ENVIROMETRIX

DISTRIBUTION

GROUNDWATER INVESTIGATION
TEST CELL FACILITY
6701 EARHART ROAD
OAKLAND, CALIFORNIA

Job No. 196332

April 19, 1996

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1 copy:	Alameda County Health Care Services Department of Environmental Health 1131 Harbor Bay Parkway Alameda, California 94502-6577 Attention: Mr. Scott O. Seery	3

QUALITY CONTROL REVIEWER

Nancy Shopay
Senior Environmental Specialist

ENVIROMETRIX

Environmental Consultants

A Report Prepared for

National Airmotive Corporation
7200 Lockheed Street
Oakland, California 94521-4504

GROUNDWATER INVESTIGATION
TEST CELL FACILITY
6701 EARHART ROAD
OAKLAND, CALIFORNIA

Job No. 196332

April 19, 1996

Prepared by

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Principal Hydrogeologist

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Senior Geologist

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ENVIROMETRIX

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1.0 INTRODUCTION

1.1 Introduction

This report presents the results of Envirometrix Corporation's (EMC's) groundwater investigation performed at the National Airmotive Corporation (NAC) Test Cell Facility, located at 6701 Earhart Road, Oakland, Alameda County, California (Plates 1 through 4). The purpose of this investigation was to determine if a groundwater contaminant plume of jet fuel is migrating toward the tidal marsh immediately east of the site.

1.2 Background

The NAC Test Cell Facility is situated on an artificial rise between the Oakland Airport North Field to the west and a tidal marsh to the east. In the past, the site and north end of the airport were used as a U.S. Naval base for an engine test cell facility. The site had also been part of the former North Port of Oakland Refuse Disposal (NPORD) property and adjacent to the City of Alameda Landfill. The tidal marsh east of the site is considered a protected wetland.

According to information provided by NAC, in September 1992, a jet fuel spill occurred, adjacent to two underground storage tanks (USTs), located near the northwest corner of the Test Cell Facility (Plate 4).

In 1995, EMCON Associates (EMCON) conducted a subsurface soil investigation, which included the collection and laboratory analysis of groundwater samples through a drilling

auger. Results of that investigation indicated that soil and groundwater contamination from Total Petroleum Hydrocarbons as Jet Fuel (TPH-JF) was present along the northern portion of the site.

Due to the groundwater contamination identified by EMCON and the relative location to the tidal marsh, the Alameda County Health Care Services Agency, Department of Environmental Health (ACDEH), requested that three groundwater monitoring wells be installed onsite and monitored annually for TPH-JF by EPA Method 8015M, benzene, toluene, ethylbenzene and xylenes (BTEX) by EPA Method 8020 and, if TPH-JF was detected in any of the wells, for Semi-Volatile Organic Compounds (SVOCs) by EPA Method 8270 for a two-year period. EMC submitted a workplan to the ACDEH on March 1, 1996 to address the groundwater monitoring. The workplan was approved on March 7, 1996. This report documents the activities associated with the installation of wells and initial groundwater sampling.

1.3 Limitations

This investigation was performed in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. No warranty or guarantee, expressed or implied, is made as to the conclusions and opinions included in this report.

Groundwater conditions can vary significantly between wells. Data or values inferred to exist between sampling points are estimates and may differ from those that actually exist.

Our assessment of the potential or extent of groundwater contamination is a professional opinion based on the data obtained from these discrete sampling locations. In addition, changes in the conditions of the property can occur with the passage of time, whether they are due to natural processes or the works of man on this or adjacent properties. Therefore, the actual conditions discovered may change over time.

This report was prepared for the sole use of National Airmotive Corporation, the only intended beneficiary of our work. No other parties should rely on the information in this report without the prior written consent of EMC.

This report is issued with the understanding that it is the responsibility of the owner, and or his representative, to ensure that information and recommendations contained in this report are brought to the attention of the regulatory agencies as may be required by law.

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2.0 SITE DESCRIPTION AND GEOLOGY

2.1 Topography

As shown on Plate 3, the site is relatively flat with an elevation of approximately one to two feet above Mean Sea Level (MSL) (USGS, 1980). The site is located on an artificial rise separating the north end of Oakland Airport from the tidal marsh.

2.2 Geology

The site lies in the Eastern Franciscan Block of the Coast Range geomorphic province. The province is characterized by many elongate ranges and narrow valleys that trend generally northwest (Norris & Webb, 1990). The basement rock in the area is the Franciscan subduction complex (Franciscan). The Franciscan is dominated by greenish-gray graywackes interbedded with dark shale and occasional limestone (Norris & Webb, 1990).

The surface rocks are Cenozoic shelf, slope and land deposits. These deposits consist mostly of sandstone and shale or mudstone of restricted areal extent (Bailey, 1966).

Locally, the site sits on a loose fill mixture of Pleistocene silts and clays. The clays, known as Bay Mud, are generally bluish gray.

The site is approximately 5 miles west of the Hayward Fault and approximately 17 miles east of the San Andreas Fault. Both the Hayward and the San Andreas are considered active faults.

2.3 Hydrology

The site is approximately 1,000 feet from San Leandro Bay. Depth to groundwater is approximately 3 feet below ground surface (bgs); however, tidal influences may influence the depth and gradient locally.

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3.0 CURRENT INVESTIGATION

3.1 Drilling

On March 29, 1996, EMC drilled and installed three groundwater monitoring wells, MW-1 through MW-3. The well locations were chosen by ACDEH to establish the extent of groundwater contamination previously identified. A monitoring well permit was obtained from the Alameda County Flood Control and Water Conservation District, Zone 7, prior to drilling. A copy of the permit is presented in Appendix A.

Drilling equipment and services were provided by Soils Exploration Services, Inc. (SES), Benicia, California. Drilling was advanced using a CME-55 drill rig with 8-inch outside diameter (OD) hollow stem auger. The drill cuttings were contained onsite in three labeled 55-gallon drums.

No soil samples were collected during this phase of investigation. Soils encountered during drilling were described using the Unified Soil Classification System (USCS). Plates 5 through 7 present the boring log and well construction details. A copy of the USCS chart and key to test data is presented on Plate 8.

