451-12

DEPARTMENT OF THE ARMY
HUNTSVILLE DIVISION, CORPS OF ENGINEERS
P.O. BOX 1600
HUNTSVILLE, ALABAMA 35807-4301

REPLY TO
ATTENTION OF

Sent 9/6 KVE
our comments attached

CEHND-ED-PM (200-1a)

27 August 1990

MEMORANDUM FOR Commander, Seneca Army Depot, ATTN: SDSSE-HE (Battaglia), Romulus, NY 14541

Karen File RI/FS SOWs

SUBJECT: Army Installation Restoration Program, Seneca Army Depot, NY, Remedial Investigation/Feasibility Study at Open Burning Grounds, Final Scope of Work (SOW) for Work Plan Preparation, Project No. SEAD-0001

1. Reference memorandum, SDSSE-HE, 21 August 1990, subject: SOW for OB/OD Grounds, RI/FS.

2. Enclosed are our responses to your review comments contained in the referenced memorandum (encl 1). Also, a copy of the final SOW for the subject project is enclosed for your information (encl 2).

3. Point of contact is Mr. Walter Perro, Project Manager, at AUTOVON 788-5142 or commercial 205-895-5142.

FOR THE COMMANDER:

for H. O. EVERITT
Chief, Engineering Division

2 Encls

CF (w/encl 2):
Commander, U.S. Army Engineer Toxic and Hazardous Materials Agency, ATTN: CETHA-IR-D (K. Gibson), Aberdeen Proving Ground, MD 21010-5401
Commander, U.S. Army Engineer Division, Missouri River, ATTN: CEMRD-ED-EA (Plack), P.O. Box 103 Downtown Station, Omaha, NE 68101-0103
Commander, U.S. Army Environmental Hygiene Agency, ATTN: HSHB-ME-SR (Hoddinott), Aberdeen Proving Ground, MD 21010-5422
Commander, U.S. Army Depot Systems Command, ATTN: AMSDS-EN-FD (Tim Toplisek), Chambersburg, PA 17201
Commander, U.S. Army Materiel Command, ATTN: AMCEN-A, 5001 Eisenhower Avenue, Alexandria, VA 22333-0001
Commander, U.S. Army Engineer Division, North Atlantic, ATTN: CENAD-CO-EP, 90 Church Street, New York, NY 10007-9998
Commander, U.S. Army Corps of Engineers, ATTN: CEMP-RI, 20 Massachusetts Avenue, NW., Room 2209, Washington, DC 20314

2 CETHA-IR-D SOWs

No Tasker
No Suspense

HND Form 7

AMC - Seneca AD OB Ground RI/FS
Response to SDSSE-HE Comments
22 August 1990
Healy

1. Comment No. 1 — Suggested change has been made.
2. Comment No. 2 — Suggested change has been made.
3. Comment No. 3 — Required presentation has been added to the schedule.
4. Comment No. 4 — Although the EPA, Region II, has referred in the past to a guidance manual on preparing the "Project Scoping Document" and although they refer to said document as a stand-alone document, our references do not support such ideas. The RI/FS Guidance Manual discusses project planning/scoping and work plans as part of the RI/FS Project Plans. Although the product of Task 2 is presented as a separate document in the SOW, this was done to appease the EPA. The references made in paragraphs 3.2.2 and 3.2.3 are correct in the context written. However, this apparent discrepancy should be resolved with Ms. Martinez.
5. Comment No. 5 — Noted. This type of comment is considered a "heads up" for now and would better be made following review of specific submittal containing the ARAR's, if in fact, the AE fails to include the RCRA reference. It is not our intention to dictate what ARAR's shall be considered, in a Statement of Work.
6. Comment No. 6 — Suggestion incorporated.
7. Comment No. 7 — Concur. A new Task has been added to the field work expected in order to fulfill this requirement.
8. Comment No. 8 — The generic schedule has been incorporated. Keep in mind that, although relative milestones will be the same, the overall SOW schedule must be longer to account for the AE's time to prepare the Draft Work Plans. In regard to

(encl 1)

THE "TURNAROUND TIMES", THE RELATIVE MILESTONES ARE NOT EXACTLY THE SAME... THE AE'S RESPONSES WILL BE REQUIRED IN 35 DAYS (SOW SCHEDULE) WHICH WILL GIVE SEAD 10 DAY. TO FORWARD SUBMITTALS TO THE REGULATORS.

9. COMMENT No. 9 CONCUR. CHANGE MADE. THE TABLE'S TITLE HAS BEEN CHANGED TO "ALL SUBMITTALS".

10. COMMENT No. 10 PARAGRAPH HAS BEEN CHANGED TO INCLUDE A REFERENCE TO POTENTIAL BURIED BRASS.

11. COMMENT No. 11 TRUE, BUT IT IS THE ONE WE JUDGE BY.

12. COMMENT No. 12 TEXT CHANGED TO REQUIRE PROTECTION OF POSTS AND MONUMENTS FROM DAMAGE DUE TO EITHER NOTED SOURCE.

13. COMMENT No. 13 REFERENCE ADDED.

24 Aug 90

ANNEX A

REMEDIAL INVESTIGATIONS AND FEASIBILITY STUDIES
AT THE OPEN BURNING GROUNDS
PHASE I - PREPARATION OF WORK PLANS
SENECA ARMY DEPOT, ROMULUS, NEW YORK

1.0 GENERAL STATEMENT OF SERVICES

1.1 Background. As part of its continuing program of evaluating its hazardous waste management practices, the Army will perform Remedial Investigations/Feasibility Studies (RI/FS) at the Open Burning (OB) Grounds at Seneca Army Depot (SEAD). The RI/FS investigations are to be conducted to determine the magnitude of environmental contamination and appropriate remedial actions. The US Army Corps of Engineers, Huntsville Division, on behalf of SEAD, will contract for the required work.

1.2 Location. Seneca Army Depot is a US Army facility located in Seneca County, New York. SEAD occupies approximately 10,700 acres. It is bounded on the west by State Route 96A and on the east by State Route 96. The cities of Geneva and Rochester are located to the northwest (14 and 50 miles, respectively); Syracuse is 53 miles to the northeast and Ithaca is 31 miles to the south. The surrounding area is generally used for farming.

1.3 Regulatory Status. Seneca Army Depot was proposed for the Federal Facilities National Priorities List on 13 July 1989. Consequently, all work to be performed under this contract shall be performed according to CERCLA guidance as put forth in the Interim Final "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA", dated October 1988 (Reference 11.20). Additionally, all work performed as part of this contract shall be performed according to the Interagency Agreement negotiated between Seneca Army Depot, the New York State Department of Environmental Conservation (NYSDEC) and the U.S. Environmental Protection Agency (USEPA), Region II (Reference 11.25).

1.4 Previous Investigations. Previous investigations have been performed at various SEAD units. An "Installation Assessment and Update" (USATHAMA Reports No. 157 (1980) and 157(U) (1987), respectively) were conducted by the U.S. Army Toxic and Hazardous Materials Agency. The purpose of the

(encl. 2)

assessments was to identify potentially contaminated areas at the Depot. The U.S. Army Environmental Hygiene Agency's Groundwater Contamination Survey No. 38-26-0868-88, "Evaluation of Solid Waste Management Units, Seneca Army Depot" (Reference 11.19) identifies and describes all solid waste management units (SWMU's) at SEAD. In addition, a Criteria Development study (Reference 11.22) has been performed and closure plans were being considered for the burning pads (SEAD-23). However, closure is presently not being considered pending the outcome of the RI/FS for this operable unit. A complete list of previous investigations is presented as References in Section 11.0.

1.5 Units to be Investigated Under this Contract. The RI/FS investigations will be focused on the open burning grounds; specifically, the burning pads and adjacent ground area. The approximate area of concern is 30 acres.

1.6 Security Requirements. Compliance with SEAD security requirements is mandated. These requirements are presented in Section 9.0.

1.7 Contaminants of Concern. Since 1941, propellant, explosive and pyrotechnic (PEP) wastes have been disposed of at the OB grounds. The contaminants of concern in this investigation are heavy metals and explosives.

2.0 OBJECTIVE. The objective of this delivery order Statement of Work (SOW) is to develop a complete Work Plan for RI/FS investigations to be performed at the Open Burning grounds. This Work Plan shall be developed as defined by Office of Solid Waste and Emergency Response Directive 9355, beginning with the RI/FS scoping process and ending with a regulatorally approved Work Plan at the identified site. Additionally, this Work Plan shall maintain the basic format of the Work Plan developed for the SEAD Ash Landfill RI/FS which is presently being finalized following regulatory review (Reference 11.23).

3.0 DETAILED DESCRIPTION OF SERVICES

3.1 General Requirements. All work performed by the AE shall be designed and implemented in a manner which complements earlier investigations and shall conform to this SOW. The AE, through the Work Plans, shall present a complete description of the RI/FS process as applied to this site. All work shall be performed under the general supervision of both a Professional Engineer registered in the State of New York and a certified geologist.

3.2 RI/FS Work Plan Preparation. The AE shall prepare two documents; a RI/FS Project Scoping Document and a RI/FS Work Plan Document which are intended to do the following: (1) to provide a consolidated report on site history, current site activities, and resulting environmental impacts; (2) to familiarize personnel who will be working on the project with site conditions; and (3) to provide project plans and proposed tasks by which RI/FS activities shall be conducted. The documents shall be prepared as follows:

3.2.1 (Task A-1) Site Visit and Review Existing Data. The AE shall perform a visual inspection of the site, review the records, reports and other data provided by the Contracting Officer and the facility, or made available to the AE from sources such as public records, the USEPA, the State Regulators, the State Geological Survey, or from interviews with local residents and officials who have knowledge of past site activities.

3.2.2 (Task A-2) RI/FS Project Scoping Document. This Task corresponds to a portion of EPA Task 1 in Appendix B of the RI/FS Guidance Manual. The AE shall prepare and submit a RI/FS Project Scoping Document which provides a summary of site conditions, gives an overview of the RI/FS process and describes how the process will be implemented at the OB Grounds. The RI/FS Project Scoping Process shall contain, as a minimum, the following elements:

3.2.2.1 Physical Characteristics of the Site. The AE shall provide a site description which includes location, ownership, topography, geology, hydrology, land use, waste type, estimates of waste volume, synopsis of findings and results of previous investigations, and other pertinent details. The description shall also include historical events of concern such as chemical storage and disposal practices, results and findings of previous studies and a "quality assurance" evaluation of the existing data in order to estimate its reliability.

3.2.2.2 Conceptual Site Model. From the analysis of the data reviewed, the AE shall make a preliminary determination of the physical characteristics of the site and prepare a Conceptual Site Model of the known contaminants. The description is to give an overview of site conditions, probable and potential contaminants of concern, severity of contamination, and the potential impacts on the environment. As a minimum the Conceptual Site Model shall include potential routes of migration, potential receptors and anticipated impacts.

3.2.2.3 Develop and Evaluate Preliminary Remedial Action Objectives and Alternatives. The AE shall present an overview of the remedial actions that could be reasonably used to mitigate adverse site conditions. The choice of alternatives shall be based on proven effectiveness of the technology and the anticipated cost of implementation. This is not meant to be a detailed investigation of all potentially available remedial technology.

3.2.2.4 Preliminary Identification of ARAR's and TBC Requirements. The AE shall make a preliminary determination of potential contaminant, location, and action specific ARAR's based upon an evaluation of existing site data.

3.2.2.5 Develop Data Needs and Data Quality Objectives. The AE shall evaluate the existing data and determine the additional data necessary to characterize the site, complete the conceptual site model, better define the ARAR's, and narrow the range of preliminary identified remedial alternatives. The AE shall consider the intended uses of existing data as well as data to be collected under this contract and determine the type, quantity, and quality of additional data needed for each site.

3.2.3 (Task A-3) RI/FS Work Plan. This Task corresponds to a portion of EPA Task 1 in Appendix B of the RI/FS Guidance Manual. The AE shall prepare an RI/FS Work Plan Document, the basis and format of which are presented in Reference 11.23. Quality Control/Quality Assurance procedures, Standard Operating Procedures, methods, equipment, and specific personnel (along with their qualifications) that an AE would need to use to accomplish the RI/FS shall be identified and discussed at appropriate locations within the plan. As a minimum the RI/FS Work Plan shall include the following:

3.2.3.1 Health and Safety Program Plan (HSP). The AE shall develop and maintain a Health and Safety Program Plan in compliance with the requirements of OSHA standard 29 CFR 1910.120 (b)(1) through (b)(4). Written certification that the HSP has been developed and implemented shall be submitted to the Contracting Officer and the plan shall be made available upon request.

3.2.3.1.1 The AE shall develop a Site-Specific Safety and Health Plan (SSHP), as part of the HSP, in accordance with the requirements of Section 5.0 of this SOW and similar to Appendix B of reference 11.23. The SSHP shall be submitted to the Contracting Officer for review and approval prior to commencing any field work.

3.2.3.2 Chemical Data Acquisition Plan (CDAP). The AE shall prepare and submit a Chemical Data Acquisition Plan (CDAP) according to the requirements of Section 6 of this SOW and similar to Appendix C of reference 11.23. This portion of the RI/FS Work Plan shall also describe in detail, the following: 1) Site Background; 2) Quality control and quality assurance procedures to be exercised including organization and responsibilities; 3) QA objectives; 4) Sampling procedures; 5) Sample custody; 6) Calibration procedures; 7) Analytical procedures; 8) Data reduction, validation and reporting; 9) Internal quality control; 10) Performance and system audits; 11) Preventive maintenance; 12) Data assessment procedures; 13) Corrective actions; and, 14) Quality assurance reports.

3.2.3.3 Field Sampling and Analysis Plan. The AE shall prepare and submit, as part of the RI/FS Work Plan, a Field Sampling and Analysis Plan (FSAP). The FSAP shall describe in detail all sampling and analysis activities to be exercised including site background, sampling objectives, sampling locations and frequency, designations, equipment and procedures and handling and analysis requirements to be applied at each site. Section 3.3.1 of this SOW provides for numerous field investigation activities which will be applied to the project **(except that actual performance of these field activities is not part of this delivery order SOW)**. It is intended that the AE, in the FSAP, propose and justify how the field investigation activities will be allocated. In addition to the specific requirements of the RI/FS Guidance Document, the AE shall provide the following subplans as part of the FSAP.

3.2.3.3.1 Geophysical Investigation Plan. The AE shall prepare and submit a brief work plan which describes specific equipment, methods and personnel which the AE will utilize to accomplish the geophysical investigations. The plan shall propose the linear footage of geophysical surveying to be performed and shall propose specific locations for proposed geophysical investigations. The plan shall include justification for the method selected for use in order to meet the objective of the geophysical investigations which is to obtain information on the physical, subsurface conditions at the site and to locate unexploded ordnance (UXO) prior to the commencement of drilling activities.

3.2.3.3.2 Soil Boring and Monitoring Well Installation Plan. The AE shall prepare and submit a Soil Boring and Monitoring Well Installation

Plan according to the requirements of Section 7.0 of this SOW and Section 4.2 of Reference 11.23. This portion of the RI/FS Work Plan shall include proposals for the number, depth, total linear footage and locations of specific borings and monitoring wells based on previous investigations and the AE's own evaluation of the site.

3.2.4 (Task A-4) Community Relations Plan. A Community Relations Plan (CRP) is presently being developed, by CETHAMA, for Seneca Army Depot, as a whole, according to the requirements of the RI/FS Guidance Manual, Appendix B, Task 2. It will describe how and when the community will be informed of RI/FS activities and findings. The Plan will describe how the RI/FS is to be implemented and managed, describe the information expected from each task and how the information will be gathered, interpreted and incorporated into the RI/FS Reports. The Plan will describe the full RI/FS process, through implementation of Remedial Action, (eventhough this delivery order SOW does not carry the RI/FS process to that point) so that the entire process is described. The AE shall, where appropriate, provide input on aspects of the plan that are site specific.

3.3 Remedial Investigation/Feasibility Studies. The objective of this SOW is to prepare a Work Plan for RI/FS investigations to be performed as laid out in the EPA Guidance Manual. The following items comprise the field work requirements of the proposed RI/FS and are provided here to aid in preparation of the Work Plan. The implementation of the work shown in this Section is to be completed as part of a subsequent delivery order once regulatory approval is given on the Work Plans. Task designations are included to provide a systematic approach to structuring the Work Plans. **Actual performance of tasks in this Section is not part of this delivery order.**

3.3.1 Remedial Investigations.

3.3.1.1 Field Investigations. The work required in this Section corresponds to EPA Task 3 in Appendix B of the RI/FS Guidance Manual. The RI field investigations shall be performed in order to characterize the site and determine the nature and extent of soil and groundwater contamination. The work shall be performed according to the approved work plan and as follows:

3.3.1.1.1 (Task A) Geophysical Surveys. Investigations shall include the performance of Geophysical Surveying according to the requirements of the approved GIP. The AE shall utilize a method of geophysical investigation capable of detecting buried metal and debris, if existing, to a

depth of 15 feet. The purpose of the geophysical surveys is to obtain detailed information necessary for source characterization. The AE shall utilize sufficient location control in the field to ensure that geophysical anomalies are located by State Plane Coordinates to the closest 1.0 foot.

3.3.1.1.2 (Task B) Drill Soil Borings. Investigations shall include the installation of soil borings as laid out in the approved FSAP. In addition, the AE shall install soil borings for the purpose of determining background conditions at the site. Soil samples, the number and frequency of which are laid out in the FSAP, will be collected as part of this subtask for subsequent chemical analysis under Task E.

3.3.1.1.3 (Task C) Surface Water Sampling. The AE shall collect one round of surface water samples. The required number and locations of samples are as directed in the approved FSAP. Field samples shall be collected at locations for analysis under Task F.

3.3.1.1.4 (Task D) Surveying. Location surveys and mapping shall be performed according to the requirements of Section 8.0 of this Statement of Work and Section 4.2.5 of Reference 11.23. The following locations shall be established as part of this task:

Task Number	Description
A	Locations of geophysical survey grid points
B	Soil borings
C	Surface water sampling points
F	14 existing monitoring wells- mapping only

3.3.1.2 Chemical Sampling and Analysis. The work required in this Section corresponds to EPA Tasks 4 and 5 in Appendix B of the RI/FS Guidance Manual. The AE shall collect and analyze samples in a manner determined in the approved FSAP. The total number of samples to be collected by the AE along with required and approved analysis methods are presented in the FSAP. The AE shall submit a Table which provides the results of each round of analytical data as soon as it is received from the laboratory, and not wait for the next scheduled report submission. Samples of the Tables to be used in presenting the type and number of analytical samples to be taken are provided in Section 6 of this SOW.

3.3.1.2.1 (Task E) Analysis of Soil Samples. The AE shall analyze all soil samples previously collected from the soil borings drilled. EP Toxicity tests should be performed only at sites that show a high metals content. The AE shall submit a Table which provides the results of each round of analytical data as soon as it is received from the laboratory, and not wait for the next scheduled report submission.

3.3.1.2.2 (Task F) Collection and Analysis of Groundwater Samples. The AE shall redevelop each of the 14 existing monitoring wells. Following individual well redevelopement, the AE shall collect and chemically analyze one groundwater sample from each of the wells. A total of 14 wells will be sampled under this subtask. Of the 14 individual samples taken, three shall be split for filtration. Of the three filtration split samples, one shall be split twice more; once to produce a filtration QA sample and once to produce a filtration QC sample. The purpose of the filtration samples is to qualify sediment influences on analysis results. Of the remaining 11 individual samples, one shall be split twice; once to produce an unfiltered QA sample and once to produce an unfiltered QC sample. In addition, the AE shall chemically analyze the surface water samples collected in Task C. The total number of water and QA/QC samples to be taken and the required analyses are summarized in the FSAP. The AE shall submit a Table which provides the results of each round of analytical data as soon as it is received from the laboratory, and not wait for the next scheduled report submission.

3.3.1.3 (Task G) Baseline Risk Assessment. The work required in this Section corresponds to EPA Task 6 in Appendix B of the RI/FS Guidance Manual. Using the information gathered from the record search, the field work and data analyses, the AE shall prepare and submit a Risk Assessment. The Risk Assessment shall provide an evaluation of the potential threat to human health and the environment in the absence of any remedial action and provide the basis for determining whether or not remedial action is necessary. The Risk Assessment Report shall be prepared using the guidance presented in the RI/FS Guidance Manual and, as a minimum, contain a baseline risk assessment, an exposure assessment, and a standards analysis. The Risk Assessment shall be submitted as part of the RI/FS Report. The AE shall provide information including, but not necessarily limited to, the following:

3.3.1.3.1 Identification of Contaminants of Concern. Using the information gathered from field work, record search, and consultation with

appropriate local, State and Federal Officials the AE shall identify the contaminants which are of concern. The AE shall provide a summary of each identified contaminant describing why it was selected, and the effects of its chronic and acute toxicity to humans and the environment.

3.3.1.3.2 Exposure Assessment. The AE shall identify actual or potential exposure paths and routes, characterize potentially exposed populations, and estimate expected exposure levels. As part of the Exposure Assessment, the following Task shall also be performed:

3.3.1.3.2.1 Water Well Survey. The AE shall make a reasonable effort to determine the existence of all operating water wells used for human consumption within one mile of the Installation that may be affected by deteriorated water quality on the Installation. A "house-to-house" survey is not intended. However, whenever possible, the AE shall include well location, depth, screened interval, water use, and number of people served by the well. This task may be performed through the examination of records available at public sources, backed by occasional field checks. The information shall be provided both in tabular form and on suitable maps.

3.3.1.3.2.2 Spring Survey. The AE shall make a reasonable effort to determine the existence of all springs used for human consumption within one mile of the Installation that may be affected by deteriorated water quality on the Installation. The information shall be provided both in tabular form and on suitable maps.

3.3.1.3.3 Toxicity Assessment. The AE shall make a comparison of acceptable levels of contamination with actual levels identified during the exposure assessment. The comparison shall be based upon available ARARs, TBCs and other toxicological data, where existing.

3.3.1.3.4 Risk Characterization. The AE shall, based upon other components of the Risk Assessment, characterize the risk associated with the site. The AE shall consider the carcinogenic risk, noncarcinogenic risk and the environmental risk. The characterization shall include a summary of each projected exposure route for contaminants of concern and the distribution of risk across various sectors of the population. Such factors as weight-of evidence associated with toxicity information, the estimated uncertainty of the component parts, and the assumptions contained within the estimates shall be discussed.

3.3.1.3.5 Propose Applicable or Relevant and Appropriate Requirements (ARAR's) and To Be Considered (TBC) Requirements. The AE shall develop and propose contaminant and location specific "Applicable or Relevant and Appropriate Requirements" (ARAR's) and To Be Considered (TBC) Requirements which, after review and possible modification as directed by the Contracting Officer, will be utilized to evaluate subsequent proposed remedial actions. ARAR's and TBC's shall be prepared using guidance presented in the RI/FS Guidance Manual.

