451-10

GEOPHYSICAL INVESTIGATION WORK PLAN
SENECA ARMY DEPOT
Romulus, New York

Prepared for:

U.S. ARMY CORPS OF ENGINEERS
Huntsville, Alabama

Prepared by:

HUNTER/ESE
Gainesville, Florida

Hunter/ESE No. 3902034-0300-3170

October 1989

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LIST OF ACRONYMS AND ABBREVIATIONS

EM	electromagnetic induction (induced electric field)
ft	feet
GPR	ground-penetrating radar
IIA	initial installation assessment
SEAD	Seneca Army Depot
USAEHA	U.S. Army Environmental Hygiene Agency
USATHAMA	U.S. Army Toxic and Hazardous Materials Agency

1.0 SITE BACKGROUND

Seneca Army Depot (SEAD) is located in the Finger Lakes region of central New York state, approximately 50 miles southeast of Syracuse (Figure 1). The installation covers about 67,000 acres and currently employs approximately 1,000 civilian and military personnel.

Construction of SEAD began in 1941. Currently, the mission of SEAD includes receiving, storing, and distribution of ammunition and explosives, General Services Administration (GSA) strategic and critical materials, and Office of Civil Defense engineering equipment; providing receipt, storage, and issue of items that support special weapons activity; and performing depot-level maintenance, demilitarization, and surveillance on conventional ammunition and special weapons.

The landfill and burning pit areas associated with these activities are the focus of this report, and they are located in the middle of the western boundary of SEAD (Figure 2). The site gently slopes to the west with numerous small drainage ditches running east-west across it. The area is heavily vegetated with grasses and brush.

Before the early 1970s, solid waste at SEAD was burned in open pits. Since that time, solid waste at SEAD has been incinerated. The residue and ashes from the burning operations were put into the landfill area, and all noncombustible rubble was put in the construction debris disposal area shown in Figure 2.