3.2 Groundwater Monitoring Well Construction

Each well was constructed inside the hollow-stem auger, using 2-inch diameter threaded Schedule 40 PVC well screen and casing. **The well screen consisted of a 10-foot length of slotted well casing with factory milled 0.020-inch perforations.** The screened interval was

between 2 and 12 feet bgs. The annular space between the well screen and the borehole was backfilled with Lonestar No. 3 sand from total depth of the borehole to approximately one foot above the top of the screen. The well was then sealed above the screened interval with approximately one foot of hydrated bentonite pellets and grouted to the surface with concrete. The well head was completed with a water-tight locking well cap and a flush-mounted well box.

On March 29, 1996, well elevations for the three monitoring wells were surveyed by EMC, based on an assumed reference elevation of 10 feet for MW-2 top of casing.

3.3 Well Development and Sampling

On April 3, 1996, after water levels were recorded, wells MW-1 through MW-3 were developed. Approximately twenty well volumes of groundwater were purged from each well and stored in two labeled 55-gallon drum onsite. Each well was purged using a pre-cleaned bailer until temperature, pH and conductivity readings stabilized and the amount of turbidity of the well had decreased. After well development, groundwater samples were collected by decanting into laboratory supplied containers. The samples were immediately placed in an iced cooler and transported under chain-of-custody procedures to Curtis & Tompkins, Ltd., (C&T) in Berkeley, California, a California-certified laboratory, for analysis. If TPH-JF was detected in a sample, EMC authorized C&T to analyze the sample for SVOCs. Laboratory analysis indicated that TPH-JF was detected therefore, the

groundwater samples were analyzed for TPH-JF, BTEX and SVOCs. Copies of the laboratory report and chain-of custody form are presented in Appendix B.

3.4 Equipment Decontamination

All field and sampling equipment was decontaminated prior to use. A high pressure hot water washer was used to remove soil from the auger. A trisodium phosphate (TSP) and water solution followed by a tap water rinse was used to clean all sampling equipment to minimize the potential for cross contamination. At present, there are three drums of soil cuttings and three drums of purged groundwater and decontamination rinsate onsite.

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4.0 SUBSURFACE CONDITIONS AND RESULTS OF CHEMICAL ANALYSES

4.1 Soil Description

Soil encountered during drilling consisted of clayey sand. The soil was grayish brown above the water table and gray at and below the water table. No odors were detected in the soil while drilling MW-1 and MW-2; however, a slight hydrocarbon odor was detected while drilling MW-3. Due to the engine testing activities adjacent to the drilling locations, it was difficult to identify the specific odor. Plates 5 through 7 present the description of soil encountered during drilling.

4.2 Water Levels and Groundwater Gradient

Water level data collected on April 3, 1996 indicated that the depth to groundwater ranged from approximately 2.8 to 3.5 feet bgs. The direction of groundwater flow on April 3, 1996, was to the west at a gradient of 0.010 feet per foot (Plate 4).

4.3 Results of Chemical Analyses on Groundwater Samples

Table 2 summarizes laboratory results of groundwater samples collected on April 3, 1996. Copies of the laboratory report and chain-of custody form are presented in Appendix B.

Laboratory results reported elevated levels of TPH-JF and TPH-D in monitoring wells MW-1 and MW-3. No TPH-JF or TPH-D was detected in MW-2 and BTEX was not detected in any of the wells.

Due to the presence of TPH-JF and TPH-D in MW-1 and MW-3, these samples were analyzed for SVOCs by EPA Method 8270. **However, laboratory results have not been received to date.** EMC will forward the results of these analyses upon receipt.

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5.0 CONCLUSIONS

Based on the results of the previous and current investigations, the following conclusions are presented:

- Native soil at the site consists of clayey sands to the maximum depth explored at approximately 12 feet bgs. The soil was grayish-brown above the water table and gray at and below the water table.
- No field evidence of soil discoloration was observed or no unusual odors were detected while drilling MW-1 or MW-2. There was a slight hydrocarbon odor detected in MW-3 while drilling.
- Groundwater was encountered onsite at depths ranging from approximately 2.8 to 3.5 feet bgs. However, tidal influences may affect the depth and gradient of groundwater locally.
- The direction of groundwater flow is to the west at a gradient of approximately 0.010 feet per foot, away from the tidal marsh.
- TPH-JF and TPH-D were detected in groundwater samples from wells MW-1 and MW-3 , but not in well MW-2. BTEX was not detected in any of the wells. Due to the presence of hydrocarbon analytes in MW-1 and MW-3, the samples from these wells were subsequently analyzed for SVOCs. EMC is presently waiting for final results.

Based on the direction of groundwater flow and the analytical results from the groundwater samples, EMC concludes that it is unlikely that the tidal marsh has been impacted from activities at the NAC Test Cell Facility.

ENVIROMETRIX

6.0 REFERENCES

Baily, E.H., (1966), *Geology of Northern California.*

California Department of Mines and Geology, (1981), *Geology of the Sacramento Valley.*

Envirometrix Corporation (EMC), (March 10, 1995), *Phase I - Preliminary Site Assessment, National Airmotive Corporation, Oakland Facilities, Oakland, California.*

Norris, Robert and Robert Webb, (1990), *Geology of California.*

U.S. Geological Survey, (1959 Photorevised 1980), *Oakland East, 7.5 Minute Series (Topographic).*

U.S. Geological Survey, (1959 Photorevised 1980), *San Leandro, 7.5 Minute Series (Topographic).*

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Table 1
Groundwater Elevation Data
National Airmotive Corporation
6701 Earhart Road
Oakland, California
EMC Job No. 196332

Well Number	Top of Casing Elevation [1] (feet)	April 3, 1996	
		Depth to Groundwater (feet)	Groundwater Elevation
MW-1	10.03	3.06	6.97
MW-2	10.00	2.80	7.20
MW-3	9.73	3.51	6.22

[1] Elevations of the wells were surveyed by EMC on March 29, 1996, and are based on an assumed elevation of 10.00 feet for well MW-2.

