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STATEMENT OF WORK
FOR
SOIL BORINGS AND WELL INSTALLATION

AT THE

HEBELKA SITE
LEHIGH COUNTY, PENNSYLVANIA

JUNE 1987

UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY
REM III REMEDIAL INVESTIGATION
FEASIBILITY STUDY
CONTRACT NO. 68-01-7250

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FOR
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HEBELKA SITE
LEHIGH COUNTY, PENNSYLVANIA

JUNE 1987

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A	SITE-SPECIFIC HASP FOR REM III SUBCONTRACTOR PRE-BID SITE VISITS
B	SITE-SPECIFIC HASP FOR REM III HAZARDOUS WASTE SITE ACTIVITIES

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1.0 GENERAL DESCRIPTION

1.1 PROJECT DESCRIPTION

In accordance with Work Assignment 120-3LJ4 and the USEPA, Ebasco Services Incorporated (Ebasco) REM III team has initiated the development of a Remedial Investigation/Feasibility Study of the Hebelka Site, located in Lehigh County, Pennsylvania, as shown in Figure 1. The Hebelka Site has been used as an automobile junkyard with periods of activity involving salvage operations. At some point during the last 10 or 15 years, two large piles (approximately 1,000 cubic yards) of used battery casings accumulated on the site in addition to empty storage tanks, empty drums, junk cars, and miscellaneous scrap metal. This study is designed to define the hydrogeologic conditions and potential contaminant migration within the area surrounding the site.

A total of nine monitoring wells and sixteen soil borings are planned for this study, located approximately as shown in Figure 2. Wells are expected to range from about 25 feet to 90 feet in depth, with a total drilled footage of approximately 585 feet. Table 1 provides a breakdown of the estimated footage for each monitoring well. Soil borings are expected to average 6 feet in depth, with a total drilled footage of approximately 96 feet.

Actual boring depths will be determined in the field by Ebasco or its representative based on subsurface conditions encountered, and may vary from the estimated depths. Bid proposal totals will be based on costs and quantity estimates contained in Figure 3.

The drilling contractor will provide all equipment and supplies necessary to complete this work. It is expected that work will begin on or about August 3, 1987. All work should be completed within 30 working days of the start of onsite activities.

1.2 SITE GEOLOGY

The Hebelka Site borders an area known as the Great Valley Section of the Lehigh Valley which is in the Appalachian Valley and Ridge Physiographic Province. In Lehigh County, the Great Valley is underlain by Cambrian and Ordovician age sedimentary rocks. In the study area, the uppermost rocks are Ordovician aged and include the Martinsburg Formation, Jacksonburg Formation, and Beekmantown Group. Structurally, these rocks have been folded and faulted. In the vicinity of the site, thicknesses and dip of the lithologies are difficult to predict due to these historic activities.

The bedrock underlying the site consists of shale and thin interbeds of siltstone and fine-grained sandstone of the Martinsburg Formation. Stratigraphically, the Martinsburg is

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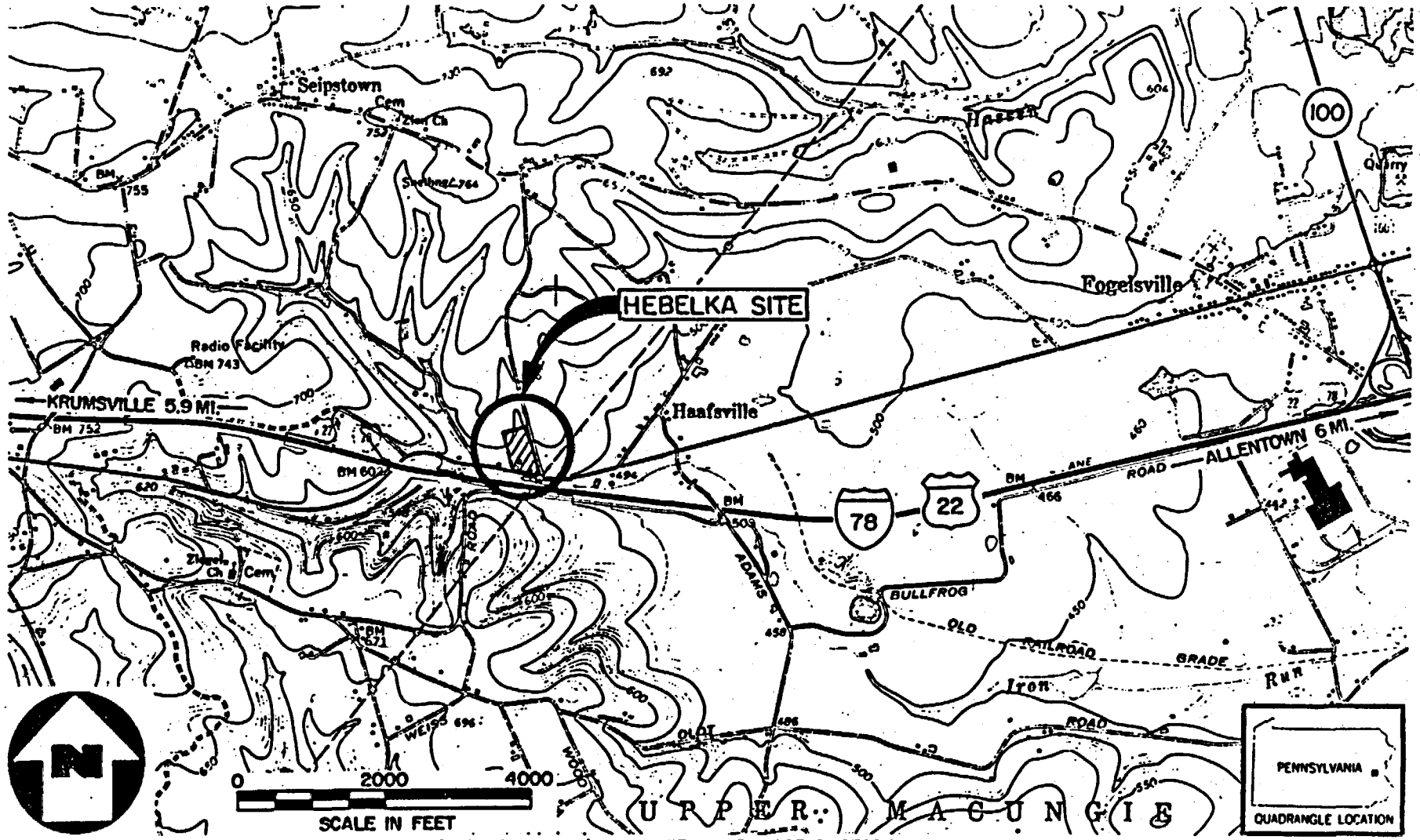

BASE MAP IS A PORTION OF THE U.S.G.S. TOPTON, PA QUADRANGLE (7.5 MINUTE SERIES, 1965, PHOTOREVISED 1972, PHOTOINSPECTED 1980). CONTOUR INTERVAL TEN FEET.

FIGURE 1

LOCATION MAP
HEBELKA SITE, LEHIGH CO., PA

NUS CORPORATION

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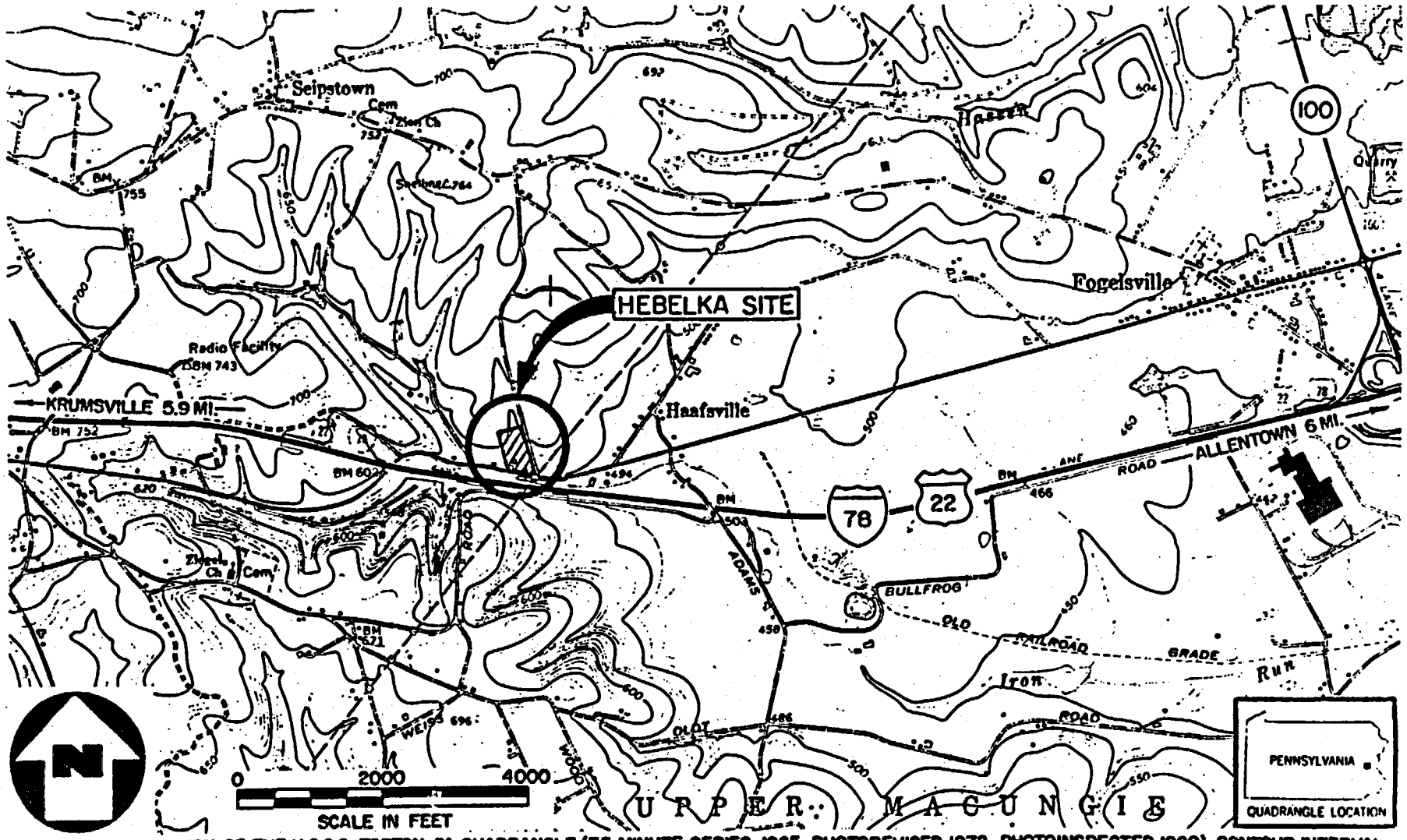

BASE MAP IS A PORTION OF THE U.S.G.S. TOPTON, PA QUADRANGLE (7.5 MINUTE SERIES, 1965, PHOTOREVISED 1972, PHOTOINSPECTED 1980). CONTOUR INTERVAL TEN FEET.

