WORK PLAN ADDENDUM - FINAL

Long-Term Monitoring Activities at Air Force Plant 59
Johnson City, New York

Prepared for:

Air Force Center for Engineering and the Environment
Brooks Air Force Base, Texas

Prepared by:

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PREFACE

This *Work Plan* (WP) was written by AECOM to describe the field activities associated with the long-term monitoring (LTM) activities at the Air Force Plant 59 (AFP 59). All work is to be completed under the United States Air Force Center for Engineering and the Environment (AFCEE) Contract No. FA8903-08-D-8770, Task Order No. 0152.

The AFCEE Restoration Team Chief is Kristi Doll. The Air Force Aeronautical Systems Center Remedial Project Manager is George Walters. The AECOM Program and Project Managers are Dave Parse and Drew Foley, respectively.

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14. ABSTRACT

This *Work Plan* describes the field activities associated with the long-term monitoring activities at Air Force Plant 59. The objective of this study is to determine concentrations of chlorinated volatile organic compounds in on-site and off-site monitoring wells. United States Geological Survey monitoring wells will be sampled to determine if decommissioning is necessary.

15. SUBJECT TERMS
LTM, Air Force Plant 59

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LIST OF ACRONYMS AND ABBREVIATIONS

AFCEE	Air Force Center for Engineering and the Environment
AFP 59	Air Force Plant 59
ASC	Aeronautical Systems Center
CHSO	Corporate Health and Safety Office
DQO	Data Quality Objective
DTW	Depth-to-Water
ERPIMS	Environmental Resources Program Information Management System
HASP	Health and Safety Plan
L/min	Liter per Minute
LTM	Long-Term Monitoring
$\mu g/m^3$	Micrograms per Cubic Meter
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PCE	Tetrachloroethene
PID	Photoionization Detector
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
SAP	Sampling and Analysis Plan
TCA	Trichloroethane
TCE	Trichloroethene
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey

LIST OF ACRONYMS AND ABBREVIATIONS (CONTINUED)

VOC	Volatile Organic Compounds
WBV	Well Bore Volume
WP	Work Plan

1.0 INTRODUCTION

This *Work Plan (WP) Addendum* describes the procedures and techniques that will be used to conduct long-term monitoring (LTM) activities at Air Force Plant 59 (AFP 59) in Johnson City, New York. AECOM has prepared this *WP Addendum* under contract to the United States Air Force Center for Engineering and the Environment (AFCEE) as part of the requirements for Contract FA8903-08-D-8770, Task Order 0152. This *WP* is not intended to be a stand alone document. This document is an addendum to the *Final Soil Vapor Study and LTM Work Plan* (AECOM, 2006) and the *Final Work Plan Addendum for the Vapor Intrusion Investigation* (AECOM, 2007). This addendum contains proposed project scope and objectives, reporting requirements, and project schedule. Site history and descriptions and the *Quality Assurance Project Plan* (QAPP) are not included; they can be found in the *Final Soil Vapor Study and LTM Work Plan* (AECOM, 2006).

1.1 PROPOSED PROJECT ACTIVITIES

The following activities are to be completed during the execution of this task order:

1. Preparation of this *WP Addendum* and other supporting documents.
2. One round of groundwater sampling of four monitoring wells installed by the New York Department of Environmental Conservation (NYDEC) located adjacent to AFP 59. Samples will be analyzed for volatile organic compounds (VOCs) and 1-4-dioxane.
3. One round of groundwater sampling of six on-site AFP 59 monitoring wells. Samples will be analyzed for VOCs and 1-4-dioxane.
4. Preparation of a letter report presenting the data collected during the field investigation.

2.0 PROJECT SCOPE AND OBJECTIVES

2.1 OBJECTIVES

Data quality objectives (DQOs) are quantitative and qualitative goals that specify the quantity and quality of the data required supporting decisions during remedial response activities.

