

91 MAR 28 AN 10: 48

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In Reply Refer To: 599/00/138

Mr. Gil Wistar, Hazardous Material Specialist Department of Environmental Health Hazardous Materials Program 80 Swan Way, Room 200 Oakland, CA 94621

Dear Mr. Wistar:

Enclosed is a copy of our proposed work plan for the initial subsurface investigation requested by your office by letter dated November 21, 1990. Upon approval from your office, we will proceed with the work plan.

If you have any questions, please contact Mr. Clifford Schem, Chief, Engineering Service at 415/447-2560, extension 6401.

Sincerely,

Marvin E. O'Rear

Medical Center Director

Enclosure

cc: Regional Industrial Hygienist

(90)

(001SM)

Prepared for the

DEPARTMENT OF VETERANS AFFAIRS MEDICAL FACILITY

Workplan for an an Initial Subsurface Investigation

4951 Arroyo Road Livermore, California

by
Augeas Corporation
2252 Fort Point Drive
Gold River, California 95670
(916) 635-0839

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1.0 INTRODUCTION

1.1 Statement of Scope of Report

The purpose of this report is to define the physical and environmental setting of the site and vicinity, document proposed procedures for the subsurface investigation of nine underground fuel storage tanks and to set forth the criteria for subsequent remedial studies. Tank tightness records and testing results are provided in Appendix 1.

1.2 Site Location

The property is located at 4951 Arroyo Road in Alameda County, approximately 5-miles south of the central business district of livermore (Figure 1). The facility is situated on a series of river terraces overlooking Arroyo Del Valle. The hospital itself lies on the uppermost terrace, with the facilities support buildings and wastewater treatment facilities located on successively lower terraces and the hillside between the terraces. The wastewater disposal ponds are located on the lowest terrace about 30 feet below the hospital grounds. The terrace levels can be seen from the topographic contours on Figure 2.

1.3 Site History

The DVA Medical Center in Livermore was originally constructed in 1923 as a tuberculosis sanitarium. Many of the original buildings have been demolished due to seismic hazards. Remaining facilities include a 191-bed hospital located in one of the older buildings and a 120-bed nursing home care unit located in a more recently constructed building. There is also an administration building and other miscellaneous structures housing hospital support services. The location of the various ancillary buildings and associated underground fuel storage tanks involved in this investigation are shown in Figure 3.

1.4 Background

In January, 1990 an investigation was conducted to determine the areal and vertical extent of soil contamination associated with the leakage of fuel oil from two 12,000-gallon underground fuel storage tanks located near building 16. During the course of this investigation concern was expressed over the integrity of the remaining nine tanks located at the different locations shown in Figure 3. Based on these concerns a review was conducted of tank tightness testing records. The most recent testing of fuel storage tanks took place in August, 1990. Eight of the nine underground tanks tested tight.

The fuel system associated with building 90 could not be pressure tested because there is no direct access to the tank. This tank was installed at the time the

Nursing Home Care Unit was built, in approximately 1981. The eight tank test results and concentrations of total extractable petroleum hydrocarbon products are presented in Appendix 2.

2.0 SITE DESCRIPTION

2.1 Vicinity Description

The DVA Medical facility consists of approximately 118 acres of buildings and grounds. The nine underground storage tanks to be investigated during this study are found at six separate locations. The majority of these tanks are buried under asphalt paving and are generally located in the parking lot adjacent to a particular support building. Figure 3 is a site plan of the facility which shows the location of buildings, asphalt or concrete cover and the existing underground as well as aboveground fuel storage tanks

2.2 Adjacent Land Use

Land use surrounding the site is predominantly agricultural/rural. The Lake Del Valle State Recreational area is approximately 2 1/2 miles southeast of the facility. The hospital lies approximately four miles east of Highway 84 (East Vallecitos Road). The closest subdivision is located approximately 2 miles north of the facility's grounds.

2.3 Surface Water Characteristics

The site lies 550 and 675 feet above mean sea level. The subject property is on a moderate incline which slopes gently to the east toward Arroyo Del Valle Creek. Surface drainage on the property appears to be good and generally flows toward the creek. Most of the present day buildings have been constructed on cut slopes with substantial amounts of fill material used to form level building sites. The present day drainage system includes the storm drains surrounding the property. Los Banos Creek lies approximately 5 miles east of the facility.

2.4 Groundwater Movement

Within the terrace deposits, groundwater flows from the higher to lower terrace levels. Water levels in existing observation wells on the lower two terraces have been used to obtain a more detailed picture of flow patterns in the vicinity of the Medical Center's sewage treatment facility. Groundwater monitoring wells, installed during the January, 1991 leaking underground tank investigation near building 16, support the contention that groundwater flow is generally north and eastward toward the terrace edges.