FIGURE 1

LOCATION MAP

HEBELKA SITE, LEHIGH CO., PA

NUS CORPORATION

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TABLE 1

MONITORING WELL COMPLETION DETAILS
HEBELKA SITE

Well Number	Est Depth (feet)	Double Cased		2 Inch ID PVC		Split Barrel Sampling		Est. NX Core (feet)	Upgradient	Downgradient	Packer Test	Slug Test	Single(s) or Cluster(C) Well
		Yes	No	Casing (feet)	Screen (feet)	Yes	No						
MW 1	50		X	42	10		X		X			X	C
MW 1A	90	X		82	10	X		70	X		X		C
MW 2	50		X	42	10		X			X		X	C
MW 2A	90	X		82	10	X		70		X	X		C
MW 3	25		X	17	10		X			X		X	C
MW 3A	90	X		82	10	X		70		X	X		C
MW 4	50		X	42	10	X			X			X	S
MW 5	50		X	42	10	X				X		X	S
MW 6A	90	X		82	10	X		70		X	X		S

MW 1 - Proposed Shallow Well (Typical)
MW 1A - Proposed Deep Well (Typical)

NX Core - For lithologic purposes and to facilitate packer tests
Packer Test - To determine hydraulic conductivities and isolate fracture zones in bedrock
Slug Test - To determine hydraulic conductivities (shallow wells)
Split-Barrel Samples - To determine lithology and bedrock/overburden interface

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FIGURE 3

BID QUOTATION FORM
(Assume Level D Personal Protection)

Item	Estimated Quantity	Unit Price ($)	Total Price ($)
1. Mobilization/Demobilization	1		
2. Soil Borings	96 ft.		
3. Shallow Monitoring Wells Drilling/Installation			
a. With soil sampling at 5-foot intervals	60 ft.		
b. Without soil sampling	165 ft.		
c. Additional drilling	100 ft.		
4. Deep Well Drilling/ Installation			
a. Outer Casing Drilling/ Installation	80 ft.		
b. Rock Coring/Reaming	280 ft.		
c. Bedrock Well Installation	360 ft.		
5. Packer Testing	24 hrs.		
6. Well Development	18 hrs.		
7. Site Access	16 hrs.		
8. Waste Containerization	8 hrs.		
9. Standby	24 hrs.		
10. Upgrade Level of Protection			
a. To Level C	Multiplier		
b. To Level B	Multiplier		

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underlain first by the Jacksonburg Formation and then, at depth, by the Beekmantown Group. The Jacksonburg is a dark gray limestone with low to moderate primary permeability. The Beekmantown Group is a very fine to coarse-grained dolomite with some interbedded limestone. Although primary permeability of the Beekmantown is low, joints and solution channels provide low to moderate secondary porosity.

Drilling and geologic characterization activities onsite may be impacted by the anticipated folded, subsurface structure as 1) drilling may be along bedding planes causing augers to migrate at an angle and 2) lithologies may be repeated at depth affecting data evaluation and geologic characterization.

The subsurface conditions presented here are for the bidders information only and are based on limited site data. Ebasco makes no guarantees, either expressed or implied, regarding actual subsurface conditions.

1.3 SCOPE OF WORK

This Request for Quotation (RFQ) defines the requirements for drilling at the Hebelka Site.

The subcontractor will furnish one, and possibly two drilling rigs, two crews, all necessary tools, and all miscellaneous materials required to complete the described program. Descriptions of the work by task that will be provided under this contract follow:

1. Mobilize/demobilize the required drilling/sampling/well construction and installation equipment and supplies. This task includes all work associated with moving equipment and supplies to the site vicinity prior to beginning work, and moving off site after the job has been completed.

   This also includes decontaminating downhole drilling equipment prior to arriving at the site and between boreholes (see Section 3.3 for details), cleaning around drilling sites after drilling/well installation activities are completed (including containerizing and moving drilling mud used to a central location, if mud rotary drilling techniques are used), subcontractor personnel conformance with specified health and safety requirements (e.g., 4-hour, pre-work health and safety meeting for site personnel, personnel decontamination, etc., see Attachment B, HASP) and any other work not specifically covered under the remaining work items, including obtaining any permits and utility clearances that may be required.

2. Prepare drilling sites as needed for drill rig access, as described in Section 3.2. The amount of clearing/

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disturbance should be kept to a minimum to reduce environmental impacts.

3. Drill and install nine monitoring wells to the approximate depths indicated in Table 1. Formation sampling will be done in accordance with the requirements of Section 3.4, in the selected well borings indicated in Table 1. Drilling and well construction/installation requirements are detailed in Section 3.5. Packer testing, to be performed in selected boreholes, is described in Section 3.7.

4. Develop the installed monitoring wells as described in Section 3.6.

5. Drill 16 soil borings to depths required for obtaining subsurface samples, approximately 6 feet total depth for each boring. Soil sampling and drilling will be performed in accordance with the requirements of Section 3.4.

2.0 SPECIAL CONDITIONS

2.1 BIDDING REQUIREMENTS

2.1.1 Site Visit

A prebid site visit for prospective bidders will be held on or about June 30, 1987. All interested parties should meet at a place and time to be determined later. Anyone planning to attend should call Mr. Stan Conti or Mr. George Latulippe at (412) 788-1080 to confirm their attendance and the meeting date and time. Proposed drilling locations will be viewed during the site visit.

All bidders will read and complete Attachment A (Site-Specific HASP for pre-bid visit) before site access will be authorized.

2.1.2 Methodology

As part of the bid, the subcontractor will submit a written plan describing how the work will be completed. At a minimum, this plan should include the work methodology, classification of personnel who will do the work and respective qualifications, a list of equipment that will be used, and a work schedule.

2.1.3 Documentation of Experience

Ebasco reserves the right to consider the subcontractor's experience records in awarding the contract. The subcontractor will submit, with the bid, certification of the following experience requirements:

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1. Bidder must have been engaged in work of similar character to that required in the Contract for a period of not less than 5 years immediately prior to the bid opening date.

2. Bidder will list the names of typical projects with a detailed description of the work performed (minimum of three projects).

3. Bidder shall certify that work site personnel will be provided who have been trained or who have equivalent work experience and training to meet the requirements of Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Response Standard 1910.120(e).

4. Bidder will certify that he owns or has commitments for the use of all equipment, materials, and manpower necessary to complete the work within the time specified.

5. In addition, the following items and conditions, where applicable, will be considered in the determination of the Contract:

   a. Compliance with Specification, and
   b. Completion of the Bidding Documents

2.1.4 Health and Safety Training

The Bidder will review the site-specific HASP (Attachment B) and certify in writing, as part of the bid, the understanding and intent to comply with such requirements.

2.2 WORK PROVIDED BY SUBCONTRACTOR

A list of the work that will be provided by the subcontractor follows:

1. Borings, Wells, and Related Items--The work will include, but not be limited to, providing supervision, labor, materials, and equipment necessary to decontaminate equipment and sampling devices, drill soil/rock borings, perform Standard Penetration Tests (SPT), collect formation samples, perform packer testing, install monitoring wells, and dispose of fluids, solvents, cuttings and contaminated wastes at designated areas, including transport, burial, removal/ deposition, and/or containerization for storage, as applicable as described under Scope of Work, and item 2 below in accordance with the Technical Specifications provided in Section 3.

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2. Containerize and Transport Waste--The subcontractor will supply DOT Spec 17 drums and contain the waste generated during the decontamination procedures at each drill site unless otherwise directed by the site geologist. Contaminated articles of clothing and debris will be contained in accordance with the requirements of the HASP. The subcontractor shall transport bulk containers and/or drums to a designated location for disposal or storage as identified in Scope of Work. Drill cuttings will be either disposed of at the drilling location or containerized in approved drums onsite. Separate drums will be used to contain the decontamination waste, and the clothing and debris. Drums will be labeled with white spray paint for identification.

3. Site Housekeeping--The subcontractor will keep the work site and adjacent area as free of material, debris, and rubbish as is practicable and shall remove from any portion of the site such material, debris, or rubbish which, in the opinion of the site geologist, may interfere with the work or constitute a nuisance to the public or plant personnel. All rubbish or debris will be removed from each drilling location at the completion of drilling/well installation operations. Downed trees/ brush from subcontractor activities shall be disposed of at a suitable landfill at the subcontractor's expense.

4. Permits--All activities by the subcontractor shall meet all applicable state and local regulations.

5. Health and Safety--All activities will be subject to the ongoing requirements of the site HASP. The subcontractor personnel must meet the requirements of this HASP and follow the directions of NUS's Health and Safety Officer to protect personnel and/or the environment.

6. Emergency/Contingency Procedures--Should it become necessary, the Subcontractor shall implement the Emergency/Contingency Procedures outlined in the HASP (Attachment B).

7. Support of Community Relations--The subcontractor will make every effort to maintain good relations with the property owners and occupants. All Subcontractor field personnel should be made thoroughly cognizant of the importance of this aspect of the work and its sensitivity to the entire program, as well as to the successful completion of the subcontractor's particular assignment.

8. Field Activities--All activities will be conducted in an efficient and professional manner, with the minimum practical damage to the site environment. Thus, tree

and brush removal and similar impacts on the existing site environment will be limited only to that which is approved by the site geologist.

9. Security--The subcontractor will be responsible for securing his equipment and materials at the site.

10. Required Documents--The subcontractor will furnish the following documents for NUS's review and records:

    a. A Certificate of Compliance stating the following: "All work provided under the Contract complies with all requirements of the specification and Ebasco-approved deviations,"
    b. All required permits,
    c. Documents identifying any deviations, and
    d. Payment invoices and supporting documentation as requested by Ebasco.

11. Protective Equipment and Clothing, Utilities, and Services--The subcontractor will supply all of the necessary equipment and clothing normally utilized for Level D and Level C protection as required by the HASP. Subcontractors will provide their respirators and appropriate filters as designated in the site-specific HASP. NUS will designate the parking, equipment storage, and personnel decontamination areas.

2.3 WORK PROVIDED BY NUS

A listing of the work that will be provided by NUS follows:

1. Site Access--Access to all locations will be arranged by NUS through EPA prior to commencement of work. No subcontractor personnel are to enter any location without first obtaining clearance from NUS. Equipment access to any location is permitted only with NUS's clearance.

2. Work Direction--NUS will stake or mark soil boring and monitoring well locations prior to the Subcontractor commencing work.

3. Quality Control--The subcontractor will perform high-quality work in accordance with specifications and any other permits or applications required. NUS will inspect the work in progress and at completion. Any discrepancies will be noted on Forms QC-1 and QC-2 (see Attachment 3).