DQOs are determined based on the end use(s) of the data. For the LTM activities, the primary objective will be to determine the concentrations of chlorinated VOCs in the exiting the AFP 59 monitoring wells and adjacent New York State wells, and to use this information and data collected during previous groundwater sampling events to analyze temporal trends in VOC concentrations in groundwater.

The DQO process for the LTM activities is presented below. The discussion provides a step-by-step description of the development of DQOs and rationale for the LTM activities.

> **Problem.** Six monitoring wells are included in the LTM program at AFP 59. Previous sampling has shown contaminant concentrations have declined to levels approaching regulatory-acceptable levels at the AFP 59 boundary.

The NYDEC monitoring wells were installed to determine if chemicals of concern have migrated beyond the property boundaries of AFP 59 and to determine if contamination in off-site groundwater monitoring wells could be originating from another source.

Boundaries of Study. The boundaries of the study area were determined based on analytical data from previous investigations and property boundaries. The study area for the groundwater sampling includes six wells which have been sampled many times over the course of the AFP 59 LTM program and four off-site NYDEC wells that are adjacent to AFP 59.

Sampling Approach. Screening data are collected to provide preliminary field data, qualitatively evaluate the nature and extent of contamination in soil gas, identify samples to send to the laboratory, and to provide health and safety monitoring. Field equipment, such as a photoionization detector (PID) will be used to collect the screening data.

One round of groundwater samples will be collected from six existing monitoring wells, including two screened in the deep aquifer and four screened in the shallow aquifer. The groundwater samples will be sent to a fixed laboratory to obtain definitive data. Definitive data will be produced by using standard methods in a fixed laboratory. The data will be used to determine VOC concentration trends on site and to evaluate potential off-site migration of AFP 59 contamination.

One round of groundwater samples will be collected from four existing New York State monitoring wells. The groundwater samples will be sent to a fixed laboratory to obtain definitive data. Definitive data will be produced by using standard methods in a fixed laboratory. The data will be used to determine VOC concentration trends off site and to evaluate potential off-site migration of AFP 59 contamination..

2.2 SAMPLE ANALYSIS SUMMARY

The proposed laboratory analyses for the groundwater samples are based on the types of chemicals used at AFP 59 and those chemicals previously detected in groundwater samples collected in the study area. A summary of the proposed laboratory analyses, including the number of environmental samples and quality assurance/quality control (QA/QC) samples, is provided in Table 2-1.

All groundwater samples will be analyzed for VOCs by Method SW8260B and for 1-4-Dioxane by Method SW8260SIM. The samples will be analyzed at an off-site laboratory.

Table 2-1. Sample Analysis Summary

Method	Matrix	# Samples	# Equipment Blanks	# Ambient Blanks	# Trip Blanks	# Field Duplicates	# MS/MSD Samples	Total # Samples
8260B	Groundwater	10	1	1	1	1	1	15
8260SIM	Groundwater	10	1	0	1	1	1	14

Key: MS/MSD = Matrix Spike/Matrix Spike Duplicate

Groundwater QA/QC samples will be collected as described in the QAPP. The QA/QC samples will be collected at the following rates:

- Trip Blanks – One trip blank will be sent with each cooler.
- Ambient Blanks – One ambient blank will be collected per sampling event.
- Duplicate Samples – Duplicate samples will be collected at a target frequency of approximately 10 percent of project samples.
- Equipment Blanks – One equipment blank will be collected during each sampling event.
- MS/MSD –MS/MSD samples will be collected at a target frequency of approximately 20 percent of project samples.

