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BID SPECIFICATION
DRILLING, SAMPLING, AND INSTALLATION OF MONITORING WELLS
AT
RESOURCE RECOVERY
PASCO SANITARY LANDFILL
PASCO, WASHINGTON

TDD R10-8410-14

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Schedule of Services and Fees

Recommended DOT Specifications: 17C, 17E, and 17H Steel Drums

Representations and Certifications Regarding Contractor Status

General Terms - Time and Materials Subcontract

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1.0 GENERAL

CH2M HILL Southeast, Inc. (CH2M HILL) with headquarters at 1941 Roland Clarke Place, Reston, Virginia 22091 has entered into a contract (Contract No. 68-01-6692) with the United States Environmental Protection Agency (EPA), dated September 30, 1982, to furnish technical, engineering and managerial services in support of Remedial Response Activities at Uncontrolled Hazardous Substance Facilities, and Ecology and Environment, Inc. (E & E) with a business office at 1700 N. Moore Street, Suite 1930, Arlington, Virginia 22209 is a duly recognized subcontractor of CH2M HILL and is a duly authorized representative of CH2M HILL under Contract with EPA to furnish technical, engineering and managerial services in support of EPA's Field Investigation Activities at Uncontrolled Hazardous Substance Facilities.

E&E is in the process of conducting an investigation of a site near Pasco, Washington (Figure 1). Part of this investigation requires the installation and sampling of monitoring wells and sediment borings to evaluate the extent of subsurface contamination beneath the site. The following sections describe the anticipated sampling programs.

2.0 INFORMATION TO BIDDERS

Questions with respect to the technical work should be directed to the attention of the E&E Project Manager, Andrew Hafferty at (206) 624-9537 and questions concerning contract procedures should be addressed to the E&E Subcontracts Manager, Richard Fullner at (206) 624-9537.

While every attempt has been made to give an accurate description of field conditions in Section 3.0, the bidder is cautioned that field conditions may change. The bidder is urged to visit the site to ascertain conditions prior to submitting a bid.

Access to private property will be arranged by E&E and EPA prior to commencement of the project. All subcontractor personnel must coordinate entry onto the site with E&E.

Before the commencement of the drilling work, E&E will conduct a training session for subcontractor personnel. The session will cover site safety, the use of respiratory protective equipment, and decontamination procedures at the site or a mutually agreeable location. The training will take approximately four to six hours. It is the subcontractor's responsibility to have enough personnel present at the training session to adequately cover any unanticipated crew member changes. Coordination and scheduling of such training will be with the above-named E&E technical project manager.

Each monitoring well location (Figure 2) will be staked or flagged by E&E personnel prior to the actual start date. The subcontractor will be required to ascertain potential conflicts between the well locations and underground utilities. Any deviation of the actual well location greater than two (2) feet due to local obstructions, or utility conflicts, shall require approval of the E&E on-site investigator.

The present schedule calls for mobilization of equipment on-site by the week of July 8, 1985. Confirmation of subcontract award is expected approximately two weeks prior to that date.

3.0 SITE GEOLOGY AND HYDROLOGY

Well logs and past geological studies have provided information on the shallow geology of the area. A generalized description of the geologic units anticipated in the vicinity of Resource Recovery is presented in Table 3.1

TABLE 3.1
DESCRIPTION OF GEOLOGIC UNITS

Geologic Unit Sub-Unit	Depth		Permeability (cm/sec)
Eolian Sand and Silt	surface	Light brown. Very fine sand and silts.	10^{-3}_10^{-5}
Touchet Formation	0-40	Light to medium brown. Very fine to medium grained sands. Occasionally slightly to very silty.	10^{-3}_10^{-5}
Pasco Gravels	40-60	Dark grey. Locally fine to coarse grained sands with occasional gravel.	$>10^{-3}$
Ringold Formation	60-100		
Ringold Sands		Dark grey. Medium to coarse grain with gravel. Gravel increasing and getting coarser with depth.	$>10^{-3}$
Ringold Gravels	100-110	Tan gravel with sand.	$>10^{-3}$
Ringold Clays	>110-140	Blue clay.	
Yakima Basalt	>140	Basalt	10^{-2}_10^{-5}

Water level measurements taken in 9 wells around the landfill in April 1984 indicate that groundwater moves in a southwesterly direction. The slope of the hydraulic gradient is approximately 4 feet per 1000 feet.

