

**Scope of Work for
The Development of
Closure Plan and Sampling of Open Burning Grounds at
Sunflower Army Ammunition Plant
Layaway of Industrial Facilities Project 5988634-1**

SITE LOCATION AND DESCRIPTION: The Old Burning Ground (Solid Waste Management Unit, SWMU, 23) is located in the west-central portion of Sunflower Army Ammunition Plant. The site is located 2,400 feet from the west boundary, and 7,800 from the south boundary of the Government property. The site consists of a topographically level (clay) pad approximately 130 feet by 340 feet surrounded by an earthen berm. The entire area is enclosed by a cyclone/chain link-type security fence. Within the earthen berm area are burning pans which were used to burn excess propellant; they are 40 inches by 120 inches by 4 inches deep. The area surrounding the Burning Ground is mostly grass-covered.

OPERATIONAL HISTORY AND WASTE CHARACTERISTICS: The Burning Ground was used for disposal of propellant by open burning in burning pans from 1985 through 1993. The stainless steel pan containers were constructed in 1985. The quantities and types of propellant burned on the site are summarized at enclosure (encl) 1. The site is currently idle, and has been since 1993.

1. Introduction:

1.1. **Scope:** This is a performance based Scope of Work for a Phase II Environmental Site Assessment (ESA). This scope is intended as a framework for preparing a Phase II, ESA and conducting a physical sampling with respect to the potential presence of a range of contaminants. A Phase II ESA (often referred to as a "Closure Plan") defines what contaminants exist, the range of migration, and proposes closure activities where and if constituent concentration is above regulated levels considering future site use. A Phase II ESA also defines the condition which regulatory agencies of primacy will accept as a "clean closure." The proposed ESA/physical sampling must gather appropriate characterization data which will allow the Army to proceed with closure protocols and procedures that will ensure compliance with the closure performance standards of Title

40, Code of Federal Regulations, Part 265, Subpart G, including but not limited to 265.111.

This ESA will evaluate a parcel of property with recognized environmental conditions, as defined in ASTM Standard Practices E1527-94.

The successful offeror will be required to submit, coordinate, and obtain approval of this Phase II ESA with the regulatory agencies of primacy.

This scope is intended for gathering high quality information about recognized environmental conditions.

1.2. History Description of Site including synopsis of Phase I ESA - Historical documentation, operational procedures, previous closure plans, Remedial Investigation Plan, Notices of Deficiency, regulator correspondence, and all background information and references will be made available to the contractor by AMSIO-IRI, or through a support contract with Alliant Techsystems. A listing of the available/previous investigative information is provided at encl 2.

1.3. Objectives - The primary objectives of an ESA submission are to evaluate known environmental conditions identified in the Phase I ESA (RCRA Facility Investigation) by (1) providing information regarding the vertical and lateral extent of contamination, (2) providing adequate subsurface investigation so as to fully delineate subsurface impacts, and provide risk-based assessment and/or detailed corrective action measures in order to subsequently complete closure plan/post-closure care plan and achieve a "clean closure" as appropriate. This document is intended to provide guidance for investigating recognized environmental conditions based on technically sound data and provide the level of inquiry necessary to implement remedial solutions for this site. The contractor shall use creative ideas writing this ESA Phase II for closure in order that the RCRA site closure is coordinated with the CERCLA activities so that the areas to be remediated under RCRA shall be clearly defined to contamination which was generated by RCRA activity.

1.4. Performance Period - The successful offeror shall complete the Phase II ESA 6 months after contract award.

1.5. Cost Proposal, Schedule and Reporting Requirements:

1.5.1. Schedule: As part of the offerors cost proposal submission, the prospective bidder will identify the man-hours, materials, and subcontract costs/services required to accomplish the tasks outlined in this SOW. A proposed schedule of activities will also be provided to identify how the offeror will meet the performance period requirements specified in paragraph 1.4. The proposal schedule will define the time frame required by the independent tasks outlined in paragraph 3.0, and any major subordinate tasks (similar to a Work Breakdown Structure Time line). The agreed to schedule will become the basis for the monthly status reports generated by the successful offeror.

1.5.2. Monthly Status Reports: The successful offeror will provide a monthly status report to AMSIO-IRI. The monthly report will identify the initial planned costs and schedule summary (as agreed to in negotiations). The report will track actual funds vouchered to track the costs expended, and identify the value of work performed to track schedule deviations. The cost portion of the report will use earned value concepts to determine value of the work actually performed. The report format will be similar to that as provided at enclosure 3.

1.6. **Organization of this SOW** - Section 1 describes the scope of the associated Phase II ESA. Section 2 discusses the significance of the data generated and potential future uses of land. Section 3 contains the objectives and components of Phase II ESA. Section 4 is about the Work Plan. Section 5 discusses Investigative Activities. Section 6 (Evaluation of Data), Section 7 (Interpretation of Data), and Section 8 (Report Preparation) collectively constitute the body of this scope. Appendix A contains definitions and acronyms. Appendix B contains a Table of Contents for the Phase II ESA Report.

