the request of Exxon Company U.S.A. (Exxon), Environmental Resolutions, Inc. (ERI) observed the performance of a Geophysical Investigation at the subject site. The investigation was performed by J.R. Associates of San Jose, California under subcontract to ERI. The purpose of the investigation was to locate abandoned underground storage tanks believed to be on site.

Specifically, the work included: the use of a ground penetrating radar (GPR) system to locate geophysical indications of USTs and the use of a magnetometer to collect magnetic data at the site.

The results of the investigation indicate there were three magnetic anomalies beneath the site (J.R. Associates, March 1997). J.R. Associates concluded that the anomalies were too small to be a cluster of three USTs or a large single UST, but it was possible that an anomaly could be a small UST (such as a used-oil UST). The report by J.R. Associates is attached for your review.

Based on the results of the geophysical survey, ERI recommends digging test pits or hand augering soil borings in the anomalous areas noted by J.R. Associates.

Please call (415) 382-5991 with any questions or comments regarding this letter.

Sincerely,
Environmental Resolutions, Inc.

for

Marc A. Briggs
Project Manager

Attachments: J.R. Associates Geophysical Investigation at the Exxon Station, No. 7-0223

74 Digital Drive, Suite 6, Novato, California 94949 415-382-9105 (FAX 415-382-1856)
Irvine • Novato • Seattle

J R ASSOCIATES

Engineering Geophysics
1886 Emory Street
San Jose, CA 95126
(408) 293-7390

GEOPHYSICAL INVESTIGATION AT THE FORMER EXXON STATION, NO: 7-0236 6630 EAST 14TH STREET OAKLAND, CALIFORNIA

March 3, 1997

For

Environmental Resolutions
74 Digital Drive, Suite 6
Novato, CA 94949

By

James Rezowalli, GP-921

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

I INTRODUCTION

This report presents the results of a geophysical investigation performed at the former Exxon service station number 7-0236 in Oakland, California. The investigation was performed for Environmental Resolutions Incorporated (ERI) by J R Associates. The purpose of the investigation was to look for geophysical indications of buried fuel or oil tanks. James Rezowalli, Principal Geophysicist, and Tom Barry, Technician, of J R Associates performed the field work on February 25, 1997.

A. Site

The site is at 6630 East 14th Street in Oakland, California (Drawing 1). It is bound by 66th Avenue, East 14th Street and Havenscourt Boulevard. ERI provided us information indicating that an Exxon service station once occupied part of the site. The station was near the corner of 66th Avenue and East 14th Street (Drawing 2). The station has been demolished and the site is presently an empty lot. There was a concern that tanks might be buried in the southeastern half of the site. The purpose of this investigation was to look for geophysical evidence of buried tanks in the southeastern half of the site.

II METHODS

Several geophysical techniques can detect buried objects. The most appropriate method for this site was a combination of magnetics and ground penetrating radar. A magnetic investigation maps the vertical magnetic gradient. The magnetic gradient is uniform throughout a site free of metal. The magnetic gradient at a site that contains ferrous metal is not uniform. Metal objects produce magnetic anomalies with characteristic shapes and magnitudes. For example, an anomaly caused by a buried fuel tank is characterized by a strong magnetic low just south of the center of the tank and a weaker magnetic high just north of the tank. Magnetic lows typically range from -150 gammas to -1500 gammas. Magnetic highs are usually half the value of the magnetic lows. This type of anomaly is what we use to locate buried tanks.

Buried utilities and pipes can produce magnetic anomalies that can mask the anomaly of a buried fuel tank. There were utilities buried beneath the sidewalks along Havenscourt Boulevard and along East 14th Street. Because of the utilities, we used a ground penetrating radar system to look for geophysical indications of tanks beneath the sidewalks. The radar can collect useful information where metal interferes with the magnetic measurements, though the radar cannot penetrate as deep into the ground as the magnetometer.