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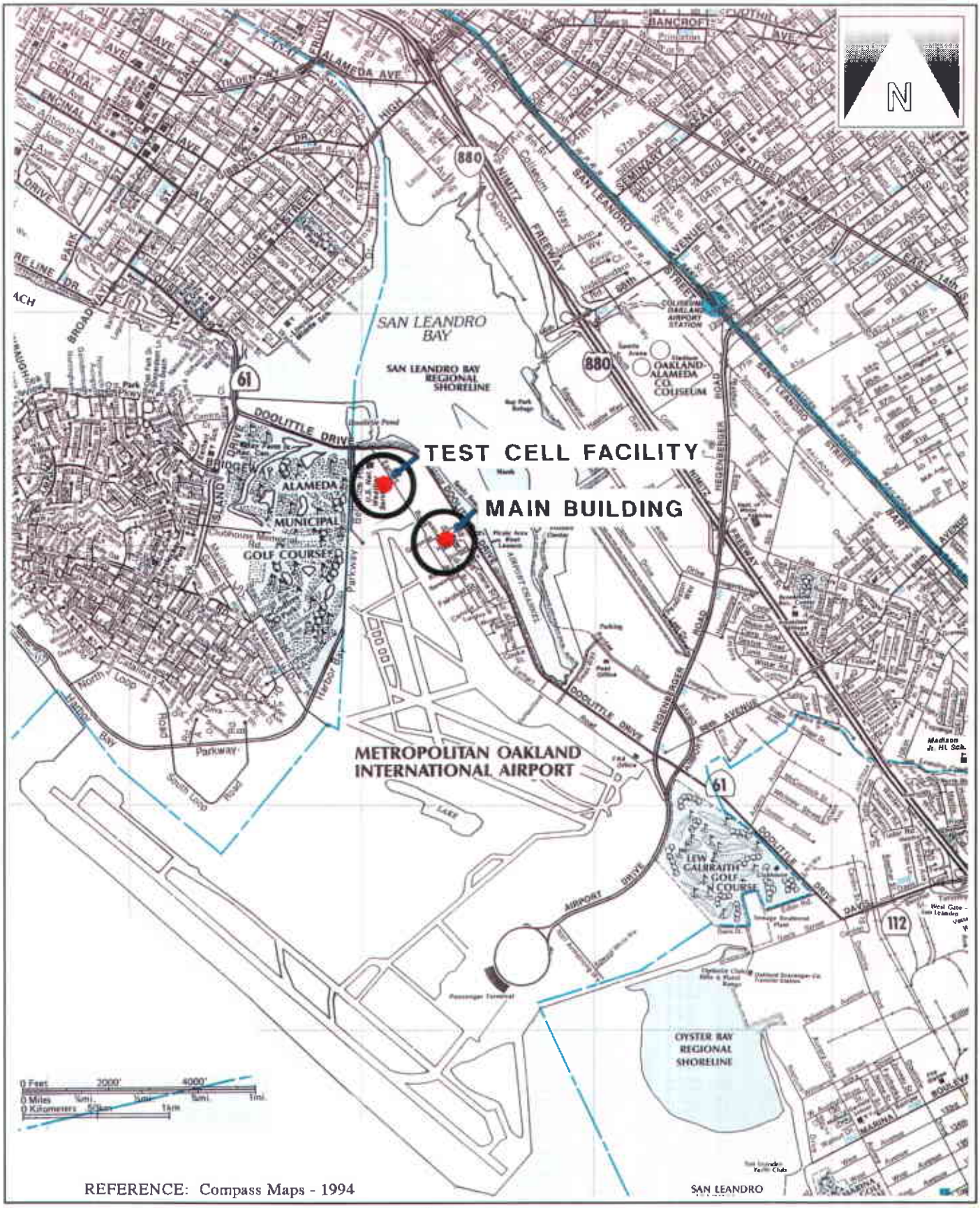
Table 2
Summary of Analytical Results
National Airmotive Corporation
6701 Earhart Road
Oakland, California
EMC Job No. 196332

DATE	SAMPLE NUMBER	TPH-JF	TPH-D	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES
4/3/96	MW-1	<50	81	<0.50	<0.50	<0.50	<0.50
4/3/96	MW-2	<50	<50	<0.50	<0.50	<0.50	<0.50
4/3/96	MW-3	1,300	2,200	<0.50	<0.50	<0.50	<0.50

TPH-JF = Total Petroleum Hydrocarbons as Jet Fuel
TPH-D = Total Petroleum Hydrocarbons as Diesel