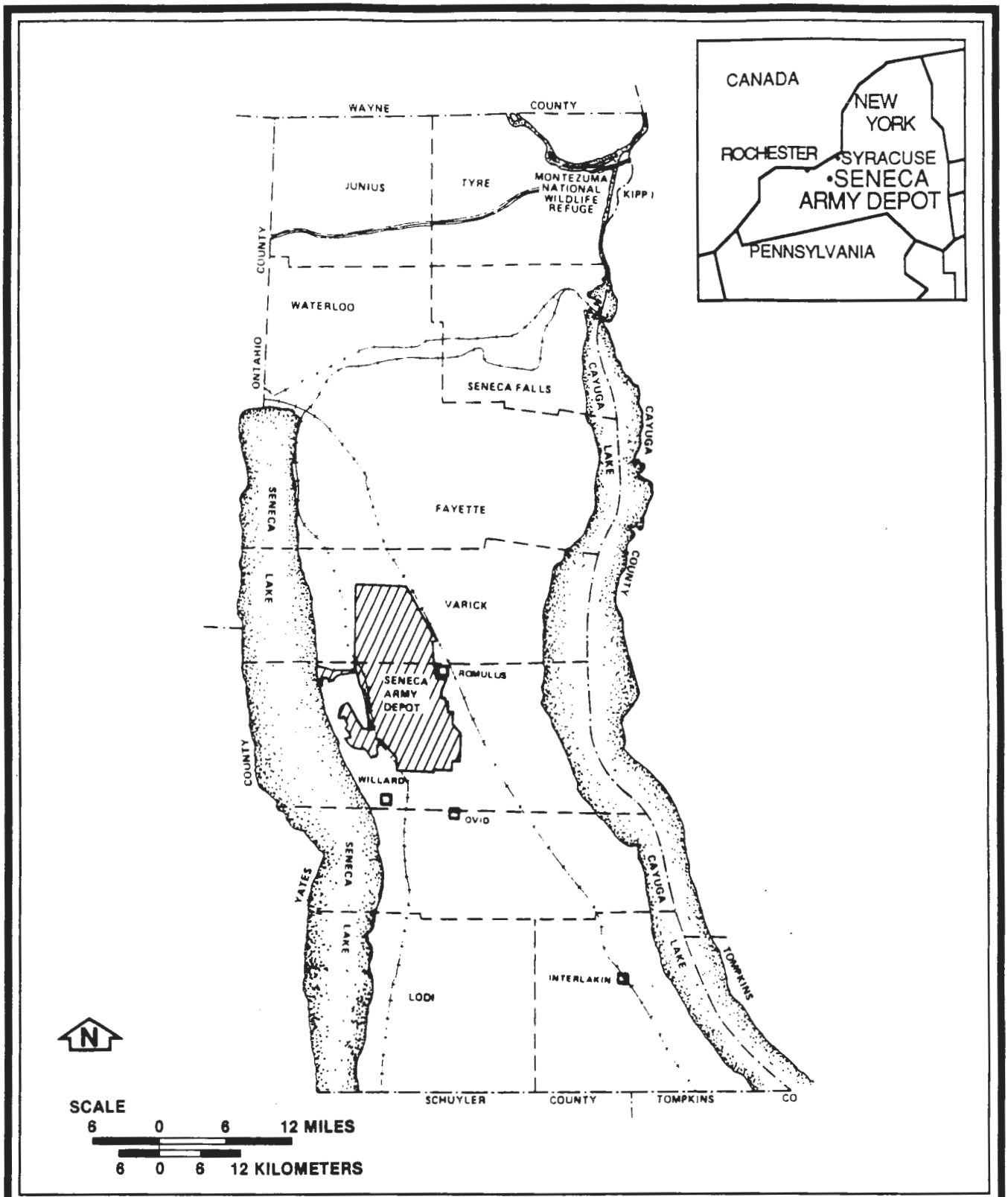

Figure 1
LOCATION OF SENECA ARMY DEPOT

SOURCE: USATHAMA, 1980; HUNTER/ESE, 1989.

HUNTER/ESE

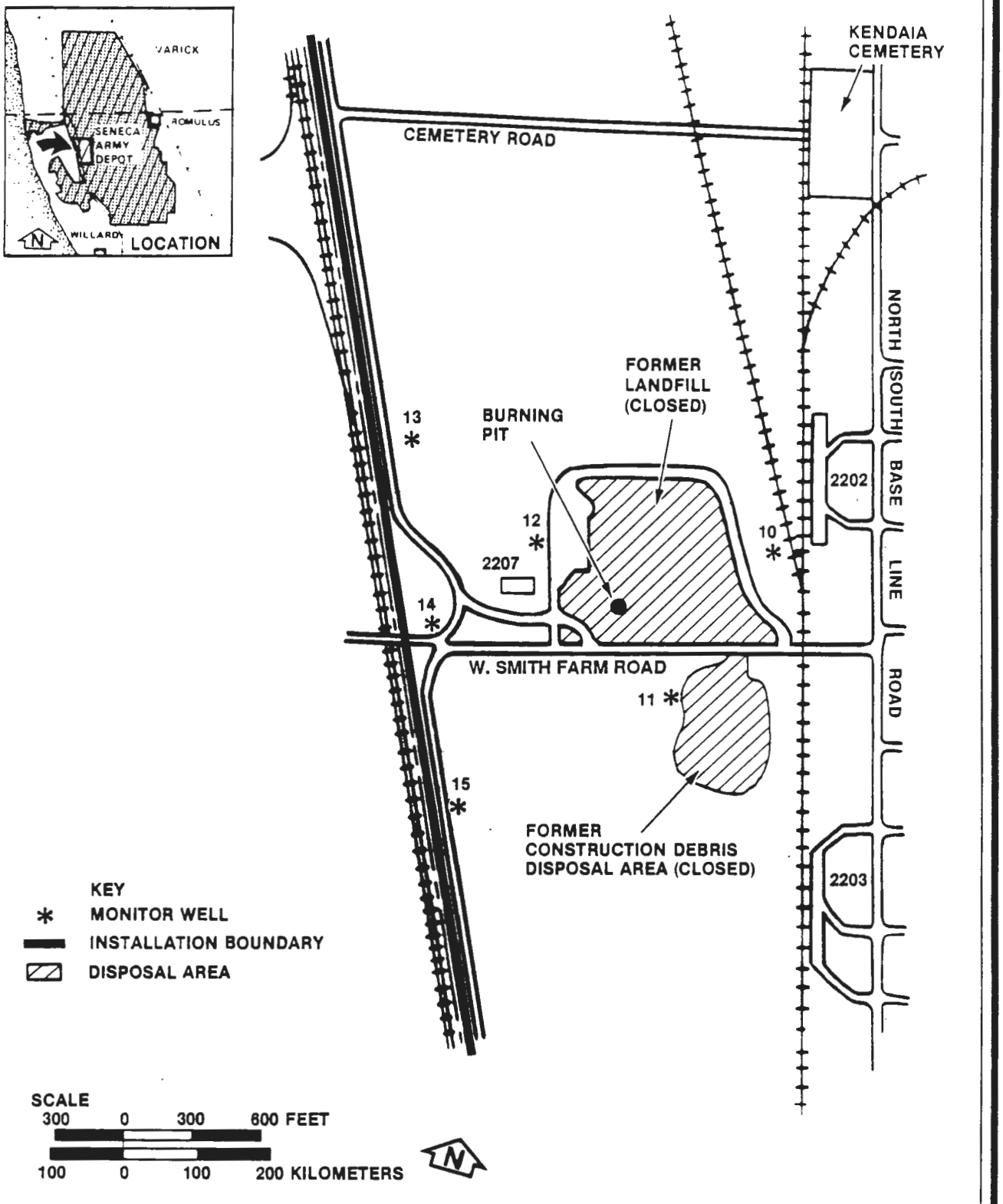

Figure 2
VICINITY OF THE FORMER LANDFILL
AND BURNING PIT AREAS

SOURCE: USAEHA, 1981b.; HUNTER/ESE, 1989.

