

SCOPE OF WORK
AIR FORCE PLANT #44

Appendix A to EPA Region IX Administrative Order
PWS-AO 2007-007

I. INTRODUCTION AND PURPOSE

This Scope of Work (SOW) defines the response activities and obligations that the Respondents are obligated to perform to implement the Work required under the Administrative Order, Docket Number PWS-AO 2007-007 (the "Order"), issued by the United States Environmental Protection Agency (EPA) regarding Air Force Plant #44 on the Tucson International Airport Area Superfund Site in Tucson, Arizona.

II. RESPONSE ACTIVITIES

Respondents shall perform the following Work:

A. Within 45 days of the effective date of this Order, the Respondents shall provide to EPA's Project Coordinator and make available to the public an Accelerated Schedule and Work Plan with specific dates for conducting remedial action in accordance with this SOW. This includes the installation of an Advanced Oxidation Process system (AOP) at Air Force Plant 44 (AFP 44) that is designed to treat Trichloroethylene (TCE) and 1,4-Dioxane (DX) in the groundwater and mitigate the impact of TCE and DX on the Tucson Airport Remediation Project (TARP) and the public water service. EPA anticipates that an approved AOP will use chemical oxidation with an ozone/hydrogen peroxide or ozone/UV light system in an oxidation reactor (see Exhibit 1). The Accelerated Schedule and Work Plan should include, but not limited to, the following documents:

- i) Contingency Plan. The Respondents shall submit documents to EPA, for review and approval in consultation with the State, that describe the contingency plans and emergency response plans to be implemented to respond to accidental releases of untreated groundwater from AFP 44 treatment facility and associated equipment, including pipelines and extraction wells. Upon EPA approval, the plans shall be implemented. Once the plans are implemented, the Respondents shall:
 - a) Provide oral notification of the event that required implementation of the contingency plans or emergency response plans to EPA and the State within forty-eight (48) hours;
 - b) Report to EPA and the State in writing within seven (7) days that the contingency plans and/or emergency response plans have been implemented; and
 - c) If implementation of the plans is not effective, the plans shall be amended and resubmitted to EPA and the State within thirty (30) days for review and approval.
- ii) Remedial Design. Such remedial design activities shall include the preparation of clear and comprehensive design documents, construction plans and specifications, and other design activities needed to implement the work and satisfy Performance Standards set forth in Section II.C. of

this SOW. All plans and specifications shall be developed in accordance with relevant portions of EPA's Superfund Remedial Design/Remedial Action Handbook (EPA 540/R- 9S/059). The Respondents may request a stream-lined design process to limit the design elements and/or required deliverables for any future components, as appropriate. EPA may, in its sole discretion, determine that all design phases are not necessary for a particular remedy component or that the design requirements identified in the SOW are not necessary at all. If this is the case, EPA will identify which remedial design documents, if any, will be required.

- iii) Construction Quality Assurance Plan. A Construction Quality Assurance Plan (CQAP) shall be developed and implemented for any significant construction to ensure, with a reasonable degree of certainty, that the completed remedial action meets or exceeds all design criteria, plans and specifications, and Performance Standards. The CQAP will include the following elements:
 - a. Responsibilities and authorities of all organizations and key personnel involved in the design and construction of the remedial action;
 - b. A description of the quality control organization, including a chart showing lines of authority, members of the Quality Assurance team, their responsibilities and qualifications, and acknowledgment that the Quality Assurance team will implement the quality control system for all aspects of the work specified and shall report to the Project Coordinator for the Party or Parties responsible for construction and to EPA. Members of the Quality Assurance team shall have a good professional and ethical reputation, previous experience in the type of QA/QC activities to be implemented, and demonstrated capability to perform the required activities. They shall also be independent of the construction contractor;
 - c. Description of the observations, inspections, and control testing that will be used to assure quality workmanship, verify compliance with the plans and specifications, or meet other QC objectives during implementation of the remedial action. This includes identification of sample size, sample locations, and sample collection or testing frequency; and acceptance and rejection criteria. The CQAP shall specify laboratories to be used, and include information which certifies that personnel and laboratories performing the tests are qualified and the equipment and procedures to be used comply with applicable standards;
 - d. Reporting procedures, frequency, and format for QA/QC activities. This shall include such items as daily summary reports, inspection data sheets, problem identification and corrective measures reports, design acceptance reports, and final documentation. Provisions for the final storage of all

records shall be presented in the CQAP. The QA official shall report simultaneously to the representative of the Respondents and to EPA;

e. A list of definable features of the work to be performed. A definable feature of work is a task which is separate and distinct from other tasks and has separate quality control requirements.

- iv) Construction Health and Safety Plan. A Construction Health and Safety Plan (CHASP) shall be prepared for any significant construction in compliance with OSHA regulations and protocols and other applicable requirements. The CHASP will describe health and safety risks, employee training, monitoring and personal protective equipment, medical monitoring, and individuals responsible in an emergency and provisions for site control for workers and for visitors to the job site. EPA will review, but neither approves, nor disapproves the CHASP.
- v) Sampling and Analysis Plan. The Respondents shall develop a Sampling and Analysis Plan (SAP) that will contain a Quality Assurance Project Plan (QAPP). The SAP shall cover all Operations and Maintenance sampling, all compliance monitoring, and any other sampling activities associated with field investigations needed to construction activities and/or operation of the remedial action.