3.3.1.4 (Task H) Treatability Study Requirements Assessment. The work required in this Section corresponds to EPA Task 7 in Appendix B of the RI/FS Guidance Manual. The AE shall recommend if specific Treatability Studies are required or if the existing situation is well enough understood and described in scientific, engineering and other technical literature such that site specific treatability studies do not appear to be necessary. If treatability studies are recommended, the AE shall assess existing data on technologies identified as Remedial Action Alternatives to determine data needs required to undertake treatability investigations following completion of alternatives development. If treatability studies are recommended, the AE shall develop a Treatability Study Concept Plan. The Treatability Study Requirements Assessment (and Concept Plan if, required) shall be submitted as part of the RI/FS Report.

3.3.2 (Task I) Feasibility Study. The work required in this Section corresponds to EPA Task 9 in Appendix B of the RI/FS Guidance Manual. The primary objective of this phase of the FS is to develop an appropriate range of waste management options that protect human health and the environment.

3.3.2.1 Develop Remedial Action Objectives. The AE shall develop remedial action objectives which protect human health and the environment and then describe general response action which will satisfy the remedial action objectives.

3.3.2.2 Identify and Evaluate Alternative Remedial Actions. The AE shall describe all available technologies that could be reasonably used as remedial actions at SEAD. The AE shall then screen the list to remove any potential Remedial Actions which are clearly illogical, inadequate, unfeasible, or otherwise ill-suited to the site. Remedial actions presented past the initial screening shall consist of only those representing proven technologies adequate to address site conditions. A detailed evaluation

including the strengths and weaknesses of each technology shall be performed. The initial screening shall be based upon effectiveness, implementability and cost. Where appropriate, the AE may combine feasible remedial actions. The "no action" alternative shall be described in detail as part of this task. Additional data needed shall also be described.

3.3.3 (Task J) Prepare RI/FS Report. The work required in this Section corresponds to EPA Tasks 8 and 11 in Appendix B of the RI/FS Guidance Manual. At the completion of the preceding tasks, the AE shall prepare the Remedial Investigation/ Feasibility Study Report, fully documenting all work performed. The report shall be prepared according to the requirements of this SOW and the referenced guidance documents. The report shall also describe any recommended work to be performed during a follow-on RI/FS and make specific recommendations, and provide the justification, for sampling locations and analytes proposed for the follow-on work. As part of this report the AE shall evaluate the need for interim or expedited remedial actions at the site. If the AE recommends that either is appropriate, he shall so propose and justify.

3.3.4 (Task K) Proposed Remedial Action Plan. The work involved in this Section corresponds to Chapter 2 of the "Draft Guidance on Preparing Superfund Decision Documents: The Proposed Plan and Record of Decision", Reference 11.24. The AE shall prepare and submit for inclusion in the Administrative Record, a Proposed Remedial Action Plan (PRAP), the purpose of which is to highlight the RI/FS report; provide a brief analysis of the remedial alternatives under consideration for this site; identify the preferred remedial action and provide the public with information on how they may participate in the remedy selection process.

3.3.5 (Task L) Record of Decision. The work required in this Section corresponds to EPA Task 12 in Appendix B of the RI/FS Guidance Manual. The AE shall prepare and submit a document for the signature of the SEAD Commander addressing the decision to implement the approved remedial action alternative.

3.3.4 (Task M) Monthly Reports. The AE shall prepare and submit monthly reports describing, at a minimum, all field activities conducted that month and those anticipated for the upcoming month. These reports shall be completed as mandated in Section 26 of the Interagency Agreement (Reference 11.25).

4.0 SUBMITTALS AND PRESENTATIONS

4.1 Format and Content. All submittals for this contract and the contract for field work implementation shall be prepared in accordance with the suggested RI/FS Format as presented in the RI/FS Guidance Manual. Each submittal shall be accompanied by an EPA completeness checklist (where existing), completed by the AE, which references the specific location within the submitted document, of the required item. All drawings shall be of engineering quality in drafted form with sufficient detail to show interrelations of major features on the installation site map. When drawings are required, data may be combined to reduce the number of drawings. The documents shall consist of 8-1/2" x 11" pages with drawings folded, if necessary, to this size. A decimal paragraphing system shall be used, with each section and paragraph of the documents having a unique decimal designation. The document covers shall consist of vinyl 3-ring binders and shall hold pages firmly while allowing easy removal, addition, or replacement of pages. A document title page shall identify the AE, the Corps of Engineers, Huntsville Division, and the date. The AE identification shall not dominate the title page. Each page of draft and draft-final documents shall be stamped "DRAFT" and "DRAFT-FINAL" respectively. Each document shall identify the members and title of the AE's staff which had significant, specific input into the document's preparation or review. Submittals shall include incorporation of all previous review comments accepted by the AE as well as a section describing the disposition of each comment. Disposition of comments submitted with the final document shall be separate from the document itself. All final submittals shall be sealed by both the registered Professional Engineer-In-Charge and certified geologist.

4.2 Presentations. The AE shall make presentations of work performed according to the schedule in paragraph 4.6. Each presentation will consist of a summary of the work accomplished and anticipated followed by an open discussion among those present. The AE shall provide a minimum of two persons at the meetings which are expected to last one day each.

4.3 Conference Notes. The AE will be responsible for taking notes and preparing the reports of all conferences, presentations, and review meetings. Conference notes will be prepared in typed form and the original furnished to

the Contracting Officer (within five (5) working days after date of conference) for concurrence and distribution to all attendees. This report shall include the following items as a minimum:

a. The date and place the conference was held with a list of attendees. The roster of attendees shall include name, organization, and telephone number.

b. Written comments presented by attendees shall be attached to each report with the conference action noted. Conference action as determined by the Government's Project Manager shall be "A" for an approved comment, "D" for a disapproved comment, "W" for a comment that has been withdrawn, and "E" for a comment that has an exception noted.

c. Comments made during the conference and decisions affecting criteria changes, must be recorded in the basic conference notes. Any augmentation of written comments should be documented by the conference notes.

4.4 Confirmation Notices. The AE will be required to provide a record of all discussions, verbal directions, telephone conversations, etc., participated in by the AE and/or representatives on matters relative to this contract and the work. These records, entitled "Confirmation Notices", will be numbered sequentially and shall fully identify participating personnel, subject discussed, and any conclusions reached. The AE shall forward to the Contracting Officer as soon as possible (not more than five (5) work days), a reproducible copy of said confirmation notices. Distribution of said confirmation notices will be made by the Government.

4.5 Progress Reports and Charts. The AE shall submit progress reports to the Contracting Officer with each request for payment. The progress reports shall indicate work performed, and problems incurred during the payment period. Upon award of this delivery order, the AE shall, within 15 days, prepare a progress chart to show the proposed schedule for completion of the project. The progress chart shall be prepared in reproducible form and submitted to the Contracting Officer for approval. The actual progress shall be updated and submitted by the 15th of each month and may be included with the request for payment.

4.6 Schedule of Deliverables and Review Meetings.

Deliverables shall be submitted according to the following schedule.

Deliverable/Meeting	Days following NTP
Draft RI/FS Scoping Document, Work Plan and Community Relations Plan Revision	80
Draft Comments Received by the Army	110
Scoping Process Presentation at SEAD	125
Draft-Final RI/FS Scoping Document, Work Plan, and Community Relations Plan Revision	145
Draft-Final Work Plan Comments due to the Army	175
Final RI/FS Scoping Document, Work Plan, and Community Relations Plan (No Disputes)	205

The above schedule is a "best-case" schedule and is dependent upon whether the comments are reviewed per the IAG without any extensions or iterations.

4.7 Submittals.

4.7.1 General Submittal Requirements.

4.7.1.1 Distribution. The AE is responsible for reproduction and distribution of all documents. The AE shall furnish copies of submittals to each addressee listed in paragraph 4.7.3 in the quantities listed in the document submittal list. Submittals are due at each of the addressees not later than the close of business on the dates shown in paragraph 4.6.

4.7.1.2 Partial Submittals. Partial submittals will not be accepted unless prior approval is given.

4.7.1.3 Cover Letters. A cover letter shall accompany each document and indicate the project, project phase, the date comments are due, to whom comments are submitted, the date and location of the review conference, etc., as appropriate. (Note that, depending on the recipient, not all letters will contain the same information.) The contents of the cover letters should be coordinated with CEHND-ED-PM prior to the submittal date. The cover letter shall not be bound into the document.

4.7.1.4 Supporting Data and Calculations. The tabulation of criteria, data, circulations, and etc., which are performed but not included in detail in the report shall be assembled as appendices. Criteria

information provided by CEHND need not be reiterated, although it should be referenced as appropriate. Persons performing and checking calculations are required to place their full names on the first sheet of all supporting calculations, and etc., and initial the following sheets. These may not be the same individual. Each sheet should be dated. A copy of this SOW shall be included as an appendix in the Draft Work Plans only.

4.7.1.5 Reproducibles. One camera-ready, unbound copy of the finaleach submittal shall be provided to the Contracting Officer in addition to the submittals required in the document and submittal list. All final submittals shall also be provided on floppy disks compatible with the Intel 310/80286 computer in ASCII format and in Word Star 2000 release 2.0 format.

4.7.2 Specific Submittal Requirements.

a. SSHP (Draft, Draft-Final, Final)

b. RI/FS Project Scoping Document (Draft, Draft-Final, Final)

c. Work Plans (Draft, Draft-Final, Final)

d. Community Relations Plan Revision (Draft, Draft-Final, Final)

4.7.3 Addressees.

Commander
U.S. Army Corps of Engineers
Huntsville Division
ATTN: CEHND-ED-PM (Mr. Walt Perro)
PO Box 1600
Huntsville, AL 35807-4301

Commander
U.S. Army Environmental
Hygiene Agency (USAEHA)
ATTN: HSHB-ME-SR (Mr. Hoddinott)
Building 1677
Aberdeen Proving Ground, MD 21010-5422

Commander
U.S. Army Material Command (USAMC)
ATTN: AMCEN-A
5001 Eisenhower Ave.
Alexandria, VA 22333-0001

Commander
U.S. Army Corps of Engineers
Toxic and Hazardous Materials Agency
ATTN: CETHA-IR-D (Ms. Katherine Gibson)
Aberdeen Proving Ground, MD 21010-5401

Commander
U.S. Army Depot Systems
Command (DESCOM)
ATTN: AMSDS-EN-FD
(Mr. Tim Toplisek)
Chambersburg, PA 17201

Commander
U.S. Army Corps of Engineers
Missouri River Division
ATTN: CEMRD-ED-EA (Mr. Doug Plack)
PO Box 103, Downtown Station
Omaha, NE 68101-0103

Commander
U.S. Army Corps of Engineers
Missouri River Division
ATTN: CEMRD-ED-GL
420 South 18th St.
Omaha, NE 68102

Commander
Seneca Army Depot
ATTN: SDSSE-HE (Randy Battaglia)
Romulus NY 14541

Commander
U.S. Army Corps of Engineers,
North Atlantic Division,
ATTN: CENAD-CO-EP
90 Church Street
New York, NY 10007-9998

Commander
HQUSACE
ATTN: CEMP-RI
20 Massachusettes Ave., NW
Room 2209
Washington, D.C. 20314-1000

4.6.4 Document and Submittal List.

	All Submittals		
	Draft	Draft-Final	Final
CEHND-ED-PM	3	3	3
USAMC	1	1	1
DESCOM	2	2	2
CETHA-IR-D	1	1	1
CEMRD-ED-EA	3	3	3
CEMRD-EA-GL	1	1	1
SDSSE-HE	23	23	23
CENAD-CO-EP	1	1	1
USAEHA	3	3	3
CEMP-RI	0	0	0
TOTAL	37	37	37

5.0 SAFETY REQUIREMENTS. The AE shall prepare and submit the Site-Specific Safety and Health Plan (SSHP) to the contracting Officer (CO) for review and acceptance prior to commencement of any field work, according to the schedule in paragraph 4.6. The SSHP shall be prepared in accordance with the requirements specified in this Section and shall be complete and in a form such that, as a stand alone document, it may be implemented immediately in the field. No field work (other than the initial visual inspection) may be performed until all plans are reviewed and approved by the CO. All work shall be performed according to the approved plans.

5.1 The SSHP shall be prepared by a board certified or board eligible Industrial Hygienist with at least 2 years hazardous waste site operations experience. Board certification or eligibility shall be documented by written confirmation by the American Board of Industrial Hygiene (ABIH) and submitted to the Contracting Officer. A fully trained and experienced health and safety officer (SSHO), responsible to the AE and the AE's Industrial Hygienist may be delegated to implement the on-site elements of the SSHP.

5.1.1 The SSHP shall be in a form usable by Corps of Engineers or U.S. Government management personnel and all other visitors to the site during site operations. The following topics shall be discussed at a minimum in the SSHP:

5.2. Site Description and Contamination Characterization. A description of the site, including a complete summary of contaminants anticipated onsite (chemical/biological names, concentration ranges, media in which found, locations onsite and estimated quantities/volumes) shall be provided.

5.3 Staff Organization, Qualifications and Responsibilities. The operational and health and safety responsibilities of each key person shall be discussed. The organizational structure, including lines of authority for safety and health and overall responsibilities of the AE and all subcontractors shall be provided. An organizational chart showing the lines of authority from the site level up through corporate management shall be provided.

5.4 Hazard Assessment and Risk Analysis. The AE shall identify the chemical, physical, safety and biological hazards of concern for each task and or operation to be performed. Include routes and sources of exposure, anticipated onsite and off-site exposure potential levels, and the applicable regulatory or recommended protective exposure standards. Action levels shall be specified and justified for the protection of onsite personnel and for the prevention or minimization of hazards/exposures to the off-site public from site activities.

5.5 Accident Prevention. All Accident Prevention Plan topics required by EM 385-1-1, Appendix Y, but not specifically covered by these elements shall be addressed in this section of the SSHP.

5.6 Training. Training for all onsite personnel as well as site specific, supervisory, refresher and visitor training shall be in accordance with 29 CFR 1910.120 Final Rule. The content, duration, and frequency, of training shall be described. Written certification that the required training has been received by affected personnel shall be submitted to the contracting officer prior to engaging in onsite activities.

5.7 Personal Protective Equipment. A written Personal Protective Equipment (PPE) Program shall be provided in the SSHP. The program shall address all the elements of 29 CFR 1910.120 (g)(5) and 29 CFR 1910.134. Specify minimum levels of protection necessary for each task/operation to be performed based on the hazard assessment/risk analysis required in paragraph

5.4 Include specific types and materials for protective clothing and respiratory protection. Establish and justify upgrade/downgrade criteria based upon the action levels established as required by paragraph 5.4.

5.8 Medical Surveillance. All personnel performing onsite activities shall participate in an ongoing medical surveillance program meeting the requirements of 29 CFR 1910.120 and ANSI Z-88.2. The medical examination protocols and results shall be overseen by a licensed physician who is certified in Occupational Medicine by the American Board of Preventive Medicine, or who by necessary training and experience is board eligible. Exam content and frequency shall be provided in the SSHP.

5.9 Air Monitoring. Specify for onsite and perimeter the types and frequency of air monitoring/ sampling to be performed. When applicable NIOSH and or EPA sampling and analytical methods shall be used. Personnel samples shall be analyzed only by laboratories successfully participating in and meeting the requirements of the American Industrial Hygiene Association's (AIHA) Proficiency Analytical Testing (PAT) or laboratory Accreditation Program. Include as appropriate real-time (direct-read) monitoring and integrated Time Weighted Average (TWA) sampling for specific contaminants of concern. Discuss instrumentation and calibration to be performed. All air monitoring results shall be compared to action levels to determine the need for corrective actions.

5.10 Site Control. The SSHP shall include a site map, description of work zone delineation, on/off site communication systems, site access controls, and security procedures.

5.11 Personnel and Equipment Decontamination. Specify decontamination procedures and equipment for personnel, personal protective equipment, sampling equipment and heavy equipment. Specify necessary facilities and their locations.

5.12 Emergency Response; Equipment and Procedures. An Emergency Response Plan as required by 29 CFR 1910.120 shall be prepared. Specify the emergency equipment and the location of such equipment to be present on site. Provide telephone numbers and points of contact for emergency services and the USACE Representative. Provide a map showing the route to the hospital that has been contacted and informed of the type of work and potential hazards on the

site. At least one person trained and certified in first aid/CPR is to be on site at all times during site operations. Documentation of certification is to be submitted with documentation of other required training.

5.13 Standard Operating Procedures, Engineering Controls and Work Practices. Discuss and site rules and prohibitions for safe work practices. Include such topics as use of the buddy system, smoking restrictions, material handling procedures, confined space entry, excavation safety, heat/cold stress monitoring, illumination, sanitation, daily safety inspections. This list of topics is not intended to be all inclusive.

5.14 Logs, Reports and Recordkeeping. Describe recordkeeping procedures for training logs, daily safety inspection logs, employee/visitor registers, medical surveillance records and certifications and air monitoring results and personal exposure records. All personnel exposure and medical monitoring records shall be maintained in accordance with applicable OSHA standards, CFR 1910 and 1926.

5.15 Unexploded Ordnance. The facility is a military installation and has been used for storage, evaluation and disposal of ordnance and/or explosive materials as well as for military training. More specifically, the OB Grounds was used for the purpose of burning munitions and explosive wastes. Consequently, the potential for encountering unexploded ordnance does exist. If unexploded ordnance is ever encountered at any time during operations at the site the AE shall mark the location, immediately stop operations in the affected area, and notify the Contracting Officer. The Government will make appropriate arrangements for evaluation and proper disposal. It is anticipated that in the event that such conditions arise, they will be overcome with only slight delays to the AE. It is the express intention of the Government that the AE is not to drill, excavate, or otherwise disturb the subsurface in areas where ordnance or explosives may reasonably be suspected unless specific, detailed plans to do so are prepared and approved.

5.16 Suggested SHERP Format.

STAFF ORGANIZATION
- Principal Engineer
- Program Manager
- Certified Industrial Hygienist
- Certified Safety Professional
- First Aid/CPR Personnel
- Field Personnel
- Subcontractor Personnel

HAZARD COMMUNICATION AND TRAINING
- Comprehensive Health and Safety Indoctrination
- Specialized Training
- Visitor Training
- Pre-Investigation Health and Safety Briefing
- Post-Investigation Health and Safety Briefing
- Morning Safety Meetings

MEDICAL SURVEILLANCE
- Medical Surveillance
- Licensed Occupational Physician
- Medical Examinations

EXPOSURE MONITORING
- Environmental and Personnel Monitoring
- Meteorological Monitoring
- Sampling and Analytical Methods
- Heat/Cold Stress Monitoring

HEALTH AND SAFETY EQUIPMENT
- Personal Protective Equipment
- Environmental Monitoring Equipment
- Decontamination Equipment
- Emergency Equipment
- Emergency-Use Respirators
- Spill Control Equipment
- Fire Extinguishers
- First Aid Equipment and Supplies
- Emergency Eye Wash/Shower (ANSI Z358.1)
- Personnel Hygiene
- Personnel Decontamination
- Communications

STANDARD OPERATING PROCEDURES
- Health and Safety Site Plan
- Site Description
- Site Inspection
- Site Security
- Site Entry Procedures
- Responsibilities
- Work Zones
- Hazard Evaluation
- Activity Hazard Analysis
- Accident Prevention
- Accident Reporting
- Safe Work Practices
- Confined Space Entry Procedures
- Material Handling Procedures
- Levels of Protection
- Decontamination Procedures
- Emergency Information
- Emergency Response Plan
- Illumination
- Sanitation

Well Installation/Logging
Sampling
Land Survey
Laboratory Analysis
Logs, Reports, and Recordkeeping

6.0 CHEMICAL DATA AND LABORATORY REQUIREMENTS.

6.1 Approval. The work plan must be approved by the Contracting Officer (CO) prior to performing any field work. In the event corrections or comments are made by the Contracting Officer on the draft plan, any necessary changes shall be implemented by the A-E before final approval.

6.2 Chemical Data Aquisition Plan (CDAP). The plan shall address all of the following: sampling and analyses, quality assurance and quality control methods, equipment, evaluations, reports and procedures as required for the work specified in this SOW. The plan shall describe field as well as laboratory procedures. The plan shall be a brief and concise description of the field and laboratory work required. Results of the field and laboratory controls shall be evaluated and reported in accordance with References 11.8 and 11.9. The AE shall provide the laboratory QA/QC plan as an appendix to the CDAP. The plan shall address each requirement as identified in ER 1110-1-263 (Reference 11.21) and shall be written in the format shown in Appendix C, paragraph C.5 of that same document.

6.3 Laboratory Requirements. The analytical laboratory utilized by the AE must be validated by the Corps of Engineers' Missouri River Division (CEMRD) as well as approved by the State of New York to perform the analytical methods required by this SOW.

6.4 Quality Assurance Laboratory Requirements. The AE must provide coordination and quality assurance samples (collected and transported by the AE) to the Government Quality Assurance (QA) laboratory. The QA samples shall be splits of the required field control samples. Each field control sample collected shall be divided equally, one portion sent to the QA laboratory and the remainder sent to the AE's lab. QA samples include all sample matrices and analysis parameters. The AE will provide the QA lab a two week notice of sample shipment. The Government will identify the QA lab.

6.5 Data Reporting Requirements. The AE shall provide the following data reporting elements: sample ID, sample receipt, organic and inorganic reporting, internal quality control reporting (lab blanks, surrogate spike

samples, lab duplicates or matrix spikes) and field duplicates and blanks. This data package shall be reported in accordance with Reference 11.26. The data package shall be submitted in draft and final report. The AE's laboratory must hold and make available all project raw data for a period of two years after samples have been analyzed.