2.3 FIELD ACTIVITIES

Figure 2-1 Air Force Plant 59 Proposed Sample Locations

URS_5S

MAIN STREET

MAIN ENTRANCE

SW1
DW1

RAMP TO 201

DAYTON STREET

CAMDEN STREET

BERWIN STREET

AVON STREET

BAE SYSTEMS

XFMR

XFMR

1002

SW7

SW4

BASE-MENT

URS_2S

URS_2D

URS_3D

SW3 DW3

ELBON STREET

LITTLE CHOCONUT CREEK

NORTH

Approximate Scale in Feet

150' 75' 0 150'

LEGEND:

- LTM Monitoring Well Sampling Location
- Off-Site Monitoring Well
- Property Boundary Fence
- TCE Contaminated Soil Removal Area

AECOM

AIR FORCE PLANT 59 VAPOR INTRUSION INVESTIGATION

Figure 2-1

Air Force Plant 59 Proposed Sample Locations
November 2010

CONTRACT NO.	TASK NO.
60134438	04
DESIGNED BY: K. Weber	DRAWN BY: K. Weber
CHECKED BY: A. Foley	DATE: November 2010
SCALE: 1" = 150'	SHEET: 1 of 1

Fig2-1_Proposed_Samp_Locs.dwg

S:\AFP59\CAD\111886 Drawings

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2.3.1 Groundwater Sampling Procedures

The following sections provide descriptions of groundwater sampling of monitoring wells that will be performed during this investigation. All groundwater samples will be analyzed for VOCs using USEPA method SW8260B and 1-4-dioxane using USEPA method SW8260B SIM.

Two groundwater sampling methods will be utilized. For the on-site monitoring wells, a similar methodology to previous LTM sampling events will be utilized to gather data that correlates to previous data. For off-site monitoring wells, micropurge methodology will be utilized to reduce purge water volumes.

The construction material of the sampling devices (e.g., polyethylene) discussed below will be appropriate for the contaminants of concern and will not interfere with the chemical analyses being performed.

All purging and sampling equipment will be decontaminated according to the specifications in *Final Soil Vapor Study and LTM Work Plan* (AECOM, 2006) prior to any sampling activities and will be protected from contamination until ready for use.

2.3.2 Groundwater Sampling

When numerous monitoring wells are to be sampled in succession, those monitoring wells expected to have low levels of contamination or no contamination will be sampled prior to those monitoring wells expected to have higher levels of contamination. This practice will help reduce the potential for cross contamination between monitoring wells. All sampling activities will be recorded in the field logbook. Additionally, all sampling data will be recorded on a monitoring well sampling form.

Before groundwater sampling begins, monitoring wells will be inspected for signs of tampering or other damage. If tampering is suspected, (i.e., casing is damaged, lock or cap is missing) this will be recorded in the field logbook and on the monitoring well sampling form, and reported to the Field Supervisor. Monitoring wells that are suspected to have been tampered with will not be sampled until the Field Supervisor has discussed the matter with the Project Manager.

Water in the protective casing or in the vaults around the monitoring well casing will be removed prior to venting and purging. Every time a casing cap is removed to measure water level or collect a sample, the air in the breathing zone will be checked with a PID. Procedures in the *Health and Safety Plan* (HASP) will be followed when high concentrations of organic vapors are detected. Air monitoring data will be recorded on the monitoring well sampling form.

Purge pump intakes will be equipped with a positive foot check valve to prevent purged water from flowing back into the monitoring well. Purging and sampling will be performed in a manner that minimizes aeration in the monitoring well bore and the agitation of sediments in the monitoring well and formation. Equipment will not be allowed to free-fall into a monitoring well.

The following information will be recorded each time a monitoring well is purged and sampled: (1) depth-to-water (DTW) before and after purging, (2) well bore volume (WBV) calculation, (3) sounded total depth of the monitoring well, (4) the condition of each monitoring well, (5) the thickness of any nonaqueous layer, (6) field parameters, such as pH, temperature, specific

conductance, and turbidity. This information will be encoded in Environmental Resources Program Information Management System (ERPIMS) files when required.

