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geo - logic

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SUSAN HUGO

GL-97-110

November 15, 1997

Paradiso Mechanical, Inc.  
P.O. Box 1836  
2600 Williams Street  
San Leandro, California 94577

Attention: Mr. Rick Montesano

RE: Work Plan/Proposal  
Installation of Monitoring Wells  
Berkeley Farms Truck Repair Shop and Yard  
4575 San Pablo Avenue  
Emeryville, California 94608

Dear Mr. Montesano:

Per your request, GEO-LOGIC is pleased to provide this workplan/proposal for the installation of three monitoring wells at the subject site. The purpose of these wells is to further define the degree and extent of soil and groundwater contamination at the subject site, and to determine the direction of groundwater flow.

This work plan/proposal for the installation of these wells is based on the soil and groundwater analytical results from the geoprobe investigation recently completed at the subject site (Davenport & Associates report dated October 24, 1997, for Harmon Management Corporation). Well MW1, located at the southern portion of the site, is intended to further delineate conditions encountered in borings SB1 through SB3 at the location of a former service station. Well MW2, located at the northwestern corner of the shop building, is intended to further delineate conditions in the vicinity of a former underground waste oil tank. Well MW3, located near the southeastern corner of the shop building, is intended to further delineate conditions in the vicinity of SB9. Also, additional samples will be collected during this work and used to determine site-specific soil parameters for risk assessment.

#### PROPOSED FIELD WORK

#### PHASE I - WELL INSTALLATION

1. KEI proposes to install three two-inch diameter monitoring wells, designated as MW1 through MW3 on the attached Figure 1, by the use of hollow-stem auger equipment. Permits will be

obtained from the Alameda County Public Works Agency - Water Resources Section prior to beginning work.

The wells will be drilled 10 feet into the saturated zone of the first encountered ground water. If a clay aquitard of at least 5 feet in thickness is encountered below the water table, drilling will be halted and the well will be constructed so as to terminate within the aquitard.

Ground water is anticipated at approximately 12 to 14 feet below grade, based on the ground water levels found during the recent geoprobe investigation.

2. Soil samples will be collected at a maximum spacing of 5 foot intervals, at significant changes in lithology, at obvious areas of contamination, and at/or within the soil/ground water interface, beginning at a depth of about 4 to 5 feet below grade. Sample intervals will be chosen so that an accurate profile of the subsurface soil conditions can be determined. Sampling for laboratory analyses and lithologic logging purposes will continue until the first water table is encountered. A photo-ionization detector will be used to field screen soil samples. Additional sampling for lithologic logging purposes only will continue below the water table to the total depth drilled.

Classification of soil will be done by a registered geologist using the Unified Soils Classification System (USCS) by a Samples will be collected in a California-modified split-spoon sampler lined with two-inch diameter brass liners. The sampler will be advanced ahead of the drilling augers at designated depths by dropping a 140 pound hammer 30 inches. Blow counts will be recorded. Samples will be removed from the sampler and retained in the brass liners. The liners will then be sealed with Teflon-lined plastic caps and placed in individually sealed plastic bags. They will then be labeled and stored in a cooler, on crushed ice or "blue ice," for delivery to a state-certified laboratory. Properly executed Chain of Custody documentation will accompany all soil samples.

3. During drilling operations, all soil materials will be stored on-site in properly labeled, DOT-approved 55-gallon drums, or else covered by visqueen.

4. Finalized Boring Logs will be prepared from the field logs and submitted to the Alameda County Department of Environmental Health (ACDEH), and the Regional Water Quality Control Board \*(RWQCB), San Francisco Bay Region.

5. Well Construction:

The well casing will consist of two-inch diameter schedule 40 PVC with flush threaded joints and 0.010 inch factory slots. The screen will extend from the total depth of the well to approximately 5 feet above the depth of the first encountered ground water. Monterey sand (#2/12) will fill the annular space from the total depth to approximately two feet above the perforated casing interval. A 2-foot thick bentonite seal will be placed in the annular space on top of the sand pack. Neat cement grout will be placed on top of the bentonite seal to the surface. A Proposed Well Construction Diagram is attached to this proposal.

The well casings will be secured with a waterproof cap and a padlock. A round, watertight, flush-mounted well cover will be concreted in place over the top of each casing. The elevations of the well casings will be surveyed by a licensed land surveyor to Mean Sea Level and to a vertical accuracy of 0.01 feet.

6. The wells will be developed approximately one week after well completion. Prior to development, the wells will be checked for depth to the water table using an electronic sounder, and for the presence of free product using an interface probe or paste tape. After recording the monitoring data, the wells will be developed by the use of a surge block and a pump. Effluent generated during well development will be contained in DOT-approved drums and hauled from the site by a licensed hazardous materials hauler.

7. Ground Water Sampling:

The wells will be sampled at least 72 hours after development. Prior to sampling, the wells will be checked for free product using an interface probe or paste tape. The wells will also be checked for the presence of a sheen.

The wells will then be purged using a pump or bailer of a minimum of four casing volumes. During purging operations, the field parameters pH, temperature, and electrical conductivity will be recorded and presented in a tabular form. Once the field parameters are observed to stabilize and a minimum

of approximately four casing volumes have been removed from each well, water samples will then be collected by the use of a clean Teflon bailer, and promptly decanted into 40 ml VOA vials and/or one-liter amber bottles, as appropriate. The vials and/or bottles will be sealed with Teflon-lined screw caps, labeled, and stored, on ice, for delivery to a state-certified laboratory. The sampling bailer will be cleaned with non-phosphate soap and clean water rinses between uses.

Properly executed Chain of Custody documentation will accompany all water samples.

8. Laboratory Analyses:

Water and selected soil samples will be analyzed by Sequoia Analytical Laboratory, a state-certified laboratory, for total petroleum hydrocarbons (TPH) as gasoline by EPA method 5030/modified 8015, benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA method 8020, and Total Lead. In addition, water and selected soil samples from wells MW1 and MW2 (vicinity of former fuel tanks and former waste oil tank, respectively) will be analyzed for TPH as diesel by EPA methods 3510/modified 8015 (water) and 3550/modified 8015 (soil). The water samples and selected soil samples from well MW2 (vicinity of former waste oil tank) will also be analyzed for Total Oil and Grease by Standard Methods 5520 B&F (water) and 5520 E&F (soil), EPA Method 8010 and 8270 constituents, and the metals cadmium, chromium, lead, zinc, and nickel.

These analyses are as recommended by the RWQCB, and as specified in the Tri-regional guidelines. Additional samples will be obtained for determination of site-specific soil parameters for use in risk assessment. For each major soil type encountered, one representative sample will be selected and tested for bulk density (ASTM D-2937), moisture content (ASTM D-2216), permeability (ASTM D-2434), total organic content (EPA Method 415.1), and grain size distribution (ASTM D 422-63). It is anticipated that the major soil types will consist of fill materials and native silty clay.

The analytical results will be presented in tabular form, showing the sample depths and results. The analytical results will be used to delineate the vertical and lateral extent of the contaminants in soil and ground water.

9. Hydrology:

The ground water flow direction and ground water gradient will be determined from the water level elevations measured in each monitoring well. The ground water flow direction will be shown on the Site Plan.

10. Conclusions:

Conclusions and results of this work will be described in a technical report. The technical report will be submitted to the ACDEH, and to the RWQCB, San Francisco Bay Region.

LIMITATIONS

Soil deposits and rock formations may vary in thickness, lithology, saturation, strength and other properties across any site. In addition, environmental changes, either naturally-occurring or artificially-induced, may cause changes in the extent and concentration of any contaminants. Our studies assume that the field and laboratory data are reasonably representative of the site as a whole, and assume that subsurface conditions are reasonably conducive to interpolation and extrapolation.

The results of this study will be based on the data obtained from the field and laboratory analyses obtained from a state-certified laboratory. We will analyze this data using what we believe to be currently applicable engineering techniques and principles in the Northern California region. We make no warranty, either expressed or implied, regarding the above, including laboratory analyses, except that our services have been performed in accordance with generally accepted professional principles and practices existing for such work.

April 18, 1995  
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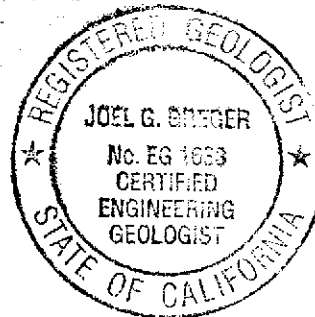
If you have any questions regarding this work plan/proposal, please do not hesitate to call me at (510) 787-6867.

Sincerely,

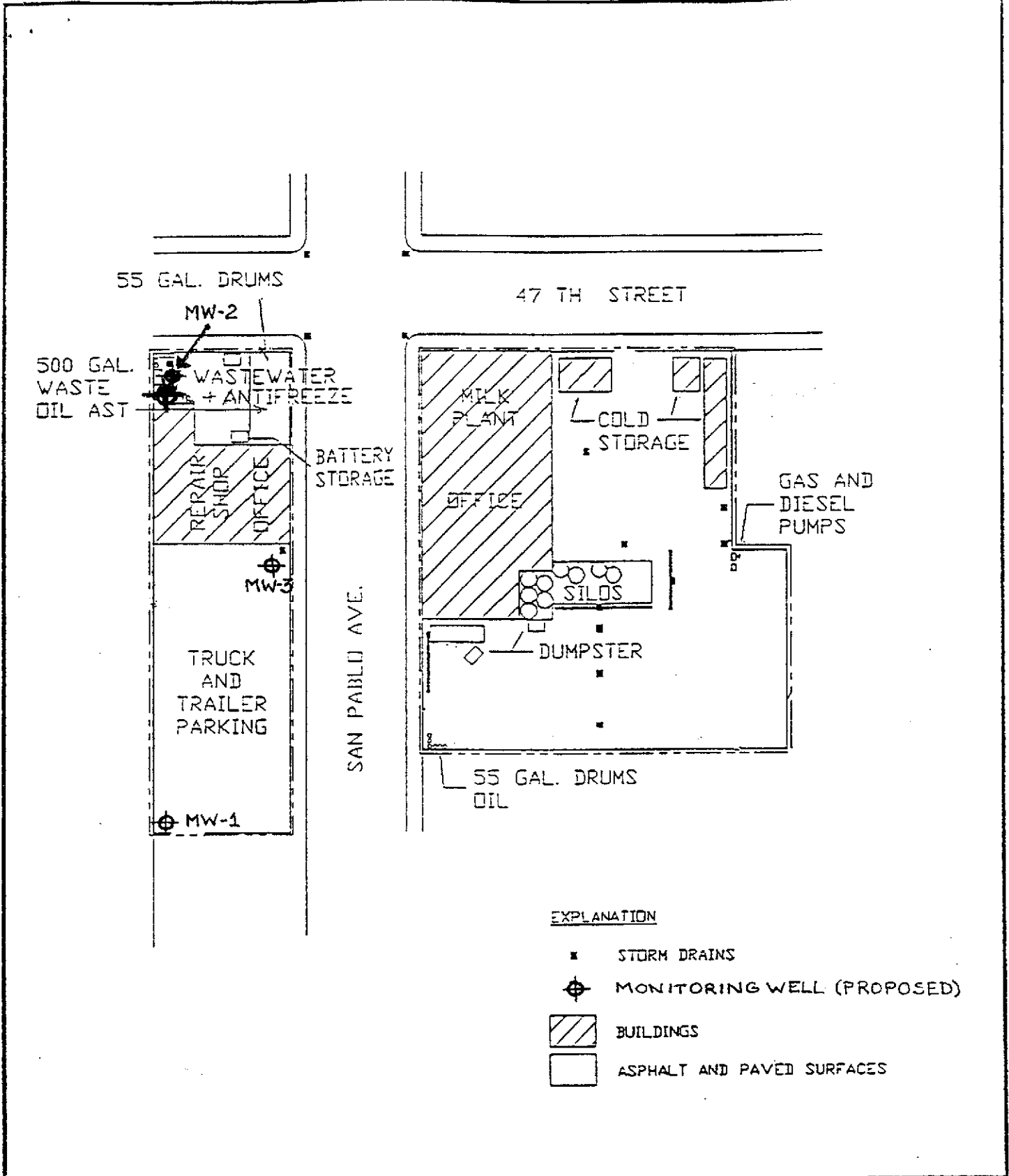


Joel G. Greger, C.E.G.  
Certified Engineering Geologist  
GEO-LOGIC

License No. EG 1633  
Exp. Date 8/31/98



Attachments: Site Plan - Figure 1  
Proposed Well Construction Diagram



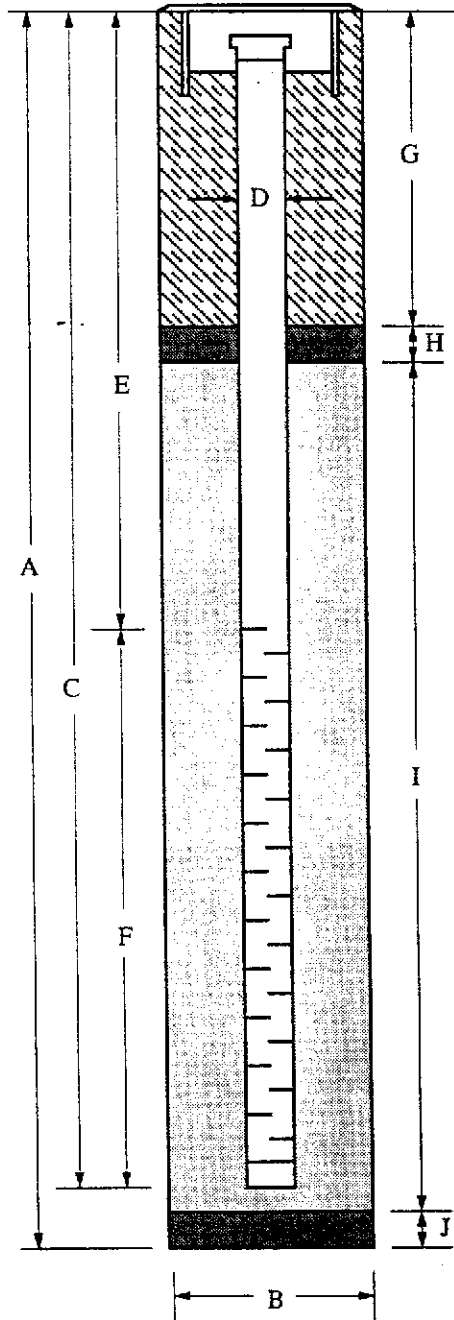
EXPLANATION

- STORM DRAINS
- ⊕ MONITORING WELL (PROPOSED)
- ▨ BUILDINGS
- ASPHALT AND PAVED SURFACES

	<b>SITE PLAN</b>	BERKELEY FARMS
	FIGURE 1	
	SCALE: 1" = 100'	4575 SAN PABLO AVENUE EMERYVILLE, CALIF.

## PROPOSED WELL CONSTRUCTION DIAGRAM

Flush-mounted Well Cover



### WELL DETAILS\*

1. Well will be terminated 10 feet into the first encountered ground water, unless an aquitard five feet or greater in thickness is encountered below the water table, in which case drilling will be halted and the well will be constructed so as to terminate within the aquitard [A].
2. Boring diameter [B] is 8 inches for 2 inch wells, 10 inches for 4 inch wells, and 12 inches for 6 inch wells.
3. Perforated interval [F] will extend from bottom of casing to five feet above the first encountered ground water table (unless water <5 feet deep).
4. Schedule 40 PVC casing, 2 inch in diameter [D], will be used. Screen is 0.020 or 0.010 inch factory machined slots, depending on filter pack grain size.
5. Filter pack will be placed from bottom of casing to two feet above perforated interval [I]. (Bottom seal [J] is not installed unless required.) One to two feet of bentonite [H] will be placed above the filter pack. Concrete grout [G] will be placed from top of bentonite seal to the surface (unless modified due to shallow water). Blank casing [E] will extend from the top of the perforated casing to the top of the hole.
6. The well will be installed with a waterproof cap, padlock and a flush-mounted well cover.

\* See text for additional information.