4. Health and Safety Monitoring--NUS provides management and oversight responsibilities over all health and safety activities as specified in the HASP. These responsibilities include authorizing all persons to

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enter or work at the site, establishing levels of protection for operating personnel, conducting environmental monitoring for health and safety purposes, implementing proper decontamination procedures, and describing the requirements for decontamination procedures to the drillers.

5. Site/Rig Geologists--NUS will provide a site/rig geologist per drill rig to supervise and document drilling, monitoring well installation, and soil sampling procedures by subcontractor, and document daily activities.

6. Storage Facility--An area to be designated in the field will serve as a temporary short term storage area of bulk containers and/or drums containing solvents or other fluids and materials which may not be allowed to be buried or disposed of through city or county facilities.

2.4 HEALTH AND SAFETY

EPA in its REM III contract requires that all persons operating at a REM III work site participate in the Subcontractor's Medical Surveillance and Health and Safety Training program (Attachment D). As part of this program, subcontractors must fulfill the following requirements:

1. Subcontractors must ensure that all employees working onsite have obtained a comprehensive medical-physical examination equivalent to the Subcontractor's Medical Surveillance Program (Attachment D) described in the REM III Health and Safety Plan, within 1 year prior to the date scheduled to work on a REM III site. This physical examination must include tests to certify an employee's ability to wear a respirator. Before commencing work and within 5 calendar days from date of contract award, the subcontractor is required to provide NUS with a physician's statement medically qualifying the employee.

2. Subcontractors must ensure that all employees have participated in health and safety training or have training in waste site experience equivalent to the requirements of OSHA Hazardous Waste Operations of Response Standard 1910.120(e). Upon award of the contract, the subcontractor must provide NUS with documentation describing the training and experience of each employee. The costs associated with the physical examination and training requirements, as described above, must be borne by the subcontractor.

3. The required training must prepare employees to perform their respective activities in respiratory protection up

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to and including Level C, i.e., air-purifying respirators. The level of protection for this project will be Level D at all locations unless changed by HSO due to unanticipated conditions.

2.5 PROJECT SCHEDULE

The subcontractor should mobilize within 10 working days of notice to proceed and complete drilling, well installation, and soil sampling within 5 weeks from the startup of drilling activities. Ebasco reserves the right to reduce or increase the number of monitoring wells and/or borings in this program. Any reduction or increase will either be deducted or paid for in accordance with the unit price bids to be specified by the subcontractor in Section 2.8 of this document.

The subcontractor will provide sufficient equipment and manpower to meet the project schedule. One, and possibly two drilling rigs will be required for soil sampling and monitoring well installation activities.

The subcontractor will assume 10-hour days and 5-day weeks to perform the drilling and well installations. If work falls behind schedule, the subcontractor should be prepared to work reasonable overtime, including Sundays, as specified by NUS. No more than 10 continuous work days will be required without rest days.

2.6 MEASUREMENT AND PAYMENT

2.6.1 Mobilization and Demobilization

Payment will be on a lump sum basis and will include all items as described in Section 1.3, item 1. Ebasco Services Incorporated (Ebasco) will recommend payment for mobilization at the successful completion of the project, after receipt of the invoice. NUS and the subcontractor will sign a form agreeing to the satisfactory completion of the project.

2.6.2 Soil Borings

Onsite soil borings will be paid for on a per foot basis. The per foot drilling price should include all equipment, materials, and labor costs associated with drilling, sampling, and backfilling the 16 onsite soil borings as described in Section 3.4.1.

2.6.3 Shallow Monitoring Well Drilling/Well Installation

Shallow monitoring well drilling/well installation will be paid for on a per foot basis.

The per foot drilling price should include all equipment, materials, and labor costs associated with drilling, sampling,

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and well construction/installation. Well material costs and well construction/installation labor/equipment costs should be included in the per foot price. Section 3.4.2 describes shallow well drilling operations, while Section 3.5 describes well construction installation requirements.

Separate quotes are requested for borings in which soil samples will be taken and for borings not requiring any soil samples.

A price quote is also requested for an additional 100 feet of drilling/well installation beyond the estimated 585 feet, to cover additional contract costs in the event that an expansion of the present program is required, based on the observed field conditions. Soil sampling should be priced in with this per foot rate.

2.6.4 Deep Well Drilling/Well Installation

Separate prices are requested for drilling and well installation activities for deep monitoring wells. The prices are to be quoted on a per foot basis for each specified item.

2.6.4.1 Outer Casing Installation

A per foot price is requested for drilling and installing 4 inch PVC casing through the overburden into bedrock. This price should include all labor, equipment, and material costs associated with drilling through the overburden into bedrock, and setting and grouting 4 inch PVC casing in place, as described in Section 3.4.3.

2.6.4.2 Rock Coring/Reaming

Rock coring and reaming will be paid for on a per foot basis. The price quoted should include all labor, equipment, and materials required to perform bedrock coring and reaming operations as described in Section 3.4.3.

2.6.4.3 Deep Well Installation

Deep well installation will be paid for on a per foot basis. The price will include all well casings, screens, and backfill materials, as well as labor and equipment charges, for constructing and installing bedrock wells as described in Section 3.5.

2.6.5 Packer Testing

Packer testing, where required, will be paid for on an hourly basis. The hourly rate should include all labor, material, and equipment costs associated with performing packer tests in bedrock borings. Adequate equipment and supplies should be available on site to efficiently perform the required tests, as described in Section 3.7.

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2.6.6 Well Development

The subcontractor will be paid on an hourly basis for monitoring well development, as described in Section 3.8. The per hour price should include all labor and equipment charges for performing well development.

2.6.7 Site Access

Minimal, if any, site preparation is anticipated to be needed prior to moving drilling rigs onto monitoring well locations. However, five of the soil borings are located within the area of the battery casings. Access through the battery casings will be required to these five locations. The subcontractor will be paid on an hourly basis for the work needed. Use of a small bulldozer or crawler loader should be included in this cost, as well as labor, equipment, and material costs. All bidders are encouraged to attend the prebid site visit to familiarize themselves with the drilling locations and access requirements.

2.6.8 Waste Containerization

The subcontractor will be paid an hourly rate for containerizing and moving wastes to a centralized locations when required. This price should include all equipment, labor, and supplies, including any 55 gallon DOT-Spec 17 approved drums needed for containerizing protective clothing or decontamination water.

2.6.9 Standby

The only acceptable charge other than those described above is an hourly standby rate which may be charged only during work delays caused by NUS. Delays caused by weather, equipment breakdown, or immobilization of drilling equipment for any reason are not chargeable.

2.6.10 Upgrade from Level D to Level C or Level B

Level C or Level B conditions may be encountered, but are not anticipated. The subcontractor will indicate the increased costs for work performed in Level C and Level B rather than Level D protection. Increased costs will be provided for drilling/well installation and decontamination.

The cost increase should be quoted as a multiplier to the quoted unit price (Example: drilling/well installation quoted at $20/foot, 1.5 x multiplier for Level C work = $30/foot.)

2.6.11 Basis of Payment

At the end of each day, the subcontractor's representative and the NUS representative will complete duplicate summary sheets (provided by NUS) detailing the day's activities, including

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drilled footage, hourly charges, etc. Both parties will sign the sheets and the quantities on the sheets will be the basis for billing and payments made for the work completed.

2.7 SUBMITTALS AND DELIVERABLES

The subcontractor will schedule and prepare the following submittals and deliverables:

Mandatory Submittals	Due
1. Methodology Plan	With Bid
2. Experience Records	With Bid
3. Health and Safety - Understanding and Intent to Comply	With Bid
4. Completed Bid Quotation Form - Figure 3	With Bid
5. REM III Health and Safety Medical Surveillance Requirements	Prior to commencing work, and within 5 calendar days from date of contract award letter
Deliverables	**Due**
1. Certificate of Compliance and Deviation Document	At completion of work
2. Invoices for Payment	Monthly or at the completion of the specified work

2.8 BID QUOTATION FORM

The subcontractor will submit the bid in direct accordance with the Bid Quotation Forms provided and should be in accordance with all other requirements described in this specification (Figure 3). Quoted prices will be valid for a period of 90 days from the bid due date.

3.0 TECHNICAL SPECIFICATIONS

3.1 STANDARDS

Standards for the performance of the field effort are specified within the text of this document. Any modifications to the standards specified must be approved by Ebasco or its representatives.

3.2 SITE ACCESS ROUTES AND DECONTAMINATION AREA

Access to the drilling locations will be provided by EPA through NUS. The subcontractor will prepare drilling locations, such as

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clearing vegetation using a bulldozer, as necessary. Costing for site access work will be based on an hourly rate. The clearing will be held to a minimum, to reduce environmental impacts.

The subcontractor will be responsible for containerizing any debris and wastes requiring isolation during decontamination procedures and transport wastes to a centralized location designated by NUS.

3.3 DECONTAMINATION

3.3.1 Soil Borings

During drilling and sampling operations for the onsite soil borings, the downhole sampling devices (split barrel sampler/thin wall tube) must be decontaminated after each sample is taken, (unless dedicated samples are used), according to the following procedure:

- Potable water rinse
- Alconox or liquinox detergent wash
- Potable water rinse
- Distilled/deionized water rinse
- Acetone or methanol
- Distilled/deionized water rinse
- Air dry

All other downhole equipment (augers, sampling rods) must be decontaminated by steam cleaning after each boring is completed.

3.3.2 Monitoring Well Drilling/Installation

All downhole drilling, sampling, and testing equipment and the back end of the drilling rig must be steam cleaned prior to beginning monitoring well drilling/installation work, between boreholes, any time the drilling rig leaves the drill site prior to finishing a boring, and at the conclusion of the drilling program. Decontamination operations will consist of washing equipment using a high-pressure steam wash. All decontamination equipment, including a steam cleaner and potable water, is to be provided by the subcontractor. Monitoring well casing and screens, and PVC casing for doubly cased wells, must also be decontaminated as described above, prior to installation. As an alternate, NSF approved PVC pipe and screens may be used without steam cleaning. It is not anticipated that decontamination water will need to be contained, however, in the event that containment is needed based on organic vapor monitoring levels above 35 ppm, the subcontractor should have 55 gallon drums available. NUS will provide a centralized location for decontamination operations.

A decontamination area is available for use at the site. The subcontractor should have plastic sheeting available for decontamination operations, in the event it is needed.

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3.4 DRILLING OPERATIONS

3.4.1 Soil Borings

The preferred method for drilling the onsite soil borings is the hollow stem auger method. Soil samples will be taken at 3-foot intervals starting at the ground surface to the total depth of each boring, (approximately 6 feet) using large diameter split barrel samplers (3-inch diameter) or thin wall tube samplers. The subcontractor should have both types of sampling devices available for use at the site. Sampling devices are to be decontaminated after each use according to the procedures described in Section 3.3.1. The subcontractor may choose to bring sufficient sampling devices for 1/2 days work (approximately 12 samples) in lieu of decontaminating between each sample. Once the final boring depth has been reached, each boring will be backfilled with bentonite chips or a cement/bentonite slurry.