A. Magnetic Instrumentation

We used a Geometrics model 856AG proton precession magnetometer to collect magnetic data. The magnetometer had two sensors and an electronics package. The magnetometer collected both total field data and vertical gradient data. The magnetometer can discriminate to 0.2 gammas in a total field of 40,000 to 60,000 gammas. Magnetic readings were stored in memory with the time of day, station numbers, and line numbers of the readings. The data were downloaded to a computer and contoured.

B. Magnetic Field Procedures

Drawing 2 shows the area where data were collected. Magnetic data were collected on ten-foot centers in a 110-foot by 120-foot grid. A data collection station is shown by "+" on the magnetic contour map (Drawing 3). An anomaly is indicated by a series of concentric magnetic contours. There were magnetic anomalies in the area. These anomalies will be discussed later in the report.

C. Radar Instrumentation

We used a SIR 3 ground penetrating radar system to collect radar data at the site. The SIR 3 had a radar control unit, a graphic profiler, and a 500-MHz antenna. The antenna transmitted a radio frequency electromagnetic pulse into the ground. The pulse traveled through the ground at approximately 2½ nanoseconds per foot. Buried objects near the ground surface, such as a tank, could reflect the pulse back to the ground surface. The radar detected the returning reflections and plotted them on the graphic profiler.

D. Depth of Radar Penetration

The depth of penetration of the ground penetrating radar depends largely on the clay and alkalinity of the soils investigated. Radar penetration probably did not exceed 2 to 3 feet at this site.

E. Radar Field Procedures

Radar data were collected along scan lines spaced at 2-foot intervals along the sidewalks next to Havenscourt Boulevard and East 14th Street. Data collection began by marking the beginning and the end of a radar scan line. A tape measure was then laid on the ground between the beginning and end marks. The antenna, connected to the control unit by a cable, was dragged along a traverse and a radar profile was collected. After a traverse was completed, the antenna was moved and the above process was repeated. The profiles were then inspected for reflections indicative of buried tanks.

III RESULTS

A. Magnetic Contours

Drawing 3 illustrates the magnetic contour map. There are many magnetic anomalies at the site. Most were caused by surface metal such as street lights and metal fencing or by utilities buried beneath the sidewalks. We found three small anomalies that indicated metal buried in the dirt lot. These anomalies appear too small to be a cluster of three tanks or a large single tank. It is possible that a small tank, such as a waste oil tank, might be the cause of any one of the three anomalies. Construction debris also could be the cause of the anomalies. The locations of the three anomalies were marked with wooden stakes at the site. The magnetic contour map shows the approximates location of the staked anomalies.

A short section of buried pipe was found at the site. The pipe was about 35 feet long and ran parallel to East 14th Street about 10 feet from the sidewalk. We could not determine if the pipe was an old product line. Its location was painted on the ground and is shown on Drawing 3.

B. Radar Anomalies

Drawing 4 illustrates a radar profile. The profile was collected along the sidewalk next to East 14th Street. There is a reflection from a buried utility near the left edge of the profile. This is typical of the profiles collected. There

