# Institutional Controls, Monitored Natural Attenuation & Vapor Intrusion Management Plan

## Little Valley Superfund Site

**SEPTEMBER 2017**

## TABLE OF CONTENTS

# 1 INTRODUCTION

## 1.1 PURPOSE

Institutional controls (ICs) are non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human exposure to contamination.

Monitored Natural Attenuation (MNA) describes a range of physical and biological processes, which, unaided by deliberate human intervention, reduce the concentration, toxicity, and/or mobility of chemicals in soil or groundwater.

Volatile organic compounds (VOCs) present in soil and groundwater, even at low levels, can migrate into buildings. This process, which is called vapor intrusion, can result in unacceptable human exposures to VOCs inside occupied buildings.

This document describes the ICs, MNA, and vapor intrusion management program associated with the Little Valley Superfund Site (hereinafter, referred to as the “Site”).

## 1.2 BACKGROUND

The Site is comprised of a plume of trichloroethene (TCE)-contaminated groundwater that extends approximately eight miles along Route 353 between the Village of Little Valley and the northern edge of the City of Salamanca in Cattaraugus County, New York (see Figure 1).

The Site is located in a rural, agricultural area, with a number of small, active and inactive industries and over 200 residential properties situated in the study area along Route 353, the main transportation route between Little Valley and Salamanca. The Village of Little Valley is on public water, while private residential wells supply the properties along Route 353 in Salamanca.

The plume ranges in width from 1,000 to 2,500 feet and in elevation from nearly 1,600 feet above mean sea level (msl) in the Village of Little Valley to less than 1,400 feet above msl near the northern edge of the City of Salamanca. The plume area is bordered by steeply sloping wooded hillsides, which attain slopes of up to 25 percent and elevations of 2,200 feet above msl.

In 1982, the Cattaraugus County Health Department (CCHD) and the New York State Department of Environmental Conservation (NYSDEC), while investigating TCE contamination in the vicinity of a small manufacturing facility on Route 353, detected TCE in nearby private wells. In 1989, CCHD and the New York State Department of Health (NYSDOH) determined that the TCE

contamination plume extended from the Village of Little Valley to the northern edge of the City of Salamanca. NYSDEC installed a number of monitoring wells in the area to investigate possible sources of the contamination. No sources were found.

Although CCHD issued health advisories to the exposed residents in 1989, affected well owners were not provided with alternate water sources. About six property owners independently installed granular activated carbon (GAC) filter systems and others purchased bottled water.

Between 1989 and 1995, CCHD and NYSDOH sampled 74 private wells in the area; 42 of these wells had TCE concentrations equal to or greater than the federal maximum contaminant level (MCL) of 5 micrograms per liter, which is deemed to be protective of human health.

In June 1996, the Environmental Protection Agency (EPA) listed the Site on the National Priorities List (NPL).

Following the listing of the site on the NPL, EPA evaluated the residential well sample results and concluded that, if not addressed, the contaminated wells would continue to present a threat to public health though ingestion. EPA prepared a focused feasibility study (FFS) to develop, screen, and evaluate alternatives for an alternative water supply system for the affected and potentially affected residences at the site.

Based upon the findings of the FFS, EPA issued a Record of Decision (ROD) on September 30, 1996. The selected remedy included the installation of air stripper point-of entry treatment units (POETs) on all affected and potentially affected private wells to ensure that drinking water standards are met. The ROD also called for an evaluation of the efficacy of the treatment systems within five years of their installation and a determination as to whether or not a more permanent system (such as a water line) would be required.

The design related to the POETs was performed from December 1996 through March 1997. Of the approximately 200 private wells located in the study area, based upon sample results, air stripper treatment units were installed on 91 wells by EPA's Removal Contractor from May 1997 through October 1997. Subsequently, 1.5 cubic foot-granular activated carbon treatment units were installed hydraulically downstream of the air strippers.

After five years of operation, it was determined that the air strippers were reaching the end of their useful life. Therefore, it was assumed that the maintenance requirements associated with these units would increase. Because of the significant reduction in contaminant concentrations in the

private wells, EPA determined that GAC units alone would be able to. effectively remove the contamination. EPA also determined that the GAC units alone would be as protective of public health as the combined air stripper/GAC treatment units. For these reasons, EPA decided to remove the air stripper treatment units and use only GAC treatment units to address the contamination in the private wells.

A remedial investigation (RI), conducted from 1997 through 2005, investigated 10 potential source areas for the presence of TCE and/or TCE-related compounds. Based upon the data that were collected, five of these areas were identified as either current or likely past sources: Bush Industries Area (BIA); Cattaraugus Cutlery Area (CCA); Great Triangle Area (Drum Storage Area); Luminite Area; and Ninth Street Landfill Area. Based upon the soil data collected during the RI, the CCA was determined to be a current localized source of groundwater contamination at the site.

The RI also concluded that while it is likely that the Great Triangle, Luminite, and Ninth Street Landfill Areas were sources of groundwater contamination in the past, based upon the data that was collected, they were not acting as current sources.

The RI also concluded that there was significant potential risk to commercial workers from direct exposure to TCE-contaminated soils in the CCA and to commercial workers from exposure to TCE-contaminated groundwater used as process water or commercial car washes.

Based on groundwater concentrations of TCE which exceeded the health-based screening criteria, it was concluded that there was a potential risk of soil vapor migration from groundwater to the indoor air of homes and businesses located in the site area.

Because POETs had been installed on all of the affected drinking water wells, there was no current unacceptable risk associated with exposure to the contaminated groundwater from these wells.

Based upon the results of the RI and a feasibility study, in August 2005 a ROD was signed. The 2005 ROD called for the excavation and off-Site treatment/disposal of an estimated 220 cubic yards (CY) of contaminated soils located at the CCA and MNA for the Site-wide groundwater. The 2005 ROD also called for an evaluation of the potential for soil vapor intrusion (SVI) into structures within the study area and mitigation, if necessary. In addition, the ROD included ICs in the form of informational devices (*e.g.,* notifications) to alert local government agencies that if there are any unimproved parcels where the underlying groundwater is contaminated with TCE above the MCL and the

property is to be developed, the groundwater should not be used without appropriate treatment. Lastly, the ROD also made the interim alternate water supply remedy (OU1) as provided for in the 1996 ROD the final remedy for the water supply.

In September and November 2005, in accordance with the selected remedy for the soil, EPA undertook pre-excavation soil sampling to define the boundaries of the soil contamination at the CCA. The results from this sampling effort indicated that the volume of contaminated soil was substantially greater than originally estimated in the 2005 ROD, increasing from approximately 220 CY to approximately 3,000 CY of TCE-contaminated soil exceeding the New York State Technical and Administrative Guidance Memorandum No. 94-HWR-4046 (TAGM) objective of 700 micrograms per kilogram (µg/kg).

Because EPA believed that the increased volume of contaminated soil at the CCA would impact the feasibility, effectiveness, and overall cost effectiveness of the selected remedy, the remedial alternatives for the soil component of the remedy selected in the 2005 ROD were reevaluated in *Focused Feasibility Study Report, Presentation of Air Permeability Testing Results and Evaluation of Soil Remedial Alternatives Related to the Cattaraugus Cutlery Area, Little Valley Superfund Site, Cattaraugus County, New York*, EPA, July 2006 (2006 FFS) report. Based upon the findings of the 2006 FFS and the results of a treatability study, it was determined that in-situ soil vapor extraction (ISVE) would be effective in addressing the contaminated soil at the CCA.

On September 28, 2006, a ROD amendment was approved, changing the soil remedy selected in the 2005 ROD to ISVE. The 2006 ROD amendment also called for excavation and off-Site treatment/disposal as a contingency remedy should operational data indicate that ISVE will not address all of the contaminated soils.

The ISVE system went into full-scale operation in fall 2006. Soil samples were collected during the course of the treatment. Based upon soil samples collected in November 2013, it was determined that while the volume of soil that was still above the TAGM objective for TCE had been reduced to an estimated 20 CY, the ISVE system appeared to have reached asymptotic levels (possibly attributable to concrete slabs, footings and piping that were discovered in the area which may have hindered ISVE performance).

In January 2014, in order to evaluate how to address the remaining areas of soil with elevated TCE concentrations at the CCA, EPA prepared *Little Valley Superfund Site–Cattaraugus Cutlery Area, Evaluation of Options for Addressing Remaining Contaminated Soil*. This document evaluated three treatment options: continued ISVE treatment of the soil; soil excavation with

off-Site disposal; and soil excavation with on-Site soil vapor extraction treatment in an ex-situ treatment cell. Based upon this evaluation, EPA and NYSDEC determined that excavation with off-Site disposal would be the best option.

The soil excavation work, which was performed the weeks of June 16, 2014 and August 4, 2014, removed approximately 25 CY (37 tons) of soil. The excavated soil was shipped to an approved landfill in Angelica, NY. Post-excavation soil samples indicated that TCE concentrations were below the TAGM soil cleanup objective of 700 µg/kg.

An ESD was issued in September 2014 (2014 ESD), documenting EPA's decision to implement the contingency soil remedy. In addition, the 2014 ESD documented an EPA determination that an additional IC was needed to address the potential for SVI at properties that may be developed over the plume in the future. Specifically, the local governmental agencies are to be advised annually that if new structures are constructed over the TCE plume (including at the CCA and Bush Industries properties), vapor mitigation measures should be implemented as part of the new construction or a property-specific evaluation should be performed to demonstrate that vapor intrusion will not be a concern at the property.

### 1.3 INSTITUTIONAL CONTROLS

Both the BIA and the facility located on the CCA obtain potable water from the public water supply of the Village of Little Valley. In addition, groundwater standards are expected to be achieved in these areas through natural attenuation, and monitoring in these areas allow for periodic inspections to determine whether groundwater is being used without treatment. Therefore, EPA concluded that notification of the property owners, in combination with the periodic inspections, would be sufficiently protective of public health until groundwater standards are achieved. Specifically, CCHD issues an annual notice to local governmental agencies, including the building code enforcement officers, stating that if any unimproved parcel where the underlying groundwater is contaminated with TCE above the MCL is developed, the groundwater should not be used without appropriate treatment. In addition, EPA notified the BIA and CCA property owners that the underlying groundwater is contaminated and should not be used without treatment. As part of the annual natural attenuation monitoring event at the BIA and CCA, the properties are inspected to verify that wells without treatment systems have not been installed. An annual report summarizing the results of the groundwater monitoring and the findings of such inspections is prepared.

As documented in the 2014 ESD, EPA determined that an IC to prevent exposure to potential SVI at parcels that are developed in the future was needed to ensure protectiveness. Accordingly, CCHD's annual notice to the local governmental agencies also advises that if new structures are constructed over the TCE plume (including at the CCA and BIA properties), vapor mitigation measures should be implemented as part of the new construction or a property-specific evaluation should be performed to demonstrate that vapor intrusion will not be a concern at the property.

## 1.4 MONITORED NATURAL ATTENUATION

The 2005 ROD called for MNA of the TCE-contaminated groundwater underlying the BIA, CCA, Great Triangle Area, and Ninth Street Landfill Area, as well as the Site-wide groundwater plume.

EPA's contractor, TetraTech, prepared an MNA plan which was approved by EPA in May 2006. The MNA plan was implemented as a limited action for one year. The limited action commenced on July 26, 2006. After one year of MNA data collection and evidence of natural attenuation, an operational and functional determination was made.

MNA monitoring of the TCE-contaminated groundwater underlying the BIA, CCA, Great Triangle Area, and Ninth Street Landfill Area, as well as the Site-wide groundwater plume, has been conducted on an annual basis as a long-term response action for ten years, utilizing 32 monitoring wells. The monitoring wells are distributed as follows: six at the BIA; 13 at the CCA; and 13 located in the downgradient plume. See Appendix C for the MNA monitoring well network. The samples are analyzed for VOCs and MNA parameters.

An inspection of the monitoring wells is performed during the groundwater monitoring activities. Inspection activities conducted include ensuring that the monitoring wells are secured, locked, and in good condition. During the September 2016 monitoring event, monitoring wells PZ-32, MW-1, PZ-38, PZ-46, and PZ-55D were found to have broken hinges on their well casing covers and monitoring well LV-8 needed a new concrete collar around the base of the casing. These items were addressed by EPA's Emergency and Rapid Response Services (ERRS) contractor in January 2017.

## 1.5 SOIL VAPOR INTRUSION MITIGATION

Concerns about TCE vapors from the groundwater getting into the air inside homes in the study area prompted the 2005 ROD to call for an evaluation of the potential for SVI into structures within the study area and the installation of mitigation systems, if necessary.

To evaluate the possibility of SVI, in September 2005, EPA tested under the foundations of 23 homes and the Luminite facility as a representative sample of the more than 300 residences and businesses overlying the contaminant plume. In January 2006, EPA revisited 12 of the homes tested in September 2005 to sample the indoor air and also tested under the basement slabs of an additional four homes. Based upon these results, EPA collected subslab samples from an additional 82 homes in July 2006. In August 2006, indoor air samples were collected from 25 additional homes and subslab samples were collected from beneath two homes.

Based upon the results of the SVI sampling effort, subslab mitigation systems were installed beneath two residences in September 2006; systems were installed in two additional homes in April 2012.

In response to a request from NYSDEC and NYSDOH to further evaluate the southern extent of the SVI study area, EPA sent sampling request letters to nine residences in this area. Sampling was performed during the week of March 6, 2017 at nine residences (four new residences and five from previous events) for the following reasons: two residences were sampled because past sampling data indicated that vapors are collecting under the slabs of the homes; three residences were sampled to verify that the vapor mitigation systems are functioning properly; and four residences were sampled in response to a request from NYSDEC and NYSDOH to further evaluate the southern extent of the southern SVI study area.

The analytical results were reviewed for the nine residences and there were no detections in the indoor air (basement and first floor) or the sub-slab samples above EPA's risk-based screening values.

To date, EPA has conducted SVI sampling at 139 residences plus a manufacturing facility and a NYSDEC facility. Annual sampling is typically conducted during the heating season.

All of the property owners/renters with drinking water wells that are protected with POETs are aware of the fact that the groundwater they use is contaminated and should not be used without treatment. They are reminded of this on a periodic basis when NYSDEC collects samples from their wells and/or provides maintenance related to their individual treatment units. Therefore, ICs to prevent human exposure to contaminated groundwater from these properties (until groundwater standards are met) were determined to be unnecessary.

# 2 INSTITUTIONAL CONTROLS MONITORING

The CCHD issues an annual notice to local governmental agencies, including the building code enforcement officers, stating that if any unimproved parcel where the underlying groundwater is contaminated with TCE above the MCL is developed, the groundwater should not be used without appropriate treatment. The notice also advises that if new structures are constructed over the TCE plume, vapor mitigation measures should be implemented as part of the new construction or a property-specific evaluation should be performed to demonstrate that vapor intrusion will not be a concern at the property.

As part of the annual natural attenuation monitoring at the BIA and CCA (see Section 3, Monitored Natural Attenuation, below), the properties will be inspected to verify that wells without treatment systems have not been installed. An annual report summarizing the results of the findings of such inspections will be prepared.

EPA will assess the protectiveness of the ICs during its five-year reviews.

# 3 MONITORED NATURAL ATTENUATION

## 3.1 NATURAL ATTENUATION MONITORING

EPA's contractor, TetraTech, prepared an MNA plan. See Appendix A for the MNA plan and Appendix B for the MNA Quality Assurance Project Plan. Appendix C shows the MNA sampling locations.

MNA monitoring of the TCE-contaminated groundwater underlying the BIA, CCA, Great Triangle Area, and Ninth Street Landfill Area, as well as the Site-wide groundwater plume, will be conducted on an annual basis utilizing 32 monitoring wells--six at the BIA; 13 at the CCA; and 13 located in the downgradient plume. The samples will be analyzed for VOCs and MNA parameters.

## 3.2 ASSURANCE MONITORING

The MNA sampling program will be conducted by EPA for ten years as a long-term response action. Henceforth, NYSDEC will collect the Site-wide samples under its operation and maintenance responsibilities.

An annual report summarizing the results of the groundwater monitoring is prepared.

EPA will assess the protectiveness of the MNA sampling program during its five-year reviews.

# 4 VAPOR INTRUSION MANAGEMENT

## 4.1 VAPOR INTRUSION MONITORING

Vapor intrusion monitoring at the Site will be performed annually during the heating season. This monitoring will continue as long as elevated levels of vapors remain and the associated buildings are occupied. See Appendix D for the vapor intrusion sampling locations (the units with vapor mitigation systems are highlighted).

## 4.2 VAPOR INTRUSION, INSPECTIONS, MAINTENANCE AND ENHANCEMENTS

The vapor mitigation systems will be inspected during the annual SVI sampling events.

Based upon the manufacturer's recommendation of a five-year useful life for the fans in the vapor mitigation system, the fans were replaced in three of the four systems in January 2017 (the owner of the fourth residence did not respond to repeated attempts to schedule the maintenance appointment). The vapor mitigation systems were inspected by EPA during the annual SVI sampling events.

Repairs, maintenance, and/or enhancements may be necessary for the mitigation systems to perform effectively. Five-year reviews will assess the efficacy of the mitigation systems.

## 4.3 FUTURE VAPOR INTRUSION MEASURES

Because the residual levels of VOCs in the groundwater are expected to dissipate slowly through MNA, EPA has concluded that preventing human exposure to VOCs at the occupied residences will be needed for a number of years to ensure the protectiveness of the remedy. Therefore, the existing vapor mitigation systems will need to continue to operate and SVI sampling will need to continue.

## 4.4 ASSURANCE MONITORING

Assurance monitoring of the vapor intrusion program will be conducted by EPA until NYSDEC assumes responsibility for operation and maintenance, at which time NYSDEC will conduct the assurance monitoring.

EPA will assess the protectiveness of the vapor intrusion program during its five-year reviews.

# APPENDIX A -- FINAL REMEDIAL ACTION WORK PLAN FOR THE LITTLE VALLEY SUPERFUND SITE, CATTARAUGUS COUNTY, NEW YORK, OCTOBER 2006

# U.S. Environmental Protection Agency
# Region 2

## Response Action Contract

**FINAL**
**REMEDIAL ACTION WORK PLAN**
**FOR THE**
**LITTLE VALLEY SUPERFUND SITE**
**CATTARAUGUS COUNTY, NEW YORK**

**OCTOBER 2006**

**Contract Number: 68-W-98-214**

TETRA TECH EC, INC.

EPA WORK ASSIGNMENT NUMBER 159-RARA-02GP
EPA CONTRACT NUMBER 68-W-98-214
TETRA TECH EC, INC.
RAC II PROGRAM

# FINAL
# REMEDIAL ACTION WORK PLAN
# FOR THE
# LITTLE VALLEY SUPERFUND SITE
# CATTARAUGUS COUNTY, NEW YORK

OCTOBER 2006

NOTICE

THE INFORMATION PROVIDED IN THIS DOCUMENT HAS BEEN FUNDED BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA) UNDER RAC II CONTRACT NUMBER 68-W-98-214 TO TETRA TECH EC, INC. (TtEC). THIS DOCUMENT HAS BEEN FORMALLY RELEASED BY TtEC TO THE EPA. HOWEVER, THIS DOCUMENT DOES NOT REPRESENT THE EPA'S POSITION OR POLICY AND HAS NOT BEEN FORMALLY RELEASED BY THE EPA.

EPA WORK ASSIGNMENT NUMBER 159-RARA-02GP
EPA CONTRACT NUMBER 68-W-98-214
TETRA TECH EC, INC.
RAC II PROGRAM

# FINAL
# REMEDIAL ACTION WORK PLAN
# FOR THE
# LITTLE VALLEY SUPERFUND SITE
# CATTARAUGUS COUNTY, NEW YORK

OCTOBER 2006


Prepared by:

_____
Richard J. Feeney, PE
Project Manager
Tetra Tech EC, Inc.

Reviewed by:

_____
Mark Sielski, P.G.
RAC II Quality Control Manager
Tetra Tech EC, Inc.

Approved by:

_____
William R. Colvin, PMP, P.G., CHMM
RAC II Program Manager
Tetra Tech EC, Inc.

**FINAL REMEDIAL ACTION WORK PLAN**

**TABLE OF CONTENTS**



**LIST OF FIGURES**

## 1.0 INTRODUCTION

A Remedial Investigation (RI) and Feasibility Study (FS) of the Little Valley Superfund Site (the Site) was performed by Tetra Tech EC, Inc. (TtEC) and predecessor companies beginning in 1997 to investigate sources of the trichloroethene (TCE) contaminated groundwater beneath the Site. Ten potential source areas, some of which were divided further into sub-areas, were investigated. During the execution of the RI an evaluation of Monitored Natural Attenuation (MNA) was performed to assess its viability as a remedy for the contaminated groundwater associated with the Site. The evaluation concluded that MNA is occurring at the Site and therefore was a viable remedy. The RI Report was completed in January 2005. The FS Report was completed in April 2005. The Record of Decision (ROD) was signed in August 2005. Excavation and off-site disposal of contaminated material in two locations of the Cattaraugus Cutlery Area (CCA) was designated as the remedy for the contaminated soil. MNA was selected as the remedy for addressing the groundwater contamination problem. The MNA Report (Tetra Tech FW, Inc., 12 May 2004) prepared during the RI was included as Appendix C of the April 2005 FS Report. Subsequent to the August 2005 ROD, a ROD amendment was signed in September 2006 calling for a soil vapor extraction system to remediate the contaminated soil at the CCA.

On 19 September 2005, EPA initiated a Remedial Design Work Assignment (WA) under Contract Number 68-W-98-214 (WA Number 156-RDRD-02GP) for the conduct of MNA sampling and analyses. TtEC submitted a draft work plan and budget estimate on 4 November 2005 based on the scope of work in the original WA Form (WAF) and WAF Amendment 1 dated 19 October 2005. EPA's comments on the 4 November 2005 work plan were received on 22 February 2006 (WAF Amendment 2). As directed in WAF Amendment 2, TtEC prepared a revised draft work plan and a revised budget estimate based on EPA's comments. Both documents were submitted on 24 March 2006 and were approved by EPA on 8 May 2006.

A Final Work Plan dated 31 May 2006 was prepared to incorporate a list of 24 existing wells and piezometers, along with 11 alternates, that will be sampled during MNA sampling events. The identification of these wells and piezometers was originally provided by EPA in an electronic message dated 9 May 2006 and finalized in a telephone conference with EPA on 30 May 2006. On 10 August 2006 EPA issued WAF Amendment 4 to close the Remedial Design project and, on 14 August 2006, issued a WAF to open this Remedial Action WA (Number 159-RARA-02GP). The objectives of this Remedial Action project are to:

- Perform two annual MNA sampling events;
- Conduct annual visual inspections of the Bush Industries and CCA properties to verify that no new wells (without treatment systems) have been installed; and
- Evaluate historic and new analytical data to monitor natural attenuation at the Site.

## 2.0 TASK PLAN FOR THE REMEDIAL ACTION

The following Remedial Action tasks will be performed for this Work Assignment:

| | |
|---|---|
| Task 1.0 | Project Planning and Support |
| Task 3.0 | Development and Update of Site Specific Plans |
| Task 4.0 | Procurement of Subcontract |
| Task 5.0 | Management Support |
| Task 7.0 | Cleanup Validation |
| Task 11.0 | Work Assignment Closeout |

The following Remedial Action tasks are not applicable to this Work Assignment:

| | |
|---|---|
| Task 2.0 | Community Relations |
| Task 6.0 | Detailed Resident Inspection (Resident Engineer) |
| Task 8.0 | Remedial Action Implementation (Subpool Activities) |
| Task 9.0 | Project Performance |
| Task 10.0 | Project Completion and Closeout |

### 2.1 Project Planning and Support (Task 1.0)

2.1.1 Program Administration (Subtask 1.01.01): Program administration activities include: tracking and monitoring of the WA technical and financial status; review of the monthly project progress reports; technical resource management; responding to questions from the EPA Project Officer/Contracting Officer; and invoicing. Performance of these activities will continue through 5 July 2008.

2.1.2 Project Management (Subtask 1.01.02): Project management activities include: preparation of Data Evaluation Reports (DERs); preparation of monthly progress reports; review and update of the project schedule; weekly communication with the EPA Work Assignment Manager (WAM) including communication prior to and during sampling activities and DER preparation; and, preparing staffing plans. Performance of these activities will continue through 5 July 2008.

2.1.3 Develop Draft Work Plan and Budget Estimate (Subtask 1.02): TtEC prepared a Draft Work Plan and a Draft Work Plan Budget Estimate under this subtask. Work plan activities are based on the SOW attached to the WAF for Work Assignment Number 156-RDRD-02GP, the May 2004 MNA Evaluation Report (Appendix C of the EPA-approved April 2005 FS Report) and the *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water* (EPA/600/R-98/128, September 1998). Activities that were completed under WA Number 156-RDRD-02GP are not included in this work plan. A schedule with dates for completion of each task and deliverables required by the SOW is included in this work plan. The only deliverables required by the SOW are DERs that will be prepared following each of the two MNA sampling events.

2.1.4 Negotiate and Revise Draft Work Plan and Budget Estimate (Subtask 1.03): Within 14 days of receipt of EPA's final comments on the Draft Work Plan, a revised Work Plan will be submitted. Following negotiation, the budget estimate will be revised, if necessary, and loaded in TtEC's financial management system.

2.1.5 Evaluate Existing Data and Documents (Subtask 1.04): TtEC will review existing site background information including the ROD for OU-2 and the data from the most recent round of residential well sampling available from the EPA WAM. The RI/FS Reports for OU-2, historical residential well sampling data

(Appendix A of the OU-2 RI Report), and the MNA Evaluation Report (Appendix C of the OU-2 FS Report) are the only data and documents that will be reviewed.

2.1.6 Meetings (Subtask 1.05): The TtEC Project Manager and Technical Lead will prepare for and participate in two progress meetings per year via telephone conference. Meeting notes will be prepared and transmitted to the WAM via electronic mail.

## 2.2 Development and Update of Site Specific Plans (Task 3.0)

2.2.1 Develop Quality Assurance Project Plan (QAPP) (Subtask 3.01): The QAPP used for TtEC's 2003 field sampling and analyses activities was approved by EPA in July 2003 as Part B of three addenda to the September 1997 Field Operations Plan (FOP). The Field Sampling and Analysis Plan (FSAP) was approved by EPA in July 2003 as Part A of these addenda to the September 1997 FOP.

The 2003 QAPP was updated for the MNA sampling and analyses activities and submitted to EPA as a draft on 31 May 2006 under the Remedial Design Work Assignment. EPA's comments on the draft were received on 31 August 2006. The Final QAPP for this Remedial Action WA will be submitted in September 2006. The QAPP for this project conforms with the latest revision of EPA QA/R-5. The QAPP describes the project objectives and organization, functional activities and quality assurance/quality control protocols used to achieve the desired DQOs.

Based on the Site Visit, and considering site-specific information included in the RI Report, the MNA Report and EPA's MNA guidance, EPA and TtEC have determined which 24 existing monitoring wells and piezometers listed in the SOW will be sampled for the MNA parameters specified in the SOW. An additional 11 monitoring wells and/or piezometers are designated as alternates in hierarchical order for replacement purposes as needed. The 24 MNA sampling wells and the list of 11 alternates to be sampled are included in the QAPP for EPA's approval. They are also listed as follows:

| Primary Wells | | Alternate Wells |
|---|---|---|
| BIA-MW-D1 | CCA-MW-10 | BIA-MW-5 |
| BIA-MW-D2 | CCA-MW-11D | PZ-38 |
| BIA-MW-2 | CCA-MW-12 | PZ-25 |
| BIA-MW-3 | PZ-20D | PZ-32 |
| BIA-MW-6 | PZ-5 | PZ-48 |
| BIA-MW-8 | PZ-6D | PZ-47D |
| CCA-MW-1 | PZ-39 | PZ-27 |
| CCA-MW-2 | PZ-45D | PZ-28D |
| CCA-MW-3 | PZ-46 | LV-8 |
| CCA-MW-5 | PZ-55D | LV-9 |
| CCA-MW-6 | | PZ-62D |
| CCA-MW-7 | | |
| CCA-MW-8 | | |
| CCA-MW-9D | | |

Factors considered in determining the 24 wells and those 11 designated as alternates, include the following:

- Wells or piezometers that were previously sampled during the RI as part of the MNA evaluation process. There are existing MNA parameter data that can be used to evaluate natural attenuation processes over time at these locations. These 15 wells or piezometers are included among the group of 38 wells and piezometers listed in the SOW.

- Any wells considered not suitable or available for sampling based on TtEC's observations during the Site Visit have been excluded from annual MNA sampling events. Therefore, PZ-53 and PZ-56 are not included. This work plan does not address performing well repairs or addressing significant physical accessibility problems. Wells BIA-MW-8, PZ-27 and PZ-28D have not been inspected recently so their availability for MNA sampling is uncertain.

- Hydrogeological and geochemical characteristics were considered relative to the location of the candidate wells. For example, it may be more meaningful to monitor VOC concentrations at the perimeter of the groundwater plume, as opposed to at the center, or near a particular hydrogeological feature that may affect contaminant transport or decay. Consideration was given to well clusters, to evaluate the effects of spatial differences on MNA processes.

Of the 38 wells listed in the SOW for this WA, six are located on the Bush Industries Area (BIA). At a later date Bush Industries may assume the responsibility for sampling and providing analytical results for these wells. At that time alternative wells may be substituted (for these six BIA wells) from the list of 11 alternate wells.

The alternate well identifications are ordered such that the sampling team can readily substitute for one or more of the original 24 planned to be sampled for those found to be dry, damaged, inaccessible or for some reason cannot be included in a MNA sampling event. TtEC's field staff will select alternate wells as substitutes from the ordered list of 11 wells, and notify EPA of the substitution. TtEC will not prepare a FCR for alternate well selections made in the field.

2.2.2 Develop Health and Safety Plan (HASP) (Subtask 3.02): The HASP used for TtEC's most recent field sampling and analyses activities (conducted in late 2003) was finalized and approved by EPA in July 2003 as Part C of three addenda to the September 1997 FOP. This document was reviewed and updated as part of the Remedial Design project, submitted to EPA on 8 November 2005, after which EPA's comments were incorporated and the document is now final.

## 2.3 Procurement of Subcontract (Task 4.0)

2.3.1 Subcontract Procurement Laboratory, IDW and Microfilm (Subtask 4.01): Three subcontracts may be required for this WA: 1) a laboratory for non-RAS analyses; 2) an IDW transport and disposal firm, if necessary; and 3) a microfilm subcontract for closeout. Since TtEC has obtained approval from NYSDEC to discharge purge and decontamination water on the ground near project wells, the IDW transport and disposal subcontract may not be necessary. NYSDEC's approval is documented in their e-mail dated 8 March 2006 and TtEC does not anticipate NYSDEC changing this requirement.

## 2.4 Management Support (Task 5.0)

2.4.1 Subcontract Management (Subtask 5.01): After award of the subcontracts, TtEC will perform routine management of subcontractor activities including monitoring progress, assuring conformance to project documents, documentation of any changes that may become necessary, reviewing invoices and closing out the subcontracts at their completion.

## 2.5 Cleanup Validation (Task 7.0)

The MNA groundwater sampling program will be conducted to assess the degradation of VOCs, specifically TCE. Groundwater samples will be collected from 24 existing monitoring wells or piezometers throughout

the Site to obtain MNA chemical analytical data according to the *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water*, EPA/600/R-98/128, September 1998 (EPA's MNA guidance). Designation of the wells to be sampled is discussed in Subtask 3.01 (Section 2.2.1).

Analyses will be performed by EPA's Division of Environmental Science and Assessment (DESA) Laboratory, the EPA Contract Laboratory Program (CLP), and an independent subcontract laboratory as follows:

- Low Concentration VOC samples will be analyzed via the EPA CLP;
- It is anticipated that analysis of the following MNA/water quality parameters will be performed by the EPA Region 2 DESA Laboratory: alkalinity, sulfate, sulfide, nitrate, chloride, and TOC; and
- The following water quality/MNA analyses will be performed by the subcontract laboratory: ferrous iron, ethane, ethene and methane. These analyses cannot be performed by the DESA Laboratory.

For each of the two MNA events TtEC will provide analytical support and perform data validation (of the samples analyzed by the subcontract laboratory). The analytical support will begin with reserving sample slots in the CLP and the DESA Laboratory and coordinating activities with the subcontract laboratory. This task will end upon TtEC's receipt of all the validated data from the MNA sampling events. TtEC will validate the analytical results received from the subcontract laboratory. All the analytical results received from the CLP laboratories and the DESA Laboratory are considered validated, and no validation effort will be performed by TtEC on these data packages.

2.5.1 Mobilization and Demobilization (Subtask 7.01): TtEC will provide the necessary personnel, equipment and materials for mobilization to and demobilization from the Site. One mobilization and demobilization will be performed for each of the two MNA sampling events. A van will be used for the field investigation in lieu of setting up a trailer at the Site. As a preferred alternative to this, TtEC may be able to use space at the NYSDEC maintenance facility in Little Valley, but the availability of such space is uncertain at this time. MNA sampling events are planned to occur during the fall of 2006 and the fall of 2007.

2.5.2 Field Investigation (Subtask 7.02): Following mobilization sampling will be performed in accordance with the EPA-approved QAPP. Since the EPA Region 2 DESA Laboratory normally accepts receipt of samples only through Fridays (i.e., no Saturday delivery is possible), sample collection activities for samples sent to the DESA Laboratory will occur on Mondays through Thursdays. The EPA-approved 24 wells (and designated alternates, as necessary) will be sampled as specified in the EPA approved QAPP and in accordance with the SOW and EPA's MNA guidance, *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water*, EPA/600/R-98/128, September 1998, by Todd Wiedemeier, Matthew Swanson, et al. EPA will obtain access to all the wells to be sampled, or designated as alternates, prior to the initial MNA sampling event.

2.5.3 Characterization and Disposal of Field Derived Wastes (Subtask 7.03): TtEC will manage Investigation-Derived Waste (IDW) in accordance with local, State, and Federal regulations (refer to the Fact Sheet, *Guide to Management of Investigation-Derived Wastes*, 9345.3-03FS (January 1992)). TtEC has obtained approval from the NYSDEC for discharging purge and decontamination water on the ground surface at the Site near project wells. Therefore, TtEC does not, at this time, plan on procuring an IDW subcontractor to transport and dispose of purge and decontamination water off site.

2.5.4 CLP-Type and DESA Laboratory Sample Analysis (Subtask 7.04): Preference will be made to the use of the EPA Region 2 DESA Laboratory while Low Concentration VOCs will be analyzed through the CLP. CLP analytical services will be requested in accordance with procedures outlined in the User's Guide to the Contract Laboratory Program, USEPA, August 2004.

2.5.5 Subcontract Laboratory Sample Analysis (Subtask 7.05): As stated above, ferrous iron and methane/ethane/ethene, which cannot be performed by the DESA Laboratory, will be sent to a subcontract laboratory. In addition, because the DESA Laboratory may not always be able to accept sample shipments corresponding to the timing of the MNA sampling events, TtEC plans to use the subcontract laboratory as a back-up for these analyses. This work plan and the QAPP will be flexible enough to permit all, or a portion, of the samples that could be analyzed by the DESA Laboratory to be analyzed by the subcontract laboratory.

2.5.6 Collect, Prepare and Ship Samples (Subtask 7.06): TtEC will collect, prepare, and ship all environmental and associated QA/QC samples collected during this task in accordance with the procedures described in the site-specific QAPP and the EPA User's Guide to the Contract Laboratory Program (EPA, 2004). A summary of the samples and associated QA/QC samples to be collected will be included in the site-specific QAPP. TtEC will procure and provide the sample containers for all samples. EPA's Field Operations and Records Management System (FORMS II Lite) will be used in the field for shipping documentation. Arrangements will be made for sample shipment and delivery with the EPA Regional Sample Control Center (RSCC) and Contract Laboratory Analytical Support Services (CLASS) offices, the EPA Region 2 DESA Laboratory, and/or the subcontract laboratory(ies); see Subtask 7.07.

2.5.7 Sample Management Coordination with EPA (Subtask 7.07): Sample management coordination with EPA will be performed in accordance with the procedures outlined in the site-specific QAPP and TtEC's EPA-approved RAC II Program Delivery of Analytical Services Plan (July 1998). The TtEC Authorized Requestor will request Routine Analytical Service (RAS) sample slots in the CLP via the EPA Region 2 RSCC Office in Edison, New Jersey. The TtEC Authorized Requestor will request sample slots with the EPA DESA Laboratory in Edison, New Jersey via the RSCC office and laboratory personnel. TtEC will coordinate the analysis of the ferrous iron, methane/ethane/ethene, and any other Non-CLP/Non-DESA Laboratory environmental samples (see Task 4.0) with the subcontract laboratory. Communication will be maintained with the EPA RSCC, the CLP CLASS office, the EPA Region 2 DESA Laboratory, and/or the subcontract laboratory regarding the scheduling, tracking, and oversight of the sample analyses and validation.

2.5.8 Implement the EPA-Approved Laboratory QA Program (Subtask 7.08): The CLP program contains a quality assurance program that evaluates laboratories using periodic performance evaluation samples, operations audits, etc. The DESA Laboratory has its own quality assurance program that provides oversight of laboratory activities. For the subcontract laboratory analyses, TtEC will implement its EPA-approved laboratory quality assurance program as stated in the RAC II Program Delivery of Analytical Services Plan (TtEC, 1998); RAC II Program Quality Management Plan (TtEC, 2006); and the site-specific QAPP.

2.5.9 Sample Management Activities (Subtask 7.09): TtEC will provide sample management functions, including chain of custody procedures, information management, sample retention, and 10-year data storage. The TtEC CLP Authorized Requestor will review the proper packing and shipping techniques with the field representatives prior to their deployment to the field for each MNA sampling event. TtEC will coordinate with the CLP RSCC and CLASS offices, the DESA Laboratory, and/or the appropriate subcontract laboratories, regarding sample analyses, quality assurance issues, and data validation (see Subtasks 7.07 and 7.10). In addition, upon receipt, hard copy and/or electronic data packages will be checked by the TtEC CLP Authorized Requestor for completeness and logged in the RAC II Program project tracking database.

2.5.10 Data Validation (Subtask 7.10): EPA Region 2 Hazardous Waste Support Section personnel, in conjunction with EPA DESA personnel in Edison, New Jersey, will perform data validation for all CLP RAS laboratory data. For samples sent to the EPA Region 2 DESA Laboratory, the results will be validated by EPA DESA personnel following the laboratory's internal data validation SOPs and reporting formats/protocols.

Non-CLP/Non-DESA data generated by the subcontracted laboratory (see Subtask 7.05) will be validated by TtEC personnel in accordance with:

- The most current versions of the EPA Region 2 Data Validation SOP (www.epa.gov/superfund/ programs/clp/guidance.htm);
- Applicable sections of the most current versions of the EPA National Functional Guidelines for Organic and Inorganic Data Validation (www.epa.gov/superfund/programs/clp/guidance.htm);
- Method-specific QC information (such as holding times, calibration records, laboratory and field blanks, duplicate precision, and surrogate and matrix spike recovery) as outlined in the applicable methodology and the Laboratory Subcontract SOW; and
- The best professional judgment of the validator.

TtEC data validators performing this task have been trained and are certified by EPA Region 2 in validating the parameters of interest associated with the project. All data validation reports will be summarized according to EPA Region 2 Data Validation SOPs. TtEC will submit copies of the Non-CLP/Non-DESA data validation reports to the EPA WAM.

2.5.11 Data Evaluation Report (Subtask 7.11): This subtask includes the compilation and evaluation of MNA sampling data and residential well sampling data. TtEC will organize and evaluate existing data for the MNA wells, residential well data contained in the RI Report, data gathered during the MNA sampling events and additional residential well data provided by EPA during the WA. Two DERs are planned to be prepared, one after each of the MNA sampling events. The reports will: summarize the field investigation activities and MNA data, including both monitoring well/piezometer and residential well results; provide an assessment of the degradation of VOCs; and provide an overview perspective on the progress of MNA at the Site. Each DER will include:

- Tables of current and historical VOC and MNA/water quality sampling data for the monitoring wells and piezometers sampled during the event;
- Tables of current and historical VOC sampling data for residential wells;
- Statistical calculations of mean, maximum and average concentrations for the residential wells (computations to follow similar protocols performed previously by EPA);
- Graphs of statistical data for the residential wells (as specified by EPA);
- Maps showing the sampling locations, based on the RI Report figures; and
- Time-series plots of VOC concentrations in various monitoring wells, piezometers and/or residential wells.

TtEC has historical residential well sampling data (i.e., those data included in the EPA-approved RI Report). Additional (i.e., "current") residential well sampling data may be provided to TtEC by the EPA for evaluation in the two DERs. The median, mean, and maximum concentrations for each annual group of residential well data will be compared with previously developed similar information. TtEC believes that the median, mean, and maximum concentrations for historic residential well data may have been calculated. If provided by EPA, these calculations will be included in TtEC's first and subsequent DER. Statistical analysis by more advanced methods, such as Mann-Kendall or Mann-Whitney procedures, will not be performed.

The maps showing sample locations will be taken from the RI Report and provided in AutoCAD format as part of the electronic deliverable. No new survey information will be obtained. Prior to the submittal of the first DER, EPA will determine whether all of the MNA wells should be shown on a single map, probably oversize (i.e., a plate), or if multiple drawings are needed.

Time-series plots will be generated for all wells with sufficient data (i.e., one or more VOC compounds having analytical results from more than three separate sampling events), including approximately 12 residential wells. The time-series plots will be reviewed with EPA, prior to the submittal of the Draft DER.

Both DERs will be based only on MNA sampling chemical data (obtained during the RI and under this WA) and chemical data from residential wells. It will not contain hydrogeological information such as groundwater contour plots, as hydrogeological data will not be generated during MNA sampling. If it is decided that groundwater flow diagrams are to be included, they will be taken directly from the EPA-approved RI Report.

Each draft DER will be prepared and submitted to EPA for review and comment 30 days after TtEC receipt of all validated data for each of the MNA sampling events. The final DER for each sampling event will be submitted to EPA within 15 days of receipt of all EPA comments in the draft report.

## 2.6 Work Assignment Closeout (Task 11.0)

Upon notification from EPA that all technical work performed under this WA is complete, project closeout activities will be performed consisting of: preparing a Work Assignment Closeout Report (WACR), indexing and consolidating project records and files, and microfilming and archiving documents.

2.6.1 Work Assignment Closeout Report (Subtask 11.01): Final costs and LOE hours for all activities will be included in the WACR and provided as an electronic copy. Costs and LOE (by P-level) will be categorized in the same detail and format as the elements contained in the Work Plan and the financial reports.

2.6.2 Document Indexing (Subtask 11.02): TtEC will organize the WA files in accordance with the TtEC RAC II file index structure. Prior to duplication and storage, a file QA audit will be performed to ensure all file elements are present and in order, and that any duplicate or draft technical report copies are removed from the project file. Missing file elements or discrepancies will be resolved prior to duplication, distribution, and storage.

2.6.3 Document Retention/Conversion (Subtask 11.03): All project files will be archived in accordance with contract requirements, microfilmed by a subcontractor and distributed and stored in accordance with RAC II requirements. After document indexing is completed, the files will be sent to a subcontractor for microfilming in accordance with RAC II requirements (i.e., silver halide original set and diazo duplicate set). Upon receipt of the microfilm from the subcontractor, TtEC will review the film against the files, approve the film for release to EPA and send the film and hard copy files to EPA (or storage pending direction to send the files to EPA).

## 3.0 PROJECT MANAGEMENT APPROACH

### 3.1 Project Organization

The project organization is depicted in Figure 3-1. This WA will be performed under the direction of TtEC's RAC II Program Manager, William R. Colvin, PMP, CHMM, P.G.

The Project Manager is Richard J. Feeney, PE who has the primary responsibility for: development of the work plan; acquisition of scientific, engineering, or additional specialized technical support; and other aspects of the day-to-day activities associated with the project. Mr. Feeney identifies staff requirements, directs and monitors progress, ensures implementation of quality procedures and adherence to applicable codes and regulations, and is responsible for performance within the established budget and schedule.

Assisting the Project Manager are the project task leads and key technical personnel from various technical disciplines including: Lynn Arabia (Technical Lead and environmental chemistry); Thomas Fowler (Field Operations Lead); Boyd Allen (MNA specialist); Grey Coppi, CIH (health and safety); Jon Gabry, Ph.D. (project quality assurance); Mark Sielski, PG (project quality control); Mary Graybowski (project controls); Steve Randolph (procurement); and Mark Worthington (contract financial and administrative management).

### 3.2 Project Schedule

As indicated on Figure 3-2, two MNA sampling events are planned: the fall of 2006 and the fall of 2007. Excluding mobilization and demobilization time, each MNA sampling event is planned to occur over a two-week period of time.

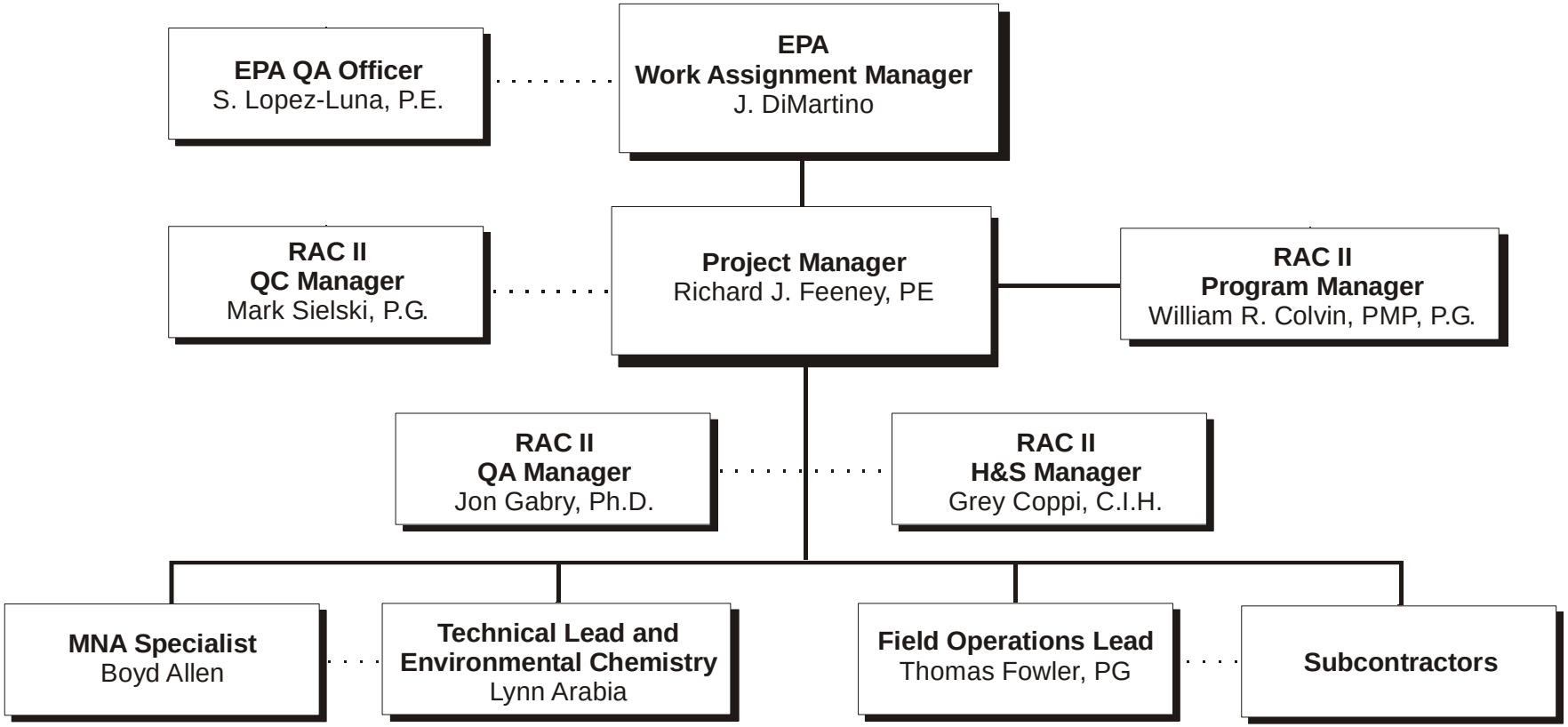
Based on TtEC's experience with the Region 2 CLP Program and the DESA Laboratory, validated analytical data should be received from EPA within 2-1/2 months after each MNA sampling event. Preparation of the DER will begin shortly afterward, and the Draft DER Report will be submitted to EPA within 30 days of TtEC's receipt of all validated laboratory data. As indicated on Figure 3-2, the second Draft DER is planned to be submitted in March 2008.

Following receipt of EPA's final comments on the Draft DER, a Final DER will be submitted to EPA within 15 days of TtEC's receipt of EPA's final comments.

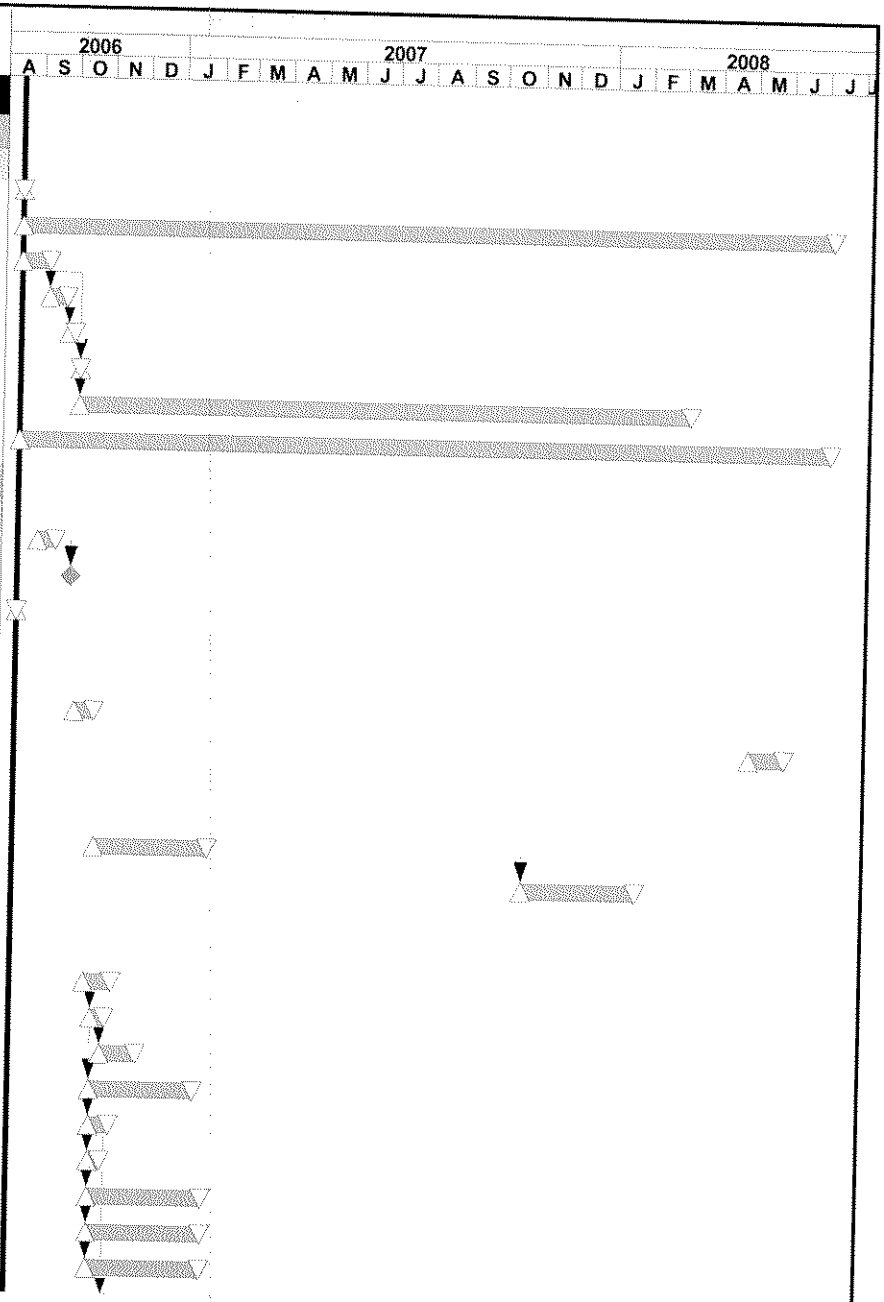
### 3.3 Work Assignment Budget Estimate

The estimated costs and hours to complete the work described in this work plan have been submitted under separate cover.

**Figure 3-1**
**Project Organization Structure**
**Little Valley Remedial Action**



| WBS | Activity Description | Calendar Days | Early Start | Early Finish |
|---|---|---|---|---|
| **LITTLE VALLEY SUPERFUND SITE RA - 159-RARA-02GP** | | | | |
| **TASK 1.0 PROJECT PLANNING AND SUPPORT** | | | | |
| | Work Assignment Authorization (SOW) | 1 | 14AUG06 | 14AUG06 |
| 1.01 | Administration | 692 | 14AUG06 | 05JUL08 |
| 1.02 | Develop Draft Work Plan and Budget Estimate | 25 | 14AUG06 | 07SEP06 |
| | EPA Review Draft Work Plan and Budget Estimate | 15 | 08SEP06 | 22SEP06 |
| 1.03 | Negotiate & Revise Draft Work Plan & Budget Est | 5 | 25SEP06 | 29SEP06 |
| | EPA Approval of Revised Draft WP & Budget Est. | 1 | 04OCT06 | 04OCT06 |
| 1.04 | Evaluate Existing Data and Documents | 519 | 05OCT06 | 06MAR08 |
| 1.05 | Meetings | 692 | 14AUG06 | 05JUL08 |
| **TASK 3.0 DEVELOP & UPDATE OF SITE SPECIFIC PLANS** | | | | |
| 3.01 | Develop Final Quality Assurance Project Plan | 15 | 01SEP06* | 15SEP06 |
| | EPA Approval of QAPP | 0 | | 29SEP06 |
| 3.02 | Develop Health and Safety Plan | 1 | 14AUG06 | 14AUG06 |
| **TASK 4.0 PROCUREMENT OF SUBCONTRACT** | | | | |
| 4.01 | Subcontract Procurement Laboratory and IDW | 17 | 04OCT06* | 20OCT06 |
| 4.01 | Subcontract Procurement Microfilm | 31 | 01MAY08* | 31MAY08 |
| **TASK 5.0 MANAGEMENT SUPPORT** | | | | |
| 5.01 | Subcontract Management 1st MNA Sampling Event | 97 | 23OCT06* | 27JAN07 |
| 5.02 | Subcontract Management 2nd MNA Sampling Event | 97 | 22OCT07* | 26JAN08 |
| **TASK 7.0 CLEANUP VALIDATION** | | | | |
| ***FIRST MNA SAMPLING EVENT*** | | | | |
| 7.01.01 | Mobilization and Demobilization | 24 | 16OCT06* | 08NOV06 |
| 7.02.01 | Field Investigation | 12 | 23OCT06 | 03NOV06 |
| 7.03.01 | Characterization & Disposal of Field Wastes | 30 | 01NOV06 | 30NOV06 |
| 7.04.01 | CLP - Type and DESA Laboratory Sample Analysis | 88 | 23OCT06 | 18JAN07 |
| 7.05.01 | Subcontract Laboratory Sample Analysis | 17 | 23OCT06 | 08NOV06 |
| 7.06.01 | Collect, Prepare and Ship Samples | 11 | 23OCT06 | 02NOV06 |
| 7.07.01 | Sample Management Coordination with EPA | 96 | 23OCT06 | 26JAN07 |
| 7.08.01 | Implement the EPA-Approved Laboratory QA Prgm | 96 | 23OCT06 | 26JAN07 |
| 7.09.01 | Sample Management Activities | 96 | 23OCT06 | 26JAN07 |




Start Date 14AUG05
Finish Date 05JUL08
Run Date 07SEP06 16:16

159W

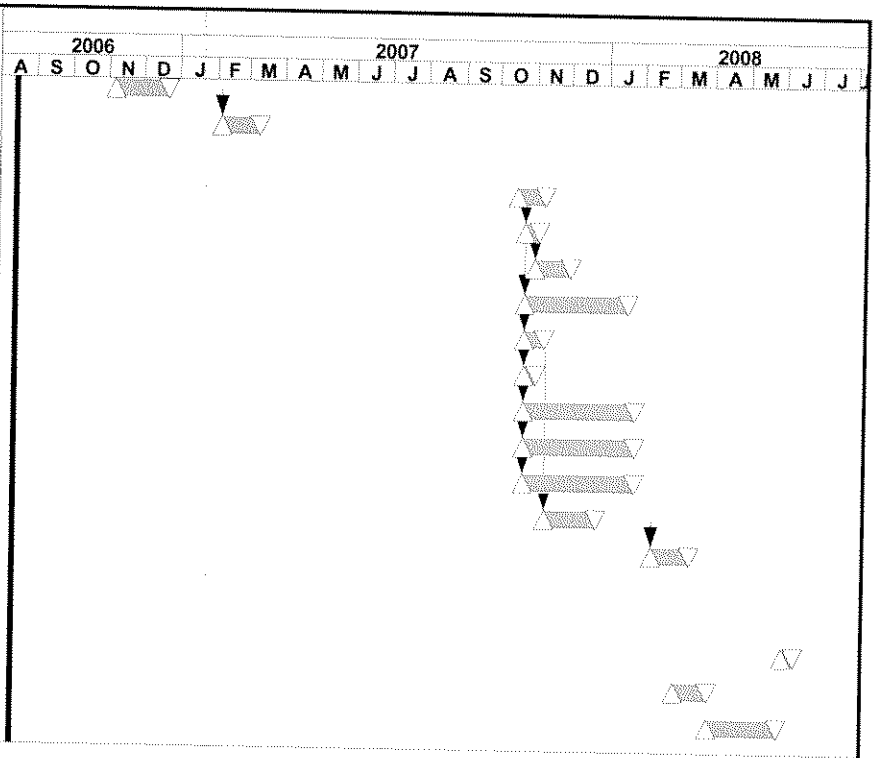
Sheet 1 of 2



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**LITTLE VALLEY SUPERFUND SITE - REMEDIAL ACTION**
**WA 159-RARA-02GP**
**BASELINE SCHEDULE**

**FIGURE 3-2**

| WBS | Activity Description | Calendar Days | Early Start | Early Finish |
|---|---|---|---|---|
| 7.10.01 | Data Validation | 45 | 06NOV06 | 20DEC06 |
| 7.11.01 | Data Evaluation Report | 32 | 05FEB07 | 08MAR07 |
| ***SECOND MNA SAMPLING EVENT*** | | | | |
| 7.01.02 | Mobilization and Demobilization | 24 | 15OCT07* | 07NOV07 |
| 7.02.02 | Field Investigation | 12 | 22OCT07 | 02NOV07 |
| 7.03.02 | Characterization & Disposal of Field Wastes | 31 | 31OCT07 | 30NOV07 |
| 7.04.02 | CLP - Type and DESA Laboratory Sample Analysis | 88 | 22OCT07 | 17JAN08 |
| 7.05.02 | Subcontract Laboratory Sample Analysis | 17 | 22OCT07 | 07NOV07 |
| 7.06.02 | Collect, Prepare and Ship Samples | 11 | 22OCT07 | 01NOV07 |
| 7.07.02 | Sample Management Coordination with EPA | 96 | 22OCT07 | 25JAN08 |
| 7.08.02 | Implement the EPA-Approved Laboratory QA Prgm | 96 | 22OCT07 | 25JAN08 |
| 7.09.02 | Sample Management Activities | 96 | 22OCT07 | 25JAN08 |
| 7.10.02 | Data Validation | 45 | 10NOV07 | 24DEC07 |
| 7.11.02 | Data Evaluation Report | 32 | 09FEB08 | 11MAR08 |
| **TASK 11.0 WORK ASSIGNMENT CLOSE OUT** | | | | |
| 11.01 | Work Assignment Closeout Report (WACR) | 10 | 01JUN08* | 10JUN08 |
| 11.02 | Document Indexing | 28 | 01MAR08* | 28MAR08 |
| 11.03 | Document Retention/Conversion | 60 | 29MAR08* | 27MAY08 |




Start Date 14AUG05
Finish Date 05JUL08
Run Date 07SEP06 16:16

159W

Sheet 2 of 2

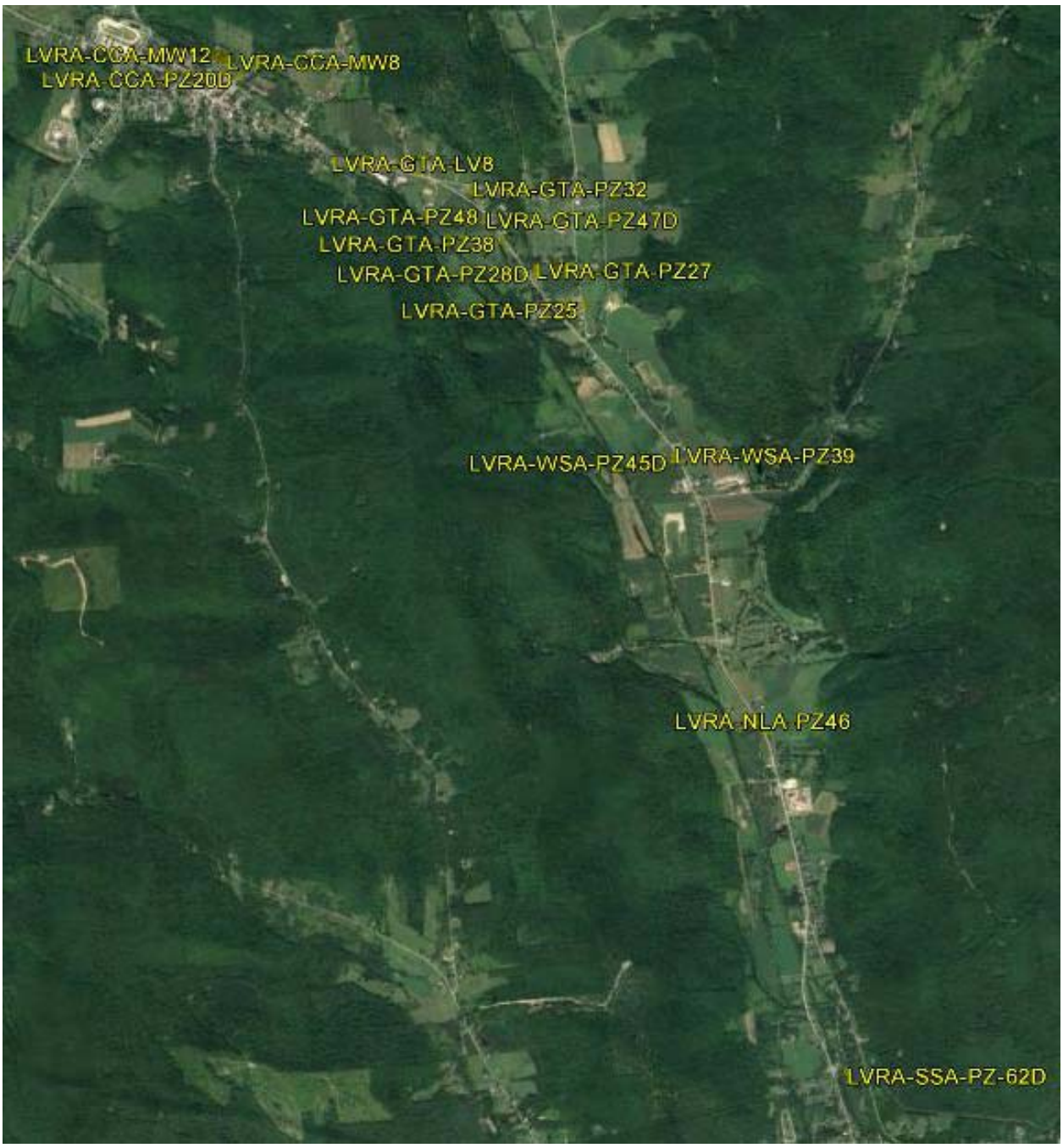
**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**LITTLE VALLEY SUPERFUND SITE - REMEDIAL ACTION**
**WA 159-RARA-02GP**
**BASELINE SCHEDULE**



# FIGURE 3-2

# APPENDIX B -- QUALITY ASSURANCE PROJECT PLAN ADDENDUM FOR REMEDIAL ACTION OF MONITORED NATURAL ATTENUATION AT THE LITTLE VALLEY SUPERFUND SITE, SEPTEMBER 2006

**APPENDIX C -- MONITORED NATURAL ATTENUATION MONITORING WELL NETWORK**



# APPENDIX D -- VAPOR INTRUSION SAMPLING LOCATIONS

Kahler Hill Rd
First St
Court St
353
Hill St
Mountain View Dr
242
Baker Rd
Whig St
Eckert Rd
Stone Chimney Rd
Refer to Figure 2
Refer to Figure 3
Refer to Figure 4
Refer to Figure 5
Fourth St
Kyler Hill Rd
Woodworth Hollow Rd
Town Line Rd
Liebler Hill Rd
Harter Ln
E Branch Bucktooth Run Rd
E Bucktooth Run Rd
N State St
Co Rd 94
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

**Legend**

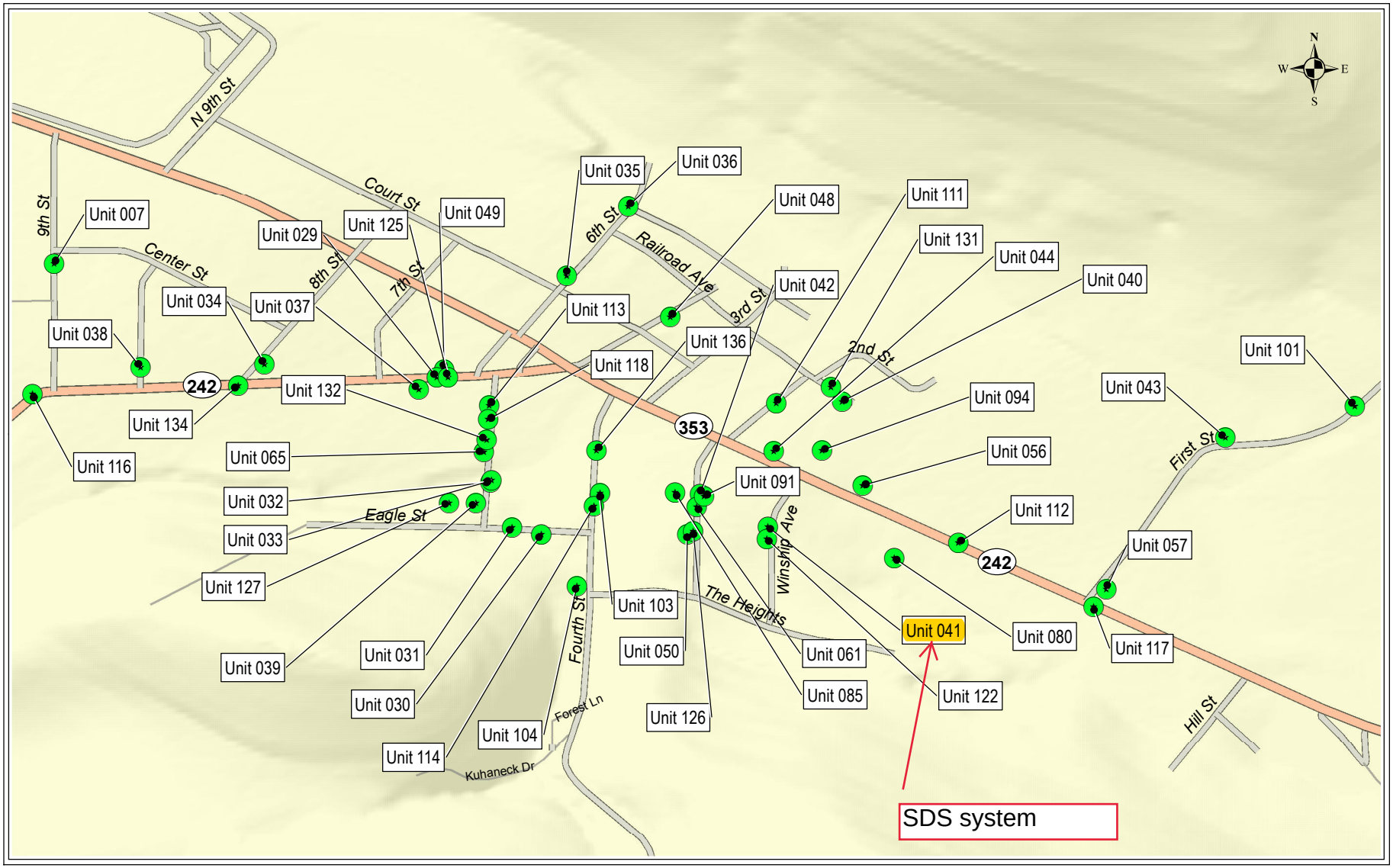
Unit Location

0 0.25 0.5 1 1.5 2 Miles

MXD: G:\Air Team\SERAS\ArcInfoProjects\SERAS01\SER00048_LittleValley\048_Unit_Locs_Fig_1.mxd

U.S. EPA Environmental Response Team
Scientific, Engineering, Response and Analytical Services
EP-W-09-031
W.A.# 0-048

Figure 1
Unit Locations
Little Valley Site
Little Valley, New York




U.S. EPA Environmental Response Team
Scientific, Engineering, Response and Analytical Services
EP-W-09-031
W.A.# 0-048

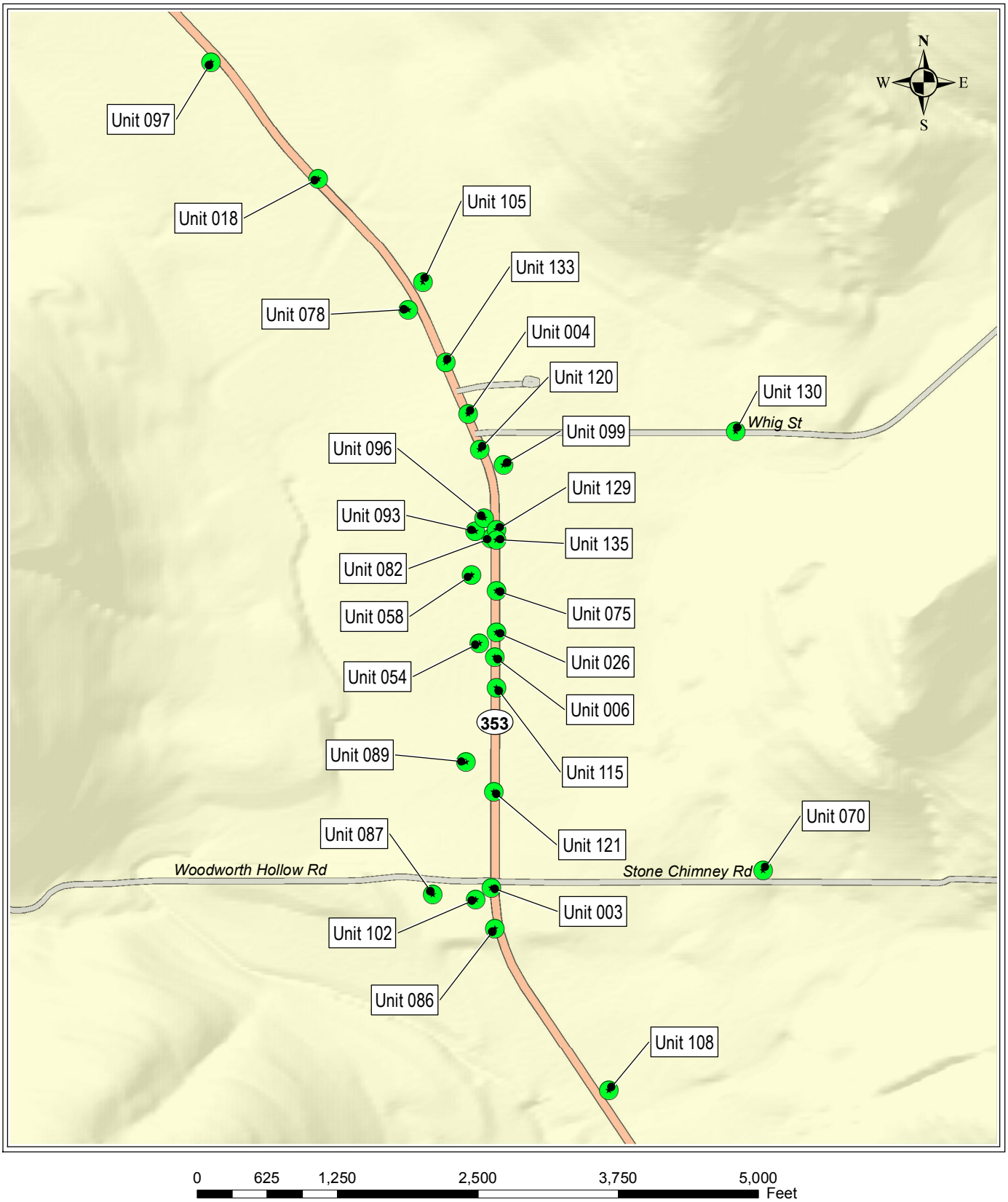
Figure 2
Unit Locations
Little Valley Site
Little Valley, New York


**Legend**

Unit Locations

U.S. EPA Environmental Response Team
Scientific, Engineering, Response and Analytical Services
EP-W-09-031
W.A.# 0-048

Figure 3
Unit Locations
Little Valley Site
Little Valley, New York

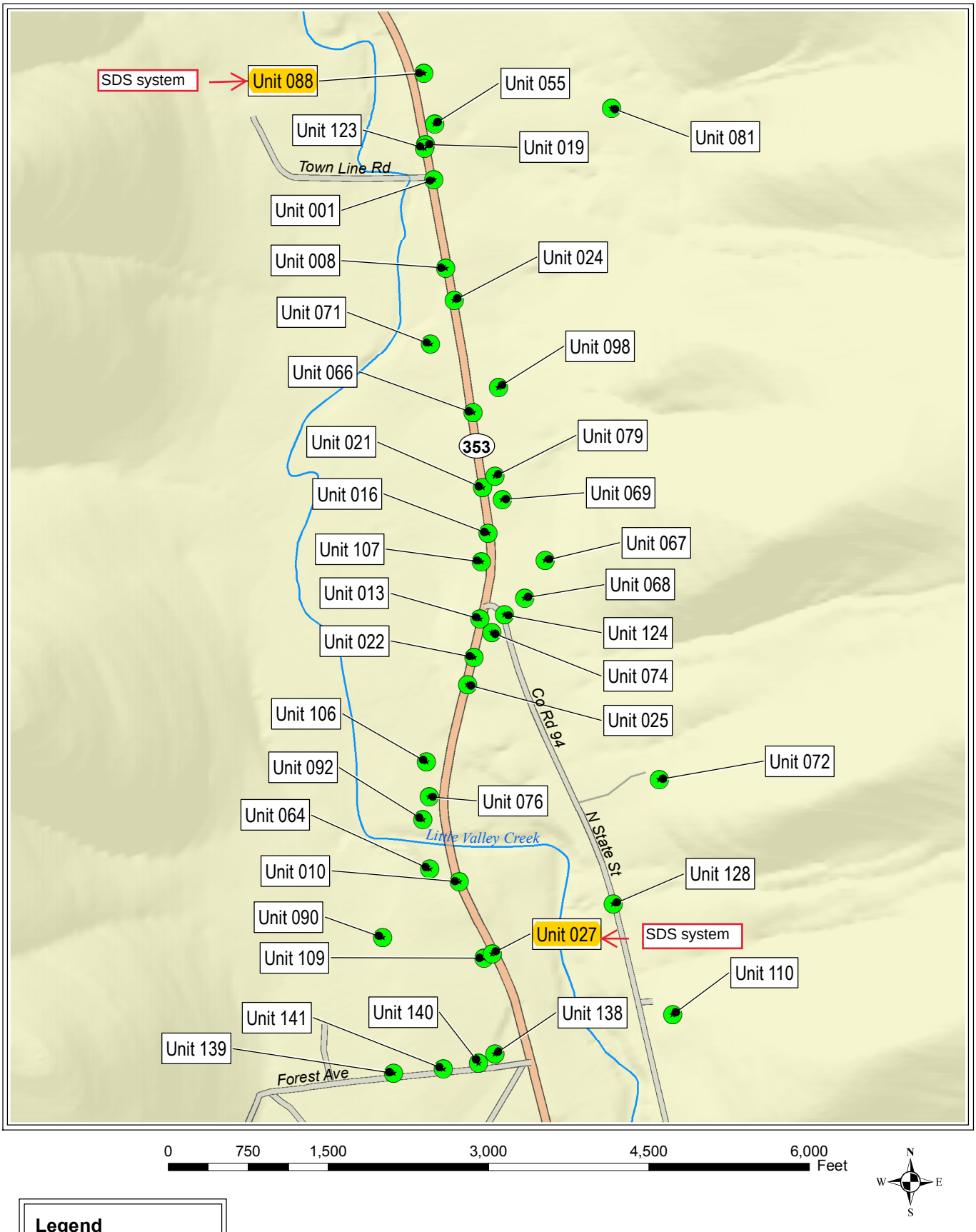



**Legend**

Unit Locations

U.S. EPA Environmental Response Team
Scientific, Engineering, Response and Analytical Services
EP-W-09-031
W.A.# 0-048

Figure 4
Unit Locations
Little Valley Site
Little Valley, New York




U.S. EPA Environmental Response Team
Scientific, Engineering, Response and Analytical Services
EP-W-09-031
W.A.# 0-048

Figure 5
Unit Locations
Little Valley Site
Little Valley, New York

G:\Air Team\SERAS\ArcInfoProjects\SERAS01\SER00048_LittleValley\048_Unit_Locs_Fig_5.mxd

## APPENDIX E -- INSPECTIONS

Based upon the manufacturer's recommendation of a five-year useful life for the fans in the vapor mitigation system, the fans were replaced in three of the systems in January 2017 (the owner of the fourth residence did not respond to repeated attempts to schedule the maintenance appointment). The vapor mitigation systems are inspected by EPA during the annual SVI sampling events. Based upon an inspection on March 7, 2017, it was concluded that three of the four mitigation systems are functioning as intended (EPA was not able to schedule access to the fourth residence, despite repeated letters and telephone calls).

An inspection of the MNA monitoring wells was conducted on September 20, 2016. In attendance were John DiMartino (RPM), Mark Denno (Hazardous Waste Support Branch), Eric Hausamann of NYSDEC (site project manager), George Momberger of NYSDEC (manages the POETs contract). Matt Holquist of AECOM (NYSDEC's POETs' O&M contractor) was also present. All monitoring wells were locked and accessible. While generally in good repair, as was noted above, five monitoring wells had broken hinges on their well casing covers and one monitoring well needed a new concrete collar around the base of the casing. These items were addressed by EPA's ERRS contractor in January 2017.

An inspection of three of the four soil vapor mitigation systems was performed on March 7, 2017 by John DiMartino and Dave Mickunas (EPA Environmental Response Team soil vapor intrusion sampling lead), as well as EPA's contractor Amy Dubois. As noted above, despite multiple letters and telephone calls, EPA was not able to schedule an inspection appointment for the fourth residence. The vapor mitigation systems all have vacuum, are secure and are operating as intended.

Inspections of the POETs were performed in October 2016 by AECOM, as detailed in its "2016 Annual Report for GAC Water Treatment System, Operation & Maintenance, Little Valley," dated February 2017. All POETs were in good repair and routine O&M was performed as noted above and detailed in the report.