HUNTER/ESE

The site is covered by thin glacial tills of silts and clays with occasional outcrops of Devonian shales and thin limestone that make up the Hamilton Group. The bedding planes of the Hamilton Group dip gently to the south and east. Any groundwater that occurs does so in the fractural and weathered shale, with unweathered shale acting as bedrock. The hydraulic conductivity of the fractured and weathered shale is low, but is somewhat higher than the overlying glacial till, which causes unconfined to semiconfined aquifer systems.

2.0 PREVIOUS INVESTIGATIONS

Numerous areas of known or suspected hazardous waste disposal at SEAD were delineated in a 1980 report by the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA). The landfill area was then recognized as having a potential for groundwater contamination. The review also identified radioactive burial sites, areas that receive effluent from sewage treatment plants, and other landfills.

After the publication of the Initial Installation Assessment (IIA) report (USATHAMA, 1980), the U.S. Army Environmental Hygiene Agency (USAEHA) conducted a monitoring program including installation of monitor wells in the landfill vicinity. These wells indicated that a definite contamination plume of trichloroethene and trans-1,2-dichloroethene could be delineated.

Environmental Science and Engineering, Inc. (ESE) (now Hunter/ESE) prepared an update of the IIA of SEAD for USATHAMA (USATHAMA, 1988) and recommended that a site investigation be conducted at the former landfill, burning pit, and incinerator. Much of the area was then investigated by a geophysical survey using ground-penetrating radar (GPR) and discrete electromagnetic induction (EM) measurements (USATHAMA, 1988). The geophysical survey was performed by ICF, Inc. in October and November 1988. The current geophysical survey will employ continuous EM measurements and GPR to an area just north of the ICF, Inc. study area.

3.0 GEOPHYSICAL SURVEY

3.1 OBJECTIVE

The objective of the geophysical survey is to detect and delineate buried metallic objects (drums, tanks, pipes) to identify possible sources of contamination. Other objectives include identifying contaminated soils and water with EM, and buried trenches, disturbed soil, and depth to bedrock with GPR.

3.2 THEORY AND METHODOLOGY

The two methods being proposed for this survey are EM, also known as terrain conductivity, and GPR. The EM method will be used over the whole area to determine the locations of buried metallic objects. GPR will be used on a confirmatory basis at locations defined by EM.

3.2.1 ELECTROMAGNETIC INDUCTION

For the EM method, a small conducting coil (transmitter) is placed near the earth's surface as shown in Figure 3. An alternating frequency current is passed through the coil, which produces the primary magnetic field. The primary magnetic field induces a current in the subsurface, which produces a secondary magnetic field. This field is converted into current by the measuring coil, and a voltage proportional to the secondary field strength is recorded. The ratio of the primary field strength to the secondary field strength is linearly proportional to the earth's conductivity.

