



August 27, 2021

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

Subject: Trip Report, Revision 0
Hamburg Kaercher Creek Site – Sediment Sampling
EPA Contract No. 68-HE-0320-D0003
Technical Direction (TD) No. T601-20-07-002
Document Control No. 0243

Dear Mr. Richardson:

Tetra Tech, Inc. (Tetra Tech) is submitting the enclosed Trip Report, Revision 0, for the Hamburg Kaercher Creek Site (the Site) for your review and approval. This trip report summarizes the field activities and analytical results of the sediment sampling conducted at the Site on May 20, 2021 and the Weston Solutions sampling in August 2019.

If you have any questions regarding this report, please call me at (610) 416-9584.

Sincerely,

A handwritten signature in black ink that reads 'Dean E. Maser'.

Dean Maser
TD Project Manager

Enclosure (1)

cc: TD File
Maria Magilton, Tetra Tech

TRIP REPORT

REVISION 0

HAMBURG KAERCHER CREEK SITE HAMBURG, BERKS COUNTY, PENNSYLVANIA

**EPA CONTRACT NO. 68-HE-0320-D0003
TECHNICAL DIRECTION NO. T601-20-07-002
DOCUMENT TRACKING NO. 0243**

Prepared For:



U.S. Environmental Protection Agency Region 3
Superfund and Emergency Management Division
1650 Arch Street
Philadelphia, PA 19103

Prepared By:



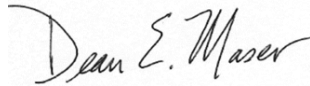
Tetra Tech
240 Continental Drive, Suite 200
Newark, DE 19713

August 2021

TRIP REPORT

REVISION 0

HAMBURG KAERCHER CREEK SITE HAMBURG, BERKS COUNTY, PA



Tetra Tech START – TD Project Manager – Dean Maser

8/25/2021

Date



Tetra Tech START – Quality Assurance Officer – Beth Williams

8/26/2021

Date



EPA – On-Scene Coordinator – Todd Richardson

9/14/2021

Date

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1.0 INTRODUCTION

Under Superfund Technical Assessment and Response Team (START) Contract No. 68-HE-0320-D0003, Technical Direction (TD) No. T601-20-07-027, U.S. Environmental Protection Agency (EPA) Region 3 tasked Tetra Tech, Inc. (Tetra Tech) to conduct sediment sampling activities at the Hamburg Kaercher Creek Site (the Site) in Hamburg, Berks County, Pennsylvania.

The objective of the sampling event was to further delineate lead in sediment. The Site location is presented in Appendix A, Figure 1. Respective sampling locations are presented in Appendix A, Figures 2 and 3.

Field sampling consisted of collecting surface and subsurface sediment samples. The EPA On-Scene Coordinator (OSC) identified all sampling locations based on field conditions at the time of sampling and proximity to Site-related activity areas.

This trip report provides documentation of the Site activities conducted by START in accordance with the Field Sampling Plan (FSP) for the Hamburg Kaercher Creek Site (Tetra Tech 2020a) and the Tetra Tech Uniform Policy Program Quality Assurance Project Plan (QAPP), Revision 1 (Tetra Tech 2021). Specifically, this report presents Site background information in Section 2.0, describes Site activities in Section 3.0, provides analytical results in Section 4.0, and conclusions in Section 5.0. References cited in this report are listed in Section 6.0.

2.0 BACKGROUND

This section describes the Site location and discusses the Site history.

2.1 SITE LOCATION

Kaercher Creek is a stream that runs through Hamburg, Pennsylvania, near several lead sites. Historically, battery wastes were disposed of in many locations along the Creek, resulting in lead contamination on the Creek's banks and creek bed. Kaercher Creek passes through many privately-owned properties and some municipal properties. Portions of the creek are accessible, while some areas have steep banks or are channelized. Kaercher Creek flows from Kaercher Creek Park, just

outside the eastern border of Hamburg, past the Cornfield and Geary Drive Sites, past the Hamburg Fieldhouse, through the former Price Battery Plant Site, and finally discharging into the Schuylkill River.

2.2 SITE HISTORY

In October 2001, EPA was notified of the presence of battery casings along Kaercher Creek near the Hamburg Fieldhouse Property. In 2002, Tetra Tech EM Inc., under the direction of the OSC, performed removal assessments along Kaercher Creek from Kaercher Lake to Kaercher Creek's confluence with the Schuylkill River. The Agency for Toxic Substances and Disease Registry (ATSDR) reviewed the Site assessment reports and issued a Health Consultation that recommended an immediate Comprehensive Environmental Response Compensation and Liability Act (CERCLA) removal action to protect human health.

EPA approved funding for the removal action (RA) at the Site, originally defined to include Kaercher Creek and Mill Creek, both streams that run thorough Hamburg Borough, pursuant to the May 2003 action memorandum. On August 5, 2003, EPA approved a change of scope of the RA that involved removing Mill Creek (to be addressed as a separate action) from the RA for the Site. The objective of the RA was to determine the extent of lead contamination in the sediment and surface soils of the creek bed and banks of Kaercher Creek, as well as to conduct limited removal and disposal of lead-contaminated soil and debris, to install a cover over the remaining lead-contaminated soil and debris, and to perform creek bank stabilization measures. Cover material consisted of clean soil, coir logs and/or matting, small rip rap, and other fill material.