A major uncertainty in the groundwater regime is the influx of water from the sedimentary units below. Fractures in the underlying bedrock could also allow water to move vertically upward into the overlying terrace deposits. this vertical migration of connate water may explain the presence of low quality water with high chloride and boron concentrations which appear in one of the observation wells located on the lower terrace.

3.0 PROPOSED TANK INVESTIGATION

Nine underground fuel storage tanks will be investigated in accordance with Alameda County Ordinances governing subsurface investigations. The nine tanks are located at six separate locations as shown in Figure 3. Tank inventory records along with tank tightness testing results are presented in Appendix 1. Underground fuel Tanks to be investigated and their locations are summarized below in Table 1.

Table 1
Tank Inventory

Location	Number of Tanks	Size (gallon)	Product	Date of Installation
Building 79	2	750	Regular gasoline	Unknown
Building 79	1	2,000	Unleaded gasoline	1977
Building 6	1	2,206	Diesel	1982
Building 62	1	2,000	Diesel	Unknown
Building 62	1	5,000	Diesel	Unknown
Building 64	1	560	Diesel	Unknown
Building 90	1	2,000	Diesel	1980
Building 88	1	1,000	Diesel	1980

Work will begin at building #79 where the greatest potential for soil contamination exists. Initially, one hollow stem auger boring will be advanced at each tank location shown in Table 1. Each boring will be drilled to a depth commensurate with a depth of one to two feet below the bottom of each tank. Soil samples will be collected at 5-foot intervals using a continuous core sampler. A 580B OVM photoionization detector (PID) will be used to initially evaluate samples. Should any sample exhibit contaminated characteristics (high PID readings, petroleum odor, etc.) all drilling activities will immediately be terminated. The sample will then eb submitted for laboratory analysis for confirmation of field and PID observations. Following confirmation, a report will be prepared indicating the presence of soil contamination.

If no contamination is encountered, additional borings will be completed to thoroughly characterize the site. It is anticipated that four borings will be required to verify the lack of subsurface contamination. One boring at each tank location will be advanced to groundwater in order to determine its depth beneath the site. From this deep boring one groundwater sample will be obtained by bailer and submitted to the laboratory for analysis.

Following completion of the fieldwork at building #79, if no contamination has been found, the above work will be repeated at the next site until all six tank locations have been fully characterized. No angle borings will be drilled during this investigation. A minimum of one soil sample from each boring (highest PID reading) will be submitted for laboratory analysis in order to confirm the absence of contamination.

3.1 Laboratory Analysis

If contamination is indicated to be present based on field data, only one soil sample will be submitted for laboratory analysis. The one sample will be analyzed for both total petroleum hydrocarbon products (TPH) by EPA Method 8015 and volatile aromatic hydrocarbon compounds (BTXE) by EPA Method 8020 in order to confirm the absence of contamination. One groundwater sample from each tank location will also be analyzed for TPH and BTXE.

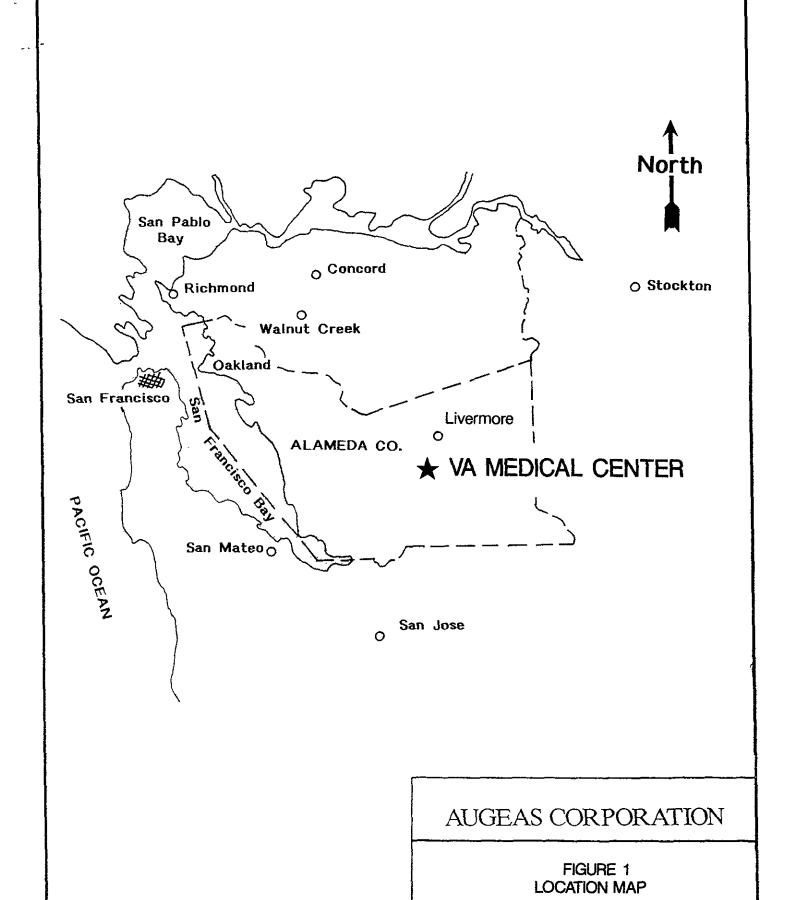
All samples will be submitted to Superior Analytical Laboratory (State Certification No. 220) in San Francisco, California for analysis. At least ten percent duplicate and ten percent spike samples will be analyzed along with the collected samples in order to provide quality control.