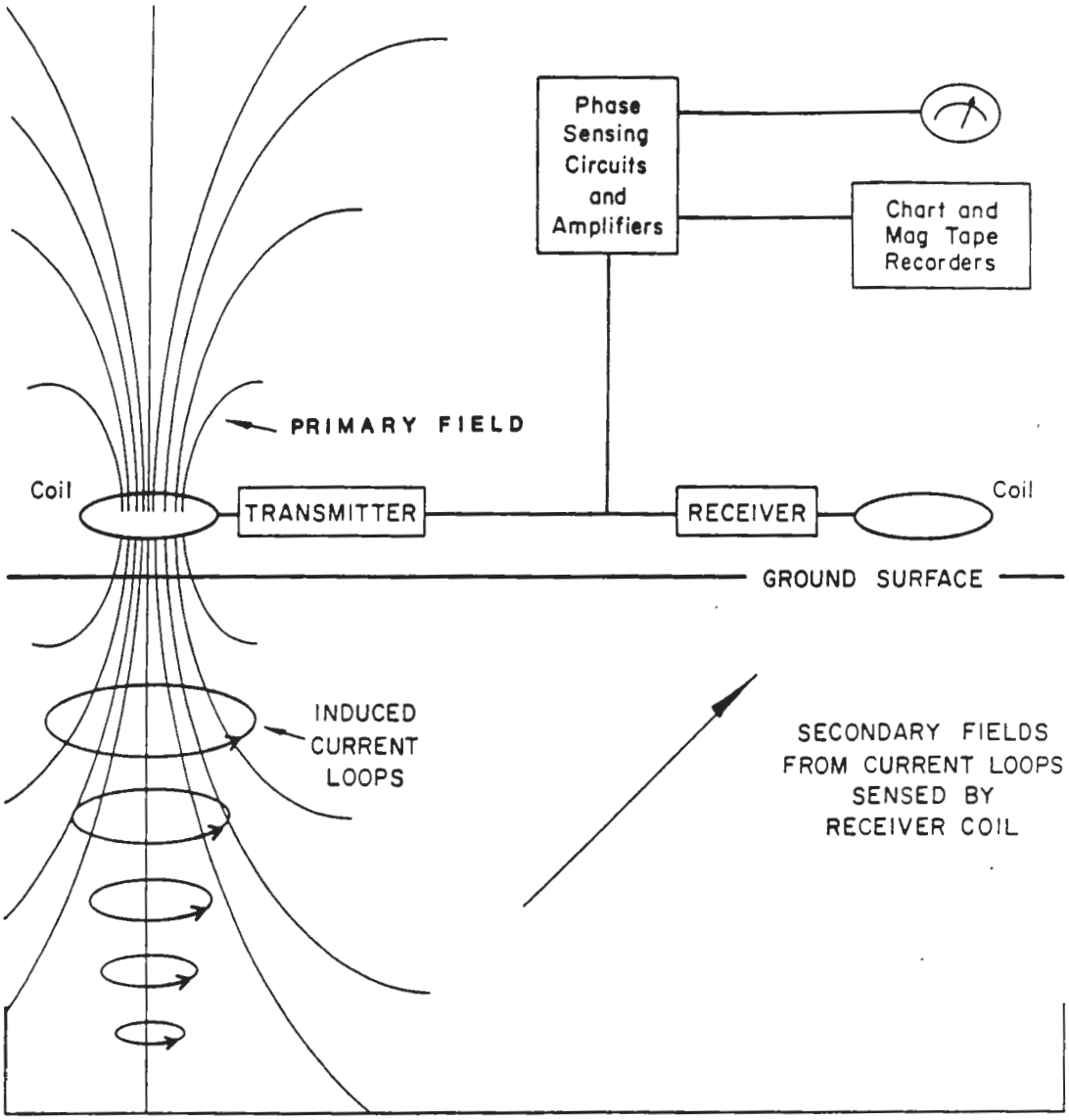

Figure 3
EM PRINCIPLE OF OPERATION

SOURCE: Benson, 1986.

HUNTER/ESE

The distance between transmitter and receiver coils for the instrument in this survey is approximately 12 feet (ft). This spacing is an important component in determining the effective depth of penetration. Effective (useable) penetration depth varies depending on the substrate, but is approximately 18 ft (McNeill, 1980). The magnetic field lines between the transmitting and receiving coils sample a large cross section of earth with each reading (12 ft by 18 ft). Data processing will be used to enhance the field measurements.

3.2.2 GROUND-PENETRATING RADAR

GPR is another electromagnetic method that uses electromagnetic waves for shallow (usually less than 30 ft) exploration (USATHAMA, 1989). The GPR method uses an impulse radar system to inject electromagnetic pulses of short duration into the ground from a broad-band antenna (Figure 4). The pulses are reflected from various interfaces within the subsurface and are picked up by the receiving section of the antenna (Benson, 1982). The data are then recorded by a graphic recorder and digital recorder.

The time the electromagnetic pulse takes to travel from the antenna to the buried object and back is proportional to the object's depth. This time is called the two way travel time and is dependent on the dielectric properties of the subsurface. The data are then processed in a manner similar to seismic data to provide cross sections of the GPR traverses.

3.3 SURVEY DESIGN

Detection Sciences, Inc. will survey in grid lines of 20-ft spacing over the approximately 10-acre area. Twelve control points will be surveyed to establish