2. Inspection And Acceptance Criteria:

2.1. **Acceptance Criteria:** At a minimum, in order to be acceptable to the Government, the final Phase II report must contain the following test data and documentation:

a. Determine the types, quantities, concentrations, extent and configuration of contamination.

b. Contain the necessary data and compile the ASTM E-1739 Risk Based Corrective Action Plan or the Risk Based Corrective Action Plan specified by the Jurisdictional Regulatory Authority and compile to submit to the regulators.

c. Contain the needed information for a Phase III remediation and/or Monitoring Plan to satisfy the requirements of 40 CFR Section 265 and the jurisdictional regulators.

d. Provide sufficient hydro-geologic characterization for minimal transport/fate modeling to satisfy the requirements of 40 CFR Section 265 and the jurisdictional regulators.

e. Provide submission to and approval by the regulators of jurisdiction for this ESA Phase II closure plan including the sampling plan and the subsequent remediation plan/post closure sampling (if required).

f. Determine and document, to the approval of the regulators of primacy, the ecological receptors and impacts, or lack thereof. This documentation shall be submitted to the Contracting Officer (CO) as outlined in paragraph 10. The CO will then forward this documentation to AMSIO-IRI for inspection. Final acceptance shall be by the CO.

2.2. **Principles** - The following principles are an integral part of this scope and are intended to be referred to in resolving any ambiguity or exercising such discretion as is accorded the Government or the contractors.

2.2.1. **Elimination of Uncertainty** - No ESA can eliminate all uncertainty. Furthermore, any sample, either surface or subsurface, taken for laboratory analysis may or may not be representative of a larger population. Professional judgment and interpretation are inherent in the process and uncertainty is inevitable. Additional investigation may be able to reduce the uncertainty but it can never be eliminated.

2.2.2. **Chemical Analysis Error** - Chemical testing methods

have inherent uncertainties and limitations. The successful offeror shall build quality control and quality assurance tests into the work plan, as outlined in Section 4.8. The environmental professional shall require the laboratory to alert it to any potential or actual problems experienced, or non-routine events which may have occurred during the testing, so that such problems can be considered in evaluating the data.

2.2.3. **Level of Investigation** - ESAs do not generally require an exhaustive investigation of environmental conditions on property. There is a point at which the cost of information obtained and the time required to obtain it outweigh the usefulness of the information and, in fact, may be a material detriment to the orderly completion of transactions. If hazardous substance or petroleum releases are confirmed on a parcel of property, the extent of further investigation is related to the degree of uncertainty that is acceptable to the user and the regulators of jurisdiction.

2.2.4. **Comparison With Subsequent Inquiry** - Phase II ESAs should be evaluated based on the reasonableness of judgments made at the time and under the circumstances in which they were made.

2.2.5. **Data Usability** - Measurements and sampling data only represent the site conditions at the time of data collection. Therefore, the usability of data collected as part of a Phase II ESA may have a finite lifetime depending on the application and use being made of the data. The successful offeror should evaluate the validity of previously generated data for any subsequent use beyond the original purpose for which it was collected.

3. **Phase II ESA Components** - The components of a Phase II ESA are as listed below. These components and specification are provided for information purposes:

1. Work Plan Development
2. Investigative Activities
3. Evaluation and Presentation of Data and Development of Risk Based Assessment
4. Presentation of Findings and Conclusions
5. Remediation Plan

4. Work Plan Development:

4.1. A plan shall be developed by the environmental professional to establish the methods and work tasks that achieve the user's Phase II objectives. The work plan should provide the rationale for planned sampling locations and testing parameters along with identification of selected methodologies and appropriate QA/QC measures. The work plan may provide for minor field modifications where appropriate. The work plan should be organized to facilitate the orderly, objective-focused implementation of the plan in the field. In general, there are seven main tasks in developing a work plan, as described in the sections 4.2 through 4.8.

4.2. Review Existing Information - Readily available existing information should be reviewed to identify or establish those characteristics of the site and its vicinity which:

- a. Constitute a recognized environmental condition.
- b. Affect the potential distribution and mobility of hazardous substances or petroleum products in structures, on the ground, in ground water, in soils, or in surface water and environs at the site.
- c. Affect the manner in which the presence of hazardous substances or petroleum products may be investigated. The review of readily available existing information should serve as the basis for evaluating the likely distribution of hazardous substances or petroleum products at the site, identifying appropriate sampling locations, and selecting appropriate sampling and analytical methodologies.

Information reviewed during work plan development should include all readily available information identified as required by ASTM E1527-94 or E1528 within the approximate minimum search distance for each REC being investigated. Some but not all of these documents are identified at encl 2.

If existing information indicates a reasonable potential for hazardous substances or petroleum products to migrate onto the property, or to migrate within soil, ground water,

surface water, or structures at the property, additional information should be reviewed, including those physical setting information sources identified as discretionary and non-standard in ASTM E1527-94 or E1528. The environmental professional may review additional sources of information as is appropriate to the property, or as required by the judgment of the environmental professional. Readily available information may be gained in review of Phase I ESAs conducted IAW ASTM E1527-94, or other ESAs or reports, including a Transaction Screen conducted IAW ASTM E1528-93 where the information, in the judgment of the environmental professional, can be reasonably relied upon. If, however, information is not available in the form of a Phase I ESA, or other reliable source, such information should be obtained in accordance with ASTM E1527-94.

Information developed at this stage of the assessment may eliminate recognized environmental conditions identified in a Phase I ESA or Transaction Screen from further Phase II investigation. The environmental professional's judgment may conclude the additional information adequately demonstrates that hazardous substances or petroleum products associated with a previously identified REC are unlikely to be present at the property.

4.3. **Potential Distributions of Contaminants** - The environmental professional shall interpret the possible distributions and chemical phases of potential contaminants. This requires that the environmental professional consider, in a setting such as the property, the contaminant properties, behaviors, and fate and transport characteristics such that the work plan will address the relevant potential environmental impairment issues.

