



July 17, 2018

Mr. Randy Brown
On-Scene Coordinator
U.S. Environmental Protection Agency, Region 7
11201 Renner Boulevard
Lenexa, Kansas 66219

**Subject: Quality Assurance Project Plan for a Phase II Targeted Brownfields Assessment
Former AutoZone Site
Dellwood, St. Louis County, Missouri
U.S. EPA Region 7, START 4, Contract No. EP-S7-13-06, Task Order No. 0002.055
Task Monitor: Randy Brown, On-Scene Coordinator**

Dear Mr. Brown:

Tetra Tech, Inc. (Tetra Tech) is submitting the attached Quality Assurance Project Plan (QAPP) for a Phase II Targeted Brownfields Assessment of the Former AutoZone site. If you have any questions or comments, please call the START Project Manager at (816) 412-1961.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ann Marie Pohlman'.

Ann Marie Pohlman
START Project Manager

A handwritten signature in blue ink, appearing to read 'Ted Faile'.

Ted Faile, PG, CHMM
START Program Manager

Enclosures

cc: Debra Dorsey, EPA START Project Officer (cover letter only)
Whitney Bynum, EPA Brownfields and Land Revitalization Branch
Todd Davis, EPA Site Assessment Manager

QUALITY ASSURANCE PROJECT PLAN
PHASE II TARGETED BROWNFIELDS ASSESSMENT
FORMER AUTOZONE SITE
DELLWOOD, ST. LOUIS COUNTY, MISSOURI

Superfund Technical Assessment and Response Team (START) 4 Contract
Contract No. EP-S7-13-06, Task Order 0002.055

Prepared For:

U.S. Environmental Protection Agency
Region 7
Superfund Division
11201 Renner Boulevard
Lenexa, Kansas 66219

July 17, 2018

Prepared By:

Tetra Tech, Inc.
415 Oak Street
Kansas City, Missouri 64106
(816) 412-1741

CONTENTS

<u>Section/Table</u>	<u>Page</u>
QUALITY ASSURANCE PROJECT PLAN FORM.....	1
TABLE 1: SAMPLE SUMMARY	6
TABLE 2: DATA QUALITY OBJECTIVE SUMMARY	8

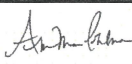
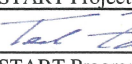
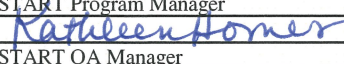
APPENDICES

Appendix

- A SITE-SPECIFIC INFORMATION REGARDING PHASE II TARGETED BROWNFIELDS
ASSESSMENT SAMPLING AT THE FORMER AUTOZONE SITE
- B FIGURES
- C SITE-SPECIFIC DATA MANAGEMENT PLAN

Region 7 Superfund Program
Addendum to the Generic QAPP for Superfund Site Assessment and Targeted Brownfields Assessment Activities (November 2017)
for the Former AutoZone Site

Project Information:

Site Name: Former AutoZone Site		City: Dellwood	State: Missouri
EPA Project Manager: Todd Davis		START Project Manager: Ann Marie Pohlman	
Approved By:			Prepared For: EPA Region 7 Superfund Division
Title:	START Project Manager	Date: 7/17/18	
Approved By:			
Title:	START Program Manager	Date: 7/17/18	Prepared By: Ann Marie Pohlman Date: July 2018
Approved By:			
Title:	START QA Manager	Date: 7/17/18	
Approved By:			Tetra Tech START Project Number: X9025.14.0002.055
Title:	EPA Project Manager	Date:	
Approved By:			
Title:	EPA QA Manager	Date:	

1.0 Project Management:

1.1 Distribution List:

EPA—Region 7: Randy Brown, On-Scene Coordinator START: Ann Marie Pohlman, Project Manager
Diane Harris, Region 7 QA Manager Kathy Homer, QA Manager

1.2 Project/Task Organization:

Randy Brown, of the EPA Region 7 Superfund Division, will serve as the EPA Project Manager for the activities described in this QAPP. Ann Marie Pohlman of Tetra Tech, Inc. (Tetra Tech), will serve as the START Project Manager.

1.3 Problem Definition/Background:

Description: This site-specific Quality Assurance Project Plan form is prepared as an addendum to the Generic Quality Assurance Project Plan for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated November 2017) and contains site-specific data quality objectives for the sampling activities described herein.

- ☒ Description attached.
- ☐ Description in referenced report: _____
Title Date

1.4 Project/Task Description:

- | | | |
|---|---|--|
| <input type="checkbox"/> CERCLA PA | <input type="checkbox"/> CERCLA SI | <input checked="" type="checkbox"/> Brownfields Assessment |
| <input type="checkbox"/> Other (description attached) | <input type="checkbox"/> Pre-CERCLIS Site Screening | <input type="checkbox"/> Removal Assessment |

Schedule: Field work is anticipated to occur in August 2018.

- ☐ Description in referenced report: _____
Title Date

1.5 Quality Objectives and Criteria for Measurement Data:

- | | |
|----------------------------|---|
| Accuracy: | <input checked="" type="checkbox"/> Identified in attached table. |
| Precision: | <input checked="" type="checkbox"/> Identified in attached table. |
| Representativeness: | <input checked="" type="checkbox"/> Identified in attached table. |
| Completeness*: | <input checked="" type="checkbox"/> Identified in attached table. |
| Comparability: | <input checked="" type="checkbox"/> Identified in attached table. |

Other Description:

*A completeness goal of 100 percent has been established for this project. However, if the completeness goal is not met, EPA may still be able to make site decisions based on any or all of the remaining validated data.

1.6 Special Training/Certification Requirements:

- ☒ OSHA 1910
- ☒ Special Equipment/Instrument Operator: Geoprobe® operation and sampling will be conducted by experienced and licensed personnel.
- ☒ Other (describe below):

The lead-based paint (LBP) inspection will be conducted by a licensed Missouri inspector experienced in use of field-portable x-ray fluorescence (XRF) analyzers. That Missouri-licensed inspector also will have received training and certification in compliance with the Asbestos Hazard Emergency Response Act (AHERA).