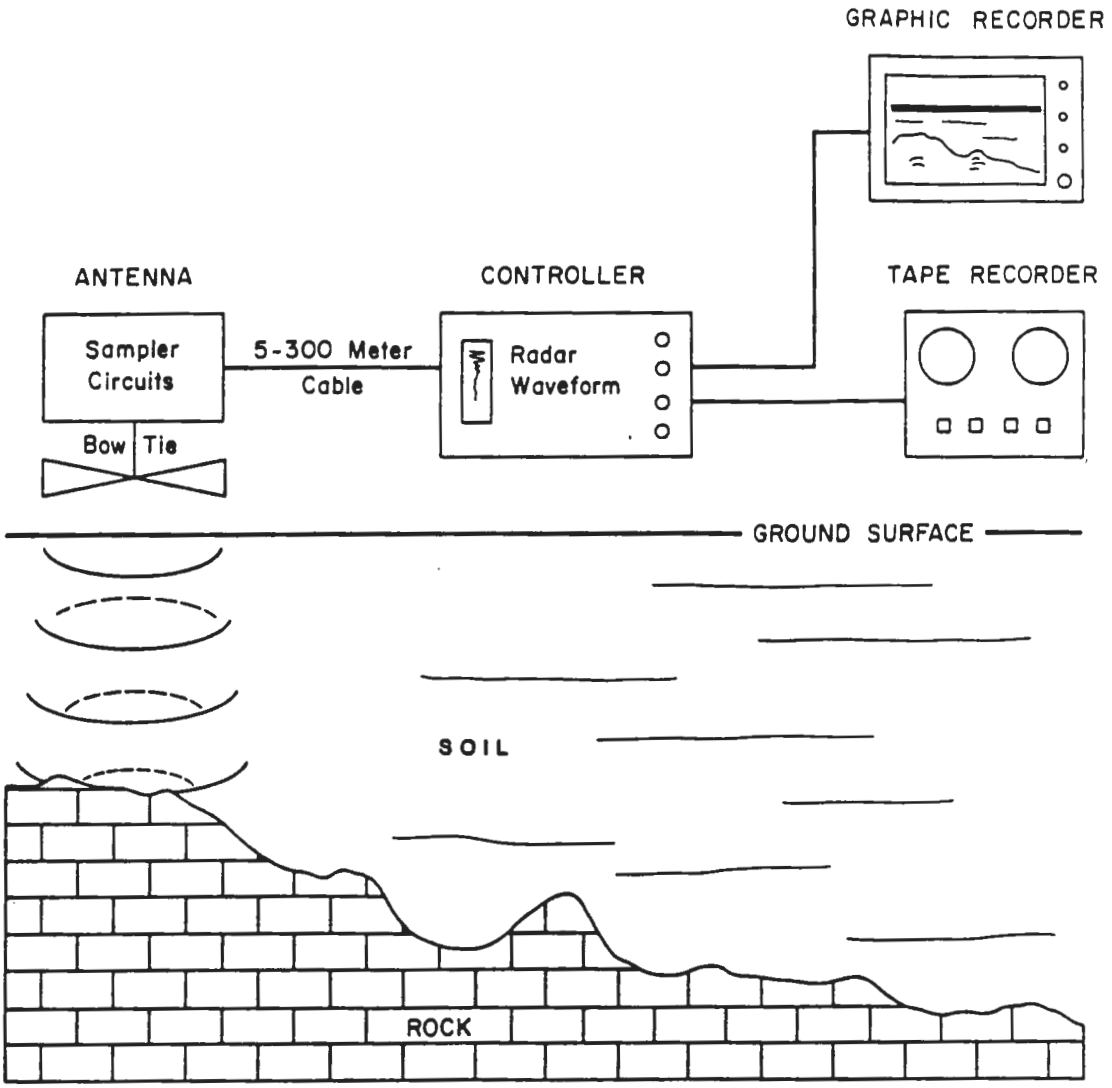

Figure 4
BLOCK DIAGRAM OF GROUND PENETRATING RADAR SYSTEM. RADAR WAVES ARE REFLECTED FROM SOIL/ROCK INTERFACE

SOURCE: Benson, 1986.

HUNTER/ESE

the grid and for remediation purposes. Nonmetallic markers will be used to mark the control points to eliminate possible interference with the geophysical survey. Until a site inspection has been performed, a more complete site map of the survey cannot be developed.

The two commercial geophysical instruments to be used are a Geonics EM31 (EM) with continuous data logger and a modified 6551 SIR System-8 (GPR). The EM will be applied first over the 20-ft grid lines. The 20-ft grid is a finer grid than the 50- and 100-ft grids used by the previous study (USATHAMA, 1989). Continuous EM measurements will provide greater resolution than the discrete station measurements (Benson, 1982) performed during the previous study.

In the previous study at SEAD, the GPR survey was hampered by the heavy vegetation over the landfill area, which caused the antenna to rise up and resulted in a variable coupling of the signal to the ground surface. In this survey, the site will be cleared of vegetation over the survey grid lines to minimize this effect. Ground surface undulations may also be minimized by the site clearing done by the U.S. Army.

Identification of potential areas of buried metal will be made in the field based on the EM measurements and GPR will be used in those areas as a confirmation measure. GPR will be useful in locating the burial depth and type of the metallic object and will yield information on depth to bedrock.

REFERENCES

Benson, R. C., Glaccum, R. A., and Noel, M. R. 1982. Geophysical Techniques for Sensing Buried Wastes and Waste Migration. Environmental Monitoring Systems Laboratory, Office of Research and Development, EPA, Las Vegas, Nevada.

