KEMRON
ENVIRONMENTAL SERVICES

2343-A State Route 821 ■ Marietta, OH 45750 ■ TEL (740) 373-4308 ■ FAX (740) 376-2536 ■ http://www.kemron.com

June 23, 2017

Ms. Molly Finn
United States Environmental Protection Agency
77 West Jackson Boulevard
Mail Code: LU-9J
Chicago, IL 60604

Re: Seep Discharge Control Work Plan, Interceptor Trench Area, AK Steel Middletown Works, Middletown, Ohio

Dear Ms. Finn:

KEMRON Environmental Services, Inc. (KEMRON), on behalf of AK Steel Corporation, has enclosed two paper copies and one electronic copy of the *Seep Discharge Control Work Plan, Interceptor Trench Area, AK Steel Middletown Works, Middletown, Ohio* (KEMRON, June 2017). This Work Plan is submitted in accordance with the 2006 Consent Decree, Civil Action No. C-1-00530, and as discussed in recent conference calls and email correspondence regarding the Interceptor Trench area within the Slag Processing RCRA Facility Investigation (RFI) Area at AK Steel Middletown Works.

Please contact me at (740) 373-1266 or mrochotte@kemron.com, or Pat Gallo at (513) 425-3476 or Pat_Gallo@aksteel.com with any comments or questions regarding this submittal.

Sincerely,
KEMRON Environmental Services, Inc.

Mary Lou Rochotte

Mary Lou Rochotte, CPG, PMP
Principal Scientist

Enclosures:

2 paper copies, 1 CD electronic copy: Seep Discharge Control Work Plan

Distribution List

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Seep Discharge Control Work Plan
Interceptor Trench Area

AK Steel Middletown Works
Middletown, Ohio

Prepared for:

AK Steel Corporation
9227 Centre Pointe Drive
West Chester, OH 45069

Prepared by:

KEMRON Environmental Services, Inc.
2343-A State Route 821
Marietta, OH 45750

June 2017

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Acronym	Definition
AK Steel	AK Steel Corporation
AST	Aboveground Storage Tank
CMS	Corrective Measures Study
FI	Facility Investigation
FRAC	Fractionation
GAC	Granulated Activated Carbon
GPS	Global Positioning System
HDPE	High Density Polyethylene
IM	Interim Measure
IM SOW	Interim Measures Scope of Work
KEMRON	KEMRON Environmental Services, Inc.
MDL	Method Detection Limits
µg/L	Micrograms per Liter
NRDC	Natural Resources Defense Council
NTTP	North Terminal Treatment Plant
Ohio EPA	Ohio Environmental Protection Agency
PCBs	Polychlorinated Biphenyls
POTW	Publically Owned Treatment Works
PTI	Permit to Install
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
RFI	Recovery Act Facility Investigation
s.u.	Standard Units
SWMU	Solid Waste Management Unit
USEPA	United States Environmental Protection Agency

1.0 INTRODUCTION

KEMRON Environmental Services, Inc. (KEMRON), on behalf of AK Steel Corporation (AK Steel), prepared this seep discharge control work plan for the Interceptor Trench Area (Work Plan) in accordance with the requirements of a Consent Decree signed by United States et al. (i.e., United States of America, State of Ohio, Sierra Club, and Natural Resources Defense Council [NRDC]) and AK Steel and entered on May, 15, 2006 (Civil Action Number C-1-00530). The Work Plan is generally based upon procedures described in the document entitled *Seep Inspection and Control Operation and Maintenance Plan* (ENVIRON 2006a) as approved by United States Environmental Protection Agency (USEPA).

The Consent Decree requires (among other things) that interim measures be conducted to control or abate potential threats to human health and the environment and/or to prevent or minimize the release or potential release of hazardous wastes, hazardous constituents or contaminants at or from the facility. Interim Measure 10 (IM 10) described in Interim Measures Scope of Work (Attachment 1 to the Consent Decree) requires the inspection of the banks of Dicks Creek adjacent to AK Steel property and the banks of Monroe Ditch for groundwater seeps. The Interim Measures Scope of Work (IM SOW) requires that any new seep detected during an inspection be sampled and that the sample be analyzed for PCBs and pH. However, if the seep is located in the phytoremediation area (located along the southern bank of Dicks Creek just east of SWMU 38), the sample is analyzed for PCBs only. If PCBs are detected in a seep sample collected and analyzed pursuant to IM 10, and/or the pH of the sample exceeds 9.0 standard units (s.u.), then, within 30 days after receiving these results, AK Steel is required to submit for approval (in accordance with Section IX of the Consent Decree) either: (1) an Interim Measures Work Plan providing for control of discharges from the seep, or (2) a report evaluating whether the seep satisfies the criteria for implementation of stabilization activities under Paragraph 22 of the Consent Decree.

The operation and maintenance of the Interceptor Trench system is also an IM (IM 9). The trench and treatment system are operated, monitored and maintained in accordance with an approved Operation and Maintenance Plan. This Work Plan is submitted in accordance with Section IX of the Consent Decree to address a groundwater seep identified on May 16, 2017 along the eastern bank of Monroe Ditch in the area being addressed by IM 9, the Interceptor Trench and Treatment System, in the Slag Processing Area of AK Steel Middletown Works. The Slag Processing Area is subject to a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI). The RFI Work Plan as approved by the United States et al. includes evaluation of the efficacy of the existing Interceptor Trench system. Since the RFI is not yet completed, AK Steel is submitting this Work Plan to present the work proposed at this time to address the May 2017 seep, or similar seeps that could potentially emerge in this same area. A final decision on the adequacy of the existing Interceptor Trench system will be conducted within the RCRA Corrective Action process, including completion of an RFI and subsequent Corrective Measures Study (CMS).

2.0 OBJECTIVE

The objective of this Work Plan is to address the seep identified as Seep IT-1, originally observed to be flowing and discharging into Monroe Ditch on May 16, 2017. Seep IT-1 was located along the eastern bank of Monroe Ditch, in the portion of the Slag Processing Area addressed by the Interceptor Trench and Treatment System (Figure 1). Water from the seep was sampled and analyzed for pH and polychlorinated biphenyls (PCBs). The implementation of this work plan will significantly reduce the potential for PCBs to be released from any future seep discharge from this area into Monroe Ditch. This Work Plan would also apply if a similar seep were to appear in the area of influence of the Interceptor Trench on the east bank of Monroe Ditch.