Region 7 Superfund Program
Addendum to the Generic QAPP for Superfund Site Assessment and Targeted Brownfields Assessment Activities (November 2017)
for the Former AutoZone Site

1.7 Documentation and Records:

- ☒ Field Sheets ☒ Site Log ☐ Trip Report ☒ Site Maps ☐ Video
☒ Chain of Custody ☒ Health and Safety Plan ☒ Letter Report ☒ Photos
- ☒ Sample documentation will follow EPA Region 7 SOP 2420.05.
☒ A copy of this QAPP and any future amendments will be available to all personnel throughout sampling activities. Original documents will be maintained by EPA.
☒ Other: Analytical information will be handled according to procedures identified in Table 2. A Phase I Targeted Brownfields Assessment (TBA), a Phase II TBA report, and a combined LBP and asbestos-containing material (ACM) survey report will be completed. A completed Property Profile Form (PPF) for the property will also be included as part of the Phase II TBA Report. A separate Analysis of Brownfield Cleanup Alternatives (ABCA) will also be submitted.

2.0 Measurement and Data Acquisition:

2.1 Sampling Process Design:

- ☐ Random Sampling ☐ Transect Sampling ☒ Biased/Judgmental Sampling ☐ Stratified Random Sampling
☐ Search Sampling ☐ Systematic Grid ☐ Systematic Random Sampling ☒ Definitive Sampling
☒ Screening w/o Definitive Confirmation ☐ Screening w/ Definitive Confirmation
☒ Sample Map Attached

- ☒ Other (Provide rationale behind each sample): See Appendix A for additional sampling information.

The proposed sampling scheme for this project will be judgmental, in accordance with the *Guidance for Performing Site Inspections Under CERCLA*, Office of Solid Waste and Emergency Response (OSWER) Directive #9345.1-05, September 1992, and *Removal Program Representative Sampling Guidance, Volume 1: Soil*, OSWER Directive 9360.4-10, November 1991. Judgmental sampling is subjective selection of sampling locations based on historical information, visual inspection, and best professional judgment of sampler(s). See Appendices A, B, and C for additional site-specific information, maps, and data management procedures.

The on-site structures will undergo LBP and asbestos inspections. During the LBP inspection, paint-covered surfaces will be screened for lead by use of an XRF analyzer. No laboratory confirmation samples for lead will be collected, as standard practice is to rely solely on XRF readings during LBP inspections.

During the asbestos inspection, samples of suspect building materials will be collected to determine if they contain asbestos. Approximately 15 samples are proposed to characterize pipe wrap, floor tiles, ceiling tiles, and other suspect building materials. The inspection is designed to quantify the amount of asbestos-containing building material on the subject property.

A summary of anticipated maximum numbers of samples to be collected for laboratory analysis is as follows. The proposed numbers of samples represent a balance between cost and coverage, and a reasonable attempt to meet study objectives while staying within the budget constraints of a typical Brownfields Assessment.

Sample Summary Location	Matrix	# of Samples*	Analysis
On-site direct-push technology (DPT) temporary wells	Groundwater	9	Volatile organic compounds (VOC), total petroleum hydrocarbons (TPH) – gasoline range organics (GRO), TPH - diesel range organics (DRO), polycyclic aromatic hydrocarbons (PAH), and total Resource Conservation and Recovery Act (RCRA) metals (excluding mercury)
On-site DPT soil borings	Soil	18	VOCs, TPH-GRO, TPH-DRO, PAHs, and RCRA metals (excluding mercury)
Surficial soil samples	Soil	5	TPH-GRO, TPH-DRO, PAHs, and RCRA metals (excluding mercury)
On-site structure	Structural Materials	15	Asbestos via Polarized Light Microscopy (PLM)
On-site structure	Structural Materials	2	Asbestos via EPA Point Count 400

* QC samples are not included with this total. See Table 1 for a complete sample summary.

Region 7 Superfund Program Addendum to the Generic QAPP for Superfund Site Assessment and Targeted Brownfields Assessment Activities (November 2017) for the Former AutoZone Site		
2.2 Sample Methods Requirements:		
Matrix	Sampling Method	EPA SOP(s)/Methods
Groundwater	At DPT temporary wells, groundwater samples will be collected through polyethylene tubing fitted with a check valve that will be inserted into a Screen Point 16 sampling apparatus containing a disposable polyvinyl chloride (PVC) or reusable stainless steel screen.	SOPs 4230.07 & 4231.2007
Soil– direct-push technology (DPT) borings	Subsurface soil samples will be collected by use of a DPT apparatus, using Macro-Core samplers fitted with PVC liners, and will be transferred to the appropriate sample containers.	SOPs 4230.07 & 4231.2012; Method 5035
Soil	Surface soil samples will be collected by use of a stainless steel garden trowel, and will be transferred to the appropriate sample containers.	SOP4231.2012; Method 5035
Structural Materials	Samples will be collected by application of techniques appropriate for the suspect building materials. A coring device will be used at interior and exterior wall locations.	ASTM E 2356-14
2.3 Sample Handling and Custody Requirements:		
<input checked="" type="checkbox"/> Samples will be packaged and preserved in accordance with procedures defined in Region 7 EPA SOP 2420.06. <input checked="" type="checkbox"/> COC will be maintained as directed by Region 7 EPA SOP 2420.04. <input checked="" type="checkbox"/> Samples will be accepted according to Region 7 EPA SOP 2420.01. <input checked="" type="checkbox"/> Other (Describe): Samples will be accepted in accordance with procedures established by the START-contracted laboratories.		
2.4 Analytical Methods Requirements:		
<input checked="" type="checkbox"/> Identified in attached table. <input checked="" type="checkbox"/> Rationale: The requested analyses have been selected based on the historical information on the site and program experience with similar types of sites. <input type="checkbox"/> Other (Describe):		
2.5 Quality Control Requirements:		
<input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Identified in attached table. <input checked="" type="checkbox"/> In accordance with the Generic Quality Assurance Project Plan for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated November 2017). <input checked="" type="checkbox"/> Describe Field QC Samples: For this investigation, field QC samples will include one field blank (water), one trip blank (water), one equipment rinsate blank (water), and field duplicates for soil and groundwater at a frequency of 10 percent. Deionized (DI) water will be used to prepare the field blank and equipment rinsate blank samples in the field. The water trip blank (provided by the START-contracted laboratory) will be analyzed to evaluate contamination possibly introduced during transportation of the containers/samples. The field blank will be collected to evaluate contamination of sampling containers and/or preservatives, and to assess contamination possibly introduced during sampling and laboratory procedure(s). The equipment rinsate blank will evaluate effectiveness of decontamination procedures for DPT groundwater sampling equipment. Evaluation of blank samples depends on levels of contamination found in environmental samples to determine whether the environmental samples are representative. Analytical results from blank samples will be evaluated qualitatively by the EPA Project Manager and EPA contractor(s) to determine a general indication of contamination possibly introduced in the field or laboratory. Field duplicate samples will be split samples, and relative percent differences between analyte concentrations in duplicate samples will be used for informational purposes only. The higher result from each duplicate sample pair will be used for decision-making purposes. <input type="checkbox"/> Other (Describe):		
2.6 Instrument/Equipment Testing, Inspection, and Maintenance Requirements:		
<input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> In accordance with the Generic Quality Assurance Project Plan for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated November 2017). <input checked="" type="checkbox"/> Other (Describe): Testing, inspection, and maintenance of field instruments (photoionization detector [PID], XRF analyzer, Global Positioning System [GPS] unit) will comply with manufacturers' recommendations. Testing, inspection, and maintenance of analytical instrumentation will comply with the previously referenced SOPs and manufacturers' recommendations.		