McNeill, J.D. 1980. Electromagnetic Terrain Conductivity Measurement at Low Induction Numbers. Geonics Limited Technical Report, Ontario, Canada.

U.S. Army Toxic and Hazardous Materials Agency (USATHAMA). 1980. Installation Assessment of Seneca Army Depot, NY. Report No. 157, Aberdeen Proving Ground, MD.

U.S. Army Toxic and Hazardous Materials Agency (USATHAMA). 1988. Update of the Initial Installation Assessment of Seneca Army Depot, NY. Report No. AMXTH-IR-A-157(U), Aberdeen Proving Ground, MD.

U.S. Army Toxic and Hazardous Materials Agency (USATHAMA). 1989. Remedial Investigations/Feasibility Studies, Seneca Army Depot Burning Pit/Landfill Site Investigation.

25 Jan 90

ANNEX B
REMEDIAL INVESTIGATIONS AND FEASIBILITY STUDIES
AT THE
INCINERATOR ASH LANDFILL
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 is performing Remedial Investigations/Feasibility Studies (RI/FS) at Seneca Army Depot (SEAD). A recently completed site investigation of the abandoned ash landfill area (Solid Waste Management Unit (SWMU) Designations SEAD-3, SEAD-6, SEAD-14 and SEAD-15) has documented the existence of a narrow plume of groundwater contamination which is believed to extend to, and possibly beyond, the Depot's western boundary. The contaminants of concern are chlorinated volatile organic compounds (VOC's); trans-1,2-dichloroethene, trichloroethene and, to a lesser extent, 1,2-dichloroethene, vinyl chloride and chloroform. Additionally, some heavy metals were found at concentrations above background. 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, is contracting for the required work.

1.2 Location. Seneca Army Depot is a US Army facility located in Seneca County, New York. SEAD occupies approximately 10,600 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. The Incinerator Ash landfill area of Seneca Army Depot was included on 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 EPA Interim Final "Guidance for Conducting Remedial Investigations/Feasibility Studies under CERCLA", dated October 1988 (Reference 11.2).

1.4 Previous Investigations. Previous investigations have been performed at various SEAD units. An "Installation Assessment" and an "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" identifies and describes all solid waste management units (SWMU's) at SEAD. In addition, a confirmation study has been performed and closure plans are being developed for the burning pads (SEAD-23). USATHAMA also prepared a "Site Investigation Report" in March 1989 for the Burning Pit/Landfill. A complete list of previous investigations is presented as References in Section 11.0.

1.5 Basis of this Investigation. A Work Plan for the intended investigation was prepared by Environmental Science and Engineering of Gainesville, Florida (Reference 11.4). This Work Plan is presently being submitted to the EPA and the State of New York Department of Environmental Conservation (NYSDEC) for a second review, the purpose of which is to assure that prior regulatory comments have been satisfactorally incorporated. Upon receipt of final regulatory approval, this Work Plan shall become the basis under which this RI/FS investigation is carried out.

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

2.0 OBJECTIVE

The objective of this Statement of Work is to perform a complete RI/FS at the Incinerator Ash Landfill area as defined by the Office of Solid Waste and Emergency Response Directive 9355 and as laid out in the final Work Plan. Additionally, all work shall be performed in accordance with the Federal Facilities Agreement in affect for Seneca Army Depot (Reference 11.5).

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) and the requirements of EPA, NYSDEC and SEAD. The AE, through RI/FS Reports, shall present a complete description of the RI/FS process as applied to the facility. All work shall be performed under the general supervision of both a Professional Engineer registered in the State of New York and a qualified Geologist.

3.2 (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.

3.3 (Task 2) Preparation of Project-Specific Plans. The existing Work Plan has been prepared to be "generic"; although tasks, procedures, equipment and other technical aspects of the RI/FS performance have, for the most part, been proposed and approved by the regulators, the AE will be required to add some project-specific information before the plans are totally acceptable. Such project-specific information will be added to the sampling, safety and quality assurance plans at a minimum. The AE shall make all additions, wherever appropriate. It is not anticipated that these revisions will be substantial.

3.4 Phase I Remedial Investigation/Feasibility Studies. The objective of Phase I of this SOW is to perform the RI/FS activities corresponding to USEPA's Phase I Remedial Investigation and USEPA Phase I and USEPA Phase II Feasibility Studies. The AE shall perform the RI and FS activities approximately concurrently. When all the field work and data analyses are complete, the AE shall prepare Phase I RI and FS Reports. The AE shall also present specific recommendations for Phase II Remedial Investigations and Feasibility Studies that may be necessary to complete the RI/FS.