2.3.2.1 Purging Prior to Sampling

Purging of monitoring wells is performed to evacuate water that has been stagnant in the monitoring well and may not be representative of the aquifer. Purging will be accomplished using a Teflon bailer or a pump. The temperature, pH, specific conductivity, and turbidity will be measured and recorded on the monitoring well sampling form after removing each well volume during purging.

Groundwater sampling methods for the on-site monitoring wells will follow protocols presented in the *Final Sampling and Analysis Plan* (SAP) (AECOM, 1994) that was prepared for the remedial investigation (RI) conducted at AFP 59 and the *USEPA RCRA Ground-Water Monitoring Technical Enforcement Guidance Document* (USEPA, 1986). The only change to the referenced protocols will be the calculation of the WBV. Under the referenced protocols, a WBV was calculated using the diameter of the auger/drill rod used to drill the borehole (in this case 8 inches). Under the revised protocol, the monitoring well casing diameter will be used to calculate the WBV.

Micropurge is an acceptable procedure to use for AFCEE projects. Micropurge will be utilized for off-site monitoring wells. Micropurge is a low flow-rate monitoring well purging and sampling method that induces laminar (non-turbulent) flow in the immediate vicinity of the sampling pump intake, thus drawing groundwater directly from the sampled aquifer horizontally through the monitoring well screen and into the sampling device. Low-flow pumping rates associated with the micropurge technique are in the approximate range of 0.2 to 2.0 liters per minute (L/min). These low-flow rates minimize disturbance in the screened aquifer, resulting in: (1) minimal production of artificial turbidity and oxidation; (2) minimal mixing of chemically distinct zones; (3) minimal loss of VOCs; and (4) collection of representative samples while minimizing purge volume.

2.3.2.2 Sample Collection

Except as noted below, at least three well volumes will be removed from the monitoring well before it is sampled or parameters are stable if the micropurge procedure is used. The sample may be collected after the temperature, pH, and specific conductivity have stabilized. Stabilization will be defined as follows: temperature ± 0.5 ^{o}C, pH ± 0.1 units, specific conductivity ± 3 percent, oxidation-reduction potential ± 10 millivolts, and turbidity ± 10 NTUs. Field equipment will be calibrated in accordance with *Final Soil Vapor Study and LTM Work Plan* (AECOM, 2006).

Micropurge sampling will use bladder pumps (or equivalent). Samples to be analyzed for volatile or gaseous constituents will not be withdrawn with pumps or at flows that degas the samples. Water-quality indicators will be monitored during micropurge (turbidity, dissolved oxygen, specific conductance, temperature, etc.).

Before collecting groundwater samples, the sampler will put on clean, phthalate-free protective gloves. Samples to be analyzed for volatile or gaseous constituents will not be withdrawn with pumps that exert a vacuum on the sample (e.g., centrifugal). New polypropylene tubing will be used for each well to prevent cross contamination. The preservative hydrochloric acid will be added to the VOC sample bottle before introducing the sample water. The sample will be collected from the pump tubing using a slow, controlled pour down the side of a tilted sample vial to minimize

volatilization. On-site wells will be collected through a bailer system. The sample vial will be filled until a meniscus is visible and immediately sealed. When the bottle is capped, it will be inverted and gently tapped to ensure air bubbles are not present in the vial. Vials with trapped air will be refilled until bubbles are not present. After the containers are sealed, sample degassing may cause bubbles to form. These bubbles will be left in the container. These samples will never be composited, homogenized, or filtered.

2.3.2.3 Waste Disposal

The following section describes the procedures for handling and disposing of waste generated on-site during the field investigation. These wastes include monitoring well development/purge water, and equipment decontamination fluids.

Monitoring well development/purge water, and equipment decontamination fluids will be containerized in 55-gallon drums and transported to a temporary staging area designated by AFP59 personnel. Samples will be collected from the drums by AECOM and analyzed by the laboratory for toxicity characteristics leaching procedure (TCLP) parameters (VOCs, SVOCs, pesticides, PCBs, herbicides, and metals). Water will be collected from each drum with a beaker. The water will then be poured into a decontaminated bucket for compositing. All of the waste will be disposed in accordance with State and Federal regulations by Clean Harbors. Analytical results and disposal procedures will be presented in the next report.