Later testing of monitoring wells at the site confirmed this southwesterly flow direction and indicated that the pattern remained unchanged during different seasons.

The depth to groundwater below land surface in the monitoring wells is shown in Table 3.2. Water levels average 60 feet below ground surface in the 6 wells.

TABLE 3.2
GROUNDWATER LEVELS

Well Number	Depth Below Surface (feet)	Surface Elevation (AMSL)*	Groundwater Elevation (AMSL)
1	64	413.9	349.8
2	56	406.2	350.1
3	68	419.1	350.8
4	37	392.75	355.4
Control Well	48	410.1	361.7
Water Supply Well	69	419.1	350.1

*AMSL - Above Mean Sea Level

4.0 SCOPE OF WORK

4.1 General Information and Drilling Locations

The work to be done includes the furnishing of all materials, labor and equipment necessary to:

1) Install 9 stainless steel monitoring wells as described in Section 4.4.

2) Collect soil and groundwater samples as described in Section 4.3.

3) Containerize drill cuttings and produced waters as each well is installed and developed as described in Section 4.4.

It is anticipated that one well will be completed at each of the locations depicted in Figure 2. Each well will be completed approximately 20 feet below the groundwater level encountered at each location.

4.2 Schedule of Work

Drilling operations are expected to begin on July 8, 1985. The drilling crew should be prepared to begin at 7:00 a.m. and work a 60-hour week. The project will operate on a six-day work week. Personnel training and initial equipment decontamination will take place on July 8, 1985.

4.3 Soil and Groundwater Sampling

During the installation of each well, E&E personnel will collect soil samples directly from the auger flights on a continual basis.

Groundwater samples will be collected from each well after completion and development. Development will be accomplished by the subcontractor by pumping, surging or other methods approved by the E&E geologist. Development will continue until the water produced is clear and free of sand.

4.4 Well Construction and Installation

The preferred method of drilling for all monitoring wells is a hollow stem auger. No drilling muds may be used and petroleum products will not be allowed for lubrication of the "downhole" equipment.

A total of nine groundwater monitoring wells will be installed at the locations depicted in Figure 2. Two wells will be installed approximately 30 feet from the downgradient perimeter of each of zones A, B, CD, and E to identify the presence of contaminants outside of the primary disposal areas. Well EE-3 will be set outside the burned and compacted area on the west side of Zone A approximately 100 feet from the burial zone. One well will be installed approximately 1,000 feet east of the existing control well (Figure 2) to provide background soil and water quality data for comparison.

Each boring will be advanced with a four-inch inside diameter (I.D.) hollow stem auger to an anticipated maximum depth of 90 feet. Wells will be constructed of two-inch diameter schedule 10 stainless steel casing having a minimum wall thickness of 0.109 inch. All casing will be a threaded flush joint type. No petroleum based lubricants will be used in assembling the casing. A twenty-foot length of wire-wound, stainless-steel well screen having a slot size appropriate to the formation (0.020 or 0.010 inch) will be installed. After the screen and casing are in place, a gravel pack of coarse sand will be poured around and two feet above the screen. Centralizers will be installed two feet above the top of the screen and on a two-foot long sump below the screen. A fine-grained sand cap, a minimum of one foot in thickness, will be emplaced on top of the gravel pack. A bentonite slurry will then be pumped into the annulus as the augers are withdrawn to provide a uniform seal. The bentonite will be brought to ten feet below ground level. Cement will be used to grout between that depth and the surface. The well will be protected with six-inch outside diameter (O.D.) steel pipe, with a locking cover, set at least three feet into the cement and extending two feet above ground level. Figure 3 presents a schematic diagram of the well construction details.