The SAP must adhere to EPA guidance, as appropriate. Although some guidance documents are listed in this SOW for convenience, it is the responsibility of the Respondents to ensure that the most up-to-date guidance documents are followed. The most up-to-date Quality Assurance guidance document can be found at:

<http://www.epa.gov/fedfac/documents/qualityassurance.htm>

The SAP must be reviewed and approved by EPA. If the Respondents choose to use a non-Contract Laboratory Program (CLP) laboratory, then the proposed laboratory's Quality Assurance Plan must be submitted to EPA for review at or before the time that the SAP is submitted to EPA. EPA may require that Party to submit additional detailed information to demonstrate that the laboratory is qualified to conduct the work, including information on personnel qualifications, equipment and material specification, and laboratory analyses of performance samples (blank and/or spike samples). In addition, data packages must be equivalent to those generated by the EPA CLP. The Respondents will submit quality assurance reports for their respective sampling activities to EPA on an annual basis. These reports shall contain information that demonstrates that the laboratories used are complying with this SOW and the quality assurance plans set forth in the SAP.

The QAPP shall describe project objectives, organizational and functional activities, data quality objectives (DQOs), and quality assurance and quality control (QA/QC) protocols that shall be used to achieve the desired DQOs. The DQO's will be developed based on the current understanding of the constituents present, concentration of contaminants present in the groundwater, and monitoring and sampling history. The QAPP shall be consistent with EPA guidance documents and all applicable guidance. The DQOs shall, at a minimum, reflect use of analytical methods for obtaining data of sufficient quality to meet National Contingency Plan requirements as identified at 40 C.F.R. § 300.435 (b). In addition, the QAPP shall address personnel qualifications, sampling procedures, sample custody, analytical procedures, document control procedures, preservation of records, data reduction, data validation, data management, procedures that will be used to enter, store, correct, manipulate, and analyze data; protocols for transferring data to EPA in electronic format; and document management.

- vi) Operations and Maintenance Plan. The Operation and Maintenance Plan (O&M Plan) for the AFP 44 AOP system shall be develop or updated, as appropriate, to ensure that the remedy is operating in compliance with the Groundwater Performance Standards as defined in Section II.C of this SOW. The O&M Plan shall represent a strategy for operation and maintenance activities.
- vii) Pre-final Construction Inspections. When the Respondents believe that future remedial action construction is complete, in compliance with all Applicable or Relevant and Appropriate Requirements (ARARs), and the remedial action is O&F (Operational and Functional), the Respondents will notify EPA and the State for the purposes of conducting a Pre-final inspection to be attended by EPA, the State, and the Respondents. If a Pre-final Construction Inspection is held for a portion of the remedial action, one or more additional inspections will be required to ensure that the entire remedial action has been properly inspected.

The objective of the inspection(s) is to determine whether construction is complete, whether the facility is operating in compliance with ARARs, and whether the remedial action (or the inspected portion) is O&F. The O&F determination will be made at the completion of remedial action to ensure that the remedy is operating properly and performing as design. This determination is made by EPA, with concurrence with the State.

Any outstanding construction items discovered during the inspection shall be identified and noted. The Respondents will certify that the equipment is meeting the purpose and intent of the specifications. Retesting shall be completed where deficiencies are revealed. A Pre-final Construction Inspection Report shall be submitted by the Party or Parties responsible

for construction, which outlines the outstanding construction items, actions required to resolve the items, completion date for the items, and an anticipated date for a Final Inspection. The Pre-final Inspection Report can be in the form of a bullet list or letter. The Pre-final Inspection Report will include a schedule for completion of any additional work deemed necessary.

- viii) Final Construction Inspection. Within fourteen (14) days after completion of any work identified in the Pre-final Inspection Report, the Respondents will notify the EPA and the State for the purposes of conducting a final inspection. The final inspection shall consist of a walk-through inspection by EPA, the State, and Respondents. The Pre-final inspection report shall be used as a checklist with the final inspection focusing on the outstanding construction items identified in the Pre-final inspection. Confirmation shall be made that outstanding items have been resolved. Any outstanding construction items discovered during the final inspection still requiring correction shall be identified and noted on a punch list. If any items are still unresolved, the inspection shall be considered to be a Pre-final Construction Inspection requiring another Pre-final Construction Inspection Report and subsequent Final Construction Inspection. If at the time of a Pre-final inspection no items are identified that require follow-up, the requirement for a final inspection may be waived by EPA.
- ix) Remedial Action Report. Within 45 days after the Respondents conclude that it has completed all response activities under the Order, the Respondents will submit to EPA a Remedial Action Report describing in detail the Work undertaken under the Order and the results of the Work.