4.4. **Sampling Plan** - A sampling program shall be designed and implemented to provide collection of potentially contaminated environmental media. Sample points will be located where they are likely to occur, as determined pursuant to the provisions of this Section.

4.5. **Health and Safety Plan** - The work plan shall include personnel health and safety precautions to be followed IAW applicable federal law or state or local equivalents and any requirements imposed by the owner or occupant of the property or by the user.

4.6. **Chemical Testing Plan** - The chemical testing program shall be designed to detect the contaminants suspected to be present in the samples collected in implementing Section 4.4 above. The chemical tests should be appropriate for detecting the indicator constituents of the hazardous substances and petroleum products identified in the review performed under Section 4.2 above, recognizing the possible chemical phases inferred in the work done under Section 4.3 above. The chemical testing program should include tests which provide quality assurance (QA) and techniques which provide quality control (QC) over the chemical analyses.

The environmental professional shall specify in advance the analytical methods to be used as well as the requirements for laboratory data deliverables (e.g., tabulated results, individual analysis sheets, chromatograms, spike recoveries, instrument calibration data, etc.) and quality control information (i.e., project-specific or only laboratory batch-specific QC sample analysis).

An extensive body of methods is available for the analysis of environmental samples gathered in the course of a Phase II ESA. Several distinct compilations of methods for the analysis of environmental samples have been developed, principally by EPA and ASTM, for different purposes, primarily for hazardous waste management, industrial and municipal wastewater monitoring, investigation and cleanup of potential Superfund sites, and monitoring of the public water supply. An example is the compilation titled Test Methods for Evaluating Solid Waste (SW-846) prepared by EPA. Each of these methods has particular benefits and limitations.

For each specific media and target analyte, a variety of methods may be appropriate, depending upon the particular circumstances. The environmental professional shall select methods for the analysis of samples giving consideration to (1) the intended end-use of the resulting data, (2) the user's data quality objectives, (3) the statutory, regulatory, or policy framework applicable to the sample in question, and (4) any limitations or allowances associated with the level of effort as understood by the environmental professional and user. The selected analytical method should be appropriate for the sample medium, target analyte, and detection limits and should result in data sufficient to support conclusions regarding recognized environmental

conditions.

4.7. Quality Assurance/Quality Control Procedures:

4.7.1. Appropriate quality assurance/quality control (QA/QC) procedures shall be included in the Phase II ESA to allow for assessment of the quality of the data collected. The QA/QC measures may include, for example, written field sampling protocol, instrument calibration, the preparation and analysis of trip blanks, duplicate samples, and holding times for sample analysis.

4.7.2. Any analytical laboratory used in the course of the Phase II ESA shall have an established QA/QC program sufficient to allow assessment of the precision and accuracy of the data it generates. The environmental professional shall verify the state certification or licensing of the analytical laboratory where applicable or otherwise evaluate the appropriateness of the QA/QC program of the analytical laboratory prior to engaging its services.

5. **Investigative Activities:** The investigative activities to be conducted under the Phase II ESA may range from non-intrusive field screening methods to intrusive multi-media sampling and laboratory analysis. This section references an overview of recognized intrusive and non-intrusive site investigation methodologies and common field screening activities and analytical protocol. The selection of one or a combination of these methods will be based on the stated objectives of the user and the judgment of the environmental professional. Appropriate QA/QC measures should be implemented according to the work plan. Investigative activities shall be statistically conclusive to ensure the remediation is acceptable to the regulatory agency of primacy.

5.1. Field Screening Techniques:

5.1.1. Field screening techniques include methods of data gathering which may result in real-time acquisition of data, for the purpose of characterizing the physical attributes of a site and for the assessment of the presence and a real distribution of a specific chemical or chemical classes at a

sampling location. Chemical field screening techniques may indicate the presence of a specific chemical or chemical class in excess of a predetermined or legally required action level. Field analytical methods include all chemical analysis methods capable of providing chemical-specific quantitative data in the field or non-laboratory setting. Field screening and analytical techniques generally allow rapid, multiple measurements at relatively low cost. Field chemical screening and analytical methods generally have higher detection limits and lower precision and accuracy compared to laboratory analytical measurements because of limitations imposed by making instruments portable and greater difficulties in applying analytical QA/QC procedures in the field.

5.1.2. Field screening sampling and analytical techniques may be used in Phase II ESAs for: (a) Qualitative and semi-quantitative confirmation of the presence of contaminants constituting a REC, (b) Preliminary mapping of the area's distribution of contaminants, (c) Guiding the collection of samples for more rigorous laboratory analysis, and (d) Guiding the placement of permanent monitoring well installations. The environmental professional will establish standard procedures and protocols prior to the implementation of field screening efforts.

5.1.3. Common field screening sampling methods that may be employed in a Phase II ESA include sampling of soil, soil gas, and ground water. Common chemical field screening and analytical methods include use of ion-selective electrodes, detection of volatile compounds using field gas chromatograph, and detection of inorganic constituents and semi-volatile organic chemicals using colorimetric wet chemistry methods, including enzyme immunoassay tests. Section 5.1.5 and Section 12 in ASTM D5730, Quinlan Standards and ASTM D5717, Standard Guide to Site Characteristics for Environmental Purposes with Emphasis on Soil, Rock The Vadose Zone and Ground Water, further address the use of field screening methods. Field screening technologies continue to evolve.