Region 7 Superfund Program
Addendum to the Generic QAPP for Superfund Site Assessment and Targeted Brownfields Assessment Activities (November 2017)
for the Former AutoZone Site

2.7 Instrument Calibration and Frequency:

- ☐ Not Applicable
- ☒ Inspection/acceptance requirements accord with the Generic Quality Assurance Project Plan for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated November 2017).
- ☒ Calibration of laboratory equipment will occur as described in the previously referenced SOPs and/or manufacturers' recommendations.
- ☒ Other (Describe): Calibration of field instruments (PID, XRF analyzer) will accord with the manufacturers' recommendations.

2.8 Inspection/Acceptance Requirements for Supplies and Consumables:

- ☐ Not Applicable
- ☒ In accordance with the Generic Quality Assurance Project Plan for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated November 2017).
- ☒ Sample containers will meet EPA criteria for cleaning procedures for low-level chemical analysis. Sample containers will have Level II certifications provided by the manufacturer in accordance with pre-cleaning criteria established by EPA in *Specifications and Guidelines for Obtaining Contaminant-Free Containers*.
- ☐ Other (Describe):

2.9 Data Acquisition Requirements:

- ☐ Not Applicable
- ☒ In accordance with the Generic Quality Assurance Project Plan for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated November 2017).
- ☒ Previous data/information pertaining to the site (including other analytical data, reports, photos, and maps, which are referenced in this QAPP) have been compiled by EPA and/or its contractor(s) from other sources. Some of that data have not been verified by EPA and/or its contractor(s); however, the information will not be used for decision-making purposes by EPA without verification by an independent professional qualified to verify such data and information.
- ☐ Other (Describe):

2.10 Data Management:

- ☐ All laboratory data acquired will be managed in accordance with Region 7 EPA SOP 2410.01.
- ☒ Other (Describe): General data management procedures for this project are addressed in a Site-Specific Data Management Plan included as Appendix C.

3.0 Assessment and Oversight:

3.1 Assessment and Response Actions:

- ☒ Peer Review ☒ Management Review ☐ Field Audit ☐ Lab Audit
- ☒ Assessment and response actions pertaining to analytical phases of the project are addressed in Region 7 EPA SOPs 2430.06 and 2430.12.
- ☒ Other (Describe): Assessment and response actions pertaining to analytical phases of the project will accord with procedures established by the START-contracted laboratory. Because of the limited duration of this activity, no field audits are anticipated.

3.1A Corrective Action:

- ☒ Corrective actions will be taken at the discretion of the EPA Project Manager whenever there appear to be problems that could adversely affect data quality and/or resulting decisions affecting future response actions pertaining to the site.
- ☐ Other (Describe):

3.2 Reports to Management:

- ☐ Audit Report ☒ Data Validation Report ☐ Project Status Report ☐ None Required
- ☒ A combined LBP and ACM survey report will be completed by START and submitted to EPA. A separate Phase II ESA report will address all other sampling.
- ☒ Reports will be prepared in accordance with the Generic Quality Assurance Project Plan for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated November 2017).
- ☒ Other (Describe): The analytical data package from the START-contracted laboratory will be validated internally by the contracted laboratory in accordance with the laboratory's established SOPs. A START chemist will conduct an external verification and validation of the laboratory data package.

Region 7 Superfund Program
Addendum to the Generic QAPP for Superfund Site Assessment and Targeted Brownfields Assessment Activities (November 2017)
for the Former AutoZone Site

4.0 Data Validation and Usability:

4.1 Data Review, Validation, and Verification Requirements:

- ☐ Identified in attached table.
- ☒ Data review and verification will accord with the Generic Quality Assurance Project Plan for Superfund Integrated Assessment and Targeted Brownfields Assessment Program (updated November 2017).
- ☐ Data review and verification will be performed by a qualified analyst and the laboratory's section manager as described in Region 7 EPA SOPs 2430.06, 2430.12, and 2410.10.
- ☒ Other (Describe): Analytical data packages from the START-contracted laboratory will be validated internally by the contracted laboratory in accordance with its established SOPs.

