



December 27, 2012


Mr. Todd Davis  
Site Assessment Manager  
U.S. Environmental Protection Agency, Region 7  
11201 Renner Boulevard  
Lenexa, Kansas 66219

**Subject: Quality Assurance Project Plan, Limited Phase II Targeted Brownfields Assessment  
Municipal Farms – Former Municipal Correctional Institute, Kansas City, Missouri  
U.S. EPA Region 7 START 3, Contract No. EP-S7-06-01; Task Order No. 0002.015.022  
Task Monitor: Todd Davis, Site Assessment Team Leader**

Dear Mr. Davis:

Tetra Tech EM Inc. is submitting the attached Quality Assurance Project Plan for a Limited Phase II Targeted Brownfields Assessment (TBA) of the Municipal Farms – Municipal Correctional Institute (MCI) in Kansas City, Missouri. If you have any questions or comments, please contact the project manager at (816) 412-1768.

Sincerely,

  
for Stephanie Luebbering  
START Project Manager

  
Ted Faile, PG, CHMM  
START Program Manager

Enclosures

cc: Roy Crossland, EPA Project Officer (cover letter only)

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X9004.06.0002.015.022

**QUALITY ASSURANCE PROJECT PLAN  
FOR A LIMITED PHASE II TARGETED BROWNFIELDS ASSESSMENT AT THE  
MUNICIPAL FARMS – MUNICIPAL CORRECTIONAL INSTITUTE  
KANSAS CITY, MISSOURI**

**Superfund Technical Assessment and Response Team (START) 3 Contract  
Contract No. EP-S7-06-01, Task Order 0002.015.022**

Prepared For:

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

December 27, 2012

Prepared By:

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## CONTENTS

<b><u>Section/Table</u></b>	<b><u>Page</u></b>
QUALITY ASSURANCE PROJECT PLAN FORM.....	1
TABLE 1: SAMPLE SUMMARY .....	5
TABLE 2: DATA QUALITY OBJECTIVE SUMMARY .....	6

### **Attachment**

- A SITE-SPECIFIC INFORMATION REGARDING THE MUNICIPAL FARMS – MUNICIPAL CORRECTIONAL INSTITUTE PROPERTY
- B FIGURES

**Region 7 Superfund Program**  
**Addendum to the QAPP for Superfund Integrated Site Assessment and Targeted Brownfields Assessment Activities (October 2012)**  
**for the Municipal Farms – Municipal Correctional Institute (MCI)**

**Project Information:**

<b>Project Name:</b> Municipal Farms – MCI		<b>City:</b> Kansas City	<b>State:</b> MO
<b>EPA Project Manager:</b> Todd Davis		<b>START Project Manager:</b> Stephanie Luebbering	
<b>Approved By:</b> <i>[Signature]</i>	<b>Title:</b> START Project Manager	<b>Date:</b> 12/27/12	<b>Prepared For:</b> EPA Region 7 Superfund Division
<b>Approved By:</b> <i>[Signature]</i>	<b>Title:</b> START Program Manager	<b>Date:</b> 12/27/12	
<b>Approved By:</b> <i>[Signature]</i>	<b>Title:</b> START QA Manager	<b>Date:</b> 12/27/12	<b>Prepared By:</b> Stephanie Luebbering <b>Date:</b> December 2012
<b>Approved By:</b>	<b>Title:</b> EPA Project Manager	<b>Date:</b>	
<b>Approved By:</b>	<b>Title:</b> EPA Region 7 QA Manager	<b>Date:</b>	<b>Tetra Tech START Project Number:</b> 9004.06.0002.015.022

**1.0 Project Management:**

**1.1 Distribution List**

EPA—Region 7: Todd Davis, EPA Project Manager  
Diane Harris, EPA Region 7 QA Manager

Tetra Tech START: Stephanie Luebbering, Project Manager  
Kathy Homer, QA Manager

**1.2 Project/Task Organization**

Todd Davis, of the EPA Region 7 Superfund Division, will serve as the EPA Project Manager for the activities described in this QAPP. Stephanie Luebbering, of Tetra Tech EM Inc., (Tetra Tech), will serve as the START Project Manager for field activities.

**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 Integrated Assessment and Targeted Brownfields Assessment Program (updated October 2012), 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"/> Removal Action |
| <input type="checkbox"/> Other (description attached): | <input type="checkbox"/> Pre-CERCLIS Area Screening | <input type="checkbox"/> Removal Site Evaluation           |   |

Other Description:

Schedule: The Limited Phase II Targeted Brownfields Assessment (TBA) is scheduled to begin in February 2013 and is anticipated to take up to 1 week to complete.

- ☐ Description in referenced report: \_\_\_\_\_  

Title
Date

**1.5 Quality Objectives and Criteria for Measurement Data:**

- |                        |   |
|------------------------|---|
| a. Accuracy:           | <input checked="" type="checkbox"/> Identified in attached table. |
| b. Precision:          | <input checked="" type="checkbox"/> Identified in attached table. |
| c. Representativeness: | <input checked="" type="checkbox"/> Identified in attached table. |
| d. Completeness*:      | <input checked="" type="checkbox"/> Identified in attached table. |
| e. 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 decisions based on any or all of the remaining validated data.