3.0 BACKGROUND

In November 1997, USEPA identified groundwater seeps containing PCBs along the eastern bank of Monroe Ditch. AK Steel contracted Reynolds, Inc. of Middletown, Ohio to install the groundwater interceptor trench and treatment system along the eastern bank of Monroe Ditch to eliminate any PCB-containing seepage into Monroe Ditch. The Interceptor Trench and Treatment System was completed in mid-January 1998 and the trench was later extended to intercept an additional seep in January 1999. Pursuant to Paragraph 14d of the Consent Decree, AK Steel received a Permit to Install (PTI) for the Interceptor Trench and Treatment System on August 15, 2006.

The Interceptor Trench system design was detailed in the August 15, 2006 OEPA PTI and the supporting application for that PTI, which are available in the project record. In summary, the underground interceptor trench incorporates three perforated collection pipes inside a high-density polyethylene (HDPE)-lined trench. The trench, backfilled with gravel, extends approximately 500 feet along the length of Monroe Ditch, collects groundwater migrating towards the ditch, and directs it by gravity-flow to a collection sump. A submersible pump moves the water from the sump to influent fractionation (frac) tanks integrated into the treatment system building. Currently, a second pump moves the water from the influent frac tanks through a series of two 6,725-pound carbon filter vessels (containing granular activated carbon [GAC]) to effluent frac tanks. The flow rate through the treatment system (i.e., influent tanks and carbon filters) is limited by the flow rate through the filters. Finally, a third pump is used to move the water from the effluent frac tanks through an underground pipe to a half million-gallon aboveground storage tank (AST) for use in the Tube City IMS area.

Any excess treated water not sent to the AST is discharged to the City of Middletown's publically-owned treatment works (POTW) through Outfall 100-004 under AK Steel's Industrial User Permit (Permit No. 100-2018). Prior to September 2016, excess treated water was trucked to the Middletown Works' North Terminal Treatment Plant (NTTP) for further treatment.

4.0 STATEMENT OF THE PROBLEM

On May 16, 2017, Seep IT-1 was identified along the eastern bank of Monroe Ditch in the area addressed by the Interceptor Trench. Discharge from the seep was observed to be entering the

ditch. The seep was identified by the Interceptor Trench O&M contractor during routine daily visual checks of the area, and after an extended period of excessive precipitation. An aqueous seep sample was collected on May 16, 2017, submitted to TestAmerica Laboratories in Dayton, Ohio, and analyzed for PCBs following EPA Method 8082. The pH of the water was measured in the field during sample collection and found to be 12.2 s.u. The analytical results of the Seep IT-1 water sample were received on May 22, 2017, with PCB Aroclor 1242 reported at a concentration of 2.2 micrograms per liter (µg/L). All other Aroclors were reported as below the laboratory method detection limit (MDL). Based on the detection of PCBs in the seep aqueous sample and consistent with the established procedures, a sample of sediment was collected from Monroe Ditch on May 23, 2017, at a location immediately downstream of the point where discharge from the seep was observed to be entering the ditch. The sediment sample was again submitted to TestAmerica Laboratories and analyzed for PCBs following Method 8082. PCBs were not detected above the laboratory Aroclor-specific MDLs in the sediment sample. Figure 2 illustrates the location of Seep IT-1 and summarizes the analytical results of the aqueous and sediment samples. The laboratory analytical reports were submitted to the United States et al. in conjunction with the May 2017 monthly progress report, and are provided as Attachment 1 to this work plan.

The existing treatment system is limited by the flow rate through the two actively used carbon filters. As indicated by the May 2017 event, in certain high groundwater flow events following extended periods of precipitation, the treatment system as designed with two carbon filters may not be able to treat the groundwater as fast as the water is collected by the Interceptor Trench. In these cases, the influent tanks reach capacity and send untreated water back to the collection sump. This in turn increases the water level in the collection sump and limits the ability of the Interceptor Trench to extract and treat groundwater. This situation was noted in early May 2017 and is interpreted as the cause of the development of Seep IT-1 on May 16, 2017. To increase the rate at which the collected groundwater was treated, two temporary 5,000-pound carbon filter vessels were added to the Treatment System on May 22, 2017. These additional carbon filter vessels were installed in parallel to the two that were already in active use, increasing the number of carbon filter vessels in active use to four. The additional carbon filter vessels allowed the flow of groundwater through the treatment system to be increased, lowering the water level in the collection sump, and increasing the ability of the Interceptor Trench to collect groundwater. Flow from Seep IT-1 was visually observed to have ceased on May 22, 2017 and flow from the seep has not been observed since that date. Subsequently, the two temporary carbon filter vessels have not been required to be in use, but remain available on-site to be returned to service if needed.

This Work Plan for the Interceptor Trench Area seep proposes to incorporate two additional carbon filter vessels into the Treatment System for the Interceptor Trench (increasing the number of permanent on-line carbon filter vessels available to treat the groundwater at any given time to four). The two additional carbon filter vessels will be brought online when an increased flow through the treatment system is required such as during high groundwater flow conditions that occur after sustained precipitation events. Decision criteria for use of these two additional vessels is provided in Section 6.2. Detailed drawings of the Interceptor Trench as modified by addition of the two-carbon filtration vessels will be submitted with an OEPA PTI application.

5.0 SEEP DISCHARGE CONTROL PLAN

Seep IT-1 was addressed by increasing the flow through the Treatment System with the temporary incorporation of two additional carbon filter vessels. AK Steel proposes to incorporate two additional carbon filter vessels permanently into the Treatment System for the Interceptor Trench Area.

Currently, groundwater from the Interceptor Trench flows by gravity into the collection sump. The OEPA Permit to Install documentation provides details of the system. Briefly, a float-controlled submersible pump conveys the water from the 8 feet by 6 feet collection sump to three 20,000-gallon influent frac tanks operated in series. Water is sent from the tanks to lead and lag carbon filter vessels operated in series using a filter pump. Each vessel contains 6,725 pounds of carbon. Treated water from the lag-carbon filter vessel is sent to two 20,000-gallon effluent frac tanks operated in series. A pump conveys the treated water through an 8-inch diameter pipe approximately 1,700 feet to a 500,000-gallon aboveground storage tank (AST). Treated water stored in the AST is used by Tube City IMS, the slag management contractor. Excess treated water not sent to the AST is discharged to the City of Middletown's POTW or the Middletown Works North Terminal Treatment Plant (NTTP), an on-site water treatment plant.