Between August 2003 and May 2004, EPA addressed a total of 5,470 feet of Kaercher Creek during the RA. EPA approved the May 2004 action memorandum to allow for the completion of the RA in 2004. The RA entailed diversion of the creek and excavation of approximately 1 foot of the lead-contaminated creek bed sediments. Lead-contaminated sediments that remained after the excavation were left in place and capped with geotextile fabric and rip-rap stone. EPA's removal activities on Kaercher Creek are documented in the Federal On-Scene Coordinator's After-Action Report for the Hamburg – Kaercher Creek Site, dated June 16, 2005 (EPA 2005).

In June 2017 and November 2017, as part of a Focused Remedial Investigation for the Price Battery Plant Site, Operable Unit 3 (OU-3), the EPA Remedial Project Manager (RPM) directed remedial contractor CDM Smith (CDM) to assess the condition of the cover (rip rap, geotextile, soil, etc.) installed by EPA's Removal Program at the Site as part of the RA on the portion of Kaercher Creek between Schuylkill River and Kaercher Lake. CDM observed and documented that the rip rap, geotextile fabric, and soil cover were in poor condition in many areas, including the portion of Kaercher Creek at and near the Hamburg Fieldhouse, previously addressed through the RA.

From April through August 2018, the OSC conducted Site visits to confirm reported erosion-damaged areas of the creek bank and to screen some of these areas for lead contamination using an x-ray fluorescence (XRF) instrument. During these removal assessment Site visits, many areas of erosion damage and exposed battery debris were observed, and XRF screening of the erosion damaged areas revealed lead concentrations ranging from 2,600 to 2,800 parts per million (ppm).

In April 2019, EPA approved an action memorandum and funding to address a damaged portion of the RA at the Hamburg Kaercher Creek Site (specifically at the Hamburg Fieldhouse) performed pursuant to the May 2004 action memorandum.

3.0 SITE ACTIVITIES

This section summarizes the surface and subsurface sediment sampling conducted at the Site and describes sample management procedures.

3.1 SURFACE AND SUBSURFACE SEDIMENT SAMPLING

In August 2019, START (Weston Solutions) collected 32 total surface sediment (SD) samples including two duplicates. The samples were collected in the creek bed at 50-foot intervals. The points were located on an aerial map using global positioning system (GPS) technology. These samples were dried in ovens, sieved through a 250-micron (μm) mesh sieve, and placed in XRF cups. The samples were analyzed using an XRF instrument. The results of the XRF analysis revealed lead concentrations ranging from 29.1 to 207 ppm.

On August 2, 2020, approximately 6 inches of rain fell in the area after a series of thunderstorms. On August 4, 2020, a tropical storm hit the area and caused a washout of the edge of the excavation. Some sediment got past the cofferdam and into the creek. This material was screened with an XRF instrument to determine whether any contamination got past the cofferdam. The XRF results indicated that some contaminated soil did enter the creek. Most of the contaminated sediment was recovered at that time. After further discussions concerning the release of contaminated sediment into the creek, the decision was made to dam off approximately 250 feet of the creek, reroute the flow with pumps and hoses, and vacuum off the surficial sediment. The vacuum truck arrived on April 26, 2021, and vacuuming operations began. However, the hose for the vacuum truck constantly clogged and EPA determined that vacuuming the sediment was not going to work. The vacuum truck was demobilized from the Site the same day.

When the vacuum truck failed to remove the sediment, a small excavator was placed into the creek and used to scrape the sediment off the surface of the creek bed, taking care not to damage the underlying geotextile fabric installed during the 2004 RA. However, in situ and ex situ XRF screening of the sediment remaining on top of the geotextile fabric continued to reveal elevated levels of lead contamination. The source of the lead-contaminated sediment directly above the geotextile fabric could not be definitively determined, but EPA and START surmised that the contamination was a pre-existing condition and not associated with the washout.

On April 28, 2021, the excavated creek bed was divided into five sections. Two sediment samples were collected from each section (from one surface and one subsurface sampling point) and screened with XRF instrumentation in situ and ex situ. Results from this event are summarized in Table 1, Appendix B. Following the completion of this sampling event, EPA determined that additional excavation could potentially damage the geotextile liner; and therefore, the disturbed portion of the creek bed was “capped” with clean sand amended with leaf litter for organic content and covered with river rock.

During the first weeks of May 2021, EPA determined that sediment samples for laboratory analysis should be collected downstream and upstream of the washout point. This request was made because EPA’s Remedial Program is currently conducting a remedial investigation/feasibility

study (RI/FS) for Kaercher Creek as part of Price Battery OU-3, and the laboratory data would be necessary to incorporate and document the sediment results for finalizing the RI/FS. The samples were analyzed in situ and ex situ, and were sent to a Contract Laboratory Program (CLP) lab for confirmation of results.