3.4.2 Shallow Monitoring Well Drilling Operations

There are no restrictions as to the drilling methods to be used for the shallow monitoring well borings required, except that the only drilling fluids approved for use are potable water or a drilling mud mixed from potable water and pure bentonite, if needed. No organic based polymer may be added to drilling fluids. Monitoring well borings must be of an adequate diameter (nominal 4 inches or more) so that 2-inch diameter PVC wells can be properly installed. Bidders are requested to provide a description of drilling methods that they propose to use, along with their response. The general Ebasco preference for drilling methods at hazardous waste sites is hollow stem auger, air, cable tool, mud rotary, and drive and wash/spinning casing, in that order of preference; however, drillers are not bound to select the most preferred option. It should be noted that some bedrock drilling may be required to complete the shallow monitoring wells.

During drilling operations of monitoring well borings, Standard Penetration Tests will be performed and split-barrel soil samples (1-1/2 inch I.D.) taken at 5-foot intervals in one of the wells at each cluster location and at each well at a single well location, in accordance with ASTM D-1586-84, starting at 0.0 to 1.5 feet. Each soil sample will be placed in a 8-ounce jar (to be provided by the subcontractor), labeled, pertinent data recorded (project, boring, and sample numbers, depth, blow counts, and date) and submitted to NUS. The remaining boring at each cluster location need not be sampled. The boring log for each boring will be maintained by NUS. The subcontractor should prepare a separate written boring log for each boring drilled, to be submitted to NUS at the conclusion of the field activities. The boring log should describe lithologies encountered, depths of various formations, sample locations,

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sample data (recovery, blow counts, etc), water levels, total depths, well construction summary, and any other pertinent data.

3.4.3 Deep Monitoring Well Drilling Operations

Deep well drilling operations will be performed using the following procedure:

1. The well boring will be advanced through the overburden and approximately 5 feet into bedrock, using air rotary, hollow stem augers, mud rotary techniques, or other techniques as applicable. No sampling will be performed. The borehole should be a minimum of 6 inches in diameter.

2. Four-inch inside diameter flush joint threaded PVC casing will be set into bedrock and grouted in place, using a cement-bentonite grout.

3. After the grout has set a minimum of 16 hours, drilling will proceed to the required depths using diamond bit coring in accordance with ASTM D 2113.

4. Once the area for groundwater monitoring is penetrated by coring (approximately 70 to 90 feet) packer testing will be performed to ensure that the zone will yield sufficient water for monitoring purposes. Other areas may be packer tested as required by the site geologist.

5. After a satisfactory monitoring interval has been reached, the boring will be reamed out with a nominal 4-inch diameter roller bit, (3-7/8-inch actual diameter), and a 2-inch diameter PVC well will be installed, as described in the following section.

If air rotary methods are used, the air from the compressor should be filtered to ensure that oil from the compressor is not introduced into the groundwater system. In addition, joint compounds should not be used. A vegetable-type oil may be used with approval of the NUS representative.

3.5 WELL CONSTRUCTION/INSTALLATION

Both shallow and deep monitoring wells will be constructed of 2-inch diameter, nonglued-flushed-joint, threaded, schedule 40 PVC casing and well screens equipped with a PVC plug. Figure 4 illustrates typical well construction details for the shallow and deep monitoring wells.

Well screens will be 10 feet in length and slot size will be 0.02 inches. The PVC well installation procedure will consist of placing the PVC pipe and screen into the completed boring and backfilling the annulus of the boring, around the well screen, with clean silica sand. A bentonite pellet seal (minimum 2-foot thickness) will then be placed. The remainder of the annulus

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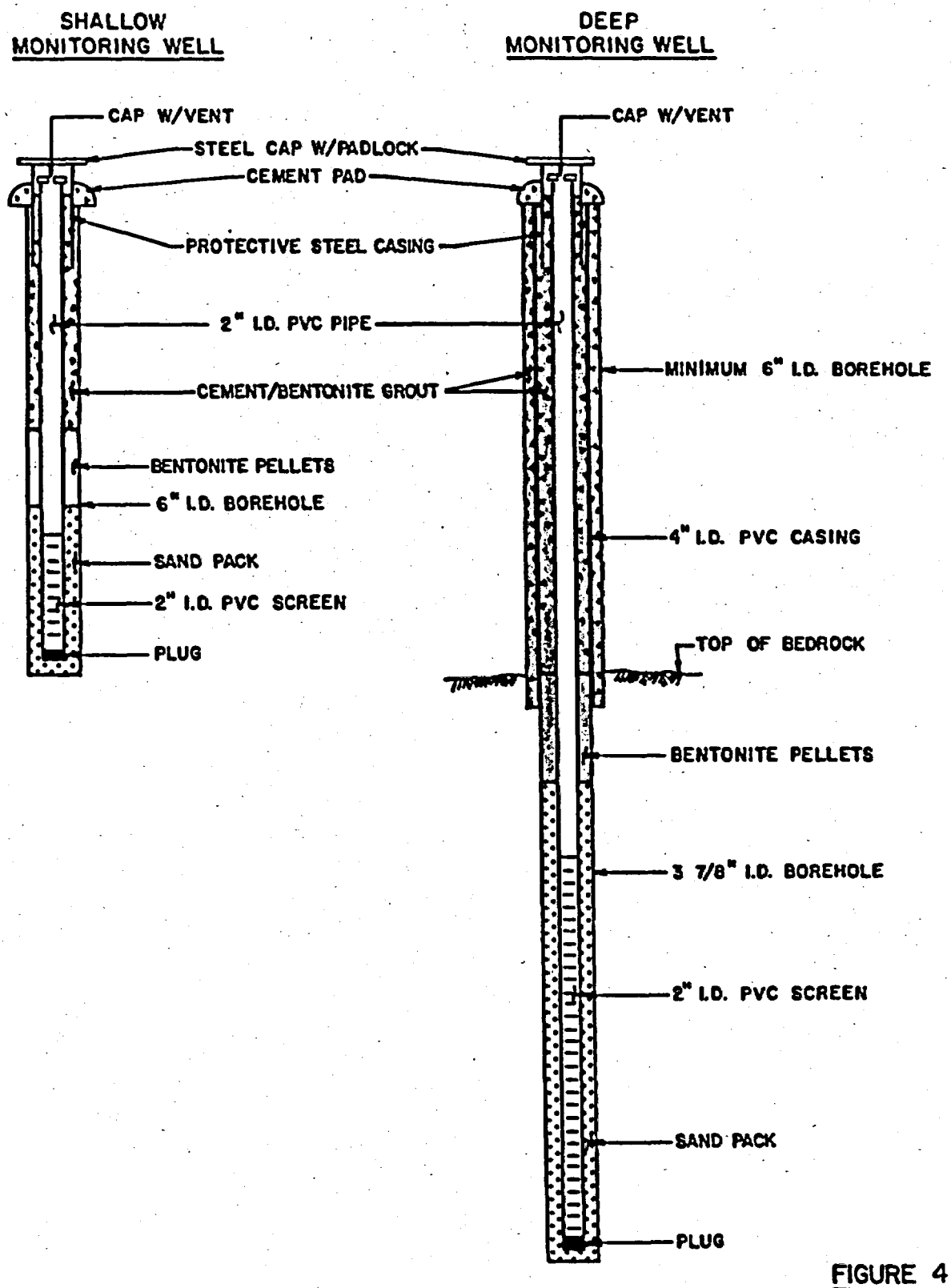

FIGURE 4

MONITORING WELL CONSTRUCTION DETAILS
HEBELKA SITE, LEHIGH CO., PA
NOT TO SCALE

NUS CORPORATION

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will be backfilled, via tremie method, with a cement-bentonite grout to the surface. The depths of all backfill materials will be monitored continuously during installation by means of weighted steel or plastic tape.

The deep monitoring wells will be constructed by first drilling a minimum 6-inch diameter hole approximately 5 feet into bedrock. A 4-inch inside diameter PVC casing will then be set and grouted. Grouting will be accomplished by the tremie method or by pumping through the 4-inch PVC casing. This will provide a seal between the outer 4-inch casing and the borehole. After coring and reaming to the desired depths, a 2-inch diameter PVC well will be installed as described above. Protective steel casings (minimum 6-inch diameter, 5 feet in length) equipped with locking caps shall be installed around all wells. Locks are to be supplied by the subcontractor and must be keyed alike. The locking caps must be adequate to prevent unauthorized access to the monitoring wells, and are subject to approval by the NUS representative. Two small, 1/4-inch diameter, holes should be drilled out of the protective casing, at the base of the stickup to allow for water drainage. A concrete apron shall also be constructed at the base of each well, sloping away from the protective casing to prevent surface water from entering.

3.6 WELL DEVELOPMENT

Monitoring wells will be developed a minimum of 24 hours after installation. Wells may be developed by pumping, surging, and/or air lifting, to remove fines from formation materials and remove any residual drilling fluids from the area around the well screen. Well development will be performed until formation water is free of fines, or until approved by the NUS representative. It is not anticipated that well development water will need to be contained.

3.7 PACKER TESTING

Packer testing of selected intervals of bedrock well borings may be required. The determination of which borings and depth intervals are to be tested will be made in the field by the NUS representative, based on observed subsurface conditions. Packer testing should be performed in accordance with standard packer testing techniques. A diagram illustrating typical packer testing equipment and setup is provided as Figure 5. Equipment for both single and double packer testing should be available.