3.2 Report Preparation

Following completion of the above fieldwork and analytical work, a report will be prepared which details the results of the investigation. An additional Problem Assessment Investigation will be recommended for any of the tank sites which show a potential for contamination either a result of simple periodic over spills or as a result of tank failure.

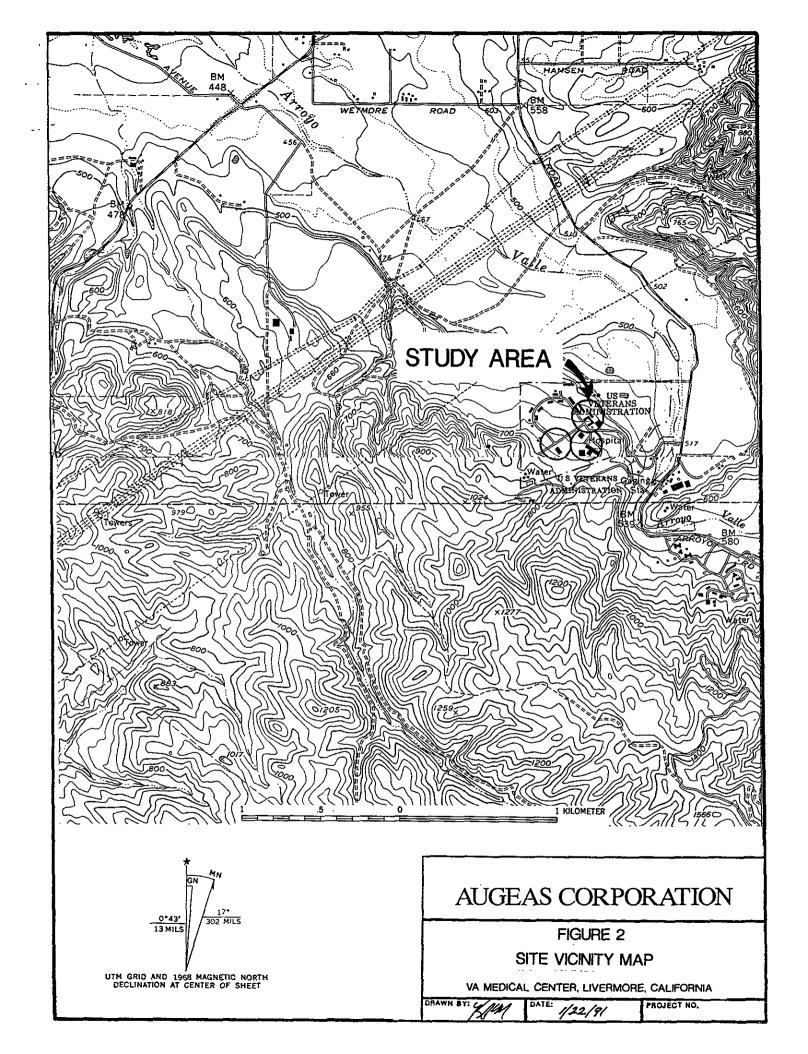
APPENDIX 1

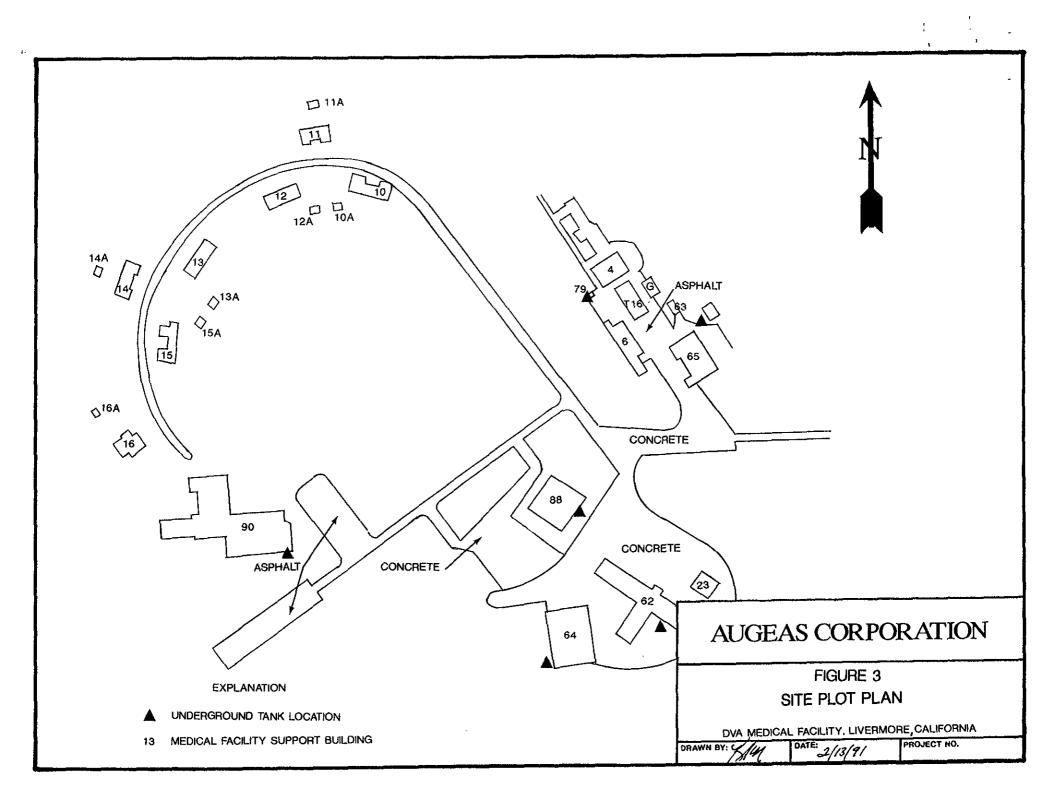
TANK TIGHTNESS TEST RESULTS AND INVENTORY RECORD



VA MEDICAL CENTER, LIVERMORE, CALIFORNIA

PROJECT NO.







ILFC, INC. PREVENTIVE MAINTENANCE SERVICE REPORT NO. 5013

FUEL ANALYSIS AND CERTIFICATION

TANK #	TANK CAPACITY GALLONS	STABILITY INDEX (AGING TEST)	AMOUNT ILFC INHIBITOR ADDED	BULK FUEL QUALITY
BLDG #6 BLDG#62-2 BLDG#62-1 BLDG #64 BLDG #88	2,000 2,000 5,000 560 1,000	20 6 6 3 2	1 gallon 1 gallon 2 gallons 1 quart 1 gallon	satisfactory satisfactory satisfactory satisfactory satisfactory

COMMENTS AND RECOMMENDATIONS

The fuel in tanks 6, 62-2, 62-1, 64, and 88 is in satisfactory for approximately one year.



P.O. Box 15212 Rio Rancho, NM 87174 (505) 892-1666 (800) 237-4532

Creating the standards for industry.

ILFC, INC. PREVENTIVE MAINTENANCE SERVICE REPORT NO. 5013

FUEL STORAGE SYSTEM INTEGRITY TESTING

SERVICE PERFORMED AT: V.A. MEDICAL CENTER

4951 Arroyo Rd. Livermore, CA

DATE TESTED: August 30, 1990

TEST METHOD: Ainlay

TECHNICIAN: Nick Stroebel

TANK #		TANK CAPACITY GALLONS	TANK TEST MEASURED CHANGE (GALLONS PER HOUR)	CONDITION OF THE FUEL SYSTEM