On May 20, 2021, surface sediment samples were collected from 0 to 2 inches below grade surface (bgs) with a disposable plastic scoop. The sampling team collected sediment down to 2 inches bgs and transferred the sediment into a labeled resealable, plastic bag. Subsurface sediment samples were collected at 9 inches bgs. The sediment was then dried, sieved, and put in a XRF cup for ex situ analysis. The XRF cups were ultimately sent to a CLP lab for confirmation. Sediment samples were collected in accordance with Tetra Tech SOP No. 006-5, “Sediment and Sludge Sampling” (Tetra Tech 2020b).

Surface and subsurface sediment samples were submitted to the laboratory for CLP lead analysis. One field duplicate sample was collected from a surface sediment location from a depth of 0 to 2 inches bgs, (HKC-SD 31). The duplicate sample was collected in accordance with the quality control (QC) objectives defined in the FSP (Tetra Tech 2020a). All sampling locations and conditions were documented on field data sheets as well as in the Site logbook in accordance with Tetra Tech SOP No. 024-3, “Recording of Notes in Field Logbook” (Tetra Tech 2020c). START collected geographic information system (GIS) location data at each sediment sampling point and locations are presented on Figure 3, Appendix A. Analytical results for surface and subsurface sediment samples are discussed in Section 4.1.

3.2 SAMPLE MANAGEMENT

All samples collected during the May 2021 sampling event were handled and packaged in accordance with Tetra Tech SOP No. 019-8, “Packaging and Shipping Samples” (Tetra Tech 2020d) and the *Contract Laboratory Program Guidance for Field Samplers* for samples shipped to CLP laboratory (EPA 2020). All shipping containers were properly labeled with EPA chain-of-custody seals and delivered with signed chain-of-custody forms. Copies of the chain-of-custody records are provided with the validated laboratory results packages in Appendix C.

4.0 ANALYTICAL RESULTS

This section summarizes the analytical results for the samples collected at the Site by START in August 2019 and April through May 2021. The May 2021 samples were analyzed under the EPA CLP in accordance with the EPA CLP Statement of Work (SOW) Superfund Inorganic Method SW-846 3050B, SFAM01.1 ICP-AES for sediment samples.

4.1 SURFACE AND SUBSURFACE SEDIMENT ANALYTICAL RESULTS

Surface and subsurface sediment analytical results were compared to the EPA Site-specific ecological risk-based effect level calculated specifically for Kaercher Creek as part of the Price Battery OU-3 RI/FS of 258 ppm. Weston Solutions (the then START contractor) conducted the initial sampling event in August 2019, collecting surface sediment every 50 feet (Figure 2, Appendix A). These samples were analyzed ex situ only.

Of the samples collected by Tetra Tech during the sampling event conducted on April 28, 2021, analytical results from 3 in situ samples and 10 ex situ samples revealed lead concentrations exceeding 258 ppm. Samples HKC-SD-14, HKC-SD-16, HKC-SD-17 and HKC-SD-18 exceeded 258 ppm both in situ and ex situ. Samples HKC-SD-10, HKC-SD-11, HKC-SD-12, HKC-SD-13, HKC-SD-15, and HKC-SD-19 exceeded 258 ppm ex situ only. During the sampling event on May 4, 2021, one in situ sample and three ex situ samples collected revealed lead concentrations exceeding 258 ppm. Sample HKC-SD-21 exceeded the lead action level both in situ and ex situ, and samples HKC-SD-20 and HKC-SD-22 exceeded only ex situ. The May 6, 2021 sampling event showed no sediment results above the threshold of 258 ppm. During the sampling event on May 20, 2021, 3 in situ samples, 5 ex situ samples, and 6 laboratory-analyzed samples were collected with lead concentrations exceeding 258 ppm. Samples HKC-SD-33, HKC-SD-35 and HKC-SD-36 exceeded 258 ppm in situ, ex situ, and laboratory. HKC-SD-31 exceeded 258 ppm ex situ and laboratory. HKC-SD-34 exceeded 258 ppm laboratory only.

5.0 CONCLUSIONS

The results from the initial sampling event conducted at the Site in August 2019 showed that no lead concentrations greater than 258 ppm were present in surface sediment. Analytical results from the April 28, May 4, and May 20, 2021 sampling events show lead concentrations above the Site-specific risk-based level of 258 ppm. The May 6, 2021 sampling event showed no lead levels above 258 in either in situ or ex situ screened samples. EPA selected sampling points to check upstream of the creek washout point, in the washout area, and downstream of washout. Some locations were co-located with points from a previous sampling event by CDM Smith to compare results. Based on the comparison of results from sampling events conducted in 2019 and 2021, the section of creek from 63 feet upstream of diversion dam west to sample point HKC-SD-31 appears to have been impacted by lead contamination above the 258 ppm Site-specific risk-based level.