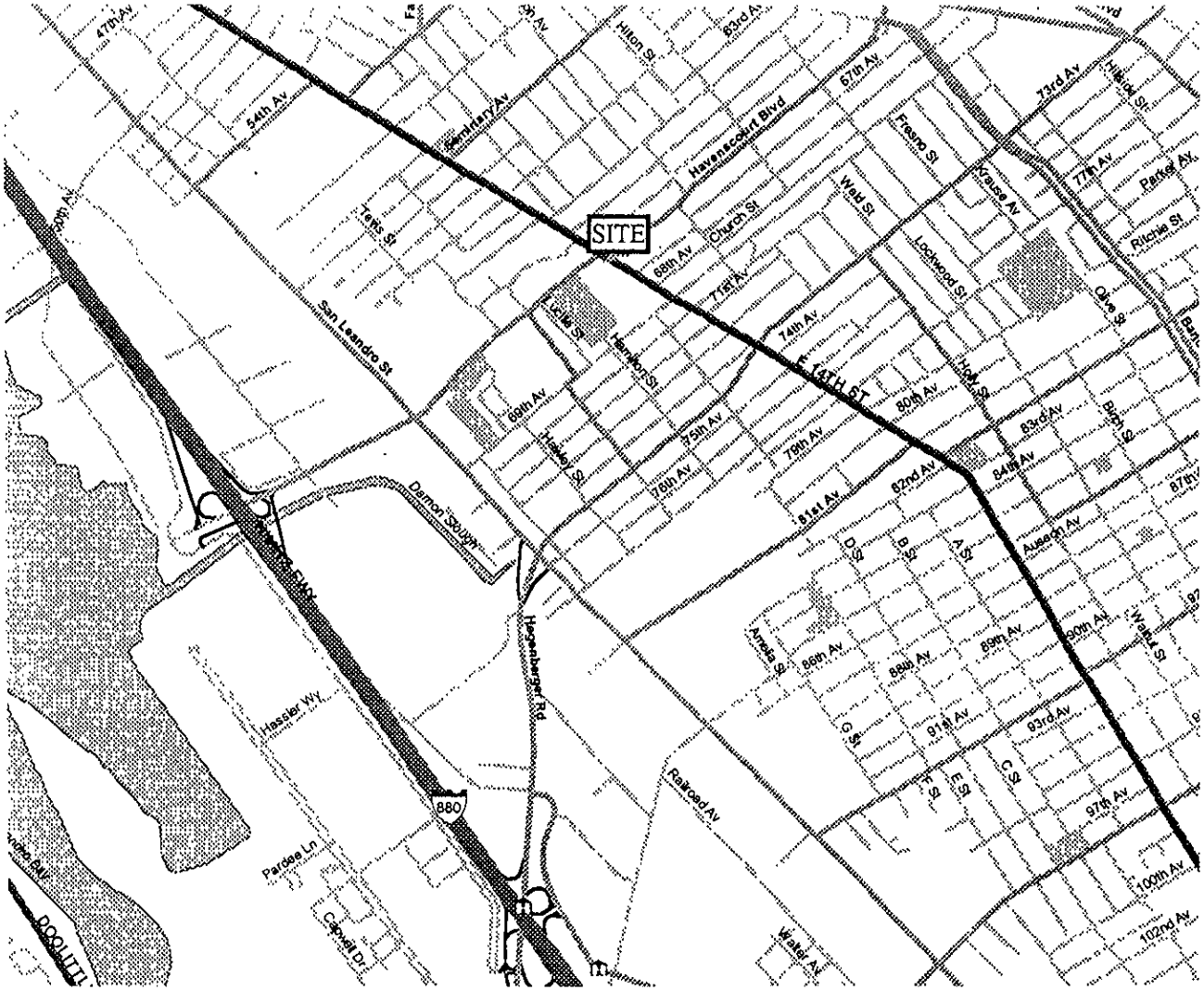
were no reflections indicative of buried tanks in the radar data collected at the site.

C. Limitations

Magnetic methods locate ferrous objects from the anomalies they produce in the earth's magnetic field. It is possible some ferrous objects will not produce an anomaly. Some possible reasons are that the object is buried too deep, the object is too small, the object is buried under or near another ferrous object, or an object is buried near a utility. A metal fence along the rear of the site and utilities buried beneath the sidewalks produced strong magnetic anomalies. These anomalies would mask an anomaly caused by a tank buried near the back fence or under the sidewalks.

The radar's usefulness is limited by its depth of penetration. The depth of penetration can vary from a few inches to several feet. If a clear reflection is created by a buried object, the reflection can be used to help determine the size and depth of the object. If we see no reflections in an area, the results might be inconclusive. There could be no reflections because there are no buried objects or because the objects were buried deeper than the radar could penetrate.