Upon completion, each well will be developed by pumping and surging or any other method that will ensure its utility as a monitoring well. The subcontractor will provide the equipment for well development. Development will continue until the water produced is

clear and free of sand. The drilling and completion of each monitoring well will be overseen by an E&E geologist responsible for the collection of lithologic samples, description of lithology according to Unified Soil Classification System (USGS), selection of perforated intervals for casing screens, and determination of final well depths.

All drill cuttings and development water will be contained in 55-gallon DOT-approved drums for subsequent analysis and disposal. All drums will be stored in a secure area on-site with the owner's permission. Disposal of the drum contents will be arranged following analysis of the soil samples. The subcontractor will also provide wooden pallets on which to place drums and will be responsible for their movement around the site. Drums will be labelled and the contents of each drum documented as to their origin (well and depth).

Every attempt will be made to leave the site in its original condition. An E&E geologist will log the soil material and supervise the entire operation. A temporary security casing or box will be placed over the well casing until permanent security can be installed.

4.5 Well Completion

A permanent steel protective casing with a lockable cap will be installed over each well. The casing will be set in a concrete pad approximately three feet square and four inches thick. Each pad will be poured and finished such that waters drain away from the well head and only one half of the pad thickness is above grade.

4.6 Reports

Upon completion of the work, boring and well logs containing the following information will be submitted to the E & E office identified in Section 7:

a. Location
b. Start and completion dates
c. Boring/well number
d. Depth to static water table
e. Soil classification depths
f. Blow counts
g. Driller's remarks
h. Sample depths and types
i. Screen depths
j. Filter depths
k. Seal depths
l. Monitoring well material used and lengths
m. Drillers' names

All Washington State Water Well Reports will be completed and sent in for each well by the drilling subcontractor.

5.0 DECONTAMINATION

Prior to the mobilization of the drill rig on-site, the rig and all associated equipment will be thoroughly cleaned to remove all oil, grease, mud, tar, etc. This cleaning process will consist of high-pressure hot-water cleaning of the drilling equipment and a high-pressure hot-water final rinse. The subcontractor must provide all equipment necessary for this cleaning process. This equipment includes potable water (preferably from a treated source), DOT-approved drums, and a mobile high-pressure hotwater washer. An area will be designated for this process by the E&E Project Manager.

Before drilling each boring, the augers, cutting bits, drill pipe, and any other drilling tools shall be cleaned with pressurized water and rinsed with acetone and methanol. Special attention must be given to the thread section of the casing and to drill rods. Petroleum-based lubricants will not be used to prevent binding. The subcontractor will be responsible for providing a means for collecting contaminated solvents, wash water, and related materials, and will ensure that the outside of all drums containing potentially contaminated materials are thoroughly cleaned.

The subcontractor will also steam clean all the drilling equipment after completion of the project to ensure that no contamination is transported from the site. The subcontractor must provide all necessary equipment for this cleaning process.

The subcontractor will be responsible for containing all wastes generated during the decontamination process.

6.0 SITE SAFETY

Because of the hazardous nature of the materials which may have been or are stored or disposed of on site, all personnel employed or retained for services by the subcontractor may be required to wear personal protective clothing and respiratory protective equipment while drilling on and off site.

Determination of the need for respiratory protection will be made by E&E personnel on a location-to-location basis. Whenever a respiratory hazard is found to exist, E&E will require the use of an air-purifying mask with cartridges or, in some cases, the use of a self-contained breathing apparatus to protect workers from organic vapors in the ambient air.

This respiratory protective equipment will be provided to the subcontractor by E&E and is to be promptly returned in similar condition to E&E upon completion of the drilling work. Respiratory protective equipment will be used when drilling wells in areas where potentially high levels of contaminants may exist either above or below ground. The equipment may be required for any personnel within 10 feet of the well location or within other areas designated on site by E & E during drilling operations.

Respiratory protective equipment cannot be used by individuals with long sideburns or beards or by individuals who wear standard eyeglasses or contact lenses. Special eyeglasses that can be worn with the respiratory equipment are available and can be purchased by the subcontractor at his expense.

