Site Characterization

and

Monitoring Well Plans

at

5511 Fairmont Hospital
San Leandro, California

Prepared

for

General Works Agency
Paul Lecheminant
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Prepared

by

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TABLE OF CONTENTS

List of Figures

List of Appendices

TANK MONITORING AND SITE CHARACTERIZATION PLAN

for

FAIRMONT HOSPITAL, 15400 FOOTHILL BOULEVARD, SAN LEANDRO, CALIFORNIA, 94578

1.0 INTRODUCTION

Gregg & Associates, Inc., a Martinez, California consulting firm specializing in environmental engineering and hydrogeology, was retained by the County of Alameda to conduct their underground storage tank management program for 60 tanks at 30 facilities, including Fairmont Hospital. Fairmont Hospital located at 15400 Foothill Boulevard in San Leandro, California (Figure 1) has five underground storage tanks: two 12,000-gallon capacity tanks containing fuel oil #5 domestic (Tanks 1 and 2), two 1,000-gallon capacity tanks containing diesel fuel (Tanks 3 and 5), and one 500-gallon capacity tank containing regular gasoline (Tank 4). Tanks 1 and 2 are used for emergency fuel for boilers, Tanks 3 and 5 are used for emergency fuel for generators, and Tank 4 is used for the facility's off-road gardening equipment. The locations of these tanks are shown on Figure 2.

Following Gregg & Associates, Inc. initial site assessment of Fairmont Hospital, it was recommended that Tank 4 be removed and the remaining tanks be tank integrity tested. After consultation with tank integrity testing firms it was found that neither Tanks 1 and 2 could be tested as a result of the fuel they contain. On 12 April 1988, Hunter Environmental Services, Inc. tested both Tanks 3 and 5. Tank 3 was found to be leaking and Tank 5 was found to be tight. Tank 4 was not tested, as Fairmont Hospital has agreed to remove the tank.

This plan addresses in detail the monitoring approach for Tanks 1, 2, and 5, and site characterization work at Tank 3 to assess the vertical and lateral extent of suspected diesel fuel contamination. This plan was written in accordance with Alameda County Water District Groundwater Protection Program, "Groundwater Monitoring Guidelines for Hazardous Materials Storage," (May 1987 revision).

2.0 TANK MONITORING PLAN

2.1 Tanks 1 and 2

2.1.1 Subsurface Investigation

Gregg & Associates, Inc. proposes to drill two well bores at the anticipated low end of the backfill for Tanks 1 and 2, as shown on Figure 3. The well bores will be drilled by Enexco of Capitola, California using a hollow-stem auger drilling rig. One of these well bores will be drilled to 45 feet to establish the presence or absence of ground water (estimated to be found at depths between 40 and 60 feet) and to characterize the lithology of the site. The other well bore will be drilled approximately 3 feet past the bottom of the tank to a total depth of 15 feet. A hydrogeologist from Gregg & Associates, Inc. will supervise all activities and provide a detailed lithologic log of each well bore.

In conjunction with the drilling of the well bores, soil will be sampled with a Modified California Sampler at 5-foot intervals from the bottom of the tanks (i.e. 12, 17, 22, 27, 32, 37, 42 and 45 feet in the first well bore and 12 and 15 feet in the second well bore). A more detailed description of drilling and soil sampling procedures are included in Appendix A.

2.1.2 Backfill Vadose Well Installation

The 45-foot well bore will be backfilled to 15 feet with concrete slurry. Fifteen-foot deep backfill vadose wells constructed of 2-inch inner diameter (ID) Schedule 40 PVC blank and perforated casing will be installed in each well bore. Construction details of well installation are included in Appendix B.

2.1.3 Laboratory Analysis

Appropriate depth-specific soil samples will be submitted by Gregg & Associates, Inc. to an independent State-certified laboratory for anlysis. An analysis for Total Petroleum Hydrocarbons using Environmental Protection Agency (EPA) Method 418.1 will be performed.

2.1.4 Report of Investigation

At the completion of all drilling, soil sampling, and laboratory analysis, Gregg & Associates, Inc. will prepare a report covering the investigation. Copies of the report will be submitted to the City of San Leandro and Alameda County Water District.