EPA will review the Remedial Action Report. If EPA determines that no further Work is necessary under the Order, EPA will so notify the Respondents. If EPA determines that further Work is necessary under the Order, EPA will notify the Respondents of such Work, and will either provide a schedule for completion of such Work, or will direct Respondents to submit within a specified time period a schedule for completion of such Work.

The Accelerated Schedule and Work Plan to implement this SOW are subject to EPA approval. To the extent that any element of the work plan is included in any other document previous submitted to EPA, such element may be described in summary manner and incorporated by reference to the respective document. The section and page number of any reference document must be included.

All reports and plans shall contain the following statement, signed by a responsible, licensed professional in the relevant discipline and by the applicable rules governing seals and stamps:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who witness the events described herein and those persons directly responsible of the gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

B. Within 15 days of receiving EPA's approval or modification of the Accelerated Schedule and Work Plan described above in Section II.A. of this SOW, the Respondents shall initiate performance of all activities in the accelerated work plan as approved or modified.

C. Groundwater Treatment AOP Performance Standard. Treated groundwater at the site shall be reinjected into the regional aquifer. The modified AOP groundwater treatment system will have removal efficiency of 90%, but not to discharge more than 3 ppb DX into the regional aquifer. The 3 ppb DX concentration is consistent with EPA's Office of Drinking Water's Health Advisory and the City of Tucson's voluntary limit at the point of compliance for the TARP groundwater treatment system. Discharge concentrations from the modified AOP groundwater treatment plant system of other contaminants of concern must be consistent with the existing and applicable Site decision documents, and must be treated to at least applicable federal and state Maximum Contaminant Levels (MCLs).

D. In addition to any other requirement of this Order and SOW, during the period in which Respondents are performing response activities pursuant to the Order, the Respondents shall submit to EPA written monthly progress reports that: (1) describe the actions which have been taken toward achieving compliance with this Order during the previous month; (2) include a summary of all results of sampling and test and all other data received or generated by Respondents or their contractors or agents in the previous month; (3) identify all work plans, plans and other deliverables required by the Order that were completed and submitted during the previous month; (4) describe all actions scheduled for the next six weeks and provide other information relating to the progress of Work under the Order; include information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule for implementation of the Work, and a description of efforts made to mitigate those delays or anticipated delays. Respondents shall submit these progress reports to EPA by the tenth day of every month following the effective date of the Order. If requested by EPA, Respondents shall also provide briefings for EPA to discuss the progress of the Work.

III. QUALITY ASSURANCE/QUALITY CONTROL

A. The Respondents shall ensure that any laboratory used to perform the analyses participates in a QA/QC program that complies with the appropriate EPA guidance. The

Respondents shall only use laboratories that have a documented Quality System that complies with the Uniform Federal Policy for Quality Assurance Project Plans, as implemented through EPA's OSWER Directive 9272.0-17 (July 2005), or its equivalent as determined by EPA.

B. Upon request by EPA, the Respondents shall have such a laboratory analyze samples submitted by EPA for QA monitoring. The Respondents shall provide to EPA the QA/QC procedures followed by all sampling teams and laboratories performing data collection and/or analysis.

C. Upon request by EPA, the Respondents shall allow EPA, or their authorized representatives, to take split and/or duplicate samples. The Respondents shall notify EPA not less than five (5) days in advance of any sample collection activity, unless shorter notice is agreed to by EPA. EPA shall have the right to take any additional samples that EPA deems necessary. Upon request, EPA shall allow the Respondents to take split or duplicate samples of any samples it takes as part of its oversight of the Respondents implementation of the Work.

D. For the purposes of establishing data quality objectives for laboratory analysis of groundwater samples, the Respondents will use laboratory analysis of 1 part per billion (ppb) or less as a practical quantitation limit and include this value in the Quality Assurance Project Plan ("QAPP") to be approved by EPA.

E. The Respondents shall submit validated data to EPA electronically (MS Office compatible) within two (2) business days of its receipt by Respondents.

F. The Respondents shall submit two (2) copies of all plans, reports or other submissions required by this Order or any approved work plan. Upon request by EPA, the Respondents shall submit such documents in electronic form whenever feasible.

IV. PUBLIC INVOLVEMENT

The Respondents shall ensure adequate public involvement in all the Work undertaken pursuant to the Order and SOW. Within 30 days of the effective date of this Order, Respondents shall submit to EPA an addendum or modify the community involvement plan for ensuring adequate public involvement, including but not limited to the following:

A. Making immediately available to the public all non privileged information obtained or compiled pursuant to this Order;

B. Providing periodic oral and written updates to the public on the progress of the Work;

C. Sharing immediately with the public all conclusions reached by the Respondents or its representatives with respect to the effects of past and present activities at AFP 44; and

D. Coordinating the Work under this Order and SOW with the response activities being undertaken at AFP 44 by the Installation Restoration Program.

V. SUBMISSIONS REQUIRING AGENCY APPROVAL

Plans, reports, and other deliverables identified in this SOW, or identified in EPA's approval or modification of the accelerated schedule and work plan to be submitted pursuant to this SOW shall be delivered to EPA in accordance with the Order and this SOW.