3.4.1 Phase I Remedial Investigations.

3.4.1.1 (Task 3) 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 field investigations as detailed in Reference 11.4 in order to characterize the site and determine the nature and extent of soil, surface water and groundwater contamination. The effort shall include performance of the RI/FS scoping process; installation of monitoring wells; performance of geophysical surveying; soil gas sampling; test pit excavations; installation of soil borings and the collection of soil, surface water and groundwater samples. Numbers for field and QA/QC sampling and analysis are presented in Table 4.3 of the Work Plan (Reference 11.4). QC/QA sampling and analytical requirements shall be coordinated with CEMRD-L and shall conform to Engineering Regulation 1110-1-263 (Reference 11.8). The work shall be performed according to the approved work plan.

3.4.1.2 (Task 4) 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 quantitative Risk Assessment. The Risk Assessment shall provide an evaluation of the potential threat to human health, the environment, and ecology 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 EPA's Interim Final "Risk Assessment Guidance for Superfund" (Reference 11.6) and "Superfund Exposure Assessment Manual" (Reference 11.7) and shall, as a minimum, contain a baseline risk assessment, an exposure assessment, and a standards analysis. The Risk Assessment shall be submitted with the Phase I RI and FS Reports. The AE shall provide information including, but not necessarily limited to, the following:

3.4.1.2.1 (Subtask 4.1) Identification of Contaminants of Concern. Using the information gathered from field work, record searches, consultations with appropriate local, State and Federal Officials, and in accordance with the applicable portion of Chapter 5 of Reference 11.6, 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.

3.4.1.2.2 (Subtask 4.2) Exposure Assessment. The AE, using modeling, shall identify actual or potential exposure paths and routes, characterize potentially exposed populations, and estimate expected exposure levels and chemical intakes in accordance with Chapter 6 of Reference 11.6. As part of the Exposure Assessment, the following Task shall also be performed:

3.4.1.2.2.1 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.

3.4.1.2.2.2 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.

3.4.1.2.3 (Subtask 4.3) Toxicity Assessment. The AE shall weigh available evidence regarding the potential for contaminants to cause adverse effects in exposed individuals and estimate the relationship between the extent of exposure and corresponding adverse effects. The relationship shall be determined from field data, ARAR's, toxicological data, and the EPA Integrated Risk Information System (IRIS). Work shall conform to applicable sections of Chapter 7 of Reference 11.6. 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.

3.4.1.2.4 (Subtask 4.4) 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. Work shall conform to applicable sections of Chapter 8 of Reference 11.6.

3.4.1.2.5 (Subtask 4.5) 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.

3.4.1.3 (Task 5) 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 assess existing data on technologies identified as Remedial Action Alternatives to determine data needs required to undertake treatability investigations following completion of alternatives development. 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. The AE shall develop a Conceptual Treatability Study Plan. Actual implementation of the Treatability Study Plan is not part of this SOW. The Treatability Study shall be submitted with the Phase I RI/S Report.

3.4.2 (Task 6) Phase 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.

3.4.2.1 (Subtask 6.1) 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.

3.4.2.2 (Subtask 6.2) 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.

3.4.3 (Task 7) Phase I 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 Phase I work performed. The report shall be prepared according to the requirements of this SOW and the referenced guidance documents. The report shall also describe the recommended work to be performed during the Phase II RI/FS and make specific recommendations, and provide the justification, for sampling locations and analytes proposed for Phase II. As part of this report the AE shall evaluate the need for interim or expedited remedial actions at each of the sites. If the AE recommends that either is appropriate, he shall so propose and justify. The AE shall also propose and justify additional investigations to be undertaken as part of the Phase II Remedial Investigations, if any, for the Contracting Officer's review and approval.

3.5 (Task 8) Post FS Support. Following approval of the RI and FS reports by the regulators, the AE shall be responsible for the preparation of the Proposed Remedial Action Plan (PRAP) and the Record of Decision (ROD). Both documents shall be prepared in accordance with the existing EPA guidance documents.

4.0 SUBMITTALS AND PRESENTATIONS

4.1 Format and Content. The Engineering Reports, consisting of RI/FS reports, presenting all data, analysis, and recommendations 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 report, 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 report 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 reports having a unique decimal designation. The report covers shall consist of vinyl 3-ring binders and shall hold pages firmly while allowing easy removal, addition, or replacement of pages. A report 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 reports shall be stamped "DRAFT" and "DRAFT-FINAL" respectively. Each report shall identify the members and title of the AE's staff which had significant, specific input into the report'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 report shall be separate from the report document. All final submittals shall be sealed by both the registered Professional Engineer-In-Charge and the Certified Professional 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 Minutes. The AE will be responsible for taking notes and preparing the minutes 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.