6.0 REFERENCES

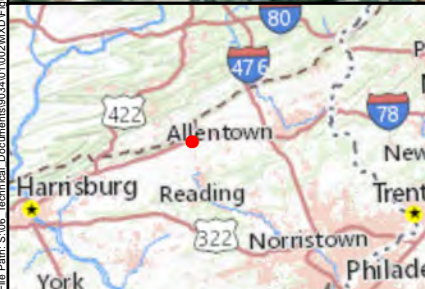
- Tetra Tech, Inc. (Tetra Tech). 2020a. Hamburg Kaercher Creek Field Sampling Plan. Revision 2. September.
- Tetra Tech. 2020b. "Sediment and Sludge Sampling." Standard Operating Procedure (SOP) No. 006-5. August.
- Tetra Tech. 2020c. "Recording of Notes in Field Logbook." SOP No. 024-3. July.
- Tetra Tech. 2020d. "Packaging and Shipping Samples." SOP No. 019-8. August.
- Tetra Tech. 2021. "Uniform Policy Program Quality Assurance Project Plan (QAPP), Revision 1." EPA Region III Superfund Technical Assessment and Response Team (START-6 Contract). August.
- U.S. Environmental Protection Agency (EPA). 2005. Federal On-Scene Coordinator's After-Action Report for the Hamburg – Kaercher Creek Site. June 16.
- EPA. 2019. "Hamburg Kaercher Creek Action Memorandum – Approval and Funding for a Time-Critical Removal Action at the Hamburg Kaercher Creek Site." EPA Region 3 Superfund and Emergency Management Division. April 2019.

EPA. 2020. *Contract Laboratory Program Guidance for Field Samplers*. Office of Superfund Remediation and Technology Innovation. OLEM 9240.0-51 USEPA 540-R-20-005. November.

APPENDIX A

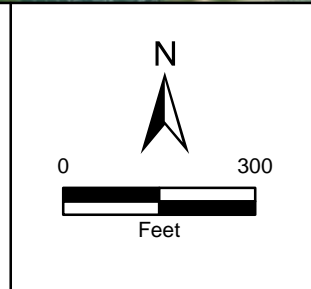
FIGURES


- 1 Site Layout
- 2 Sediment Sampling Locations and Results – August 14, 2019
- 3 Sample Location Map

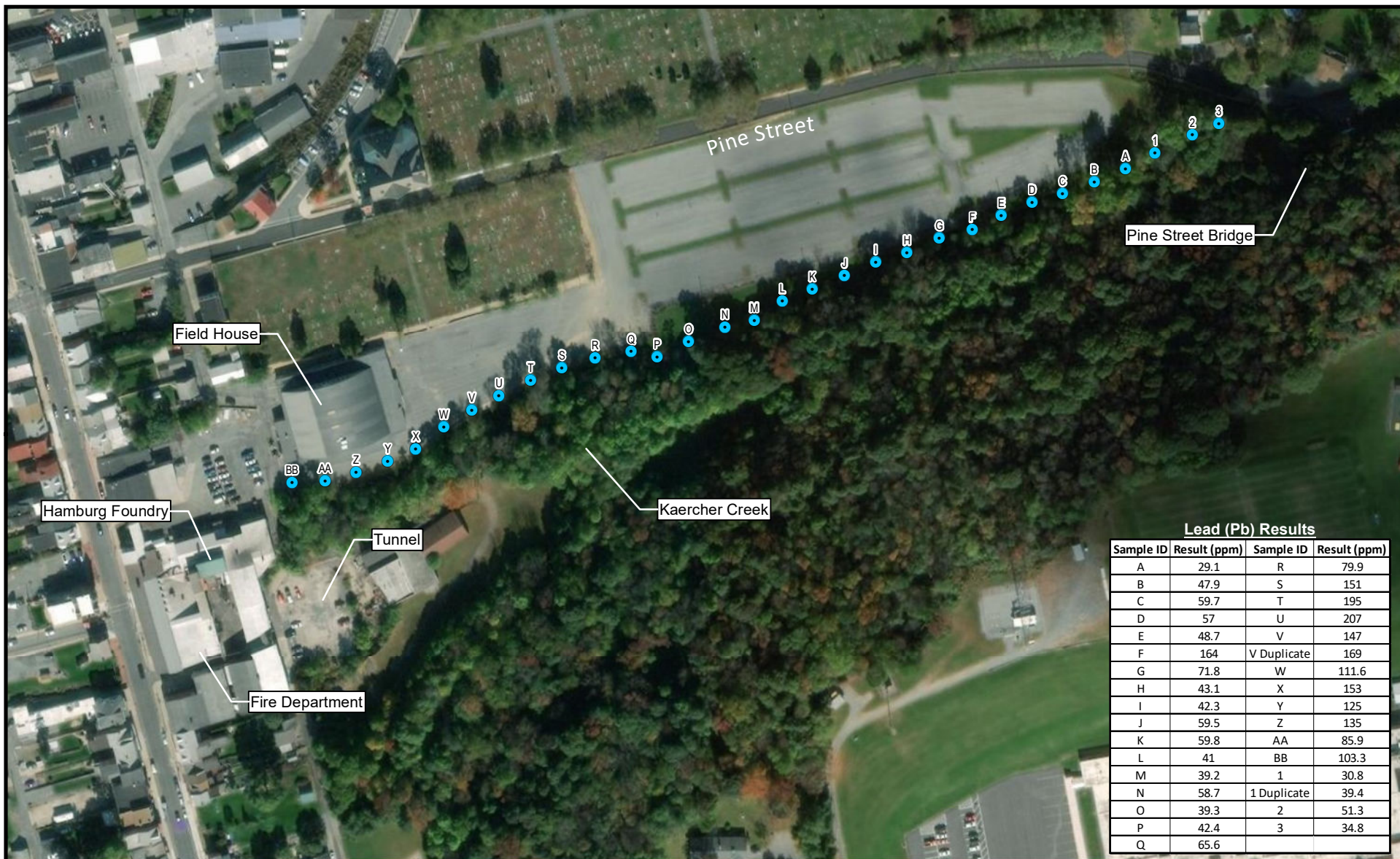


[1] Source: 2019 Sediment Sample Locations Map. Please note that Tetra Tech revised Weston Solutions Figure 1 of August 14, 2019 to Figure 2 so that it would logically fit into the After Action Report for Hamburg Kaercher Creek.