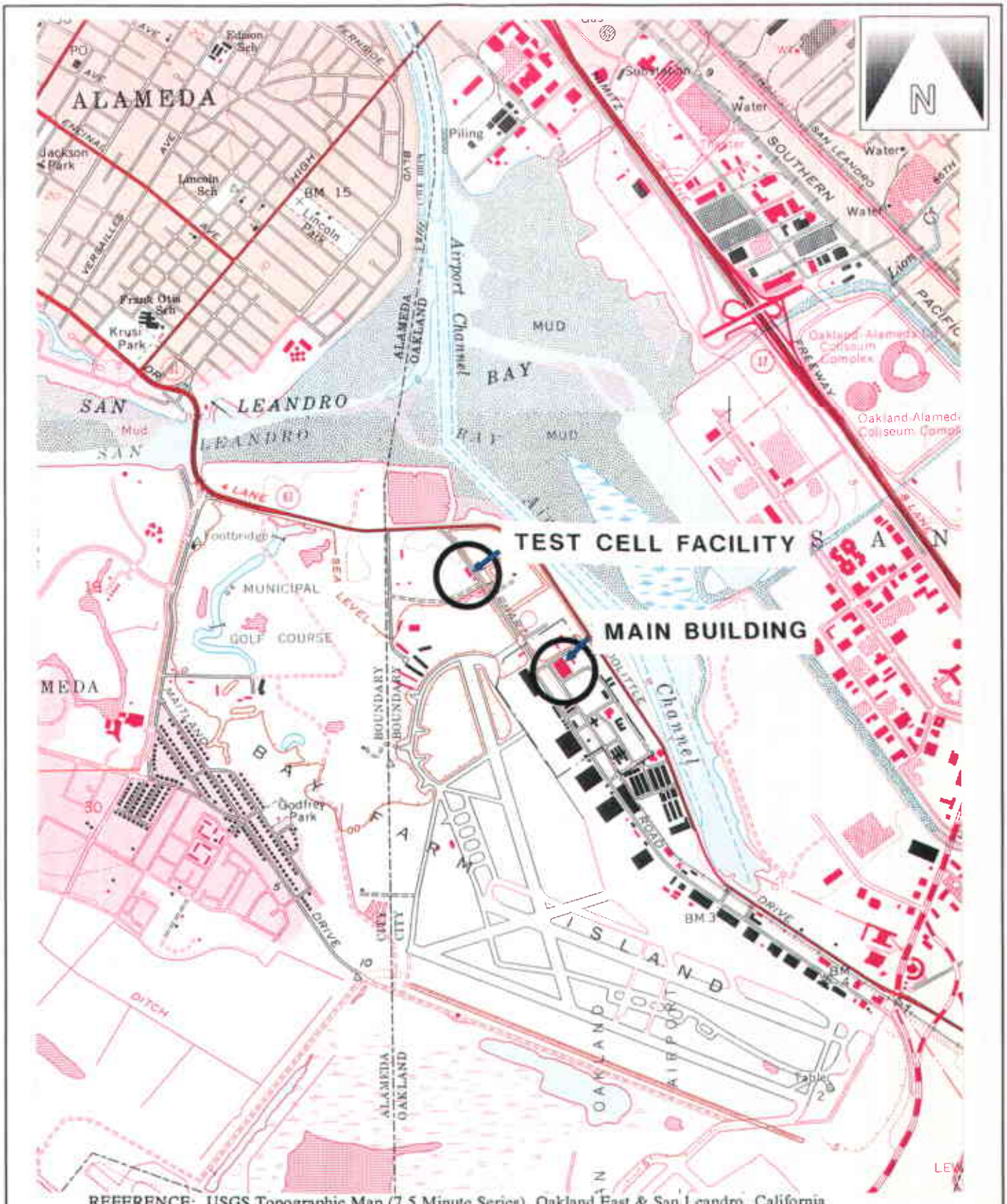
All units are in parts per billion (ppb).

ENVIROMETRIX	DRAWN BCC	JOB NUMBER 196332	**SITE LOCATION MAP** National Airmotive Corporation Test Cell Facility Oakland, California
	APPROVED NTS	DATE 4/96	
	REVISED	DATE	PLATE **1**



REFERENCE: Compass Maps - 1994

ENVIROMETRIX	DRAWN: BCC	JOB NUMBER: 196332	**SITE VICINITY MAP** National Airmotive Corporation Test Cell Facility Oakland, California
	APPROVED: NTS	DATE: 4/96	PLATE **2**
	REVISED	DATE	



REFERENCE: USGS Topographic Map (7.5 Minute Series), Oakland East & San Leandro, California (1959, Photorevised 1980)

ENVIROMETRIX	DRAWN BCC	JOB NUMBER 196332	**SITE TOPOGRAPHICAL MAP**
	APPROVED NTS	DATE 4/96	National Airmotive Corporation Test Cell Facility Oakland, California
	REVISED	DATE	PLATE **3**

ENVIROMETRIX

DRAWN	BCC
APPROVED	NTS
REVISED	
JOB NUMBER	196332
DATE	4/96
DATE	

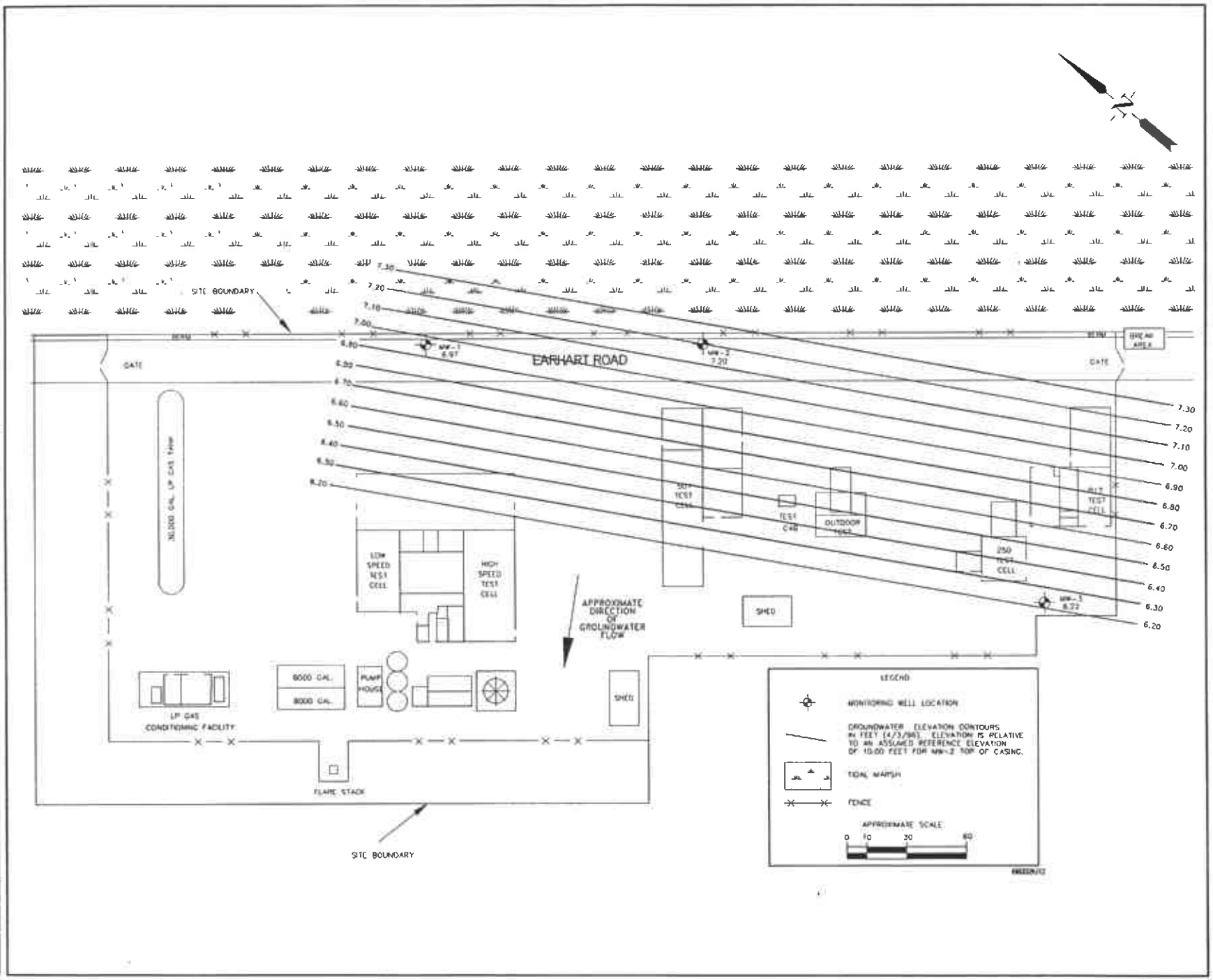
SITE PLAN AND GROUNDWATER ELEVATIONS 4/3/96