Other protective equipment which may be required by E & E includes chemically resistant coveralls, which will be provided by E&E, and rubber overshoes, steel-toed safety boots, hardhats, rubber gloves, and safety goggles, all of which will be furnished by the subcontractor. When work is performed in potentially contaminated areas as determined by E&E, boots and gloves must be washed with detergent solution and rinsed with water before leaving the work site. E&E will be responsible for personnel decontamination.

[Note: Prospective bidders are cautioned that the possible requirement to wear protective equipment while conducting drilling operations may result in some discomfort and added physical stress to the subcontractor employee. Accordingly, prospective bidders should assure themselves that their employees' physical condition will allow them to successfully perform their duties without physical harm or adverse health effects when wearing the protective equipment. The subcontractor will convey this assurance to the E&E Project Manager in a letter no later than one week after the award notification.]

As the work will be performed during the summer months, the subcontrator should consider the potential for heat stress, especially since protective clothing and equipment is likely to be required. To protect the safety of other workers on-site, the E&E Project Manager reserves the right to remove from the site any worker showing signs of heat stress. Persons so memoved will be transported to the nearest hospital. Down-time resulting from personnel shortages will not be billable to the project.

Before commencement of the drilling work, E&E will conduct a training session for subcontractor personnel. The session will cover site safety, the sue of respiratory protective equipment, and decontamination procedures at the site or a mutually agreeable location. The training will take approximately four to six hours. It is the subcontractor's responsibility to have enough personnel present at the training session to adequately cover any unanticipated crew member changes. Coordination and scheduling of such training will be with the above-named E&E Project Manager.

7.0 CONTRACT PARTICULARS

The subcontractor will, on his own time and at his own expense, prior to the starting date, procure all permits, licenses, and certificates that may be required of him by law for the execution of the work hereunder. The subcontractor will comply with all federal, state and local laws, ordinances, rules, and regulations relating to the performance of the work hereunder.

The subcontractor is responsible for contacting utility companies and verifying in the field all existing underground cables, gas mains or other utilities. The location of drilling will be altered, if necessary, to avoid any damage to existing utilities. During the progress of the work, the subcontractor will cooperate with the owners of utilities and permit their representatives access to the work area to determine if their utilities are being endangered in any way.

At the completion of field operations, it will be the responsibility of the subcontractor to restore the site as nearly as possible to its original condition.

Should boulders or other obstructions be encountered, the subcontractor will attempt to redrill, after approval from E&E personnel, at distances not greater than 10 feet away from the first boring in an attempt to penetrate the soil to a reasonable depth. Where a reasonable depth is not obtained due to boulders or other obstructions, the subcontractor will be paid for the depth reached for all drilling attempts. If it is necessary to move a drilling location to a new site, the new location will be designated by a new boring number, and the boring location will be marked in the field by E&E personnel.

Upon completion of the field work, complete drilling logs of all borings will be delivered at the expense of the subcontractor to the office of Ecology and Environment, Inc., located at 108 S. Washington Street, Suite 302, Seattle, WA 98104, Attention: Mr. Andrew Hafferty.

The contract bid items will include all services, labor, equipment, transportation, material, and supplies needed to complete the work. Payment for these items will be provided in the compensation for drilling and well installation and will also include drilling in areas of difficult access; recording and submitting data incidental to each item; and possible waste containerization costs. Any down time incurred by the subcontractor other than delay at the request of E&E will not be a payment item.

No other payments for any specified or indicated work nor for any work implied therefrom will be made. No payment will be made for drilled holes abandoned without authorization of E&E, for drilling holes for which satisfactory samples and data are not submitted, or for nonfunctioning monitoring wells.

Prior to the start of field operations, the subcontractor will designate his foreman or representative who will be the only individual authorized to discuss work schedules and related matters with E&E personnel.

8.0 BID PARTICULARS

The quantities and items stated on the attached bid sheet are E & E's best approximation of the scope of work and are for the specific purpose of comparing bids. E & E does not guarantee that the bid quantities are correct or that stated tasks will be performed. E & E reserves the right to vary the quantities or delete items in their entirety, and the subcontractor will not be entitled to any extra payment due to such amended quantities or deleted items. It must be stated, however, that at this time every item discussed in the work plan is expected to be performed under this contract.