Source: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS



Hamburg Lead Kaercher Creek Hamburg, Berks County, Pennsylvania	
Figure 1 Site Layout	
	
Prepared For: R3 START VI	Prepared By: V.Petrov
Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet	



Legend

- Sediment Sample Locations



Coordinate System:
WGS84 UTM Zone 18N Feet

0 130 260
Feet

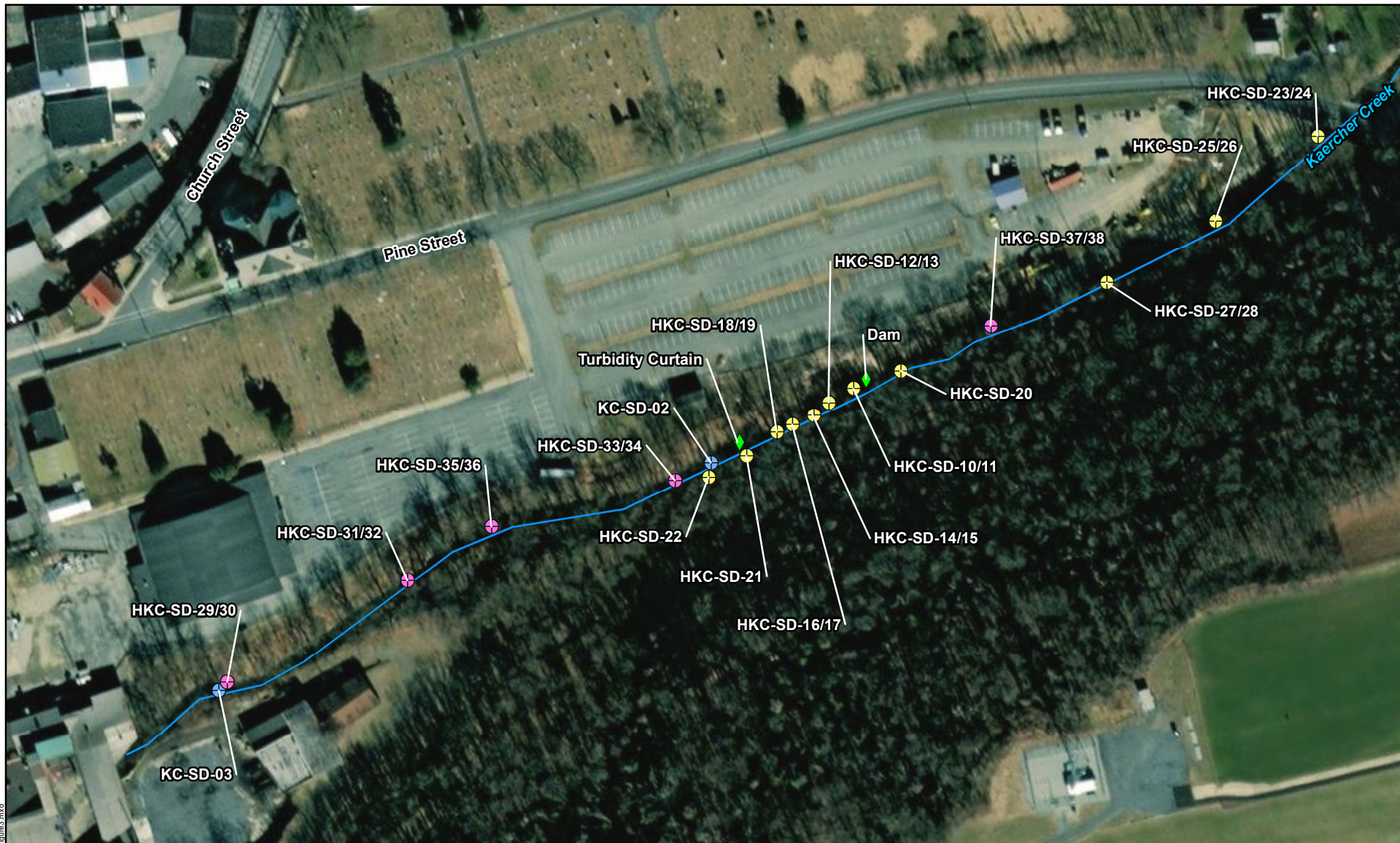
[1] Source: 2019 Sediment Sample Locations Map. Please note that Tetra Tech revised Weston Solutions Figure 1 of August 14, 2019 to Figure 2 so that it would logically fit into the After Action Report for Hamburg Kaercher Creek.