BLDG	••	2,000	0.039	tight
BLDG	#62-2	2,000	0.0118	tight
BLDG	#62-1	5,000	0.042	tight
BLDG	#64	560	0.023	tight
BLDG	#79-1	2,000	0.006	tight
BLDG	#79-2	750	0.042	tight
BLDG	#79-3	750	0.004	tight
BLDG	#88	1,000	0.026	tight
BLDG	#90	could not	test	and the same to

COMMENTS AND RECOMMENDATIONS

Fuel_Rsystems 6, 62-2, 62-1, 64, 79-1, 79-2, 79-3, and 88 are ILFC certified tight in accordance with the tests performed. The leak rates do not exceed the standard of 0.050 gallons per hour described in the National Fire Protection Assoc., Bulletin N.F.P.A. 329.

Fuel system 90 could not be pressure tested because there is no direct access into the tank.



P.O. Box 15212 Rio Rancho, NM 87174 (505) 892-1666 (800) 237-4532

ILFC, INC. TEP ANALYSIS REPORT NO. 5013

RECOMMENDATIONS AND CONCLUSIONS

SITE ID: V.A. Medical Center SITE LOCATION: 4951 Arroyo Rd. - Livermore, CA

The TVPH (total volatile petroleum hydrocarbons) and TEPH (total extractable petroleum hydrocarbons) concentrations that were detected are listed on the site maps. The sample that showed the largest amount of petroleum hydrocarbons was the sample from hole 6 at Building #79. The GC/MS chromatogram of this sample showed only 14.2 ppm (parts per million) of TVPH and had a pattern characteristic to that of aged gasoline. However, an extract of this same sample showed much higher levels of TEPH which had the distinct odor of paint thinner. Since all tanks tested tight, it is presumed that the hydrocarbons detected originated from the surface.