**1.6 Special Training/Certification Requirements:**

- ☒ OSHA 1910      ☒ Special Equipment/Instrument Operator (describe below):      ☐ Other (describe below):

Sampling personnel will be experienced in Geoprobe® operation and in the collection of soil and groundwater samples.

**1.7 Documentation and Records:**

- |  |  |   |   |                                |
|--|--|---|---|--------------------------------|
| <input checked="" type="checkbox"/> Field Sheets     | <input checked="" type="checkbox"/> Daily Log              | <input type="checkbox"/> Trip Report              | <input checked="" type="checkbox"/> Area Maps | <input type="checkbox"/> Video |
| <input checked="" type="checkbox"/> Chain of Custody | <input checked="" type="checkbox"/> Health and Safety Plan | <input checked="" type="checkbox"/> Letter Report | <input checked="" type="checkbox"/> Photos    |                                |
- ☒ Sample documentation will follow EPA Region 7 SOP 2420.05.
- ☒ Other: Analytical information will be handled according to procedures identified in Table 2.

**Region 7 Superfund Program**  
**Addendum to the QAPP for Superfund Integrated Site Assessment and Targeted Brownfields Assessment Activities (October 2012)**  
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**2.0 Measurement and Data Acquisition:**

**2.1 Sampling Process Design:**

- |  |   |  |   |
|--|---|--|---|
| <input type="checkbox"/> Random Sampling                       | <input type="checkbox"/> Transect Sampling                    | <input checked="" type="checkbox"/> Biased/Judgmental Sampling | <input type="checkbox"/> Stratified Random Sampling     |
| <input type="checkbox"/> Search Sampling                       | <input type="checkbox"/> Systematic Grid                      | <input type="checkbox"/> Systematic Random Sampling            | <input checked="" type="checkbox"/> Definitive Sampling |
| <input type="checkbox"/> Screening w/o Definitive Confirmation | <input type="checkbox"/> Screening w/ Definitive Confirmation |  |   |
| <input checked="" type="checkbox"/> Sample Map Attached        |   |  |   |

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

The proposed sampling scheme will incorporate judgmental methods with definitive laboratory analysis, in accordance with the *Guidance for Performing Site Inspections Under CERCLA*, OSWER Directive #9345.1-05, September 1992. Judgmental sampling is the subjective (based) selection of sampling locations based on historical information, visual inspection, and the best professional judgment of the sampler(s).

See Attachments A and B for additional site-specific information and maps.

Sample Summary Location	Matrix	# of Samples*	Analysis
On-site Geoprobe® boring locations	Soil	5	VOCs, SVOCs, RCRA Metals, TPH-GRO, TPH-DRO, TPH-ORO
On-site Geoprobe® temporary monitoring wells	Groundwater	2	VOCs, SVOCs, dissolved RCRA Metals, TPH-GRO, TPH-DRO, TPH-ORO, Pesticides, Herbicides, Total Suspended Solids (TSS)
On-site surface soil locations	Surface soil	6	VOCs, SVOCs, RCRA Metals, TPH-GRO, TPH-DRO, TPH-ORO, Pesticides, Herbicides
On-site	Soil	1	Soil type classification

\*NOTE: Quality control (QC) samples are not included with these totals. See Table 1 for a complete sample summary.

**2.2 Sample Methods Requirements:**

Matrix	Sampling Method	EPA SOP(s)/Methods
Soil	Subsurface soil samples will be collected with a Geoprobe® direct-push apparatus, using Macro-Core samplers fitted with polyvinyl chloride (PVC) liners and transferred to the appropriate sample containers.	SOPs 4230.07, 4230.03, & 4231.2012; Method 5035
Groundwater	Groundwater samples will be collected from Geoprobe® temporary monitoring wells. These groundwater samples will be collected through Geoprobe® rods via disposable polyethylene tubing and a peristaltic pump or check valve.	SOPs 4230.07 and 4231.2007
Surface soil	Surface soil samples will be collected with a stainless steel spoon from a depth of 0 to 6 inches below ground surface (bgs).	SOPs 4231.2012; Method 5035
Soil	A soil classification sample will be collected at a depth of at least 10 feet bgs or directly above bedrock, whichever is encountered first, and will be placed directly into a laboratory-supplied container.	ASTM D422-63

- ☐ Other Description:

**2.3 Sample Handling and Custody Requirements:**

- ☒ Samples will be packaged and preserved in accordance with procedures defined in Region 7 EPA SOP 2420.06.
- ☒ COC will be maintained as directed by Region 7 EPA SOP 2420.04.
- ☐ Samples will be accepted according to Region 7 EPA SOP 2420.01.
- ☒ Other (Describe): Samples submitted to a START-contracted laboratory will be accepted in accordance with procedures established by the laboratory.