Hamburg Lead Kaercher Creek
Hamburg, Berks County, Pennsylvania

Figure 2
Sediment Sample Locations
August 14, 2019

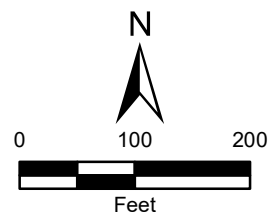
TDD#: W501-19-04-006
Contract: EP-S3-15-02
Prepared: 9/9/2019





Legend

- ⊕ CDM Location
- ⊕ Sediment Location - XRF Screening
- ⊕ Sediment Location - XRF Screening & Lab Analysis
- ◆ Other Features
- Streams



Hamburg Kaercher Creek
Hamburg, Berks County, PA

Figure 3
Sample Location Map



Prepared For: EPA R3 START VI
Prepared By: Megan Kelly
Coordinate System: NAD 1983 2011 StatePlane Pennsylvania South FIPS 3702 FT US

APPENDIX B

TABLES

TABLE 1
SURFACE AND SUBSURFACE SEDIMENT ANALYTICAL RESULTS

Note: The results shown in red are above the EPA Site-specific ecological risk-based effect level of 258 PPM

LOCATION	SAMPLE ID	RESULT (ppm)	LAB RESULT (ppm)	COMMENT
XRF CREEK SEDIMENT RESULTS FROM 04/28/21 (collected before backfilling in excavated area)				
Section I - I	HKC-SD-10	Insitu-111; Exsitu-758	N/A	Dam to 25'
Section I - II	HKC-SD-11	Insitu-107; Exsitu-374	N/A	
Section II - I	HKC-SD-12	Insitu-138; Exsitu-314	N/A	25' - 50'
Section II - II	HKC-SD-13	Insitu-114; Exsitu-380	N/A	
Section III - I	HKC-SD-14	Insitu-263; Exsitu-860	N/A	50' - 75'
Section III - II	HKC-SD-15	Insitu-147; Exsitu-1760	N/A	
Section IV - I	HKC-SD-16	Insitu-795; Exsitu-1607	N/A	75' - 100'
Section IV - II	HKC-SD-17	Insitu-295; Exsitu-1618	N/A	
Section V - I	HKC-SD-18	Insitu-260; Exsitu-847	N/A	100' to Turbidity Curtain
Section V - II	HKC-SD-19	Insitu-94; Exsitu-490		
XRF CREEK SEDIMENT RESULTS FROM 05/04/21				
Upstream of Dam	HKC-SD-20	Insitu-62; Exsitu-783,668	N/A	63' upstream of dam
Upstream of Turbidity Curtain	HKC-SD-21	Insitu-267; Exsitu-641	N/A	42' upstream of turbidity curtain
Downstream of Turbidity Curtain	HKC-SD-22	Insitu-94; Exsitu-389	N/A	28'downstream of turbidity curtain
XRF CREEK SEDIMENT RESULTS FROM 05/06/21				
Pine Street Bridge - Surface	HKC-SD-23	Insitu-25; Exsitu-56	N/A	Downstream of Pine Street Bridge
Pine Street Bridge - Subsurface	HKC-SD-24	Insitu-19; Exsitu-53	N/A	
Near outfall - Surface	HKC-SD-25	Insitu-13.8; Exsitu-38.4	N/A	Near metal outfall pipe
Near outfall - Subsurface	HKC-SD-26	Insitu-17; Exsitu-37.2	N/A	
Western most - Surface	HKC-SD-27	Insitu-35; Exsitu-147	N/A	Between the outfall and dam sample
Western most - Subsurface	HKC-SD-28	Insitu-40; Exsitu-138	N/A	

LOCATION	SAMPLE ID	RESULT (ppm)	LAB RESULT (ppm)	COMMENT
XRF CREEK SEDIMENT RESULTS FROM 05/20/21				
Co-located at KC-SD03 - surface	HKC-SD-29	Insitu-55; Exsitu-220	250	See Figure 3 map for locations
Co-located at KC-SD03 - 9" below bed surface	HKC-SD-30	Insitu-54; Exsitu-83	83	See Figure 3 map for locations
Between KC-SD-02 &03 - surface	HKC-SD-31	Insitu-114; Exsitu-376	390	See Figure 3 map for locations
Between KC-SD-02 &03 - surface	HKC-SD-31 Dup	NA; Exsitu-349	390	See Figure 3 map for locations
Between KC-SD-02 &03 - 9" below bed surface	HKC-SD-32	Insitu-39.4; Exsitu-159	190	See Figure 3 map for locations
Co-located at KC-SD-02 & turbidity curtain - surface	HKC-SD-33	Insitu-514; Exsitu-662	720	See Figure 3 map for locations
Co-located at KC-SD-02 & turbidity curtain - 9" below bed surface	HKC-SD-34	Insitu-71; Exsitu-246	330	See Figure 3 map for locations
Slag Area - surface	HKC-SD-35	Insitu-580; Exsitu-1247	1300	See Figure 3 map for locations
Slag Area - 9" below bed surface	HKC-SD-36	Insitu-490; Exsitu-613	810	See Figure 3 map for locations
Upstream of dam - surface	HKC-SD-37	Insitu-24; Exsitu-61	89	See Figure 3 map for locations
Upstream of dam - 9" below bed surface	HKC-SD-38	Insitu-54.8; Exsitu-106	160	See Figure 3 map for locations

APPENDIX C

VALIDATED ANALYTICAL RESULTS PACKAGES



ICF
ESAT Region 3
US Environmental Protection Agency Environmental Science Center
701 Mapes Road Ft. Meade, MD 20755-5350
Phone 410-305-3012

Date: July 1, 2021

To: ESAT Region 3 Project Officer

From: Lisa D. Penix
Validator

Kurt Roby
Reviewer

Subject: Inorganic Data Validation (S4VEM)
Hamburg Kaercher Creek
49475 MCT6P1

Overview

This data package consisted of eleven (11) sediment samples, including a field duplicate sample, analyzed for lead (Pb) by ICP-AES.