IV DRAWINGS

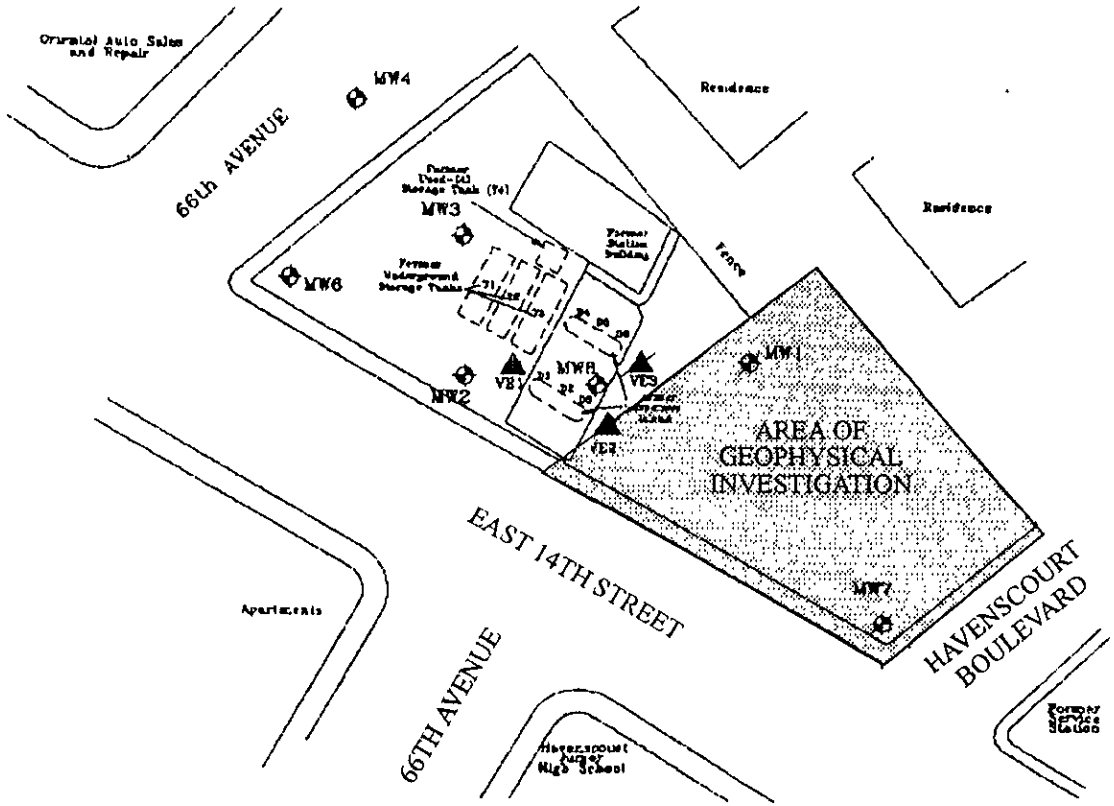


Vicinity Map- Former Exxon Station 7-0236
6630 East 14th Street
Oakland, California

SCALE: See Diagram	JOB NUMBER:		DRAWN BY J.J.R.
DATE. 3-3-1997		103127-97	REVISED

J R ASSOCIATES Civil and Environmental Geophysics
1886 Emory Street, San Jose, CA (408) 293-7390