Bids will be accepted only for the entire scope of work.

Bid prices as submitted will remain valid for a period of 6 months from the date of bid opening in the event there is a delay in awarding the contract. A GSA Optional Form 60 may also be required.

Receipt of any addenda sent to the bidder must be acknowledged by letter prior to the time of bid opening or by attaching the required documents to the bid at time of submittal.

The following documentation must accompany the completed bid sheet:

1. A letter addressing the following items:

    a. An estimate of the number of days required to complete the drilling and construction of the wells.

    b. The earliest date the subcontractor can respond after award of the bid.

2. Proof of minimum insurance coverage.

3. The completed Representations and Certifications Regarding Subcontractor Status form.

Bids for the soil sampling/well drilling and installation at the site will be received by E&E, 108 South Washington Street, Suite 302, Seattle, WA no later than 4:00 p.m., Pacific Daylight Time, June 19, 1985. The bid package will be enclosed in an envelope which will have the following marking in the lower left-hand corner: Bid for: TDD# R10-8410-14.

The authorization to proceed with the work by the selected bidder will be under a subcontract issued by E&E. A unit-price, time and materials type contract, with provision for designated lump sum items, will be used. Copies of both E&E's General Terms for Time and Materials Contracts and E&E's requirement for insurance coverage to be furnished by the subcontractor are also included.

The project has a high priority rating. The bid must be reviewed and approved by E&E and the EPA. E&E and the EPA reserve the right to accept the bid most advantageous to the completion of the work or to reject any or all bids, as they may determine in their sole and absolute discretion, and to proceed no further in this matter.

9.0 BID ITEMS

Item 1. Mobilization and Demobilization

This item will carry all charges incidental to equipment set-up and removal, in order that the charges need not be distributed among the more variable items of the contract. This item will be paid at the contract lump sum price for mobilization and demobilization and will include the furnishing of personnel, machinery, tools, and all other equipment necessary to carry on and complete the work properly. All material or equipment furnished under this item will remain the property of the subcontractor and will be maintained, cared for, and disposed of by him. This item will include the charge for the respiratory equipment training program. This item will also include any costs incurred by the subcontractor for decontamination equipment and supplies, and for moving containers of hazardous material on-site.

Item 2. Soil Borings with Sampling

This work will be paid for at the respective contract unit prices per foot of drilling a minimum six-inch outside diameter hole from the ground surface to the final depth.

Item 3. Well Installation and Completion

This item will include all costs and time for well installation, gravel packing, grouting and completion. This item includes all labor and equipment necessary to complete the well (with materials such as gravel, bentonite, and cement grout), and restore the site. Payment will be made for each accepted well at the per well rate as bid.

Item 4. Well Development

This item will include all time and necessary equipment to properly develop each monitoring well. Wells will be developed until deemed acceptable by E&E. Payment will be made for the actual time for development at the hourly rate as bid. Note that purged water from all wells will be drummed or stored in tanks until it can be analyzed.

Item 5. Well Protection and Finishing

This item will include all costs for materials and time necessary to fabricate and install the well protection at each well location. Payment will be made at the per well unit price as bid.

Item 6. Decontamination Time and Materials

This item will include all charges for labor and hourly rates for equipment down-time necessary to decontaminate drilling equipment prior to drilling the first boring, between successive borings, and at the completion of the project. This item will include any other costs incurred by the subcontractor for decontamination equipment, supplies, and drums containing drill cuttings. NOTE: all washwater after the drilling of the first boring will be drummed.

Item 7. Delay (Standby)Time

If work by the subcontractor is delayed for more than 30 minutes as a result of actions by E&E, the subcontractor will be entitled to reimbursement for each delay in excess of 30 minutes. Both the subcontractor and E&E will jointly record and verify any such instances and the time involved in excess of 30 minutes. At the project completion, the subcontractor will be paid for the accumulated totals of these delays. Payment will be at the hourly rate as bid. Payment does not include time for difficult moving, mechanical breakdown, or conditions that in the opinion of the E&E representative jeapordize the quality of work or sampling.