SAMPLE TABLE
Types and Numbers of Samples Collected

	Field Samples	Quality Assurance and Quality Control: Splits/Dups QC(AE)	Splits/Dups QA(CE)	Rinsates QC(AE)	Rinsates QA(CE)	Trip Blanks QC(AE)	Trip Blanks QA(CE)
GROUNDWATER:							
Volatiles	____	____	____	____	____	____	____
B/N/A	____	____	____	____	____	NR	NR
Pesticides/PCB's	____	____	____	____	____	NR	NR
TRPH	____	____	____	____	____	NR	NR
Metals	____	____	____	____	____	NR	NR
Other:_____	____	____	____	____	____	____	____
SURFACE WATER:							
Volatiles	____	____	____	____	____	____	____
B/N/A	____	____	____	____	____	NR	NR
Pesticides/PCB's	____	____	____	____	____	NR	NR
TRPH	____	____	____	____	____	NR	NR
Metals	____	____	____	____	____	NR	NR
Other:_____	____	____	____	____	____	____	____
SURFACE SOILS:							
Volatiles	____	____	____	NR	NR	NR	NR
B/N/A	____	____	____	NR	NR	NR	NR
Pesticides/PCB's	____	____	____	NR	NR	NR	NR
TRPH	____	____	____	NR	NR	NR	NR
Metals	____	____	____	NR	NR	NR	NR
Other:_____	____	____	____	NR	NR	NR	NR
SUBSURFACE SOILS:							
Volatiles	____	____	____	NR	NR	NR	NR
B/N/A	____	____	____	NR	NR	NR	NR
Pesticides/PCB's	____	____	____	NR	NR	NR	NR
TRPH	____	____	____	NR	NR	NR	NR
Metals	____	____	____	NR	NR	NR	NR
EP TOX	____	____	____	NR	NR	NR	NR
Explosives	____	____	____	NR	NR	NR	NR

TABLE 3
SUGGESTED METHODS FOR SAMPLE ANALYSIS

Analyte	Technique	Soil	Groundwater	Surface Water(1)
Arsenic (As)	GF	3050/7060	7060	206.2
	H	7061	7061	206.3
Barium (Ba)	DA	3050/7080	3005/7080	208.1
	GF	----	----	208.2
	ICP	3050/6010	3005/6010	200.7
Cadmium (Cd)	DA	3050/7130	3005/7130	213.1
	GF	3050/7131	3020/7131	213.2
	ICP	3050/6010	3005/6010	200.7
Chromium (Cr)	DA	3050/7190	3005/7190	218.1
	GF	3050/7190	3020/7191	218.2
	ICP	3050/6010	3005/6010	200.7
Lead (Pb)	DA	3050/7420	3005/7420	239.1
	GF	3050/7421	3020/7421	239.2
	ICP	3050/6010	3005/6010	200.7
Mercury (Hg)	CV	7471	7470	245.1
Selenium (Se)	GF	3050/7740	7740	270.2
	H	7741	7741	270.3
Silver (Ag)	DA	7760	7760	272.1
	GF	----	----	272.2
	ICP	3050/6010	3005/6010	200.7
EP Toxicity	---	1310	----	----
Volatile Organics	GC/MS	8240	8240	624
Explosives		SM02	SM01	SM01

DA=Direct Aspiration
GF=Graphite Furnace
H=Hydride
CV=Cold Vapor
ICP=Inductively Coupled Plasma
GC=Gas Chromatograph
GC/MS=Gas Chromatograph/Mass Spectroscopy

(1) Surface water samples may also be analyzed by the SW-846 methods listed for groundwater.

(2) USATHAMA Methods.

7.0 SOIL BORING AND MONITORING WELL REQUIREMENTS.

7.1 Subsurface Drilling.

7.1.1 Location. Soil boring and monitoring well locations shall be proposed by the AE as part of the Work Plans prior to commencement of drilling activities. The AE shall obtain written approval from the facility engineer, to drill at each site to avoid disturbing buried utilities. Following written approval, tentative locations shall be determined in the field based on the results of the geophysical surveys.

7.1.2 Conduct of Subsurface Drilling with Respect to UXO. The AE shall provide a 2-person UXO team, an UXO Supervisor and an UXO specialist to assure that drilling crews do not encounter surface/subsurface UXO. The UXO team, prior to initiating each 2-foot increment of subsurface drilling, shall, utilizing a method suitable for detection of buried brasses and ferrous metals, check for suspected subsurface UXO. This will preclude drilling into small UXO which may not be detectable from the surface. If meter readings indicate suspected UXO, such UXO shall be marked, AE personnel diverted from the site and the CO notified for Government action. The AE UXO team shall not excavate, render-safe or dispose of any encountered UXO.

7.1.2.1 Qualifications of the UXO Team. The UXO Specialist shall be a graduate of the USN EOD School, Indian Head, Maryland and shall have served at least 3 years in military EOD assignments. The UXO Supervisor shall be a graduate of the same school and shall have at least 10 years in military EOD assignments, of which at least 5 years shall have been in supervisory positions.

7.2. AE Responsibility for Monitoring Wells. It is the responsibility of the AE to properly plan, design, install, develop, and test monitoring wells so that they are suitable to produce groundwater samples representative in quantity and quality of subsurface conditions. The AE shall ensure that the requirements of this scope of work and best construction practices are carried out.

8.0 SURVEY REQUIREMENTS.

8.1 Control Points. Plastic or wooden hubs shall be used for all basic control points. A minimum of five (5) concrete monuments with 3.25-inch domed brass or aluminum alloy survey markers (caps) and witness posts shall be established at the site. The concrete monuments shall be located within the

project limits, be set 50 feet from the edge of any existing roads in the interior of the project limits and be a minimum of 500 feet apart. The placement of all monuments, hubs etc., shall be coordinated with SEAD. Witness posts, etc., shall be durable and brightly colored to preclude damage due to normal landscaping activities. Concrete monuments shall be constructed so as to preclude damage due to frost action. Horizontal control (1:10,000) and vertical control (1:5,000) of third order or better shall be established for the network required for all the monuments. The caps for the new monuments shall be stamped in a consecutively numbered sequence as follows:

SEAD-7-1990	SEAD-8-1990	SEAD-9-1990
USAED-HUNTSVILLE	USAED-HUNTSVILLE	USAED-HUNTSVILLE

The dies for stamping the numbers and letters into these caps shall be of 1/8-inch in size. All coordinates are to be referenced to the State Plane Coordinate System and all elevations are to be referenced to the 1929 North American Vertical Datum.

8.2 Location Surveys. Coordinates and elevations shall be established for the four corners and a baseline of each area that is investigated by a geophysical survey: for each soil boring and surface water sampling point and for each monitoring well. The coordinates shall be to the closest 1.0-foot and referenced to the State Plane Coordinate System. Elevations to the closest 0.10 foot shall be provided for the ground surface at each soil boring. Elevations to the closest 0.01-foot shall also be established for the survey marker and the top of casing (measuring point) at each monitoring well. These elevations shall be referenced to the National Geodetic Vertical Datum of 1929.

8.3 The location, identification, coordinates and elevations of all the control points recovered and/or established at the site and all of the geophysical survey areas, soil borings, monitoring wells (new and existing) and all surface water sampling points shall be plotted on a planimetric map (at a scale of 1 inch=50 feet) to show their location with respect to surface features within the project area. A tabulated list of the monuments, the soil borings and the surface water sample points including their coordinates and elevations, a "Description Card" for each monument established or used for

this project, the 1 inch=50 feet map and all field books and computations shall be prepared and submitted to the Huntsville Division (CEHND), ATTN: CEHND-ED-CS. The tabulation shall consist of the designated number of each boring, monument or surface water sampling point, the X- and Y-coordinates and all the required elevations. The Description Card shall show a sketch of each monument; its location relative to reference marks, buildings, roads, towers, etc.; a written description telling how to locate the monument from a known point; the monument name or number and the adjusted coordinates and elevations. These items shall be submitted to CEHND no later than the Draft Report Submission (305 days following submission).

9.0 SECURITY REQUIREMENTS. The following requirements must be followed by the AE at Seneca Army Depot to facilitate entry and exit of AE employees and to maintain security.

9.1 Personnel Registration:

9.1.1 A list of all AE employees, sub-contractors and suppliers indicating firm name and address will be furnished through POC/COR to the Counterintelligence Division, Building 710, 72 hours prior to commencement of work.

9.1.2 A confirmation of employment SDSSE-SC Form 268 will be executed by the AE concerning each employee, to include all sub-contractors and their personnel. No forms will be transferred to another file if the AE has other on-going contracts at SEAD. The AE will provide a list of personnel who are authorized to sign Form 268 for the firm. A sample of each signature is required. Counterintelligence Division must be notified, in writing, of any changes to this list. All completed forms will be provided through COR/POC to the Counterintelligence Division 72 hours prior to commencement of work. Failure to complete Form 268 correctly will result in employee's denial of access to Seneca. The Counterintelligence Division must be notified, in writing through POC/COR to Counterintelligence, at least 72 hours prior to requesting any action. The chain of command for all AE actions will be through POC/COR to Counterintelligence Division. There will be no exceptions.

9.1.3 Camera permits require written notice from the POC/COR prior to access. Open camera permits will not be issued. The following information is required:

(a) Camera make, model and serial number.

(b) Contract name and name of individual responsible for the camera.

(c) Dates camera will be used.

(d) Where it will be used.

(e) What will be photographed and why.

9.1.4 If a rental, leased or privately owned vehicle is required in place of a company vehicle, the following information is needed.

(a) Name of individual driving.

(b) Year, make, model, color and license plate of the vehicle.

(c) Typed letter on company letterhead indicating that the company assumes responsibility for rental, leased or privately owned vehicles.

9.1.5 All access media will be destroyed upon expiration date of contract. If an extension is required a list of employee names and new expiration date must be furnished to the Counterintelligence Division. Contract extensions must be made prior to the contract expiration date or new Form 268s will be required for each individual that requires an extension.

9.2 Traffic Regulations:

9.2.1 Traffic Laws, State of New York, apply with emphasis on the following regulations.

9.2.2 Speed Limit:

Controlled Area	- as posted
Ammo Area	- 5 mph
Limited/Exclusion Area	- 25 mph

9.2.3 All of the above are subject to change with road conditions or as otherwise posted.

9.3 Parking: AE vehicles (trucks, rigs, etc.) will be parked in areas designated by the Director of Law Enforcement and Security. Usually parking will be permitted within close proximity to the work site. Do not park within 30 feet of a depot fence, as these are clear zones.

9.4 Gates:

9.4.1 Post 1, Main Gate - NY Highway 96, Romulus, New York is open for personnel entrance and exit 24 hours daily, 7 days a week.

9.4.2 Post 3, entrance to North Depot Troop Area, located at end of access road from Route 96-A is open 7 days a week for personnel and vehicle entrance and exit.

9.5 Security Regulations:

9.5.1 Prohibited Property:

9.5.1.1 Cameras, binoculars, weapons and intoxicating beverages will not be introduced to the installation, except by written permission of the Director/Deputy Director of Law Enforcement and Security.

9.5.1.2 Matches or other spark producing devices will not be introduced into the Limited/Exclusion or Ammo Area's except when the processor of such items is covered by a properly validated match or flame producing device permit.

9.5.1.3 All vehicles and personal parcels, lunch pails, etc. are subject to routine security inspections at any time while on depot property.

9.5.1.4 All building materials, equipment and machinery must be cleared by the Director of Engineering and Housing who will issue a property pass for outgoing equipment and materials.

9.6 AE Employee Circulation:

9.6.1 AE employees are cleared for entrance to the location of contract work only. Sight-seeing tours or wandering from work site is NOT AUTHORIZED.

9.6.2 Written notification will be provided to the Counterintelligence Division (Ext. 30202) at least 72 hours prior to overtime work or prior to working on non-operating days.

9.6.3 Security Police (Ext. 30448/30366) will be notified at least two hours in advance of any installation or movement of slow moving heavy equipment that may interfere with normal flow of traffic, parking or security.

9.7 Unions: Representatives will be referred to the Depot Industrial Labor Relations Officer (Ext. 41317).

9.8 Offenses: (Violations of law or regulations)

9.8.1 Minor: Offenses committed by AE personnel which are minor in nature will be reported by the Director of Law Enforcement and Security to the Contracting Officer who in turn will report such incidents to the AE for appropriate disciplinary action.

9.8.2 Major: Serious offenses committed while on the installation will be reported to the FBI. Violators may be subject to trial in Federal Court.

9.9 Explosive Laden Vehicles:

9.9.1 Vehicles such as vans, cargo trucks, etc. carrying explosives will display placards or signs stating "EXPLOSIVES".

9.9.2 Explosive ladened vehicles will not be passed.

9.9.3 When an explosive laden vehicle is approaching, pull over to the side and stop.

9.9.4 When catching up with an explosive laden vehicle, slow down and allow that vehicle to remain at least 100 feet ahead.

9.9.5 When approaching an intersection where an explosive laden vehicle is crossing - STOP - do not enter the intersection until such time as the explosive carrier has passed thru, and cleared the intersection.

9.9.6 When passing a vehicle that is parked, and displaying "Explosive" signs, slow down to 10 miles per hour, and take every precaution to allow more than ample clearance.

9.10 Clearing Post: All AE employees are required to return all identification badges, and passes on the last day of employment on the depot. The AE is responsible for the completion of all turn-ins by his employees, and informing the Counterintelligence Division and the depot organization administering the contract, for termination of any employee's access to the depot.

10.0 PUBLIC AFFAIRS. The AE shall not publicly disclose any data generated or reviewed under this contract. The AE shall refer all requests for information to CEHND. Reports and data generated under this contract shall become the property of the Department of Defense and distribution to any other source by the AE, unless authorized by the Contracting Officer, is prohibited.

11.0 REFERENCES

11.1 "Procedures Manual for Groundwater Monitoring at Solid Waste Disposal Facilities," USEPA Publ. No. EPA/530/SW-611.

11.2 "Manual of Water Well Construction Practices, " USEPA Publ. NO. EPA/570/9-75-001.

11.3 "Methods of Determining Permeability, Transmissibility, and Drawdown," U.S. Geological Survey Water Supply Paper No. 1536-1, 1963.

11.4 "U.S. Corps of Engineers Safety and Health Requirements Manual," U.S. Army Engineering Manual No. EM-385-1-1, April 1981.

11.5 "Code of Federal Regulations, "Volume 40, Parts 260 through 265 plus 270, July 1986.

11.6 "American Society for Testing and Materials," ASTM D-421, D-422, D-423, D-424, D-2216, and D-2436.

11.7 "Code of Federal Regulation," Volume 40, Part 300, July 1987.

11.8 "Methods for Chemical Analysis of Water and Wastes," U.S. Environmental Protection Agency, Publ. No. EPA/625/6-7-003a.

11.9 "Test Methods for Evaluating Solid Wastes," USEPA Publ. No. SW- 846, July 1982.

11.10 "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act," 40 CFR 136, Federal Register, Oct 26, 1984.

11.11 "RCRA Groundwater Monitoring Technical Enforcement Guidance Document" (Draft) Office of Waste Programs Enforcement, USEPA, August 1985.

11.12 "Handbook for Analytical Quality Control in Water and Wastewater Laboratories," EPA Manual 600/4-79-019, March 1979.

11.13 "Safety and Occupational Health Document Requirements for Hazardous Waste Site Remedial Actions," U.S. Army Engineering Regulation (ER) 385-1-192.

11.14 "Engineer Guidance Design Manual for Architect-Engineer," US Army Corps of Engineer. HNDM-1110-1-1. Rev. 1986.

11.15 RCRA Corrective Action Plan, OSWER Directive 9902.3, November, 1986.

11.16 U.S. Army Toxic and Hazardous Materials Agency (USATHAMA), Initial Installation Assessment of Seneca Army Depot, N.Y. Report no. AMXTH-IR-A-157, 1980.

11.17 U.S. Army Environmental Hygiene Agency (USAEHA), Final Report, Army Pollution Abatement Program Study No. D-1031-W, Landfill Leachate Study, Seneca Army Depot, 1981.

11.18 U.S. Army Toxic and Hazardous Materials Agency (USATHAMA), Update of the Initial Installation Assessment of Seneca Army Depot, N.Y. Report No. AMXTH-IR-A-157(U), 1988.

11.19 "Evaluation of Solid Waste Management Units, Seneca Army Depot", Interim Final Report, Groundwater Contamination Survey No.38-26-0868-88, U.S. Army Environmental Hygiene Agency.

11.20 Interim Final, "Guidance For Conducting Remedial Investigations and Feasibility Studies Under CERCLA", OSWER Directive 9355.3-01, U.S. EPA, Office of Emergency and Remedial Response, October 1988.

11.21 ER 1110-1-263, "Chemical Data Quality Management for Hazardous Waste Remedial Activities," U.S. Army Corps of Engineers Regulation, CEMP-RT, Mar 1990.

11.22 "Criteria Development Report For the Closure of Nine Burning Pads, Seneca Army Depot", Metcalf and Eddy, October 1989.

11.23 "Final Work Plan, Remedial Investigation/Feasibility Study at the Ash Landfill, Seneca Army Depot, Romulus, New York", Environmental Science and Engineering, Inc., _____ 1990.

11.24 "Draft Guidance on Preparing Superfund Decision Documents: The Proposed Plan and Record of Decision", OSWER Directive 9355.3-02.

11.25 "Federal Facility Agreement Under CERCLA Section 120, Seneca Army Depot, Romulus, New York" , _____ 1990.

11.26 Memorandum, "Minimum Chemistry Data Reporting Requirements for DERP and Superfund HTW Projects." U.S. Army Corps of Engineers, CEMRD-ED-GL, August 1989.

1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) has reviewed the Site Investigation (SI) Report for Seneca Army Depot (SEAD) with consideration given to the requirements set forth in the Proposed NCP (40 CFR 300), CERCLA, and the EPA Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA (EPA, 1988). EPA does, however, recognize that the SI Report is the result of a study initiated in accordance with the Corrective Action requirements for Solid Waste Management Units under RCRA (40 CFR 264.101). Although the SI generally did not follow EPA guidance/policy for conducting remedial investigations (RIs) under CERCLA, EPA's review and comment was focused on similar areas.

The following objectives, as stated in the July 1989 SI Report, were also considered by EPA during this review: (1) to locate and define the limits of the contamination source(s); (2) to verify the nature and extent of ground water contamination; and (3) to recommend interim remedial measures for source control and contaminant reduction, if necessary.

2.0 TECHNICAL EVALUATION

2.1 Review of Document: Seneca Army Depot Landfill/Burning Pit Site Investigation Final Report, July 1989, by ICF Technology, Inc.

2.1.1 General Evaluation

The SI was conducted in a phased approach which utilized a well developed strategy. The investigation activities conducted to date have established a reasonable basis for identifying data gaps and further information needs when the Remedial Investigation/Feasibility Process (RI/FS) is initiated.

The results of the geophysical surveys (primarily the terrain conductivity survey) were used to identify areas of both high and low conductivity. EPA believes that the results of the electromagnetic induction (EM) survey were clearly effective in identifying the limits of the landfill, as high conductivity readings were obtained throughout the presumed dumping area of the landfill. (It is noted later in this section that areas of high conductivity were also correlated with elevated levels of volatile organics reported during the soil gas survey.) However, neither the EM survey nor the ground penetrating radar (GPR) survey were able to determine if these metals targets were in fact contamination sources, or merely buried objects dispersed throughout the contaminated media.

EPA also notes that the EM survey identified zones of low-conductivity (Exhibit 3-3) to the east and west of the landfill disposal area. As stated, low conductivity readings may indicate the presence of a ground water contamination plume, but only if contaminant concentrations are very high or if a free-product layer is present. Low conductivity measurements may also be due to the dilution of high total dissolved solids (TDS) content ground water by the infiltration of rainfall or snowmelt. The overriding opinion of the SI is that the contaminant sources exist within the presumed limits of the landfill, and ground water contamination is migrating westward towards the SEAD Depot property boundary. However, in the event that the zones of low EM conductivity due east of the landfill are related to the presence of an additional contaminant plume, the extent of the ground water contamination will be substantially larger than suspected. In this case, the presumptions concerning suspected source areas and migration pathways will need to be reexamined. It should also be noted that there is only one monitoring well to the east of the landfill, and the hydraulic regime in this area is not well defined.

The soil gas survey was conducted using the same grid layout established for the geophysical survey. It is noted that the grid and sampling locations were actually extended further to the north than originally planned due to the detection of buried metal in this area. EPA notes that the soil gas survey was generally successful in identifying areas of high volatile organic compound (VOC) content in the soil gas. Furthermore, it is significant that elevated soil gas reading patterns had a tendency to mimic the patterns of high conductivity readings reported during the EM survey. This information suggests that the extent of the contaminated area within the landfill itself has been fairly well delineated. However, the SI does not distinguish soil gas anomalies attributable to sources (i.e., contaminated soil, drums, or other wastes) from anomalies associated with a contaminated ground water plume.

Soil sampling was conducted following completion of the soil gas survey. The results, however, proved inconclusive in supporting the delineation of potential source areas identified during the geophysical survey and soil gas survey. Elevated levels of volatiles were only identified in two areas throughout the central portion of the landfill. EPA concurs with the hypothesis presented in the SI, which states that the absence of high concentrations of volatiles in the soil is probably due to the bulk of volatile material being located at or below the water table, either as a separate phase or in the dissolved state. Contaminants become present in the soil gas due to continuous volatilization from the saturated zone, and entrainment of the contaminants in the soil gas phase. The implications of the source being located at or beneath the water table are discussed in subsequent paragraphs.

Based on the aquifer testing, Exhibit 3-16 of the SI reports relatively low permeability values generally ranging between 10^{-4} and 10^{-6} um/sec for these wells (one additional value was reported at 10^{-11} um/sec for the well constructed in bedrock). EPA notes, however, that the method used to reduce the data was not correctly applied, and that the wells selected for testing may have been biased toward high-permeability zones. EPA further notes that results presented in the Geohydrologic Study No. 38-26 0313-88 appear to conflict with the values presented in the SI. This prior study reported that the hydraulic conductivity of the fractured shale was "quite high" based on experience gained while bailing a well set in the fractured shale. This study reports: "In one well, with at most a 5-foot saturated zone and only 6 feet of water in a 2-inch casing, there was no detectable drop in water level during rapid bailing." EPA notes that fractured bedrock and particularly shale and limestone bedrock are characteristically very heterogenous. Furthermore, hydraulic conductivity is dependent on fracture aperture width and fracture density which can be variable laterally and with depth. No boring logs or monitoring well construction diagrams, however, were provided in the SI, therefore EPA was unable to compare the calculated hydraulic conductivity values with the type of geologic formation surrounding the well. Thus, the reliability of the reported hydraulic conductivity values could not be assessed. (EPA notes later in this review that a determination of the effective permeability and hydraulic conductivity of the fractured shale is critical, as it will be used to determine the hydraulic loading factor in the permeable treatment bed design. Use of the relatively low permeabilities associated with the glacial till may result in significant under-design of the permeable treatment bed.)

EPA stresses here that the lack of monitoring well schematic diagrams and boring logs in the SI make an overall understanding of the subsurface conditions of the area difficult to achieve. Also, the lack of a topographic map makes it difficult to understand the surficial hydrology of the area. EPA recommends inclusion of this type of information in all subsequent reports developed for the landfill area. EPA further recommends that all computer-generated contour plots be edited to remove misleading artifacts or "false contours."

Ground water sampling was conducted at 10 existing monitoring wells during the SI, the results of which were used to verify the plume delineation provided by prior studies. One such study, the Geohydrologic Study No. 38-26-0313-88, had identified two sources of contamination in ground water: one in the vicinity of PT-18 as a source of trichloroethene (TCE) and chloroform, and one north of PT-18 as a source of dichloroethene (DCE), vinyl chloride, and a floating product relating to diesel fuel. The prior study had concluded that contaminants were emanating from these two source areas, from east to west toward the Depot boundary. EPA notes that the SI has generally provided similar results, reporting that a

narrow contaminant plume exists between the suspected source areas and Well PT-17, extending in a west-southwesterly direction. EPA concurs that a plume exists in this area, based on a review of the analytical data provided in the SI.

EPA, however, continues to have significant concerns regarding the source of the ground water contamination and the potential migration pathways of these contaminants. There remains no indication in the SI as to whether the source exists: (1) within the overburden of the landfill (within buried drums etc.); (2) dissolved in the ground water; or (3) as a separate phase floating on the water table or as a sinking immiscible phase in the aquifer. Furthermore, a variety of ground water flow patterns are typically associated with landfills due to the possible effect of ground water "mounding." More specifically, the recharge through uncapped landfill material tends to exceed the recharge rate of the subsurface material in the surrounding areas. Therefore, an increase in water table elevation often develops directly beneath the landfill. The effect of this increased water table elevation is that local ground water may flow radially from directly beneath the landfill.