4.2 Validation and Verification Methods:

- ☐ Identified in attached table.
- ☐ The data will be validated in accordance with Region 7 EPA SOPs 2430.06, 2430.12, and 2410.10.
- ☒ The EPA Project Manager will inspect the data to provide a final review. The EPA Project Manager will review the data, if applicable, from laboratory spikes and duplicates, laboratory blanks, and field QC samples to ensure the data are acceptable. The EPA Project Manager will also compare the sample descriptions with the field sheets for consistency, and will ensure appropriate documentation of any anomalies in the data.
- ☒ Other (Describe): The data will be validated externally by START via application of methods consistent with a Stage 2B validation, as described in the EPA Contract Laboratory Program (CLP) *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (EPA 2009). A Stage 2B validation includes verification and validation based on a completeness and compliance check of sample receipt conditions and sample-related and instrument-related QC results. The EPA Project Manager will be responsible for overall validation and final approval of the data, in accordance with projected use of the results.

4.3 Reconciliation with User Requirements:

- ☐ Identified in attached table:
- ☒ If data quality indicators do not meet the project's requirements as outlined in this QAPP, the data may be discarded, and re-sampling or re-analysis of the subject samples may be required by the EPA Project Manager.
- ☐ Other (Describe):

Region 7 Superfund Program
Addendum to the Generic QAPP for Superfund Site Assessment and Targeted Brownfields Assessment Activities (November 2017)
for the Former AutoZone Site

Table 1: Sample Summary

Site Name: Former AutoZone Site				Location: Dellwood, Missouri			
START Project Manager: Ann Marie Pohlman				Activity/ASR #: Not applicable (NA)		Date: July 2018	
No. of Samples	Matrix	Location	Purpose	Depth or other Descriptor	Requested Analysis	Sampling Method/SOP	Analytical Method
9	Groundwater	On-site DPT temporary wells	To determine whether groundwater contamination occurred from historical use of the site	Directly below water table	VOCs, TPH-GRO, TPH-DRO, PAHs, and total RCRA metals (excluding mercury)	SOPs 4230.07 & 4231.2007	Methods 8260, 8270, & 6020
18	Soil	On-site DPT soil borings	To determine whether soil contamination occurred from historical use of the site	Two 2-foot depth intervals at 12 boring locations based on field screening results and observations	VOCs, TPH-GRO, TPH-DRO, PAHs, and RCRA metals (excluding mercury)	SOPs 4230.07 & 4231.2012; EPA Method 5035	Methods 5035, 8260, 8270, & 6010
5	Surface Soil	On-site surficial soil samples	To determine whether soil contamination occurred from the historical use of the site	0-2 inches below ground surface (bgs)	VOCs, TPH-GRO, TPH-DRO, PAHs, and RCRA metals (excluding mercury)	SOP 4231.2012; EPA Method 5035	Methods 5035, 8260, 8270, & 6010
Up to 100	Paint-covered surfaces	Site buildings	To quantify lead in paint on structures	Paint-covered surfaces	Total lead via XRF	NA (Not applicable) (in-situ)	Method 6200
15	Structural Materials	Site buildings	To quantify asbestos in building materials	Bulk material from floors, walls, ceilings, and pipes	Asbestos via PLM	ASTM E 2356-14	EPA 600/R-93/116
2	Structural Materials	Site buildings	To verify asbestos concentrations, as determined by PLM, in building materials	Bulk material from floors, walls, ceilings, and pipes	Asbestos via EPA Point Count 400	ASTM E 2356-14	EPA 600/R-93/116
QC Samples							
1	Water	Equipment rinsate blank	To evaluate effectiveness of decontamination procedures for DPT sampling equipment	Not applicable (NA)	VOCs, TPH-GRO, TPH-DRO, PAHs, and total RCRA metals (excluding mercury)	NA	Methods 8260, 8270, & 6020
1	Water	Field blank	To assess field-introduced and laboratory-introduced contamination	NA	VOCs, TPH-GRO, TPH-DRO, PAHs, and total RCRA metals (excluding mercury)	NA	Methods 8260, 8270, & 6020
1	Water	Trip blank	To assess field/transportation-related contamination	NA	VOCs	NA	Method 8260

Region 7 Superfund Program
Addendum to the Generic QAPP for Superfund Site Assessment and Targeted Brownfields Assessment Activities (November 2017)
for the Former AutoZone Site

Table 1: Sample Summary

Site Name: Former AutoZone Site				Location: Dellwood, Missouri			
START Project Manager: Ann Marie Pohlman				Activity/ASR #: Not applicable (NA)		Date: July 2018	
No. of Samples	Matrix	Location	Purpose	Depth or other Descriptor	Requested Analysis	Sampling Method/SOP	Analytical Method
1	Groundwater	Field duplicate	To assess precision of analytical and sampling methods	Directly below water table	VOCs, TPH-GRO, TPH-DRO, PAHs, and total RCRA metals (excluding mercury)	SOPs 4230.07 & 4231.2007	Methods 8260, 8270, and 6020
1	Soil	Field duplicate	To assess precision of analytical and sampling methods	2-foot depth intervals based on field screening results and observations	VOCs, TPH-GRO, TPH-DRO, PAHs, and RCRA metals (excluding mercury)	SOPs 4230.07 & 4231.2012; EPA Method 5035	Methods 5035, 8260, 8270, & 6010
1	Surface Soil	Field duplicate	To assess precision of analytical and sampling methods	0-2 inches bgs	VOCs, TPH-GRO, TPH-DRO, PAHs, and RCRA metals (excluding mercury)	SOP 4231.2012; EPA Method 5035	Methods 5035, 8260, 8270, & 6010