DRAWING NUMBER
1



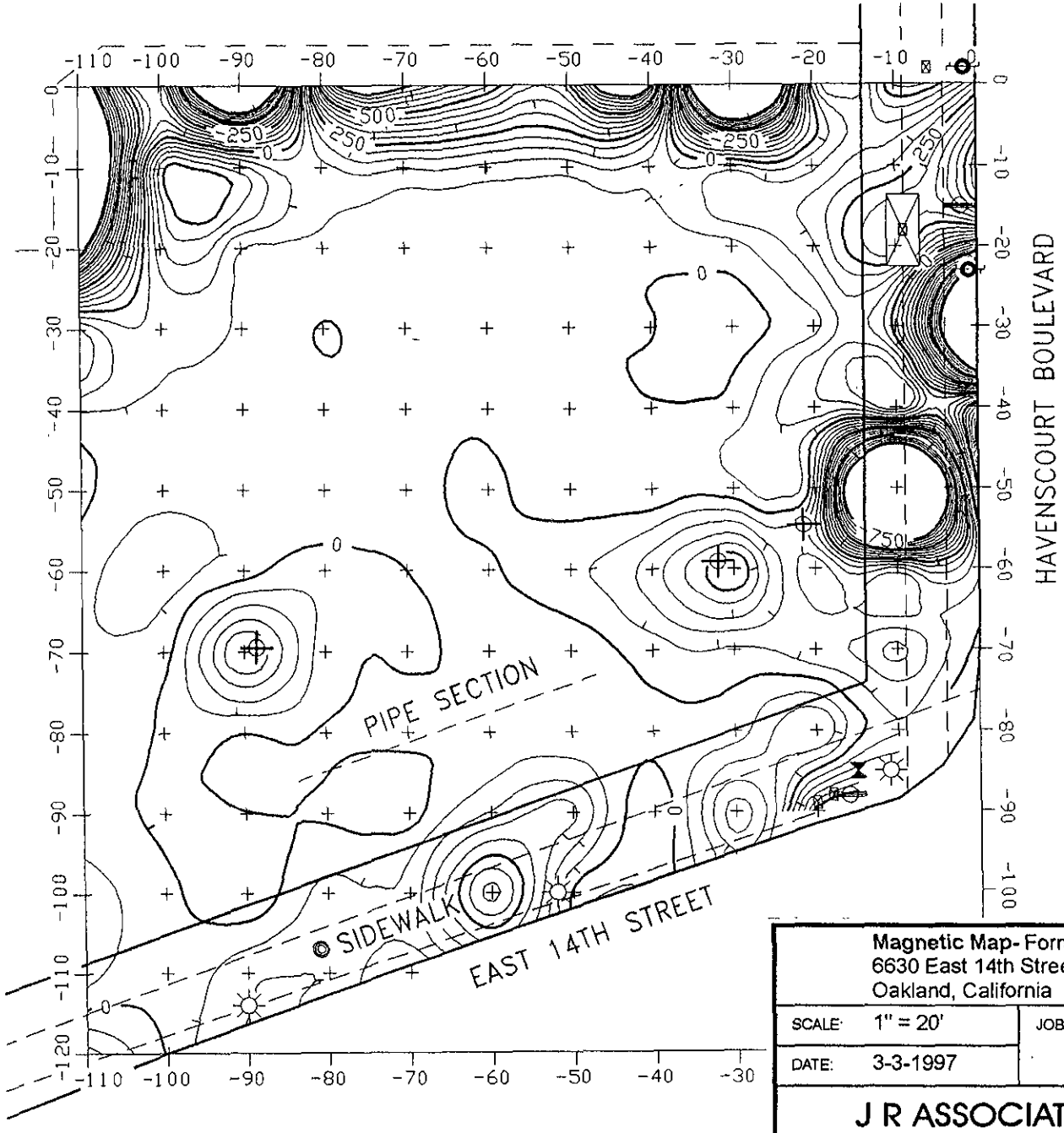
Note: Diagram based on site map provided by Environmental Resolutions Incorporated.

Site Map- Former Exxon Station 7-0236
6630 East 14th Street
Oakland, California

SCALE: See Diagram	JOB NUMBER: 103127-97	DRAWN BY J J.R.
DATE 3-3-1997		REVISED

J R ASSOCIATES Civil and Environmental Geophysics
1886 Emory Street, San Jose, CA (408) 293-7390

DRAWING NUMBER 2



EXPLANATION:

- MANHOLE COVER OR DRAIN
- CHRISTY BOX
- LIGHT
- POST OR SIGN
- POWER POLE
- VALVE
- STAKED ANOMALY
- BURIED PIPE
- FENCE
- MAGNETIC DATA POINT
- MAGNETIC CONTOUR