EPA notes that the SI provides no indication of the potential for ground water migration to the north, to the east, or to the southeast of well PT-18. Therefore, based on this lack of data, EPA assumes that a variety of ground water flow patterns may be occurring in the vicinity of PT-18 which are dictating the fate of volatile organic contaminants in the fractured bedrock. EPA also notes that, with the exception of PT-10, there are no monitoring wells to determine the presence of a contaminant plume migrating to the east of the landfill. Furthermore, only monitoring well PT-23 is capable of monitoring ground water to the north. PT-23, however, was not sampled during the SI. Therefore, the evidence is not conclusive that the existing ground water contamination plume is limited to the western portion of the landfill area.

EPA also notes that the bedrock contours presented in Exhibit 2-8 indicate that at Well PT-18 the bedrock elevation drops significantly towards the eastern portion of the landfill (at PT-10). For the volatile organic contaminants which are present in ground water at concentrations greater than their solubility limits, the contaminants may sink to bedrock and migrate along the bedrock surface in an easterly direction. EPA does not, however, anticipate that volatile organic contaminants are present at high enough levels to make this a significant migration pathway.

Other concerns exist regarding the determination of migration pathways for ground water. For instance, the SI indicates that contamination is migrating westward along the buried water line and/or the old adjacent roadway which is noted on several installation drawings. Once the end of the water line is reached (around Grid point D-9 for the main line and B-9 for the

extension), the local ground water gradient (which lies in a more southwesterly direction than the plume axis) may provide more influence on flow direction. The preceding discussions suggest that the direction of contaminant migration may change prior to reaching the Depot property boundary, and any remedy designed to intercept contamination in this area will not necessarily be intercepting the entire contamination plume. Rather, these remedies will only serve to minimize contaminant migration off the SEAD property. EPA notes that additional concerns exist regarding the potential for surface water to be impacting downgradient areas. This factor is discussed further in subsequent paragraphs.

On the basis of the results of the geophysical survey, aquifer testing, soil gas screening, and the analytical results of the soil and ground water sampling activities conducted during the field investigation, potential Interim Remedial Measures (IRMs) were developed and evaluated by the Army contractor. EPA, however, has substantial concerns regarding the Army contractor's approach to the development of IRMs in the SI. Furthermore, EPA recognizes that the Army contractor has developed these remedies in accordance with corrective action requirements established under RCRA, therefore, deviations from Superfund policy are expected. However, due to the proposal of SEAD to the Superfund National Priority List (NPL), followed by a full-scale RI/FS, EPA strongly recommends that consideration be given to the Superfund policies and procedures at this time.

The preliminary RI/FS scoping process begins with a review of all available site data, including analytical data, historical disposal records, and aerial photographs and site maps. This is followed by the development of a conceptual site model which identifies suspected source areas, potential release mechanisms and migration pathways and possible human and environmental receptors including exposure routes. The development of the site model is important in that it identifies the potential for an immediate release of contaminants from the site which, in turn poses an imminent threat to human and/or environmental receptors. It is the presence of an imminent threat to human health and/or the environment that would justify the implementation of an interim site remedy while a more long term solution to the site-wide contamination problem is being determined.

The conceptual model also aids in determining whether the entire site can be remediated as a single operable unit (i.e., one treatment option suitable for all affected media), or whether it is necessary to divide the site into separate operable units for treatment based on unique characteristics of each unit (i.e., media etc.). Following the development of the site model, potential remedial alternatives are determined, and data requirements to support the alternative development process are identified. Also included under project scoping would be a preliminary identification of chemical-specific, location-specific, and

action-specific ARARs which would aid in assessing the feasibility and overall implementability of these preliminary remedial alternatives.

To illustrate the points of the above discussion, EPA has developed a conceptual site model for the SEAD landfill which is presented as Figure 2.1. The model presents the suspected source(s), potential release mechanisms and migration pathways, and exposure routes. According to this illustration, release mechanisms include percolation/infiltration, leachate seeps, and overland runoff. EPA notes that the potential for surface water runoff from the landfill has not been evaluated in the SI, and may in fact pose a more immediate migration pathway than that of ground water transport. It is likely that surface runoff (and perhaps ground water seeps) are impacting the wetland areas to the north, and the surface water bodies to the west of the SEAD property. EPA cannot support the position of the Army contractor to ignore these potential migration pathways due to a lack of understanding of surface runoff conditions. EPA strongly recommends that measures to control these potential release occurrences be incorporated into any interim remedial measure considered for implementation.

A total of four interim remedial measures are presented in the SI that were determined to be feasible by the Army contractor: (1) installation of ground water pumping wells; (2) installation of a collection trench; (3) collection and treatment of withdrawn water; and (4) the installation of a permeable treatment bed directly into the aquifer. EPA has several questions regarding the development and evaluation of each remedy. These uncertainties are discussed below.

For the Installation of Pumping Wells remedy, the SI states that recovery wells would need to be placed at the Depot property boundary to be effective. EPA, however, notes that recovery wells could be located both at the presumed source area (landfill), and at the property boundary to maximize system effectiveness. This type of recovery system would be more amenable to incorporation into the final site remedy due to its expanded capacity for plume containment and ground water recovery.

For the Installation of Collection Trenches remedy, EPA agrees that the occurrence of both contaminated ground water and a confining aquiclude at shallow depths would make a linear trench collection dewatering system attractive. However, EPA is unclear as to what unit is intended to serve as the confining aquiclude (i.e., bedrock, till etc.). In order to assess the feasibility of implementing this remedy, EPA would need to examine the boring logs to determine if till or unfractured bedrock is present in the proposed location for the collection trench. Furthermore, the vertical hydraulic conductivity of the presumed confining layer would need to be determined in order to assess the potential for migration through this layer, and its resultant effectiveness as

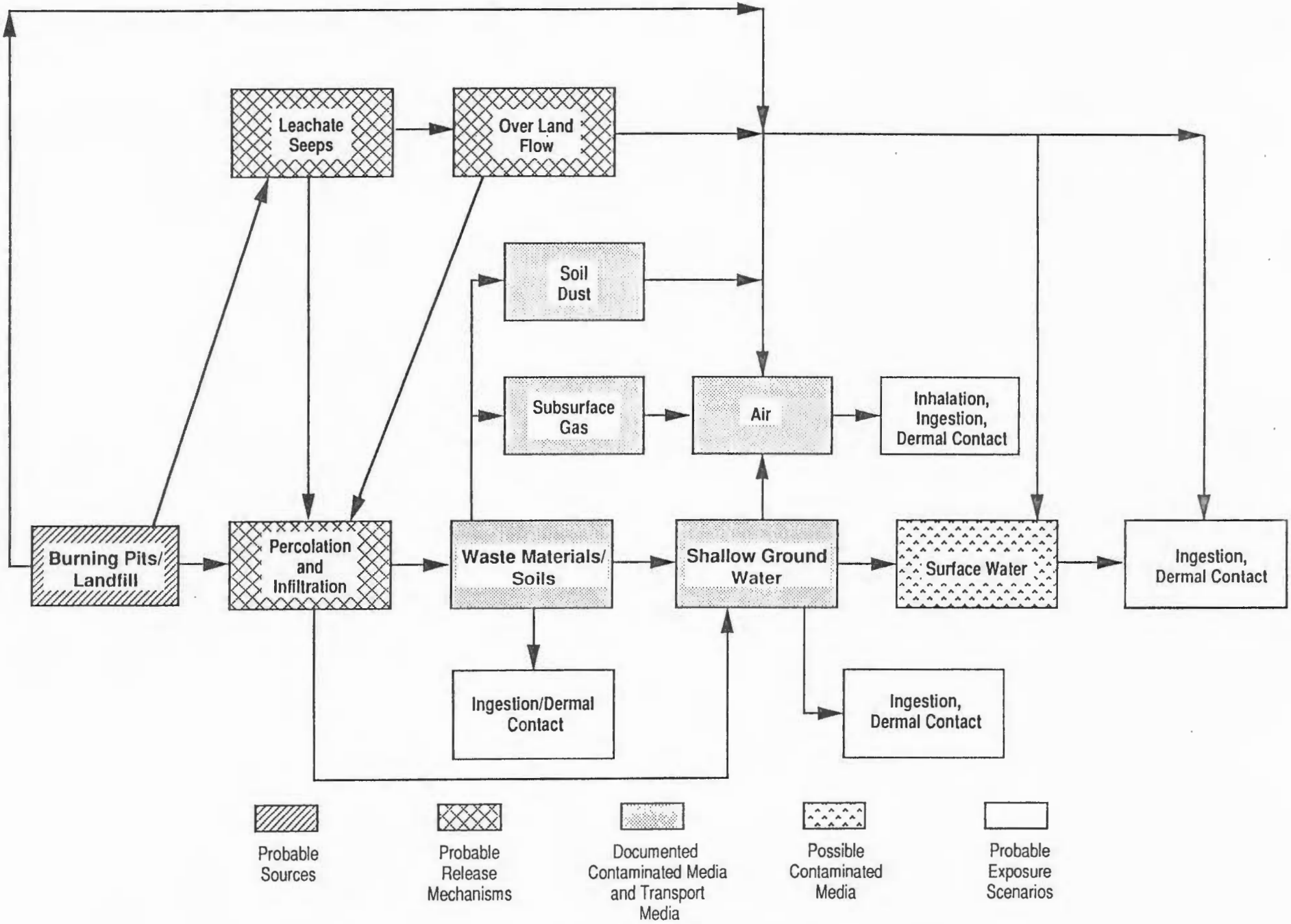

Figure 2.1. Conceptual model for the Seneca Burning Pits/Landfill

an aquitard. EPA does note, however, that a collection trench will serve the dual purpose of intercepting contaminated ground water at the property boundary in addition to collecting surface runoff. Furthermore, the collection trench will reduce, but not eliminate, the need for ground water monitoring downgradient of the site. For these reasons, greater consideration should be given to this remedy.

For the Collection and Treatment of Withdrawn Water remedy, EPA stresses that this type of system could be used to treat both contaminated ground water and surface runoff, thereby providing dual protection.

The selected remedy for the landfill area is the Installation of a Permeable Treatment Bed. EPA questions the long term effectiveness of this system. Initially, the SI Report has not fully delineated the lateral extent of the VOC plume. In the geohydrologic Study No. 38-26-0313-88, the plume was shown to extend under and to the south side of Smith Farm Road. If this is the case, the roadway will need to be excavated for construction of the permeable treatment bed. EPA has also noted earlier in this discussion that the precise migration patterns of ground water have not been established. The SI indicates that, upon approaching the end of the existing water lines, contamination may begin to move in a southerly direction, and thus evade the treatment bed. The SI also proposes to grout the bottom of the trench to competent bedrock. EPA notes that the presence of deep fractures beneath the presumed competent bedrock layer would create the potential for contaminant migration beneath the treatment bed through these deeper fractures. This pathway has not been assessed in the SI. Furthermore, the impact of surface runoff along the western boundary of the SEAD facility currently remains unknown.

It is suggested that the groundwater be analyzed for iron, manganese, MTBE (methyl-tert-butyl-ether), DIPE (Diisopropyl ether) and DOC (dissolved organic carbon). These are known to have very high carbon usage rates, and may seriously affect the activated carbon binding efficiency. This would result in the early breakthrough of the compounds of interest. Depending on the concentration of these components, the amount of activated carbon would have to be increased significantly to account for their sorption.

Initially, the capped carbon trench will act as a barrier to the lateral movement of groundwater, because the matrix potential in the activated carbon will be significantly less than the surrounding clay. The movement of groundwater, removal of contaminants by activated carbon and their detection by downgradient monitoring wells will all be retarded by this barrier. This may lead to an erroneous conclusion regarding efficacy of contaminant removal.

If the trench is to serve as a selective barrier for groundwater contaminants during any long-term remedial effort, the monitoring effort must continue as long as the trench serves to contain contaminants from moving downgradient of the landfill, not just for one year as proposed in the SOW. While the activated carbon contained in the trench appears to be adequate for contaminant removal, no laboratory studies were performed with groundwater from the site to confirm this conjecture. A number of organic or inorganic constituents may seriously impair the binding efficiency of the activated carbon, and allow chlorinated aliphatics to move downgradient through the trench.

EPA notes additional considerations (refer to page-specific comments) for this remedy, including: the use of a cost-estimate based on the minimum design requirements; the lack of consistent data concerning the permeability of the fractured bedrock; the ability to effectively locate six monitoring wells in zones of varying permeabilities downgradient of the bed such that they will be able to detect breakthrough throughout the length of the trench; long term maintenance and monitoring requirements; and the concern that preferential contaminant loading onto distinct portions of the permeable bed may lead to undetected breakthrough in portions of the bed.

2.1.2 Page-Specific Comments

P. 2-4 The first bullet identifies the former burning pits as a possible source of contamination. However, no map or site location plan is provided in the SI which delineates the pits with respect to the landfill or incinerator. EPA also notes that this item states that the burning pits were used to burn uncontaminated trash between 1941 and 1974, whereas the Interim Final Report - Ground Water Contamination Survey No. 38-26-0868-88 lists the burning pits (SWMU #SEAD-14) as having been used to dispose of oils and solvent sludges.

P. 2-4 The second bullet identifies the grease pits, which were used for disposal of kitchen grease, as another possible source of contamination. EPA recommends that future sampling activities should include an analysis of ground water for oil and grease content, as these constituents will affect the life expectancy of the activated carbon in the permeable treatment bed.

P. 2-5 EPA notes that the SI Report provides an excellent description of regional surficial and bedrock geology, but is weak on site-specific geology since no boring logs are provided.

P. 2-13 The first paragraph under "e) Hydrogeology" states the depth to groundwater tends to be shallow, ra from 0.3 to 7 meters below the surface; the se paragraph states that the shales below 10 feet essentially dry. These statements are contradictor

Paragraph 5 states: "Within the landfill area, shallow ground water is contained within the overbur soils and weathered bedrock, at a depth of 5-8 feet bel the surface. The ground water generally flows across t site toward the west-southwest." Based on the East-We cross section of the landfill area presented in Exhibi 2-8, EPA would agree that the general ground water flo pattern would be east to west. However, it appears i Exhibit 2-8 that the bedrock elevation drops significantly at Well PT-18 from the landfill area towards the eastern portion of the site. In the event that organic solvents are present in ground water at concentrations greater than their respective solubility limits, the contaminants may form a separate dense phase and migrate along the bedrock surface in an easterly direction.

EPA also notes that ground water "mounding" beneath the landfill may result in a variety of localized flow patterns in the vicinity of the landfill, including ground water flow to the north, to the east, and to the south.

P. 2-16 The top paragraph states: "Contaminated ground water may be discharging in the swampy areas formed at the juncture of the bedrock units." EPA feels that a north-south cross section of the landfill area should be developed to aid in predicting the impact (if any) of the landfill on the swampy areas to the north and northwest.

The top paragraph further states: "There is no evidence that significant connection exists between the shallow ground water and deeper aquifers, and contamination is expected to be limited to the upper water supplies." The basis for concluding that there is no connection between the shallow ground water and the deep aquifer should be provided. Furthermore, what is the current status of the shallow ground water as a water supply?

Runoff channeled to surface water bodies by culverts and ditches is usually considered a point source discharge and requires a SPDES permit.

P. 2-17 A number of comment found in the report suggest that TCE (and its daughter products) may not be the only contaminants of concern. For example, page 2-17 states,

"The study concluded that a definite contamination plume with two main constituents, TCE, trans-1,2-DCE, chloroform, 1,2-DCE, VC and a floating product that appeared to be diesel fuel were also detected." This leads EPA to the conclusion that other contaminants may be present in the reservoir, perhaps greatly retarded by the clay and low permeability, but still there and likely to encounter the activated carbon wall at some time in the future. EPA does not know how the concentrations of other contaminants in the aquifer will affect the operational efficiency of the wall. This should be included as part of the bench scale testing discussed in Section 2.1.1 of this review.

Paragraph 2 indicates the presence of a floating product in ground water that appears to be diesel fuel. However, the precise location and extent of this free-phase product is not discussed. EPA recommends that the extent of this product be included as a primary objective of subsequent site investigations. In addition, page 3-7 states, "additional data measurements were performed on 10 ft centers in the area surrounding the diesel fuel tank." This represents a potential source for diesel fuel contamination of the aquifer.

P. 3-3 It is unclear what the elevations (i.e., for ground surface and well casings) were referenced to, and with what precision and accuracy.

P. 3-3 The discussion of geophysical surveys suggests that there was a concern over ordnance materials at the landfill site. How the SI does not indicate if any material of this nature was encountered, and whether proper field precautions were taken.

P. 3-5 Paragraph 1 states: "There was a marked effect from the underground water lines at the site, which can be mapped from the EM data, and are shown in the graphs of EM found in Appendix B." Portions of the EM amplitude plots which are interpreted to indicate pipe effects should be clearly labeled. These should also be clearly cross-referenced to a facility map displaying the survey lines, in addition to a facility map which indicates subsurface utilities.

P. 3-6 The top paragraph states: "The values calculated represent reasonably precise estimates of comparative object depths." This paragraph should reference Exhibit 3-12, which appears to be a tabulation of depths to subsurface objects calculated from the GPR data. More supporting information should be provided as backup to the calculations, as well as the assumptions used in

reducing the data. EPA questions whether any of the calculated depths were verified during the subsurface investigations.

P. 3-8 Paragraph 2 under Section 3.2.4 states: "Detection of buried metal entailed analysis of high-conductivity readings...., while detection of contaminated groundwater by some organic solvents depended on analyzing the data for low conductivities." The presence of ppb or even ppm concentrations of organics compounds will not significantly change the conductivity or dielectric constant of water beneath the site so that a contaminant plume could be observed using a surface geophysical method (unless a free floating phase was present). This is particularly true around a landfill where ground water characteristically has very high total dissolved solids (TDS), primarily due to constituents such as chloride, iron, manganese, sodium, and sulfates. The presence of these major constituents will almost always mask the presence of organic contaminants. In addition, the absence of a plume of low-conductivity ground water does not indicate the absence of contamination by organic solvents. It is also possible that areas of low electrical conductivity may be associated with recharge zones, where ground water is partially diluted by infiltration of precipitation.

P. 3-9 Paragraph 2 states: "The contour map (exhibit 3-2) clearly indicates the buried water line that runs through the area from east to west past the incinerator building." A pipeline is not particularly clear in this figure. There does not appear to be a continuous linear anomaly based on the data presented and the manner that they are contoured. The figure indicates three anomalies labeled "pipe effects" but they do not form a linear array which passes the incinerator building, and they are not continuous.

P. 3-9 The SI report mentions a "grease pit area, located in the eastern portion of the plot." This feature should be indicated on the appropriate figures.

P. 3-9 Paragraph 3 states: "Although some of the isolated low conductivity areas may be associated with significant ground water contamination, it is concluded that the concentration of the contaminants is sufficiently low that variations in conductivity values are not discernible with any degree of confidence." The meaning of this statement is unclear. If low conductivity readings are associated with ground water contamination, then based on Exhibit 3-3, a ground water contamination plume may exist in the eastern portion of the landfill

along grid lines N and O. Furthermore, there are no monitoring wells in this area that would have identified the presence of contamination. Therefore, how was it concluded that the "concentration of contaminants is sufficiently low" such that conductivity values are not discernible?

P. 3-10 Exhibits 3-2 to 3-7 - The data in these figures are illegible, and to 3-15 it is not possible to evaluate the contours or the interpretations based thereon. Furthermore, what is the significance of the area indicated as "false contouring" in exhibit 3-2? In addition, the units of the data and the contour interval are not stated.

P. 3-18 Paragraph 2 states: "In all of the previously mentioned exhibits, some contour lines will be noted in areas where no measurements were performed. These anomalies are caused by the algorithm used by the contouring program...." Plots created by graphical contouring software should generally be hand-edited as a reality check and to remove artifacts such as these.

P. 3-19 Paragraph 4 states, "The GPR records also show reflections that correlate with the postulated dipping bedding planes of the bedrock formations." The report appears to be confusing dip of bedding planes with the slope of the bedrock surface. Generally, the geophysical methods used in this investigation can not "see" bedding planes, unless there was a very high degree of fracturing or weathering associated with the bedding planes. Also, on page 2-7 the report states that the sedimentary formations beneath the site "dip at a shallow angle to the south-southeast across the area at a rate of approximately 50 feet per mile." This statement conflicts with the "southerly or westerly" dip of approximately 23 degrees reported at the top of page 3-23. The feature observed by GPR is probably the top of the bedrock surface (i.e. the interface between the bedrock and the overlying glacial deposits).

Page 3-19 further states, "GPR records indicate numerous areas where buried drums may be located, with the depth of burial ranging from just beneath the surface to 5 feet," and page 3-23 states, "The possibility of buried drums exists, and buried drums may be contributing to the observed groundwater contamination." These two statements point to the presence of other source areas for aquifer contamination. It would be stretching the imagination to presume that all of these drums contain only TCE or the other detected compounds. There is no data in the reports indicating that acid, base/neutral

analysis was done on the soil or groundwater. Therefore, organic compounds other than TCE will at some time probably contact the activated carbon wall. As a further example, page 3-26 states, "From soil gas measurements, it is believed that the "toluene" peak could be due to the presence of various di- and trichloroethylenes, chloroform, carbon tetrachloride, or possibly even C6 to C10 aliphatic hydrocarbons, as well as toluene, xylenes and other aromatics." Again, this suggests more contaminants in the aquifer (or a source potential) that may interfere with the activated carbon sorption of TCE.

P. 3-25 The top paragraph mentions soil gas samples were collected from within the "former sludge pond." The location and contents of this sludge pond need to be more thoroughly described.

P. 3-30 There is also a concern that the metals analysis could be incorrect. Paragraph 1 indicates that samples collected for metals analysis were filtered through a <45 micron filter. This leads EPA to believe that no unfiltered samples were analyzed for metals. Depending on the concentration, type and size of colloidal particles present in the groundwater, the concentration of metals may be grossly underestimated. EPA Region II recommends against filtering samples for metals analysis to provide conservative results. Region II also recommends preserving aqueous samples for volatile analysis with hydrochloric acid to a pH < 2. Aqueous samples collected during the SI do not appear to have been properly preserved.

P. 3-31 Exhibit 3-14 - This table needs clarification or additional information with respect to the following items:

- The table should provide the north-south coordinate as well as the east coordinate;
- Does the third column titled "Well Casing" refer to the "stickup" of the casing above the ground surface?
- Is "Well Depth" measured from the top of the casing or from the ground surface?
- What do the missing values in the columns labeled "depth to water from top of casing" mean?
- Why are water level elevations provided for wells on dates where the depth to water from top of casing is missing?

- What is the significance of the columns labeled "weathered bedrock depth" and "hard bedrock depth"--depth below what?

P. 3-33 Paragraph 6 states: "The primary purpose of the building inspection was to ascertain whether the sumps could be a source for observed ground water contamination, and no indications were found that this is the case." This statement is supported by the preceding paragraph which states: "OVA measurements indicated the absence of volatile contaminants ...." However, pg. 3-34 indicates that it is not known if the building contains hazardous quantities of heavy metals or other nonvolatile organic compounds. Therefore, the presence of elevated concentrations of heavy metals or nonvolatile organics in the ground water within the sump remains a possibility.