Deliverable/Meeting	Days Following Contract Award
Draft site-specific Plans	40
Comments provided	70
Final site-specific Plans	115
Contractor mobilization complete/ Field work starts	160
Draft RI Report	310
Comments provided	340
Review Meeting at Seneca AD	350
Draft-Final RI Report	385
Final Phase I RI/FS Report	415
Draft FS Report Submitted	455
Comments provided	485
Draft-Final FS Report Submitted	530
Final FS Report (No Disputes)	560
Draft PRAP	605
Comments provided	635
Draft-Final PRAP	675
Final PRAP	705
Draft ROD	745
Comments provided	775
Draft-Final ROD	820
Final ROD (No Disputes)	850
Presentations	860

The overall completion date for this delivery order shall be 900 calendar days after contract award.

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 4.7.2 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-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, 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, etc., and initial the following sheets. These may not be the same individual. Each sheet should be dated. A copy of this statement 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 each submittal shall be provided to the Contracting Officer in addition to the submittals required in the document and submittal list.

4.7.2 Addressees.

Commander
U.S. Army Corps of Engineers
Huntsville Division
ATTN: CEHND-PM (Mr. John Romeo)
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-S
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U.S. Army Corps of Engineers
Missouri River Division
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Commander
U.S. Army Material Command
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Commander
U.S. Army Corps of Engineers
Missouri River Division
ATTN: CEMRD-ED-GL
PO Box 103, Downtown Station
Omaha, NE 68101-0103

Commander
U.S. Army Corps of Engineers
Toxic and Hazardous Materials
Agency
ATTN: CETHA-IR-S
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: CEMP-RI
20 Massachusettes Ave., NW
Room 2209
Washington, D.C. 20314-1000

4.7.3 Document and Submittal List.

	Plans		Reports	
	Draft	Final	Draft	Final
CEHND-PM	6	6	6	6
USAMC	0	0	1	1
DESCOM	0	0	2	2
CETHA-IR-D	1	1	1	1
CEMRD-ED-EA	3	3	3	3
CEMRD-EA-GL	0	0	1	1
SDSSE-HE	23	23	23	23
CENAD-CO-EP	0	0	0	0
USAEHA	7	7	7	7
CEMP-RI	0	0	0	0
TOTAL	40	40	44	44

	Post FS Support		
	Draft	Draft-Final	Final
CEHND-PM	6	6	6
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	7	7	7
CEMP-RI	1	0	1
TOTAL	46	45	46

5.0 SAFETY REQUIREMENTS.

5.1 Site activities in conjunction with this project may pose unique safety, chemical, and/or biological exposure hazards which require specialized expertise to effectively address and eliminate. The AE shall conduct the RI/FS activities according to the requirements presented in the Work Plan.

5.2 Prior to commencement of RI/FS field activities the AE shall submit for review an amendment to the Work Plan SHERP which is to contain the following:

5.2.1 A discussion of the AE's organizational structure, to include lines of authority of the AE and all subcontractors, shall be provided along with an organizational chart showing the lines of authority for safety and health from site level to

corporate management. Each person assigned specific safety and health responsibilities shall be identified and pertinent qualifications and experience shall be described.

5.2.2 Documentation of compliance with training and medical surveillance requirements for affected employees shall be provided. A format for such documentation is provided in the Work Plan SHERP.

6.0 QUALITY ASSURANCE PROJECT PLAN REQUIREMENTS

The AE shall perform all sampling and analysis activities according to the requirements presented in the Work Plan.

7.0 SOIL BORING AND MONITORING WELL REQUIREMENTS.

All drilling, installation and sampling activities shall be performed according to the requirements presented in the Work Plan.

8.0 SURVEY REQUIREMENTS.

All surveying shall be completed according to the requirements presented in the Work Plan.

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

11.2 Interim Final, "Guidance for or Conducting Remedial Investigations /Feasibility Studies Under CERCLA", U.S. EPA, Office of Solid Waste and Emergency Response, October 1988.

11.3 "Chemical Data Quality Management For Hazardous Waste Remedial Activities", ER 1110-1-263, March 1990.

11.4 "Work Plan for Remedial Investigations / Feasibility Studies at the Ash Landfill, Seneca Army Depot, Romulus, New York", Environmental Science and Engineering, ?? ????????, 1991.

11.5 "Federal Facility Agreement under CERCLA Section 120 in the matter of Seneca Army Depot, Romulus, New York", Docket No. II-CERCLA-FFA-00202, USEPA, U.S. Department of the Army, and the New York State Department of Environmental Conservation, November 1990.

11.6 Interim Final, "Risk Assessment Guidance for Superfund", OSWER Directive 9285.7-01a, September 1989.

11.7 "Superfund Exposure Assessment Manual", EPA/540/1-88/01, OSWER Directive 9285.5-1, April 1988.

11.8 "Chemical Data Quality Management: A Checklist for Chemistry Review", CEMRD-ED-GC, 21 September 1988.