**2.4 Analytical Methods Requirements:**

- ☒ Identified in attached table.
- ☒ Rationale: The requested analyses have been selected based on historical information about the site and program experience with similar types of sites.
- ☐ Other (Describe):

**Region 7 Superfund Program**  
**Addendum to the QAPP for Superfund Integrated Site Assessment and Targeted Brownfields Assessment Activities (October 2012)**  
**for the Municipal Farms – Municipal Correctional Institute (MCI)**

**2.5 Quality Control Requirements:**

- ☐ Not Applicable
- ☒ Identified in attached table.
- ☒ In accordance with the Generic Quality Assurance Project Plan for Superfund Integrated Assessment and Targeted Brownfields Assessment Program (updated October 2012).
- ☒ Field QC Samples: For this investigation, one field blank (water) will be prepared with distilled, deionized (DI) water provided by the START-contracted laboratory. The field blank will be collected to evaluate contamination of sampling containers and/or preservatives, and to assess contamination potentially introduced during the sampling and laboratory procedure(s). One equipment rinsate blank will be prepared with DI water provided by the START-contracted laboratory. The equipment rinsate will evaluate the effectiveness of decontamination procedures for Geoprobe® sampling equipment. In addition, one soil trip blank and one water trip blank will be prepared by the START-contracted laboratory to evaluate contamination introduced during transportation of the containers/samples. The QC samples will be submitted for the analyses listed in the attached tables. Evaluation of blank samples depends on the levels of contamination found in environmental samples to determine whether the environmental samples are representative. Analytical results of the blank samples will be evaluated on a qualitative basis by the EPA project manager and EPA contractor(s) to determine a general indication of field-introduced and/or lab-introduced contamination. Because evaluation for total method precision is not necessary for this project, no field duplicates will be collected.
- ☐ Other (Describe):

**2.6 Instrument/Equipment Testing, Inspection, and Maintenance Requirements:**

- ☐ Not Applicable
- ☒ In accordance with the Generic Quality Assurance Project Plan for Superfund Integrated Assessment and Targeted Brownfields Assessment Program (updated October 2012).
- ☒ Testing, inspection, and maintenance of analytical instrumentation will proceed in accordance with the previously referenced SOPs and/or manufacturers' recommendations. Testing, inspection, and maintenance of field instruments will proceed in accordance with manufacturers' recommendations.

**2.7 Instrument Calibration and Frequency:**

- ☐ Not Applicable
- ☒ In accordance with the Generic Quality Assurance Project Plan for Superfund Integrated Assessment and Targeted Brownfields Assessment Program (updated October 2012).
- ☒ Calibration of laboratory equipment will be performed as described in the previously referenced SOPs and/or manufacturers' recommendations.
- ☒ Other (Describe): Calibration of field instruments (photoionization detector [PID], etc.) will be conducted in accordance with manufacturers' recommendations.

**2.8 Inspection/Acceptance Requirements for Supplies and Consumables:**

- ☐ Not Applicable
- ☒ In accordance with the Generic Quality Assurance Project Plan for Superfund Integrated Assessment and Targeted Brownfields Assessment Program (updated October 2012).
- ☒ All 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 Integrated Assessment and Targeted Brownfields Assessment Program (updated October 2012).
- ☒ Previous data or information pertaining to the area (including other analytical data, reports, photos, maps, etc., that are referenced in this QAPP) has been compiled by EPA and/or its contractor(s) from other sources. Some of that data has not been verified by EPA and/or its contractor(s); however, that unverified information will not be used for decision-making purposes by EPA without verification by an independent professional qualified to verify such data or 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): Laboratory data acquired by the START-contracted laboratory will be managed in accordance with procedures established by the laboratory.

**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 (to be determined).

**Region 7 Superfund Program**  
**Addendum to the QAPP for Superfund Integrated Site Assessment and Targeted Brownfields Assessment Activities (October 2012)**  
**for the Municipal Farms – Municipal Correctional Institute (MCI)**

**3.1A Corrective Action:**

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

**3.2 Reports to Management:**

- ☐ Audit Report                      ☒ Data Validation Report                      ☐ Project Status Report                      ☐ None Required
- ☒ A letter report describing the sampling techniques, locations, problems encountered (with resolutions to those problems), and interpretation of analytical results will be prepared by START and submitted to the EPA.
- ☒ Reports will be prepared in accordance with the Generic Quality Assurance Project Plan for Superfund Integrated Assessment and Targeted Brownfields Assessment Program (updated October 2012).
- ☐ Other (Describe):

**4.0 Data Validation and Usability:**

**4.1 Data Review, Validation, and Verification Requirements:**

- ☐ Identified in attached table.
- ☒ Data review and verification will be performed in accordance with the Generic Quality Assurance Project Plan for Superfund Integrated Assessment and Targeted Brownfields Assessment Program (updated October 2012).
- ☐ 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): The analytical data package will be validated internally by the contracted laboratory in accordance with the laboratory's established SOPs. A Tetra Tech chemist will conduct an external verification and validation of the laboratory data package using a method 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 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.

**4.2 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, for 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): If any problems with field measurements or analytical data are identified by Tetra Tech's data verification/validation, the Tetra Tech Project Manager will verbally, and in writing if requested by EPA, explain the circumstances of the failure, describe any corrective action taken, and provide an opinion on the limitations and usefulness of the data to the EPA Project Manager.