5.2. Environmental Media Sampling:

5.2.1. The Phase II ESA requires environmental sampling with field and/or laboratory analysis to determine whether hazardous substances or petroleum products are present on property. The selection of sampling locations and analytical parameters should be consistent with the work plan developed at the onset of the project. Any deviations from the work plan should be noted and justified in the final report. Methodologies for collecting, preserving, and analyzing environmental media samples are well documented by several government, private, and academic institutions. Sampling locations should be documented with sufficient precision to allow the sampling event to be reproduced later.

5.2.2. The Phase II sampling activities should be conducted to avoid the introduction of contaminants from the sampling equipment, sampling containers, and the analytical laboratory into the sample and to avoid the spread of contaminants in the environment.

5.2.3. Sampling methods that may be employed during a Phase II site investigation are among the standards presented in ASTM D5730. See Section 2.1. New technologies are frequently introduced.

5.3. **Sample Handling:**

5.3.1. Sample handling includes sample collection and containerization, filtration, and preservation. Sample containerization and preservation techniques are among the standards presented in D5730. Only containers approved or recommended in the applicable analytical protocol should be used.

5.3.2. A completed chain of custody record should accompany each shipment of samples to the analytical laboratory. Chain of custody records provide written documentation regarding sample collection and handling and identify the persons involved in the chain of sample possession. Chain of custody records also provide a written record of requested analytical parameters.

5.3.3. The environmental professional shall ensure that the samples are delivered such that the analysis can be completed within the appropriate sample holding times.

6. **Evaluation of Data:** The implementation of the work plan will generate information and data regarding environmental conditions at the property which must be evaluated.

To complete the Phase II ESA, this information and data must be analyzed to (1) Qualify the adequacy of the work performed, and (2) Evaluate whether a release or disposal of hazardous substances or petroleum products has occurred. If hazardous substances or petroleum products are not detected, the Phase II ESA information and data should be interpreted to determine whether all appropriate inquiry has been performed. If so, no further work is necessary to satisfy the "all appropriate inquiry" element of the innocent purchaser provision of CERCLA with respect to the recognized environmental conditions investigated. If hazardous substances or petroleum products are detected, the Phase II information and data shall be interpreted to determine what further work shall be accomplished to investigate the nature and extent of the release.

6.1 **Verification of Assumptions** - The first step in analysis of data is to test whether the assumptions upon which the work plan was based were valid. That is, one asks whether samples were collected of the right media (e.g., soil, ground water) or at the right place (i.e., where contaminants should be if the potential release had actually occurred).

A work plan is typically based upon assumptions, U.S. Geological Survey, local well drilling logs, and previous investigations, as to subsurface physical conditions, e.g., soil permeability, depth to the water table, ground water flow direction and characteristics of potential contaminants. Actual information on these conditions is usually gained through the explorations, sampling, and observations completed under the work plan (at least for those studies where subsurface conditions are of concern). In some jurisdictions, the evaluation and analysis of the subsurface conditions may require a licensed individual (e.g., registered geologist, professional engineer). The environmental professional should evaluate whether the work plan assumptions were valid, in light of the actual conditions encountered. If an assumption was not valid, then the work performed may not have been adequate to verify the presence of a REC.

For example, the work plan may have called for the installation of a number of observation wells, some of which were intended to be down gradient of areas where releases may have occurred. However, the water table elevations measured in the wells might have indicated that ground water flowed in a different direction than that inferred for work plan development. Hence the wells were not down gradient of the potential release areas and their purpose was not met. This would indicate that additional site work would have to be done to successfully complete the Phase II ESA. On the other hand, water table elevations may have confirmed that the wells were down gradient, as intended. They are then qualified as successfully meeting their purpose, and the analysis and interpretation of data relating to them can proceed.

6.2. Verification of Data - The second step is to evaluate whether any target analyses detected in the samples collected are attributable to the site. This requires the environmental professional to determine whether the accuracy of the analytical results should be questioned based on the QA/QC procedures described in Section 4.7. When data quality is determined to be acceptable, test results should be interpreted.

7. Interpretation of Results: The results of the Phase II explorations, sampling, and testing should be interpreted to determine the significance of the data as they relate to the user's objectives. The data shall be evaluated to determine if other sources of contamination or more highly contaminated media may exist at the site but were not investigated IAW this Guide. If chemicals which occur in nature are detected, the data must be interpreted to determine whether they are naturally occurring or are present as a result of human activity. For example, lead occurs naturally in soils and waters, at a range of concentrations. Mere detection of lead does not necessarily reflect lead disposal. The environmental professional must make a scientifically sound comparison between the lead level detected and the naturally occurring lead level in the site vicinity (the naturally occurring level is sometimes referred to as the "background" or "ambient" level) and must evaluate potential sources (e.g., fill materials present on the property in an area where use of mine tailings as fill was prevalent) to determine whether a disposal and/or a release have occurred.

Elimination of RECs - Where fewer than all recognized environmental conditions identified in a Phase I ESA or Transaction Screen are investigated in the Phase II ESA, the conclusion that no further inquiries warranted applies only to the recognized environmental conditions investigated. However, this Scope should not be construed to require Phase II assessment of all recognized environmental conditions identified in a Phase I ESA or a Transaction Screen. Where the Government's objectives may be otherwise satisfied, a REC identified in a Phase I ESA or Transaction Screen may be eliminated from the Phase II ESA.