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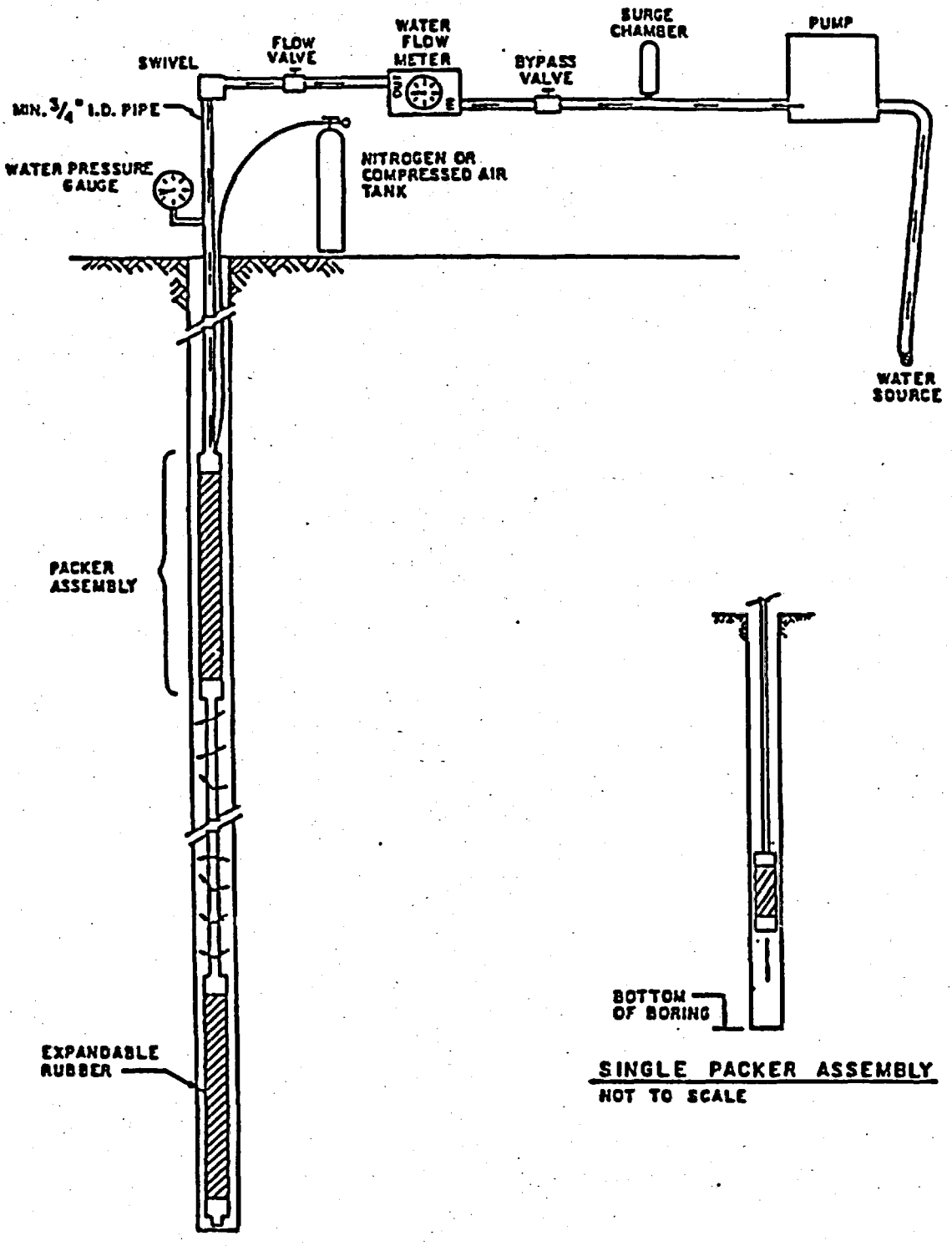

SINGLE PACKER ASSEMBLY
NOT TO SCALE

DOUBLE PACKER ASSEMBLY and ASSOCIATED APPARATUS
NOT TO SCALE

FIGURE 5

TYPICAL PACKER TEST SETUPS
HEBELKA SITE, LEHIGH CO., PA

NUS CORPORATION

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ATTACHMENT A

SITE-SPECIFIC HASP FOR REM III
SUBCONTRACTOR PRE-BID SITE VISIT

SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR REM III

SUBCONTRACTOR PRE-BID SITE VISITS

SITE: Hebelka Site

LOCATION: Lehigh County, Pennsylvania

DATE PREPARED: May 28, 1987

PREPARED BY: Kevin Kenney
(NAME/COMPANY)

PLANNED SITE ACTIVITY DATES: June 30, 1987

REVISION: 0

EBASCO SERVICES INCORPORATED, EBASCO SUBCONTRACTORS AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY DO NOT GUARANTEE THE HEALTH OR SAFETY OF ANY PERSON ENTERING THIS SITE. DUE TO THE HAZARDOUS NATURE OF THIS SITE AND THE ACTIVITY OCCURRING THEREON, IT IS NOT POSSIBLE TO DISCOVER, EVALUATE, AND PROVIDE PROTECTION FOR ALL POSSIBLE HAZARDS WHICH MAY BE ENCOUNTERED. STRICT ADHERENCE TO THE HEALTH AND SAFETY GUIDELINES SET FORTH HEREIN WILL REDUCE, BUT NOT ELIMINATE, THE POTENTIAL FOR INJURY AT THIS SITE. THE HEALTH AND SAFETY GUIDELINES IN THIS PLAN WERE PREPARED SPECIFICALLY FOR THIS SITE AND SHOULD NOT BE USED ON ANY OTHER SITE WITHOUT PRIOR RESEARCH AND EVALUATION BY TRAINED HEALTH AND SAFETY SPECIALISTS.

Project Name: Hebelka Project No.: 619Y

Purpose of Visit:

To familiarize drillers and surveyors to the site itself and the duties to be undertaken.

Site Visit Personnel:	Responsibility:
G. Latulippe	Site Manager
S. Conti	HSO

Emergency Information:

Type	Name	Phone Nos.
Police:	Allentown	(215) 861-2026
Ambulance:	Canty	(215) 437-5252
Hospital:	St. Lukes (Bethlehem)	(215) 691-4141
Rescue Service:		911
CHSS:	M. Soltis	(412) 788-1080
Site Manager:	G. Latulippe	(412) 788-1080
HSM:	G. Smith	(412) 788-1808

Hospital Route:

Take old Route 22 to Route 222, tkae this to Ceadercrest Blvd. (see Perkins Restaurant on right) make a left here and go to Route 22E. Follow this to Route 378S. This will bring you to S. Bethlehem. As you go over a bridge, make right onto W. 3rd Steet. Follow this up hill and hospital will be on the right.

Site Background/Hazard Assessment:

The site is an old junk yard with junk cars, empty tanks, and scrap metal. Because of the small amount of work to be done, the hazards involved will be minimal.

Subcontractor Conduct On Site:

Subcontractor representatives will remain with the Site Health and Safety Officer (HSO) or Site Manager (SM) throughout the site visit period. If requested to leave an area the subcontractor will leave promptly and in an orderly manner. Subcontractors who fail to follow instructions will be requested to leave the site.

PPE Requirements:

Field clothes and shoes will be worn by site visitors. Hard hats and safety glasses are recommended and will be required if subcontractors enter buildings or will be close to operating machinery.

If the HSO judges that respiratory toxicants may be encountered, subcontractors must bring to the site their own full face air purifying respirator together with appropriate cartridges to be specified by the HSO. The HSO may perform a fit test at his discretion.

Respirator Required: None

Type of Cartridge: None

Monitoring Equipment and Calibration Information:

If any onsite work is to be done, a (PID) HNU monitoring instrument shall be used to monitor the work environment. In the area around the battery piles, caution shall be taken to prevent injuries from the physical hazards.

Approvals

By their signature the undersigned certify that this HASP is approved and will be utilized at the Hebelka site.

Original signed by Kevin Kenney Health and Safety Officer	5-28-87 Date
Original signed by G. Latulippe Site Manager	5-28-87 Date
Original signed by M. Soltis Company Health and Safety Supervisor	5-28-87 Date
Original signed by John Janous REM III Health and Safety Manager	5-29-87 Date

I certify that I have read and understand this Health and Safety Plan. I further certify that in consideration of entrance permission to this site for bid purposes I will faithfully follow all instructions of the Site Health and Safety Officer designated for this visit.

Signature	Company
Name (Printed)	Date

ATTACHMENT B

SITE-SPECIFIC HASP FOR REM III
HAZARDOUS WASTE SITE ACTIVITIES

SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR REM III
HAZARDOUS WASTE SITE ACTIVITIES

SITE: Hebelka

LOCATION: Upper Macungie Twp. Lehigh County

DATE PREPARED: May 20, 1987

PREPARED BY: Matthew M. Soltis/NUS Corporation
(NAME/COMPANY)

PLANNED SITE ACTIVITY DATES: _____

REVISION: 1

EBASCO SERVICES INCORPORATED, EBASCO SUBCONTRACTORS AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY DO NOT GUARANTEE THE HEALTH OR SAFETY OF ANY PERSON ENTERING THIS SITE. DUE TO THE HAZARDOUS NATURE OF THIS SITE AND THE ACTIVITY OCCURRING THEREON, IT IS NOT POSSIBLE TO DISCOVER, EVALUATE, AND PROVIDE PROTECTION FOR ALL POSSIBLE HAZARDS WHICH MAY BE ENCOUNTERED. STRICT ADHERENCE TO THE HEALTH AND SAFETY GUIDELINES SET FORTH HEREIN WILL REDUCE, BUT NOT ELIMINATE, THE POTENTIAL FOR INJURY AT THIS SITE. THE HEALTH AND SAFETY GUIDELINES IN THIS PLAN WERE PREPARED SPECIFICALLY FOR THIS SITE AND SHOULD NOT BE USED ON ANY OTHER SITE WITHOUT PRIOR RESEARCH AND EVALUATION BY TRAINED HEALTH AND SAFETY SPECIALISTS.

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SECTION I: GENERAL

This plan has been prepared in conformance to REM III Program Guideline HS-1.01. It addresses all those activities associated with sampling activities involving battery piles, surface and groundwater sources, and soils at the Hebelka and will be implemented by the HSO during site work. Compliance with this HASP is required of all persons and third parties who enter this site. Assistance in implementing this Plan can be obtained from the REM III Health and Safety Manager (HSM), and/or the NUS Corporation Company Health and Safety Supervisor (CHSS). The content of this HASP may change or undergo revision based upon additional information made available to health and safety (H&S) personnel, monitoring results or changes in the technical scope of work. Any changes proposed must be reviewed by H&S staff and are subject to approval of the NUS Corporation, CHSS, and the HSM.