Region 7 Superfund Program Addendum to the Generic QAPP for Superfund Site Assessment and Targeted Brownfields Assessment Activities (November 2017) for the Former AutoZone Site								
Table 2: Data Quality Objective Summary								
Site Name: Former AutoZone Site				Location: Dellwood, Missouri				
START Project Manager: Ann Marie Pohlman				Activity/ASR #: Not applicable (NA)			Date: July 2018	
Analysis	Analytical Method	Data Quality Measurements					Sample Handling Procedures	Data Management Procedures
		Accuracy	Precision	Representativeness	Completeness	Comparability		
Groundwater								
VOCs, TPH-GRO, TPH-DRO, PAHs, and total RCRA metals (excluding mercury)	See Table 1	Per analytical method	Per analytical method	Judgmental sampling based on professional judgment of the sampling team	100%; no critical samples have been identified	Standardized procedures for sample collection and analysis will be used.	See Section 2.3 of QAPP form.	See Section 2.10 of QAPP form.
Soil								
VOCs, TPH-GRO, TPH-DRO, PAHs, and RCRA metals (excluding mercury)	See Table 1	Per analytical method	Per analytical method	Judgmental sampling based on professional judgment of the sampling team	100%; no critical samples have been identified	Standardized procedures for sample collection and analysis will be used.	See Section 2.3 of QAPP form.	See Section 2.10 of QAPP form.
Structural Materials								
Asbestos via PLM	See Table 1	Per analytical method	Per analytical method	Judgmental sampling based on professional judgment of the sampling team	100%; No specific critical samples have been identified.	Standardized procedures for sample collection and analysis will be used.	See Section 2.3 of QAPP form.	See Section 2.10 of QAPP form.
Asbestos via EPA Point Count 400	See Table 1	Per analytical method	Per analytical method	Judgmental sampling based on professional judgment of the sampling team	100%; No specific critical samples have been identified.	Standardized procedures for sample collection and analysis will be used.	See Section 2.3 of QAPP form.	See Section 2.10 of QAPP form.

APPENDIX A

SITE-SPECIFIC INFORMATION REGARDING PHASE II TARGETED BROWNFIELDS ASSESSMENT SAMPLING AT THE FORMER AUTOZONE SITE

INTRODUCTION

The Tetra Tech, Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) has been tasked by the U.S. Environmental Protection Agency (EPA) Region 7 Superfund Division to conduct a Phase II Targeted Brownfields Assessment (TBA) of the former AutoZone site (the site), at 9947 West Florissant Avenue, Dellwood, Missouri. The site also includes the New York Grill at 9901 West Florissant Avenue (see Appendix B, Figures 1 and 2). The site hosted an AutoZone store on the northern portion of the property from at least as early as 2001 to 2014. The AutoZone store burned in 2014. The former AutoZone site is currently a partially concrete and asphalt vacant lot. The New York Grill is currently an operating restaurant with an associated storage outbuilding and associated asphalt parking areas on the southern portion of the property.

The primary purpose of this investigation is to assess potential impact on human health and the environment by hazardous substances that may have been released to soil and groundwater. The scope of the TBA will include (1) surface soil, subsurface soil, and groundwater sampling to confirm or eliminate recognized environmental conditions (REC) identified during the Phase I TBA (Tetra Tech, Inc. [Tetra Tech] 2018); and (2) inspection and sampling of on-site structures for presence of asbestos-containing building materials (ACBM) and lead-based paint (LBP). The Phase II TBA will be consistent with ASTM International (ASTM) Standard E1903-11 for Phase II Environmental Site Assessments (ESA), and otherwise in compliance with EPA's "All Appropriate Inquiries" Rule (AAI Rule) (40 *Code of Federal Regulations* [CFR] Part 312). This Quality Assurance Project Plan (QAPP) identifies site-specific features and addresses elements of the sampling strategy and analytical methods proposed for the Phase II TBA.

SITE BACKGROUND INFORMATION

Information regarding the site's location, description, geology/hydrogeology, and relevant investigation history is discussed in this section.

Site Location/Description

The site is at 9947 (former AutoZone) and 9901 West Florissant Avenue (New York Grill) in Dellwood, Missouri. The site is depicted on the Clayton, Missouri, U.S. Geological Survey (USGS) 7.5-minute topographic series map (USGS 1993), and is just south of the Florissant, Missouri, USGS 7.5-minute topographic series map (USGS 1998) (see Appendix B, Figure 1). Coordinates at the approximate center of the site are 39.7473700 degrees north latitude and 90.2801510 degrees west longitude.

The approximate 1.96-acre site currently consists of a vacant lot with a partial concrete parking area (where the former AutoZone parts store was located) on the northern portion, and an operating restaurant (New York Grill) with a storage outbuilding and asphalt parking area on the southern portion. Figure 2 in Appendix B illustrates the approximate former building footprint and site boundaries. The site is adjoined to the north and south by commercial properties. West Florissant Avenue adjoins the property to the east followed by a car wash and other commercial properties. Residential land adjoins the site to the west.

Historical documentation and information indicate that the site was originally developed as a residential property as early as 1933. An AutoZone was previously on the northern portion of the site from at least 2001 to 2014, but burned in 2014. The southern portion of the site is currently occupied by New York Grill, an operating restaurant, and a storage outbuilding with associated parking.

Geology and Hydrogeology

Soils at the site are predominantly Urban land-Harvester complex (U.S. Department of Agriculture [USDA] 2018). Urban land soils have generally been modified by disturbance of the natural layers. The Harvester series consists of moderately well-drained silt and clay loam material. Slopes range from 9 to 20 percent. The Fishpot-Urban land complex makes up the rest of the soils on the subject property. The Fishpot series consists of somewhat poorly-drained stratified silty or clay loam. Slopes range from 0 to 5 percent (USDA 2018).

The site is within the Central Lowland Groundwater Province. The subject property lies within the Mississippi River's 500-year floodplain. Geology in the region is generally characterized by crystalline, Precambrian rocks that underlie Paleozoic and younger sedimentary rocks (USGS 1997).

Groundwater in the subject property area likely flows south-southeast (following the topographic gradient) toward Maline Creek. In the absence of site-specific data or other indicators, direction of groundwater flow may be inferred from the regional topographic gradient. Therefore, groundwater flow at the site is assumed toward the south-southeast. Groundwater has been encountered at about 15-20 feet below ground surface (bgs) at other sites in this area (Tetra Tech 2018).

Previous Investigations

No reports of previous investigations were provided for review as part of this assessment.