This Work Plan proposes to incorporate two additional carbon filter vessels operated in series (i.e., a lead and a lag filter) into the Treatment System. Each of the additional carbon filter vessels will contain a minimum of 5,000 pounds of granulated activated carbon. The two additional carbon filter vessels will be brought online in high groundwater flow conditions and will be operated in parallel with the two original carbon filter vessels, increasing the number of permanent on-line carbon filter vessels to four. Increased and significantly higher water levels in the collection sump and/or the sustained operation of the float-controlled submersible pump located in the collection sump over a significant period-of-time will be used to indicate high groundwater flow conditions (see Section 6.0). The two additional carbon filter vessels will be brought online if high groundwater flow conditions are established, and will be left in place but offline in lower flow conditions.

AK Steel or its designee will be responsible for the installation, operation, and maintenance of the two additional carbon filter vessels. In addition, AK Steel or its designee will be responsible for obtaining a PTI from OEPA for this modification to the existing system. The carbon filter vessels will be installed after the PTI is obtained from OEPA. Detailed drawings for system will be prepared and submitted as part of the PTI application.

6.0 MONITORING

6.1 Current Monitoring

Currently, the effectiveness of the Interceptor Trench and Treatment System is routinely monitored to maintain carbon filter efficiency and confirm that PCB-containing groundwater is not bypassing the system. A detailed description of current monitoring can be found in the Operation and Maintenance Plan entitled *Groundwater Interceptor Trench Operation and Maintenance Plan, Revision 1.0* (ENVIRON 2006b). To summarize, the efficiency of the original carbon filters vessels

is determined weekly through the analysis of water samples collected from three ports on the treatment system: (1) influent sample, consisting of untreated groundwater; (2) intermediate sample, cycled through the lead carbon filter; and (3) effluent sample, cycled through both the lead and lag carbon filters. Results of these analyses determine the need to rotate the online filters with a third, offline filter. To confirm that PCB-containing groundwater is not bypassing the system, monthly surface water samples are collected from four locations: (1) Monroe ditch, adjacent to the Interceptor Trench; (2) Monroe Ditch, approximately 200 feet downstream of the Interceptor Trench; (3) mouth of Monroe Ditch at the confluence with Dicks Creek; and (4) Dicks Creek at Yankee Bridge. This same monitoring will continue.

6.2 Additional Monitoring and Response

Two types of additional monitoring will be conducted. Daily monitoring will be conducted every workday and include an evaluation of the: (1) water level in the collection sump and (2) pumping conditions (normal or sustained) of the float-controlled submersible pump located inside of the sump. High-flow monitoring will be conducted only if the results of the daily monitoring indicate high groundwater flow conditions.

6.2.1 Daily Monitoring. The water level in the collection sump will be measured using a staff gauge installed inside of the sump. Sustained and continuous operation of the float-controlled submersible pump for a period of 1 day (24 hours) or longer would indicate high groundwater flow conditions. If this condition is met, then high-flow monitoring will be conducted. The results of the daily monitoring will be recorded on the field log by the operating contractor. AK Steel may add indicators of high groundwater conditions in the internal operational protocols of the Treatment System based on experience and collection of additional sump level monitoring data over time.

6.2.2 High-Flow Monitoring and Response. High-flow monitoring will be conducted only if the results of the daily monitoring determine that high groundwater flow conditions are occurring at the Interceptor Trench Area. High flow monitoring and subsequent response will include:

1. <u>Bringing two additional carbon filter vessels online</u>. Groundwater will be conveyed in parallel with the existing carbon filters.

2. <u>Evaluating the efficiency of the additional carbon filter vessels.</u> When the additional filters are brought online and operated for more than 24 hours, weekly carbon filtering sampling will include all of the on-line carbon filters. The efficiency of the additional carbon filters will again be determined through the analysis of water samples collected from three ports installed on the piping for the two filters: (1) influent sample, consisting of untreated groundwater; (2) intermediate sample, cycled through the lead carbon filter; and (3) effluent sample, cycled through both the lead and lag carbon filters. The water samples will be analyzed for PCBs following Method 608/8082. The results of these analyses determine the need to replace one or more of the additional filters' granular activated carbon.

3. Inspecting the eastern bank of Monroe Ditch for seeps. The inspection will begin at the collection sump and proceed upstream for 500 feet along Monroe Ditch covering the Interceptor Trench Area. Since IM 9 remains in place and the temporary addition of carbon filtration vessels appears to have successfully abated seep IT-1, it is not anticipated that additional PCB-containing seeps will recur in this vicinity.
4. Seep Recurrence. If seeps recur after implementation of this work plan, AK Steel will further evaluate the pumping and treatment capacity of the Interceptor Trench system. Consistent with current procedures, the location of seep will be identified with Global Positioning System (GPS) coordinates, a sample of water will be collected from the seep, and the pH of the water will be measured in the field during sample collection. The information will be captured on a seep inspection form that contains the information included on the example form in Attachment 2. The water sample will be analyzed for PCBs following Method 608. The results of the inspection will be recorded on a field log. If PCBs are detected in the water sample and the seep is observed to be discharging to Monroe Ditch then a sample of sediment will be collected from the ditch immediately downstream of the point where the seep discharged into the stream. The sediment sample will be analyzed for PCBs following EPA Method 608/808s. Samples will be managed and analyzed in accordance with the most current Middletown Works RFI/CMS Quality Assurance Project Plan (QAPP).

   Based on the existence of the Interceptor Trench and Treatment System (implemented in accordance with IM 9), and the on-going RFI at the Slag Processing Area, a separate Interim Measures Work Plan or other separate documentation will not be necessary should additional seeps in this vicinity be identified. The RCRA Corrective Action process that is underway for the Slag Processing Area will result in selection of a final remedy for the Interceptor Trench and Treatment System, IM 9, and its area of groundwater influence. Therefore, additional application of IM 10 that may trigger separate proposed interim measures would not be applicable. Instead of IM 10 new plans, and until Corrective Measures are selected and implemented through the RCRA Corrective Action process regarding the Slag Processing Area, seep control in the vicinity of the Interceptor Trench will be conducted through implementation of:

   a) this Interceptor Trench Area Seep Control Work Plan;
   b) the current Interceptor Trench (IM 9) O&M Plan or any approved revision to that O&M Plan; and,
   c) any applicable requirements of a current or future PTI issued by OEPA.

   When Corrective Measure(s) selection and implementation are completed in the future, the operations, monitoring and maintenance requirements and documents noted in this Work Plan will be replaced with a post-remedy operations, monitoring and maintenance plan, containing requirement determined necessary at that time and as approved via the Corrective Measures Implementation phase of the Corrective Action process.