P. 3-35 Four shallow overburden wells and one bedrock well were tested using a slug test method to obtain an estimate of aquifer permeability (hydraulic conductivity). The SI report states that "Initially, most of the 15 existing wells were tested qualitatively to determine whether the slug tests would be expected to provide interpretable results. For example, Well PT-10....was not chosen because preliminary testing showed that very little water-level change would be observed during the tests." This statement indicates that wells screened in low permeability (i.e. low hydraulic conductivity) materials were omitted from the investigation. Consequently, the slug test data are biased toward higher hydraulic conductivities. Estimates of rates of ground water flow based on these data will therefore be higher than the average ground water flow over the site.

P. 3-37 The SI report uses the method of Bouwer and Rice (1974) to reduce the aquifer test (slug test) data. Paragraph 1 states, "This analysis assumes the monitoring well fully penetrates an aquifer of homogeneous, isotropic, infinite medium in which both soil and water are incompressible." The Bouwer and Rice method does not require that the well be fully penetrating (i.e. that the well screen extend through the entire saturated thickness of the aquifer). This method does, however, require that the top of the well screen be below the water table. The reason for this requirement is that one of the input parameters in the formulation is L, the screen length, which is a constant. If the water table crosses the well screen, the saturated length of the well screen will vary during the test and the input value of L has no meaning. Another way of expressing this is that the unsaturated

length of the screen above the water table has no effect at all on the behavior of the aquifer during the test. The input value for screen length is not provided in the report, but it is clear from the thickness of the water column in wells tabulated in Exhibit 3-15 that the top of the screens are not below the water table.

Another problem with this analysis is that the report appears to have confused aquifer thickness (parameter D in the Bouwer and Rice paper) with height of the water column in the well (H in Bouwer and Rice). The formulas used in the equation for effective radius, R_e, depend on the relative magnitudes of D and H. At this site, aquifer thickness for the shallow wells may be the saturated thickness of the overburden above the bedrock. The saturated thickness of the overburden does not seem to have been used in the calculations, and it is not provided in the report. Furthermore, the report states that it is reasonable to assume that screen length is less than or equal to aquifer thickness, "as noted in Exhibit 3-15." This table does not provide any information about aquifer thickness.

P. 3-37 Paragraph 2 states that: "The computer-generated work sheets showing the input data and the average calculations for each of the wells tested are provided in Appendix D." Appendix D only contains graphical displays of the data and the computer-calculated recalculation of the input data (based on a regression of initial head, H_o). No calculations or specific input data are provided.

P. 3-38 The values calculated from the slug test data are actually hydraulic conductivities, and not permeabilities. For the reasons discussed above, these values may not reflect actual hydraulic conductivities of the aquifer beneath the site. The data should be recalculated using a more appropriate methodology which does not require that the top of the screen be submerged.

P. 3-41. Exhibit 3.17 - "Below certified reporting limit (BCRL)" should be replaced by actual measured values and a column added showing the appropriate maximum contaminant level (MCL) or other standard for each contaminant. If the BCRL refers to the detection limit, the value of the detection limit should be included.

P. 4-1 Paragraph 1 states, "Data on ground surface, groundwater, and well elevations were presented in Exhibit 3-6,..." The table containing these data is Exhibit 3-14.

P. 4-1 K is the hydraulic conductivity, not permeability. Units of permeability are length squared.

P. 4-2 This figure is actually a projection of water level elevation and ground surface onto a vertical plane running east-west across the site. By projecting the data onto this plane, some of the 3-dimensional information is lost. Using this figure it is possible only to observe the gross direction of ground water flow, and not more detailed spatial variations or flow paths. This is not an effective means of presenting hydrogeologic data. The report should provide a contour map of the water table, with well locations, water level data, and geographic and facility features clearly indicated.

P. 4-4 The value chosen for the effective aquifer porosity and used to calculate the average ground water flow velocity across the site is 0.11. This may be a reasonable value, but it should be noted that porosity may have a range of values, especially in the shale bedrock. The ground water flow velocity and travel times should be calculated for a possible high and a possible low porosity, and also for the high and low values of hydraulic conductivity obtained. This exercise would serve as a simplified "sensitivity analysis." As noted in the comment to page 3-35, the hydraulic conductivities measured are probably biased toward higher values.

The SI report notes that because the observed concentrations are low, it is likely that the contaminants migrate at the same velocity as the ground water. Significant retardation of contaminant migration may occur at high or at low concentrations.

Exhibit 4-3 - The SI report notes that there is an apparent discrepancy between the direction of ground water flow and the apparent direction of contaminant migration. The report should reference this discussion to a map which clearly displays concentrations of indicator compounds in monitoring wells across the site. This map could then be compared to a similar map, drawn to the same scale and covering the same area, which shows ground water elevation contours. The x-y plot in Exhibit 4-3 is not appropriate for displaying hydrogeologic data, because it is a projection of 3-dimensional data onto a 2-dimensional vertical plan.

On page 4-4 the SI report also notes that "one or more preferential pathways that may be due to the presence of either natural or man-made permeable zones is postulated." If one of these preferential pathways

becomes the main conduit for highly contaminated groundwater, a preferential pathway may evolve through the activated carbon bed, resulting in breakthrough at that point. This, of course, is dependent on the concentration of and competition between the contaminants themselves and other organic matter.

P. 4-6 Exhibit 4-4 - This figure should contain facility features for reference and comparison to other maps in the report. It would also be helpful if this hydrologic map were at the same scale as the other maps in the report.

P. 4-7 This entire section was hard to follow. The "relatively narrow plume" that is discussed should be shown on a map. Based on Exhibit 4-4, EPA's own sketch of the plume seems to be following the western direction of the groundwater flow in the northern part of the landfill; however, since the wells are not shown on an area-wide map, it is hard to draw any conclusions about the rest of the site.

The acronyms used in this section (TRCLE, T12DCLE) are not defined.

The "deep ditch" that is cited as influencing the contamination in PT-24 is also not on a map.

The SI report suggests that the apparent discrepancy between the rates and directions of ground water flow and contaminant transport may be due to the presence of higher conductive (transmissive) zones in the aquifer, such as backfilled material around underground utility lines. The report proposes that the water line identified in the EM survey and other features identified in historical documents may be serving as preferred conduits for contaminant migration. However, again the report does not provide a map which indicates these features or a map which shows the distribution of contamination across the site, and thus it is impossible to evaluate this hypothesis.

P. 4-7 Paragraph 1 states: "The reduction in concentration along the transport pathway is possibly due to loss of the volatile constituents from the slow-moving, shallow groundwater." Other possible reasons for decrease in the levels of contamination as the plume moves from the source include:

- dilution of the plume by recharge from infiltrating rainfall and snow melt;

- dispersion of the plume laterally and vertically; or

- "sinking" of the plume, which may occur if ground water gradient contains a significant downward vertical component.

P. 4-7 Paragraph 2 states: "Concentrations in wells further upgradient (PT-20 and PT-22) are of the same order or less than in Well PT-17, and contaminant levels drop by roughly two orders of magnitude from Well PT-18 (near the source) to Well PT-17." According to Exhibit 4-5 for the most recent sampling (Nov 88), the above statement is correct relative to trichloroethene. However, the concentration of t-1,2- dichloroethene is roughly one order of magnitude less at Well PT-17 than Well PT-18 for the most recent sampling. Furthermore, for samples collected in October 1987, the level of t-1,2-DCE was actually higher at Well PT-17 (172 ug/L) than at Well PT-18 (160 ug/L). The fact that concentration levels appear to be decreasing at Well PT-17, and increasing at Well PT-18 contradicts the postulates regarding suspected source areas and the predicted east to west migration pathways.

P. 4-9 If well PT-21 was purged to dryness prior to sampling, the water reentering the well may have "cascaded" down the inside of the screen, causing the volatiles to be lost. This may account for the lower concentrations found in this well relative to PT-22.

P. 4-9 Paragraph 1 indicates that none of the existing monitoring wells effectively intercept the migration pathway extending upgradient from Well PT-24, nor any other ground water contamination that may be migrating away from landfill locations north of about grid line 4, or the source areas identified at grid point K-2. EPA notes that Wells PT-16 and PT-23 should provide some indication of contamination migrating from these areas, however these wells were not sampled during the November 1988 investigation. It is noted that prior sampling of Wells PT-16 and PT-23 during the Geohydrologic Study conducted in October 1987 (No. 38-26-0313-88) revealed no volatile contamination in these wells. Thus, it appears that prior migration of ground water contaminants in a north to northwesterly direction has not occurred. However, it is unclear why additional sampling of these wells was not conducted during the November 1988 investigation, especially since significant increases in concentration have been observed in some wells (i.e., PT-12 and PT-18) between the 1987 and 1988 sampling events.

P. 4-12 Paragraph 1 states that: "the data indicate considerable inhomogeneity in the landfill contents, and not all of the area may require consideration of corrective actions." Given the heterogeneity of the landfill contents, and the inability to delineate specific source areas with certainty, EPA believes it would be difficult to determine which portions of the landfill require corrective action, and those which do not, using existing data.

This problem is further complicated by the fact that no monitoring wells are located within the eastern portion of the landfill. Although soil gas readings have not identified volatile contamination near the ground surface, the presence of volatiles dissolved within the water table, or as a separate phase beneath the water table, remains a possibility. Furthermore, given the combination of a deep high-yield bedrock aquifer in conjunction with a thick overburden, which are the conditions in the eastern portion of the landfill (as described on p. 2-13), the presence of volatiles in soil gas would not be expected even if significant ground water contamination was present.

P. 5-2 Paragraph 1 refers to preferential migration pathways that may exist, accounting for the "narrow" plume. The inferred internal limits of the plume are highly speculative, yet should be delineated on a map or site plan of the area.

P. 5-2 The last paragraph states that due to the low transmissivity of the aquifer, an extremely large number of collection wells would be required to intercept the contaminant plume. EPA notes that there exists conflicting information on the effective permeability of the fractured shale compared to the glacial fill.

P. 6-4 Paragraph 4 states: "There are no location-specific ARARs applicable to the interim response actions proposed for implementation at SEAD." EPA notes that surface runoff from SEAD flows into streams which flow into Seneca lake. Furthermore, a swamp area was identified in the vicinity of the landfill. In the event that the implementation of interim measures impacts either the streams or wetlands, certain ARARs may apply.

These additional ARARs are likely to include:

Executive Order 11990 - Protection of Wetlands
(40 CFR 6, Appendix A)

Wild and Scenic Rivers Act - Protection of Riverways (16 USC 1271)

In the event that an abundance of wildlife, or registered endangered species are known to inhabit the area, state and federal ARARs pertinent to wildlife protection may also apply.

P. 6-5 Chemical-specific ARARs for surface and ground water are provided on p. 6-5. Additional ARARs should be considered when considering either interim response or final remedial actions. For actions which involve the discharge of effluent to surface water, the following will apply:

Clean Water Act - Effluent Discharge Limitations (40 CFR 401.15)

For actions which cause the release of volatile organics or other contaminants to the atmosphere (excavation, air stripping, incineration etc.):

Clean Air Act - National Ambient Air Quality Standards (40 CFR 50)

Clean Air Act - Emissions limitations for new sources (40 CFR 60)

Clean Air Act - Emissions standards for Hazardous Air (40 CFR 61) Pollutants

P. 6-6 Section 6.2.3 Corrective Action Requirements notes the presence of significant deficiencies in the data currently available for the site. Known deficiencies include: (1) uncertainties regarding the current or potential use of the shallow ground water; (2) potential for contamination of the deep aquifer; (3) risk associated with surface water runoff or the discharge of ground water to surface systems; (4) existence of potential receptors, exposure pathways, exposure point concentrations, and risks.

In light of the above deficiencies, it would be advisable to develop a conceptual model of the site which identifies all potential sources, migration pathways and receptor groups. The model will help identify remediation objectives, the need for interim remedies, and areas where additional site investigation is warranted. A conceptual site model is normally developed during the project scoping phase, in conjunction with the preliminary identification of ARARs, remedial action alternatives, and the corresponding data requirements.

In light of the fact that the potential uses of the shallow ground water beneath the landfill area are not known, the formulation of remedial response objectives in the feasibility study (FS) is not possible. Remedial response objectives are formulated to provide for the protection of public health, and land use potential is a fundamental consideration. Therefore, the Army contractor should prepare a risk assessment (RA) in conjunction with any follow-up remedial investigation (RI) activities, prior to initiating the FS process.

P. 6-7 The first paragraph states: "...it was determined that the relevant and appropriate, rather than the applicable, requirements would be used to establish the need for consideration of response actions." EPA notes that because the potential uses of the shallow ground water are currently unknown, there is no way to determine which ARARs or TBC criteria are relevant and appropriate to site conditions.

P. 6-7 Paragraph 1 under Section 6.3 states that corrective action is required to minimize the release of contaminants from sources. The paragraph goes on to state that interim response actions "must immediately prevent or reduce threats to human health or the environment...." Previous studies of have indicated that site contamination may extend to surface water, and may have moved offpost (refer to p. 2-17). Page 2-5 of the SI further states that surface runoff from SEAD flows west into Seneca Lake or northward into Kendig Creek.

In spite of these considerations, page 6-8 of the SI states, "the nature and extent of surface water problems are not known with certainty, and response actions are not considered for control and treatment of runoff except in concert with actions for ground water." Given the levels of contamination detected at the site, and the general surface runoff patterns expected in the area, the control of surface runoff should be included in all interim response actions, regardless of which ground water controls are implemented.

P. 6-8 Section 6.4.1 Installation of Pumping Wells - Paragraph 2 indicates that a large number of wells spaced at 5-foot intervals along the entire breadth of significant contamination would be required to intercept the plume. EPA does not believe that enough is currently known about the aquifer characteristics to estimate or predict the radius of influence, drawdown, etc. for these wells. EPA recommends that a long-term pumping test be conducted to provide more data on aquifer characteristics necessary

for the design of the extraction system.

P. 6-8 Paragraph 1 under Section 6.4.1 states that a collection well system would need to be installed near the Depot Boundary for benefits to be noticed in a few years. It is further stated that reversal in flow direction could not be depended on to limit migration down-gradient from a collection system placed closer to the sources. EPA notes that collection wells could actually be placed both near the source and at the Depot boundary. This system would minimize offsite migration and facilitate overall aquifer restoration. Furthermore, this system may be more amenable to inclusion as a component of the final remedy.

P. 6-8 Sections 6.4.1 and 6.4.2 identify interim remedies involving the installation of pumping wells, and collection trenches. These response actions identify removal actions, however a treatment component (i.e., activated carbon or air stripping) should be included as a component of each.

P. 6-10 Section 6.4.3 provides calculations of the amount of chlorinated volatile compounds that will need to be treated in a years time. EPA does not believe enough information is available to accurately estimate hydraulic or contaminant loading on the carbon treatment system.

P. 6-11 Paragraph 2 states: "The primary advantages of this action would be the low cost of initial installation and the very low maintenance cost." EPA notes that it is difficult to conceptualize the low cost of the permeable treatment bed action, as no cost estimates were presented for the other interim remedies proposed in this section. Furthermore, paragraph 5 states "Costs are provided for the minimum required length (320 feet) of the system: depending on the safety factor desired, a length of 30% to 50% greater should be considered." EPA believes that a collection trench would not only be cheaper to install, but would eliminate the need for extensive monitoring downgradient of the trench while providing the additional capacity for the collection of surface runoff. (Note that if surface runoff becomes a substantial problem, the installation of collection trenches will be warranted which may interfere with the permeable treatment beds.)

EPA also notes that if breakthrough is detected at an isolated point along the treatment bed, excavation of the contaminated portion of the bed will be required. EPA has questions as to whether this will be as "simple" and "inexpensive" an operation as it is described to be in a subsequent paragraph. In addition, the contaminated

material removed from the trench would have to comply with all ARARs concerning treatment and/or disposal regulations.

P. 6-11 Paragraph 3 states: "The process would supplement, and become part of, a permanent corrective action such as landfill capping or removal." Due to the length of time required to achieve aquifer restoration using the in situ permeable treatment bed (50 years), EPA questions the suitability or desirability of using this action as a permanent remedy. Furthermore, in the event that this remedy is not adaptable to the permanent remedy, a considerable expense would have been incurred with perhaps a less than significant return.

P. 6-11 Paragraph 6 states that at least six wells will need to be installed prior to the treatment bed design to provide data on the contamination profile and the presence of permeable zones. However, Section 6.4.1. Installation of Pumping Wells stated that of the 64 recovery wells, half of these wells (32) would need to be installed as a "test" case to determine permeability variations. EPA questions why only six wells would be needed to assess permeability variations relative to the treatment bed remedy, when 32 would be required for the pumping well remedy. Furthermore, EPA stresses that the identification of highly permeable zones will be essential to assure proper placement of monitoring wells, and the subsequent detection of breakthrough at any point along the in situ permeable treatment bed.

P. 6-12 Exhibit 6-1 does not identify costs associated with the construction of a levee or berm to prevent run-on into excavation areas, the temporary storage of excavated soils, dewatering activities (if necessary), offsite disposal of excavated materials, and long-term operation and maintenance (O & M) requirements including ground water monitoring and carbon disposal.

App. B The scale on most of the figures in this appendix is illegible.

App. D All of the graphs of rising head test data appear to show that the head measurements decreased with increasing time. What is the reference point for the head measurements? All of the values seem to vary between about 1.1 and 0.3 feet.

2.2 Review of Document: Statement of Work For The Treatability Study Of The Proposed Interim Remedial Measures at the Incinerator Ash Landfill, Seneca Army Depot, Romulus, New York, June 22, 1989.

2.2.1 General Overview

EPA reviewed the Treatability Project Statement of Work (SOW) primarily to assess the depth and quality of information currently available regarding the design and implementation of the in situ permeable treatment bed system. EPA notes that the SOW does not represent a treatability project design report. However, the SOW is valuable in that it serves as a guide to prospective engineering firms and equipment vendors with respect to the overall needs and requirements of the project. The SOW also serves to establish the quality assurance (QA) objectives of the project.

EPA believes that the SOW provides the necessary framework, including QA considerations, such that full actualization of the treatability project may be achieved. As stated in the SI, the purpose of the permeable carbon bed will be to intercept and remove volatile organic contaminants from the groundwater emanating from the incinerator ash landfill area. EPA does express concern, however, that the treatment system design presented in the SOW is based on the minimum design requirements established during the SI. For this reason, the AE firm should be informed that additional data gathering activities are warranted to assess the actual extent of the plume and to verify migration pathways, or else a significant safety factor (30% to 50%) will need to be incorporated into the treatment bed design to account for the uncertainties in actual site conditions.

Permeable treatment beds have not been used at hazardous waste sites; they have only been tested on the bench and pilot scale. EPA suggests that great care be given to the experimental stage of the technology. In depth analysis of the groundwater for constituents that might adversely affect activated carbon binding is also strongly suggested, as discussed above.

EPA notes that the Army contractor should also be required to conduct bench scale testing as necessary to determine the most suitable carbon/sand mixture appropriate to the site conditions at SEAD. In addition, the AE should be required to identify all data requirements of this technology (including specific engineering analyses), and make provisions to obtain any such data not currently available for the site. EPA is specifically concerned with the lack of convincing data regarding the hydraulic conductivity and transmissivity of the glacial till and fractured bedrock, and the presence of permeability variations throughout the shallow aquifer. The former item will be essential to predicting the hydraulic loading factor for the carbon bed, while

the latter item will be significant in determining the placement of monitoring wells downgradient of the in situ treatment bed.

EPA also has questions regarding the identification of "competent bedrock." Based on information presented in the SI, it does not appear that adequate analysis concerning bedrock quality beneath the highly weathered zone has been completed. EPA recommends that downhole geophysical logging be conducted in the vicinity of the proposed treatment trench. EPA also notes that geological profiles of this area could be developed following excavation of the trench and used to modify the approved design prior to actual carbon bed installation.

Section 3.4.2 of the SOW specifies that the AE/vendor will be responsible for all dewatering and excavation activities, and must assure that all excavated soil and dewatered groundwater deemed hazardous be handled appropriately. EPA would recommend that some type of composite sample screening be conducted to determine whether excavated material and ground water is hazardous or nonhazardous. EPA would also recommend that provisions for the temporary storage of contaminated materials onsite be incorporated into the system design and work plan, assuming some storage of hazardous material will be required. Furthermore, pre-treatment requirements for discharging hazardous ground water should be considered assuming that some effluent discharge will be occurring. These items will be crucial to maintaining compliance with all federal and state ARARs, while minimizing the potential for a release of contaminants during remedy implementation.

Section 7.0 discusses the criteria for installation of the monitoring wells mentioned in Section 3.4.2. These criteria should be incorporated into the system design, installation, and monitoring sub-plan as outlined in this section. Furthermore, the boring and well locations must be properly surveyed to provide accurate coordinates and elevations for each monitoring well as stated in Section 8.0.

EPA concludes that this proposal is sufficient in providing the AE with all necessary requirements instrumental to completing the proposed treatability project. Furthermore, this document is consistent with the ideas presented in all previously reviewed site specific literature including the Site Investigation (SI) Report completed in July 1989. However, EPA is skeptical about using this technology at this site. Whereas both trichloroethene and trans-1,2-dichloroethene can be removed with activated carbon, they have a low level of breakthrough, and because they are much less sorbable than other organics, the possibility of desorption is preference for the other organics in the plume is high. In addition, EPA believes further investigation of the geology and hydrology of the site is required, especially as it relates to the hydraulic conductivity of the fractured bedrock and the permeability of the shallow aquifer and subsurface. Only when

these additional data are obtained, should the AE/vendor finalize the treatment system design and begin implementation of the proposed treatability project.

2.2.2 Page-Specific Comments

P. AC-2 SEAD was proposed to the NPL in July, 1989.

P. AC-3 (Task C-3) Treatment System Design indicates that monitoring wells will be installed prior to bed installation to provide baseline data and to monitor the effectiveness of the treatment bed following installation. EPA notes that significant variations in permeability of the fractured bedrock are likely to exist throughout the length of the proposed trench. Therefore, the strategic placement of monitoring wells in highly susceptible areas will be critical to assure that contaminant breakthrough is detected by one of the wells. EPA does not feel that the hydrogeologic data needed to locate these wells currently exists. It may therefore be more appropriate to excavate the trench, and then develop a geologic cross-section of the trench to determine zones of greatest permeability. Following examination of these cross-sections, monitoring well locations can be determined for maximum effectiveness.

EPA questions whether 10 monitoring wells will be sufficient to provide complete monitoring of the trench. In fact, the SI indicated that 32 recovery wells would need to installed downgradient of the site to determine permeability variations in the weathered bedrock (Pump and Treat Remedy). Furthermore, only 6 monitoring wells were proposed in the SI report for the In Situ treatment bed remedy.

EPA expresses concern about the potential for contaminant migration through deep bedrock fractures beneath the in situ permeable treatment bed. In the event that deep layer transport is occurring, the proposed remedy may not be effective in preventing offsite migration of contaminants.