**4.3 Reconciliation with User Requirements:**

- ☒ 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):

<b>Region 7 Superfund Program</b> <b>Addendum to the Generic QAPP for Superfund Integrated Site Assessment and Targeted Brownfields Assessment Activities (October 2012)</b> <b>for the Municipal Farms – Municipal Correctional Institute (MCI)</b>							
<b>Table 1: Sample Summary</b>							
<b>Project Name:</b> Municipal Farms – MCI site				<b>Location:</b> Kansas City, Missouri; See Attachment B, Figure 1			
<b>Project Manager:</b> Stephanie Luebbing				<b>Activity/ASR #:</b> To be determined		<b>Date:</b> December 2012	
No. of Samples	Matrix	Location	Purpose	Depth or other Descriptor	Requested Analysis	Sampling Methods	Analytical Method
5	Soil	On-site Geoprobe® boring locations	To assess potential sub-surface soil contamination from site operations	2-foot interval (between 0 and 20 feet below ground surface [bgs]) based on field screening	VOCs, SVOCs, RCRA Metals, TPH-GRO, TPH-DRO, TPH-ORO6	EPA SOPs 4230.07, 4230.03, & 4231.2012; EPA Method 5035	Methods: 8260, 8270, 6020, 7471B
2	Groundwater	On-site Geoprobe® temporary monitoring wells	To assess potential groundwater contamination from site operations	Directly below the water table	VOCs, SVOCs, Dissolved RCRA Metals, TPH-GRO, TPH-DRO, TPH-ORO, Pesticides, Herbicides, TSS	EPA SOPs 4230.07 & 4230.15	Methods: 8260, 8270, 6010, 7471B, 8081, 8151, 160.2
5	Surface soil	Suspected drainage areas	To assess potential surface soil contamination from site operations	0 to 6 inches bgs	VOCs, SVOCs, RCRA Metals, TPH-GRO, TPH-DRO, TPH-ORO, Pesticides, Herbicides	EPA SOPs 4230.03, & 4231.2012; EPA Method 5035	Methods: 8260, 8270, 6020, 7471B, 8081, 8151
1	Surface soil	Next to radio tower	To assess potential surface soil contamination from site operations	0 to 6 inches bgs	RCRA Metals, TPH-GRO, TPH-DRO, TPH-ORO	EPA SOPs 4230.03, & 4231.2012	Methods: 8260, 8270, 6020, 7471B
1	Soil	On-site Geoprobe® boring locations	To determine soil classification	From at least 10 feet bgs or directly above bedrock	Soil Classification	ASTM D422-63	ASTM D422-63
<b>QC Samples</b>							
1	Water	Rinsate Blank	To evaluate effectiveness of decontamination procedures for Geoprobe® sampling equipment	Not applicable (NA)	VOCs, SVOCs, RCRA Metals, TPH-GRO, TPH-DRO, TPH-ORO, Pesticides, Herbicides	NA	Methods: 8260C, 8270, 6010, 7471B, 8081, 8151
1	Water	Field Blank	To assess field-introduced and laboratory-derived contamination	NA	VOCs, SVOCs, RCRA Metals, TPH-GRO, TPH-DRO, TPH-ORO, Pesticides, Herbicides	NA	Methods: 8260C, 8270, 6010, 7471B, 8081, 8151
1	Water	Trip Blank	To assess transportation-related contamination	NA	VOCs	NA	Method 8260C
1	Soil	Trip Blank	To assess transportation-related contamination	NA	VOCs	NA	Method 8260C



Region 7 Superfund Program Addendum to the Generic QAPP for Superfund Integrated Site Assessment and Targeted Brownfields Assessment Activities (October 2012) for the Municipal Farms – Municipal Correctional Institute (MCI)						
Table 2: Data Quality Objective Summary						
Project Name: Municipal Farms – MCI site				Location: Kansas City, Missouri; See Attachment B, Figure 1		
Project Manager: Stephanie Luebbering				Activity/ASR #: To be determined		Date: December 2012
Analysis	Analytical Method	Data Quality Measurements				
		Accuracy	Precision	Representativeness	Completeness	Comparability
SOIL						
VOCs, SVOCs, RCRA Metals, TPH-GRO, TPH-DRO, TPH-ORO, Pesticides, Herbicides	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 defined	Standardized procedures for sample collection and analysis will be used.
GROUNDWATER						
VOCs, SVOCs, RCRA Metals, TPH-GRO, TPH-DRO, TPH-ORO, Pesticides, Herbicides, TSS	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 defined	Standardized procedures for sample collection and analysis will be used.

**ATTACHMENT A**

**SITE-SPECIFIC INFORMATION REGARDING THE MUNICIPAL FARMS – MUNICIPAL  
CORRECTIONAL INSTITUTE PROPERTY**

## **INTRODUCTION**

The Tetra Tech EM 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 Limited Phase II Targeted Brownfields Assessment (TBA) of the Municipal Farms – Municipal Correctional Institute (MCI) (site) in Kansas City, Missouri. The primary purpose of the investigation is to determine whether past site operations have resulted in releases of hazardous contaminants to the soil and groundwater.