Half cell readings indicate that these fuel systems are in satisfactory condition in regards to corrosion. Although the tanks at Building #62 show readings that may be considered borderline both tanks tested tight. However, yearly monitoring of their condition is imperative.

All the data indicates that both passive and impressed current cathodic protection systems should be installed to protect these fuel systems.

INTERNATIONAL LUBRICATION & FUEL CONSULTANTS, INC. Rio Rancho New Mexico 87048 1-800-237-4532 TEP SITE ANALYSIS: PLOT OF HALF-CELL READINGS AND HYDROCARBON ANALYSIS RESULTS

LEGEND ppm HYDROCARBONS HOLE NUMBER **HALF CELL READINGS** Note: Reported as: N ppm TEPH/ ppm TVPH pH: 6.4 38.0ppm / < MDL 23.0ppm / <MDL Soil Resistivity in ohm-cm 5 feet 2016 ohm-cm -586 -592 10" 1497.6 ohm-cm 20" 806.4 ohm-cm Moisture content: 16.25 1000 gal diesel Soil microbe count: high38.0 27.0ppm / < MDL 25.0ppm / 1.95ppm -572 **BUILDING #38** Drawing No. 76 SITE: CLIENT **DATE ON SITE: 8-15-90** VA MEMORIAL HOSPITAL VA MEMORIAL HOSPITAL Drawn by: NICHOLAS STROEBEL 4951 ARROYOROAD 4951 ARROYO ROAD LIVERMORE CA. DATE OF ANALYSIS: 8-20-90 LIVERMORE CA.

Date: 8-22-90

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INTERNATIONAL LUBRICATION & FUEL CONSULTANTS, INC. Bio Bancho New Mexico 87048 1-800-237-4532 TEP SITE ANALYSIS: PLOT OF HALF-CELL READINGS AND HYDROCARBON ANALYSIS RESULTS

LEGEND ppm HYDROCARBONS HOLE NUMBER HALF CELL READINGS Note: Reported as: ppm TEPH/ppm TVPH pH: 6.4 N Soil Resistivity in ohm-cm 5 feet 4608 ohm-cm 10 2304 ohm-cm 20" 2918.4 ohm-cm Moisture content: 13.5% 2000 gal diesel Soil microbe count: high normal ~ / <MDL -/<MDL \odot 3 ~.543 -/<MDL -559 0 -577

DATE ON SITE: 8-16-90

DATE OF ANALYSIS: 8-20-90

SITE: BUILDING 90

VA MEMORIAL HOSPITAL

4951 ARROYO ROAD
LIVERMORE CA.

CLIENT

VA MEMORIAL HOSPITAL 4951 ARROYO ROAD LIVERMORE CA. Drawing No. 79

Drawn by: NICHOLAS STROEBEL

Date: 8-23-90

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INTERNATIONA LUBRICATION & FUEL CONSULTANTS, INC. Rio Rancho New Mexico 87048 1-800-237-4532 TEP SITE ANA .YSIS: PLOT)F HALF-CELL READINGS AND HYDROCARBON ANALYSIS RESULTS

PPM HYDROCARBONS
HOLE NUMBER

HALF CELL READINGS

Note: Reported as: ppm TEPH/ppmTVPH

pH: 6.6

Soil Resistivity in ohm-cm
5 feet 1536 ohm-cm
10' 1689.6 ohm-cm
20' 1728 ohm-cm

Moisture content: 8.25%

Soil microbe count: high

normal

82.0ppm/0. 36ppm

1

-422

560 gal diesel

(2)

375.0ppm / 0.165ppm

-.423

DATE ON SITE: 8-15-90

DATE OF ANALYSIS: 8-20-90

SITE:

BU LDING#64

VA MEN DRIAL HOSPITAL 4951 AR: DYO ROAD

LIVERM RECA.