2.3.3 Site Personnel

Table 2-3 lists anticipated project personnel.

Table 2-2. Personnel Responsibilities

Title	Name
BAE Systems Coordinator	Tom Tokos/Stacey Whallon
ASC Project Manager	George Walters, ASC
AFCEE Project Manager	Kristi Doll, AFCEE
AECOM Project Manager	Drew Foley, AECOM
AECOM Site Manager	Drew Foley, AECOM
Analytical Laboratory-Groundwater	Test America
Health and Safety Professional	Sean Liddy, AECOM
Site Health and Safety Professional	Drew Foley, AECOM
Project Engineer	Lydia Plotz, AECOM

2.4 SCHEDULE

The tentative start date for LTM groundwater activities fieldwork is November 16, 2010. It is anticipated that field activities will last approximately 3 days. Laboratory data will take approximately 3 to 4 weeks for analysis following submission to the laboratory, and then the data will be validated. The *LTM Activities Data Report* will be submitted to the NYSDEC and NYSDOH for review once all field activities have been conducted. A final report will then be submitted after the agencies' comments have been incorporated.

3.0 PROJECT ORGANIZATION AND RESPONSIBILITY

AECOM will manage the field services including sample collection, data analysis, site characterization, and reporting. The project organization is shown on Figure 3-1. The following is a list of key AECOM personnel. Brief descriptions of their roles are provided below.

1. Program Manager – Dave Parse – 703-549-8728
2. Project Manager – Drew Foley– 703-549-8728
3. Corporate Health and Safety Officer – Sean Liddy – 410-869-6164
4. Project/Site Health and Safety Officer – Drew Foley – 703-549-8728
5. Project Quality Assurance Manager – Devon Chicoine – 703-549-8728
6. Subcontracts Administrator – Amy Harrington – 703-549-8728
7. Cost Administrator – Jan Moran – 703-549-8728