SAMPLING STRATEGY AND METHODOLOGY

This activity will involve collection of groundwater, surface soil, and subsurface soil samples, as well as inspection and sampling of on-site structures for presence of ACBM and LBP to identify site-related contaminants. Sampling is tentatively scheduled to begin in August 2018, and will require approximately 2 to 3 days to complete. As applicable, standard operating procedures (SOP) and chain-of-custody (COC) procedures referenced in this QAPP will be followed throughout sampling activities to verify integrity of samples from time of collection until submittal for laboratory analysis. Disposal of investigation-derived wastes (IDW) and procedures for equipment and personal decontamination will be addressed in a site-specific health and safety plan prepared by Tetra Tech. Most IDW is expected to consist of disposable sampling supplies (gloves, paper towels, etc.) that will be disposed of off-site as uncontaminated solid waste. Descriptions of the sampling strategy and procedures follow. Tentative locations for advancements of 9 proposed borings (soil and groundwater borings are collocated) and five surface soil samples are shown on Figure 2 in Appendix B.

Soil Sampling

Tetra Tech proposes to advance as many as 9 soil borings to collect soil samples within the site boundaries. At each boring location, START will use direct-push technology (DPT) equipment to advance a soil sampler containing disposable polyvinyl chloride (PVC) liners from ground surface to groundwater, or to geologic refusal, whichever occurs first. Depth to groundwater is estimated at between 15 and 20 feet bgs.

As many as two soil samples will be collected from each boring (total of 18 soil samples) and submitted for laboratory analysis. Soil cores will be screened by use of a hand-held photoionization detector (PID) for presence of elevated concentrations of volatile organic compounds (VOC). Soil samples will be collected within depth intervals inducing the highest PID readings. If no elevated readings are observed, collection will occur within intervals where visual impacts appear or odors are detected. If no indications of contamination are found, the soil samples will be collected within depth intervals selected by EPA or the START field team. Typically, samples would be collected within 0-2 feet bgs and within the capillary fringe (if groundwater is encountered) or within the bottom portion of the boring (if refusal is encountered).

At each sampling interval, a grab sample for analysis for VOCs and total petroleum hydrocarbons (TPH) – gasoline range organics (GRO) will be collected in accordance with EPA SW-846 Method 5035; approximately 5-gram plugs of soil (one plug per sample container) will be collected by use of a

disposable, tipless, plastic syringe, and transferred to two 40-milliliter (mL) vials preserved with sodium bisulfate, and one 40-mL vial preserved with methanol. In addition, one unpreserved 40-mL vial or similar container will be packed with soil for percent solids determination. Remaining soil from each sample interval will be placed in a disposable aluminum pie pan by use of a disposable stainless steel spoon, homogenized, and placed into two 8-ounce jars for analyses for TPH – diesel range organics (DRO), polycyclic aromatic hydrocarbons (PAH), and total Resource Conservation and Recovery Act (RCRA) metals (excluding mercury).

In addition, five surface soil samples will be collected by use of a stainless steel garden trowel. At each sampling interval, 3 to 5 aliquots per sample would be placed in a disposable aluminum pie pan and a grab sample for analysis for VOCs and TPH – GRO will be collected in accordance with EPA SW-846 Method 5035; approximately 5-gram plugs of soil (one plug per sample container) will be collected by use of a disposable, tipless, plastic syringe, and transferred to two 40-mL vials preserved with sodium bisulfate, and one 40-mL vial preserved with methanol. In addition, one unpreserved 40-mL vial or similar container will be packed with soil for percent solids determination. Remaining soil from each composite sample will be homogenized and placed into two 8-ounce jars for analyses for TPH – DRO, PAHs, and total RCRA metals (excluding mercury).

Groundwater Sampling

Tetra Tech proposes to advance DPT temporary wells for groundwater sampling at as many as 9 locations. Each DPT well will be collocated with a DPT soil boring (see Appendix B, Figure 2). START will collect groundwater samples near the water table (approximately 15 to 20 feet bgs) at each DPT temporary well.

Samples from temporary wells will be collected by use of a Geoprobe® Screen Point 16 sampling apparatus containing either disposable, 4-foot-long, PVC screens or a Geoprobe reusable stainless steel screen. At each location, the sampler will be advanced to approximately 4-5 feet below the water table, and then the screen will be exposed to the aquifer. After the screen is deployed at the bottom of the boring, about 1 gallon of water will be purged through disposable polyethylene tubing utilizing a check valve placed at the bottom of the tubing.

Samples for low-level VOCs analysis via SW-846 Method 8260 will be collected into three 40-mL vials preserved with hydrochloric acid (HCl). Samples for analysis for PAHs via SW-846 Method 8270 will be collected in unpreserved 1-liter (L) amber glass bottles. Water samples submitted for TPH-GRO analysis via SW-846 Method 8260 will be collected in two 40-mL vials and preserved with HCl. Samples for

TPH-DRO analysis via SW-846 Method 8270 will be collected in unpreserved 1-L amber glass bottles (one container per sample). Samples for total RCRA metals analysis via SW-846 Method 6020 will be collected in 1-L plastic bottles preserved with nitric acid (one container per sample).

After sampling at each location, the groundwater sampler and rods will be decontaminated with a tap water and Alconox wash and tap water rinse before sampling occurs at the next location. New tubing will be used at each well location.

Following collection of each sample, its location (i.e., depth and global positioning system [GPS] coordinates) will be recorded in the site logbook in accordance with EPA Region 7 SOP 2341.01. Each sample will be labeled and packaged accordingly, and placed in a cooler maintained at or below a temperature of 4 degrees Celsius (°C) from time of collection until submittal to EPA Region 7 laboratory for analysis. After completion of sampling, all DPT boreholes will be plugged with bentonite from bottom of hole to ground surface. Any disturbance to surface materials (concrete or asphalt) will be patched with appropriate material.

ACBM Sampling

Approximately 15 bulk samples will be collected from suspected ACBM. Selection of sampling locations will be based on a site inspection by Tetra Tech START.

Bulk samples will be collected by use of sampling devices appropriate for the suspect building materials. The samples will be placed into Whirl-pak bags. Non-dedicated sampling equipment will be decontaminated by application of a dry wipe method after sampling concludes at each sampling location. Sample locations and material quantities will be recorded on an inspection log. All samples will be stored in coolers, pending submittal to a Tetra Tech-contracted laboratory for analysis for asbestos via polarized light microscopy (PLM). Additionally, a portion of the bulk samples that yield low asbestos results (less than 3% asbestos) via PLM analysis will be re-analyzed via EPA Point Count 400.