CLIENT

VA MEMORIAL HÖSPITAL 4951 ARROYO ROAD LIVERMORE CA. Drawing No. 75

Drawn by: NICHOLAS STROEBEL

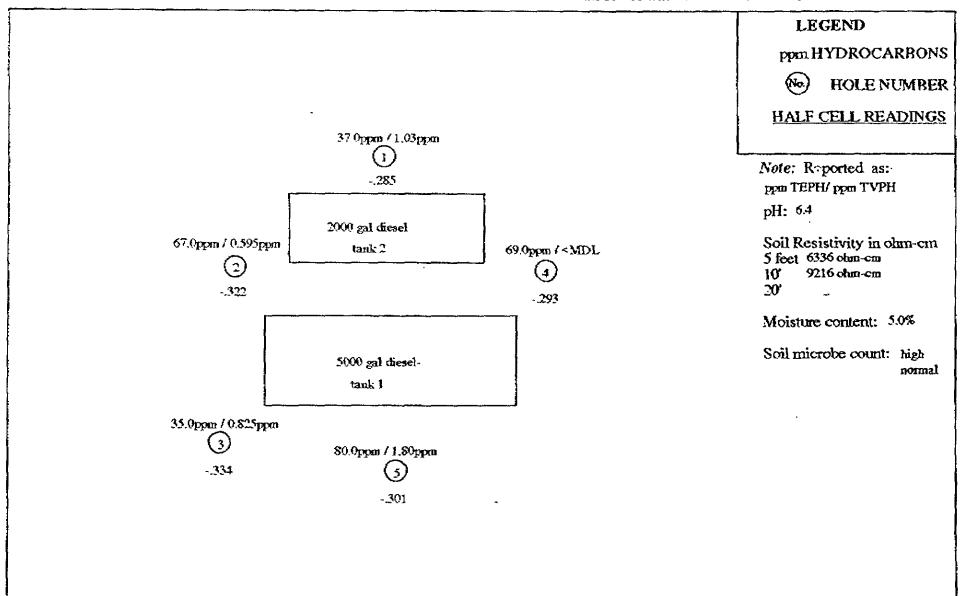
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INTERNATIONAL LUBRICATION & FUEL CONSULTANTS, INC. Pio Pancho New Mexico 87048 1-800-237-4532 TEP SITE ANALYSIS: PLOT OF HALF-CELL READINGS AND HYDROCARBON ANALYSIS RESULTS



DATE ON SITE: 8-15-90

SITE:

BUILDING #62

VA MEMORIAL HOSPITAL 4951 ARROYO ROAD LIVERMORE CA.

CLIENT

Drawing No. 77

Drawn by: NICHOLASSTROEBEL

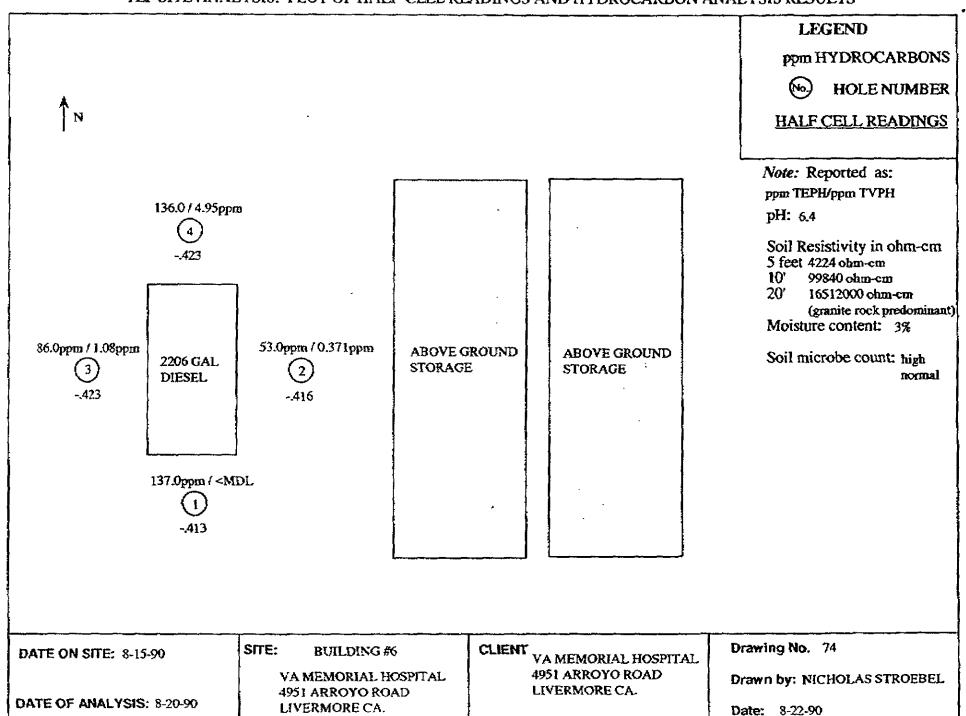
Date: 8-22-90

DATE OF ANALYSIS: 8-20-90

VA MEMORIAL HOSPITAL 4951 ARROYO ROAD LIVERMORE CA.