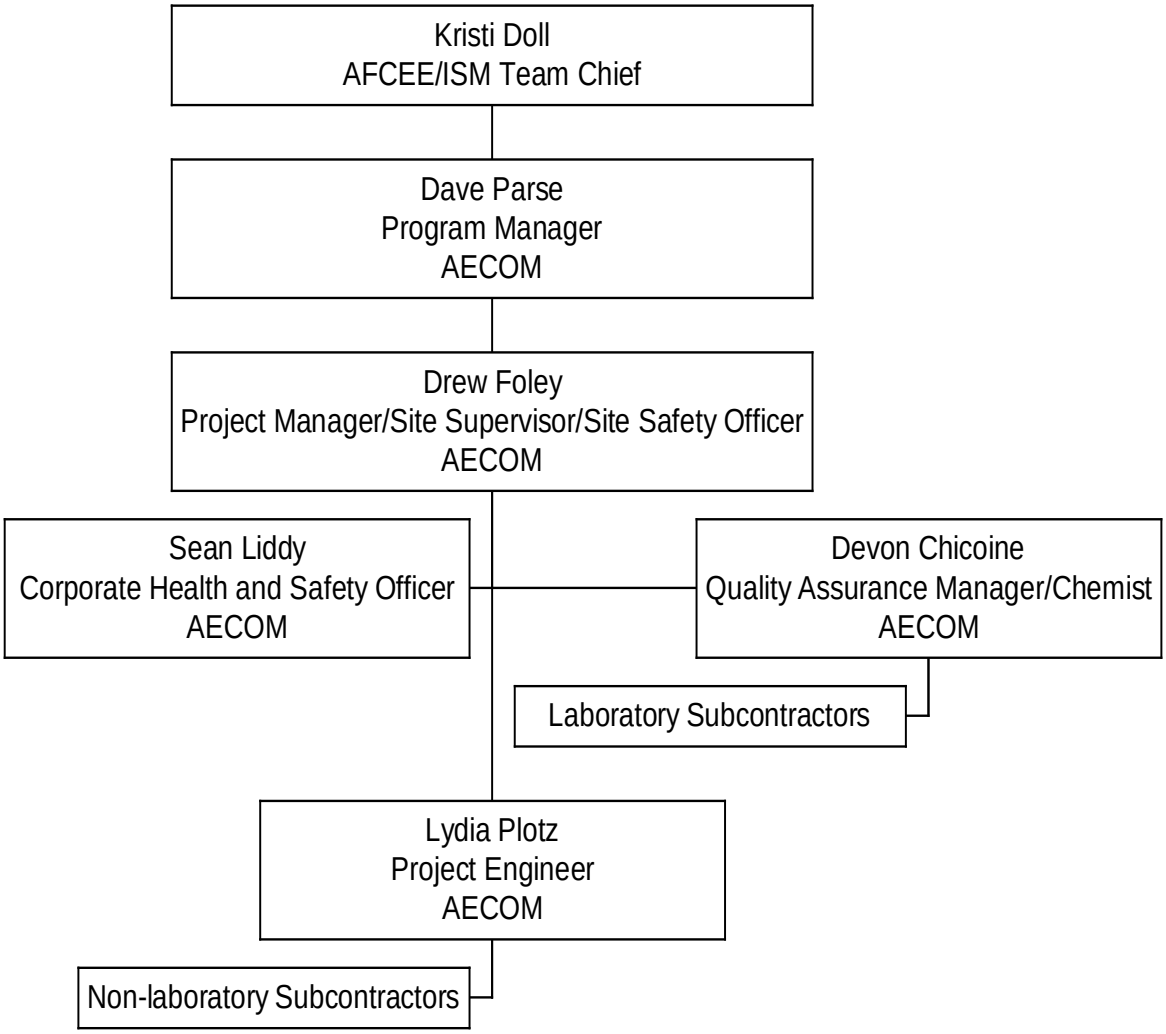
Program Manager. The Program Manager, Dave Parse, is responsible for overall direction, coordination, technical consistency, and review of the entire contract. His responsibilities include:

1. Final approval and review of WPs, all project deliverables, schedules, contract changes, and labor allocations for each task.
2. Approval of budgets and schedules and any changes in budgets or schedules.
3. Ensuring availability of key personnel assigned to the project for the duration of the contract.
4. Overseeing coordination among management, field teams, and support personnel to ensure consistency of performance.
5. Communicating, as necessary, with the AFCEE Project Manager to evaluate the progress of the program and to facilitate the early resolution of any potential problem.
6. Frequent communication with the Project Manager to ensure that project objectives are being completed in a timely manner.

Project Manager. The Project Manager, Drew Foley, is responsible for the effective day-to-day management of all operations. His responsibilities include:

1. Review and approval of project deliverables including the WP and technical reports.
2. Review and approval of schedules, labor allocations, and sampling methods and QA plans, including chemical analysis parameters.
3. Management of all funds for labor and materials procurement.
4. Oversight of project subcontractors and coordination of all requisitions.
5. Establishment and enforcement of work element milestones to ensure timely completion of project objectives.
6. Communicating developments in the project to the Program Manager.

Figure 3-1. Project Organization Chart



7. Frequent communication with the AFCEE Project Manager with regard to day-to-day progress of the project.
8. Providing technical guidance to project staff.
9. Assisting in resolving nonconformance issues.

Corporate Health and Safety Officer. The Corporate Health and Safety Officer (CHSO), Sean Liddy, is responsible for implementing the Corporate Health and Safety Program, reviewing and approving all project-specific *HASPs*, ensuring that all personnel have successfully completed health and safety training as necessary, conducting on-site health and safety inspections, providing health and safety advice and assistance to project teams, and advising the Program Manager. THE CHSO HAS THE AUTHORITY TO IMMEDIATELY STOP ALL WORK AT THE SITE FOR HEALTH AND SAFETY REASONS.