This quality assurance project plan (QAPP) identifies site-specific features and addresses elements of the sampling strategy and analytical methods proposed for this Phase II TBA. An assessment of the data acquired will be conducted to determine if additional response is warranted.

## **SITE DESCRIPTION AND BACKGROUND**

The site is an approximately 21.8-acre tract of land at 8700 Ozark Road in Kansas City, Jackson County, Missouri. According to the City of Kansas City, Missouri (City), KC Mapper website, the legal description of the tract of land that encompasses the site is “Sec 30-49-32 NW ¼, all that pt of NW ¼ ly E of Eastern Avenue and North of Ozark Road and swly of Raytown Road (ex W 180 thof)” (City of Kansas City [City] 2012). The site is depicted on the United States Geological Survey (USGS) 7.5-minute series Independence, Missouri topographic quadrangle map (USGS 1996) in northwest ¼, Section 30, Township 49 north, Range 32 west (see Figure 1, Attachment B). The site is part of a lightly developed area with an adjoining residential neighborhood in Kansas City, Missouri. The coordinates at the approximate center of the site are 39° 2' 24.88" north latitude and 94° 29' 26.08" west longitude (Google Earth 2012).

## **SITE HISTORY/INVESTIGATIONS**

The site is currently vacant land except for some improved roadways, a parking lot associated with the previous development, a radio tower, and a municipal garden (see Figure 2, Attachment B). The former Men's Reformatory was north of the former MCI. According to historical fire insurance maps, the Men's Reformatory was constructed between 1911 and 1914 (Tetra Tech 2011a). The Men's Reformatory was used by the City until the 1960s and was demolished in 1991 (Environmental Advisors and Engineers, Inc. [EAE] 2012). At least one 30-gallon gasoline tank in a concrete box was on the west side of the Men's Reformatory main building (Tetra Tech 2011a).

The former MCI was on 9.7 acres of land on the north side of Ozark Road. Construction of the correction institute began in 1968. It was completed and occupied in May 1971. The structures were abated for asbestos and demolished in 2011 (EAE 2012). The environmental database report indicated that a 5,000-gallon underground storage tank (UST) had been removed from the MCI in 1994. A maintenance building was reportedly present along the southern boundary of the current location of the community garden. The maintenance building reportedly stored gas, diesel, oil-based and latex paint, auto lubricants, antifreeze, paint thinner, and other miscellaneous solvents and cleaners (Tetra Tech 2011a).

In May 2010, a portion of the site surface soils was sampled and field screened for Resource Conservation and Recovery Act (RCRA) metals using an x-ray fluorescence (XRF) analyzer. The sampling and analysis was performed by the Soil Chemistry Laboratory, Department of Agronomy, Kansas State University (KSU). KSU concluded that no significant concentrations had been identified inconsistent with future use of a portion of the site as a community garden, but recommended followup testing for possible presence of pesticides.

In March 2011, on behalf of the City, Tetra Tech conducted a Phase I Environmental Site Assessment (ESA) of the Municipal Garden Farm Community Garden project, which is included in the site boundaries. In April 2011, Tetra Tech conducted a Limited Phase II ESA for the Municipal Garden Farm Community Garden project. No groundwater was encountered, but the soil samples collected during the Phase II ESA were analyzed for volatile organic compounds (VOC), semivolatile organic compounds (SVOC), total petroleum hydrocarbons (TPH)-gasoline-range organics (GRO), TPH-diesel-range organics (DRO), TPH-oil-range organics (ORO), RCRA metals, and pesticides. Based on the sampling during the Phase II ESA, the soil did not appear to have been affected by historical activities within the area of the proposed community garden or within adjacent properties (Tetra Tech 2011b).

## **SAMPLING STRATEGY AND METHODOLOGY**

The sampling activities are tentatively scheduled to begin in February 2013 and will require approximately 2 days to complete. Proposed sampling locations are shown on Figure 3 in Appendix B. The laboratory data obtained for all samples collected during this project will be compared to the Missouri Risk-Based Corrective Action (MRBCA) Tier 1 Risk-Based Target Levels (RBTL) to assess whether further response is warranted. Descriptions of proposed samples to be collected for this Phase II TBA are as follows.

**Groundwater** – Tetra Tech will collect groundwater samples from up to two Geoprobe<sup>®</sup> temporary monitoring wells. The Geoprobe<sup>®</sup> temporary monitoring wells will be placed near the former MCI

building and near the former Men's Reformatory where the historical UST was noted on the Sanborn map (see Figure 3, Attachment B). These samples will be collected with a Screen Point 15 sampling apparatus containing a disposable 4-foot-long polyvinyl chloride (PVC) screen. At each location, the screen will be deployed directly below the water table, and a sample will be collected through disposable polyethylene tubing with either a peristaltic pump or using a check valve placed at the bottom of the tubing.