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INTERNATIONAL LUBRICATION & FUEL CONSULTANTS, INC. Rio Rancho New Mexico 87048 1-800-237-4532 TEP SITE ANALYSIS: PLOT OF HALF-CELL READINGS AND HYDROCARBON ANALYSIS RESULTS



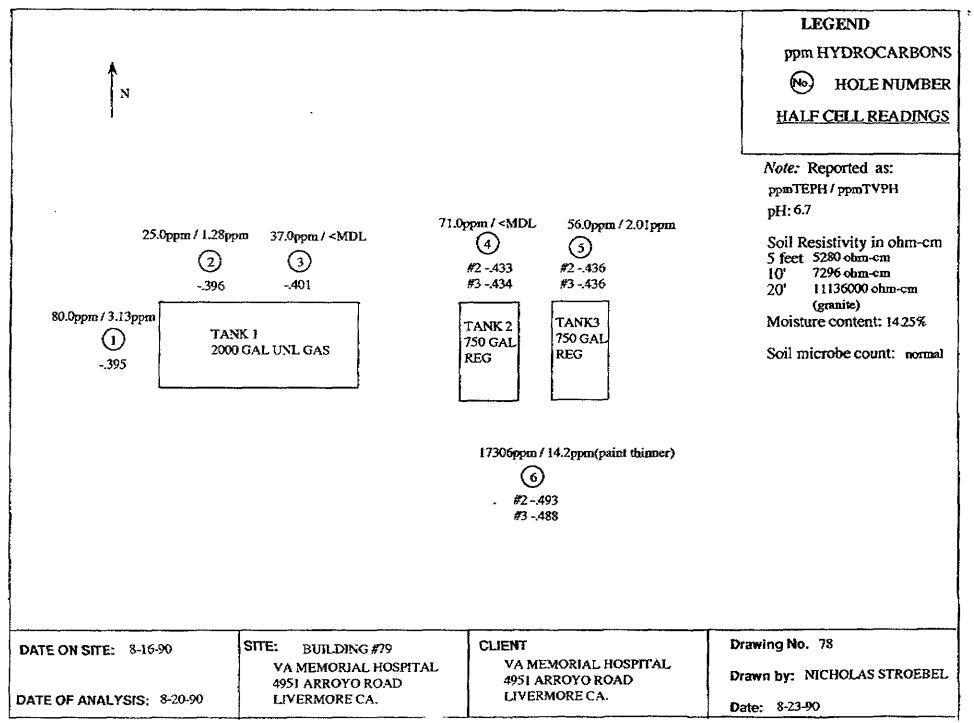
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Strong Aggress City State 21P					
II Facility					
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CIN		County		·	ZIP
Making Address	City	.l	S	late	21P
Phone wildres Type of Business Type of Business Digit Motor Vehicle	e Fuel Station	□ oz Other:			<u> </u>
Number of Tasks at in sifected Rural Areas Township			Section		
III 24 Hour Emergency Contact Person			<u>L</u>		
Davis Name dast name trop and Phone wilarea code	Name (last name lies	tt and Phone w. area cos	51:		
COMPLETE THE FOLLOWING ON A SEPAR	ATE FORM	FOR EACH C	ONTA	AINER	
IV Description		.11			2
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			n 🗆 os	Yes '	······································
					
G Does the Container Store (Check One). ☐ 31 Waste 💢 22 Product					
H Does the Container Store Motor Vehicle Fuel or Waste Oil? 💢 or Yes	□ n2 N0	If Yes, Check ap	proprial	te box(e	es)
🔲 ा Unicaded 🗅 रू Regular 🗇 त्र Premium 🔲 व्य Diesel 🔲 as Waste	e O∉ ⊡ os Oth	ner (List): #Z	Baile	er Fo	iel oil
V Container Construction					<u> </u>
A. Thickness of Primary Containment ☐ Gauge ☐ Inches	□ cm 🕱 Ui	nknown			
B → vaulted (Located in an underground Vault.) □ ∞ Non-vaulted					
	oped 🗆 us l	Jnknown □ 9	6 None		
		ride □ os Con-	crete	□ ns /	Aluminum
🛘 ಾ Steel Clad 🗎 अ Bronze 🗎 ಅ Composite 🗖 10 Non-meta	llic 🛭 🖽	Earthen Walls			-
☐ 12 Unknown ☐ 13 Other	Country Start Country Country				
E □ ~ Rubber Lined □ ::: Alkyd Lining □ 03 Epoxy Lining □ 04	Phenolic Lının	g □ us Glass	Lining	☐ os	Clay Lining
Juan Unkned □ os Unknown □ os Other.					
F ☐ or Polyethlene Wrap ☐ ∞ Vinyl Wrapping ☐ ∞ Cathodic Protein	ction 🗆 04 l	Jnknown # o	None	□ 94	Other PainT