Project/Site Health and Safety Officer. The Project/Site Health and Safety Officer, Drew Foley, is responsible for implementing the Corporate Health and Safety Program, reviewing and monitoring compliance with the site-specific *HASP*, implementing corrective measures for site-specific health and safety deficiencies, ensuring required training and medical monitoring of project personnel, conducting kick-off and daily safety meetings, and maintaining health and safety records (daily logs, meeting sign-in sheets, and accident reports). THE PROJECT/SITE HEALTH AND SAFETY OFFICER HAS THE AUTHORITY TO IMMEDIATELY STOP ALL WORK AT THE SITE FOR HEALTH AND SAFETY REASONS. Specific responsibilities include:

1. Ensuring that all personnel allowed access to the site (including regulatory agency personnel) are aware of all potential hazards and current activities at the site.
2. Ensuring that all personnel are aware of and follow the provisions of this plan, and are instructed in the safety practices established in this plan, including emergency procedures.
3. Keeping BAE staff away from sample containers during sampling.
4. Ensuring that all heavy machinery and equipment are locked or chained each evening upon completion of daily activities.

Project Quality Assurance Manager. Devon Chicoine is designated as the Project QA Manager. She remains independent of the cost, scheduling, and other performance constraints that are the responsibility of the Program Manager and/or the Project Manager. The Project QA Manager's primary functions and responsibilities are to prepare, maintain, and verify compliance with the site-specific *SAP*; ensure that established laboratory and field procedures, as identified in the SAP, are being followed; ensure that QC documentation is provided; and ensure that all QA problems are handled in an expeditious manner. She is responsible for project activity audits to verify conformance with QA objectives, and for informing the Program Manager and the Project Manager of QA findings. The Project QA Manager will also be responsible for ensuring that all subcontractor activities are performed in accordance with QA requirements through review of subcontractor documents, laboratory data, and periodic audits. Final data review is also the responsibility of the Project QA Manager. She has the authority and responsibility to

identify problems, initiate or provide solutions, verify implementation of solutions, and order the stoppage of work, if necessary.

Subcontracts Administrator. The Subcontracts Administrator, Amy Harrington, will be responsible for proper procurement and execution of subcontractor agreements.

Subcontractors

Subcontractors will be needed to complete the LTM groundwater activities and soil-gas investigation project. The following is a complete listing of subcontractors that will be used on this project:

- Off-Site Laboratory Analysis: Test America
- Off-Site Waste Disposal: Clean Harbors Environmental Services

4.0 REPORTING REQUIREMENTS

The required project reporting deliverables are:

- *WP Addendum*, including updated *HASP*;
- *LTM Groundwater Activities Data Report*;
- ERPIMS Data Submission; and
- Progress Reports.

5.0 REFERENCES

AECOM, Inc. 1994. *Final Sampling and Analysis Plan.*

———. 2005. *Downgradient Soil-Gas Sampling, Air Force Plant 59, Letter Report*. January.

———. 2006. *Final Soil Vapor Study and Long-Term Monitoring Work Plan*. October.

———. 2007. *Final Soil-Gas and Groundwater Monitoring Report for the October/November 2006 Sampling Event*. August.

———. 2007. *Final Work Plan Addendum for the Vapor Intrusion Investigation*. November.

New York State Department of Health (NYSDOH). 2006. *Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York.* October.

United States Environmental Protection Agency (USEPA). 1986. *USEPA RCRA Ground-Water Monitoring Technical Enforcement Guidance Document.*

———. 1994. *Guidance for the Data Quality Objectives Process EPA QA/G4*. Quality Assurance Management Staff, EPA/600/R-96/055. September.