The proposed depth of the trench is not given. A discussion of the potential of the trench to alter groundwater flow should be included.

P. AC-4 (Subtask C-3.2) Treatment Trench - This section states: "It is anticipated that the trench will be 320 feet by 15 feet by 2 feet (length, depth and width, minimum dimensions, respectively). EPA notes that p. 6-11 of the SI Report states: "Costs are provided for the minimum

required length (320 feet) of the system; depending on the safety factor desired, a length of 30% to 50% greater should be considered." In light of the above information, it does not seem appropriate for the AE to develop a trench design based on the minimum size requirements.

P. AC-4 Contamination Control Measures - Section states that: "The AE shall be responsible for the transport and treatment/disposal of dewatered ground water and excavated soil." EPA notes that the engineering design should include measures to prevent run-on into the excavated areas and provision for the temporary storage of dewatered/excavated sludge, in the event that offsite transport of contaminated material cannot be conducted in a timely manner. In addition, what does the term "dewatered ground water" mean?

P. AC-5 (Subtask C-4.2) Excavation, Transportation and Disposal This section states that the AE shall be responsible for the disposal of hazardous wastes in an approved landfill. Updated RCRA Land Disposal Restrictions (LDR) establish maximum contaminant concentration limits applicable to wastes placed in landfill. Depending on the volatile organic contaminant levels reported in these wastes, landfilling may not be a viable disposal option. LDR may also restrict the option of leaving the carbon filtration wall in place after remediation is completed. Disposal of the carbon should be included in a discussion of the anticipated lifespan.

It may not be feasible to collect and transport contaminated ground water generated during excavation and/or dewatering activities. Therefore, provisions may need to be established for providing on-site treatment of ground water (i.e., activated carbon canisters, air stripping etc.) prior to discharge at or in the vicinity of the site.

P. AC-5 (Task C-5) Treatment System Operation - This section states monitoring wells will be sampled prior to and following system installation. EPA again notes that it may not be feasible to establish monitoring well locations prior to excavation of the trench, and examination of the subsurface structure. Perhaps a small number of monitoring wells can be installed prior to treatment bed installation, followed by the installation of additional wells (as needed) following remedy implementation. Monitoring wells must extend beyond the current plume to ensure that contaminated groundwater is

not breaking through or moving around the edges or underneath the trench.

Groundwater monitoring of the treatment system must continue beyond one year to determine that the wall is continuing to work and that breakthrough or leakage around the ends is not occurring.

P. AC-6 EPA will also take splits of groundwater samples.

P. AC-7 Metals, arsenic, selenium and mercury must be analyzed both before and after installation.

Table 2. "After 10 mo." should read "After 12 mo."

P. AC-8 (Task C-7) Engineering Report - EPA recommends that the AE report also identify the volumes of material excavated from the trench, and all treatment, storage, transportation, and disposal activities accomplished. In addition, the AE report should contain as-built drawings of the carbon filtration wall, as well as the reasons for any variations from the original plans.

3.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the review of the Site Investigation Report for the Burning Pits/Landfill (SI), and the Treatability Project Statement of Work (SOW), EPA concludes that a significant amount of valuable information has been generated on the SEAD landfill area, however, serious data gaps have been identified. The specific conclusions and recommendations of EPA appear below.

- The geophysical surveys and the soil gas surveys have been effective in identifying areas of suspected contamination. However, EPA is convinced that the actual source of the ground water contamination plume remains unknown. The potential sources may include leaking drums buried within the landfill mass; contaminants dissolved within the water table of unknown origin or a separate phase of volatile organic contamination which may be near the bedrock surface. EPA also notes that the composition of the landfill wastes and ground water has not been determined. Although volatile organics have been identified in ground water, the presence of floating product within the aquifer remains a possibility. This product may have serious implications in the event that an in situ permeable treatment bed is installed.

- The vertical and horizontal hydraulic conductivity and transmissivity of the fractured bedrock along the western property boundary has not been determined with certainty. Furthermore, EPA has identified conflicting information in the

background documentation which would require resolution prior to the design of an effective interim or final remedial alternative. EPA also has concerns regarding the determination and extent of permeability variations in the shallow aquifer, and their effect on the proposed interim remedial measure. EPA recommends that a long-term pumping test be conducted in addition to downhole geophysical logging, in order to provide needed data with regard to shallow aquifer and fractured bedrock conditions.

- EPA generally agrees that ground water flows east to west in the landfill area. However, EPA believes that significant variations in localized flow patterns are likely to exist including the potential for migration to the north, to the east and to the south of the landfill. (Note that the SI does not evaluate the potential for ground water "mounding" beneath the landfill.) Therefore, any remedy designed to intercept contamination at the landfill boundary will not necessarily prevent migration in other areas. EPA also notes that no information has been provided on surface runoff patterns, therefore a potentially significant migration pathway remains completely unknown. EPA believes that the generation of a north-south geological cross section throughout the landfill area would enable an assessment of groundwater impacts to the north, as well as estimate surface discharge to the swamps.

- EPA believes that significant deficiencies exist with the selected interim remedy, and additional information is needed to assess the feasibility and implementability of this remedy. Specifically, the hydraulic conductivity of the fractured shale should be determined and used as the hydraulic loading factor in the treatability system design. Use of the relatively low hydraulic conductivities associated with the glacial till may result in significant under-design of the permeable treatment bed.

- Additional concerns regarding the permeable treatment bed remedy are identified in the page-specific comments, and include:

  (1) The use of a cost-estimate based on the minimum design requirements;

  (2) The lack of consistent data concerning the hydraulic conductivity of the fractured bedrock;

  (3) The ability to effectively locate six monitoring wells in zones of varying permeabilities downgradient of the bed, such that they will be able to detect breakthrough throughout the length of the trench;

  (4) Long term maintenance and monitoring requirements; and

(5) The concern that preferential contaminant loading onto distinct portions of the permeable bed may lead to undetected breakthrough in portions of the bed.

- The lack of monitoring well schematic diagrams and boring logs in the SI report make an overall understanding of the subsurface conditions difficult. Also, lack of a topographic map makes it difficult to understand surficial hydrology. EPA recommends inclusion of this type of information in the SI report. Furthermore, there appears to be conflicting date in the SI Report and the Geohydrologic Study No. 38-26-0313-88 with respect to hydraulic conductivity of the subsurface formations.

- The full scale RI/FS for the SEAD landfill and burning pits area should include additional sampling of soils and ground water, including sampling to the north, east and southeast of the suspected source areas. The RI should also include further investigation of the nature of the waste materials within the landfill, in addition to greater delineation of bedrock contours, hydraulic conductivity of the fractured bedrock, and variations in hydraulic conductivity of the shallow aquifer. Additional objectives for future RI activities can be identified throughout this review.

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ANNEX ?

REMEDIAL INVESTIGATIONS AND FEASIBILITY STUDIES
AT THE
OPEN BURNING GROUNDS
SENECA ARMY DEPOT, ROMULUS, NEW YORK

1.0 GENERAL STATEMENT OF SERVICES

1.1 Background. As part of its continuing program of evaluating its hazardous waste management practices, the Army will perform Remedial Investigations/Feasibility Studies (RI/FS) at the Open Burning (OB) Grounds at Seneca Army Depot (SEAD). The RI/FS investigations are to be conducted to determine the magnitude of environmental contamination and appropriate remedial actions. The US Army Corps of Engineers, Huntsville Division, on behalf of SEAD, will contract for the required work.

1.2 Location. Seneca Army Depot is a US Army facility located in Seneca County, New York. SEAD occupies approximately 10,700 acres. It is bounded on the west by State Route 96A and on the east by State Route 96. The cities of Geneva and Rochester are located to the northwest (14 and 50 miles, respectively); Syracuse is 53 miles to the northeast and Ithaca is 31 miles to the south. The surrounding area is generally used for farming.

1.3 Regulatory Status. Seneca Army Depot was ~~included on~~ proposed for the Federal Facilities National Priorities List on 13 July 1989. Consequently, all work to be performed under this contract shall be performed according to CERCLA guidance as put forth in the Interim Final "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA", dated October 1988 (Reference 11.20). Additionally, all work performed as part of this contract shall be performed according to the ~~Federal Facility Agreement~~ Inter Agency Agreement negotiated ~~for~~ between Seneca Army Depot, (Reference ??.??) New York Department of Environmental Conservation (DEC) and US EPA Region II (EPA).

1.4 Previous Investigations. Previous investigations have been performed at various SEAD units. An "Installation Assessment and Update" (USATHAMA Reports No. 157 (1980) and 157(U) (1987), respectively) were conducted by the U.S. Army Toxic and Hazardous Materials Agency. The purpose of the assessments was to identify potentially contaminated areas at the Depot. The U.S. Army Environmental Hygiene Agency's Groundwater Contamination Survey No. 38-26-0868-88, "Evaluation of Solid Waste Management Units, Seneca Army Depot" (Reference 11.19) identifies and describes all solid waste management units (SWMU's) at SEAD. In addition, a Criteria Development study (Reference 11.22) has been performed and closure plans were being considered for the burning pads (SEAD-23). However, closure is not presently being considered, ~~presently, while~~ pending outcome of an RI/FS, ~~studies are being conducted~~. A complete list of previous investigations is presented as References in Section 11.0.

1.5 Units to be Investigated Under this Contract. The RI/FS investigations will be focused on the open burning grounds; specifically, the burning pads and adjacent ground area. The approximate area of concern is 30 acres.

1.6 Security Requirements. Compliance with SEAD security requirements is mandated. These requirements are presented in Section 9.0.

1.7 Contaminants of Concern. Since 1941, propellant, explosive and pyrotechnic (PEP) wastes have been disposed of at the OB grounds. The contaminants of concern in this investigation are heavy metals and explosives.

2.0 OBJECTIVE

The objective of this Statement of Work is to develop a complete Work Plan for RI/FS investigations to be performed at the Open Burning grounds. This Work Plan shall be developed as defined by Office of Solid Waste and Emergency Response Directive 9355, beginning with the RI/FS scoping process and ending with a regulatorally approved Work Plan at the identified site. Additionally, this Work Plan shall maintain the basic format of the Work Plan developed for the SEAD Ash Landfill RI/FS which is presently being finalized following regulatory review (Reference 11.23).

3.0 DETAILED DESCRIPTION OF SERVICES

3.1 General Requirements. All work performed by the AE shall be designed and implemented in a manner which complements earlier investigations and shall conform to this Statement of Work (SOW). The AE, through the Work Plans, shall present a complete description of the RI/FS process as applied to this site. All work shall be performed under the general supervision of both a Professional Engineer registered in the State of New York and a certified geologist.

3.2 RI/FS Work Plan Preparation. The AE shall prepare two documents; a RI/FS Project Scoping Document and a RI/FS Work Plan Document which are intended to do the following: (1) to provide a consolidated report on site history, current site activities, and resulting environmental impacts; (2) to familiarize personnel who will be working on the project with site conditions; and (3) to provide project plans and proposed tasks by which RI/FS activities shall be conducted. The documents shall be prepared as follows:

3.2.1 (Task 1) Site Visit and Review Existing Data. The AE shall perform a visual inspection of the site, review the records, reports and other data provided by the Contracting Officer and the facility, or made available to the AE from sources such as public records, the USEPA, the State Regulators, the State Geological Survey, or from interviews with local residents and officials who have knowledge of past site activities.

3.2.2 (Task 2) RI/FS Project Scoping Document. This Task corresponds to a portion of EPA Task 1 in Appendix B of the RI/FS Guidance Manual. The AE shall prepare and submit a RI/FS Project Scoping Document which provides a summary of site conditions, gives an overview of the RI/FS process and describes how the process will be implemented at the OB Grounds. The RI/FS Project Scoping Process shall contain, as a minimum, the following elements:

3.2.2.1 Physical Characteristics of the Site. The AE shall provide a site description which includes location, ownership, topography, geology, hydrology, land use, waste type, estimates of waste volume, synopsis of findings and results of previous investigations, and other pertinent details. The description shall also include historical events of concern such as chemical storage and disposal practices, results and findings of previous studies and a "quality assurance" evaluation of the existing data in order to estimate its reliability.

3.2.2.2 Conceptual Site Model. From the analysis of the data reviewed, the AE shall make a preliminary determination of the physical characteristics of the site and prepare a Conceptual Site Model of the known contaminants. The description is to give an overview of site conditions, probable and potential contaminants of concern, severity of contamination, and the potential impacts on the environment. As a minimum the Conceptual Site Model shall include potential routes of migration, potential receptors and anticipated impacts.

3.2.2.3 Develop and Evaluate Preliminary Remedial Action Objectives and Alternatives. The AE shall present an overview of the remedial actions that could be reasonably used to mitigate adverse site conditions. The choice of alternatives shall be based on proven effectiveness of the technology and the anticipated cost of implementation. This is not meant to be a detailed investigation of all potentially available remedial technology.

3.2.2.4 Preliminary Identification of ARAR's and TBC Requirements. The AE shall make a preliminary determination of potential contaminant, location, and action specific ARAR's based upon an evaluation of existing site data.

3.2.2.5 Develop Data Needs and Data Quality Objectives. The AE shall evaluate the existing data and determine the additional data necessary to characterize the site, complete the conceptual site model, better define the ARAR's, and narrow the range of preliminary identified remedial alternatives. The AE shall consider the intended uses of existing data as well as data to be collected under this contract and determine the type, quantity, and quality of additional data needed for each site.

3.2.3 (Task 3) RI/FS Work Plan. This Task corresponds to a portion of EPA Task 1 in Appendix B of the RI/FS Guidance Manual. The AE shall prepare an RI/FS Work Plan Document, the basis and format of which are presented in Reference 11.23. Quality Control/Quality Assurance procedures, Standard Operating Procedures, methods, equipment, and specific personnel (along with their qualifications) that an AE would need to use to accomplish the RI/FS shall be identified and discussed at appropriate locations within the plan. As a minimum the RI/FS Work Plan shall include the following:

3.2.3.1 Health and Safety Program Plan (HSP). The AE shall develop and maintain a Health and Safety Program Plan in compliance with the requirements of OSHA standard 29 CFR 1910.120 (b)(1) through (b)(4). Written certification that the HSP has been developed and implemented shall be submitted to the Contracting Officer and the plan shall be made available upon request.

3.2.3.1.1 The AE shall develop a Site-Specific Safety and Health Plan (SSHP), as part of the HSP, in accordance with the requirements of Section 5.0 of this SOW. The SSHP shall be submitted to the Contracting Officer for review and approval prior to any field work.

3.2.3.2 Quality Assurance Project Plan. The AE shall prepare and submit a Quality Assurance Project Plan (QAPP) according to the requirements of Section 6 of this SOW. This portion of the RI/FS Work Plan shall also describe in detail, the following: 1) Site Background; 2) Quality control and quality assurance procedures to be exercised including organization and responsibilities; 3) QA objectives; 4) Sampling procedures; 5) Sample custody; 6) Calibration procedures; 7) Analytical procedures; 8) Data reduction, validation and reporting; 9) Internal quality control; 10) Performance and system audits; 11) Preventive maintenance; 12) Data assessment procedures; 13) Corrective actions; and, 14) Quality assurance reports.

3.2.3.3 Field Sampling Plan. The AE shall prepare and submit, as part of the RI/FS Work Plan, a Field Sampling Plan (FSP). The FSP shall describe in detail all sampling and analysis activities to be exercised including site background, sampling objectives, sampling locations and frequency, designations, equipment and procedures and handling and analysis requirements to be applied at each site. Section 3.3.1 of this SOW provides for numerous field investigation activities which will be applied to the project. It is intended that the AE, in the Field Sampling Plan, propose and justify how the field investigation activities will be allocated. In addition to the specific requirements of the RI/FS Guidance Document, the AE shall provide the following subplans as part of the FSP.

3.2.3.3.1 Geophysical Investigation Plan. The AE shall prepare and submit a brief work plan which describes specific equipment, methods and personnel which the follow-on AE ("AE") will utilize to accomplish the geophysical investigations. The plan shall propose the linear footage of geophysical

surveying to be performed and shall propose specific locations for proposed geophysical investigations. The plan shall include justification for the method selected for use in order to meet the objective of the geophysical investigations which is to obtain information on the physical, subsurface conditions at the site and to locate UXO prior to the commencement of drilling activities.

3.2.3.3.2 Soil Boring and Monitoring Well Installation Plan. The AE shall prepare and submit a Soil Boring and Monitoring Well Installation Plan according to the requirements of Section 7.0 of this SOW and Section 4.2 of Reference 11.23. This portion of the RI/FS Work Plan shall include proposals for the number, depth, total linear footage and locations of specific borings based on previous investigations, the AE's own evaluation of the site, and the results of the geophysical investigations.

3.2.4 (Task 4) Community Relations Plan. A Community Relations Plan (CRP) is presently being developed, by CETHAMA, for Seneca Army Depot, as a whole, according to the requirements of the RI/FS Guidance Manual, Appendix B, Task 2. It will describe how and when the community will be informed of RI/FS activities and findings. The Plan will describe how the RI/FS is to be implemented and managed, describe the information expected from each task and how the information will be gathered, interpreted and incorporated into the RI/FS Reports. The Plan will describe the full RI/FS process, through implementation of Remedial Action, (even though this SOW does not carry the RI/FS process to that point) so that the entire process is described. The AE shall, where appropriate, provide input on aspects of the plan that are site specific.

3.3 Remedial Investigation/Feasibility Studies. The objective of this SOW is to prepare a Work Plan for RI/FS investigations to be performed as laid out in the EPA Guidance Manual. The following items comprise the work requirements of the proposed RI/FS and are provided here to aid in the developement of the Work Plan. The implementation of the work shown in this Section is to be completed as part of a separate contract. References to the "AE" are meant to imply the AE who will be responsible for actually implementing the work required as part of the RI/FS. Task designations are included to provide a systematic approach to structuring the Work Plans and the cost es-

timate for implementation. Tasks in this section are not part of this contract.

3.3.1 Remedial Investigations.

3.3.1.1 Field Investigations. The work required in this Section corresponds to EPA Task 3 in Appendix B of the RI/FS Guidance Manual. The RI field investigations shall be performed in order to characterize the site and determine the nature and extent of soil and groundwater contamination. The work shall be performed according to the approved work plan and as follows:

3.3.1.1.1 (Task A) Geophysical Surveys. Investigations shall include the performance of Geophysical Surveying according to the requirements of the approved GIP. The "AE" shall utilize a method of geophysical investigation capable of detecting buried metal and debris, if existing, to a depth of 15 feet. The purpose of the geophysical surveys is to obtain detailed information necessary for source characterization. The "AE" shall utilize sufficient location control in the field to ensure that geophysical anomalies are located by State Plane Coordinates to the closest 1.0 foot.

3.3.1.1.2 (Task B) Drill Soil Borings. Investigations shall include the installation of soil borings as laid out in the approved FSP. In addition, the "AE" shall install soil borings for the purpose of determining background conditions at the site. Soil samples, the number and frequency of which are laid out in the FSP, will be collected as part of this subtask for subsequent chemical analysis under Task 9.

3.3.1.1.3 (Task C) Surface Water Sampling. The "AE" shall collect one round of surface water samples. The required number and locations of samples are as directed in the approved FSP. Field samples shall be collected at locations for analysis under Task 10.

3.3.1.1.4 (Task D) Surveying. Location surveys and mapping shall be performed according to the requirements of Section 8.0 of this Statement of Work and Section 4.2.5 of Reference 11.23. The following locations shall be established as part of this task:

Task Number	Description
5	Locations of geophysical survey grid points
6	Soil borings
7	Surface water sampling points
10	14 existing monitoring wells- mapping only

3.3.1.2 Chemical Sampling and Analysis. The work required in this Section corresponds to EPA Tasks 4 and 5 in Appendix B of the RI/FS Guidance Manual. The "AE" shall collect and analyze samples in a manner determined in the approved FSP. The total number of samples to be collected by the "AE" along with required and approved analysis methods are presented in the FSP. The "AE" shall prepare cost estimates assuming that the entire Table 1 and Table 2 lists are to be analyzed. During contract negotiations the "AE" and Contracting Officer will agree on a unit price for each method. If all analyses specified in this SOW are not required, the price shall be reduced according to the agreed unit price. The "AE" shall submit a Table which provides the results of each round of analytical data as soon as it is received from the laboratory, and not wait for the next scheduled report submission. Samples of the Tables to be used in presenting the type and number of analytical samples to be taken are provided in Section 6 of this SOW.

3.3.1.2.1 (Task E) Analysis of Soil Samples. The "AE" shall analyze all soil samples previously collected from the soil borings drilled. EP Toxicity tests should be performed only at sites that show a high metals content. The "AE" shall submit a Table which provides the results of each round of analytical data as soon as it is received from the laboratory, and not wait for the next scheduled report submission.

3.3.1.2.2 (Task F) Collection and Analysis of Groundwater Samples. The "AE" shall redevelop each of the 14 existing monitoring wells. Following individual well redevelopement, the "AE" shall collect and chemically analyze one groundwater sample from each of the wells. A total of 14 wells will be sampled under this subtask. Of the 14 individual samples taken, three shall be split for filtration. Of the three filtration split samples, one shall be split twice more; once to produce a filtration QA sample and once to produce a filtration QC sample. The purpose of the filtration samples is to qualify sediment influences on analysis results. Of the remaining 11 individual

samples, one shall be split twice; once to produce an unfiltered QA sample and once to produce an unfiltered QC sample. In addition, the "AE" shall chemically analyze the surface water samples collected in Task 6. The total number of water and QA/QC samples to be taken and the required analyses are summarized in the FSP. The "AE" shall submit a Table which provides the results of each round of analytical data as soon as it is received from the laboratory, and not wait for the next scheduled report submission.

3.3.1.3 (Task G) Baseline Risk Assessment. The work required in this Section corresponds to EPA Task 6 in Appendix B of the RI/FS Guidance Manual. Using the information gathered from the record search, the field work and data analyses, the "AE" shall prepare and submit a Risk Assessment. The Risk Assessment shall provide an evaluation of the potential threat to human health and the environment in the absence of any remedial action and provide the basis for determining whether or not remedial action is necessary. The Risk Assessment Report shall be prepared using the guidance presented in the RI/FS Guidance Manual and, as a minimum, contain a baseline risk assessment, an exposure assessment, and a standards analysis. The Risk Assessment shall be submitted as part of the RI/FS Report. The "AE" shall provide information including, but not necessarily limited to, the following:

3.3.1.3.1 Identification of Contaminants of Concern. Using the information gathered from field work, record search, and consultation with appropriate local, State and Federal Officials the "AE" shall identify the contaminants which are of concern. The "AE" shall provide a summary of each identified contaminant describing why it was selected, and the effects of its chronic and acute toxicity to humans and the environment.