Analyses were performed by Bonner Analytical Testing Company (BON) according to Contract Laboratory Program (CLP) Statement of Work (SOW) SFAM01.1.

Data were validated according to the National Functional Guidelines for Inorganic Superfund Methods Data Review and applicable USEPA Region 3 modifications. Electronic validation was performed by the Electronic Data eXchange & Evaluation System (EXES). The validation report has been assigned the Superfund Data Validation Level Stage_4_Validation_Electronic_Manual (S4VEM).

The following validation narrative is an evaluation of laboratory reported data based on the electronic data package available through the EXES Data Manager dated June 9, 2021.

Summary

No data quality outliers or technical deficiencies were identified that would require rejection or estimation of sample results.

Notes

No detected concentrations were less than Contract Required Quantitation Limit (CRQL).

Laboratory blanks associated with the samples in this SDG were free from contamination.

Laboratory duplicate, serial dilution and Laboratory Control Sample analyses were within control limits.

The matrix spike recovery was outside control limits in sample MC0AE1. The initial concentration was greater than four times (>4X) the amount of the spike added. No data were qualified.

Results reported for field duplicate pair MC0AD9/MC0AE7 were comparable (within control limits of 25 Relative Percent Difference (RPD) or \pm CRQL). No data were qualified based on field duplicate precision.

A sample calculation check was performed on sample MC0AD7. The calculated result had an RPD less than 5% of the reported result. No sample data were qualified.

Validation qualifiers are only applied by the validator to field samples. Qualifiers may be applied by EXES electronic validation in addition to laboratory quality control samples.

Glossary of Inorganic Data Qualifier Codes

Validation	In order of descending precedence. Only one of these qualifiers may apply to any
Qualifiers	result.

R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit
B	The result is presumed a blank contaminant. This qualifier is used for drinking water samples only.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.

Sample Summary Report

Project Name: HAMBURG LEAD - KAERCHER CREEK SITE Project	GroupID: 49475/68HERH20D0009/MCT6P1	Lab Name: Bonner Analytical Testing Co.
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Sample Number: LCS01	Method: Metals by ICP-AES	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Spike	2.0		mg/kg	2.0		1	YES	S4VEM

Sample Summary Report

Project Name: HAMBURG LEAD - KAERCHER
CREEK SITE Project

GroupID: 49475/68HERH20D0009/MCT6P1

Lab Name: Bonner Analytical Testing Co.

Sample Number: MC0AD7	Method: Metals by ICP-AES	Matrix: Soil	MA Number:
Sample Location: HKC-SD-29	pH:	Sample Date: 05/20/2021	Sample Time: 13:30:00
% Moisture:		% Solids: 99	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	250		mg/kg	250		1	YES	S4VEM

Sample Summary Report

Project Name: HAMBURG LEAD - KAERCHER
CREEK SITE Project

GroupID: 49475/68HERH20D0009/MCT6P1

Lab Name: Bonner Analytical Testing Co.

Sample Number: MC0AD8	Method: Metals by ICP-AES	Matrix: Soil	MA Number:
Sample Location: HKC-SD-30	pH:	Sample Date: 05/20/2021	Sample Time: 13:35:00
% Moisture:		% Solids: 99	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	83		mg/kg	83		1	YES	S4VEM

Sample Summary Report

Project Name: HAMBURG LEAD - KAERCHER
CREEK SITE Project

GroupID: 49475/68HERH20D0009/MCT6P1

Lab Name: Bonner Analytical Testing Co.

Sample Number: MC0AD9	Method: Metals by ICP-AES	Matrix: Soil	MA Number:
Sample Location: HKC-SD-31	pH:	Sample Date: 05/20/2021	Sample Time: 13:52:00
% Moisture:		% Solids: 98	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	390		mg/kg	390		1	YES	S4VEM

Sample Summary Report

Project Name: HAMBURG LEAD - KAERCHER
CREEK SITE Project

GroupID: 49475/68HERH20D0009/MCT6P1

Lab Name: Bonner Analytical Testing Co.

Sample Number: MC0AE0	Method: Metals by ICP-AES	Matrix: Soil	MA Number:
Sample Location: HKC-SD-32	pH:	Sample Date: 05/20/2021	Sample Time: 13:57:00
% Moisture:		% Solids: 99	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	190		mg/kg	190		1	YES	S4VEM

Sample Summary Report

Project Name: HAMBURG LEAD - KAERCHER
CREEK SITE Project

GroupID: 49475/68HERH20D0009/MCT6P1

Lab Name: Bonner Analytical Testing Co.