National Airmotive Corporation

Test Cell Facility

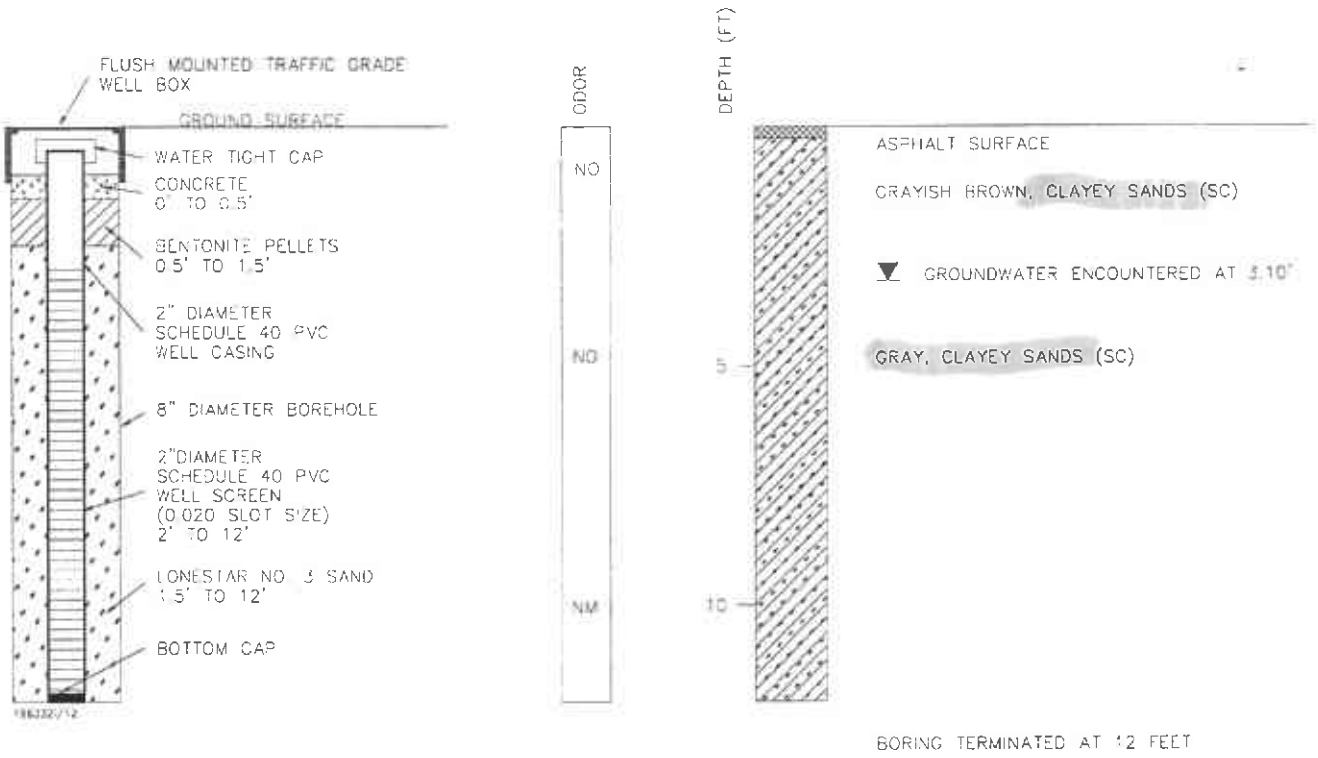
Oakland, California

PLATE 4



EQUIPMENT:	8-INCH HOLLOW STEM AUGER
TOP OF CASING ELEVATION*:	10.03
DATE:	MARCH 29, 1996

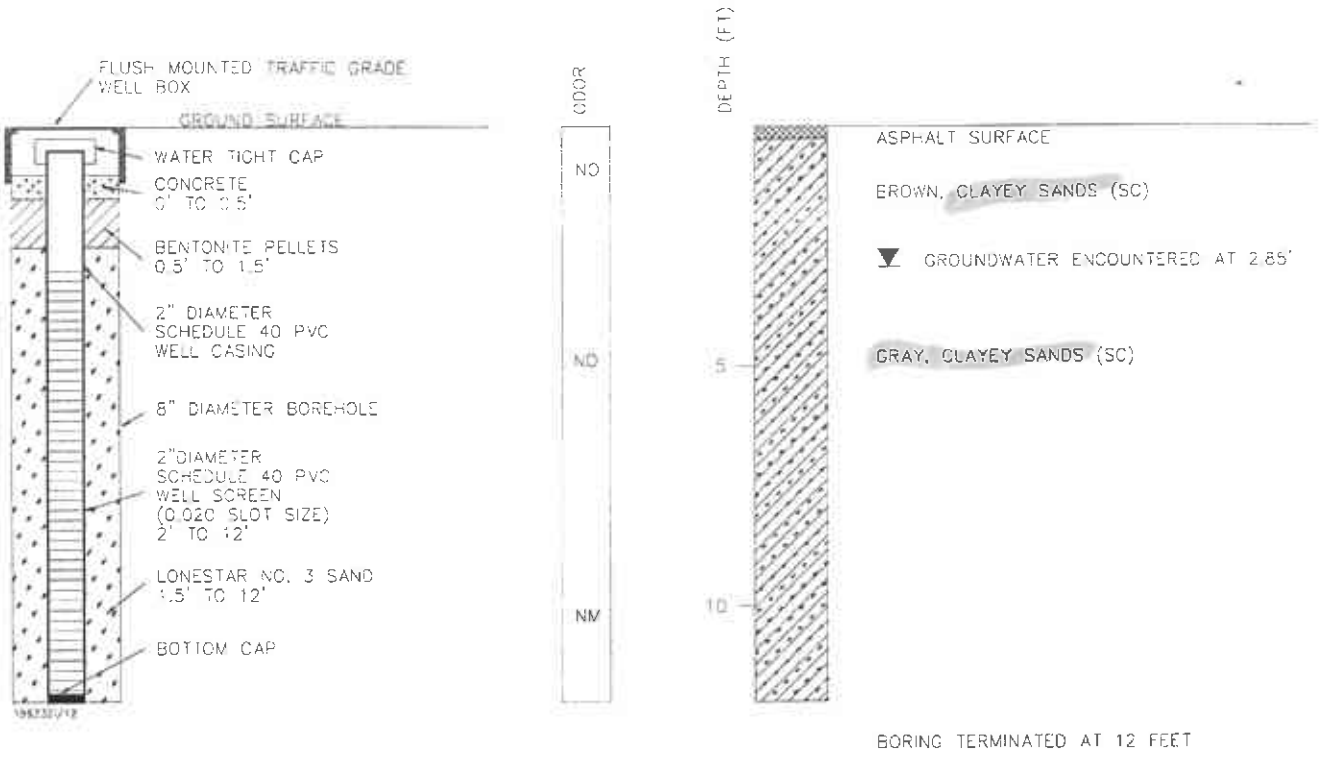
*ELEVATION IS RELATIVE TO AN ASSUMED REFERENCE ELEVATION OF 10.00 FEET FOR MW-2 TOP OF CASING