SITE Hebelka SITE NO. 619Y

PLAN DATE May 15, 1987

SCOPE OF WORK Sample Activities, involving battery piles, surface and groundwater sources and soils

	SITE MANAGER	HEALTH AND SAFETY OFFICER
NAME	G. Latulippe	M. Soltis
WORK PHONE	(412) 788-1080	(412) 788-1080

EMERGENCY PHONE NUMBERS

Allentown	Police Dept.	(215) 861-2026
	Fire Dept.	911
	Rescue Service	(215) 437-5252
St. Lukes (Bethlehem)	Hospital	(215) 691-4141
LeHigh Valley Center	Back-up Hospital	(215) 776-8000
	National Response Ctr.	(800) 424-8802
	Poison Control Center	
Matt Soltis	CHSS	(412) 788-1080
	REM III Regional Mgr.	
	Field Operations Leader	
	REM III HSM (G. Smith or J. Janous)	(703) 558-7506
	Community Relations Coordinator	
	Offsite Emerg. Services	
	Site Command Post	

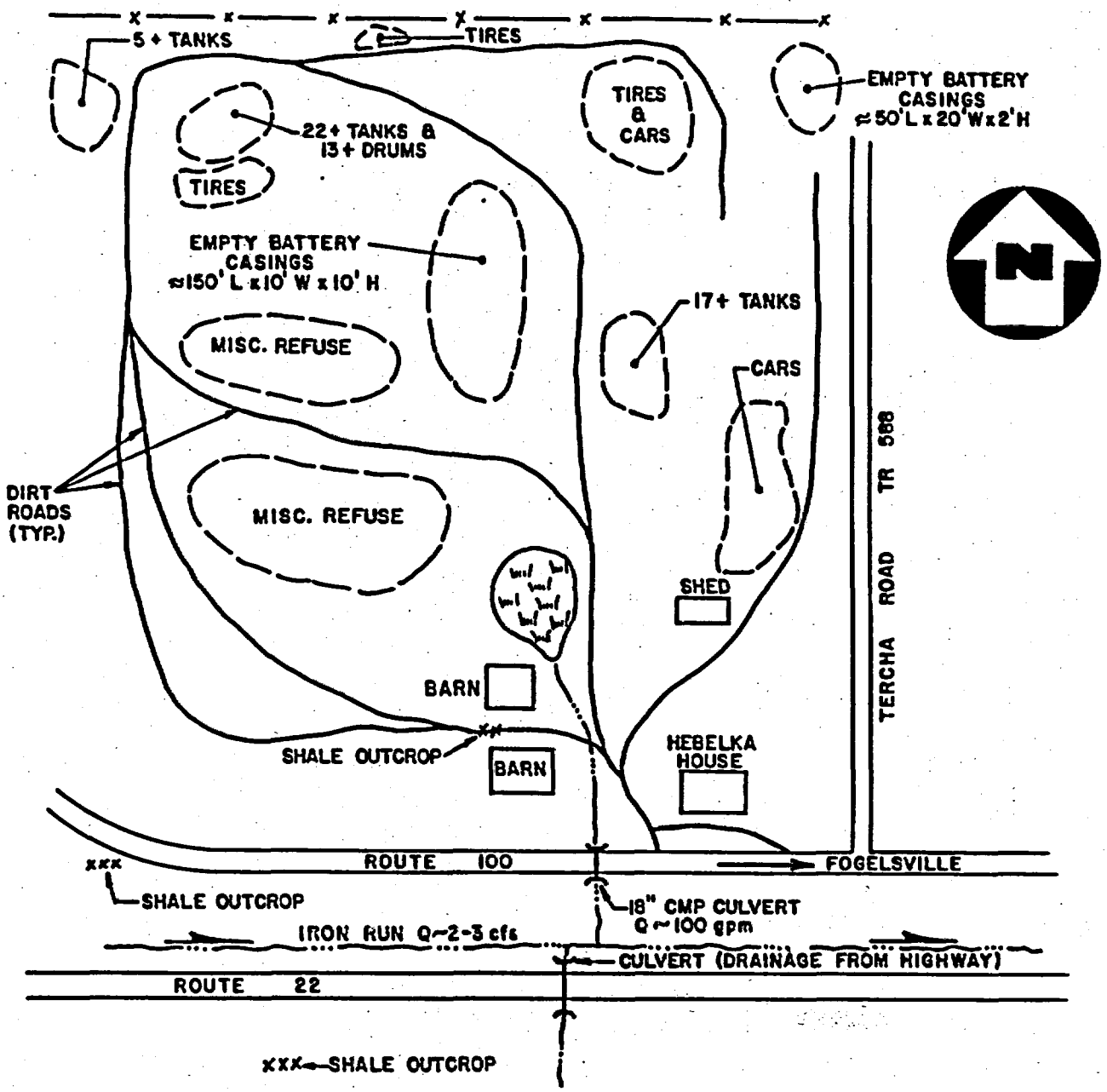

FIGURE 1

GENERAL ARRANGEMENT
HEBELKA SITE, LEHIGH CO., PA
NOT TO SCALE

NUS CORPORATION

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SECTION II: HEALTH AND SAFETY PERSONNEL

2.0 HEALTH AND SAFETY PERSONNEL DESIGNATIONS

The following briefly describes the health and safety designations and general responsibilities which may be employed for the Hebelka Site. (When preparing plan, delete all personnel not appropriate to this site).

2.1 COMPANY HEALTH AND SAFETY SUPERVISOR

The CHSS has overall responsibility for development and implementation of this HASP. He also shall approve any changes to this plan due to modification of procedures or newly proposed site activities.

The CHSS will be responsible for the development of new company safety protocols and procedures necessary for field operations and will also be responsible for the resolution of any outstanding safety issues which arise during the conduct of site work. Health and safety-related duties and responsibilities will be assigned only to qualified individuals by the NUS Corporation CHSS. Before personnel may work on site, currentness of acceptable medical examination and acceptability of health and safety training must be approved by the CHSS.

2.2 SITE HEALTH AND SAFETY OFFICER

The HSO will be present on site during the conduct of all Level A, B, or high-hazard Level C field operations and will be responsible for all health and safety activities and the delegation of duties to the H&S staff in the field. Where the site is identified as low-hazard Level C or Level D, the HSO may direct the site health and safety efforts through an assistant health and safety officer approved by the CHSS. The assistant will be responsible for implementation of the HASP. He may direct or participate in downrange activities as appropriate when this does not interfere with his primary HSO responsibility. The HSO has stop-work authorization which he will execute upon his determination of an imminent safety hazard, emergency situation, or other potentially dangerous situations, such as detrimental weather conditions. Authorization to proceed with work will be issued by the CHSS after such action. The HSO will initiate and execute all contact with support facilities and personnel when this action is appropriate.

2.3 ASSISTANT HEALTH AND SAFETY OFFICER

An Assistant HSO may be designated. On low-hazard Level C or Level D site he may have collateral duties but must be qualified for the health and safety responsibility by the CHSS. At

Level A, B or high-hazard Level C sites, he will be the downrange person who accompanies field sampling teams and will report to the HSO. Additionally, he may be required to support the HSO when multiple operations are conducted that require monitoring and HSO surveillance. His primary responsibility is to provide the appropriate monitoring to ensure the safe conduct of field operations. He will have access to continuous communications with the Command Post. The number of Assistant HSO's will be dependent upon the number of downrange operations occurring simultaneously, site level of protection designation, and the individual assignments made by the HSO. The Assistant HSO will also share responsibility with the Field Operations Lead and the HSO for ensuring that all safety practices are utilized by downrange teams and that during emergency situations appropriate procedures are immediately and effectively initiated. He will also be responsible for the control of specific field operations and all related activities such as personnel decontamination, monitoring of workers for heat or cold stress, distribution of safety equipment, and conformance with all other procedures established by the HASP.

2.4 AIR MONITORING SPECIALIST

The Air Monitoring Specialist, if needed, will perform all supplemental air monitoring necessary to support specific activities as required by the HASP. These activities will include operations where special problems exist, extensive instrumentation is required, or particularly complex operations are planned. He will provide consultation to the project team where such services are necessary to ensure that appropriate monitoring, calibration, and maintenance procedures are employed. This will include specification as to type of instrumentation and procedures to be employed to make sure of its proper use.

SECTION III: SITE HISTORY AND PHYSICAL DESCRIPTION

3.1 LOCATION

The site is located in Upper Macungie Township, Lehigh County, Pennsylvania. The site is situated within a rural-suburban area of north-central Lehigh County. Population distribution within 3 miles of the site is scattered.

3.2 DESCRIPTION

The Hebelka Site consists of an area of approximately 15 acres. It is bordered on the south by Route 100, on the east by Tercha Road (TR 588), on the north by a cornfield, and on the west by Township roads (dirt construction). The site terrain angles into a shallow ravine in the east-central portion of the site. The site is sloped downwards toward the southern border.

Currently on site, there is a large quantity of scrap automobiles and parts, approximately 40 underground storage tanks (UST), piles of broken battery casings, and other miscellaneous refuse.

3.3 HISTORY

According to the Site Inspection Report prepared by NUS in November, 1985, the history of the Hebelka property involved its use as an automobile and scrap metal "junk yard," for the past 20 years. At some point within the past 10 to 15 years approximately 750 to 1,000 cubic yards of battery casings were dumped on site. The origin of these casings has not been positively determined.

A walk-through reconnaissance was performed by NUS in April, 1987. The only monitoring instrument readings above area background levels were noted in the UST. These were obtained by inserting an HNU PID extension probe into the tanks. Readings noted ranged from 2 to 150 ppm. No readings above background were noted in breathing zone areas on site.

SECTION IV: SITE RELATED INCIDENTS, COMPLAINTS, AND ACTIONS

No previous site activities in these areas.

SECTION V: WASTE DESCRIPTION/CHARACTERIZATION

5.1 The following information is presented in order to identify the types of materials that may be encountered at the Hebelka Site. The detailed information on these materials was obtained from NUS Hebelka Preliminary Risk Assessment Report.

5.2 CERCLA HAZARD RATING DEFINITIONS

Substance	Toxicity	Ignitability	Reactivity	Persistence
Lead	2	2	0	will slowly be precipitated by natural carbonates
Mercury	2	0	0	moderate
Zinc	0	1	1	moderate
Chromium	0*	2	0	may last in insoluble forms indefinitely

* Except in hexavalent form in which it is extremely toxic.

5.3 WASTE TYPES: Liquid X Solid X Gas ____ Sludge X Semi-solid X Other ____

5.4 CHARACTERISTICS: Corrosive X Flammable ____ Explosive ____ Volatile ____ Radioactive ____ Inert ____ Other ____

5.5 CONTAINMENT: Pit ____ Pond ____ Lagoon ____ Lake ____ Process Vessel ____ Tank ____ Piping ____ Drum ____ Tank Car ____ Lab Pack ____ Other X

5.6 DESCRIPTION OF "OTHER" FOUND IN 5.3, 5.4, AND 5.5.

Battery piles - Piles of crushed and broken battery casings. This may involve some small amounts of residual battery fluid wastes. no intact battery casings observed.

SECTION VI: HAZARD ASSESSMENT

The potential hazard levels for the tasks to be conducted on the Hebelka Site, from an onsite worker potential, range from low to moderate depending on the activity being performed. All surface activities have been designated as having a minimum worker hazard level. Subsurface activities present a marginally higher risk potential.

Contaminants identified on site consist of four heavy metal substances. These are as follows:

Contaminant	Medium	Detected Concentration
Lead	Soil	7240 mg/kg
Mercury	Groundwater	0.5 µg/l
	Surface Water	Below water quality standards
Zinc	Groundwater	194 µg/l
	Surface Water	Below water quality standards
Chromium	Sediments of Iron Run Creek	6800 mg/kg

The presence of mercury and zinc, at this time, present a minimum health and safety concern. This is due to their detected concentrations, all of which were below specific water quality, regulatory, and guidance criteria. Chromium is also of minor concern since it has not been detected onsite. Rather, it has only been detected in the sediments of Iron Run Creek which is south of the site. Therefore, the principle contaminant of concern is lead.

LEAD

Lead and its compounds present primarily a chronic health hazard risk since they are all cumulative poisons. Lead presents a moderate flammability concern when in the form of dust exposed to heat or flame. When headed, lead emits highly toxic fumes. Lead has not demonstrated any carcinogenic characteristics. However, it is a potential mutagen and a teratogen.