A REC identified in a Phase I ESA or Transaction Screen may also be eliminated from the full scope of Phase II ESA procedures by developing further information not included in the Phase I or Transaction Screen. For example, the user may obtain a tank closure report not included in the Phase I report that confirms there were no releases from the tank which was identified as a REC in the Phase I or Transaction Screen. This new information may eliminate the need for additional Phase II tasks with respect to that REC. Similarly, a REC identified in the Phase I or Transaction Screen due to off-site conditions (e.g., a nearby CERCLIS or LUST site) may be eliminated from a Phase II ESA if the records associated with such sites confirm that hazardous substances or petroleum products have not migrated or are not likely to migrate onto the property. Such additional record review generally occurs in the work plan development stage of the Phase II ESA See Section 4.3.

8. **Remediation Plan** - As applicable, the environmental professional shall provide a remediation plan which complies with a clean closure, takes into account future site use, and anticipated receptors.

8.1. **Definition of Clean Closure and Factors of Consideration:** As applicable, the environmental professional will propose to the regulators a concentration of regulated constituents which will identify a state of clean closure. The constituent concentration will take into consideration background levels, future use of the site, and any impact to the likely receptors.

8.2. **Remediation Plan:** After investigative activities are

performed, evaluated, and the definition level of clean closure is approved by the regulatory agency of primacy, the environmental professional will propose a remediation plan. If applicable, the plan will identify activities to neutralize/decontaminate the constituents with concentration levels above those approved by the clean closure definition. These remediation activities will be accomplished in the second phase of this project, and are not part of this SOW. The tasks proposed will be selected from techniques and procedures which have been accepted by regulators and proven economically feasible. The environmental professional will weigh the impacts and costs that the remediation activities have on future monitoring requirements.

9. Suggested Phase II ESA Report Preparation: Table of Contents is at Paragraph 10.

9.1. **Purpose.** The purpose of a written report is to provide detailed documentation of the data and evaluation that (a) documents and supports the conclusions of the environmental professional, (b) facilitates decisions about the transaction, (c) substantiates the innocent purchaser defense, if available, and (d) develops documentation for testing necessary to compile a plan for Remedial Action Phase III.

9.2. **Standards.** Preparation of a written Phase II ESA report is based on three standards: 1) the components of a scientific report, 2) good technical writing, and 3) clear and accurate presentation of the results and conclusions, and recommendations to the user. A standard scientific report contains the following sections: an introduction, a summary of background information, a description of site conditions, a description of work performed and methods used, data evaluation and presentation, and findings and conclusions. The report will be supported by appropriate tables, figures, and appendices. Good technical writing is consistent, accurate, precise, clear and complete. In all respects, the whole report needs to stand on its own.

9.3. **Format of Report.** The report format for a written Phase II ESA report is presented in section 10. At a minimum, the written report shall contain these elements.

9.4. **Content of Report:**

9.4.1. **Introductory Components.** The introductory components of this Phase II ESA shall include a transmittal letter, executive summary, cover page and table of contents.

9.4.1.1. **Transmittal Letter.** A transmittal letter documents the date of a report's delivery and identifies the intended recipients of the report. It also may contain other important information including a description of the report as draft or final and a designation that the report is confidential and/or subject to attorney-client privilege. The transmittal letter also may identify the staff responsible for the work.

The environmental professional(s) responsible for the Phase II ESA will sign the report. Signatures, along with typed names and titles may appear in the transmittal letter, on the cover page, or on a signature page at the end of the main text of the report. Where required by the local jurisdiction, professional seals, license type and license number, as applicable, will be affixed following a signature.

9.4.1.2. **Cover Page.** The cover or title page identifies the following items: the subject property name and address, the preparer of the report, the person for whom the report was prepared and the date of the report. It may also include a statement of confidentiality. If appropriate, it also may include a statement identifying the document as subject to certain legal privileges. For example, the cover page may bear the following statement: Subject to Attorney-Work Product and Other Privileges.

9.4.1.3. **Table of Contents.** The table of contents refers the reader to the location of the major sections of the report and to the figures, tables and appendices. All section, figure, table and appendix titles should match those of the text. See Section 10 for a recommended Table of Contents.

9.4.1.4. **Executive Summary.** An executive summary provides a concise overview of the findings of the ESA. As a summary, it should generally be brief and should not discuss material not included in the text of the report.

9.4.2. **Main Text.** The main text of the report will contain an introduction, a discussion of background information, a

description of work performed during the Phase II ESA and of the methods used, data evaluation and presentation, and a discussion of findings/conclusions.

9.4.2.1. **Introduction**. The introduction will include the purpose and scope of the Phase II ESA; any special terms, conditions, or limitations; the date of authorization of the project and any changes. The introduction also shall identify items not included within the scope of the Phase II ESA that might have been expected to be included.

The introduction also references the guiding standards including contracts/service agreements, regulatory requirements, and the work plan. The introduction generally identifies the specific tasks comprising the work performed in the order in which they will be described later.

9.4.2.2. **Background Information**. This section shall include a description of the site and its features, a description of the physical site setting, a brief discussion of the site's history and use and the use of adjacent properties, and a summary of previous environmental site assessments. Reference to an existing Phase I ESA report may convey this information.

This section will identify the data and conclusions that led to the performance of the Phase II ESA. If the Phase II ESA is based on earlier environmental site assessments, the earlier ESAs should be precisely identified (e.g., by reference to report title, project number, author and date of any report). Where appropriate, prior ESAs may be included in an appendix. If recommendations for further work were included in a referenced prior ESA but were not followed in the Phase II ESA, an explanation in this section is appropriate.

9.4.2.3. **Phase II ESA Activities**. This section should summarize the work plan as actually implemented. This section should describe what was done, identify the methods that were used, identify the location of the Phase II ESA activities and pertinent site conditions. This section also should explain the rationale for the work performed, including the review of supplemental records and the selection of sampling locations, analytical parameters and methodologies. Deviations from the work plan and deviations

from standard methodologies should also be explained.

Standard procedures and methods exist for a wide variety of activities that are performed during Phase II ESAs, including vapor monitoring/screening methods, sampling procedures, chain of custody procedures, drilling methods, survey methods, well installation procedures, water level measurement methods, and analytical methods. Many of these methods and procedures are identified in ASTM Standard D5730-95, "Standard Guide for Site Characteristics for Environmental Purposes with Emphasis on Soil, Rock the Vadose Zone and Ground Water."

Methods used can be identified by reference to a specific published standard or method such as ASTM, state protocols, or EPA methodologies. Other methods used (e.g., standard operating procedures for a particular company) will be described in detail. Where appropriate, the details of methods and procedures used can be included in an appendix.

9.4.2.4. **Evaluation and Presentation of Results.** Results of the Phase II ESA shall be presented in a logical order and should be summarized to allow the reader to more readily follow the discussion of findings and conclusions which appears in the next section of the report. Results may be presented in text, in tables, and/or in figures. Reference to the location of data in the appendices is appropriate. Results should be presented consistently and accurately.

(a) **Evaluation.** Evaluation of data involves verifying work plan assumptions as they relate to meeting objectives and determining whether chemical constituents detected in samples were attributable to site conditions or to QA/QC failures. See Section 6 for a detailed discussion of data evaluation.

(b) **Presentation.** The presentation of results will be organized to assist the reader's understanding of the interpretation of the chemical analysis data that follows in the next section of the report. Organizational divisions may be by media (e.g., soil data presented separately from ground water data), contaminant type (e.g., organic vs. inorganic contaminants), source (e.g., contamination from leaking underground storage tank vs. contamination from drum storage area), or other factors.

The specific information presented will depend on the activities performed. Although Phase II ESAs can involve the full range of environmental media, they most typically involve sampling and chemical analysis or screening of soil, vapors and/or ground water.

As a minimum, the following information shall be presented for the referenced activities:

(1) **Soil Sampling:** The locations of sampling point in relation to potential sources; the depths of sampling; the depth to pertinent horizons, such as the water table and the fill/natural soil contact; the sampling and analytical methods used; and the results of chemical analyses.

(2) **Vapor Sampling:** The locations of sampling points in relation to potential sources; the depths of sampling; the depth to pertinent horizons, such as the water table and the fill/natural soil contact; the sampling and analytical methods used; and the results of chemical analyses.

(3) **Ground Water Sampling:** The locations of sampling points in relation to potential sources; water level data (e.g., depth to water or water table elevation, screened interval elevation, filtered interval elevation); the sampling and analytical methods used; and the results of chemical analyses.

9.4.2.5. **Discussion of Findings and Conclusions** - Findings and conclusions section include:

(a) A Statement that the Phase II ESA was conducted in accordance with the guidance contained in this scope and in accordance with the work plan, and a description of any deviations from the scope or work plan;

(b) A summary description of: (1) the nature of the recognized environmental conditions identified in previous work (2) the investigations performed to evaluate the identified recognized environmental conditions, (3) the data generated from the investigations, and (4) any limitations of the data produced and their impact on conclusions.

(c) The environmental professional's interpretation of

the significance of the data as they relate to the user's objectives. The interpretation of data can be assisted by comparisons with applicable or relevant and appropriate standards or guidelines. These standards or guidelines most often are contained in state or federal regulatory programs. The identification and verification of reference standards and guidelines is often assisted by legal counsel with environmental expertise. This section shall contain comparisons of the data with background concentrations for naturally occurring compounds such as metals or inorganic compounds. Appropriate citations and references to standards, guidelines and sources for background concentrations should be included. See Section 7 for a detailed discussion of interpretation of results.

(d) A statement whether, in the judgment of the environmental professional, the data generated in the Phase II ESA are sufficient to support a conclusion, with respect to the recognized environmental conditions investigated, either that hazardous substances or petroleum products have been released or disposed at the property or that hazardous substances or petroleum products have not been released or disposed at the property; and:

(e) Where applicable, an explanation of data insufficiencies that prevent a conclusion that hazardous substances or petroleum products were or were not released or disposed at the property.

9.4.3. **Concluding Components**. The report shall contain tables, figures, and appendices as necessary or appropriate to explain and support the main text of the report.

9.4.3.1. **Tables and Figures**. Tables and figures may be used as a summary presentation of data. The guidelines for data presentation in Section 9.4.2.4. apply to tables and figures as well as to text.

Figures that show potential sources of contamination, sampling points, locations of other activities and surface and subsurface structures can significantly aid the understanding of the reader. Figures should be dated and should include a north arrow, a bar scale (preferably a scale that can be used with a standard engineers' scale), a legend, a title, and other appropriate identification. If figures

are based on the work of others the source should be referenced.

9.4.3.2. **Appendices**. The following is a non-exhaustive list of materials that are appropriate for inclusion in appendices to a Phase II ESA report: (a) photographs, (b) subsurface exploration logs, (c) laboratory reports, with quality control information, (d) chain of custody forms, (e) specific methods, and (f) reports of previous environmental site assessments.

9.5. **Additional Services** - Any additional services contracted for between the user and the environmental professionals, including a broader scope of assessment, more detailed conclusions, liability/risk evaluations, recommendations for additional Phase II investigations, remediation techniques, etc., are beyond this scope, and should only be included in the report if so agreed upon by the user and the environmental professional.