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	1 Owner			
1	U.S.V.A. MEdical C. uter			
	4951 ARROYO Rd.	LIVERMORE	CA. 94550	
	II Facility			
•	JAME SAME	Dealer / Foreman / Supervisor		
	Some Admires SAME	L L	aresi Cross Street NETMORE RO IZIP	1.
	City	Alamed	ZIP ZIP	 -
	SAME Namy Assume SAME	City	State Sign	
J	Type of Business 4/5-447-2560 □ or Motor Vehicle Fue	el Station 202 Other 11/1	EdiCAL CENTER	
Ha	SAME Oncorporation On Motor Vehicle Fuel Note: 15 September 1 Rural Areas Courses Only: Range Ra		ection	
	III 24 Hour Emergency Contact Person			
	Days Name Hay harre shall and Phone & area cost 4/5-447-2560-6-6470 Nights Name PTZER VIM # ### #############################	ust name tirst; and Phone waters code	.825- 943/a	
	COMPLETE THE FOLLOWING ON A SEPARATE			
	IV Description			
	A 🕱 ⊤ Tank 🖽 🕾 Sump 🖂 🐯 Lagoon, Pit or Pond 🖂 🌬 Other:		Number (If there is no number assign	OBE:
	B Manufacturer (if appropriate) BERXES Year of Mfg: _/98Z	C. Year Installed:	1,6 #3 1982 Unknov	wn
	D Container Capacity 2200 gallons Unknown E. Container Repairs			
	F Is Container currently used? 💆 21 Yes 🖾 12 No. If No. year of last use			
	G Does the Container Store (Check One). □ or Waste 🕱 02 Product			
	H Does the Container Store Motor Vehicle Fuel or Waste Oil? 🕱 01 Yes 🖂	ng No if Yes. Check appr	ropriate box(es)	
	☐ or Unleaded ☐ or Regular ☐ is Premium 💢 o₄ Diesel ☐ os Waste Oil			
	V Container Construction			
	A Thickness of Primary Containment: Gauge inches in	em 🕱 Unknown		
	B D > Vaulted (Located in an underground Vault) 🔀 2 Non-vaulted -			
	C 🗆 :: Double Walled 🗎 xx Single Walled 🗀 no Lined 🗀 nd Wrapped		None	
	D □ c Carbon Steel □ cr Stainless Steel 🗡 03 Fiberglass □ 04 Polyv	· · · · · · · · · · · · · · · · · · ·	rete □	
i	,	☐ □ Earthen Walls		
	🗆 12 Unknown 🗆 15 Other:			
		nolic Lining 🗆 os Glass Li	ining 🗆 os Clay Lining	
	🔀 er Unknea 🗆 to Unknown 🗆 to Other:			~
ļ	F 🗆 or Polyethlene Wrap 🗀 😅 Vinyl Wrapping 🗀 os Cathodic Protection	Da Unknown Xos	None □ no Other	

INTERNATIONAL LUBRICATION & FUEL CONSULTANTS, INC. Rio Rancho New Mexico 87048 1-800-237-4532 TEP SITE ANALYSIS: PLOT OF HALF-CELL READINGS AND HYDROCARBON ANALYSIS RESULTS



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ch MA	Country Coun	ZiP			
Alawny Appress	Dealer / Foreman/ Supervistry Notine of Cross Street Cross S	/IP			
Phone in area chose	Design Four Process County State County Count				
There is all to the control of the c	Dealer/Foreman/Supervetory Shearest Cross St. County				
Number of Tanks at this Facility Rural Areas Only:	County State County Co				
III 24 Hour Emergency Contact Person	County C				
Davis Nami, viasi namini intiviand Phone w larea code	NignIs Name	e (last name first) an	d Phone w/area code		
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	T. L. W. W.				
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D Container Capacity Z₃00 gallons □ U	nknown E. Container Repairs	Cdy State ZiP	Year		
F Is Container currently used? X or Yes 🗆 o	2 No If No. year of last use:				□ ₀ Unknown
G Does the Container Store (Check One)	or Waste ✓ 02 Product				
H Does the Container Store Motor Vehicle Fue	el or Waste Oil? ⊠oı Yes □	los No lf Y	es. Check appropr	rate box	(es)
in Unleaded □ x Regular □ ou Premium	n □ ₀₄ Diesel □ ₀₅ Waste Oi	I □ ∞ Other	(List):		· Farementally sale · Hally supplement of Fa
V Container Construction			····································	·····	
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C □ ·· Double Walled 🔀 ∞ Single Walled				ne	······
					e Aluminum
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				Service Ser	
E □ a- Rubber Lined □ o₂ Alkyd Lining (□ os Epoxy Lining □ o₄ Phe	enotic Lining	☐ os Glass Linin	g 🗆	% Clay Lining
Zor Unlined □ 38 Unknown □ 99 Other	er:				
F 🗆 e Polyethlene Wrap 🗀 😅 Vinyl Wrappir	ng Din Cathodic Protection	n Marine	rnown Dus Nor	ne [l m Other

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Dealer / Foreman / Supervisor County ZiP	ON A SEP	FOLLOWIN	OMPLETE THE	co				
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			known	□ cm 💢 Uni	auge 🗆 Inch		mary Containment	A Thickness of Primi
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		None			•			
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imum	□ ⁶⁶ Alumini	crete □ n∈	de □ ∞ Conc	Polyvinyl Chlorid	perglass 🗆	s Steel □ o₃	el □ ∞ Stainles	D & Carbon Steel
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	Lins Clay E					🗆 🕫 Other	☐ of Unknown	Xor Unlined
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