2.1.5 Monitoring and Reporting

The backfill vadose wells at Fairmont Hospital will be monitored monthly by lowering a bailer into the well to assess whether or not fluid resulting from tank leakage is collecting in the well. A semi-annual report of the results of the field testing will be submitted to both the City of San Leandro and Alameda County Water District. In the event that fluid from tank leakage is found, both agencies will be notified within 24 hours.

2.2 Tank 5

2.2.1 Installation of Tank Continous Monitoring System

A Tidel GTM continuous electronic monitoring system (tank level monitor), manufactured by Tidel Systems of Carrollton, Texas, will be installed on Tank 5 at Fairmont Hospital. The Tidel GTM will produce daily records of inflow and outflow and record daily, weekly, and monthly reconciliation periods between inflows, outflows, and volume on hand. Written daily entries of any unusual occurrences that might affect the inflow, outflow, or volume on hand and written entries explaining in detail any adjustments to the records will also be maintained.

2.2.2 Monitoring and Reporting

Tidel GTM tank integrity tests will be performed daily. The following variation during tank integrity test mode will be reported to the City of San Leandro and Alameda County Water District within 24 hours of the finding:

DAILY 200 gallons

WEEKLY 3 percent of throughput or 100 gallons, whichever is greater, but in no case greater than 350 gallons

MONTHLY 0.5 percent of throughput or 100 gallons, whichever is less

Fairmont Hospital will submit semi-annual written report to both agencies that will contain a statement indicating that the inventory reconciliation data is within allowable variations or that allowable variations were exceeded. The dates and the quantities of the excessive variations will be listed. the report will also include any occurrence of pipeline repair.

The Tidel GTM system will be inspected at least once a year by certified personnel from Tidel Systems. Maintenance will be performed on the system during the inspections, if necessary.

3.0 SITE CHARACTERIZATION PLAN

3.1 Tank 3

3.1.1 Subsurface Investigation

Gregg & Associates, Inc. proposes to drill three soil borings to characterize the vertical and lateral extent of petroleum hydrocarbons (diesel fuel) in the vicinity of Tank 3. The proposed locations of these borings are shown on Figure 3. The drilling of the borings will be performed by Enexco. The soil borings will be drilled with a truck-mounted hollow-stem auger drilling rig approximately 5 feet past the vertical extent of the soil contamination or to ground water, whichever is less. A hydrogeologist from Gregg & Associates, Inc. will supervise all activities and provide a detailed lithologic log of each borehole.

In conjunction with the drilling of the borings, soil will be sampled with a Modified California Sampler at 5-foot intervals from the ground suface to a depth of 20 feet, then at 10-foot intervals thereafter. Detailed drilling and soil sampling procedures are included in Appendix A.

3.1.2 Laboratory Analyses

Appropriate depth-specific soil samples will be submitted by Gregg & Associates, Inc. to an independent State-certified laboratory for analysis. An analysis for Total Petroleum Hydrocarbons using a diesel fuel standard will be performed in accordance with EPA Method 8015. An analysis for benzene, toluene, ethyl benzene, and total xylenes will be performed in accordance with EPA Method 8020, only if Total Petroleum Hydrocarbons are detected.

3.1.3 Report of Investigation

At the completion of all drilling, soil sampling, and laboratory analyses, Gregg & Associates, Inc. will prepare a report covering the investigation. copies of the report will be submitted to both the City of San Leandro and Alameda County Water District.

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This proposed Tank Monitoring and Site Characterizatin Plan should be viewed as tentative and subject to change depending upon conditions to be determined during the subsurface investigation. If conditions are found to differ significantly from those assumed in developing this program, the City of San Leandro and Alameda County Water District will be contacted and their approval sought on any recommended program modification before implementation.