Lead compounds can be absorbed through intact skin. Inhalation, and ingestion are also exposure routes. Exposure symptoms include anorexia, vimoting, malaise and convulsions. May also leave permanent brain damage. Lead is recognized as being an acute inhalative hazard and a chronic ingestive and inhalative hazard.

Control efforts: Control dust and/or use Level C (filter) respiratory protection.

X-RAY FLUORESENCE

The x-ray fluoresence tests involve using an instrument containing a gamma radiation source. Monitoring instrumentation

shall be concurrently utilized to detect any leaks that may occur during these activities.

DRUM SAMPLING

Drum sampling operations present distinct, separate levels of hazard potentials. Past visual observations of 55-gallon drums on site involved containers with hazardous labels and containers that presented evidence that they had been subjected to internal pressure (bulging at the ends). However, no sealed drums were noted. The observed drums were open and empty. Monitoring instrument screening of randomly-selected drums did not involve any elevated readings.

This task is to involve inspecting site drums, and if any are found to be open and contain substances, they will be sampled. Chemical hazard potentials during such sampling efforts could be significant due to the unknown qualities of the substance(s). Therefore, these efforts will require continuous air monitoring throughout drum sampling operations. No sealed drums shall be opened without first consulting the project HSO.

Physical hazard potentials presented by drum sampling is directed at the potential for falls, or being struck by dislodged drums. These containers are haphazardly piled on the site and access to them may be difficult. Proper manual material handling tasks will be followed (proper lifting techniques), steel toe and shank workboots, cotton outer gloves and hard hats (at the HSO's discretion) will be used to minimize these hazard potentials.

SECTION VII: TRAINING

7.0 BASIC TRAINING REQUIRED

Completion of the REM III Fundamental Health and Safety Training or the approved equivalent is required for all employees who will perform work in areas where the potential for a toxic exposure exists. Training or training and site experience must also conform to the requirements of 29 CFR 1910.120.

7.1 ADVANCED TRAINING

Advanced Training as necessary will be provided to any personnel who will be expected to perform site work utilizing Level A protection or other specialized operation to be undertaken at a site. An Emergency Response Team shall be formed and trained to carry out Level A work.

7.2 SITE-SPECIFIC TRAINING

Training will be provided that will specifically address the activities, procedures, monitoring, and equipment for the site operations. It will include site and facility layout, hazards, and emergency services at the site, and will detail all provisions contained within this HASP. This training will also allow field workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity.

7.3 SAFETY BRIEFINGS

Project personnel will be given briefings by the HSO or Assistant HSO on a daily or as-needed basis to further assist site personnel in conducting their activities safely. It will be provided when new operations are to be conducted, changes in work practices must be implemented due to new information made available, or if site or environmental conditions change. Briefings will also be given to facilitate conformance with prescribed safety practices when performance deficiencies are identified during routine daily activities or as a result of safety audits.

7.4 FIRST AID AND CPR

The CHSS will identify those individuals requiring this training in order to ensure emergency treatment is available at field activities. It is expected that the selected number of field workers will have First Aid training and several members of the field team will have CPR training. These courses will be consistent with the requirements of the American Red Cross Association.

7.5 OTHER TRAINING

No further training for this site is required at this time.

SECTION VIII: ZONES, PROTECTION, AND COMMUNICATION

8.1 SITE ZONES

(Description and attach figure)

There are two battery piles located onsite, one on the eastern portion and one on the mid-western section. These areas, along with the areas in the proximity of the discarded USTs and drums, are designated as exclusion zone areas. The rest of the site has not been suspected of containing any contaminants. However, the entire site presents a possible physical hazard potential, and some precautions, restrictions, and requirements shall be observed. Decontamination areas (partial) shall be designated by the Site Safety Officer in the proximities of the known/suspected contaminated areas. Support facilities shall be placed offsite, near the Hebelka House. These areas are shown on the attached Conceptual Drawing of the Hebelka Site.

8.2 PERSONAL PROTECTION

8.2.1 General

The level of protection to be worn by field personnel will be defined and controlled by the HSO with approval of the CHSS. Basic levels of protection for general operations are outlined in the REM III Personal Protection Guidelines HS-2. Where more than one hazard area is indicated, further definition shall be provided by review of site hazards, conditions, and proposed operational requirements and by monitoring at the particular operation being conducted. Protection may be upgraded or downgraded, as appropriate, only after the HSO receives authorization from the Hebelka Site CHSS.

Task	Level of Protection
Sample battery casings	D
Soil borings and sampling	D
Surface sampling	D
X-ray fluoresence	D
Surface water and sediment samples	D
Monitoring well installation and groundwater sampling	D
Slug testing	D
Survey of water surface elevations	D
Drum Sampling	D

8.2.2 Initial Levels of Protection

Initial levels of protection will be employed during the performance of the Initial Reconnaissance. The recon team is anticipated to consist of a minimum number of personnel. The HSO, the Site Manager, or Site Project Engineer, and other appropriate support personnel may be required. The team will enter hazardous areas and spill locations in conservatively-specified protection with appropriate monitoring equipment. The Initial Reconnaissance will allow for the selection of appropriate protection levels for planned operations, decontamination procedures, site layout, sampling strategies, and general safety planning. It should be noted that this HASP allows for upgrading or downgrading of protection levels to conservatively preclude any potential for contamination while not sacrificing protection or efficiency. During the Initial Reconnaissance, the team will perform various monitoring techniques to identify the presence of contaminants as well as assessing the integrity of the site in consideration of safety for the proposed site investigation, sampling, or construction operations. Careful attention shall be paid to conform to requirements of 29 CFR 1910.120(c) relating to Site Characterization and Analysis.

(Planned Protection and Justification)

A. Dermal Protection - Tyvek coveralls, bulldog boot covers, surgeon's inner gloves, cotton work outer gloves.

   During activities presenting potentials for contact with contaminated liquids, these requirements will change to include Tyvek PE or PVC coveralls, nitrile outer gloves (instead of cotton work gloves) and eye/splash protection.

B. Respiratory Protection - All activities anticipated to be conducted in Level D. If the presence of airborne dust particulates exists, either control dust emissions by wetting the area down, or continue work in Level C, full-face respiratory protection and tape-up all joints. If monitoring instrument readings exceed background, personnel are to retreat to a safe atmosphere. If readings do not subside, contact Pittsburgh Health and Safety (NUS).

C. Other PPE - For all site activities: steel toe and shank work boots, hard hats (at HSO discretion), NUS personnel shall wear TLD badges.

8.2.3 Safety Equipment

Basic emergency and first aid equipment will be available at the Support Zone and/or the CRC, as appropriate. This shall include HASP-specified communications, first aid kit, emergency eyewash or emergency shower or drench system, fire extinguisher, and other safety-related equipment. Also located in the Support Zone or the CRZ will be a backup field team when required to support downrange field teams. The Command Post will be manned during all times when teams are downrange, communications will be maintained, and personnel will be available to assist in decontamination procedures for personnel and equipment. Other safety equipment will be located at the site of specific operations, e.g., a drilling rig, as appropriate.
(List equipment to be provided.)

Above mentioned items plus items of monitoring instruments as addressed in Section IX.

8.3 COMMUNICATIONS

- Walkie-Talkies - Hand held units shall be utilized as much as possible by field teams for communication between downrange operations and the Command Post base-station.

- Telephones - A telephone may be located in the Command Post trailer in the Support Zone for communication with emergency support services/facilities. If not appropriate for a particular project, the nearest public phones shall be identified.

- Air Horns - These will be carried by downrange field teams and also will be maintained at the Support Zone for announcing emergency evacuation procedures (see Section XIV) and backup for other forms of communications.

- Hand signals - To be employed by downrange field teams along with utilizing the buddy system. These signals are also very important when working with heavy equipment. They shall be known by the entire field team before operations commence and covered during site-specific training.

Other communications include: None at this time.

SECTION IX: MONITORING PROCEDURES

9.1 MONITORING DURING SITE OPERATIONS

All site environmental monitoring should be accompanied by meteorological monitoring of appropriate climatic conditions.

9.1.1 Drilling Operations - Monitoring will be performed continuously by the HSO during the period of work. A photoionization detector (PID) and/or flame ionization detector (FID) equipped organic vapor meter will be utilized to monitor the breathing zone, the borehole, and all geological samples upon their retrieval. Drill cuttings will also be monitored. A combustible gas indicator (CGI) with oxygen alarm will be used to monitor the borehole for the presence of combustible gases. Similar monitoring of any fluids produced during well development will also be conducted.

9.1.2 Excavation Operations - Monitoring will be performed continuously during all excavation and sampling operations. A PID and/or FID organic vapor meter will be utilized to monitor the breathing zone, the excavated area, any any material taken from an excavation. Monitoring of the excavation with a CGI and oxygen meter will be conducted.

9.1.3 Other Operations - A radiation survey meter shall be used during x-ray fluoroscopy activities. Colorimetric tubes may be used at the discretion of the HSO.

9.2 PERSONNEL MONITORING PROCEDURES

During site operations, personnel monitoring may be performed to establish and document the environment in which field teams have been working. This monitoring will be utilized to comply with the requirements of the REM III Health and Safety Program and with OSHA regulations. Use of cartridge respirators shall be monitored to comply with OSHA and to document compliance with acceptable exposure criteria.

(Planned personnel monitoring)

Primary inhalation concern is with contaminant-ladened dust particles. If Level C protection is used, the HSO shall determine the specific cartridge(s), and the limitations of those devices.

9.3 MEDICAL SURVEILLANCE PROCEDURES FOR EVIDENCE OF PERSONAL EXPOSURE

All REM III personnel and subcontractors who will be performing field work at the Hebelka Site will be required to have passed a REM III's medical surveillance examination or equivalent. A release for work will be confirmed by the NUS Corporation CHSS before an employee can begin hazardous activities. The exam will be taken annually at a minimum and upon termination of REM III work. Additional medical testing may be required by the NUS Corporation CHSS in consultation with the company physician and the HSO if an overt exposure or accident occurs, or if other site conditions warrant further medical surveillance. The tests that will be employed for a specific site are to be addressed here.

Due to the contaminants of concern, medical examinations shall include blood screenng and urinalysis for heavy metals.

SECTION X: SAFETY CONSIDERATIONS FOR SITE OPERATIONS

10.1 GENERAL

All field sampling will be performed under the level of protection described in Section VIII. In this section all non-monitoring, safety-related procedures will be described for each site operation. Such procedures may include special additional clothing to be worn, respirator specification and modification, special safety equipment such as harnesses and non-sparking tools, need for backup teams, etc. Special considerations should also address provision for heat and cold stress, presence of water, sewer and electrical lines, underground conduits, sampling handling requirements, etc.
(See discussion in HS-1.01)

Ambient weather conditions shall be monitored by the HSO in respect to presenting physiological stress on site personnel. This shall be specifically noted when items of air-circulating restrictive PPE are used.

Protective clothing to be used in conductance of site tasks is as previously presented. Any modifications of these requirements shall be only at the approval of the site HSO.

