SAMPLING AND ANALYSIS PLAN
FOR THE
ANNANDALE PCE SITE
REVISION 0

Prepared for

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region III

Prepared by

WESTON SOLUTIONS, INC.

Region III Superfund Technical Assessment and Response Team

12 November 2010

Approved by: _____ Date: _____

WESTON START Project Team Leader

Approved by: _____ Date: _____

U.S. EPA Region III
On-Scene Coordinator

Projected Dates of Sampling:	11/22/10 – 11/23/10
CERCLA ID/Site Spill Identifier No.:	N/A
Contract Name:	START-4
Contract No.:	EP-S3-10-05
Technical Direction Document No.:	WS01-10-10-005
Document Control No.:	W0036.1E.00060`

ACRONYM LIST

µg/kg	Micrograms per Kilograms
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
DQO	Data Quality Objective
EPA	Environmental Protection Agency
ERT	Environmental Response Team
IDW	Investigative Derived Waste
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NIOSH	National Institute for Occupational Safety and Health
OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Administration
PE	Performance Evaluation
PPE	Personal Protective Equipment
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
QC	Quality Control
RSL	Regional Screening Levels
SAP	Field Sampling Plan
SDR	Sample Discrepancy Report
SOP	Standard Operating Procedure
START	Superfund Technical Assessment and Response Team
SVOC	Semi volatile Organic Compound
TDD	Technical Direction Document
VOC	Volatile Organic Compound
WESTON®	Weston Solutions, Inc.

TABLE OF CONTENTS

Section **Page**

TABLE OF CONTENTS (CONTINUED)

Section **Page**

LIST OF TABLES

LIST OF FIGURES

LIST OF ATTACHMENTS

1. INTRODUCTION

This Sampling and Analysis Plan (SAP) identifies the data collection activities and associated quality assurance/quality control (QA/QC) measures specific to the Annandale PCE Site (the site) located in Annandale, Fairfax County, Virginia. All data will be generated in accordance with the quality requirements described in the START-4 *Program-Wide Uniform Federal Policy Act Quality Assurance Project Plan (QAPP)*, (WESTON, October 2010). The purpose of this SAP is to describe site-specific tasks that will be performed in support of the stated objectives. The SAP will reference the QAPP for generic tasks common to all data collection activities, including routine procedures for sampling and analysis, sample documentation, equipment decontamination, sample handling, data management, assessment, and data review. Additional site-specific procedures and/or modifications to procedures described in the START-4 Program-Wide QAPP are presented in the following SAP subsections and attached Standard Operating Procedures.

This SAP is prepared, reviewed, and approved in accordance with the procedures detailed in the START-4 Program-Wide QAPP. Any deviations or modifications to the approved SAP will be documented using **Table 1-1: SAP Revision Form.**

2. PROJECT MANAGEMENT AND SAP DISTRIBUTION AND PROJECT TEAM MEMBER LIST

Management of the site will be as documented in the START-4 Program-Wide QAPP and the Program-Wide START-4 Quality Management Plan (WESTON, April 2010). An organizational chart, communication pathways, personnel responsibilities and qualifications, and special personnel training requirements are presented in the START-4 Program-Wide QAPP and the START Program-Wide Quality Management Plan.

The personnel listed below will be involved in planning and/or technical activities performed for this data collection activity. Each will receive a copy of the approved SAP. A copy of the SAP will also be retained in the site file.

Name	Title	Organization	Phone Number	Email
Charles Fitzsimmons	OSC	EPA	410-305-3027	Fitzsimmons.Charlie@epamail.epa.gov
Robert McGlade	Program SOW Manager	START	610-701-3133	r.mcglade@westonsolutions.com
Craig LaCosse	Project Team Leader	START	414-406-1673	Craig.lacosse@westonsolutions.com
George Crawford	Health and Safety	START	610-701-3771	George.crawford@westonsolutions.com
Brian Magee	QA Reviewer	START	610-701-3097	Brian.magee@westonsolutions.com

NOTES:
OSC – On-Scene Coordinator
QA – Quality Assurance
START – Superfund Technical Assessment and Response Team
EPA – United States Environmental Protection Agency

3. PLANNING AND PROBLEM DEFINITION

3.1 PROBLEM DEFINITION

This Sampling and Analysis Plan was developed to assess potential risk to occupants at select residences possibly impacted by a release of dry cleaner-type chemicals and subsequent migration of contaminants via the vapor intrusion pathway in Annandale, VA. The volatile organic compounds (VOCs) of interest are tetrachoroethylene (PCE) and its degradation products trichloroethylene (TCE) cis-1,2-Dichloroethene (cis-1,2-DCE), and vinyl chloride (VC) as well as other recently detected compounds including benzene, xylenes, and chloroform.

Both indoor and ambient air sampling will be conducted to assess indoor air quality. The events leading to the investigation of indoor air at the residences was initiated by a suspected release in the vicinity of a residential property located at 4605 Randolph Drive in Annandale, Virginia as described below.

3.2 SITE HISTORY AND BACKGROUND

The Annandale PCE Site (Figure 1) is located in a combination of residential and retail/commercial sites and the limits of contamination are currently undefined. The Annandale PCE Site was discovered as a result of a complaint of bad tasting water from a private water supply well at a residential property located in Annandale, Virginia at 4605 Randolph Drive

(residence located at 37. 82416945 degrees north latitude and 77.173172 degrees west longitude). Two additional structures are present at the 4605 Randolph Drive residence in addition to the house. These structures are two sheds located on either side of the drainage area that is located behind the residence. An inactive heating oil underground storage tank (UST) is located along the front side of the house and an active above ground storage tank (AST) is located on the back side of the house (Figure 2). The property was built prior to 1966 and has been a residential property since construction as evident from an aerial photograph review by Marshall Miller & Associates, Inc. [MM&A (MM&A, 2010)]

The subject property is adjacent to retail/commercial sites to the north and west and an undeveloped lot and residential property to the east and south. This residential property is not connected to a municipal water supply and is one of several residential properties that utilize a private water supply well for drinking and/or supplemental property use (e.g., irrigation). This property along with adjacent properties is connected to a municipal sewer system.

The Virginia Department of Environmental Quality (DEQ) was notified of bad tasting water from a private water supply well located at 4605 Randolph Drive and arranged for Culligan of Hagerstown, Maryland to collect a sample from the well for laboratory testing. On May 10, 2010, a sample was collected from the water supply well and analyzed by Maryland Spectral Services, Inc. of Baltimore, Maryland. Analytical results of the water well sample indicated the detection of several VOCs.

Based on the detection of several VOCs from the private water supply well at 4605 Randolph Drive, the DEQ, under the State Lead Program, issued Pollution Complaint number 2010-3275 and arranged for Culligan to install a carbon filtration unit (CFU) to treat the water pumped from the well to the house. Subsequently, the DEQ identified nearby private water well users from records obtained through the Fairfax County Water Authority (FCWA) and arranged for testing of the wells in June 2010. VOCs were not detected in any of the off-site water supply wells.

The water supply well at 4605 Randolph Drive (pre and post CFU water) was later sampled on July 9, 2010, and analyzed for VOCs by EPA method SW-846 8260B. Analytical results of the July sampling event confirmed the presence of VOCs detected in the May 2010 sampling event in the untreated water. No detectable VOCs were identified in the post CFU filtered water.

The DEQ hired subcontractor MM&A to perform a limited soil and groundwater investigation at and in the vicinity of the residence at 4605 Randolph Drive. MM&A installed seven soil borings using direct-push technology (DPT) and hand auger techniques. A total of seven monitoring wells were installed within the soil borings indicated above. Field screening of the soils with a photoionization detector (PID) was completed in an effort to identify soils potentially impacted by contaminants.

One soil sample was collected form boring MW-6 at 8 to 12 feet below ground surface (bgs) based on the elevated PID results and analyzed for TPH-DRO by EPA Method SW-846 8015B. The analytical results indicated a concentration of 194 mg/kg in the soil at MW-6 indicating petroleum impact in the soil horizon at this location identified as a former location of a UST.

All seven monitoring wells were sampled for VOCs and SVOCs per EPA Methods SW-846 8260 and SW-846 8270, respectively. Several VOCs were detected including benzene, xylenes, methyl tert-butyl ether (MTBE) and diisopropyl ether (DIPE) at MW-6 and PCE, TCE, and cis-1,2-DCE at monitoring wells MW-2 and MW-3. Benzene, MTBE, PCE, and TCE exceeded drinking water Maximum Contaminant Levels (MCLs) or risk standards in groundwater. No SVOCs were detected.

The soil descriptions form the SI conducted by MM&A indicate primarily sand and silt textures. The bedrock in the vicinity of the site is metasedimentary and metaigneous rocks according the MM&A report (MM&A, 2010). Depth-to-bedrock based on the geologic well logs review by MM&A indicates a range from 53 to 98 feet bgs (MM&A 2010). Soil borings as described in the MM&A report indicate saprolite, a type of chemically weathered bedrock encountered below the depth of soil, as shallow as 8 feet bgs at monitoring well location MW-2 (behind residence). The saprolite was also encountered at monitoring well locations MW-3 and MW-4 and may be considered a stratigraphic layer retarding the downward migration of groundwater and dissolved contaminants. The only information available for the onsite water supply well is that it has a 6-inch diameter well casing and the well is assumed to be bored into the bedrock.

The depth-to-water observed in the monitoring wells ranged from 5 to 10 feet bgs. As a result of the shallow depth-to-water, and the sandy soils, the potential exists for vapors from the contaminants to migrate via vapor intrusion into the basements (excavated into soils

approximately 3 to 5 feet) of nearby residential properties and affect air quality. Due to these findings, select residential properties will be sampled for evidence of vapor intrusion by use of indoor air sampling methods.

3.3 CONTAMINANTS OF CONCERN/TARGET ANALYTES

Analytes and/or classes of compounds that will be monitored include the following:

Volatile Organic Compound	Detection Limit (ppbv)	CAS Number
benzene	0.1	71432
chloroform	0.1	67663
Trichloroethene (TCE)	0.1	79016
Tetrachloroethene (PCE)	0.1	127184
1,1-dichloroethene	0.1	75354
xylenes	0.1	1330207
vinyl chloride (VC)	0.1	75014

4. PROJECT DESCRIPTION AND SCHEDULE

Site activities to be performed as part of this SAP include the assessment of vapor intrusion at select residential properties in Annandale, VA. This assessment will focus on the collection of indoor air samples by START personnel at the residential property of interest using 6-L summa canisters for the evaluation of VOCs of interest including PCE and its degradation products along with benzene, chloroform, and xylenes. The samples will be collected over a 24-hour period and submitted to Test America for analysis. For the purposes of this SAP, the following organizations will have the following roles/responsibilities:

Organization	Role/Responsibility/Task
EPA Region III OSC	Coordination with stakeholders and other federal agencies; START contractor direction
Test America Laboratory	Provide summa canisters for collection of air samples; provide receipt of air samples collected by START; extraction and analysis of air samples; coordination with other laboratory resources as needed.
START Contractor	Technical support to the OSC; air sampling, and monitoring; packaging of air samples for OSC or shipping agent/courier delivery to Test America Laboratory.

The schedule of activities and reports is as follows:

- Initial Site Walkthrough - 03 November 2010
- SAP/QAPP – 12 November 2010
- SUMMA® Canister Sampling – 17-18 November 2010
- Unvalidated data - received within 14 days of sampling event
- Validated data [Electronic Data Deliverable (EDD)] – received within 30 days of sampling event
- Final Report - 4 weeks after receipt of final validated data

All project deliverable dates are estimated based on the information available at the time of the SAP completion. New information, additional tasks, and events outside START control may result in revisions to these dates.

START personnel will collect, package, and deliver the samples to a Test America courier within 24-hours of collection. Test America personnel will receive samples from the Test America courier upon arrival at the Test America laboratory. Analytical turnaround time for results will be 14 days for fully unvalidated data and 30 days for final validated data.

5. PROJECT QUALITY OBJECTIVES

5.1 PROJECT OBJECTIVES

Sufficient data will be obtained from a representative number of samples to support defensible decisions by EPA and to determine whether further actions at the site are necessary.

The following is a list of project objectives that may apply to the site investigation:

- To assess air quality to determine the impact on human health and/or the environment.
- Determine/verify the magnitude of the release and extents of contamination
- Identify the areas of highest contamination
- Determine/verify if contamination is migrating or has migrated

More information about the sampling procedures to support this decision-making process is provided in Section 6.

5.2 MEASUREMENT AND PERFORMANCE CRITERIA

Generic measurement and performance criteria described in the START-4 Program-Wide QAPP will be used. These criteria will ensure that data are sufficiently sensitive, precise, accurate, and representative to support site decisions.

5.3 DATA QUALITY OBJECTIVES

Data quality objectives (DQOs) address requirements that include when, where, and how to collect samples; the number of samples; and the limits on tolerable error rates. These steps should be revisited periodically as new information about a problem is learned.

Sections 11 and 37 of the START-4 Program-Wide QAPP present additional information about DQOs. In order to meet those overall project objectives, the project-specific Data Quality Objectives are as follows:

- Collect indoor air analytical data that can be directly compared to EPA Region III Risk-Based Concentrations for the specific chemicals of potential concern (PCE and primary degradation products) in order to determine if they are posing a potential risk to human health.

- Collect ambient (exterior) air samples to establish ambient background concentrations of the specific chemicals of potential concern

- Collect indoor air samples in sub-grade portions of the buildings where residents may spend the most amount of time (e.g., basement bedrooms, etc.) and in locations where vapor intrusion migration is most likely (e.g., sump areas, gaps between the basement walls and floating slab floors, etc.)

- Collect indoor air samples in ground level areas of the house to assist in determining if the specific chemicals of potential concern are resulting from other internal household sources (e.g., dry cleaned clothing, chlorinated drinking water, etc.).

In order to meet these objectives, indoor air analytical data may also be evaluated against the following criteria:

- Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites.
- Removal Action Levels.
- State-specific screening levels.
- National Institute for Occupational Safety and Health (NIOSH)/Occupational Safety and Health Administration (OSHA) exposure limits.
- Other.

6. SAMPLING DESIGN

Air samples will be collected a three residential location to assess the potential for vapor intrusion using 6-L summa canisters (Figure 3). The volatile organic compounds (VOCs) of interest are PCE and its degradation products along with benzene, chloroform, and xylenes. START personnel will provide support during the ongoing vapor intrusion studies by performing the following:

1. Indoor air samples will be collected over a 24-hour period using SUMMA® canisters with controlled-flow regulators in accordance with WESTON SOPs#801 and 806. At least one (1) co-located indoor air sample will be collected by placing two (2), 6-L SUMMA® canisters in immediate proximity to each other in order to approximate identical sampling point. Outdoor ambient air monitoring and/or sampling for PCE and other VOCs will be conducted to establish ambient conditions. Sampling will be conducted at the following locations for a total of twelve (12) samples:

    - LOCATION 1 (4605 Randolph Drive) - (3) 24-hour SUMMA® – (2) in basement and (1) on 1st floor
    - LOCATION 2 – (4609 Randolph Drive) (3) 24-hour SUMMA® – (2) in basement and (1) on 1st floor
    - LOCATION 3 (4613 Randolph Drive) - (2) 24-hour SUMMA® – (1) in basement and (1) on 1st floor
    - LOCATION 4 (Background at 4605 Randolph Drive) - (2) 24-hour SUMMA® - (2) Outdoor Ambient Air
    - Co-Located Sample – Location to be determined in the field
    - Equipment Lot (“Trip”)Blank

    The exact sample locations within each residence will be determined by the EPA OSC. Access to the properties will be arranged by EPA. Laboratory procurement and sampling will be performed by START.

2. Acquire local meteorological data (wind speed and direction, temperature, relative humidity, rainfall, barometric pressure, etc.) prior to (7 days) and concurrent with the SUMMA® canister sampling.

Samples will be analyzed by EPA Method TO-15 for the parameters listed in Table 6-1: Sampling and Analysis Summary. In addition, requirements for sample containers, volume, preservation, and quality control (QC) samples are presented in Table 6-1.

6.1 SAMPLE NUMBERING SYSTEM

Weston Solutions, Inc. (WESTON®) START will assign each sample a unique number. The sample number highlights the suspected contaminated area and location, and will be used for documentation purposes in field logbooks, as well as for presentation of the analytical data in memoranda and reports. The project samples will be identified using the following format:

The sample ID will be composed of three components:

[_ _] [_ _] [_ _]
1 2 3

Component 1 – Defines the site location using a number:
RES1 = Residential property at 4605 Randolph Drive
RES2 = Residential property at 4609 Randolph Drive
RES3 = Residential property at 4613 Randolph Drive

Component 2 – Is the individual sample type and location identifier where:
IA## = indoor air sample
AA## = ambient air sample

Component 3 – Defines QA sample type:
00 = Environmental sample
01 = Duplicate sample
02 = Equipment Lot ("Trip") blank

Examples of the sample identifications for the site are as follows:

A typical sample may be identified as RES1-IA01-00. The "RES1" indicates the sample was collected from the residential property at 4605 Randolph Drive, and the "IA" indicates the sample is an indoor air sample at location 01. The "00" indicates that the sample is an environmental sample..

6.2 MANAGEMENT OF INVESTIGATION DERIVED WASTES

For the purposes of this SAP, investigation-derived wastes are defined as any byproduct of the field activities that is suspected or known to be contaminated with hazardous substances. The performance of field activities will produce waste products such as spent sampling supplies (e.g., tubing if utilized) and expendable PPE. Spent sampling supplies (tubing) and expendable PPE will be collected in plastic bags Expendable PPE will be collected and disposed of as non-hazardous solid waste.

7. SAMPLING PROCEDURES

7.1 SAMPLING STANDARD OPERATING PROCEDURES

WESTON START SOPs, EPA ERT SOPs, and other SOPs that will be used during the site evaluation are provided in Attachment A.

7.2 DECONTAMINATION PROCEDURES

Due to the equipment and PPE involved in sir sampling, site-specific decontamination procedures are not required for the air sampling event. Sampling supplies and PPE are expendable and will be disposed of as detailed in **Section 6.2**

8. SAMPLE HANDLING, TRACKING, AND CUSTODY PROCEDURES

All samples will be identified, handled, shipped, tracked, and maintained under chain-of-custody, in accordance with the START-4 Program-Wide QAPP.

9. FIELD ANALYTICAL METHODS AND PROCEDURES

9.1 FIELD ANALYTICAL METHODS AND STANDARD OPERATING PROCEDURES

WESTON START SOPs, EPA ERT SOPs, and other SOPs that will be used during the site evaluation are provided in Attachment A.

9.2 FIELD TESTING LABORATORY

Field testing is not anticipated for this project.

9.3 SCREENING/CONFIRMATORY ANALYSES

For the purposes of this SAP, field screening and confirmatory analyses are not required.

10. FIXED LABORATORY ANALYTICAL METHODS AND PROCEDURES

The laboratory responsible for all analyses is the Test America Burlington Laboratory in South Burlington, VT. The Point of Contact for this project at the Test America Burlington Laboratory is:

Don Dawicki
TestAmerica Burlington Laboratory
30 Community Drive
Suite 11
South Burlington, VT 05403-6809
802.923.1026 (voice)
802-660-1919 (fax)
Don.Dawicki@testamericainc.com

11. QUALITY CONTROL ACTIVITIES

11.1 FIELD QUALITY CONTROL

The number of QC samples collected for each analytical parameter and concentration level are listed in Table 6-1**.** QC samples for this sampling event consist of one (1) equipment lot ("Trip") blank and one (1) co-located sample pair. The equipment lot ("trip") blank will evaluate potential sample equipment contamination (SUMMA canister and vacuum gauge, if utilized) and the co-located sample pair will evaluate sample variance. The QC sample determination and frequency is in accordance with Tale 6-1 and the START-4 Program-Wide QAPP, Section 28.

11.2 ANALYTICAL QUALITY CONTROL

QC for analytical procedures will be performed at the frequency described in the START-4 Program-Wide QAPP, Section 28. In addition, method-specific QC requirements will be used to ensure data quality.

11.3 PERFORMANCE EVALUATION SAMPLES

Performance Evaluation (PE) samples, if required, will be procured and analyzed for the subject parameters by the Test America Burlington Laboratory.

12. DOCUMENTATION, RECORDS, AND DATA MANAGEMENT

Documentation, record keeping, and data management activities will be conducted in accordance with the START-4 Program-Wide QAPP, Section 33.

Analytical reports comprise final results (uncorrected for blanks and recoveries, unless specified), methods of analysis, levels of reporting, surrogate recovery data and method blank data. In addition, special analytical problems will be noted in the case narratives. The number of significant figures reported will be consistent with the limits of uncertainty inherent in the analytical method. If any analytical anomalies were encountered during the analyses, it is documented in the case narrative and copies of the Sample Discrepancy Reports (SDRs) or Corrective Action Reports (CARs) must be included in the data packages.

12.1 DATA DELIVERABLES

The laboratory will report all analytical results using Level II, full Contract Laboratory Program (CLP) – type documentation reports.

12.2 DATA REPORTING

Data will be reported by sample delivery group or chain-of-custody number (i.e. in the same batches as received at the laboratory).

All air samples will be reported in both parts per billion by volume (ppbv) and $\mu g/m^3$. In some cases, a modification of the referenced method may be necessary to achieve the required reporting limits or provide analysis of difficult sample matrices. When modifications are performed, the specific alterations, as well as the justification for the change, will be presented in the case narrative accompanying the data report. It is anticipated that individual sample reporting units may vary as a result of dilution requirements, variability in sample weight or volume used to perform the analysis, dry weight adjustment for solid samples, the presence of analytical background contaminants, or other sample or analysis related conditions.

13. QUALITY ASSURANCE ASSESSMENT AND CORRECTIVE ACTIONS

One field audit may be conducted during the early phase of a long-term response activity. Field sampling and field analytical procedures will be assessed for conformance with procedures described in the START-4 Program-Wide QAPP and with this site-specific SAP. Findings will be documented in a report to management. Corrective actions in response to audit findings will be initiated, implemented, and checked according to the START-4 Program-Wide QAPP, Section 32.

Any modifications or corrections to sampling documentation will be made via memoranda to file.

14. REPORTS TO MANAGEMENT

Reports to management will be written and distributed in accordance with the START-4 Program-Wide QAPP, Section 33.

15. STEPS 1, 2, AND 3: DATA REVIEW REQUIREMENTS AND PROCEDURES

Step 1: Data collection activities, including sample collection and data generation, will be verified in accordance with the START-4 Program-Wide QAPP, Section 34.

Step 2: Data will be validated by a third party in accordance with the EPA Region III Modifications to the National Functional Guidelines for Data Validation.

Step 3: Data will be reviewed for usability in accordance with the START-4 Program-Wide QAPP, Section 37.

TABLES

Table 1-1 SAP Revision Form

Annandale PCE Site Sampling Table, Annandale, VA
OSC: Charlie Fitzsimmons
TDD: WS01-10-10-005

Date	Revision Number	Proposed Change to SAP/QAPP	Reason for Change of Scope/Procedures	SAP Section Superseded	Requested By	Approved By

Notes:

TDD – Technical Direction Document

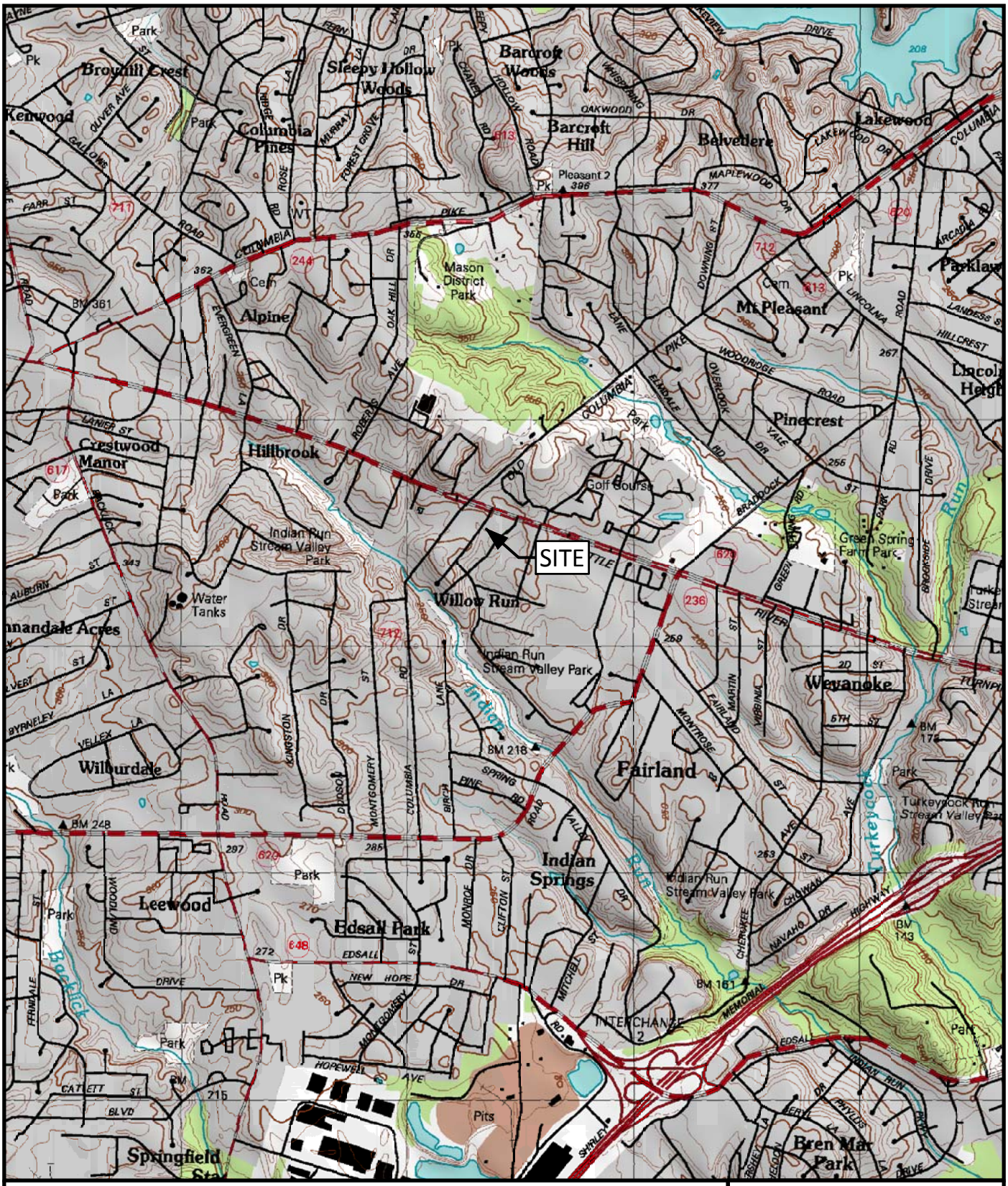
OSC – On-Scene Coordinator

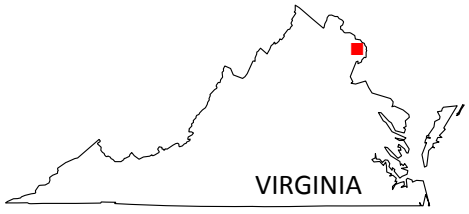
Table 6-1 Sampling and Analysis Summary

Annandale PCE Site Sampling Table, Annandale, VA
OSC: Charlie Fitzsimmons
TDD: WS01-10-10-005

Matrix	Analytical Parameter	Analytical Method	Containers (Numbers, Size, and Type)	Preservation Requirements	Number of Sampling Locations	Number of Field Duplicates	Number of MS/ MSDs	Number of Blanks (Trip, Field, Equipment Rinsate)	Total Number of Samples to Laboratory	Holding Time
Air	VOCs, Detection Limit 0.1 ppbv	TO-15	6-L Summa Canisters	Ambient Temperature	10	Co-located; 1 per 20	None	1 Equipment Lot ("Trip") Blank	12	14 days from sample collection

FIGURES





Data Sources:
Basemap - USGS 7.5' Annandale, VA Quadrangle - 1994
Contour Interval = 10'

N

Coordinate System:
PA State Plane, NAD83, feet

0 2,000
Feet

Annandale PCE SITE
Annandale, Virginia

Figure 1
Site Location Map

TDD#: WS01-10-10-005
Contract: EP-S3-10-05

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File: \\Fsfed01\TIG\EPA_Region_III\Annandale\mxd\Site_Location.mxd, 11-Nov-10 14:26, zieglera

Legend

MW-1 MONITORING WELL LOCATION / ID

Data Sources:
Imagery: ESRI Bing Map Service, 2010

Coordinate System: GCS WGS 1984

N

0 70
Feet

Annandale PCE Site
Annandale, Virginia

Figure 2
Site Features Map

TDD#: WS01-10-10-005
Contract: EP-S3-10-05

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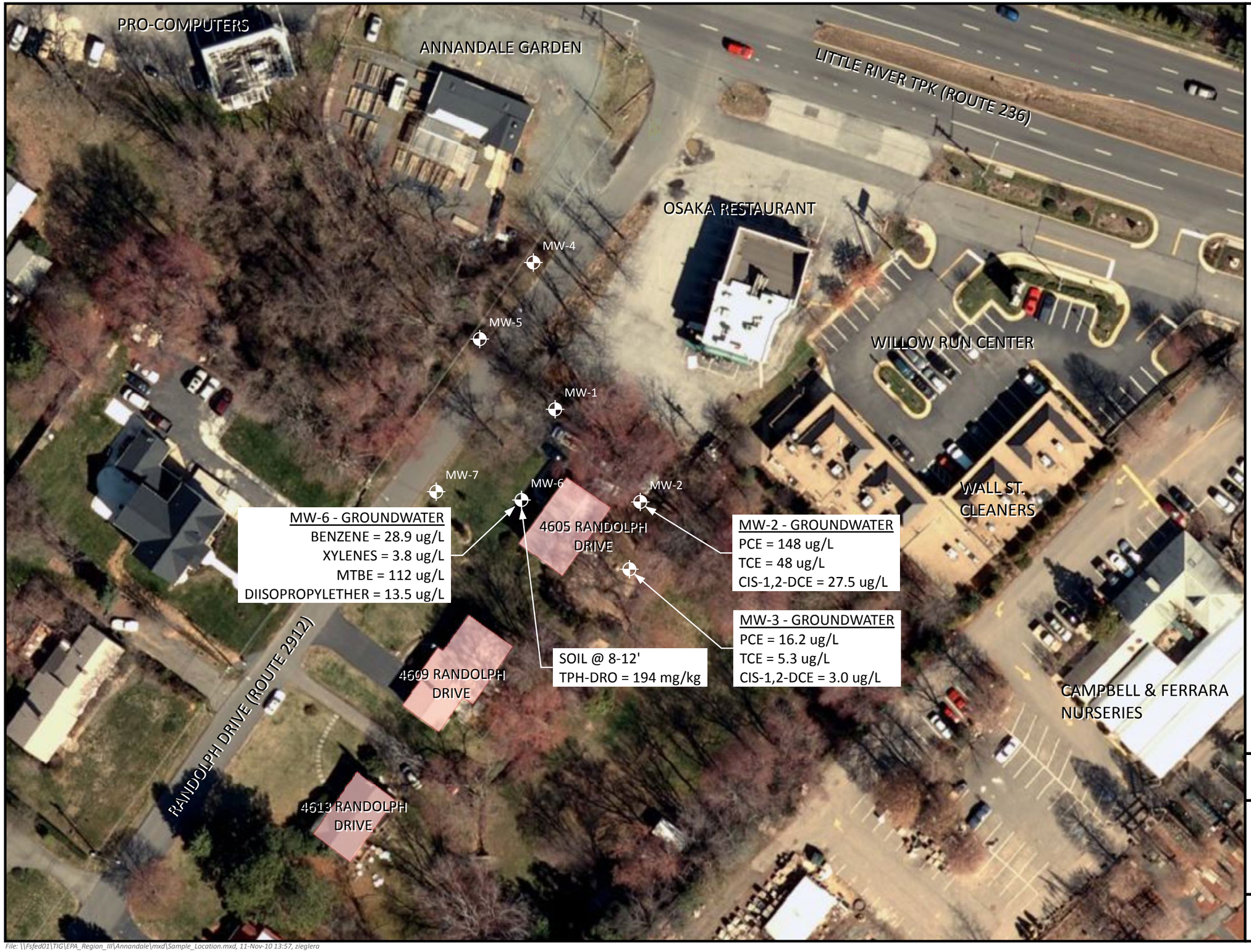

Legend

MW-1 MONITORING WELL LOCATION / ID

Proposed Indoor Air Sample Locations

Data Sources:
Imagery: ESRI Bing Map Service, 2010

Coordinate System: GCS WGS 1984

N

0 70

Feet

Annandale PCE Site
Annandale, Virginia

Figure 3
Sample Location Map

TDD#: WS01-10-10-005
Contract: EP-S3-10-05

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ATTACHMENTS

ATTACHMENT A

LIST OF APPLICABLE EPA ERT AND WESTON SOPs

WESTON SOPs

- ☐ SOP #002 - Safety Plan Selection
- ☐ SOP #006 - Emergency Response
- ☐ SOP #009 - Site Inspection
- ☐ SOP #014 - Analytical Procurement
- ☐ SOP #015 - Sampling Plan Selection

Documentation:

- ☐ SOP #101 - Logbook Documentation
- ☐ SOP #102 - Field Notes
- ☐ SOP #103 - Chain-of-Custody Documentation
- ☐ SOP #104 - Photographic and Video Documentation

Air Monitoring:

- ☐ SOP #709 - Operation and Maintenance of HNU Photoionization Detector (PID)
- ☐ SOP #710 - Operation and Maintenance of Organic Vapor Analyzer (OVA)

Air Sampling:

- ☐ SOP #801 - Indoor Air Sampling
- ☐ SOP #806 - Summa Canister Sampling

EPA ERT SOPs:

- SOP #1001 - Chromatographic Peak Integration Procedures
- SOP #1003 - Confidential Reporting of Data Integrity Issues
- SOP #1015 - Data Validation Procedures for Routine Volatile Organic Analysis
- SOP #1016 - Data Validation Procedures for Routine Organic Analyses
- SOP #1703 - SUMMA Canister Cleaning Procedure
- SOP #1704 - SUMMA Canister Sampling
- SOP #1706 - SUMMA Canister Field Standards
- SOP #1814 - GC/MS Analysis of Sorbent Tubes and Canisters
- SOP #1816 - Indoor Air Analysis of Volatile Organic Compounds by GC/MS
- SOP #2001 - General Field Sampling Guidelines
- SOP #2002 - Sample Documentation
- SOP #2003 - Sample Storage, Preservation and Handling
- SOP #2004 - Sample Packaging and Shipment
- SOP #2005 - Quality Assurance/Quality Control Samples
- SOP #2008 - General Air Sampling Guidelines
- SOP #2101 - Retrieving Meteorological Information
- SOP #2105 - Indoor Air Assessment, Sampling and Monitoring Guidelines
- SOP #2114 - Photoionization (PID) Detector (HNU)