3.3.1.3.2 Exposure Assessment. The "AE" shall identify actual or potential exposure paths and routes, characterize potentially exposed populations, and estimate expected exposure levels. As part of the Exposure Assessment, the following Task shall also be performed:

3.3.1.3.2.1 Water Well Survey. The "AE" shall make a reasonable effort to determine the existence of all operating water wells used for human consumption within one mile of the Installation that may be affected by deteriorated water quality on the Installation. A "house-to-house" survey is not intended. However, whenever possible, the "AE" shall include well loca-

tion, depth, screened interval, water use, and number of people served by the well. This task may be performed through the examination of records available at public sources, backed by occasional field checks. The information shall be provided both in tabular form and on suitable maps.

3.3.1.3.2.2 Spring Survey. The "AE" shall make a reasonable effort to determine the existence of all springs used for human consumption within one mile of the Installation that may be affected by deteriorated water quality on the Installation. The information shall be provided both in tabular form and on suitable maps.

3.3.1.3.3 Toxicity Assessment. The "AE" shall make a comparison of acceptable levels of contamination with actual levels identified during the exposure assessment. The comparison shall be based upon available ARARs, TBCs and other toxicological data, where existing.

3.3.1.3.4 Risk Characterization. The "AE" shall, based upon other components of the Risk Assessment, characterize the risk associated with the site. The "AE" shall consider the carcinogenic risk, noncarcinogenic risk and the environmental risk. The characterization shall include a summary of each projected exposure route for contaminants of concern and the distribution of risk across various sectors of the population. Such factors as weight-of evidence associated with toxicity information, the estimated uncertainty of the component parts, and the assumptions contained within the estimates shall be discussed.

3.3.1.3.5 Propose Applicable or Relevant and Appropriate Requirements (ARAR's) and To Be Considered (TBC) Requirements. The "AE" shall develop and propose contaminant and location specific "Applicable or Relevant and Appropriate Requirements" (ARAR's) and To Be Considered (TBC) Requirements which, after review and possible modification as directed by the Contracting Officer, will be utilized to evaluate subsequent proposed remedial actions. ARAR's and TBC's shall be prepared using guidance presented in the RI/FS Guidance Manual.

3.3.1.4 (Task H) Treatability Study Requirements Assessment. The work required in this Section corresponds to EPA Task 7 in Appendix B of the RI/FS Guidance Manual. The "AE" shall recommend if specific Treatability Studies are required or if the existing situation is well enough understood

and described in scientific, engineering and other technical literature such that site specific treatability studies do not appear to be necessary. If treatability studies are recommended, the "AE" shall assess existing data on technologies identified as Remedial Action Alternatives to determine data needs required to undertake treatability investigations following completion of alternatives development. If treatability studies are recommended, the "AE" shall develop a Treatability Study Concept Plan. Actual implementation of the Treatability Study Concept Plan is not part of this SOW. The Treatability Study Requirements Assessment (and Concept Plan if, required) shall be submitted as part of the RI/FS Report.

3.3.2 (Task I) Feasibility Study. The work required in this Section corresponds to EPA Task 9 in Appendix B of the RI/FS Guidance Manual. The primary objective of this phase of the FS is to develop an appropriate range of waste management options that protect human health and the environment.

3.3.2.1 Develop Remedial Action Objectives. The "AE" shall develop remedial action objectives which protect human health and the environment and then describe general response action which will satisfy the remedial action objectives.

3.3.2.2 Identify and Evaluate Alternative Remedial Actions. The "AE" shall describe all available technologies that could be reasonably used as remedial actions at SEAD. The "AE" shall then screen the list to remove any potential Remedial Actions which are clearly illogical, inadequate, unfeasible, or otherwise ill-suited to the site. Remedial actions presented past the initial screening shall consist of only those representing proven technologies adequate to address site conditions. A detailed evaluation including the strengths and weaknesses of each technology shall be performed. The initial screening shall be based upon effectiveness, implementability and cost. Where appropriate, the "AE" may combine feasible remedial actions. The "no action" alternative shall be described in detail as part of this task. Additional data needed shall also be described.

3.3.3 (Task J) Prepare RI/FS Report. The work required in this Section corresponds to EPA Tasks 8 and 11 in Appendix B of the RI/FS Guidance Manual. At the completion of the preceding tasks, the "AE" shall prepare the Remedial Investigation/ Feasibility Study Report, fully documenting all work

performed. The report shall be prepared according to the requirements of this SOW and the referenced guidance documents. The report shall also describe any recommended work to be performed during a follow-on RI/FS and make specific recommendations, and provide the justification, for sampling locations and analytes proposed for the follow-on work. As part of this report the "AE" shall evaluate the need for interim or expedited remedial actions at the site. If the "AE" recommends that either is appropriate, he shall so propose and justify.

3.4 (Task K) Phase II Field Sampling Plan. The "AE" shall prepare and submit, as part of the overall RI/FS Work Plan, a Phase II Field Sampling Plan (FSP). This Phase II FSP shall consider additional follow-on investigations required by the Regulators as a result of their review of the RI and FS reports. This Phase II FSP shall be an addendum to the original FSP prepared in Task 3, and shall show proposed locations and present the location rationale for additional investigations. In the absence of specific requirements on numbers and locations of follow-on investigations from the EPA, the "AE" shall, based on the regulatory review comments received, propose and justify actual numbers of borings, wells, samples, etc., and locations. All methods and procedures shall be as laid out in the original FSP. Together, the original and addendum will form a complete FSP for the OB Grounds. Section 3.5.1 of this SOW provides for follow-on field investigation activities which will be applied to the project. Within the FSP addendum the following will be discussed:

3.4.1 Geophysical Investigations. The "AE" shall propose specific linear footage and location requirements for additional geophysical investigations.

3.4.2 Soil Boring and Monitoring Well Installations. This portion of the FSP addendum shall include proposals for locations of specific borings and wells based upon previous investigations, the "AE"'s own evaluation of the sites, and the results of the geophysical investigations. If required, specific numbers and depths shall be proposed.

3.5 Follow-on Remedial Investigation/Feasibility Studies. The "AE" shall perform the follow-on RI and FS activities approximately concurrently. When all the field work and data analyses are complete, the "AE" shall revise

the previously prepared RI/FS Report.

3.5.1 Follow-on Remedial Investigations.

3.5.1.1 Field Investigations. The work required in this Section corresponds to EPA Task 3 in Appendix B of the RI/FS Guidance Manual. The "AE" shall perform additional field investigations in order to further characterize the site and determine the nature and extent of soil and groundwater contamination. The work shall be performed according to the approved work plan and addendum and as follows:

3.5.1.2 (Task L) Geophysical Surveys. The "AE" shall perform Geophysical Surveying according to the requirements of the approved GIP and addendum. The "AE" shall utilize a method of geophysical investigation capable of detecting buried metal and debris, if existing, to a depth of 15 feet. The purpose of the geophysical surveys is to obtain detailed information necessary for source characterization. The "AE" shall utilize sufficient location control in the field to ensure that geophysical anomalies are located by State Plane Coordinates to the closest 1.0 foot.

3.5.1.3 (Task M) Drill Soil Borings. The "AE" shall drill soil borings as determined in the approved FSP addendum. Soil samples will be collected as part of this subtask for subsequent chemical analysis under Task 21.

3.5.1.4 (Task N) Install Monitoring Wells. The "AE" shall install monitoring wells as directed in the approved FSP addendum. One of these wells shall be installed for the purpose of monitoring background conditions. The "AE" shall be responsible for collecting one ground water sample from each of the new wells for analysis under Task 22.

3.5.1.5 (Task O) Surface Water Sampling. The "AE" shall collect an additional round of surface water samples as directed in the approved FSP addendum. Field samples shall be collected for analysis under Task 22.

3.5.1.6 (Task P) Surveying. Each new geophysical survey, soil boring , monitoring well and surface water sampling point shall be located according to the requirements of Section 8.0 of this Statement of Work and Section 4.2.5 of Reference 11.23. The following locations shall be established as part of this Task:

Task Number	Description
L	linear feet of geophysical survey
M	soil borings
O	surface water sampling points
N	monitoring wells

3.5.2 Chemical Sampling and Analysis. The work required in this Section corresponds to EPA Tasks 4 and 5 in Appendix B of the RI/FS Guidance Manual. The "AE" shall collect and analyze samples in a manner determined in the approved FSP and addendum. The "AE" shall submit a Table which provides the results of each round of analytical data as soon as it is received from the laboratory, and not wait for the next scheduled report submission.

3.5.2.1 (Task Q) Analysis of Soil Samples. The "AE" shall analyze the soil samples previously collected from all soil borings. EP Toxicity tests should be performed only at sites that show a high metals content. The "AE" shall submit a Table which provides the results of each round of analytical data as soon as it is received from the laboratory, and not wait for the next scheduled report submission.

3.5.2.2 (Task R) Collection and Analysis of Groundwater Samples. The "AE" shall collect and chemically analyze one groundwater sample from each of the newly installed wells. Of the individual samples taken, two (one of which will be the background sample) shall be split for filtration. Of the two filtration split samples, one shall be split twice more; once to produce a filtration QA sample and once to produce a filtration QC sample. The purpose of the filtration samples is to qualify sediment influences on analysis results. Of the remaining individual samples, one shall be split twice; once to produce an unfiltered QA sample and once to produce an unfiltered QC sample. In addition, the "AE" shall chemically analyze all surface water samples collected in Task 19. The "AE" shall submit a Table which provides the results of each round of analytical data as soon as it is received from the laboratory, and not wait for the next scheduled report submission.

3.6 (Task S) Revise RI/FS Report. The work required in this Section corresponds to EPA Tasks 8 and 11 in Appendix B of the RI/FS Guidance Manual. At the completion of the preceding follow-on tasks, the "AE" shall revise the previously prepared Remedial Investigation/ Feasibility Study Report, fully documenting all work performed.

3.7 (Task T) Proposed Remedial Action Plan. The work involved in this Section corresponds to Chapter 2 of the "Draft Guidance on Preparing Superfund Decision Documents: The Proposed Plan and Record of Decision", Reference 11.24. The "AE" shall prepare and submit for inclusion in the Administrative Record, a Proposed Remedial Action Plan (PRAP), the purpose of which is to highlight the RI/FS report; provide a brief analysis of the remedial alternatives under consideration for this site; identify the preferred remedial action and provide the public with information on how they may participate in the remedy selection process.

3.8 (Task U) Record of Decision. The work required in this Section corresponds to EPA Task 12 in Appendix B of the RI/FS Guidance Manual. The "AE" shall prepare and submit a document for the signature of the SEAD Commander addressing the decision to implement the approved remedial action alternative.

3.9 (Task 5) Preparation of Cost Estimate. The AE shall prepare a complete cost estimate of all work that is to be performed under the follow-on contract to implement the RI/FS at the OB Grounds.

4.0 SUBMITTALS AND PRESENTATIONS

4.1 Format and Content. All submittals for this contract and the contract for field work implementation shall be prepared in accordance with the suggested RI/FS Format as presented in the RI/FS Guidance Manual. Each submittal shall be accompanied by an EPA completeness checklist (where existing), completed by the AE/"AE", which references the specific location within the submitted document, of the required item. All drawings shall be of engineering quality in drafted form with sufficient detail to show interrelations of major features on the installation site map. When drawings are required, data may be combined to reduce the number of drawings. The documents shall consist of 8-1/2" x 11" pages with drawings folded, if necessary, to this size. A

decimal paragraphing system shall be used, with each section and paragraph of the documents having a unique decimal designation. The document covers shall consist of vinyl 3-ring binders and shall hold pages firmly while allowing easy removal, addition, or replacement of pages. A document title page shall identify the "AE", the Corps of Engineers, Huntsville Division, and the date. The "AE" identification shall not dominate the title page. Each page of draft and draft-final documents shall be stamped "DRAFT" and "DRAFT-FINAL" respectively. Each document shall identify the members and title of the "AE"'s staff which had significant, specific input into the document's preparation or review. Submittals shall include incorporation of all previous review comments accepted by the "AE" as well as a section describing the disposition of each comment. Disposition of comments submitted with the final document shall be separate from the document itself. All final submittals shall be sealed by both the registered Professional Engineer-In-Charge.

4.2 Presentations. The AE/"AE" shall make presentations of work performed according to the schedule in paragraph 4.6. Each presentation will consist of a summary of the work accomplished and anticipated followed by an open discussion among those present. The AE/"AE" shall provide a minimum of two persons at the meetings which are expected to last one day each.

4.3 Conference Notes. The AE/"AE" will be responsible for taking notes and preparing the reports of all conferences, presentations, and review meetings. Conference notes will be prepared in typed form and the original furnished to the Contracting Officer (within five (5) working days after date of conference) for concurrence and distribution to all attendees. This report shall include the following items as a minimum:

a. The date and place the conference was held with a list of attendees. The roster of attendees shall include name, organization, and telephone number.

b. Written comments presented by attendees shall be attached to each report with the conference action noted. Conference action as determined by the Government's Project Manager shall be "A" for an approved comment, "D" for a disapproved comment, "W" for a comment that has been withdrawn, and "E" for a comment that has an exception noted.

c. Comments made during the conference and decisions affecting

criteria changes, must be recorded in the basic conference notes. Any augmentation of written comments should be documented by the conference notes.

4.4 Confirmation Notices. The AE/"AE" will be required to provide a record of all discussions, verbal directions, telephone conversations, etc., participated in by the AE/"AE" and/or representatives on matters relative to this contract and the work. These records, entitled "Confirmation Notices", will be numbered sequentially and shall fully identify participating personnel, subject discussed, and any conclusions reached. The AE/"AE" shall forward to the Contracting Officer as soon as possible (not more than five (5) work days), a reproducible copy of said confirmation notices. Distribution of said confirmation notices will be made by the Government.

4.5 Progress Reports and Charts. The AE/"AE" shall submit progress reports to the Contracting Officer with each request for payment. The progress reports shall indicate work performed, and problems incurred during the payment period. Upon award of this delivery order, the AE/"AE" shall, within 15 days, prepare a progress chart to show the proposed schedule for completion of the project. The progress chart shall be prepared in reproducible form and submitted to the Contracting Officer for approval. The actual progress shall be updated and submitted by the 15th of each month and may be included with the request for payment.

4.6 Schedule of Deliverables and Review Meetings.

Deliverables shall be submitted according to the following schedule.

Deliverable/Meeting	Days following NTP
Draft RI/FS Scoping Document, Work Plan, and Community Relations Plan	80
Comments to AE	125
Draft-Final RI/FS Scoping Document, Work Plan, and Community Relations Plan	155
Final RI/FS Scoping Document, Work Plan, and Community Relations Plan (No Disputes)	185

4.6.1 Schedule of Deliverables and Review Meetings under the Follow-on Contract. The subject schedule will be provided.

4.7 Submittals.

4.7.1 General Submittal Requirements.

4.7.1.1 Distribution. The "AE" is responsible for reproduction and distribution of all documents. The "AE" shall furnish copies of submittals to each addressee listed in paragraph 4.7.3 in the quantities listed in the document submittal list. Submittals are due at each of the addressees not later than the close of business on the dates shown in paragraph 4.6.

4.7.1.2 Partial Submittals. Partial submittals will not be accepted unless prior approval is given.

4.7.1.3 Cover Letters. A cover letter shall accompany each document and indicate the project, project phase, the date comments are due, to whom comments are submitted, the date and location of the review conference, etc., as appropriate. (Note that, depending on the recipient, not all letters will contain the same information.) The contents of the cover letters should be coordinated with CEHND-ED-PM prior to the submittal date. The cover letter shall not be bound into the document.

4.7.1.4 Supporting Data and Calculations. The tabulation of criteria, data, circulations, and etc., which are performed but not included in detail in the report shall be assembled as appendices. Criteria information provided by CEHND need not be reiterated, although it should be referenced as appropriate. Persons performing and checking calculations are required to place their full names on the first sheet of all supporting calculations, and etc., and initial the following sheets. These may not be the same individual. Each sheet should be dated. A copy of this scope of work shall be included as appendix A in the Draft RI/FS report only.

4.7.1.5 Reproducibles. One camera-ready, unbound copy of the finaleach submittal shall be provided to the Contracting Officer in addition to the submittals required in the document and submittal list. All final submittals shall also be provided on floppy disks compatible with the Intel 310/80286 computer in ASCII format and in Word Star 2000 release 2.0 format.

4.7.2 Specific Submittal Requirements.

a. SSHP (Draft, Final)

d. RI/FS Work Plan (Draft, Draft-Final, Final)

e. Community Relations Plan Update (Draft-Final, Final)

4.7.2.1 Specific Submittal Requirements for the Follow-on Contract.
The subject submittal requirements will be provided.

4.7.3 Addressees.

Commander
U.S. Army Corps of Engineers
Huntsville Division
ATTN: CEHND-ED-PM (Mr. Walt Perro)
PO Box 1600
Huntsville, AL 35807-4301

Commander
U.S. Army Depot Systems
Command (DESCOM)
ATTN: AMSDS-EN-FD
(Mr. Tim Toplisek)
Chambersburg, PA 17201

Commander
U.S. Army Environmental
Hygiene Agency (USAEHA)
ATTN: HSHB-ME-SR (Mr. Hoddinott)
Building 1677
Aberdeen Proving Ground, MD 21010-5422

Commander
U.S. Army Corps of Engineers
Missouri River Division
ATTN: CEMRD-ED-EA (Mr. Doug Plack)
PO Box 103, Downtown Station
Omaha, NE 68101-0103

Commander
U.S. Army Material Command (USAMC)
ATTN: AMCEN-A (Mr. Bob King)
5001 Eisenhower Ave.
Alexandria, VA 22333-0001

Commander
U.S. Army Corps of Engineers
Missouri River Division
ATTN: CEMRD-ED-GL
420 South 18th St.
Omaha, NE 68102

Commander
U.S. Army Corps of Engineers
Toxic and Hazardous Materials Agency
ATTN: CETHA-IR-D (Ms. Katherine Gibson)
Aberdeen Proving Ground, MD 21010-5401

Commander
Seneca Army Depot
ATTN: SDSSE-HE (Randy Battaglia)
Romulus NY 14541

Commander
U.S. Army Corps of Engineers,
North Atlantic Division,
ATTN: CENAD-CO-EP
90 Church Street
New York, NY 10007-9998

Commander
HQUSACE
ATTN: CEEC-EB
20 Massachusettes Ave., NW
Room 2209
Washington, D.C. 20314-1000

4.6.4 Document and Submittal List.

	RI/FS Work Plans		
	Draft	Draft-Final	Final
CEHND-ED-PM	6	6	6
USAMC	1	1	1
DESCOM	2	2	2
CETHA-IR-D	2	2	2
CEMRD-ED-EA	3	3	3
CEMRD-EA-GL	1	1	1
SDSSE-HE	20	20	20
CENAD-CO-EP	1	1	1
USAEHA	6	6	6
CEEC-EB	0	0	0
TOTAL	42	42	42

5.0 SAFETY REQUIREMENTS

The AE shall prepare and submit the Site-Specific Safety and Health Plan (SSHP) to the contracting Officer (CO) for review and acceptance prior to commencement of any field work, according to the schedule in paragraph 4.6. The SSHP shall be prepared in accordance with the requirements specified in this Section and shall be complete and in a form such that, as a stand alone document, it may be implemented immediately in the field. No field work (other than the initial visual inspection) may be performed until all plans are reviewed and approved by the CO. All work shall be performed according to the approved plans.

5.1 The SSHP shall be prepared by a board certified or board eligible Industrial Hygienist with at least 2 years hazardous waste site operations experience. Board certification or eligibility shall be documented by written confirmation by the American Board of Industrial Hygiene (ABIH) and submitted to the Contracting Officer. A fully trained and experienced health and safety officer (SSHO), responsible to the AE and the AE's Industrial Hygienist may be delegated to implement the on-site elements of the SSHP.

5.1.1 The SSHP shall be in a form usable by Corps of Engineers or U.S. Government management personnel and all other visitors to the site during site operations. The following topics shall be discussed at a minimum in the SSHP:

5.2. Site Description and Contamination Characterization. A description of the site, including a complete summary of contaminants anticipated onsite (chemical/biological names, concentration ranges, media in which found, locations onsite and estimated quantities/volumes) shall be provided.

5.3 Staff Organization, Qualifications and Responsibilities. The operational and health and safety responsibilities of each key person shall be discussed. The organizational structure, including lines of authority for safety and health and overall responsibilities of the AE and all subcontractors shall be provided. An organizational chart showing the lines of authority from the site level up through corporate management shall be provided.

5.4 Hazard Assessment and Risk Analysis. The AE shall identify the chemical, physical, safety and biological hazards of concern for each task and or operation to be performed. Include routes and sources of exposure, an-

ticipated onsite and off-site exposure potential levels, and the applicable regulatory or recommended protective exposure standards. Action levels shall be specified and justified for the protection of onsite personnel and for the prevention or minimization of hazards/exposures to the off-site public from site activities.

5.5 Accident Prevention. All Accident Prevention Plan topics required by EM 385-1-1, Appendix Y, but not specifically covered by these elements shall be addressed in this section of the SSHP.

5.6 Training. Training for all onsite personnel as well as site specific, supervisory, refresher and visitor training shall be in accordance with 29 CFR 1910.120 Final Rule. The content, duration, and frequency, of training shall be described. Written certification that the required training has been received by affected personnel shall be submitted to the contracting officer prior to engaging in onsite activities.

5.7 Personal Protective Equipment. A written Personal Protective Equipment (PPE) Program shall be provided in the SSHP. The program shall address all the elements of 29 CFR 1910.120 (g)(5) and 29 CFR 1910.134. Specify minimum levels of protection necessary for each task/operation to be performed based on the hazard assessment/risk analysis required in paragraph 5.4. Include specific types and materials for protective clothing and respiratory protection. Establish and justify upgrade/downgrade criteria based upon the action levels established as required by paragraph 5.4.

5.8 Medical Surveillance. All personnel performing onsite activities shall participate in an ongoing medical surveillance program meeting the requirements of 29 CFR 1910.120 and ANSI Z-88.2. The medical examination protocols and results shall be overseen by a licensed physician who is certified in Occupational Medicine by the American Board of Preventive Medicine, or who by necessary training and experience is board eligible. Exam content and frequency shall be provided in the SSHP.

5.9 Air Monitoring. Specify for onsite and perimeter the types and frequency of air monitoring/ sampling to be performed. When applicable NIOSH and or EPA sampling and analytical methods shall be used. Personnel samples shall be analyzed only by laboratories successfully participating in and meeting the requirements of the American Industrial Hygiene Association's (AIHA)

Proficiency Analytical Testing (PAT) or laboratory Accreditation Program. Include as appropriate real-time (direct-read) monitoring and integrated Time Weighted Average (TWA) sampling for specific contaminants of concern. Discuss instrumentation and calibration to be performed. All air monitoring results shall be compared to action levels to determine the need for corrective actions.

5.10 Site Control. The SSHP shall include a site map, description of work zone delineation, on/off site communication systems, site access controls, and security procedures.

5.11 Personnel and Equipment Decontamination. Specify decontamination procedures and equipment for personnel, personal protective equipment, sampling equipment and heavy equipment. Specify necessary facilities and their locations.

5.12 Emergency Response; Equipment and Procedures. An Emergency Response Plan as required by 29 CFR 1910.120 shall be prepared. Specify the emergency equipment and the location of such equipment to be present on site. Provide telephone numbers and points of contact for emergency services and the USACE Representative. Provide a map showing the route to the hospital that has been contacted and informed of the type of work and potential hazards on the site. At least one person trained and certified in first aid/CPR is to be on site at all times during site operations. Documentation of certification is to be submitted with documentation of other required training.

5.13 Standard Operating Procedures, Engineering Controls and Work Practices. Discuss and site rules and prohibitions for safe work practices. Include such topics as use of the buddy system, smoking restrictions, material handling procedures, confined space entry, excavation safety, heat/cold stress monitoring, illumination, sanitation, daily safety inspections. This list of topics is not intended to be all inclusive.

5.14 Logs, Reports and Recordkeeping. Describe recordkeeping procedures for training logs, daily safety inspection logs, employee/visitor registers, medical surveillance records and certifications and air monitoring results and personal exposure records. All personnel exposure and medical monitoring records shall be maintained in accordance with applicable OSHA standards, CFR 1910 and 1926.

5.15 Unexploded Ordnance. The facility is a military installation and has been used for storage, evaluation and disposal of ordnance and/or explosive materials as well as for military training. More specifically, the OB Grounds was used for the purpose of burning munitions and explosive wastes. Consequently, the potential for encountering unexploded ordnance does exist. If unexploded ordnance is ever encountered at any time during operations at the site the AE shall mark the location, immediately stop operations in the affected area, and notify the CO. The Government will make appropriate arrangements for evaluation and proper disposal. It is anticipated that in the event that such conditions arise, they will be overcome with only slight delays to the AE. It is the express intention of the Government that the AE is not to drill, excavate, or otherwise disturb the subsurface in areas where ordnance or explosives may reasonably be suspected unless specific, detailed plans to do so are prepared and approved.

5.16 Suggested SHERP Format.

STAFF ORGANIZATION

- Principal Engineer
- Program Manager
- Certified Industrial Hygienist
- Certified Safety Professional
- First Aid/CPR Personnel
- Field Personnel
- Subcontractor Personnel

HAZARD COMMUNICATION AND TRAINING

- Comprehensive Health and Safety Indoctrination
- Specialized Training
- Visitor Training
- Pre-Investigation Health and Safety Briefing
- Post-Investigation Health and Safety Briefing
- Morning Safety Meetings

MEDICAL SURVEILLANCE

- Medical Surveillance
- Licensed Occupational Physician
- Medical Examinations

EXPOSURE MONITORING

- Environmental and Personnel Monitoring
- Meteorological Monitoring
- Sampling and Analytical Methods
- Heat/Cold Stress Monitoring

HEALTH AND SAFETY EQUIPMENT

- Personal Protective Equipment
- Environmental Monitoring Equipment
- Decontamination Equipment
- Emergency Equipment
- Emergency-Use Respirators
- Spill Control Equipment
- Fire Extinguishers
- First Aid Equipment and Supplies
- Emergency Eye Wash/Shower (ANSI Z358.1)
- Personnel Hygiene
- Personnel Decontamination
- Communications

STANDARD OPERATING PROCEDURES

- Health and Safety Site Plan
- Site Description
- Site Inspection
- Site Security
- Site Entry Procedures
- Responsibilities
- Work Zones
- Hazard Evaluation

Activity Hazard Analysis
Accident Prevention
Accident Reporting
Safe Work Practices
Confined Space Entry Procedures
Material Handling Procedures
Levels of Protection
Decontamination Procedures
Emergency Information
Emergency Response Plan
Illumination
Sanitation
Well Installation/Logging
Sampling
Land Survey
Laboratory Analysis
Logs, Reports, and Recordkeeping

6.0 CHEMICAL DATA AND LABORATORY REQUIREMENTS

6.1 Approval. The work plan must be approved by the Contracting Officer (CO) prior to performing any field work. In the event corrections or comments are made by the Contracting Officer on the draft plan, any necessary changes shall be implemented by the A-E before final approval.

6.2 Chemical Data Aquisition Plan. The plan shall address all of the following: sampling and analyses, quality assurance and quality control methods, equipment, evaluations, reports and procedures as required for the work specified in this SOW. The plan shall describe field as well as laboratory procedures. The plan shall be a brief and concise description of the field and laboratory work required. Results of the field and laboratory controls shall be evaluated and reported in accordance with References 11.8 and 11.9. The AE shall provide the laboratory QA/QC plan as an appendix to the CDAP. The plan shall address each requirement as identified in ER 1110-1-263 (Reference 11.8) and shall be written in the format shown in Appendix C,

paragraph C.5 of that same document.

6.3 Laboratory Requirements. The analytical laboratory utilized by the AE must be validated by the Corps of Engineers' Missouri River Division (CEMRD) as well as approved by the State of New York to perform the analytical methods required by this SOW.

6.4 Quality Assurance Laboratory Requirements. The "AE" must provide coordination and quality assurance samples (collected and transported by the "AE") to the Government Quality Assurance (QA) laboratory. The QA samples shall be splits of the required field control samples. Each field control sample collected shall be divided equally, one portion sent to the QA laboratory and the remainder sent to the "AE"'s lab. QA samples include all sample matrices and analysis parameters. The "AE" will provide the QA lab a two week notice of sample shipment. The Government will identify the QA lab.

6.5 Data Reporting Requirements. The "AE" shall provide the following data reporting elements: sample ID, sample receipt, organic and inorganic reporting, internal quality control reporting (lab blanks, surrogate spike samples, lab duplicates or matrix spikes) and field duplicates and blanks. This data package shall be reported in accordance with Reference 9.9. The data package shall be submitted in draft and final report. The "AE"'s laboratory must hold and make available all project raw data for a period of two years after samples have been analyzed.

TABLE
Types and Numbers of Samples Collected

		Quality Assurance and Quality Control					
	Field	Splits/Dups		Rinsates		Trip Blanks	
	Samples	QC("AE")	QA(CE)	QC("AE")	QA(CE)	QC("AE")	QA(CE)
GROUNDWATER:							
Volatiles	_____	_____	_____	_____	_____	_____	_____
B/N/A	_____	_____	_____	_____	_____	NR	NR
Pesticides/PCB's	_____	_____	_____	_____	_____	NR	NR
TRPH	_____	_____	_____	_____	_____	NR	NR
Metals	_____	_____	_____	_____	_____	NR	NR
Other:_____	_____	_____	_____	_____	_____	_____	_____
SURFACE WATER:							
Volatiles	_____	_____	_____	_____	_____	_____	_____
B/N/A	_____	_____	_____	_____	_____	NR	NR
Pesticides/PCB's	_____	_____	_____	_____	_____	NR	NR
TRPH	_____	_____	_____	_____	_____	NR	NR
Metals	_____	_____	_____	_____	_____	NR	NR
Other:_____	_____	_____	_____	_____	_____	_____	_____
SURFACE SOILS:							
Volatiles	_____	_____	_____	NR	NR	NR	NR
B/N/A	_____	_____	_____	NR	NR	NR	NR
Pesticides/PCB's	_____	_____	_____	NR	NR	NR	NR
TRPH	_____	_____	_____	NR	NR	NR	NR
Metals	_____	_____	_____	NR	NR	NR	NR
Other:_____	_____	_____	_____	NR	NR	NR	NR
SUBSURFACE SOILS:							
Volatiles	_____	_____	_____	NR	NR	NR	NR
B/N/A	_____	_____	_____	NR	NR	NR	NR
Pesticides/PCB's	_____	_____	_____	NR	NR	NR	NR
TRPH	_____	_____	_____	NR	NR	NR	NR
Metals	_____	_____	_____	NR	NR	NR	NR
EP TOX	_____	_____	_____	NR	NR	NR	NR
Explosives	_____	_____	_____	NR	NR	NR	NR

TABLE 3
SUGGESTED METHODS FOR SAMPLE ANALYSIS

Analyte	Technique	Soil	Groundwater	Surface Water(1)
Arsenic (As)	GF	3050/7060	7060	206.2
	H	7061	7061	206.3
Barium (Ba)	DA	3050/7080	3005/7080	208.1
	GF	----	----	208.2
	ICP	3050/6010	3005/6010	200.7
Cadmium (Cd)	DA	3050/7130	3005/7130	213.1
	GF	3050/7131	3020/7131	213.2
	ICP	3050/6010	3005/6010	200.7
Chromium (Cr)	DA	3050/7190	3005/7190	218.1
	GF	3050/7190	3020/7191	218.2
	ICP	3050/6010	3005/6010	200.7
Lead (Pb)	DA	3050/7420	3005/7420	239.1
	GF	3050/7421	3020/7421	239.2
	ICP	3050/6010	3005/6010	200.7
Mercury (Hg)	CV	7471	7470	245.1
Selenium (Se)	GF	3050/7740	7740	270.2
	H	7741	7741	270.3
Silver (Ag)	DA	7760	7760	272.1
	GF	----	----	272.2
	ICP	3050/6010	3005/6010	200.7
EP Toxicity	---	1310	----	----
Volatile Organics	GC/MS	8240	8240	624
Explosives		SM02	SM01	SM01

DA=Direct Aspiration
GF=Graphite Furnace
H=Hydride
CV=Cold Vapor
ICP=Inductively Coupled Plasma
GC=Gas Chromatograph
GC/MS=Gas Chromatograph/Mass Spectroscopy

(1) Surface water samples may also be analyzed by the SW-846 methods listed for groundwater.

(2) USATHAMA Methods.

7.0 SOIL BORING AND MONITORING WELL REQUIREMENTS.

7.1 Subsurface Drilling.

7.1.1 Location. Soil boring and monitoring well locations shall be proposed by the AE as part of the plan prior to commencement of drilling activities. The "AE" shall obtain written approval from the facility engineer, to drill at each site to avoid disturbing buried utilities. Following written approval, tentative locations shall be determined in the field based on the results of the geophysical surveys.

7.1.2 Conduct of Subsurface Drilling with Respect to UXO. The "AE" shall provide a 2-person UXO team, an UXO Supervisor and an UXO specialist to assure that drilling crews do not encounter surface/subsurface UXO. The UXO team, prior to initiating each 2-foot increment of subsurface drilling, shall, utilizing a magnetometer, check for suspected subsurface UXO. This will preclude drilling into small UXO which may not be detectable from the surface. If meter readings indicate suspected UXO, such UXO shall be marked, "AE" personnel diverted from the site and the CO notified for Government action. The "AE" UXO team shall not excavate, render-safe or dispose of any encountered UXO.

7.1.2.1 Qualifications of the UXO Team. The UXO Specialist shall be a graduate of the USN EOD School, Indian Head, Maryland and shall have served at least 3 years in military EOD assignments. The UXO Supervisor shall be a graduate of the same school and shall have at least 10 years in military EOD assignments, of which at least 5 years shall have been in supervisory positions.

7.2. "AE" Responsibility for Monitoring Wells.

7.2.1 It is the responsibility of the "AE" to properly plan, design, install, develop, and test monitoring wells so that they are suitable to produce groundwater samples representative in quantity and quality of subsurface conditions. The "AE" shall ensure that the requirements of this scope of work and best construction practices are carried out.

8.0 SURVEY REQUIREMENTS.

8.1 Control Points. Plastic or wooden hubs shall be used for all basic control points. A minimum of five (5) concrete monuments with 3.25-inch domed brass or aluminum alloy survey markers (caps) and witness posts shall be established at the site. The concrete monuments shall be located within the project limits, be set 50 feet from the edge of any existing roads in the interior of the project limits and be a minimum of 500 feet apart. The placement of all monuments, hubs etc., shall be coordinated with SEAD to prevent destruction due to regular landscaping activities. Horizontal control (1:10,000) and vertical control (1:5,000) of third order or better shall be established for the network required for all the monuments. The caps for the new monuments shall be stamped in a consecutively numbered sequence as follows:

SEAD-7-1990	SEAD-8-1990	SEAD-9-1990
US"AE"D-HUNTSVILLE	USAED-HUNTSVILLE	USAED-HUNTSVILLE

The dies for stamping the numbers and letters into these caps shall be of 1/8-inch in size. All coordinates are to be referenced to the State Plane Coordinate System and all elevations are to be referenced to the 1929 North American Vertical Datum.

8.2 Location Surveys. Coordinates and elevations shall be established for the four corners and a baseline of each area that is investigated by a geophysical survey: for each soil boring and surface water sampling point and for each monitoring well. The coordinates shall be to the closest 1.0-foot and referenced to the State Plane Coordinate System. Elevations to the closest 0.10 foot shall be provided for the ground surface at each soil boring. Elevations to the closest 0.01-foot shall also be established for the survey marker and the top of casing (measuring point) at each monitoring well. These elevations shall be referenced to the National Geodetic Vertical Datum of 1929.

8.3 The location, identification, coordinates and elevations of all the control points recovered and/or established at the site and all of the geophysical survey areas, soil borings, monitoring wells (new and existing)

and all surface water sampling points shall be plotted on a planimetric map (at a scale of 1 inch=50 feet) to show their location with respect to surface features within the project area. A tabulated list of the monuments, the soil borings and the surface water sample points including their coordinates and elevations, a "Description Card" for each monument established or used for this project, the 1 inch=50 feet map and all field books and computations shall be prepared and submitted to the Huntsville Division (CEHND), ATTN: CEHND-ED-CS. The tabulation shall consist of the designated number of each boring, monument or surface water sampling point, the X- and Y-coordinates and all the required elevations. The Description Card shall show a sketch of each monument; its location relative to reference marks, buildings, roads, towers, etc.; a written description telling how to locate the monument from a known point; the monument name or number and the adjusted coordinates and elevations. These items shall be submitted to CEHND no later than the Draft Report Submission (305 days following submission).

9.0 SECURITY REQUIREMENTS

9.1 The following requirements must be followed by the "AE" at Seneca Army Depot to facilitate entry and exit of "AE" employees and to maintain security.

9.1.1 Personnel Registration:

9.1.1.1 A list of all "AE" employees, sub-contractors and suppliers indicating firm name and address will be furnished through POC/COR to the Counterintelligence Division, Building 710, 72 hours prior to commencement of work.

9.1.1.2 A confirmation of employment SDSSE-SC Form 268 will be executed by the "AE" concerning each employee, to include all sub-contractors and their personnel. No forms will be transferred to another file if the "AE" has other on-going contracts at SEAD. The "AE" will provide a list of personnel who are authorized to sign Form 268 for the firm. A sample of each signature is required. Counterintelligence Division must be notified, in writing, of any changes to this list. All completed forms will be provided through COR/POC to the Counterintelligence Division 72 hours prior to commencement of work. Failure to complete Form 268 correctly will result in employee's denial of

access to Seneca. The Counterintelligence Division must be notified, in writing through POC/COR to Counterintelligence, at least 72 hours prior to requesting any action. The chain of command for all "AE" actions will be through POC/COR to Counterintelligence Division. There will be no exceptions.

9.1.1.3 Camera permits require written notice from the POC/COR prior to access. Open camera permits will not be issued. The following information is required:

(a) Camera make, model and serial number.

(b) Contract name and name of individual responsible for the camera.

(c) Dates camera will be used.

(d) Where it will be used.

(e) What will be photographed and why.

9.1.1.4 If a rental, leased or privately owned vehicle is required in place of a company vehicle, the following information is needed.

(a) Name of individual driving.

(b) Year, make, model, color and license plate of the vehicle.

(c) Typed letter on company letterhead indicating that the company assumes responsibility for rental, leased or privately owned vehicles.

9.1.1.5 All access media will be destroyed upon expiration date of contract. If an extension is required a list of employee names and new expiration date must be furnished to the Counterintelligence Division. Contract extensions must be made prior to the contract expiration date or new Form 268s will be required for each individual that requires an extension.

9.1.2 Traffic Regulations:

9.1.2.1 Traffic Laws, State of New York, apply with emphasis on the following regulations.

9.1.2.2 Speed Limit:

Controlled Area	- as posted
Ammo Area	- 50 mph
Limited/Exclusion Area	- 25 mph

9.1.2.3 All of the above are subject to change with road conditions or as otherwise posted.

9.1.3 Parking: "AE" vehicles (trucks, rigs, etc.) will be parked in areas designated by the Director of Law Enforcement and Security. Usually parking will be permitted within close proximity to the work site. Do not park within 30 feet of a depot fence, as these are clear zones.

9.1.4 Gates:

9.1.4.1 Post 1, Main Gate - NY Highway 96, Romulus, New York is open for personnel entrance and exit 24 hours daily, 7 days a week.

9.1.4.2 Post 3, entrance to North Depot Troop Area, located at end of access road from Route 96-A is open 7 days a week for personnel and vehicle entrance and exit.

9.1.5 Security Regulations:

9.1.5.1 Prohibited Property:

9.1.5.1.1 Cameras, binoculars, weapons and intoxicating beverages will not be introduced to the installation, except by written permission of the Director/Deputy Director of Law Enforcement and Security.

9.1.5.1.2 Matches or other spark producing devices will not be introduced into the Limited/Exclusion or Ammo Area's except when the processor of such items is covered by a properly validated match or flame producing device permit.

9.1.5.1.3 All vehicles and personal parcels, lunch pails, etc. are subject to routine security inspections at any time while on depot property.

9.1.5.1.4 All building materials, equipment and machinery must be cleared by the Director of Engineering and Housing who will issue a property pass for outgoing equipment and materials.

9.1.6 "AE" Employee Circulation:

9.1.6.1 "AE" employees are cleared for entrance to the location of contract work only. Sight-seeing tours or wandering from work site is NOT AUTHORIZED.

9.1.6.2 Written notification will be provided to the Counterintelligence Division (Ext. 30202) at least 72 hours prior to overtime work or prior to working on non-operating days.

9.1.6.3 Security Police (Ext. 30448/30366) will be notified at least two hours in advance of any installation or movement of slow moving heavy equipment that may interfere with normal flow of traffic, parking or security.

9.1.7 Unions: Representatives will be referred to the Depot Industrial Labor Relations Officer (Ext. 41317).

9.1.8 Offenses: (Violations of law or regulations)

9.1.8.1 Minor: Offenses committed by "AE" personnel which are minor in nature will be reported by the Director of Law Enforcement and Security to the Contracting Officer who in turn will report such incidents to the "AE" for appropriate disciplinary action.

9.1.8.2 Major: Serious offenses committed while on the installation will be reported to the FBI. Violators may be subject to trial in Federal Court.

9.1.9 Explosive Laden Vehicles:

9.1.9.1 Vehicles such as vans, cargo trucks, etc. carrying explosives will display placards or signs stating "EXPLOSIVES".

9.1.9.2 Explosive ladened vehicles will not be passed.

9.1.9.3 When an explosive laden vehicle is approaching, pull over to the side and stop.

9.1.9.4 When catching up with an explosive laden vehicle, slow down and allow that vehicle to remain at least 100 feet ahead.

9.1.9.5 When approaching an intersection where an explosive laden vehicle is crossing - STOP - do not enter the intersection until such time as the explosive carrier has passed thru, and cleared the intersection.

9.1.9.6 When passing a vehicle that is parked, and displaying "Explosive" signs, slow down to 10 miles per hour, and take every precaution to allow more than ample clearance.

9.1.10 Clearing Post: All "AE" employees are required to return all identification badges, and passes on the last day of employment on the depot. The "AE" is responsible for the completion of all turn-ins by his employees, and informing the Counterintelligence Division and the depot organization administering the contract, for termination of any employee's access to the depot.

10.0 PUBLIC AFFAIRS.

The "AE" shall not publicly disclose any data generated or reviewed under this contract. The "AE" shall refer all requests for information to CEHND. Reports and data generated under this contract shall become the property of the Department of Defense and distribution to any other source by the "AE", unless authorized by the Contracting Officer, is prohibited.

11.0 REFERENCES

11.1 "Procedures Manual for Groundwater Monitoring at Solid Waste Disposal Facilities," USEPA Publ. No. EPA/530/SW-611.

11.2 "Manual of Water Well Construction Practices, " USEPA Publ. NO. EPA/570/9-75-001.

11.3 "Methods of Determining Permeability, Transmissibility, and Drawdown," U.S. Geological Survey Water Supply Paper No. 1536-1, 1963.

11.4 "U.S. Corps of Engineers Safety and Health Requirements Manual," U.S. Army Engineering Manual No. EM-385-1-1, April 1981.

11.5 "Code of Federal Regulations, "Volume 40, Parts 260 through 265 plus 270, July 1986.

11.6 "American Society for Testing and Materials," ASTM D-421, D-422, D-423, D-424, D-2216, and D-2436.

11.7 "Code of Federal Regulation," Volume 40, Part 300, July 1987.

11.8 "Methods for Chemical Analysis of Water and Wastes," U.S. Environmental Protection Agency, Publ. No. EPA/625/6-7-003a.

11.9 "Test Methods for Evaluating Solid Wastes," USEPA Publ. No. SW- 846, July 1982.

11.10 "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act," 40 CFR 136, Federal Register, Oct 26, 1984.

11.11 "RCRA Groundwater Monitoring Technical Enforcement Guidance Document" (Draft) Office of Waste Programs Enforcement, USEPA, August 1985.

11.12 "Handbook for Analytical Quality Control in Water and Wastewater Laboratories," EPA Manual 600/4-79-019, March 1979.

11.13 "Safety and Occupational Health Document Requirements for Hazardous Waste Site Remedial Actions," U.S. Army Engineering Regulation (ER) 385-1-

192.

11.14 "Engineer Guidance Design Manual for Architect-Engineer," US Army Corps of Engineer. HNDM-1110-1-1. Rev. 1986.

11.15 RCRA Corrective Action Plan, OSWER Directive 9902.3, November, 1986.

11.16 U.S. Army Toxic and Hazardous Materials Agency (USATHAMA), Initial Installation Assessment of Seneca Army Depot, N.Y. Report no. AMXTH-IR-A-157, 1980.

11.17 U.S. Army Environmental Hygiene Agency (USAEHA), Final Report, Army Pollution Abatement Program Study No. D-1031-W, Landfill Leachate Study, Seneca Army Depot, 1981.

11.18 U.S. Army Toxic and Hazardous Materials Agency (USATHAMA), Update of the Initial Installation Assessment of Seneca Army Depot, N.Y. Report no. AMXTH-IR-A-157(U), 1988.

11.19 "Evaluation of Solid Waste Management Units, Seneca Army Depot", Interim Final Report, Groundwater Contamination Survey No.38-26-0868-88, U.S. Army Environmental Hygiene Agency.

11.20 Interim Final, "Guidance For Conducting Remedial Investigations and Feasibility Studies Under CERCLA", OSWER Directive 9355.3-01, U.S. EPA, Office of Emergency and Remedial Response, October 1988.

11.21 "Chemical Data Quality Management For Hazardous Waste Remedial Activities", ER 1110-1-263, 1 March 1989.

11.22 "Criteria Development Report For the Closure of Nine Burning Pads, Seneca Army Depot", Metcalf and Eddy, October 1989.

11.23 "Final Work Plan, Remedial Investigation/Feasibility Study at the Ash Landfill, Seneca Army Depot, Romulus, New York", Environmental Science and Engineering, Inc., ?????? 1990.

11.24 "Draft Guidance on Preparing Superfund Decision Documents: The Proposed Plan and Record of Decision", OSWER Directive 9355.3-02.