SECTION XI: DECONTAMINATION PROCEDURES

All personnel and equipment exiting the exclusion zone shall be thoroughly decontaminated. Figures should be used to illustrate the decon procedures for personnel and portable equipment for the various protection levels indicated in Section VIII. Heavy equipment, if utilized for operations where it may be contaminated, will have prescribed decontamination procedures to prevent hazardous materials from leaving the site. They may include excavating a shallow pit to collect waste cleaning solution and screens, set up if required, to prevent the spread of air contaminanats. The pit will be cleaned, wastes disposed of, filled in, and covered with clean soil when its use is terminated. The surface area of the pit shall be sufficient to accommodate the washwater generated by the largest piece of machinery. Equipment needed may include a steam generator with high pressure water, empty containers, screens, screen support structures, and shovels. (Describe layout and include figure)

1. Wash and rinse outer boots and gloves (if nitrile is worn)
2. Remove outer gloves - dispose
3. Remove coverals - dispose
4. Remove boot covers
5. Remove respirator (if worn)
6. Remove inner gloves (dispose)

SECTION XII: ADDITIONAL WORK PRACTICES

Specific concerns for each individual site task are included here.

A radiation survey meter shall be used during x-ray fluoroscopy activities to monitor for gamma radiation leaks emitted from the instrument.

SECTION XIII: DISPOSAL PROCEDURES

All discarded materials, waste materials, or other objects shall be handled in such a way as to preclude the potential for spreading contamination, creating a sanitary hazard, or causing litter to be left onsite. All potentially contaminated materials, e.g., clothing, gloves, etc., will be bagged or drummed as necessary and segregated for disposal. All contaminated waste materials shall be disposed of as required by the provisions included in the contract and consistent with REM III and regulatory provisions. All non-contaminated materials shall be collected and bagged for appropriate disposal as normal domestic wastes. (Describe planned disposal procedures)

At the discretion of EPA, to be determined by the NUS Project Manager.

SECTION XIV: EMERGENCY PLAN

14.0 As a result of the hazards on site, and the conditions under which operations are conducted, the possibility of an emergency situation developing in very real. An emergency plan is required to be available for use at all REM III Sites.

Various individual site characteristics will determine preliminary action to be taken to assure that this emergency plan may be successfully implemented in the event of a site emergency. Careful consideration must be given to the proximity of neighborhood housing or places of employment and to the relative possibility of site fire, explosion or release of vapors or gases which will impinge on these neighbors. If there is even a remote possibility of any of these occurrences, the Site Manager must coordinate the neighborhood interface with his Regional Manager, the Community Relations Coordinator, the CHSS and the HSM.

Careful evaluation of the above factors have been made by the Site Manager. Based on this analysis, the following action will be taken prior to site activity.

Emergency routes of egress shall be designated and communicated to site personnel, along with safe places of refuge, emergency communications, emergency decontamination, emergency first aid response.

14.1 THE SITE EMERGENCY COORDINATOR IS:

Field Operations Leader	Mr. Stan Conti
HSO (Alternate)	Mr. M. M. Soltis
	(Mr. K. A. Kenney)

The emergency coordinator shall make contact with local fire, police and other emergency units prior to beginning work on site. In these contacts the emergency coordinator will inform the emergency units about the nature and duration of work expected on the site and the type of contaminants and possible health or safety effects of emergencies involving these contaminants. Also at this time the emergency coordinator and the emergency response units shall make arrangements to handle any emergencies that might be anticipated.

Contacts have been (will be) made with the following individuals:

Name	Title	Jurisdiction

The emergency coordinator shall implement the contingency plan whenever conditions at the site warrant such action. The coordinator will be responsible for assuring the evacuation, emergency treatment, emergency transport of site personnel as necessary, and notification of emergency response units and the appropriate Management staff.

14.2 EVACUATION

In the event of an emergency situation, such as fire, explosion, significant release of toxic gases, etc.; an air horn or other appropriate device will be sounded for approximately 10 seconds indicating the initiation of evacuation procedures. All personnel in both the restricted and nonrestricted areas will evacuate and assemble near the Support Zone or other safe area as identified by the emergency plan. The location shall be upwind of the site as determined by the wind direction indicator. For efficient and safe site evacuation and assessment of the emergency situation, the Emergency Coordinator will have authority to initiate proper action if outside services are required. Under no circumstances will incoming personnel or visitors be allowed to proceed into the area once the emergency signal has been given. The HSO or Assistant HSO must see that access for emergency equipment is provided and that all combustion apparatus has been shut down once the alarm has been sounded. Once the safety of all personnel is established the Allentown Fire Dept. and other emergency response groups will be notified by telephone of the emergency. The Site evacuation plan shall be rehearsed regularly as part of the overall training program for site operations.

14.3 POTENTIAL OR ACTUAL FIRE OR EXPLOSION

Immediate evacuation of site (air horn will sound at 10 second intervals). Notify local fire and police department, and other appropriate emergency response groups if LEL values are above 25 percent in the work zone or if an actual fire or explosion has taken place.

Fire Department - 911
Police Department - (215) 861-2026

14.4 ENVIRONMENTAL INCIDENT (RELEASE OR SPREAD OF CONTAMINATION)

Control or stop spread of contamination if possible. The emergency coordinator should instruct a person on site to immediately contact local authorities to inform them of the possible or immediate need for neighborhood evacuation. If a significant release has occurred, the National Response Center should then be contacted. This group will alert National or Regional Response Teams as necessary. Following these emergency calls, the reporting individual should then notify the SM, CHSS, RM, and HSM.

		PHONE
	Fire Department	911
Allentown	Police Department	(215) 861-2026
	National Response Center	(800) 424-8802
G. Latulippe	SM	(412) 788-1080
M. Soltis	CHSS	(412) 788-1080
	RM	
	HSM	(703) 558-7506

14.5 PERSONNEL INJURY

Emergency first aid shall be applied onsite as deemed necessary. Then decontamination and transport the individual to nearest medical facility if needed. The HSO will supply medical data sheets to appropriate medical personnel and complete the incident report designated in HS-1.12.

Hospital	-	(215) 691-4141
Rescue	-	(215) 437-5252

The ambulance/rescue squad shall be contacted for transport as necessary in an emergency. However, since some situations may require transport of an injured party by other means, a hospital route must be firmly identified. During the initial reconnaissance a primary hospital and back-up facility shall be located and route located to and from site with details of the route delineated. A hospital route location map shall also be provided in the HASP as well as conspicuously posted on site.

Primary Hospital Route:

Take old Route 22 to Route 222 and take this to Cedarcrest Blvd. (see Perkins Restaurant on right) make a left here and go to Route 22-E. Follow this to Route 378-S. This will bring you to S. Bethlehem as you go over a bridge make right onto West 3rd Street. Follow this up hill and hospital will be on the right.

Backup Hospital Route:

Take Route 22E until you see a sign that says Quakertown South. Take this all the way to Cedarcrest Blvd. Make a right at Cedarcrest and hospital is up the street.

14.6 OVERT PERSONNEL EXPOSURE

Include generic first air procedures in this section. Typical response includes:

Skin Contact:	Use copious amounts of soap and water. Wash/rinse affected area thoroughly, then provide appropriate medical attention. Eyewash and emergency shower or drench system will be provided onsite at the CRZ and/or Support Zone as appropriate. Eyes should be rinsed for 15 minutes upon chemical contamination.
Inhalation:	Move to fresh air and/or, if necessary decon/transport to hospital.
Ingestion:	Decontamination and transport to emergency medical facility.
Puncture wound or laceration:	Decontaminate and transport to emergency medical facility. HSO will provide medical data sheets to medical personnel as requested (see Section XVI).

Hospital - (215) 691-4141
Rescue - (215) 434-5252

14.7 ADVERSE WEATHER CONDITIONS

In the event of adverse weather conditions, the HSO will determine if work can continue without sacrificing the health and safety of all field workers. Some of the items to be considered prior to determining if work should continue are:

- Potential for heat stress and heat-related injuries
- Potential for cold stress and cold-related injuries
- Treacherous weather-related working conditions
- Limited visibility
- Potential for electrical storms

SECTION XV: AUTHORIZATIONS

Personnel authorized to enter the Hebelka Site while operations are being conducted must be certified by the NUS Corporation CHSS. Authorization will involve completion of appropriate training courses and medical examination requirements as required by OSHA 29 CFR 1910.10 and review and sign-off of this HASP. All personnel must utilize the buddy system or trained escort, and check in with the Field Team Leader at the Command Post.

1. NUS Corporation Personnel Authorized to Perform Work Onsite:

1.		11.	
2.		12.	
3.		13.	
4.		14.	
5.		15.	
6.		16.	
7.		17.	
8.		18.	
9.		19.	
10.		20.	

2. Other Personnel Authorized to Enter Site:

1.	ZPMO Personnel	6.	
2.	REM III Regional Personnel	7.	
3.	EPA Personnel	8.	
4.	State Environmental Personnel	9.	
5.	Police, Fire, Emergency Personnel	10.	

SECTION XVI: MEDICAL DATA SHEET

This brief Medical Data Sheet will be completed by all onsite personnel and will be kept in the Command Post during the conduct of site operations. Completion is required in addition to compliance with the Medical Surveillance Program requirements described in the REM III Program Health and Safety Plan. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

Project Hebelka _____

Name _____ Home Telephone _____

Address _____

Age _____ Height _____ Weight _____

Name of Next of Kin _____

Drug or other Allergies _____

Particular Sensitivities _____

Do you wear contacts? _____

Provide a checklist of Previous Illnesses or Exposures to Hazardous Chemicals _____

_____

_____

What medications are your presently using? _____

_____

_____

Do you have any medical restrictions? _____

_____

Name, Address, and phone number of personal physician:

_____

_____

_____

_____

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Do you wear contacts? _____

Provide a checklist of Previous Illnesses or Exposures to Hazardous Chemicals _____

_____

_____

What medications are your presently using? _____

_____

_____

Do you have any medical restrictions? _____

_____

Name, Address, and phone number of personal physician:

_____

_____

_____

_____

SECTION XVII: FIELD TEAM REVIEW

Each field team member shall sign this section after site-specific training is completed and before being permitted to work on site.

I have read and understand this Site-Specific Health and Safety Plan. I will comply with the provisions contained herein.

Site/Project: Hebelka

Name Printed	Signature	Date

SECTION XVIII: APPROVALS

By their signature the undersigned certify that this HASP is approved and will be utilized at the Hebelka Site.

Original Signed by K. Kenney Health and Safety Officer	05/15/87 Date
Original Signed by George J. Latulippe Site Manager	05/15/87 Date
Original Signed by Gary F. Smith Company Health and Safety Supervisor	05/15/87 Date
Original Signed by Arthur K. Bomberger Company Designated Lead	06/10/87 Date
Original Signed by John A. Janous REM III Health and Safety Manager	06/08/87 Date