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7080 DONLON WAY, SUITE 208
DUBLIN, CA 94568
(415) 828-4253

90 DEC 18 AM 11:00

December 17, 1990

Gil Wistar
Dept. of Hazardous Material Prog.
80 Swan Way, Suite 200
Oakland, CA 94621

RE: WORK PLAN FOR SUBSURFACE
ENVIRONMENTAL INVESTIGATION
6310 HOUSTON PLACE
DUBLIN, CA 94568

Dear Sir:

After you review and approve the attached plan, we would like to start proceedings immediately.

Please call me if you have any questions pertaining to the above matter.

Sincerely,

FRED L. HOUSTON

FLH:dm
Enclosure
CC: Lester Feldman RWQCB

November 29, 1990
1025hmur
EEI 90175-3W

Mr. Gilbert Wister
Alameda County Department of Environmental Health
80 Swan Way, Rm 200
Oakland, CA 94621

Subject: Letter Work Plan for Subsurface Environmental Investigation at the Former American City Truck Stop, 6310 Houston Place in Dublin, California.

Mr. Wister:

This plan presents the work proposed to install three additional ground-water monitoring wells at site and the neighboring vicinity of the site. The site is located at the 6310 Houston Place in Dublin, California. The site location is shown in the Site Vicinity Map, Plate P-1. Environmental Experts, Inc. (EEI) is performing this work at the request of Winning Action Investment.

SITE HISTORY

Previous work conducted at the project site included the installation of four (4) ground water monitoring wells (MW-1 through MW-4). Periodic ground water testing of these wells has been performed at the site since October 1989.

Analytical testing of soil samples collected with respect to well installations indicate the non-presence of hydrocarbons in the soil. Periodic testing of the ground water indicated the continous presence of detectable levels of TPHd, TOG and BTEX in each sampling event.

Findings of previous work performed indicate that concentrations of oil and diesel hydrocarbons appears to be greatest in the vicinity of the UST's on the site. However, the magnitude and extent of hydrocarbon compounds in the ground-water has yet to be fully delineated in the south, east and west area of the site.

November 29, 1990
Gibert Wister/ACDEH

SCOPE OF WORK

To investigate the extent of hydrocarbons in the ground-water, EEI is proposing to drill three soil borings, two insite and one offsite, and to install three ground-water monitoring wells in these borings. The proposed monitoring wells' location ~~is~~ are shown in Plate P-1. EEI will obtain a permit from the Alameda County Flood Control and Water Conservation District (Zone 7) for the well installation. A Site Safety Plan (SSP) will be prepared for this site; all field work will be conducted according to EEI's SSP. The wells will be drilled by a licensed driller, and well construction will comply with ACWD Guidelines and the Standard Operating Procedures of EEI. We expect to encounter ground-water about 9 feet below the ground surface level. We intend to drill the borings and install the wells to a maximum depth of 20 feet.

Environmental Experts will:

1- Prepare a SSP for work performed at the site. The SSP will be applicable to personnel and subcontractors of EEI.

2- Observe the drilling of three soil borings and the installation of three ground-water monitoring wells. The borings will be drilled with a 10-inch diameter, hollow-stem auger with a CME-75 (or equivalent) truck mounted drill rig. The augers will be steam-cleaned before and after each use to minimize the possibility of cross-contamination.

3- Collect and classify relatively undisturbed soil samples at 5-foot intervals from the ground surface to the total depth of the borings. Soil samples will be collected by using a split-spoon sampler as outlined in the attached procedures. The geologist will examine and classify soil according to the Unified Soil Classification System (USCS).

4- Describe soil subsurface vapor conditions during drilling by screening soil samples with an organic vapor meter (OVM).

5- Submit an estimated two soil samples from each boring to a State-certified laboratory to be analyzed for total oil and grease (TOG), total petroleum hydrocarbons (TPH) as diesel including benzene, toluene, ethylbenzene, and xylenes (BTEX).

6- Construct ground-water monitoring wells in the boreholes with 4-inch inside diameter, threaded jointed, PVC casing; a typical well construction diagram is shown in Plate P-2. No chemical cements, glues, or solvents will be used in well

construction. The bottom of the casing will have a threaded end-plug, and the top will have a water-tight locking cap. The screened portion of the well will consist of a factory-perforated casing with 0.020-inch slots. The well screen will extend from the total depth of the boring to approximately 2 feet above the static ground-water depth.