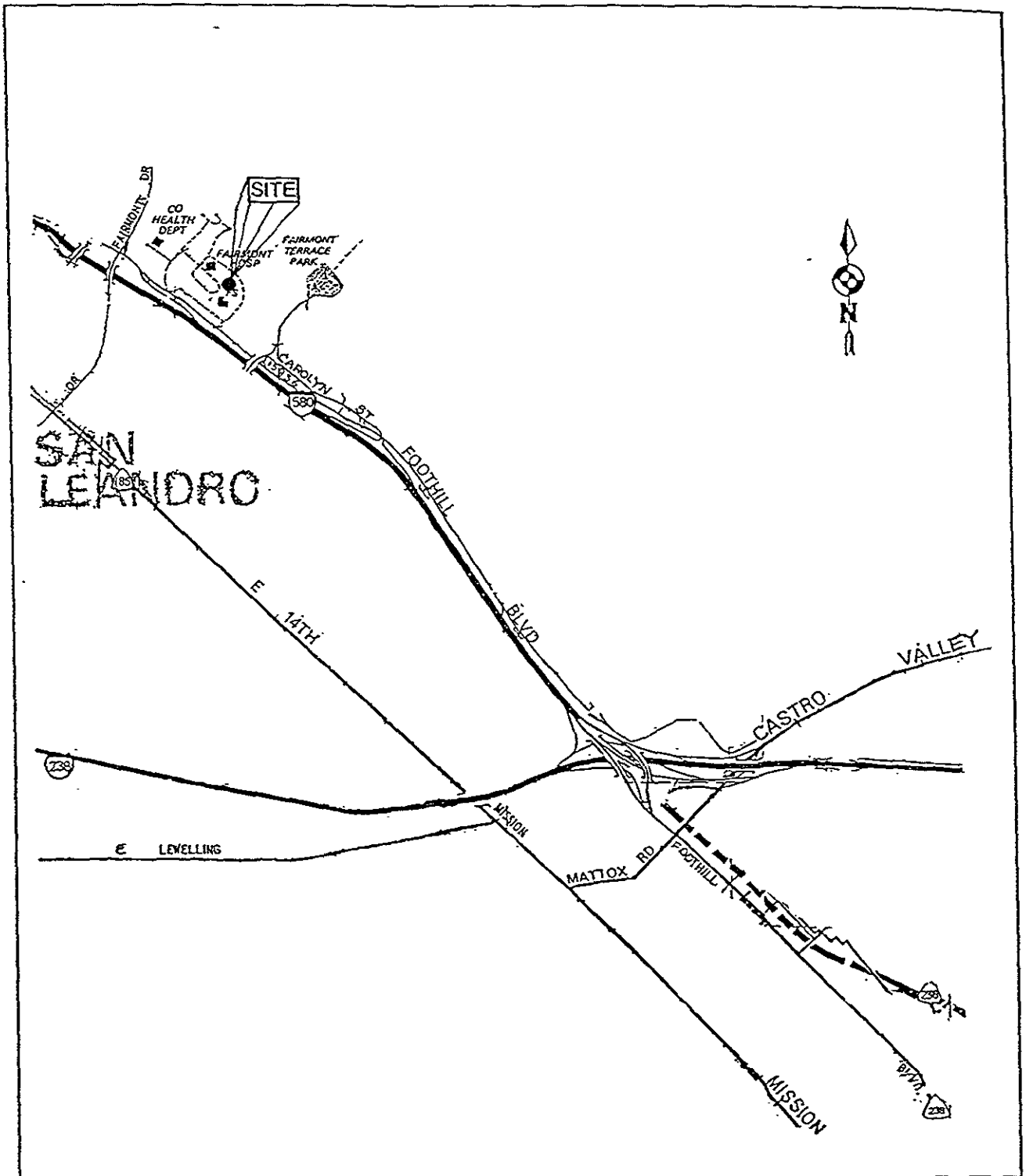

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FIGURE 1
LOCATION MAP

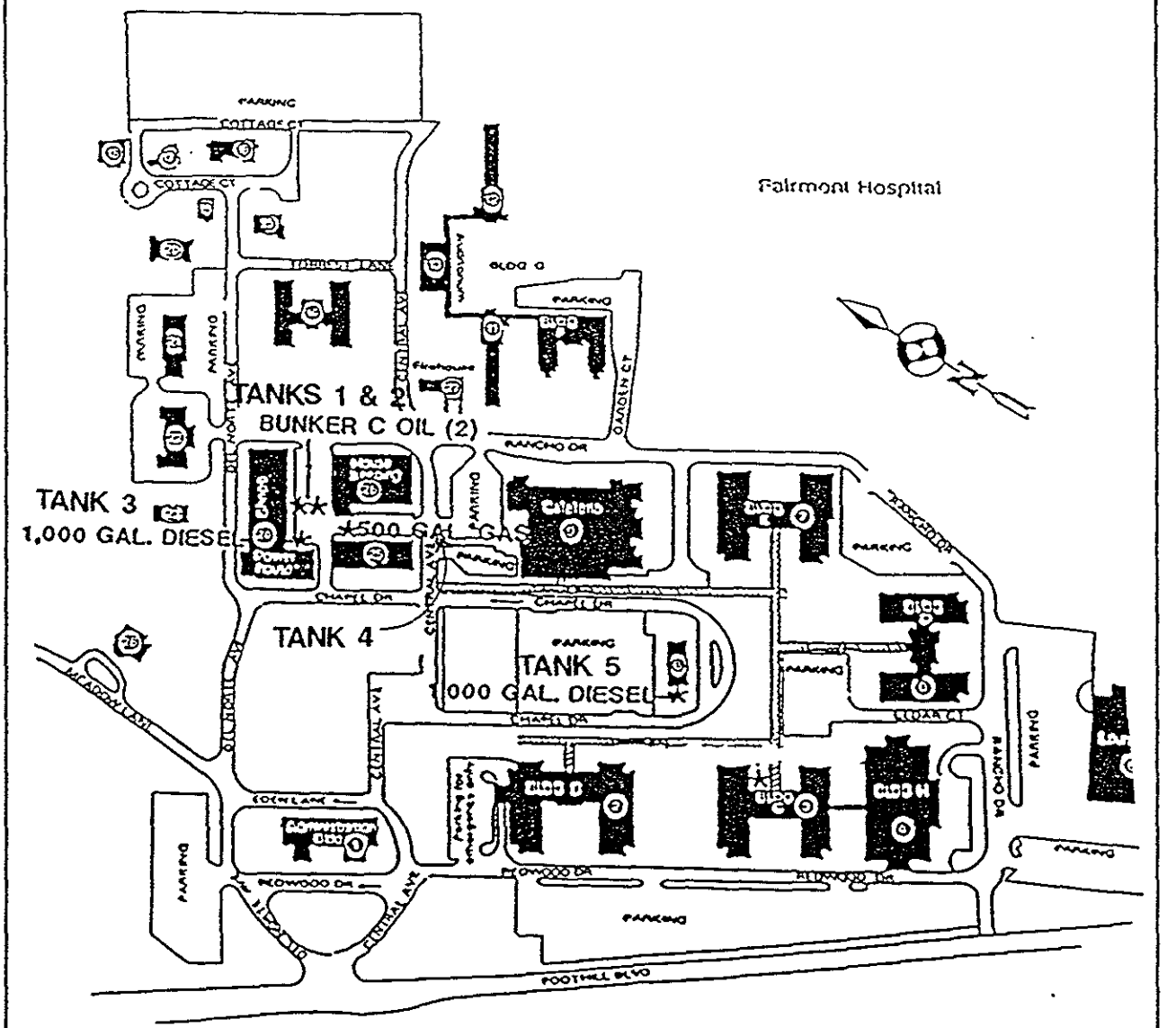

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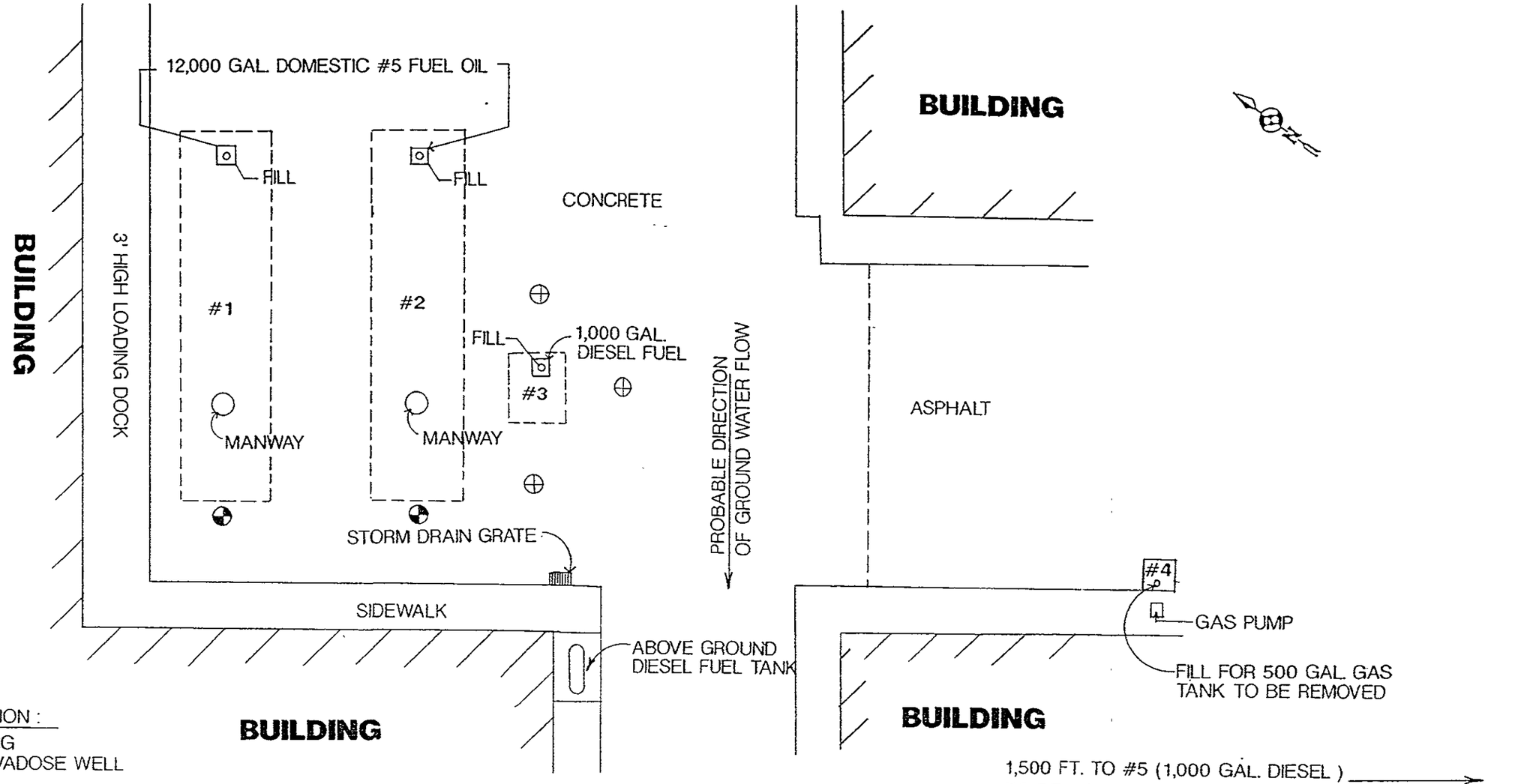
FIGURE 2
LOCATION OF TANKS AT FAIRMONT HOSPITAL



SCALE: 1" = 10'

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FIGURE 3
SITE PLAN
FAIRMONT HOSPITAL
02 - 276 - 005

APPENDIX A
DRILLING AND SOIL SAMPLING PROCEDURES

A truck-mounted Mobile Drilling company Model B-53 hollow-stem auger drilling rig will be used to drill the borings. the auger flights are in 5-foot lengths with an inside diameter (ID) of 3.25 inches and an outside diameter (OD), including the drill bit, of approximately 7.5 inches. A retractable plug prevents woil from entering into the auger flights during the boring process. The plug, located at the end of a 140-pound drive hammer, is inserted into and retrieved from the hollow-stem auger by a wire line.