6.3 Performance Criteria

AK Steel or its designee will be responsible for: (1) conducting the daily monitoring associated with the existing and the two additional carbon vessels; (2) determining if high flow groundwater conditions exist; (3) conducting high-flow monitoring as applicable; and (4) bringing the two additional carbon vessels online during high flow groundwater conditions. Groundwater control will be attained if no additional seeps are observed during the inspections conducted as part of the monitoring activities implemented during high flow groundwater conditions.

7.0 REPORTING

A letter report will be prepared and submitted to USEPA et al. within 45 days of the incorporation of the two additional carbon filter vessels into the existing Treatment System. The report will include a summary of the installation of the two vessels and other necessary modifications and will include an updated drawing of the Treatment System illustrating the two-carbon filter vessels installation. In addition, other reports and plans will be prepared or modified including:

- The existing Operation and Maintenance Plan (i.e., *Groundwater Interceptor Trench Operation and Maintenance Plan, Revision 1.0*, ENVIRON, August 2006) will be updated and revised to address the operational changes to the Treatment System and to incorporate the monitoring requirements for the two additional carbon filter vessels. The modified Operation and Maintenance Plan will be submitted to the United States et al. for approval within 45 days after the incorporation of the two additional carbon filter vessels into the existing Treatment System.

- Quarterly reports will continue to be prepared in accordance with the Consent Decree and the currently approved Operation and Maintenance Plan, documenting the operation and management activities regarding the Interceptor Trench and Treatment System. The standard format and information contained in the reports will be updated and modified to address the operational changes to the Treatment System consistent with the revised Operation and Maintenance Plan, and to incorporate the results of the monitoring requirements for the two additional carbon filter vessels. The quarterly reports will be updated and modified starting with the report for the first calendar quarter after the two additional carbon filter vessels are incorporated into the existing Treatment System.

- AK Steel or its designee will be responsible for preparing an OEPA PTI application for the installation of the two additional carbon filter vessels and submitting the application to OEPA within sixty days of AK Steel's receipt of written approval of this work plan.

Should a seep be identified under Section 6.2.2, AK Steel or its designee will notify the United States et al., and conduct additional evaluation and action to remedy the situation as described in this Work Plan.

8.0 SCHEDULE

AK Steel will select one or more contractors to implement this Work Plan to attain groundwater control during high groundwater flow conditions following receipt of USEPA's written approval of

this plan. Daily monitoring per Section 6.2.1 of this Work Plan will begin immediately following the incorporation of the two additional carbon filter vessels into the existing Treatment System. High flow monitoring as described in Section 6.2.2 of this Work Plan will be conducted as necessary based on the results of the daily monitoring.

The proposed schedule for the work is presented in Figure 3. The schedule will be updated as necessary and finalized following receipt of USEPA's written approval of this Work Plan.

9.0 REFERENCES

ENVIRON 2006a. *Seep Inspection and Control, Operation and Maintenance Plan, Dicks Creek Study Area, Middletown, Ohio*. June 2006.

ENVIRON 2006b. *Groundwater Interceptor Trench Operation and Maintenance Plan, Dicks Creek Study Area, Middletown, Ohio, Revision 1.0*. August 2006.

TABLES

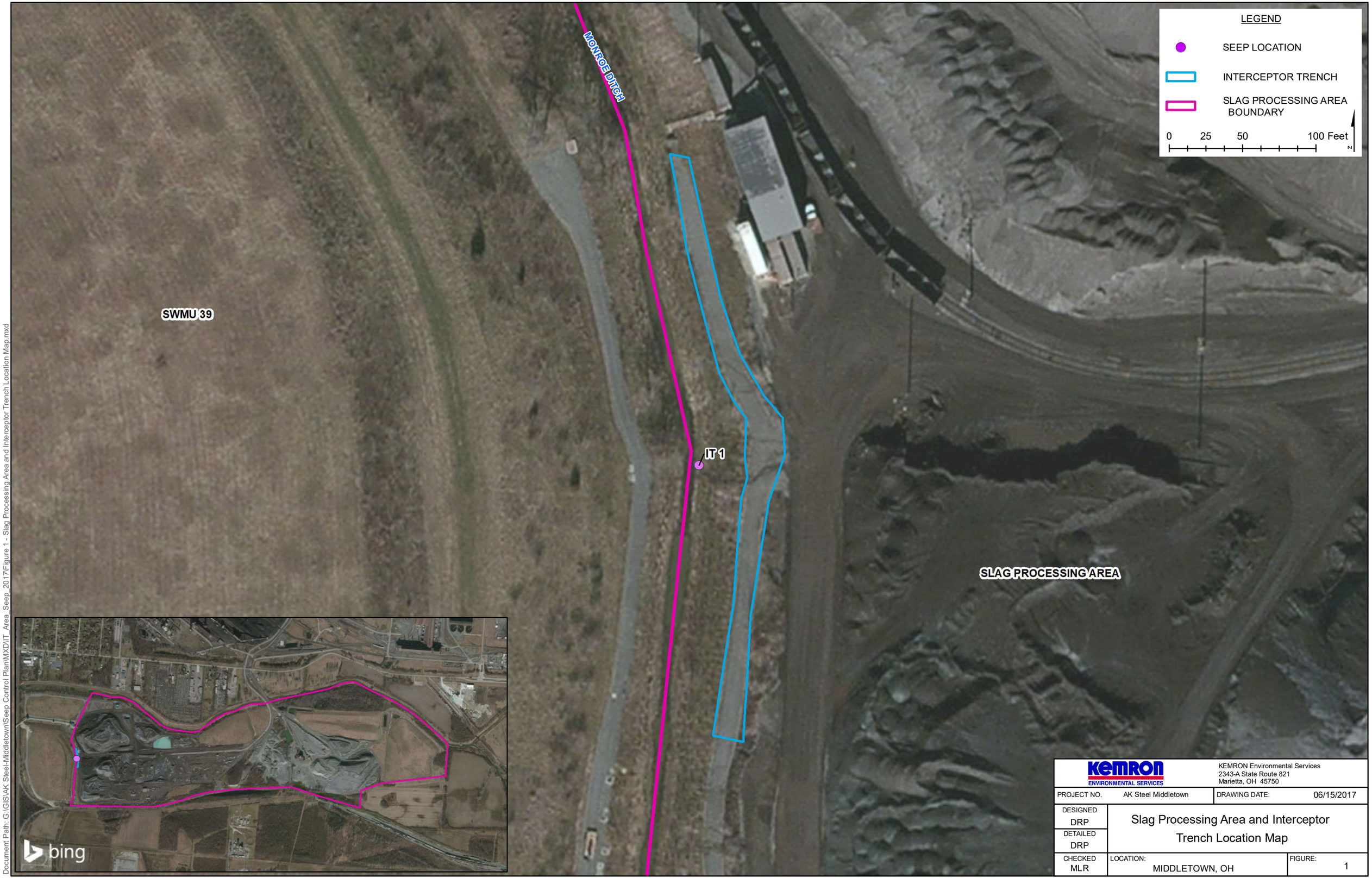
Table 1: Analytical Results of Seep Water Sample