The annular space around the screened portion of the well casing will be packed with sorted and washed #3 sand to approximately 2 feet above the perforations. A 1-foot thick bentonite plug will be placed above the sand as a seal against cement entering the sand pack. The remaining annulus will be backfilled with a tremied neat cement slurry to approximately 1-foot below the ground surface. A locking, watertight utility box will be placed over each wellhead approximately 1/2 inch above the surrounding ground surface and sealed in place with concrete.

7- Develop the wells by surge-pumping or other suitable methods until the discharge water is relatively free of silt.

8- Measure depth to ground-water in the monitoring wells and subjectively analyze ground-water samples for visual evidence of contamination in accordance with the procedures described in the attachment.

9- Purge and sample the monitoring wells in accordance with the attached procedures and submit water samples to a State-certified laboratory to be analyzed for TPHd, TOG, and BTEX.

10- Contract a licensed land surveyor to survey the wells and selected facilities.

11- Interpret field and laboratory data and prepare a report summarizing our findings, conclusions, and recommendations. The interpretation will include evaluation of ground-water gradient and flow direction. The report will also discuss the hydrogeology beneath the site, levels of hydrocarbons contamination, ground water plume definition, and any field observations that may have an impact on the site.

Soil and ground-water samples for testing will be analyzed for TPH as gasoline by using EPA Test Methods 8015, for BTEX by EPA Methods 8020 (soil) and EPA 602 (water), and for TOG DHS 530 D&E (soil and water). Analysis will be performed at the analytical laboratory of

Chromalab in San Ramon, California, a State-certified hazardous waste testing laboratory.

Soil cuttings will be stored and piled on and covered with visqueen covers onsite, pending receipt of laboratory results. Purge water will be stored onsite in properly labeled, 17E, 55-gallon DOT approved drums, pending the receipt of laboratory results. The soil and purged ground-water will remain the responsibility of Winning Action Investment.

Please call if you have any questions regarding this letter work plan.