The following information will be recorded in a logbook for each temporary monitoring well location: purge times or estimated purge volumes, exact sample locations (depths and Global Positioning System [GPS] coordinates), and analyses to be performed. The groundwater samples will be submitted to the START-contracted laboratory for analyses for VOCs, SVOCs, TPH-GRO, TPH-DRO, TPH-ORO, herbicides, pesticides, RCRA metals (dissolved, including mercury). The groundwater will also be analyzed for total suspended solids (TSS). Groundwater samples to be submitted for analysis for VOCs will be collected into two 40-milliliter vials preserved with hydrochloric acid (HCl) to a pH <2. The TPH-GRO samples will be collected in two unpreserved 40-milliliter vials. Groundwater samples to be submitted for analyses for herbicides, pesticides, SVOCs, TPH-DRO, TPH-ORO, and TSS will be collected in laboratory-supplied containers. Groundwater samples to be submitted for RCRA metals analysis will be collected in a laboratory-supplied container and preserved with nitric acid (HNO<sub>3</sub>) to a pH <2. These samples will be filtered in the field for analysis for dissolved metals. All groundwater samples will be stored in coolers maintained at temperatures at or below 4 degrees Celsius (°C) pending submittal to the START-contracted laboratory.

**Subsurface soil** – Soil samples will be collected from up to five boreholes to assess the impact of site activities on sub-surface soil. The boreholes will be placed near the former stable/canning factory on the southern boundary of the site—two near the former MCI, one near the former Men's Reformatory UST, and one near the rubble pile north of the former Men's Reformatory (see Figure 3, Attachment B). Each borehole will be advanced using a truck-mounted, direct-push technology (DPT) Geoprobe<sup>®</sup> rig. At each borehole, a Geoprobe<sup>®</sup> Macro-Core soil sampler fitted with a disposable PVC sleeve will be advanced to 30 feet below ground surface (bgs), groundwater, or refusal, whichever is encountered first. Tetra Tech will log the soil type and change in lithology in the DPT soil borings. The soil core will be retrieved and screened for VOCs with a photoionization detector (PID). Samples for laboratory analysis will be collected (from each borehole) from the 2-foot interval that yields the highest PID result, or from the bottom 2-foot section of the soil core if no field screening results above background levels are recorded. Each sample for laboratory analysis will include a grab sample for analysis for VOCs collected in accordance with EPA SW-846 Method 5035, and will consist of two 40-milliliter vials, each containing

approximately 5 grams of soil and preserved with sodium bisulfate, and two 40-milliliter vials filled with soil. Two other 40-milliliter vials will be filled for analysis for TPH-GRO.

After collection of the grab samples, the remaining soil from each sample interval will be removed from the PVC liner and placed in a disposable aluminum pie pan for homogenization, and then transferred to sample containers. These containers will be submitted for analyses for TPH-DRO, TPH-ORO, SVOCs, and RCRA metals (including mercury). Pertinent data, including analyses to be performed and exact sample locations (depths and GPS coordinates), will be recorded in the field logbook for each sample. All soil samples will be stored in coolers maintained at or below 4°C pending submittal to a START-contracted laboratory.

**Surface soil** – Soil samples will be collected from up to five locations where drainage from the site likely left the property and one sample near the radio tower to assess the impact of site activities on surface soils (see Figure 3, Attachment B). Five aliquot samples will be collected from each of the five locations where drainage from the site has left the property. At each sample location where detection of noticeable staining and/or VOCs using a PID occurs, sampling will follow via EPA Method 5035 guidelines for VOCs and TPH-GRO. The remaining soil will be placed in a disposable aluminum pie pan for homogenization, and then transferred to appropriate containers. Each grab soil sample will be collected using a dedicated sampling spoon or hand auger from 0 to 6 inches bgs. These containers will be submitted for analyses for TPH-DRO, TPH-ORO, SVOCs, RCRA metals (including mercury), herbicides, and pesticides.

Five aliquot samples will also be collected near the radio tower. If a detection of noticeable staining and/or VOCs using a PID occurs, sampling will follow via EPA Method 5035 guidelines for TPH-GRO. The remaining soil will be placed in a disposable aluminum pie pan for homogenization, and then transferred to appropriate containers. Each grab soil sample will be collected using a dedicated sampling spoon or hand auger from 0 to 6 inches bgs. These containers will be submitted for analyses for TPH-DRO, TPH-ORO, and RCRA metals (including mercury).

Pertinent data, including analyses to be performed and exact sample locations (GPS coordinates), will be recorded in the field logbook for each sample. All soil samples will be stored in coolers maintained at temperatures at or below 4°C pending submittal to a START-contracted laboratory.

**Soil classification** – For classification of soil type based on grain size, START will collect a soil sample at the site within an area expected to be free from contamination but representative of the soils within the site. This sample will be collected concurrently with the soil sample collected near the former MCI

facility along the eastern portion of the site. The soil classification sample will be collected at a depth of at least 10 feet bgs or directly above bedrock, whichever is encountered first. Encounter with only one soil type is assumed. This information would be used to help determine the appropriate Tier 1 risk-based target levels under the current MRBCA model if contaminants are found at the site.

## **QUALITY CONTROL**

To evaluate sample quality control (QC), a water field blank, water trip blank, equipment rinsate blank, and a soil trip blank will be collected, as specified in Section 2.5 of the QAPP form.