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11. **Performance Period:** Contractor effort will begin within 15 days after award of the contract pertaining to this SOW. All tasks will be completed within 6 months after receipt of this contract. Financial closeout will take place as soon as possible after final acceptance.

Calendar Day

Contractor Award	0
Contractor submits work plan	30
Gov't Review Completed	45
Final Work	75
Draft Final Report	105
Gov't comments	115
Draft Final Report	180

12. **Access and Working Hours:**

Working hours shall conform to those presently established at Sunflower AAP for the day shift (7 a.m. to 5 p.m.), unless otherwise specified. All personnel shall have departed from the facility by 5 p.m., unless otherwise required or special permission is given. Permission must be obtained in writing from the Contracting Officer.

ENCLOSURE 1

Definitions

1. **approximate minimum search distance** - The area for which records must be obtained and reviewed pursuant to ASTM E-1527-94.
2. **aquifer** - As defined in D653, a water-bearing formation that provides a ground water reservoir.
3. **ARARs** - An acronym for "applicable or relevant and appropriate requirements". A term used in CERCLA and interpreted by EPA regulations. Applicable requirements means "those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site." 40 CFR Section 300.5. Relevant and appropriate requirements means "those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not 'applicable' to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site." 40 CFR section 300.5.
4. **asbestos-containing materials (ACMs)** - Any material or product that contains more than 1% asbestos. See EPA, Managing Asbestos in Place. A Building Owner's Guide to Operations and Maintenance Programs for Asbestos-Contaminated Materials, July 1990, pg. 2.
5. **ASTM** - Formerly known as American Society for Testing and Materials
6. **attorney-client privilege** - A privilege that a client may invoke to protect confidential communications between the

client and the client's attorney from disclosure.

7. **business decision** - A decision based on various considerations relating to a specific property, such as a transfer of title or change in financing. Such considerations may also include the potential financial exposure associated with environmental risks, the value of the property compared to the cost of environmental assessment, the participation and/or motivations of specific parties to the transaction (i.e., owner, seller, buyer, lender, etc.).

8. **CERCLA** - The acronym for the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. section 9601, et seq., the primary federal statute that governs the imposition of liability for environmental cleanups.

9. **CFR** - Code of Federal Regulations

10. **chain of custody** - A written or printed form which is used to document sample possession, condition and responsibility from the time of collection through laboratory analysis.

11. **chemical phases** - The physical state of the chemical, i.e., solid, liquid, vapor/gaseous. A chemical's physical state can change from one phase to another based on its physical environment.

12. **common law** - As distinguished from law created by the enactment of legislatures, the common law comprises the body of those principles and rules of action, relating to the government and security of persons and property, which derive their authority solely from uses and customs of immemorial antiquity, or from the judgments and decrees of the courts recognizing, affirming and enforcing such usages and customs; and, in this sense, particularly the ancient unwritten law of England. (Black's Law Dictionary 250-251. 5th ed. 1979).

13. **cuttings** - Soil or other material that is brought to the surface by drilling and/or sampling.

14. **disposal** - As defined by CERCLA and interpreted by EPA regulations, the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous

waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including ground waters. By judicial construction, the term also may include hazardous substances in repose in the environment. See *United States v. Waste Industries*, 734 F.2d 159 (4th Cir. 1984), with the result that hazardous substances that have migrated to a site from an off-site source may nonetheless be considered to have been disposed at the site. This construction is not universally accepted. See *United States v. Petersen Sand and Gravel, Inc.*, 806 F. Supp. 1346 (D.III. 1992).

15. **down gradient** - With respect to a given reference point, it is all points through which ground water originating at the reference point flows until reaching a surface discharge point or a distance or depth that ceases to be a matter of potential environmental concern; the direction of decreasing hydrostatic head.

16. **environmental media** - soil, water, air, sediment

17. **environmental professional** - A person or group of persons possessing sufficient training and experience necessary to prepare and implement a Phase II environmental site assessment in accordance with this scope, and from the information generated by such activities, having the ability to develop sound conclusions regarding recognized environmental conditions in connection with the property in question. An individual's status as an environmental professional may be limited to the type of assessment to be performed or to specific segments of the assessment for which the professional is responsible. The person may be an independent contractor or an employee of the user. NOTE: Some jurisdictions may have licensing requirements for individuals who perform certain activities included in a Phase II ESA.

18. **EPA** - United States Environmental Protection Agency

19. **ESA** - environmental site assessment

20. **fate and transport characteristics** - Natural consequences that can be predicted based on the distinguishing characteristics of a substance and the media

which carry the substance.

21. **field screening** - see Section 5.1.

22. **ground water** - As defined by ASTM D653, the part of the subsurface that is in the saturated zone. Loosely, all subsurface water as distinct from surface water.

23. **ground water flow** - as defined by ASTM D63, the movement of water in the zone of saturation.

24. **ground water flow direction** - the compass bearing of the movement of water in the zone of saturation.

25. **hazardous substance** - a substance defined as a hazardous substance pursuant to CERCLA, 42 U.S.C. section 9601(14) as interpreted by EPA regulations and the courts. The term includes any substance designated pursuant to section 311(b)(2)(A) of the Clean Water Act, 33 U.S.C. section 1321(b)(2)(A); any element, compound, mixture, solution or substance designated pursuant to section 102 of CERCLA, 42 U.S.C. section 9602; any hazardous waste having the characteristics identified under or listed pursuant to section 3001 of the Solid Waste Disposal Act, 42 U.S.C. section 6921 et seq., has been suspended by Act of Congress; any toxic pollutant listed under section 307(a) of the Clean Water Act, 33 U.S.C. section 1317(a); any hazardous air pollutant listed under-section 112 of the Clean Air Act, 42 U.S.C. section 7412; and any imminently hazardous chemical substance or mixture with respect to which the EPA administrator has taken action pursuant to section 7 of the Toxic Substances Control Act, 15 U.S.C. section 2606. The term does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance by EPA and the term does not include natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas). Hazardous substances designated by EPA are listed in 40 CFR Section 302.4.