During the drilling process, relatively undisturbed soil samples will be collected from the borings for chemical analysis and visual description. the soil samples will be collected using a Modified California Sampler. The Modified California Sampler consists of an outer sampler barrel lined with a set of 6-inch long (2.50 inches OD and 2.375 inches ID) brass rings. The sampler is attahcd to the end of a drive hammer, lowered through the hollow-stem auger flights, and is driven 12 inches by raising and dropping the 140-pound drive hammer. A soil sample is thereby collected in the two rings placed end to end inside the sampler.

After the sampler is driven to the desired depth, the rings will be removed. The lower ring will contain the soil sample to be used for chemical analysis. The ends of the lower ring will be sealed with aluminum foil, capped with plastic end caps, and secured with duct tape. The sample will then be labeled and placed in an ice chest for cold storage during field work. The soil samples will be delivered to an independent State-certified analytical laboratory for analyses. These procedures are in accordance with acceptable practices set by Federal, State, and local agencies.

The soil in the upper ring will be examined in the field for olfactory indicatins of chemical contamination and used for lithologic description. The grain size, color, odor, moisture, and other pertinent Unified Soil Classification System (USCS) properties will be described on field boring logs by a hydrogeologist from Gregg & Associates, Inc.

Before the Modified California Sampler and rings are assembled and placed in the boring, they will be cleaned to avoid cross-contamination of samples. the equipment will be washed with an approved cleaning solution, rinsed with tap water, rinsed with distilled water, and then allowed to air dry. The auger flights will be steam cleaned prior to arrival at the site. Only clean augers will be used to drill each boring.

APPENDIX B
WELL INSTALLATION

The backfill vadose wells will be constructed of 2-inch ID, Schedule 40, PVC blank and perforated pipe. Each monitoring well will extend to a depth of 15 feet below the ground surface (3 feet below the bottom of the tank). Screened or perforated casing will be installed from 15 to 5 feet. The perforated pipe is factory-machine-slotted with openings of approximately 0.020 inch. The perforated pipe will be fitted with a slip-on cap before being placed in the bottom of the borehole. Blank pipe will be connected to the perforated pipe and will extend to the ground surface.

The annulus between the borehole (approximately 7.5 inches ID) and the 2-inch ID perforated pipe will be filled with a clean sand pack of Lone star #3 sand. The sand pack will extend from the total depth of the well to 1-foot above the uppermost slots on the perforated pipe. The remainder of the annulus will be filled with concrete to the ground surface.

At the ground surface the blank pipe will be capped with a slip-on cap and the envire ground-water monitoring assembly will be protected and enclosed by a locking cast-iron box and cover with a water-tight seal. The cast-iron box and cover with a water-tight seal. The cast-iron cover will be set approximately 1/2 inch above the paved surface and concreted in place.

All lengths of pipe used in the backfilled vadose well construction, both blank and perforated, will be connected by threaded joints. No glues or adhesives will be used. The PVC blank and perforated pipe and caps placed in the borings are cleaned at the factory and sealed for delivery. These techniques will preclude introducing outside contamination.

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The annulus between the borehole (approximately 7.5 inches ID) and the 2-inch ID perforated pipe will be filled with a clean sand pack of Lonestar #3 sand. The sand pack will extend from the total depth of the well to 2 foot above the uppermost slots on the perforated pipe. The remainder of the annulus will be filled with concrete to the ground surface.

At the ground surface the blank pipe will be capped with a slip-on cap and the entire ground-water monitoring assembly will be protected and enclosed by a locking cast-iron box and cover with a water-tight seal. The cast-iron cover will be set approximately 1/2 inch above the paved surface and concreted in place.

All lengths of pipe used in the backfilled vadose well construction, both blank and perforated, will be connected by threaded joints. No glues or adhesives will be used. The PVC blank and perforated pipe and caps placed in the borings are cleaned at the factory and sealed for delivery. These techniques should preclude introducing outside contamination.