LBP Screening

Paint-covered surfaces will be screened for lead by use of an x-ray fluorescence (XRF) spectrometer to assess presence and determine quantity of LBP. Screening locations and results will be recorded on an inspection log. Because standard protocol is to rely solely on XRF results during these types of inspections, no collection of laboratory confirmation samples for lead analysis is proposed.

XRF screening results exceeding 1 milligram per square centimeter (mg/cm²) of lead will be considered positive for LBP.

QUALITY CONTROL SAMPLES

To evaluate sample QC, one water field blank and one water rinsate blank will be prepared as specified in Section 2.5 of the QAPP form, using deionized (DI) water. The field blank will be prepared by pouring DI water into preserved sample containers. The rinsate sample will be prepared by running DI water through the Geoprobe Screen Point 16 sampler immediately following decontamination of the sampler, and allowing the water to flow into preserved sample containers. In addition, one laboratory-prepared water trip blank will be submitted to the laboratory to evaluate contamination possibly introduced during transportation of containers and samples. Field duplicate surface soil, subsurface soil and groundwater samples will be split samples, and will be collected at a rate of 10 percent. Relative percent differences between results from duplicate samples will be used for informational purposes only. The higher result from the duplicate sample pair will be used for decision-making purposes. Analytical accuracy and precision will be determined via analysis of laboratory-prepared spikes and duplicates.

ANALYTICAL METHODS

Surface soil, subsurface soil, and groundwater and samples will be analyzed at the EPA Region 7 laboratory for VOCs, TPH-GRO, TPH-DRO, PAHs, and total RCRA metals (excluding mercury). Samples will be analyzed according to appropriate EPA methods, as listed in Table 1 of the QAPP form. START will ensure that the EPA Region 7 laboratory can implement project-required analytical methods for the contaminants of concern at the levels required. Standard turnaround times and detection limits for those methods will be adequate for this project. Appropriate containers and physical/chemical preservation techniques will be applied during field activities to help verify acquisition of representative analytical results. Submittal of samples to the laboratory is expected in August 2018. Specified analytical methods are expected to achieve levels of detection that will enable EPA decision-makers to determine if response is warranted to address site-related contamination presenting a threat to human health or the environment. Results will be compared to Missouri Risk-Based Corrective Action (MRBCA) Default Target Levels (DTL) and Tier I Risk-Based Target Levels (RBTL) for residential and/or industrial land use.

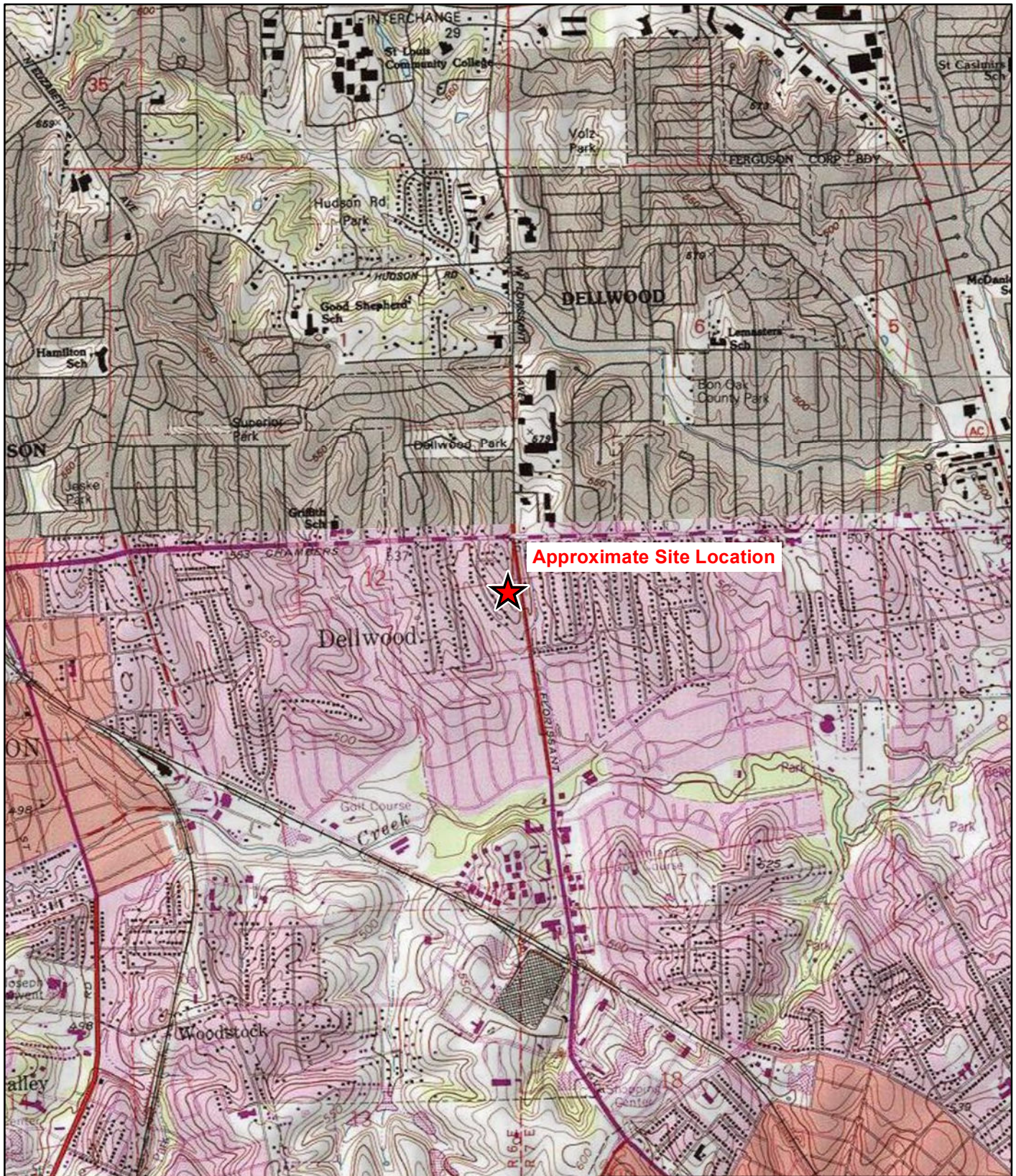
Samples of suspected ACBM will be analyzed for asbestos according to EPA 600/R-93/116, which is analysis via PLM. A portion of samples determined by PLM analysis to contain asbestos, but at a low amount (less than 3% asbestos), will be re-analyzed via EPA Point Count 400 (EPA Method 600/R-93/116). Bulk materials samples will be submitted for analysis to a START-contracted, licensed laboratory that also is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