Investigation-derived waste (IDW), consisting primarily of used tubing, gloves, and other solid waste will be disposed of as uncontaminated solid waste. Purge water and soil cuttings will be disposed of on site as non-hazardous waste. Issues pertaining to decontamination of personnel and sampling equipment will be addressed in a site-specific Health and Safety Plan (HASP) prepared by START.

## **ANALYTICAL METHODS**

All samples will be submitted to a START-contracted laboratory for analysis. The soil and groundwater samples will be analyzed for VOCs, SVOCs, RCRA metals (including mercury), TPH-GRO, TPH-DRO, TPH-ORO, pesticides and herbicides. Groundwater samples will be filtered in the field and submitted for analyses for dissolved (filtered) metals. Groundwater samples also will be analyzed for TSS. All samples will be analyzed according to SOPs and methods specified on the QAPP form. START has selected a laboratory whose analytical detection limits are below the applicable MRBCA default target levels for all the analytes. Appropriate containers and physical/chemical preservation techniques will be employed during the field activities to help verify that representative analytical results are obtained. Samples will be submitted to the laboratory in February 2013.

## REFERENCES

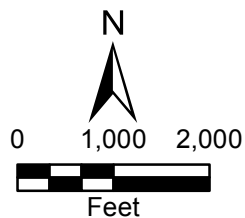
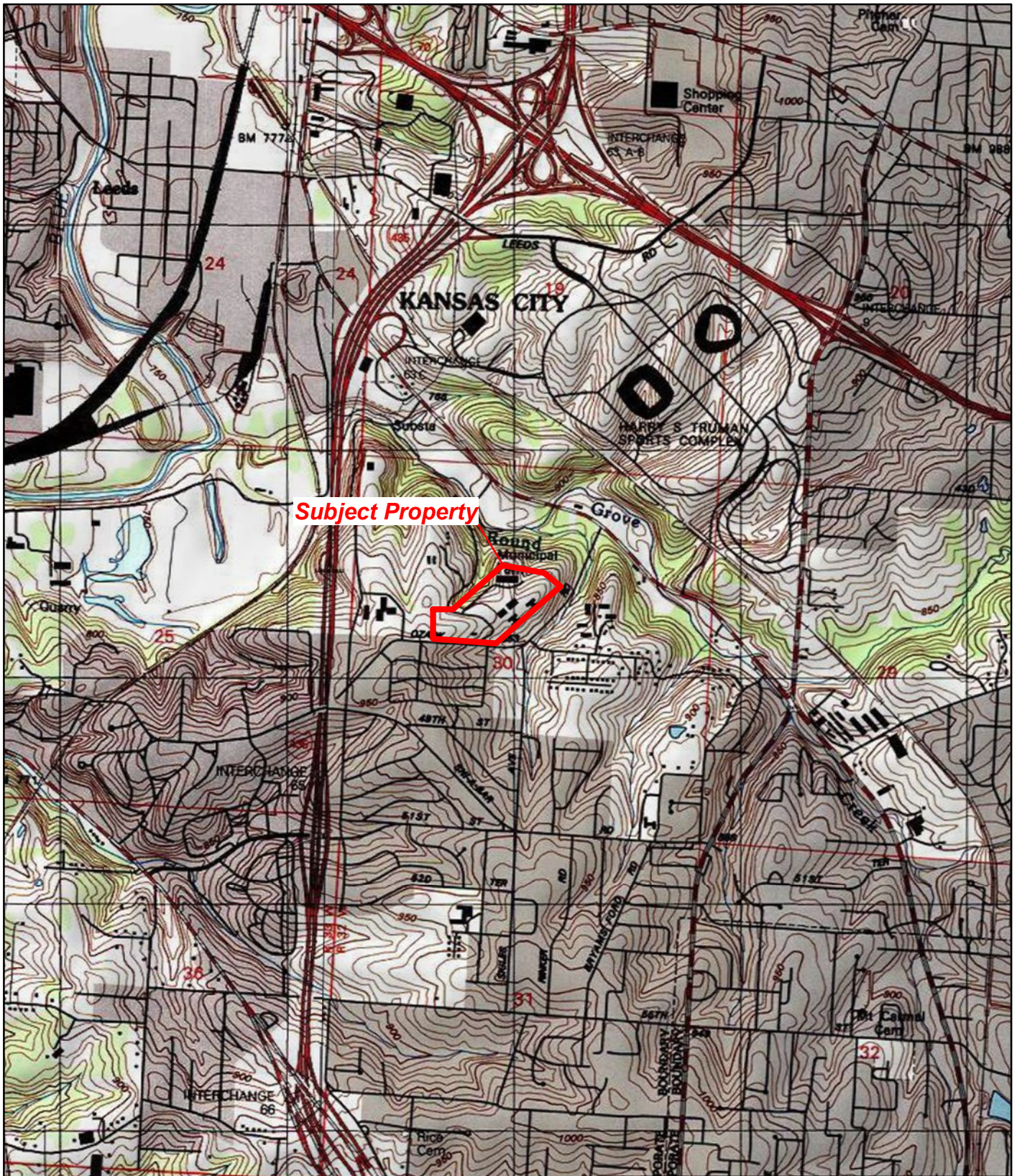
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## **ATTACHMENT B**