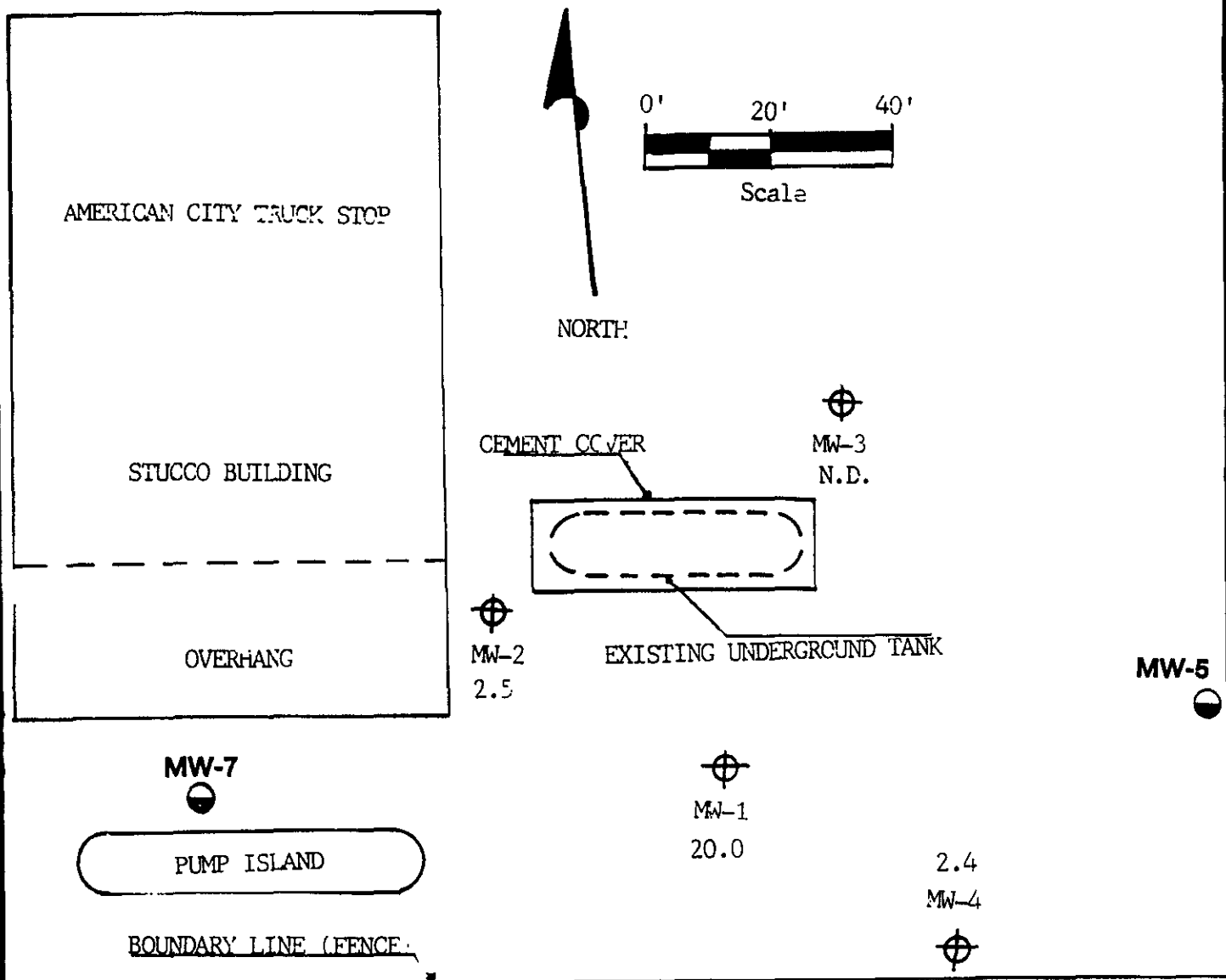
Sincerely,

Rasmi El-Jurf
Project Engineer

Reviewedby:

Christopher M. French
R.G. 4465

Attachments: Plate P-1 - Site Vicinity Map
Plate P-2 - Well Construction Diagram



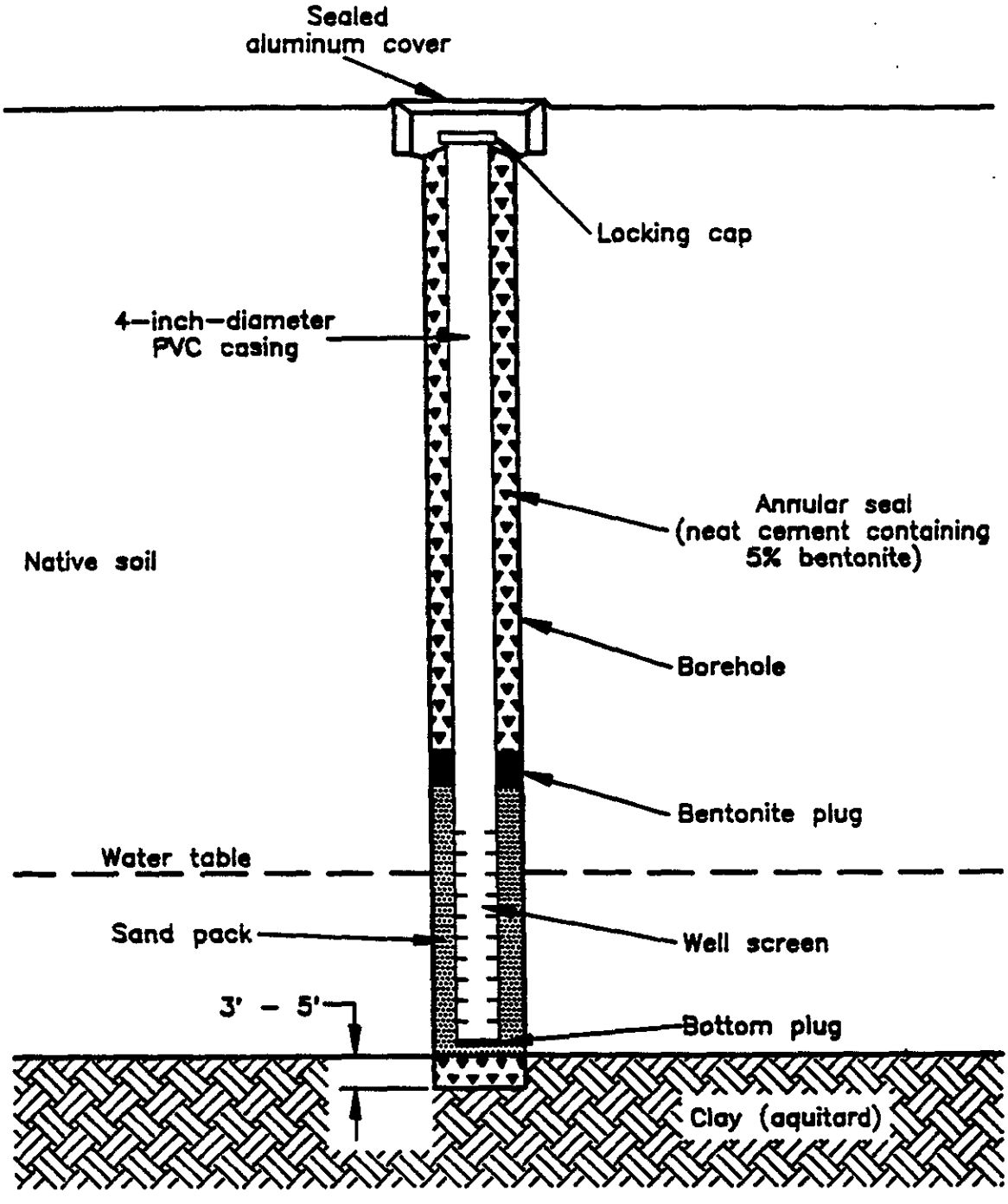
LEGEND:

EXISTING MONITORING WELL

PROPOSED MONITORING WELL

EEI ENVIRONMENTAL EXPERTS, INC.

Ground–water monitoring well



Not to scale

	MONITORING WELL CONSTRUCTION	PLATE

ATTACHMENT B

Soil and Groundwater Sample Collection and Handling Protocol

ATTACHMENT B

SOIL & GROUNDWATER SAMPLE COLLECTION & HANDLING PROTOCOL

INTRODUCTION & PURPOSE

Because reliable and representative test results must be generated from soil and groundwater samples, it is essential to establish a sampling procedure which assures that all samples are:

- Collected by approved and repeatable methods
- Representative of the materials(s) at the desired location and depth
- Uncontaminated by container and sampling equipment

The following sampling protocol is designed to be a guide to the sampling and handling procedures for soil and groundwater samples to be collected. Based on conditions which may be encountered in the field, some modifications to this protocol may be required to fit the needs of an individual site.

SAMPLING PROCEDURES

Groundwater Sampling

Prior to collecting groundwater samples, monitoring wells will be purged by bailing until pH, conductivity, and temperature levels stabilize. Wells will be purged and groundwater samples will be obtained using a Teflon bailer and nylon rope. New nylon rope is used for each well. If floating product is present in the well, an alternate sampling method will be utilized.

The appropriate number of sample containers and type will be used for each sample collected, in accordance with the analytical laboratory requirements and EPA protocol. The bottles will be filled using the bailer, fitted with a bottom emptying device to inhibit volatilization. All sample bottles will be pre-cleaned by the supplier according to EPA protocols.

To prevent cross contamination of groundwater samples by the sampling equipment, all equipment used in sampling will be washed with a trisodium phosphate solution, triple rinsed with distilled water, and allowed to air dry prior to each use. A sample of the distilled water used in the final rinse will be retained for analysis as part of sample quality assurance.

Soil Sampling

After the soil sampler is driven to the desired depth and the samples are retrieved, each end of the ring containing the soil sample to be retained for laboratory analysis will be sealed with Teflon sheeting, covered with plastic end caps, and sealed with PVC tape. All sample containers (tubes and end caps) will be steamed cleaned and air dried prior to use. The soil sample recovered in the ring just above the sample retained for chemical analysis will be examined in the field for visual and olfactory indications of chemical contamination and used for lithologic description.

The Unified Soil Classification System (USCS) will be used to log and describe the soil by the on-site geologist. These logs will also include details of the sampling process such as depth, apparent odors, discoloration, and any other factors which may be required to evaluate the presence of contamination at the site.

POST SAMPLING PROCEDURES

One field/travel blank consisting of one sample bottle filled with distilled water will accompany soil and groundwater sample containers at all times, including during transport to and from the site. Distilled water field/travel blanks will be analyzed according to the appropriate EPA Methods corresponding to the soil/groundwater sample analyses.

Sample containers will be labeled with sample number, project number, date, and the initials of the person collecting the sample. A separate sample collection record will be maintained for each groundwater sample collected.

Soil and groundwater samples collected will be analyzed by an analytical laboratory certified by the California Department of Health Services (DHS) for complete chemical analysis of hazardous waste as well as drinking water samples. Quality assurance documentation will accompany all analytical reports generated by the laboratory.

The samples will be placed in an ice cooler immediately following collection, and will remain in the ice cooler until refrigerated at the analytical laboratory. The samples will be delivered to the laboratory direct by courier or overnight freight within 48 hours of time of collection. Appropriate chain of custody forms will be used for all samples.

ATTACHMENT C

Drilling Procedures & Groundwater Monitoring Well Construction/Design

ATTACHMENT C

DRILLING PROCEDURES & GROUNDWATER MONITORING WELL CONSTRUCTION/DESIGN

DRILLING AND SAMPLING PROCEDURES

All borings for well construction will be drilled using eight-inch diameter or larger hollow stem auger equipment. A California Registered Geologist will direct the collection of undisturbed samples of the soils encountered and the preparation of detailed logs of each boring.