ENVIROMETRIX	DRAWN: BCC	JOB NUMBER: 196332	**LOG OF MONITORING WELL MW-1** National Airmotive Corporation Test Cell Facility Oakland, California
	APPROVED: NTS	DATE: 4/96	PLATE **5**
	REVISED:	DATE:	

EQUIPMENT:	8-INCH HOLLOW STEM AUGER
TOP OF CASING ELEVATION*:	10.00
DATE:	MARCH 29, 1996

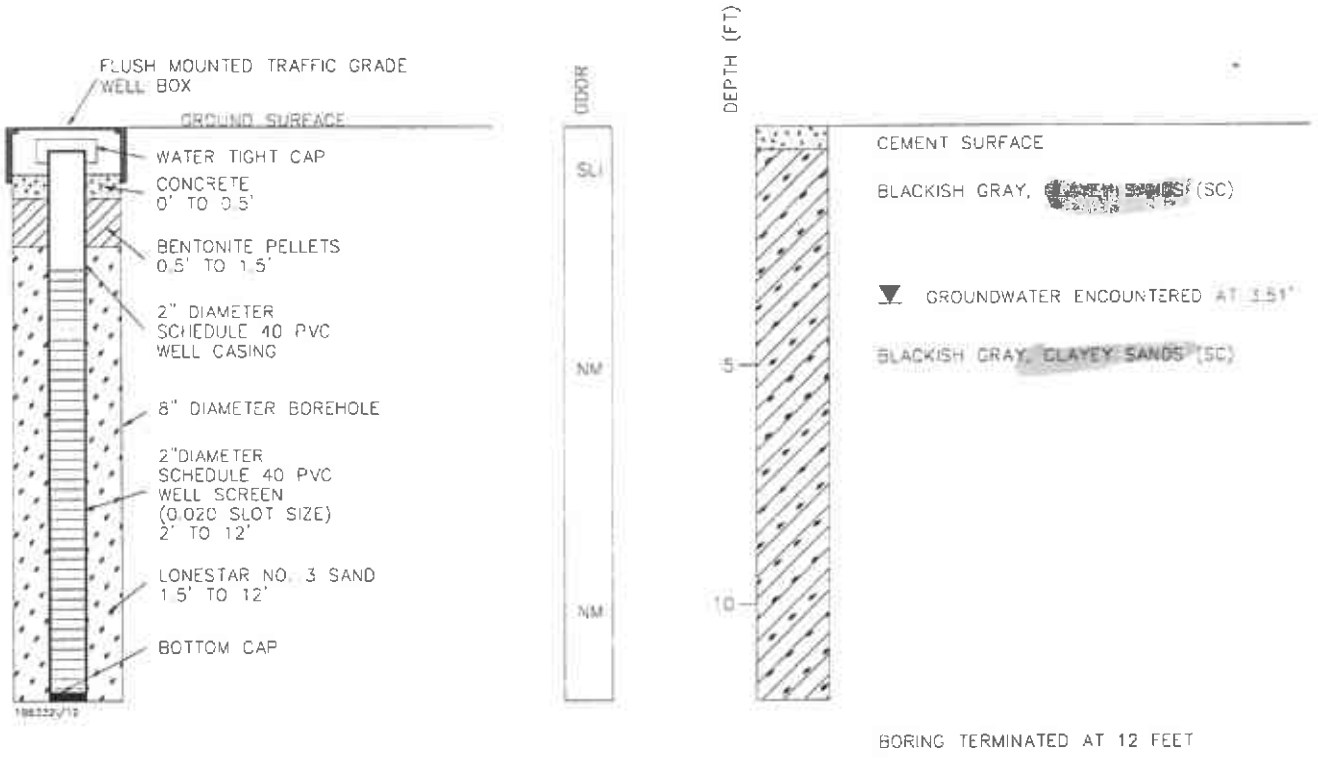
*ELEVATION IS RELATIVE TO AN ASSUMED REFERENCE ELEVATION OF 10.00 FEET FOR MW-2 TOP OF CASING