		Chemical Name	Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260	pH
Location ID	Sample Type	Sample Date	*ug/L*	*ug/L*	*ug/L*	*ug/L*	*ug/L*	*ug/L*	*ug/L*	*su*
IT SIDE #1	Normal	5/16/2017	<0.22	<0.22	<0.22	2.2	<0.22	<0.22	<0.22	12.2

Table 2: Analytical Results of Sediment Sample

		Chemical Name	Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260
Location ID	Sample Type	Sample Date	*ug/Kg*	*ug/Kg*	*ug/Kg*	*ug/Kg*	*ug/Kg*	*ug/Kg*	*ug/Kg*
IT SIDE #1 SEDIMENT	Normal	5/16/2017	<30	<29	<20	<25	<22	<18	<23

FIGURES

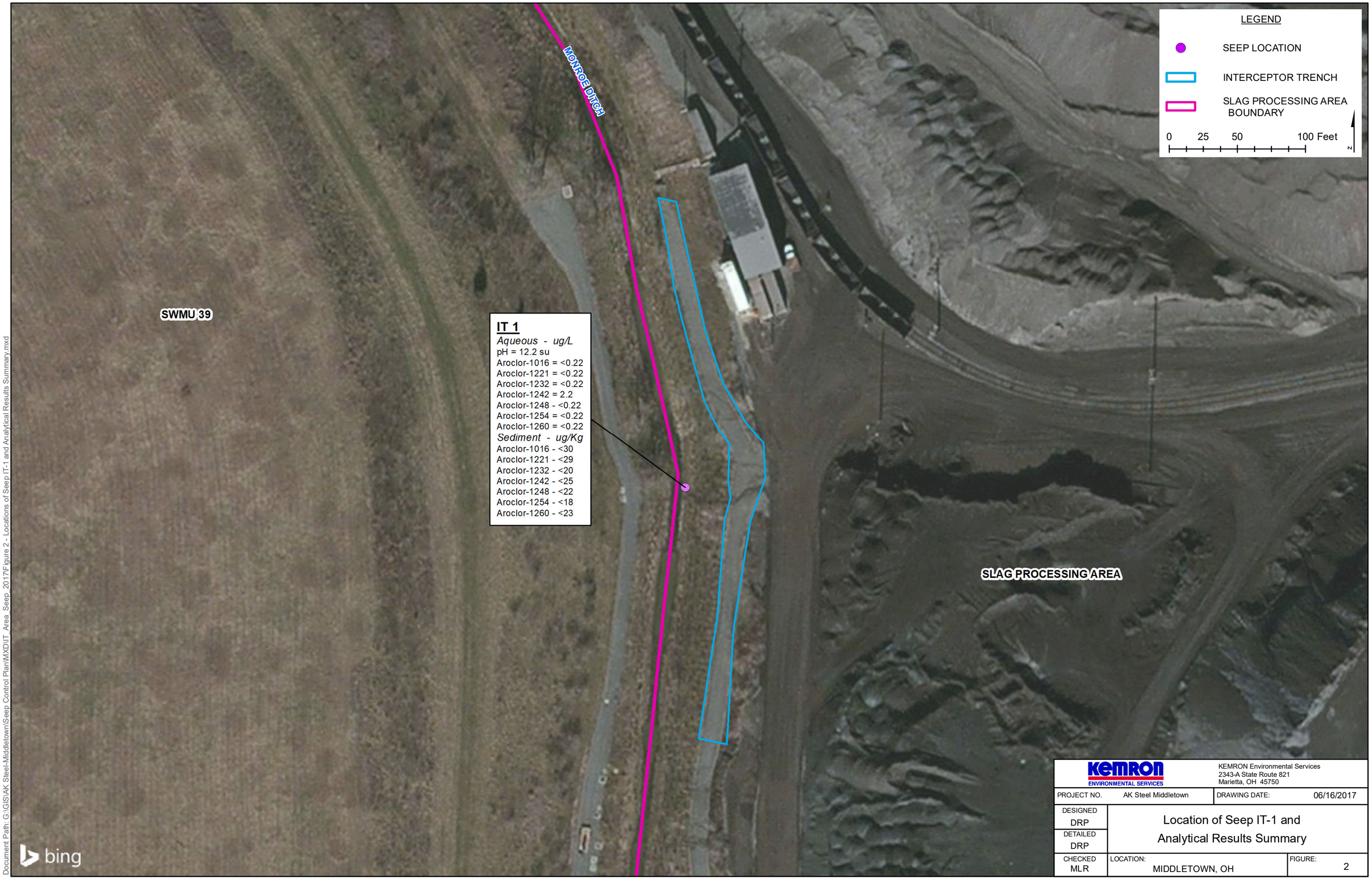


KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services
2343-A State Route 821
Marietta, OH 45750

PROJECT NO.	AK Steel Middletown	DRAWING DATE:	06/15/2017
DESIGNED DRP	Slag Processing Area and Interceptor Trench Location Map		
DETAILED DRP			
CHECKED MLR	LOCATION: MIDDLETOWN, OH	FIGURE:	1

Document Path: G:\GIS\AK Steel-Middletown\Seep Control Plan\MXD\IT_Area_Seep_2017\Figure 1 - Slag Processing Area and Interceptor Trench Location Map.mxd



KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services
2343-A State Route 821
Marietta, OH 45750

PROJECT NO.	AK Steel Middletown	DRAWING DATE:	06/16/2017
DESIGNED DRP	Location of Seep IT-1 and Analytical Results Summary		
DETAILED DRP			
CHECKED MLR	LOCATION: MIDDLETOWN, OH	FIGURE:	2

Document Path: G:\GIS\AK Steel-Middletown\Seep Control Plan\MXD\IT_Area_Seep_2017\Figure 2 - Locations of Seep IT-1 and Analytical Results Summary.mxd