Soil sampling will be conducted using a modified California drive sampler, a standard penetration sampler, or a five-foot continuous sampler. Representative samples of each soil type will be retained in either Ziploc bags (for verification of soil classification) or two-inch to three-inch diameter, six-inch long, clean, brass or stainless steel tubes (for laboratory analysis). The samples will be retained for verification of soil classification and for chemical laboratory analytical testing, as appropriate. Teflon sheeting will be placed between the soil sample and the cap, and the cap will be sealed with PVC tape.

When access limitations do not allow drilling with truck mounted equipment, either a trailer mounted drilling rig, portable power driven, or manually operated soil sampling equipment will be utilized. If soil samples are to be retained for analysis, they will be collected in clean brass or stainless steel tubes fitted within a thin walled drive sampler. The soil samples will be capped and sealed as described above.

All down hole sampling, drilling, and well construction equipment and materials, including augers, casing, and screens will be steam cleaned prior to their initial use. The sampling equipment will be cleaned prior to each assembly by washing with a trisodium phosphate solution, rinsing with distilled water, and allowing to air dry. The auger flights, drill bit, and sampler will be steam cleaned at each boring location.

MONITORING WELL CONSTRUCTION

Monitoring wells will be constructed in accordance with applicable local water district or California Department of Water Resources guidelines. The specific completion details for each well will be determined in the field at the time of drilling by a California Registered
Geologist experienced in groundwater monitoring system design and installation.

Monitoring wells consist of two or four-inch diameter, Schedule

40 PVC casing and screens with flush, threaded joints. No PVC glue was used. Where a customized monitoring well design is not required, the screened sections will be machine slotted with either 0.010-inch (0.255 mm) or 0.020-inch (0.51 mm) openings. The smaller slot size will be used where the wells are screened within fine-grained sandy soils, and the larger slots will be used where coarser deposits are encountered. The slotted sections will be fitted with a flush threaded cap and placed opposite the water-bearing strata in the boring. The blank pipe will be connected to the perforated pipe and will extend to just below the ground surface.

At most sites in sedimentary formations, it is not practical to "rationally design" a filter pack based on sieve analyses. From experience, Lonestar No. 1/20 or No. 3 washed sand as a filter material has been selected for use in the proposed wells. The 0.010-inch and 0.020-inch slot sizes were selected to retain 100 percent of the filter material.

The annulus between the side of the borehole and the slotted section will be filled with a clean sand pack to variable depths, but not less than one or two feet above the perforated pipe. The annulus will be packed with either Lonestar No. 1/20 (where 0.010-inch slotted pipe is used) or No. 3 (where 0.020-inch slotted pipe is used) washed sand filter material. The gradation of the filter material is summarized below:

U.S. Sieve No.	Opening (mm)	Percent Passing (No. 3)	Percent Passing (No. 1/20)
6	3.35	100	
8	2.36	99 - 100	
12	1.70	62 - 78	
16	1.18	15 - 33	100
20	0.85	0 - 8	90 - 100
30	0.60	0 - 4	14 - 40
40	0.425		0 - 5

A seal of bentonite pellets approximately 24-inches thick will be placed above the sand pack to reduce the risk of grout penetration into the sand. The bentonite pellets will be hydrated with distilled water to form a tight plug. A cement/bentonite grout will be placed above the bentonite plug to a depth of approximately two feet below the ground surface. The grout will be pumped into the boreholes using a tremie pipe. Concrete will be placed from the top of the cement/bentonite mixture to the ground surface.

The completed wells will be enclosed in a traffic rated enclosure placed flush with grade or in an above-ground metal enclosure, and will be fitted with a locking cap. If a groundwater level contour map is to be prepared, well head elevations will be determined by a level survey, and well coordinates will be determined by a traverse survey. The level/traverse survey will be referenced to a bench mark of known elevation and coordinates. Once water levels have stabilized, water levels in all wells will be measured.

After the wells have been completed, they will be developed by pumping and surging to clean and stabilize the soils around the screens. A manually operated, positive displacement surge pump and Teflon bailer, surge block, and/or centrifugal pump will be used for development. A minimum of 10 well casing volumes of water will be removed during development; however, development will continue until water flows clear and pH, temperature, and conductivity have stabilized. All development equipment will be steam cleaned prior to its initial use in each well. A well development log will be maintained which will include 1) a record of development water parameters at frequent intervals, 2) the quantity of water removed during development, and 3) flow rates during development.

Soil cuttings generated during drilling will be wrapped in plastic sheeting, and water generated during well development will be retained in secured 55-gallon drums until chemical analytical data from samples are received.