Sample Number: MC0AE1	Method: Metals by ICP-AES	Matrix: Soil	MA Number:
Sample Location: HKC-SD-33	pH:	Sample Date: 05/20/2021	Sample Time: 14:03:00
% Moisture:		% Solids: 99	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	720		mg/kg	720		1	YES	S4VEM

Sample Summary Report

Project Name: HAMBURG LEAD - KAERCHER
CREEK SITE Project

GroupID: 49475/68HERH20D0009/MCT6P1

Lab Name: Bonner Analytical Testing Co.

Sample Number: MC0AE1D	Method: Metals by ICP-AES	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date: 05/20/2021	Sample Time: 14:03:00
% Moisture:		% Solids: 99	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	740		mg/kg	740		1	YES	NV

Sample Summary Report

Project Name: HAMBURG LEAD - KAERCHER CREEK SITE Project	GroupID: 49475/68HERH20D0009/MCT6P1	Lab Name: Bonner Analytical Testing Co.
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Sample Number: MC0AE1L	Method: Metals by ICP-AES	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 99	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	670		mg/kg	670		5	YES	NV

Sample Summary Report

Project Name: HAMBURG LEAD - KAERCHER
CREEK SITE Project

GroupID: 49475/68HERH20D0009/MCT6P1

Lab Name: Bonner Analytical Testing Co.

Sample Number: MC0AE1S	Method: Metals by ICP-AES	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date: 05/20/2021	Sample Time: 14:03:00
% Moisture:		% Solids: 99	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Spike	730		mg/kg	730		1	YES	NV

Sample Summary Report

Project Name: HAMBURG LEAD - KAERCHER
CREEK SITE Project

GroupID: 49475/68HERH20D0009/MCT6P1

Lab Name: Bonner Analytical Testing Co.

Sample Number: MC0AE2	Method: Metals by ICP-AES	Matrix: Soil	MA Number:
Sample Location: HKC-SD-34	pH:	Sample Date: 05/20/2021	Sample Time: 14:08:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	330		mg/kg	330		1	YES	S4VEM

Sample Summary Report

Project Name: HAMBURG LEAD - KAERCHER
CREEK SITE Project

GroupID: 49475/68HERH20D0009/MCT6P1

Lab Name: Bonner Analytical Testing Co.

Sample Number: MC0AE3	Method: Metals by ICP-AES	Matrix: Soil	MA Number:
Sample Location: HKC-SD-35	pH:	Sample Date: 05/20/2021	Sample Time: 14:12:00
% Moisture:		% Solids: 97	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1300		mg/kg	1300		1	YES	S4VEM

Sample Summary Report

Project Name: HAMBURG LEAD - KAERCHER
CREEK SITE Project

GroupID: 49475/68HERH20D0009/MCT6P1

Lab Name: Bonner Analytical Testing Co.

Sample Number: MC0AE4	Method: Metals by ICP-AES	Matrix: Soil	MA Number:
Sample Location: HKC-SD-36	pH:	Sample Date: 05/20/2021	Sample Time: 14:20:00
% Moisture:		% Solids: 99	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	810		mg/kg	810		1	YES	S4VEM

Sample Summary Report

Project Name: HAMBURG LEAD - KAERCHER
CREEK SITE Project

GroupID: 49475/68HERH20D0009/MCT6P1

Lab Name: Bonner Analytical Testing Co.

Sample Number: MC0AE5	Method: Metals by ICP-AES	Matrix: Soil	MA Number:
Sample Location: HKC-SD-37	pH:	Sample Date: 05/20/2021	Sample Time: 14:30:00
% Moisture:		% Solids: 99	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	89		mg/kg	89		1	YES	S4VEM

Sample Summary Report

Project Name: HAMBURG LEAD - KAERCHER
CREEK SITE Project

GroupID: 49475/68HERH20D0009/MCT6P1

Lab Name: Bonner Analytical Testing Co.

Sample Number: MC0AE6	Method: Metals by ICP-AES	Matrix: Soil	MA Number:
Sample Location: HKC-SD-38	pH:	Sample Date: 05/20/2021	Sample Time: 14:37:00
% Moisture:		% Solids: 99	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	160		mg/kg	160		1	YES	S4VEM

Sample Summary Report

Project Name: HAMBURG LEAD - KAERCHER
CREEK SITE Project

GroupID: 49475/68HERH20D0009/MCT6P1

Lab Name: Bonner Analytical Testing Co.

Sample Number: MC0AE7	Method: Metals by ICP-AES	Matrix: Soil	MA Number:
Sample Location: HKC-DUP-03	pH:	Sample Date: 05/20/2021	Sample Time: 16:00:00
% Moisture:		% Solids: 99	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	390		mg/kg	390		1	YES	S4VEM

Sample Summary Report

Project Name: HAMBURG LEAD - KAERCHER CREEK SITE Project	GroupID: 49475/68HERH20D0009/MCT6P1	Lab Name: Bonner Analytical Testing Co.
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Sample Number: PBS01	Method: Metals by ICP-AES	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:	% Solids: 100		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	mg/kg	1.0	U	1	YES	S4VEM

Sample Summary Report

Project Name: HAMBURG LEAD - KAERCHER
CREEK SITE Project

GroupID: 49475/68HERH20D0009/MCT6P1

Lab Name: Bonner Analytical Testing Co.