REFERENCES

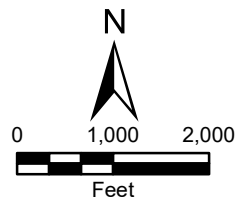
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APPENDIX B

FIGURES



Approximate Site Location



Former AutoZone
9947 West Florissant Ave
Dellwood, Missouri

Figure 1
Site Location Map





Legend

- Proposed soil/groundwater sample location
- Proposed surficial soil sample location
- Former AutoZone building boundary
- Subject property boundary


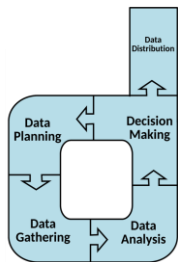
Former AutoZone
9947 West Florissant Ave
Dellwood, Missouri

Figure 2
Proposed Sample Locations Map



APPENDIX C

SITE-SPECIFIC DATA MANAGEMENT PLAN

		EPA Site-Specific Data Management Plan			
		Site Name:	Former AutoZone Site – 15 th Street and First Ave.	Site ID:	NA
		Author:	Ann Marie Pohlman	Affiliation:	EPA Region 7
		Date Initiated:	07/16/2018	Last Updated:	07/16/2018

This site-specific data management plan (SSDMP) is intended to provide guidance for data collection, storage, analysis, and distribution. The data collection and management practices identified in this plan are designed to ensure data integrity and consistency throughout the project. The SSDMP should be used in conjunction with the Region 7 Regional Data Management Plan. The SSDMP is not intended to be all encompassing regarding data management. Additionally, this document is intended to be updated as data management practices change; therefore, revisions of this plan are expected during a project.

Data Planning

Data Quality Objective	Data Stream(s)
Determine if hazardous substances are present at levels that pose a threat to human health and the environment	Analytical Data
Assess groundwater pathway for removal/further site evaluation	Documents/Files, Spatial Data

Data Planning – Site Contact List

Name (Affiliation)	Role	Email	Phone Number
Randy Brown	EPA Project Manager (PM)	Brown.randolph@epa.gov	913-551-7978
Clayton Hayes	START Data Manager	Clayton.hayes@tetrattech.com	816-412-1933
	Public Information Officer (PIO)		
	Community Involvement Coordinator		
Ann Marie Pohlman	START PM	Annmarie.pohlman@tetrattech.com	816-412-1961
Clayton Hayes	START GIS Team Contact	Clayton.hayes@tetrattech.com	816-412-1933
	State Agency Contact		
	Local Agency Contact		

Data Gathering - Collection

Data Stream	Collection Tool	Specifications	Instructions	Repository
Images	Camera/Iphone	Photographer, Lat/Long, date, time		SEMS
Documents / Files	Email/Scan	Form name, User	Copy electronic scan (PDFs) versions to repository	Response.EPA.gov / SEMS
Monitoring Data	Logbook	LocationID	Record readings in logbook; include copy in report	SEMS
Sampling Data	Field Sheet	SampleID, LocationID,	Attach to report and enter in Scribe	Scribe / SEMS
Analytical Data	Scribe	SampleID, Result, Analyte	Transfer electronic data deliverable (EDD) into Scribe	Scribe / SEMS
Spatial Data	GIS	Lat/Long	Record coordinates by use of hand-held device	ER Cloud

Data Gathering – Quality Assurance/Quality Control

Data Stream	QA/QC Method	Frequency	Responsibility
Data Collection Instrumentation	Calibration	Per recommended instrumentation requirement (minimum)	START PM
Images	Technical/Editorial Review	Prior to storage deposit	START PM
Documents / Files	Technical/Editorial Review	Prior to storage deposit	START PM
Contacts	Technical/Editorial Review	As needed	START PM
Monitoring Data	Technical Review	Prior to storage deposit	START PM
Sampling Data	Technical Review	Prior to storage deposit	START Data Manager
Analytical Data	Technical Review	Prior to storage deposit	START Data Manager
Spatial Data	Technical Review	Prior to storage deposit	START GIS Team

Data Gathering – Storage

Repository	Instructions	Frequency	Responsibility	Access Details
Scribe	Scribe project created at direction of EPA Project Manager and Data Manager	At beginning of project – prior to data collection	START Data Manager	Scribe Project # (to be determined)
ER Cloud	Store operational data on the ER Cloud in accordance with EPA requirements	Throughout project	START Data Manager	ER Cloud secured access
SEMS	Archive project-related documents in accord with EPA requirements	Upon completion of project	EPA R7	https://www.epa.gov/enviro/sems-search

Data Archiving

EPA PM is responsible for managing site information and ensuring submission of all site-related records for proper archiving in accordance with EPA requirements.

Data Analysis – Decision Making

Analysis Task	Method	Data Storage Source	Frequency	Responsibility	Deliverable
Sample results evaluation	Data report/ site assessment report review	Project geodatabase, Scribe	As directed by EPA PM	EPA PM/START PM	Map and/or Geoplatform Viewer

Data Distribution

Deliverable	Audience	Review	Approve	Release Method
Site Assessment Report	EPA / MDNR / Public	EPA PM/PIO	EPA PM/PIO	Response.epa.gov / FOIA Request