ENVIROMETRIX	DRAWN: BCC	JOB NUMBER: 196332	**LOG OF MONITORING WELL MW-2** National Airmotive Corporation Test Cell Facility Oakland, California
	APPROVED: NTS	DATE: 4/96	PLATE 6
	REVISED:	DATE:	

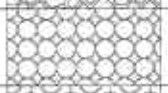
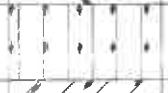
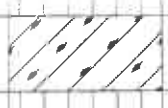
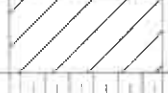
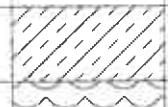
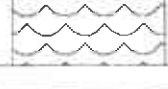
EQUIPMENT:	8-INCH HOLLOW STEM AUGER
TOP OF CASING ELEVATION*:	9.73
DATE:	MARCH 29, 1996

*ELEVATION IS RELATIVE TO AN ASSUMED REFERENCE ELEVATION OF 10.00 FEET FOR MW-2 TOP OF CASING



ENVIROMETRIX	DRAWN: BCC	JOB NUMBER: 196332	LOG OF MONITORING WELL MW-3 National Airmotive Corporation Test Cell Facility Oakland, California
	APPROVED: NTS	DATE: 4/96	PLATE 7
	REVISED	DATE	

UNIFIED SOIL CLASSIFICATION - ASTM D2487-85

MAJOR DIVISIONS			SYMBOLS		TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW		WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
			GP		POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 12% FINES	GM		SILTY GRAVELS, SILTY GRAVELS WITH SAND
			GC		CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SANDS MORE THAN HALF THE COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW		WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
			SP		POORLY GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SAND WITH OVER 12% FINES	SM		SILTY SANDS WITH OR WITHOUT GRAVEL
			SC		CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
			OL		ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH		INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH		ORGANIC SILTS OR CLAYS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS			Pt		PEAT AND OTHER HIGHLY ORGANIC SOILS

KEY TO TEST DATA

- "UNDISTURBED" SAMPLE
- "UNDISTURBED" CLASSIFICATION SAMPLE
- LOST SAMPLE
- GRAB CLASSIFICATION SAMPLE

OTHER

ABBREVIATIONS FOR THE ODOR READING AS FOLLOWS:
NO- NONE, SLI- SLIGHT, MOD- MODERATE,
STR- STRONG

BLOWS/FT ARE SHOWN ONLY FOR THE BOTTOM 6" PORTION OF SAMPLER

NM- NOT MEASURED

ENVIROMETRIX

DRAWN	JOB NUMBER
BCC	196332
APPROVED	DATE
NTS	4/96
REVISED	DATE

SOIL CLASSIFICATION CHART AND KEY TO TEST DATA
National Airmotive Corporation
Test Cell Facility
Oakland, California

PLATE **8**

ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588 VOICE (510) 484-2600
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT NAC Test Cell Facility
6701 Earhart Road
Oakland, CA 94621-4504

CLIENT
Name National Airmotive Corporation
Address 7200 Lockheed Street Voice (510) 613-1000
City Oakland, CA Zip 94621-4504

APPLICANT
Name Environmetrix Corporation
Atten: Norman Shopay Fax (916)375-1024
Address 3950 Industrial Blvd Voice (916)375-1000
City Suite 2000 Zip 95691
W. Sacramento, CA

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:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

DRILLER'S LICENSE NO. C-57 582696
Soils Exploration Services; Benicia, CA

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 10 ft.
Surface Seal Depth 15 ft. Number 3

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

ESTIMATED STARTING DATE 3/27/96
ESTIMATED COMPLETION DATE 3/27/96

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

APPLICANT'S SIGNATURE Carol D. Wilson Date 3/15/96

FOR OFFICE USE

PERMIT NUMBER 96223
LOCATION NUMBER ___

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

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

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

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

E WELL DESTRUCTION. See attached

Approved Wyman Hong Date 22 Mar 96
Wyman Hong

91992

ENVIROMETRIX

APPENDIX B

LABORATORY REPORT
AND
CHAIN-OF-CUSTODY FORM

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

A N A L Y T I C A L R E P O R T

Prepared for:

Envirometrix Corporation
3950 Industrial Boulevard
Suite 200C
West Sacramento, CA 95691-3430

Date: 17-APR-96
Lab Job Number: 125067
Project ID: N/A
Location: N/A

Reviewed by: Pamela Moore

Reviewed by: _____

125067

ENVIROMETRIX CORPORATION
3950 Industrial Blvd
Suite 200C
West Sacramento CA 95691
Phone: (916) 375-1000
FAX: (916) 375-1024

ENVIROMETRIX

CHAIN OF CUSTODY RECORD

Sample Collector: Bonnie Colburn Date/Time: 4/3/96

Signature of Collector: Bonnie Colburn

LABORATORY: Curtis + Tompkins

Project Name: Job #:

Project Location: Project Manager:

REMARKS: QA/QC

Run 8270 only if there is a hit on the TPH

SAMPLE ID	Sampling Date	Sampling Time	DESCRIPTION	Container	Preservatives	Matrix	BTEX (602/8020/503.1)	BTEX/TPH gas (602/8020)	TPHdiesel (8015)	EPA 601	TPH - Jet Fuel (8015M)	8270 - see remarks	Turn Around Time: Standard	Turn Around Time: Rush Services (72hr/48hr/24hr/12hr)
-1 MW-1	4/3/96	10:00		2 VOA, 2 Amber	(None)	Water	✓				✓	✓	✓	
-2 MW-2	4/3/96	11:30		2 VOA, 2 Amber	(None)	Water	✓				✓	✓	✓	
-3 MW-3	4/3/96	12:40		2 VOA, 2 Amber	(None)	Water	✓				✓	✓	✓	

Relinquished by:	Received by:	Relinquished by:	Received by:
Bonnie Colburn	Cynthia E Schlacy		
Date: 4/3/96 Time: 4:24pm	Date: 4/3/96 04:26	Date: Time:	Date:

CHAINOD.vls/10:1 3/11/96

TEH-Tot Ext Hydrocarbons

Client: Envirometrix Corporation

Analysis Method: CA LUFT (EPA 8015M)
Prep Method: EPA 3520

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
125067-001	MW-1	26826	04/03/96	04/04/96	04/07/96	
125067-002	MW-2	26826	04/03/96	04/04/96	04/07/96	
125067-003	MW-3	26826	04/03/96	04/04/96	04/07/96	