ID	Task Name	Start	Finish	Calendar Days
0	**Groundwater Seep Discharge Control Schedule**	**Tue 5/23/17**	**Wed 8/29/18**	**464 days**
1	Prepare and Submit Work Plan	Tue 5/23/17	Fri 6/23/17	32 days
2	EPA Review/Comment	Sat 6/24/17	Sun 7/23/17	30 days
3	Revise/Finalize Work Plan	Mon 7/24/17	Sun 8/13/17	21 days
4	EPA Final Work Plan Approval	Mon 8/14/17	Sun 9/3/17	21 days
5	Prepare and Submit OEPA PTI Application	Mon 9/4/17	Thu 11/2/17	60 days
6	OEPA Prepares/Issues PTI	Fri 11/3/17	Wed 1/31/18	90 days
7	IT System Modifications Implementation	Thu 2/1/18	Sun 4/1/18	60 days
8	Prepare and Submit Letter Completion Report re. System Modifications	Mon 4/2/18	Wed 5/16/18	45 days
9	O&M Plan Revision Preparation and Submittal	Mon 4/2/18	Wed 5/16/18	45 days
10	EPA Review/Comment on Letter Report and Revised O&M Plan	Thu 5/17/18	Sun 7/15/18	60 days
11	Revise/Finalize Letter Report and O&M Plan	Mon 7/16/18	Wed 8/29/18	45 days

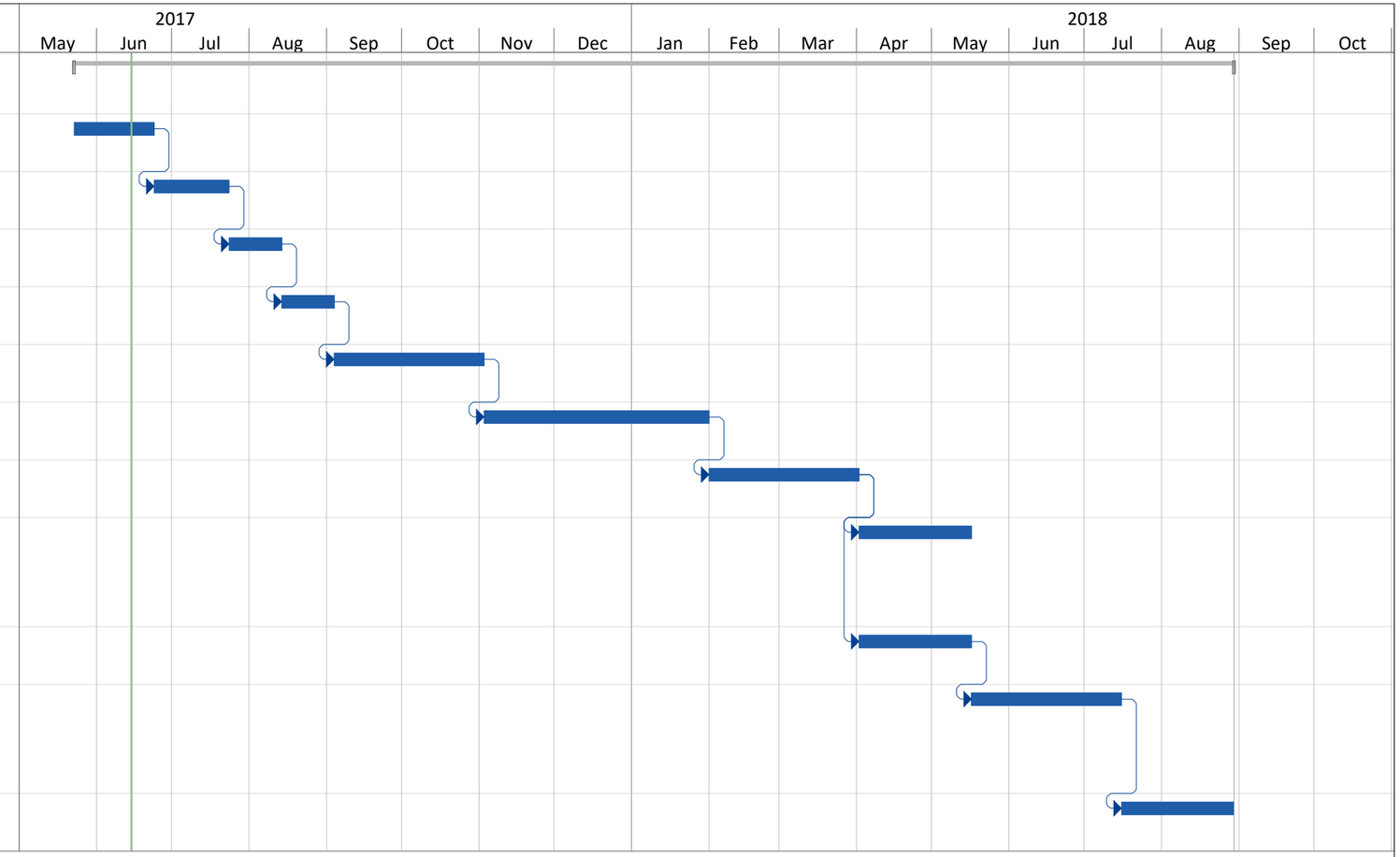


Figure 3 - Groundwater Seep Discharge Control Schedule-IT Area
Project: Slag Processing Area RFI: Groundwater Seep Discharge Control
Date: Thu 6/15/17

Task		External Tasks		Manual Task		Finish-only	
Split		External Milestone		Duration-only		Deadline	
Milestone		Inactive Task		Manual Summary Rollup		Progress	
Summary		Inactive Milestone		Manual Summary		Manual Progress	
Project Summary		Inactive Summary		Start-only			

\\ohio-pdc\E\GIS\AK Steel-Middletown\Seep Control Plan\MXD\IT_Area_Seep_2017\Slag Processing Area RFI_Groundwater Seep Discharge Control.mpp

Attachment 1

Analytical Reports and Data Validation Reports

#240-79671-1
#240-79957-1

Data Validation Completeness Worksheet
Level II

Site:	AK Steel Middletown	Date:	5/30/2017
SDG#:	240-79671	Page	1 of 3
Lab:	Test America	Reviewer:	Stephanie Mossburg
		2nd Reviewer:	

Method: PCBs by Method 608

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area	Code	Comments	Qualifier
I	Case Narrative	A		
II	Sample Receipt Documentation	A		
III	Technical Hold Times	A		
IV	Blanks	A		
V	Surrogates	A		
VI	Matrix Spike/Matrix Spike Dup.	NA	MS/MSD samples were not collected	
VII	Laboratory Control Samples	A		
VIII	Field Blanks	NA	The field blank and equipment rinse blanks were not collected.	
IX	Field Duplicates	NA	Field duplicates were not collected	
X	Overall Assessment of the Data	A	**No data were qualified.**	

Codes: A = Acceptable
NA = Not provided/applicable
SW = See Worksheet
ND = No compounds detected
R = Rinsate
FB = Field Blank
D = Duplicate
TB = Trip Blank
EB = Equipment Blank

Validated Samples:

Sample ID	Q	Sample ID	Q	Sample ID	Q
IT SIDE #1					

SDG #	240-79671	Laboratory:	Test America	Validator:	Stephanie Mossburg	Validation Date:	5/30/2017
Site:	AK Steel	AR/COC#	1	Sample Receipt Docs Present:	Yes	Validation Level:	II
Matrix:	Water	# of Samples:	1	Case Narrative Present:	Yes	Page	2 of 3
COCs present:	Yes	COCs signed:	Yes	COCs dated:	Yes	Sample Container Integrity:	Acceptable
Analysis:	PCBs by Method 608						

Requested Analyses Not Reported			
Client Sample ID	**Lab Sample ID**	**Analysis**	**Comments**
None			

Hold Time/Preservation Outliers						
Client Sample ID	Lab Sample ID	Analysis	Preservation	Collection Date	Preparation Date	Analysis Time

Comments: All results were analyzed within the method hold time requirements

SDG:	240-79671	Method:	608	Matrix:	Water	Laboratory Sample IDs:	240-79671-1
Batch #s:	PCBs (279798, 279848)						

Analyte (outliers)	Method Blank	5X MB	LCS %R	LCSD %R	LCS/LCSD RPD	MS% R ()	MSD% R ()	MS/MSD RPD	FD RPD (-)	QC Rinse Blank	Field Blank	Trip Blank	

Surrogate/Tracer Outliers for 8082

DoD Limits (lab criteria); (TCMX: 15-131%; DCB: 10-114%))

Sample ID	TCMX	DCB												

Comments: All QC controls were acceptable. No data were qualified

A = Acceptable
NA = Not Applicable

TestAmerica

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-79671-1
Client Project/Site: AK Steel - IT SIDE #1

For:
AK Steel Corporation
Door 21E
1801 Crawford Street
Middletown, Ohio 45043-0001

Attn: Alex Shumakh

Authorized for release by:
5/22/2017 1:48:38 PM

Debbie Olszowka, Project Manager II
(513)733-5700
debbie.olszowka@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Definitions/Glossary

Client: AK Steel Corporation
Project/Site: AK Steel - IT SIDE #1

TestAmerica Job ID: 240-79671-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: AK Steel Corporation
Project/Site: AK Steel - IT SIDE #1

TestAmerica Job ID: 240-79671-1

Job ID: 240-79671-1

Laboratory: TestAmerica Canton

Narrative

Job Narrative
240-79671-1

Comments
No additional comments.

Receipt
The sample was received on 5/18/2017 8:00 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.1º C.

GC Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
Method(s) 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 240-279798.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: AK Steel Corporation
Project/Site: AK Steel - IT SIDE #1

TestAmerica Job ID: 240-79671-1

Client Sample ID: IT SIDE #1 — Lab Sample ID: 240-79671-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aroclor-1242	2.2		0.22		ug/L	2		608	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: AK Steel Corporation
Project/Site: AK Steel - IT SIDE #1

TestAmerica Job ID: 240-79671-1

Client Sample ID: IT SIDE #1

Date Collected: 05/16/17 15:17
Date Received: 05/18/17 08:00

Lab Sample ID: 240-79671-1

Matrix: Water

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	<0.22		0.22		ug/L		05/21/17 15:07	05/22/17 09:12	2
Aroclor-1221	<0.22		0.22		ug/L		05/21/17 15:07	05/22/17 09:12	2
Aroclor-1232	<0.22		0.22		ug/L		05/21/17 15:07	05/22/17 09:12	2
Aroclor-1242	**2.2**		0.22		ug/L		05/21/17 15:07	05/22/17 09:12	2
Aroclor-1248	<0.22		0.22		ug/L		05/21/17 15:07	05/22/17 09:12	2
Aroclor-1254	<0.22		0.22		ug/L		05/21/17 15:07	05/22/17 09:12	2
Aroclor-1260	<0.22		0.22		ug/L		05/21/17 15:07	05/22/17 09:12	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*30*		*10 - 114*	*05/21/17 15:07*	*05/22/17 09:12*	*2*
Tetrachloro-m-xylene	*60*		*15 - 131*	*05/21/17 15:07*	*05/22/17 09:12*	*2*

QC Sample Results

Client: AK Steel Corporation
Project/Site: AK Steel - IT SIDE #1

TestAmerica Job ID: 240-79671-1

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Lab Sample ID: MB 240-279798/2-A
Matrix: Water
Analysis Batch: 279848

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 279798

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	<0.10		0.10		ug/L		05/21/17 15:07	05/22/17 09:30	1
Aroclor-1221	<0.10		0.10		ug/L		05/21/17 15:07	05/22/17 09:30	1
Aroclor-1232	<0.10		0.10		ug/L		05/21/17 15:07	05/22/17 09:30	1
Aroclor-1242	<0.10		0.10		ug/L		05/21/17 15:07	05/22/17 09:30	1
Aroclor-1248	<0.10		0.10		ug/L		05/21/17 15:07	05/22/17 09:30	1
Aroclor-1254	<0.10		0.10		ug/L		05/21/17 15:07	05/22/17 09:30	1
Aroclor-1260	<0.10		0.10		ug/L		05/21/17 15:07	05/22/17 09:30	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*64*		*10 - 114*	*05/21/17 15:07*	*05/22/17 09:30*	*1*
Tetrachloro-m-xylene	*62*		*15 - 131*	*05/21/17 15:07*	*05/22/17 09:30*	*1*

Lab Sample ID: LCS 240-279798/3-A
Matrix: Water
Analysis Batch: 279848

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 279798

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Aroclor-1016			2.50	1.37		ug/L		55	50 - 114		
Aroclor-1260			2.50	1.38		ug/L		55	8 - 127		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*65*		*10 - 114*
Tetrachloro-m-xylene	*63*		*15 - 131*

QC Association Summary

Client: AK Steel Corporation
Project/Site: AK Steel - IT SIDE #1

TestAmerica Job ID: 240-79671-1

GC Semi VOA

Prep Batch: 279798

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79671-1	IT SIDE #1	Total/NA	Water	3510C	
MB 240-279798/2-A	Method Blank	Total/NA	Water	3510C	
LCS 240-279798/3-A	Lab Control Sample	Total/NA	Water	3510C	

Analysis Batch: 279848

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79671-1	IT SIDE #1	Total/NA	Water	608	279798
MB 240-279798/2-A	Method Blank	Total/NA	Water	608	279798
LCS 240-279798/3-A	Lab Control Sample	Total/NA	Water	608	279798