### **FIGURES**





Kansas City Municipal Farms - MCI  
8100 Ozark Road  
Kansas City, Missouri

**Figure 1**  
Site Location Map







#### Legend

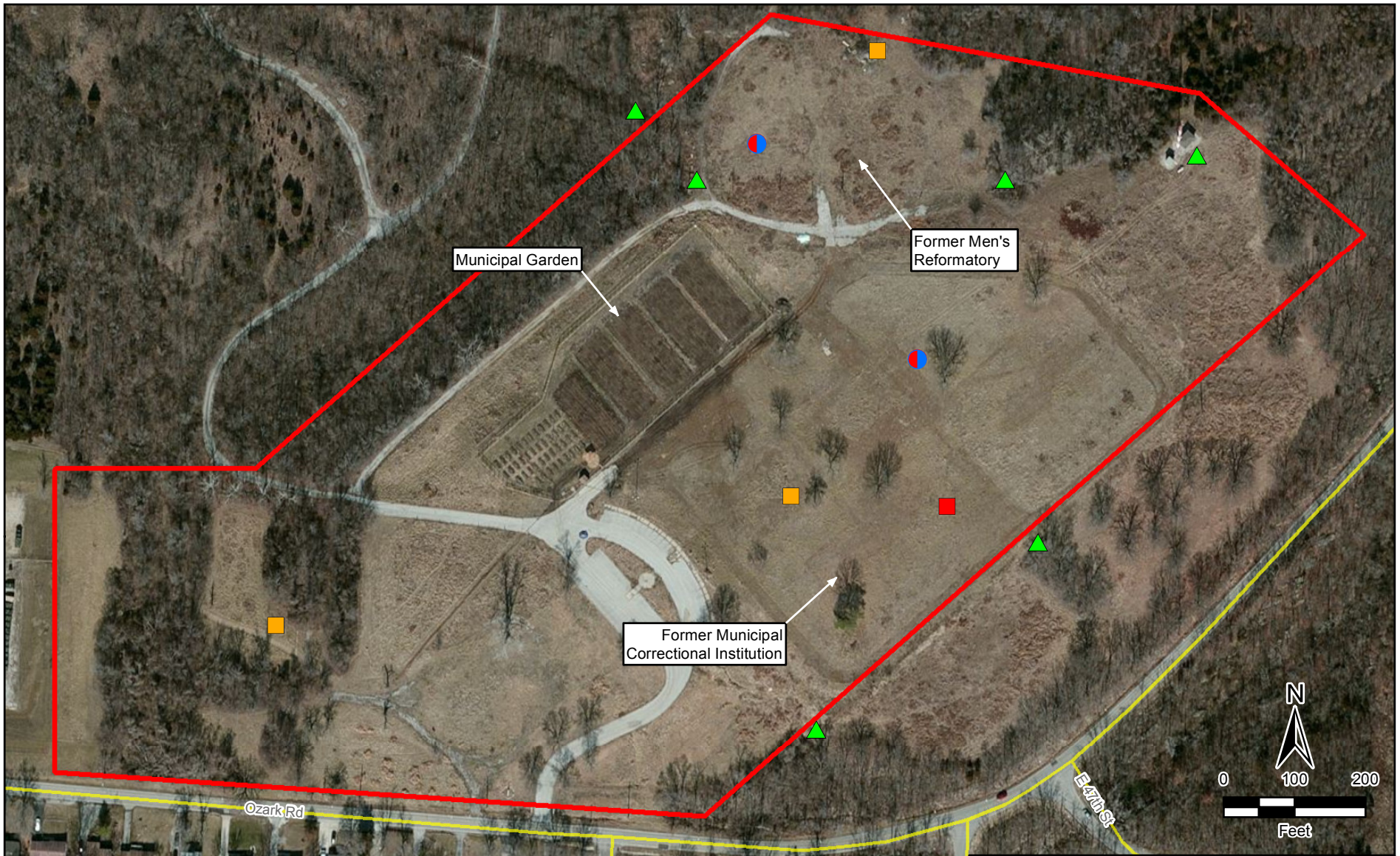
- Major road
- Street
- Stream/River
- Approximate subject property boundary
- HEHS Health Emergency Hazmat Site

Kansas City Municipal Farms - MCI  
8100 Ozark Road  
Kansas City, Missouri







**Figure 2**  
Site Layout Map







#### Legend

- |   |   |   |                                       |
|---|---|---|---------------------------------------|
|  | Proposed DPT soil and groundwater sample location |  | Street                                |
|  | Proposed soil classification sample location      |  | Approximate subject property boundary |
|  | Proposed subsurface soil sample location          | DPT   | Direct push technology                |
|  | Proposed surface soil sample location             |   |                                       |

Source: ArcGIS Online, Bing Maps Hybrid, 2012; HSIP Gold, 2007

Kansas City Municipal Farms - MCI  
8100 Ozark Road  
Kansas City, Missouri

**Figure 3**  
Proposed Sample Location Map



Date: 12/21/12

Drawn By: Nick Wiederholt

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