Item 8. Materials

These items will be paid at the respective unit prices as invoiced for materials specified in the scope of work. Payment will be made only for those items used.

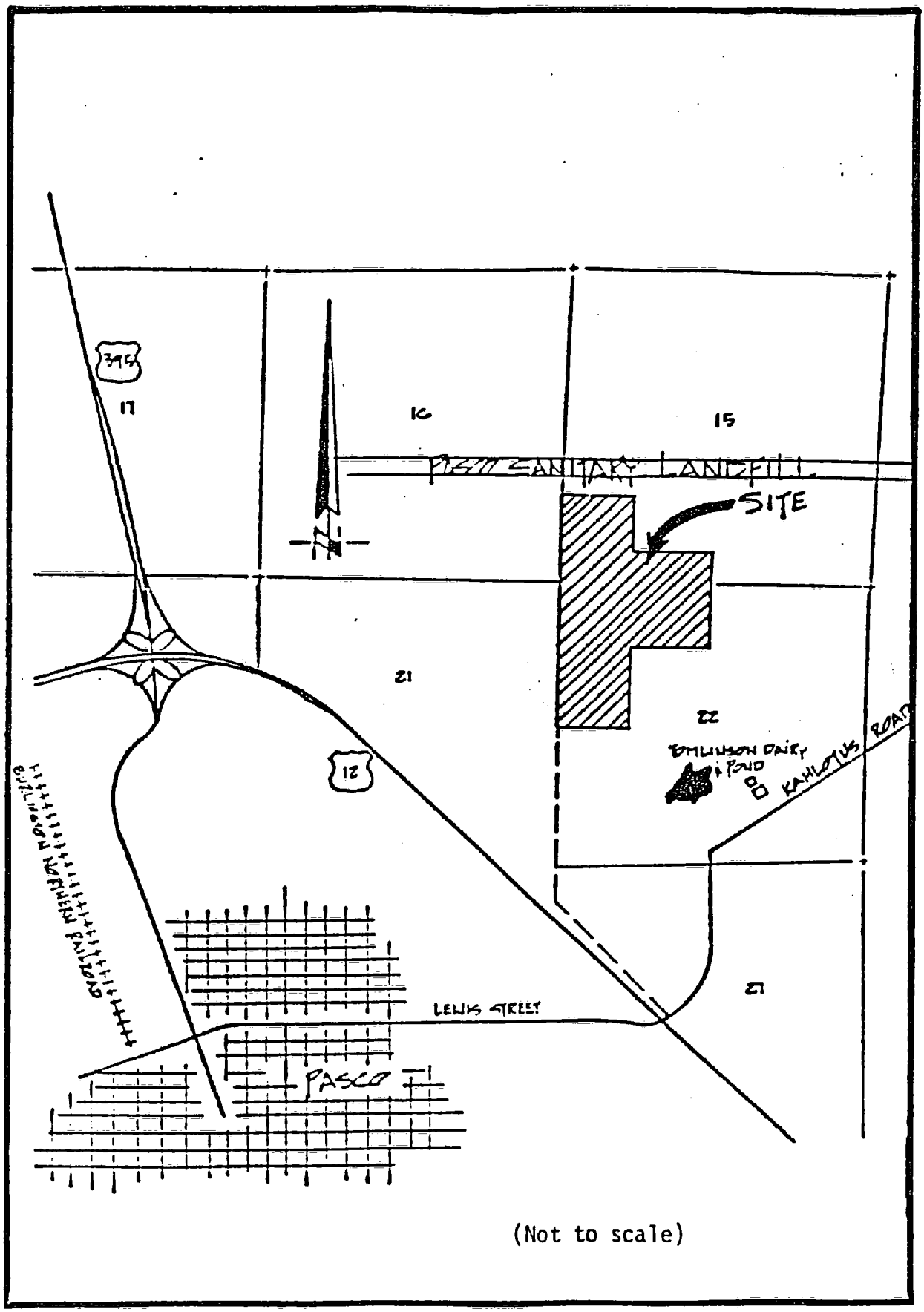