26. **mg/kg** - A common expression of concentration of any chemical constituent in a sample mass. Milligrams per kilogram are equivalent to parts per million (ppm), by weight.

27. **ug/kg** - A common expression of concentration of any chemical constituent in a sample mass. Micrograms per kilogram are equivalent to parts per billion (ppb), by weight.

28. **naturally occurring chemical substances** - Substances which occur in nature and whose presence in that location is not a result of human activity.

29. **NCP** - The National Oil and Hazardous Substances Pollution Contingency Plan, found at 40 CFR section 300. Loosely, the NCP is EPA's blueprint on how hazardous substances are to be cleaned up pursuant to CERCLA.

30. **organic compounds** - carbon compounds, whether natural or synthetic in origin. Examples of some specific compounds of environmental concern are: benzene, toluene, and naphthalene (petroleum components); tetrachloroethylene and trichloroethylene (chlorinated solvents); and chlorofluorocarbons such as Freon.

31. **petroleum products** - those substances included within the petroleum exclusion to CERCLA, 42 U.S.C. section 9601(14), as interpreted by the courts and EPA; that is, petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance under subparagraphs (A) through (F) of 42 U.S.C section 9601(14), natural gas, natural gas liquids, liquefied natural gas, and synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas). (The word fraction refers to certain distillates of crude oil, including gasoline, kerosene, diesel oil, jet fuels, and fuel oil, pursuant to Standard Definitions of Petroleum Statistics).

32. **Phase I environmental site assessments (ESAs)** - The process described in ASTM E1527-94.

33. **Phase II environmental site assessments (ESAs)** - The process described in this scope.

34. **principal source(s) of drinking water** - The body of water which may be used as drinking water by one or more individuals.

35. **property** - The property that is the subject of the ESA described in this Guide. The term includes buildings and other fixtures and improvements located on the property and affixed to the land.

36. **purged ground water** - Water that is removed from a monitoring well prior to collecting a representative sample of the aquifer including water generated during installation and well development.

37. **quality assurance/quality control (QA/QC)** - The use of standards and procedures to ensure that samples collected and data generated are reliable, reproducible and verifiable.

38. **recognized environmental condition (REC)** - The presence or likely presence of any hazardous substances or petroleum products on property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include de minimis conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

39. **release** - As defined by section 101(22) of CERCLA, 42 U.S.C. section 9601(22), "any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substance or pollutant or contaminant), but excluding (A) any release which results in exposure to persons solely within a workplace, with respect to a claim which such persons may assert against the employer of such persons, (B) emissions from the engine exhaust of a motor vehicle, rolling stock aircraft, vessel, or pipeline pumping station engine, (C) release of source, byproduct, or special nuclear material from a nuclear incident, as those terms are defined in the Atomic Energy Act of 1954 [42 U.S.C. section 2011 et seq.], if such release is subject to requirements

with respect to financial protection established by the Nuclear Regulatory Commission under section 170 of such Act [42 U.S.C. section 2210], or, for the purposes of section [104 of CERCLA] or any other response action, any release of source, byproduct, or special nuclear material from any processing site designated under section [102(s)(1) or 302(a) of the Uranium Mill Tailings Radiation Control Act of 1978; 42 U.S.C. section 7912(a)(1) or 7942(a)], and (D) the normal application of fertilizer."

40. **sample medium** - The particular matrix that is sampled for laboratory analysis. Examples of commonly encountered matrices include; soil, sludge, sediment, air, wastes, pure or mixtures of chemicals, ground water, drinking water, surface water, etc.

41. **self-evaluation privilege** - A privilege invoked to protect from disclosure confidential information resulting from a critical self-analysis undertaken by the party seeking to invoke the privilege.

42. **Superfund** - The common name for the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. section 9601, et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 ("SARA"), the primary federal statute that governs the imposition of liability for environmental cleanups.

43. **surface water** - Water above the surface of the ground, including but not limited to lakes, ponds, reservoirs, artificial impoundments, streams, rivers, springs, seeps, and wetlands.

44. **target analyte** - A chemical substance or class of chemicals that is selected for laboratory analysis.

45. **Transaction Screen Process** - The process described in ASTM E1528.

46. **U.S.C.** - United States Code

47. **user** - The party seeking to use Standard Practice E1527, E1528 or this Guide to guide performance of an ESA of the property. A user may include, without limitation, a purchaser of property, a potential tenant of property, an

owner of property, a lender, or a property manager.

48. **vadose zone** - As defined in ASTM D4696 and 5314, the hydro-geological region extending from the soil surface to the top of the principle water table; commonly referred to as the "unsaturated zone" or zone of aeration".

49. **water table** - As defined in ASTM D4750, the surface of a ground water body at which the water pressure equals atmospheric pressure. Earth material below the ground water table is saturated with water.

50. **work product privilege** - A privilege that provides limited protection from disclosure to another party of documents and tangible things discovered or prepared by or for one party or that party's representative (e.g., attorney, consultant) in anticipation of litigation or for trial.