Analyte	Units	125067-001	125067-002	125067-003
Diln Fac:		1	1	1
JP5	ug/L	<50	<50	1300 YH
Diesel Range	ug/L	81 Y	<50	2200
Surrogate				
Hexacosane	%REC	109	113	103

Y: Sample exhibits fuel pattern which does not resemble standard
H: Heavier hydrocarbons than indicated standard

BTXE

Client: Envirometrix Corporation

Analysis Method: EPA 8020
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
125067-001	MW-1	26979	04/03/96	04/12/96	04/12/96	
125067-002	MW-2	26979	04/03/96	04/12/96	04/12/96	
125067-003	MW-3	26979	04/03/96	04/13/96	04/13/96	

Analyte Diln Fac:	Units	125067-001 1	125067-002 1	125067-003 1
Benzene	ug/L	<0.5	<0.5	<0.5
Toluene	ug/L	<0.5	<0.5	<0.5
Ethylbenzene	ug/L	<0.5	<0.5	<0.5
m,p-Xylenes	ug/L	<0.5	<0.5	<0.5
o-Xylene	ug/L	<0.5	<0.5	<0.5
Surrogate				
Trifluorotoluene	%REC	100	100	100
Bromobenzene	%REC	93	95	94

Curtis & Tompkins, Ltd.

Lab #: 125067 BATCH QC REPORT

TEH-Tot Ext Hydrocarbons	
Client: Envirometrix Corporation	Analysis Method: CA LUFT (EPA 8015M) Prep Method: EPA 3520
METHOD BLANK	
Matrix: Water Batch#: 26826 Units: ug/L Diln Fac: 1	Prep Date: 04/04/96 Analysis Date: 04/06/96

MB Lab ID: QC18632

Analyte	Result	
JP5	<50	
Diesel Range	<50	
Surrogate	**%Rec**	**Recovery Limits**
Hexacosane	113	60-140

Curtis & Tompkins, Ltd.

Lab #: 125067 BATCH QC REPORT

TEH-Tot Ext Hydrocarbons	
Client: Envirometrix Corporation	Analysis Method: CA LUFT (EPA 8015M) Prep Method: EPA 3520

BLANK SPIKE/BLANK SPIKE DUPLICATE

Matrix:	Water	Prep Date:	04/04/96
Batch#:	26826	Analysis Date:	04/06/96
Units:	ug/L		
Diln Fac:	1		

BS Lab ID: QC18633

Analyte	Spike Added	BS	%Rec #	Limits
Diesel Range	2475	2092	85	60-140
Surrogate	%Rec	Limits		
Hexacosane	108	60-140		

BSD Lab ID: QC18634

Analyte	Spike Added	BSD	%Rec #	Limits	RPD #	Limit
Diesel Range	2475	2234	90	60-140	7	<35
Surrogate	%Rec	Limits				
Hexacosane	105	60-140				

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
RPD: 0 out of 1 outside limits
Spike Recovery: 0 out of 2 outside limits

Curtis & Tompkins, Ltd.

Lab #: 125067 BATCH QC REPORT

BTXE

Client: Envirometrix Corporation

Analysis Method: EPA 8020
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water
Batch#: 26979
Units: ug/L
Diln Fac: 1

Prep Date: 04/12/96
Analysis Date: 04/12/96

MB Lab ID: QC19208

Analyte	Result
Benzene	<0.5
Toluene	<0.5
Ethylbenzene	<0.5
m,p-Xylenes	<0.5
o-Xylene	<0.5

Surrogate	%Rec	Recovery Limits
Trifluorotoluene	93	58-130
Bromobenzene	86	62-131

Curtis & Tompkins, Ltd.

Lab #: 125067 BATCH QC REPORT

BTXE

Client: Envirometrix Corporation
Analysis Method: EPA 8020
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Water
Batch#: 26979
Units: ug/L
Diln Fac: 1
Prep Date: 04/12/96
Analysis Date: 04/12/96

LCS Lab ID: QC19210

Analyte	Result	Spike Added	%Rec #	Limits
Benzene	21.6	20	108	80-120
Toluene	22.9	20	115	80-120
Ethylbenzene	21.6	20	108	80-120
m,p-Xylenes	44.1	40	110	80-120
o-Xylene	22.7	20	114	80-120

Surrogate	%Rec	Limits
Trifluorotoluene	93	58-130
Bromobenzene	88	62-131

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
Spike Recovery: 0 out of 5 outside limits

Curtis & Tompkins, Ltd.

Lab #: 125067 BATCH QC REPORT

BTXE

Client: Envirometrix Corporation
Analysis Method: EPA 8020
Prep Method: EPA 5030

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Field ID: ZZZZZZ
Lab ID: 125088-008
Matrix: Water
Batch#: 26979
Units: ug/L
Diln Fac: 1

Sample Date: 04/02/96
Received Date: 04/03/96
Prep Date: 04/12/96
Analysis Date: 04/12/96

MS Lab ID: QC19211

Analyte	Spike Added	Sample	MS	%Rec #	Limits
Benzene	20	<0.5000	22.2	111	75-125
Toluene	20	<0.5000	23.4	117	75-125
Ethylbenzene	20	<0.5000	22.3	112	75-125
m,p-Xylenes	40	<0.5000	45	113	75-125
o-Xylene	20	<0.5000	23.3	117	75-125

Surrogate	%Rec	Limits
Trifluorotoluene	93	58-130
Bromobenzene	91	62-131

MSD Lab ID: QC19212

Analyte	Spike Added	MSD	%Rec #	Limits	RPD #	Limit
Benzene	20	22.7	114	75-125	2	<20
Toluene	20	23.9	120	75-125	2	<20
Ethylbenzene	20	22.7	114	75-125	2	<20
m,p-Xylenes	40	46.1	115	75-125	2	<20
o-Xylene	20	23.8	119	75-125	2	<20

Surrogate	%Rec	Limits
Trifluorotoluene	94	58-130
Bromobenzene	92	62-131

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits