Tetra Tech EM Inc.

7 Creek Parkway, Suite 700, Boothwyn, PA 19061 ◆ (610) 485-6410 ◆ FAX (610) 485-8587

April 29, 2008

Mr. Todd Richardson
On-Scene Coordinator
U.S. Environmental Protection Agency Region 3
1650 Arch Street
Philadelphia, PA 19103

Subject: **Final Sampling and Analysis Plan for the Jay-Cee Cleaners Site**
EPA Contract No. EP-S3-05-02
TDD No. E23-014-08-02-003
Document Tracking No. 0485

Dear Mr. Richardson:

Tetra Tech EM Inc. (Tetra Tech) is submitting the final sampling and analysis plan (SAP) for the Jay-Cee Cleaners site. The SAP summarizes the planned residential well sampling and drilling investigation at the site. If you have any questions regarding this report, please call me at (215) 651-4022.

Sincerely,

Jordan Vaughn
Project Manager

Enclosure

cc: TDD File

FINAL SAMPLING AND ANALYSIS PLAN
FOR THE
JAY-CEE CLEANERS SITE
NELSONIA, ACCOMACK COUNTY, VIRGINIA

Prepared for

U.S. Environmental Protection Agency Region 3
Hazardous Site Cleanup Division
1650 Arch Street
Philadelphia, PA 19103

Prepared by

Tetra Tech EM Inc.
7 Creek Parkway, Suite 700
Boothwyn, PA 19061

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April 29, 2008

Prepared by

Jordan Vaughn
Project Manager

Approved by

Marian Murphy
START Point of Contact

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1.0 INTRODUCTION

Under Eastern Area Superfund Technical Assessment and Response Team (START) Contract No. EP-S3-05-02, Technical Direction Document (TDD) No. E23-014-08-02-003, U.S. Environmental Protection Agency (EPA) Region 3 tasked Tetra Tech EM Inc. (Tetra Tech), with a removal site evaluation at the Jay-Cee Cleaners site in the City of Nelsonia, Accomack County, Virginia. The purpose of this removal site evaluation is to confirm the presence of hazardous substances, primarily tetrachloroethene (PCE), trichloroethene (TCE), and *cis*-1,2-dichloroethene (DCE), in the shallow and intermediate soil and groundwater at the site; to determine the lateral and horizontal extents of contamination; to establish the local groundwater flow direction; and to determine if residential wells near the site have been impacted. To accomplish this, Tetra Tech proposes to conduct a subsurface investigation at the site and to continue monitoring residential wells located in the vicinity of the site.

This sampling and analysis plan (SAP) presents site background information in Section 2.0, describes project objectives and data use in Section 3.0, outlines the proposed field investigation in Section 4.0, summarizes analytical parameters in Section 5.0, describes quality assurance and quality control (QA/QC) procedures in Section 6.0, presents project deliverables in Section 7.0, and presents a project schedule in Section 8.0. All references cited in this SAP are listed after the text. Tetra Tech developed this SAP in accordance with the provisions of the "Quality Assurance Project Plan (QAPP) for START" (Tetra Tech 2006).

2.0 BACKGROUND

This section describes the site and its location, outlines the site's history, and summarizes previous site investigation activities.

2.1 SITE LOCATION

The Jay-Cee Cleaners site (site) is located at 16163 Lankford Highway, approximately 300 feet south of the intersection of Lankford Highway (US Route 13) and Nelsonia Road (State Road 187), in the City of Nelsonia, Accomack County, Virginia. The geographic coordinates of the approximate center of the site are latitude 37.8186 north and longitude 75.5883 west (U.S. Geological Survey [USGS] 1965, photorevised 1986). A Site Location Map is provided as Figure 1.

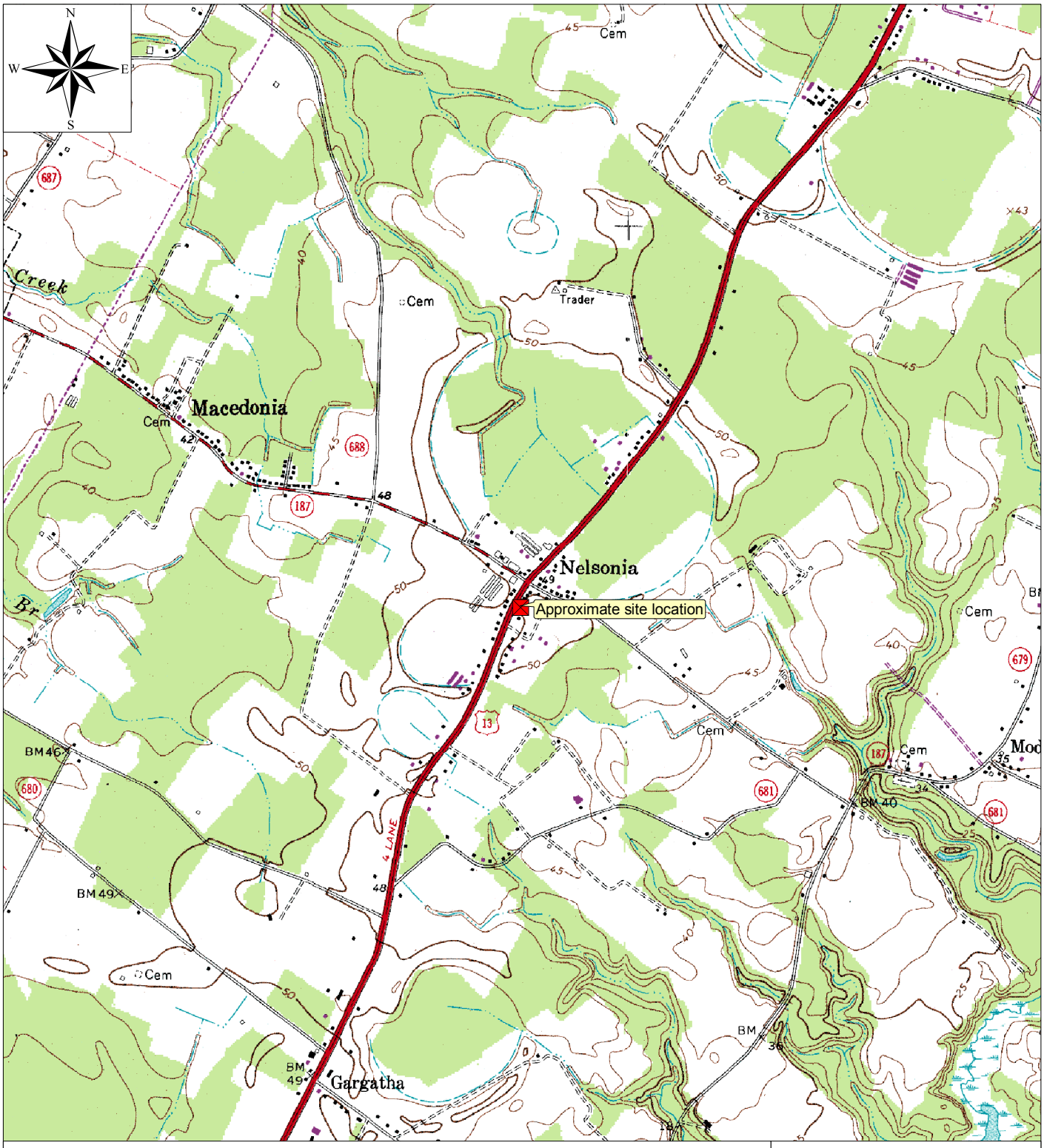
2.2 SITE DESCRIPTION

The site is an approximately 1.1-acre parcel of land with an approximately 3,000-square-foot, single-story structure located at the center of the property (ECS Mid-Atlantic, LLC [ECS] 2007). The site operated as a dry cleaner from approximately 1957 to 2003 (ECS 2007). The site is located at approximately 50 feet above mean sea level and slopes gently to the southwest (USGS 1965, photorevised 1986).

The site is located in a mixed commercial and residential area. Nearby commercial properties include the Royal Farm convenience store and gas station, located immediately northeast of the site, and Complete Auto vehicle maintenance and repair shop, located immediately south of the site. Nearby residential properties are located along Lankford Highway, Nelsonia Road, and Leigh Street. The surrounding area includes additional residential properties, agricultural land, and woodland. Figure 2, Site Layout Map, shows the location of Jay-Cee Cleaners, local streets, and nearby commercial properties (Accomack County 2002).

2.3 SITE HISTORY

In April 2007, a Phase II Environmental Site Assessment (ESA) was completed by ECS for the Jay-Cee Cleaners property. During the ESA, 11 soil borings were completed to maximum



Source: Modified from USGS 7.5-Minute Series Topographic Quadrangle; Bloxom, Virginia

0 0.25 0.5 Miles

Approximate Site Location =

Jay-Cee Cleaners Site
Nelsonia, Accomack County, Virginia

Figure 1
Site Location Map

TDD No. E23-014-08-02-003
EPA Contract No. EP-S3-05-02

Map created on November 19, 2007
by D. Call, Tetra Tech EM Inc.

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Approximate Site Location =

Jay-Cee Cleaners Site
Nelsonia, Accomack County, Virginia

Figure 2
Site Layout Map

TDD No. E23-014-08-02-003
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Map created on November 19, 2007
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depths of between 4.0 and 8.0 feet below ground surface (bgs) at various locations of concern throughout the property. Soil samples were collected from three of the 11 borings and analyzed for volatile organic compounds (VOC); groundwater samples were collected from two of the 11 borings and analyzed for VOCs. Laboratory analytical results indicated elevated concentrations of PCE and/or several PCE-related compounds, including TCE and DCE, in all three of the soil samples. Detected maximum concentrations of PCE, TCE, and DCE in the soil were detected at 9,200 miligrams per kilogram (mg/kg), 100 mg/kg, and 36 mg/kg, respectively. Both groundwater samples results indicated elevated concentrations of PCE and PCE-related compounds, including TCE and DCE. The maximum concentrations of PCE, TCE, and DCE detected in the groundwater samples were 100,000 micrograms per liter (µg/L), 6,300 µg/L, and 52,000 µg/L, respectively.

Following completion and review of the ESA, the Virginia Department of Environmental Quality (VA DEQ) was notified of the elevated VOC concentrations. VA DEQ, in turn, notified EPA of the elevated concentrations. In September 2007, EPA tasked Tetra Tech with collecting groundwater samples from the nearby residences for VOC analysis. In October 2007, Tetra Tech collected groundwater samples from seven residential properties located near the site. All samples were analyzed for VOCs. Analytical results indicated trace amounts of PCE and/or TCE in two of the residential wells. The maximum concentrations of PCE and TCE detected in the residential wells were 0.6 µg/L and 0.06 µg/L, respectively.

3.0 PROJECT OBJECTIVE AND DATA USE

The objective of the proposed work is to confirm the presence of VOCs in the shallow soil and groundwater at the site, to better define the lateral and horizontal extents of contamination, to establish the local groundwater flow direction, and to determine if residential wells near the site have been impacted. To accomplish this, Tetra Tech proposes to complete at the site approximately 10 Geoprobe® direct-push soil boreholes to below the top of the shallow water table, or approximately 10 feet bgs, and, if warranted by analytical results from the shallow

wells, one hollow stem auger borehole to the base of the shallow aquifer, or approximately 75 feet bgs. Soil samples will be collected from the shallow and intermediate boreholes. Temporary wells will be installed in all boreholes, and groundwater samples will be collected from the temporary wells. Soil and groundwater samples will be analyzed to determine the presence and/or extent of VOCs. The temporary wells will be surveyed and the information used to determine groundwater flow direction. Additionally, Tetra Tech proposes to continue quarterly sampling of residential wells located near the site. Tetra Tech will also attempt to obtain well logs from the neighbors and the County Health Department. Results from this proposed work will be used to determine the need for further investigations at the site.

4.0 PROPOSED FIELD INVESTIGATION

This section describes the scope of work, Tetra Tech personnel responsible for the tasks presented in this SAP, proposed sampling activities and field measurements, and a summary of analysis methodologies for the project.

4.1 SCOPE OF WORK

As part of the site evaluation, Tetra Tech and its subcontractors will perform the following tasks:

- Complete approximately 10 boreholes to below the top of the shallow water table, or approximately 10 feet bgs, using Geoprobe direct-push methods.
- Collect approximately 10 subsurface soil samples from the boreholes for laboratory analysis. Soil samples will be analyzed for VOCs.
- Install approximately 10 temporary monitoring wells in the boreholes and collect groundwater samples for laboratory analysis. Groundwater samples will be analyzed for VOCs.
- If warranted by analytical results of samples collected from the shallow wells, complete one intermediate borehole to the bottom of the shallow aquifer, or approximately 75 feet bgs, using hollow stem auger drilling methods. Continuous core will be collected during drilling.

- If an intermediate well is completed, collect approximatley five subsurface soil samples and approximately one groundwater sample from the intermediate borehole for laboratory analysis. Soil and groundwater samples will be analyzed for VOCs.

- Survey the temporary monitoring wells and determine the local groundwater flow direction.

- Collect groundwater samples from the residential wells located in the vicinity of the site. Residential well groundwater samples will be sampled for VOCs.

- Attempt to obtain well logs of residential wells located in the vicinity of the site.

4.2 KEY PROJECT PERSONNEL

The Tetra Tech project manager for the TDD is Ms. Jordan Vaughn. As the project manager, Ms. Vaughn is responsible and accountable for all aspects of the project scope of work, including achieving the technical, financial, and scheduling objectives for the project. Ms. Vaughn will communicate directly with the EPA On-Scene Coordinator (OSC) for this project, Mr. Todd Richardson.

Other Tetra Tech personnel proposed for the project are listed in Table 1. The technical or field support personnel used to support the project may vary depending on the specific needs of the project, site conditions, and availability of staff.

TABLE 1
PROPOSED TETRA TECH PROJECT PERSONNEL

Project Function	Name	Role
Project Manager	Ms. Jordan Vaughn	The project manager is responsible for implementing all activities identified in the TDD; developing and implementing the site health and safety plan; preparing all deliverables required by the TDD; and communicating directly with the EPA OSC, the project team, and any other personnel needed to complete the project. The project manager has authority to commit resources necessary to complete the work.

TABLE 1
PROPOSED TETRA TECH PROJECT PERSONNEL

Project Function	Name	Role
Health and Safety Officer	Mr. Richard Ecord	The health and safety officer oversees and supports development of the site health and safety plan; and communicates directly with the Tetra Tech project manager to ensure that all corporate health and safety protocols applicable to the site are followed.
Chemist	Ms. Marian Murphy	The project chemist coordinates with the Tetra Tech project manager regarding the analytical requirements for the project; solicits and procures necessary laboratory services; reviews sample data and validates data, if necessary; and communicates directly with the Tetra Tech project manager, field support personnel, EPA OSC, and START program manager as necessary.
Graphics and Mapping Specialist	Mr. Dan Call	The graphics and mapping specialist generates maps and other figures for project deliverables or presentations; and assists the Tetra Tech project manager or other personnel when global positioning system activities are required.
Financial Manager	Mr. Bob Rynkar	The financial manager works with the Tetra Tech project manager in planning related to the TDD budget and completion date; enters project financial information into the Tetra Tech management information system; and prepares regular and special reports to assist the Tetra Tech project manager in managing the project.
Point of Contact	Ms. Marian Murphy	The point of contact assists the Tetra Tech project manager as necessary to implement the project; commits or helps obtain all necessary company resources to meet the objectives of the TDD; provides document quality control reviews; and addresses and works with the Tetra Tech project manager in resolving project management issues.
Field Support Personnel	Ms. Lori Coleman To be decidesd	The field personnel perform necessary sampling or monitoring as well as other tasks defined in the TDD or assigned by the EPA OSC or the Tetra Tech project manager; and communicate directly with the Tetra Tech project manager and, when appropriate, the EPA OSC.

Notes: TDD = Technical Directional Document
EPA = U.S. Environmental Protection Agency
START= Superfund Technical Assessment and Response Team
OSC = On-Scene Coordinator

4.3 PROPOSED SAMPLING ACTIVITIES

This section describes the proposed sampling and summarizes the sampling locations and sampling methods to be used at the site. Tetra Tech will use a unique identifier for each sample

collected.

Tetra Tech will conduct photographic and written logbook documentation activities in accordance with Tetra Tech Standard Operating Procedures (SOP) Number (No.) 024, "Recording of Notes in Field Logbook" (Tetra Tech 1999a), and Tetra Tech's QAPP for START (Tetra Tech 2006).

4.3.1 Shallow Subsurface Soil Sampling

Prior to any subsurface activities, underground utility clearances will be investigated and marked.

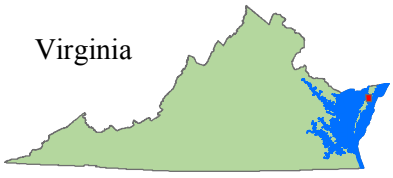
Tetra Tech will collect soil samples from each of the 10 soil boreholes completed at the site using Geoprobe direct-push technologies. The soil sampling locations are depicted as "proposed monitoring well locations" in Figure 3, Proposed Monitoring Well Locations Map. Final subsurface sampling locations may be modified due to property access constraints and underground and overhead utility locations. Tetra Tech will conduct Geoprobe activities in accordance with Tetra Tech SOP No. 054-1, "Using the Geoprobe System" (Tetra Tech 1999b). Soil from the borings will be collected in acetate sleeve liners. The lithology of the soil borings will be recorded prior to sampling. Each soil boring will be screened for the presence of VOCs using a photoionization detector (PID).

One soil sample will be collected from each soil boring. Tetra Tech will conduct sampling in accordance with Tetra Tech SOP No. 005-1, "Soil Sampling" (Tetra Tech 1999c). Samples will be collected, in order of priority, from zones with elevated PID readings; zones exhibiting visual evidence of contamination; soil immediately above the shallow water table; and/or the lowermost interval of the borehole. Tetra Tech will collect subsurface soil samples directly into Encore samplers for analysis for VOCs. At each sample interval, Tetra Tech will also collect soil into one 2-ounce jar for soil moisture analysis. One duplicate field sample and one matrix

Legend

- Drinking water well
- Perc tank
- Proposed monitoring well
- Residential well
- Septic tank
- UST
- Vent pipes
- Drain line

Approximate Site Location =



Jay-Cee Cleaners Site
Nelsonia, Accomack County, Virginia

Figure 3
Proposed Monitoring Well Location Map

TDD No. E23-014-08-02-003
EPA Contract No. EP-S3-05-02

Map created on April 10, 2008
by D. Call, Tetra Tech EM Inc.

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spike/matrix spike duplicate (MS/MSD) sample will also be collected from the site for QC purposes. Soil samples will be designated in accordance with the following format: "JCC-XX-####," with "JCC" referring to Jay-Cee Cleaners, "XX" representing the specific sampling location, and "####" representing the sampling interval in feet (e.g., a "####" designation of "0809" would represent a sampling interval from 8 to 9 feet).

4.3.2 Shallow Groundwater Sampling

Upon borehole completion, temporary monitoring wells will be installed in each of the boreholes at the site. Tetra Tech will collect groundwater that accumulates in the temporary monitoring wells. Tetra Tech will conduct sampling in accordance with Tetra Tech SOP No. 010-3, "Groundwater Sampling" (Tetra Tech 2000a). Prior to collecting the groundwater samples, Tetra Tech will purge the wells for 15 minutes or until the temporary wells are pumped dry. Shallow groundwater samples will be collected using a bladder pump. Groundwater samples will be collected in 40-milliliter vials with hydrochloric acid preservative for analysis for VOCs. One duplicate field sample, one trip blank, one rinsate blank, and one matrix spike/matrix spike duplicate (MS/MSD) sample will also be collected from the site for QC purposes. Shallow groundwater samples will be designated in accordance with the following format: "JCC-GW-##," with "JCC" referring to the "Jay-Cee Cleaners" site, "GW" representing groundwater, and "##" referring to the borehole from which the groundwater sample was collected.

The temporary monitoring wells will be surveyed by a licensed surveyor. Survey results and depth to groundwater measurements will be used to determine groundwater flow direction.

4.3.3 Intermediate Subsurface Soil Sampling

Tetra Tech will review analytical results from shallow soil and groundwater samples and, if warranted by the sample results, an intermediate well will be completed to the bottom of the shallow aquifer, or approximately 75 feet. Prior to any subsurface activities, underground utility

clearances will be investigated and marked.

Tetra Tech will collect subsurface soil samples from one intermediate borehole completed to the bottom of the shallow aquifer, or approximately 75 feet bgs, using hollow stem auger with continuous core drilling methods. Tetra Tech will collect approximately five soil samples from the borehole. The proposed location for the intermediate borehole is depicted on Figure 3, Proposed Monitoring Well Locations. The final location may be modified due to property access constraints, underground and overhead utility locations, and analytical results. Soil from the borehole will be collected in acetate sleeve liners using continuous core sampling. The lithology of the soil borings will be recorded prior to sampling. Each soil boring will be screened for presence of VOCs using a PID.

Tetra Tech will conduct sampling in accordance with Tetra Tech SOP No. 005-1, "Soil Sampling" (Tetra Tech 1999c). Samples will be collected, in order of priority, from zones with elevated PID readings, zones exhibiting visual evidence of contamination, zones immediately above clay lenses, and/or at 15-foot intervals. Tetra Tech will collect subsurface soil samples directly into Encore samplers for analysis for VOCs. At each sample interval, Tetra Tech will also collect soil into one 2-ounce jar for soil moisture analysis. One duplicate field sample and one MS/MSD sample will also be collected from the site. Subsurface soil samples will be designated in accordance with the following format: "JCC-IW01-####," with "JCC" referring to Jay-Cee Cleaners, "IW01" referring to "intermediate well 01," and "####" representing the sampling interval in feet (e.g., a "####" designation of "4243" would represent a sampling interval from 42 to 43 feet).

4.3.4 Intermediate Groundwater Sampling

If deemed appropriate by shallow soil and groundwater analytical results, one temporary intermediate monitoring well will be installed to the bottom of the shallow aquifer, or approximately 75 feet bgs. The temporary monitoring well will be screened at the bottom of the

aquifer. Tetra Tech will collect one groundwater sample from the monitoring well. Sampling will be conducted in accordance with Tetra Tech SOP No. 010-3, "Groundwater Sampling" (Tetra Tech 2000a). Prior to collecting the groundwater sample, Tetra Tech will purge the well for 15 minutes or until the well is pumped dry. Groundwater will be collected using a bladder pump. The groundwater sample will be collected in 40-milliliter vials with hydrochloric acid preservative for analysis for VOCs. One trip blank sample will also be collected for QC purposes. The shallow groundwater sample will be designated in accordance with the following format: "JCC-GW-IW01," with "JCC" referring to the "Jay-Cee Cleaners" site, "GW" representing groundwater, and "IW01" referring to "intermediate well 01."

The ground surface adjacent to the temporary intermediate groundwater well will be surveyed by a licensed surveyor. Survey results and depth to groundwater measurements will be used to determine vertical groundwater gradient.

4.3.5 Residential Well Groundwater Sampling

Tetra Tech will conduct quarterly groundwater sampling of residential wells located in the vicinity of the site. Residential well locations are depicted in Figure 4, Residential Well Locations Map. Pending access, a total of seven residential wells designated for monitoring will be sampled during each quarterly sampling event. Prior to collecting the samples, Tetra Tech will purge the residential wells for 15 minutes. Residential well samples will be collected in 40-milliliter vials with hydrochloric acid preservative for analysis for VOCs. One duplicate field sample, one trip blank, and one MS/MSD sample will also be collected from the site. Groundwater samples will be designated in accordance with the following format: "JCC-RW-##," with "JCC" referring to the "Jay-Cee Cleaners" site, "RW" referring to "residential well," and "##" referring to the residential well from which the groundwater sample was collected. In coordination with the residential well sampling, Tetra Tech will gather residential well logs from the sampled properties. The well logs will be examined to determine the screened interval and total depths of the sampled wells.

Approximate Site Location =

Jay-Cee Cleaners Site
Nelsonia, Accomack County, Virginia

Figure 4
Sampling Location Map

TDD No. E23-014-08-02-003
EPA Contract No. EP-S3-05-02

Map created on November 19, 2007
by D. Call, Tetra Tech EM Inc.

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5.0 ANALYTICAL PARAMETERS AND METHODS

Table 2 summarizes the matrices, analysis, analytical methods, sample containers and preservatives, detection limits, and maximum holding times for all samples to be collected during the sampling event. Based on the historic groundwater sample analytical results, the primary contaminant of concern for this sampling event is PCE.

TABLE 2
ANALYTICAL PARAMETERS SUMMARY

Matrix	Analysis	Analytical Method	Container (per location)	Preservative	Detection Limit	Maximum Holding Time
Shallow Subsurface Soil	VOC	SOM 01.2	Three Encore Samplers and one 2-oz CWM	Ice	CRQL	48 hours
Shallow Groundwater	VOC	SOM 01.2	Three 40-mL septa closure vials	HCl (pH <2), Ice	CRQL	14 days
Intermediate Subsurface Soil	VOC	SOM 01.2	Three Encore Samplers and one 2-oz CWM	Ice	CRQL	48 hours
Intermediate Groundwater	VOC	SOM 01.2	Three 40-mL septa closure vials	HCl (pH <2), Ice	CRQL	14 days
Residential Well Groundwater	VOC	SOM 01.2	Three 40-mL septa closure vials	HCl (pH <2), Ice	CRQL	14 days

Notes:
CRQL = Contract-required quantitation limit
CWM = Clear, wide-mouth jar
EPA = U.S. Environmental Protection Agency
HCl = Hydrochloric acid
mL = Milliliter
oz = Ounce
SOM = Superfund organic method
VOC = Volatile organic compound

6.0 QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

This section describes the QA/QC procedures for the proposed activities at the Jay-Cee Cleaners site. Specifically, this section addresses responsibility, sampling equipment decontamination, field controls, laboratory controls, data validation, and data evaluation and management.

6.1 RESPONSIBILITIES

The Tetra Tech project manager, Ms. Vaughn, will be responsible for ensuring that sample quality and integrity are maintained in accordance with the QAPP for START (Tetra Tech 2006), and that sample labeling and documentation procedures proceed in accordance with Tetra Tech SOP No. 019, "Packaging and Shipping Samples" (Tetra Tech 2000b).

Regulations for packaging, marking, labeling, and shipping hazardous materials and wastes are promulgated by the U.S. Department of Transportation. Air carriers that transport hazardous materials (in particular, Federal Express) require compliance with the current International Air Transport Association (IATA) regulations, which apply to shipment and transport of hazardous materials by air carrier. Tetra Tech will follow all applicable IATA regulations.

6.2 SAMPLING EQUIPMENT DECONTAMINATION

Disposable equipment, such as Teflon tubing and acetate sleeve liners, will be used to collect samples to minimize the possibility of cross-contamination. The disposable equipment will be double-bagged and disposed of as dry industrial waste. Non-dedicated equipment will be decontaminated in accordance with Tetra Tech SOP No. 002, "General Equipment Decontamination" (Tetra Tech 1999d). Decontamination of non-dedicated sampling equipment, including Geoprobe rods, will consist of a tap water and Liquinox wash, a tap water rinse, a de-ionized water rinse, and air drying. The Geoprobe and drilling contractors will be responsible for disposing of decontamination water.

6.3 FIELD QUALITY CONTROL

Field QC measures will consist of collecting trip blank, field duplicate, rinsate (as appropriate, for non-dedicated sampling equipment), and MS/MSD samples.

6.4 LABORATORY QUALITY CONTROL

Samples will be shipped to the EPA Region 3 Analytical Services and Quality Assurance Branch (ASQAB) or to the EPA Contract Laboratory Program (CLP) laboratory assigned by the ASQAB. Laboratory QC measures will consist of all QC elements identified in the CLP Statement of Work (SOW) and will include completion of all forms and deliverables required in the SOW.

6.5 DATA VALIDATION

EPA Region 3 Central Regional Laboratory's QA staff will perform data validation in accordance with EPA Region 3 modifications to the EPA CLP National Functional Guidelines for Data Review and Innovative Approaches to Data Validation to an M2 organic data validation level (EPA 1994, 1995).

6.6 DATA EVALUATION AND MANAGEMENT

This section describes how Tetra Tech will (1) evaluate the data generated during the sampling event, (2) determine whether the data are representative of site conditions and complete enough for use in making confident risk management decisions, and (3) ensure that the data are secure and retrievable.

6.6.1 Data Evaluation

Tetra Tech will review the analytical package to determine whether any major deficiencies were encountered during analysis and to ensure that the data are interpreted correctly.

6.6.2 Data Representativeness and Completeness

This SAP is designed to obtain data representative of environmental conditions at the site. If sampling varies significantly from this plan because of unexpected field conditions or other unforeseeable factors, Tetra Tech will discuss in the trip report how those variations affect data representativeness.

This SAP is also designed to obtain enough valid and acceptable data to achieve 90-percent completeness when compared against the amount of data planned. When validated analytical results are received, Tetra Tech will calculate the percent completeness based on an equation in the QAPP for START (Tetra Tech 2006). If 90-percent completeness is not achieved because fewer samples than anticipated are collected or because data are rejected during the validation process, the Tetra Tech project manager will discuss the matter with the EPA OSC and will include a discussion of the matter in the trip report.

6.6.3 Data Management

Tetra Tech will request that the laboratory submit the analytical data in electronic form, as well as in the required hard copy analytical data package. Tetra Tech will compare the electronic data deliverables with the hard copy data package to ensure their consistency. When the Tetra Tech chemist has approved the data set with the appropriate data qualifiers, the electronic data will be released to the Tetra Tech project manager for reporting. Tetra Tech will use the data to prepare a trip report for the project. All electronic data will be stored in a Microsoft (MS) Excel or Access database for future retrieval and reference based on the OSC's requirements. If the analytical data are not available from the laboratory in electronic form, Tetra Tech will manually enter the data into an MS Excel or Access database. Each hard copy data package will be kept in the project file in the Tetra Tech office in Boothwyn, Pennsylvania, until the data package is officially transferred to EPA.

7.0 DELIVERABLES

Information and data obtained from the sampling event will be compiled in a trip report. The trip report will include data collection methods, sampling locations, data summary tables, and maps.

8.0 PROJECT SCHEDULE

All site activities are expected to require approximately 11 days to complete (3 days to complete Geoprobe and shallow groundwater sampling, 5 days to complete intermediate well installation and sampling, and 3 separate days to complete three rounds of residential well sampling). Activities will be conducted over five separate mobilizations to the site. Tetra Tech will ship the samples collected to the OASQA or the selected CLP laboratory for analysis. Tetra Tech expects to receive validated analytical data from the laboratory within 14 days after the laboratory receives the samples. Tetra Tech will provide EPA a draft trip report within 30 days after all site activities are completed and validated data are available. Table 3 presents the required tasks and the anticipated time frame for completing each task.

TABLE 3

PROJECT SCHEDULE

Task	Completion Timeframe
Receive and accept TDD	February 2008
Develop site health and safety plan	April 2008
Submit Draft SAP	April 2008
Submit Final SAP	April 2008
Mobilize to site – residential well sampling	April 17, 2008
Conduct residential well sampling; review residential well logs	1 day
Mobilize to site – Geoprobe work, shallow soil and shallow groundwater sampling, survey	April 23, 2008
Conduct Geoprobe work and shallow soil and shallow groundwater sampling	3 days

TABLE 3

PROJECT SCHEDULE

Task	Completion Timeframe
Conduct survey	1 day
Mobilize to site – hollow stem auger work and intermediate soil and groundwater sampling	To be decided
Conduct hollow stem auger work and intermediate soil and groundwater sampling	5 days
Receive sample analytical data	14 days after laboratory receives samples
Evaluate and validate data	5 days after data are received
Develop and submit draft trip report	30 days after data validation
Meet with EPA OSC regarding report recommendations	15 days after trip report is submitted
Mobilize to site – additional residential well sampling	To be decided
Conduct residential well sampling	1 day per sampling event
Write AOC and close out TDD	30 days after all work is completed

Notes:

AOC = Acknowledgement of completion
EPA = U.S. Environmental Protection Agency
OSC = On-Scene Coordinator
SAP = Sampling and Analysis Plan
TDD = Technical Direction Document

REFERENCES

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