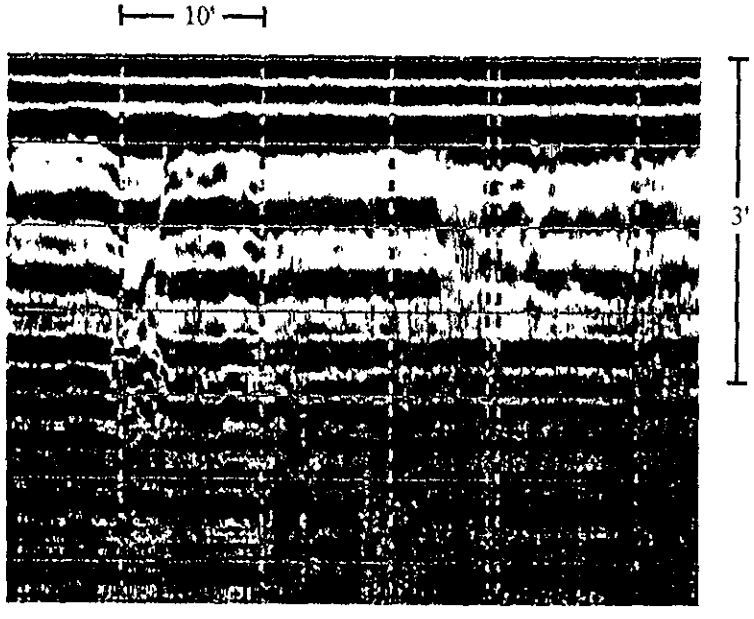
Magnetic Map- Former Exxon Station 7-0236
6630 East 14th Street
Oakland, California

SCALE: 1" = 20'	JOB NUMBER:		DRAWN BY J.J.R
DATE: 3-3-1997		103127-97	REVISED

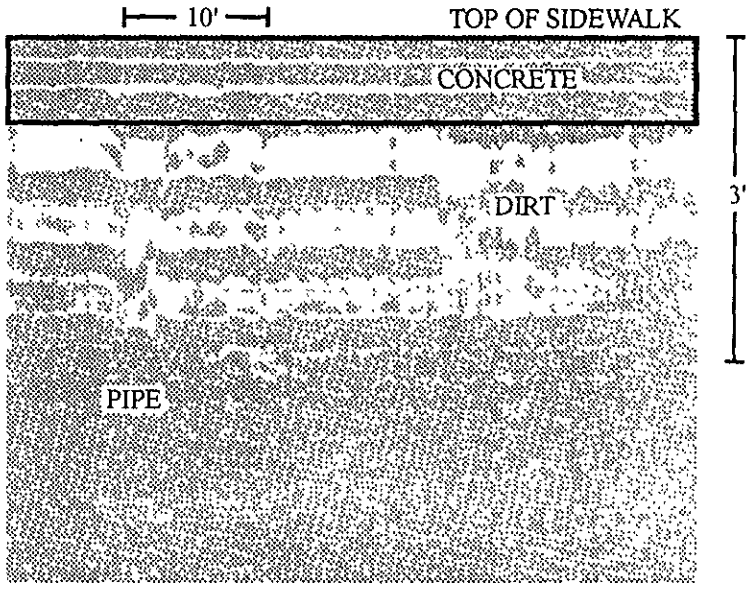
J R ASSOCIATES Civil and Environmental Geophysics
1886 Emory Street, San Jose, CA (408) 293-7390

DRAWING NUMBER: 3

RADAR PROFILE



INTERPRETATION



Example Radar Profile- Former Exxon Station 7-0236
6630 East 14th Street
Oakland, California

SCALE: See Diagram	JOB NUMBER:		DRAWN BY: J.J R.
DATE 3-3-1997		103127-97	REVISED

J R ASSOCIATES Civil and Environmental Geophysics
1886 Emory Street, San Jose, CA (408) 293-7390

DRAWING NUMBER
4