FIGURE 1
Resource Recovery

Site Map

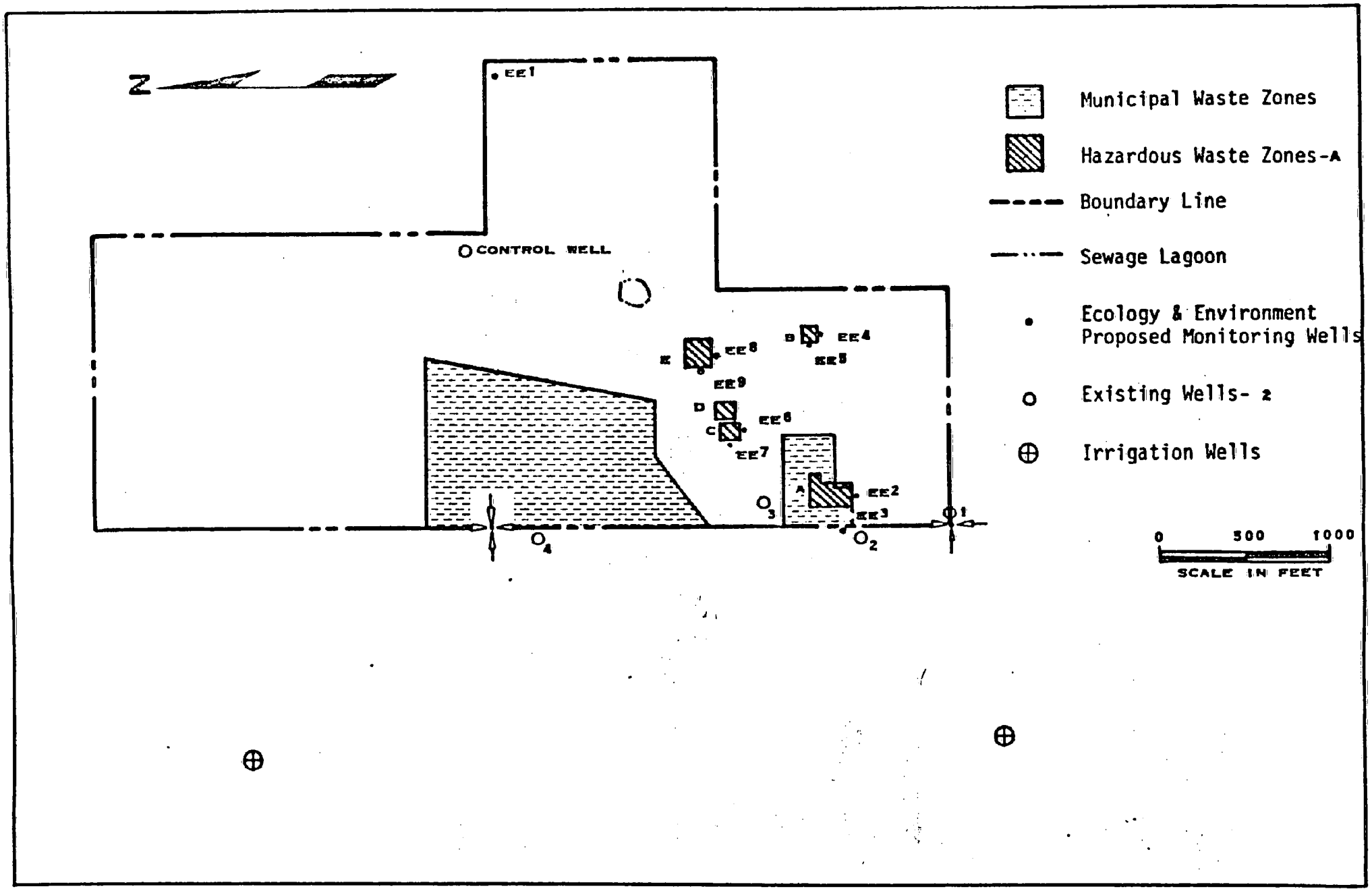

FIGURE 2
PASCO SANITARY LANDFILL
HAZARDOUS WASTE BURIAL ZONES AND
EXISTING MONITORING WELL LOCATIONS,
NEW MONITORING WELL LOCATIONS

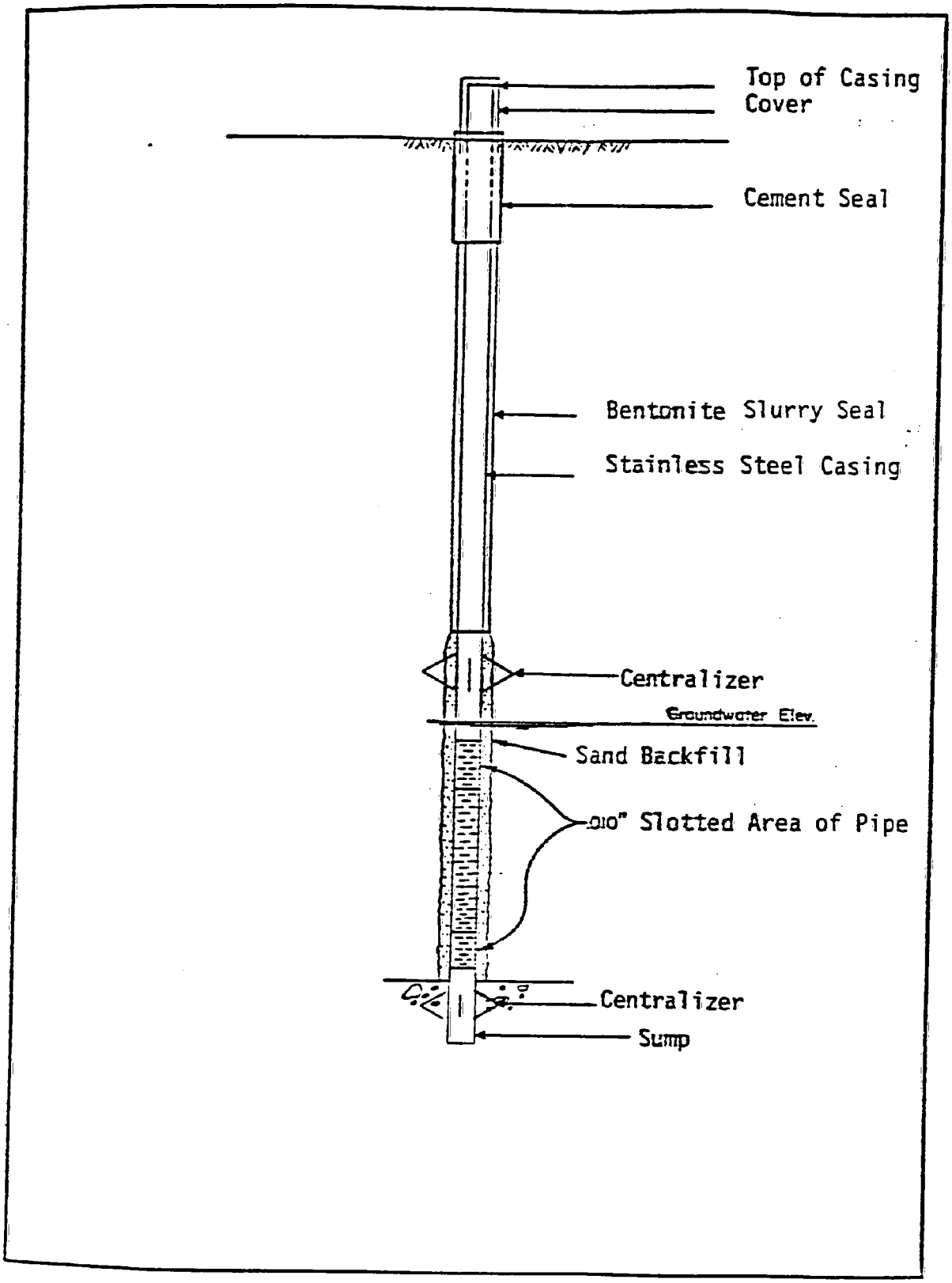

FIGURE 3
Schematic Well Diagram