Accreditation/Certification Summary

Client: AK Steel Corporation
Project/Site: AK Steel - IT SIDE #1

TestAmerica Job ID: 240-79671-1

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-18
Connecticut	State Program	1	PH-0590	12-31-17
Florida	NELAP	4	E87225	06-30-17 *
Illinois	NELAP	5	200004	07-31-17 *
Kansas	NELAP	7	E-10336	01-31-18
Kentucky (UST)	State Program	4	58	02-23-18
Kentucky (WW)	State Program	4	98016	12-31-17
Minnesota	NELAP	5	039-999-348	12-31-17
Minnesota (Petrofund)	State Program	1	3506	07-31-17 *
Nevada	State Program	9	OH-000482008A	07-31-17 *
New Jersey	NELAP	2	OH001	06-30-17 *
New York	NELAP	2	10975	03-31-18
Ohio VAP	State Program	5	CL0024	09-14-17
Oregon	NELAP	10	4062	02-23-18
Pennsylvania	NELAP	3	68-00340	08-31-17 *
Texas	NELAP	6	T104704517-15-5	08-31-17 *
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-17
Washington	State Program	10	C971	01-12-18
West Virginia DEP	State Program	3	210	12-31-17
Wisconsin	State Program	5	999518190	08-31-17 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

3.4 | C3.1

TestAmerica INCORPORATED

Dayton Division
3601 S. Dixie Drive
Dayton, OH 45439

Phone: 937-294-6856
Toll Free: 800-572-9839
Fax: 937-294-7816

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring _____

Client Name: AK Steel Corporation
Client #: 24008214
Address: 1801 Crawford St
City/State/Zip Code: Middletown OH
Project Manager: Alex Shumakh
Telephone Number: 513 260 6316
Fax:
Sampler Name: (Print Name) Douglas Courtney
Sampler Signature: [signature]

Project Name: IT seep
Project #:
Site/Location ID: Middletown
State: OH
Report To: Alex Shumakh
Invoice To: Alex Shumakh
Quote #
PO#

TAT
~~Standard~~
X Rush (surcharges may apply)
Date Needed: 5/22/17
Fax Results: Y N

QC Deliverables
___ None
___ Level 2 (Batch QC)
___ Level 3
___ Level 4
Other: _____

SAMPLE ID	Date Sampled	Time Sampled	G=Grab, C=Composite	Field Filtered	Matrix: SL-Sludge DW-Drinking Water GW-Groundwater S-Soil/Solid WW-Wastewater Specify Other	Preservation & # of Containers: HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	Analyze For: PCB		REMARKS
IT SIDE#1 (IT SEEP#1)	5/16/17	1517	G	N	SW						2		X		

240-79671 Chain of Custody

210 Dayton

Special Instructions:

LABORATORY COMMENTS:
Init Lab Temp:
Rec Lab Temp:
Custody Seals: Y N N/A
Bottles Supplied by Test America: Y N
Method of Shipment:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
[signature]	5/17/17	1643	[signature]	5-17-17	1643
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
			[signature]	05/18/17	800
Relinquished By: [signature]	5-17-17 Date:	1650 Time:	Received By:	Date:	Time:

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 79671
Canton Facility

Client AK steel Site Name FT Seep Cooler unpacked by: DsD
Cooler Received on 05/18/17 Opened on 05/18/17
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other
Receipt After-hours: Drop-off Date/Time Storage Location
TestAmerica Cooler # Foam Box Client Cooler Box Other
Packing material used: Bubble Wrap Foam Plastic Bag None Other
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **-0.3** °C) Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 3.1 °C
   IR GUN #36 (CF **+0.8**°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 11-15 have been checked at the originating laboratory.
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC697954**
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
14. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #____ Yes No
15. Was a LL Hg or Me Hg trip blank present? ____ Yes No

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

Samples processed by:

16. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

17. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

18. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____.

Ref: SOP NC-SC-0005, Sample Receiving
\\racorp\corp\QA\QA_Facilities\Canton-QA\Document-Management\Work-Instruction\Word Version Work Instructions\WI-NC-099-042717 Cooler Receipt Form.doc djl

Data Validation Completeness Worksheet
Level II

Site:	AK Steel Middletown	Date:	5/30/2017
SDG#:	240-79957	Page	1 of 3
Lab:	Test America	Reviewer:	Stephanie Mossburg
		2nd Reviewer:	

Method: PCBs by Method 8082

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area	Code	Comments	Qualifier
I	Case Narrative	A		
II	Sample Receipt Documentation	A		
III	Technical Hold Times	A		
IV	Blanks	A		
V	Surrogates	SW		
VI	Matrix Spike/Matrix Spike Dup.	NA	MS/MSD samples were not collected	
VII	Laboratory Control Samples	A		
VIII	Field Blanks	NA	The field blank and equipment rinse blanks were not collected.	
IX	Field Duplicates	NA	Field duplicates were not collected	
X	Overall Assessment of the Data	A	**No data were qualified.**	

Codes: A = Acceptable
NA = Not provided/applicable
SW = See Worksheet
ND = No compounds detected
R = Rinsate
FB = Field Blank
D = Duplicate
TB = Trip Blank
EB = Equipment Blank

Validated Samples:

Sample ID	Q	Sample ID	Q	Sample ID	Q
IT SIDE #1 SEDIMENT					

SDG #	240-79957	Laboratory:	Test America	Validator:	Stephanie Mossburg	Validation Date:	5/30/2017
Site:	AK Steel	AR/COC#	1	Sample Receipt Docs Present:	Yes	Validation Level:	II
Matrix:	Sediment	# of Samples:	1	Case Narrative Present:	Yes	Page	2 of 3
COCs present:	Yes	COCs signed:	Yes	COCs dated:	Yes	Sample Container Integrity:	Acceptable
Analysis:	PCBs by Method 8082						

Requested Analyses Not Reported			
Client Sample ID	**Lab Sample ID**	**Analysis**	**Comments**
None			

Hold Time/Preservation Outliers						
Client Sample ID	Lab Sample ID	Analysis	Preservation	Collection Date	Preparation Date	Analysis Time

Comments: All results were analyzed within the method hold time requirements

SDG:	240-79957	Method:	8082	Matrix:	Sediment	Laboratory Sample IDs:	240-79957-1
Batch #s:	PCBs (280363, 280740)						

Analyte (outliers)	Method Blank	5X MB	LCS %R	LCSD %R	LCS/LCSD RPD	MS% R ()	MSD% R ()	MS/MSD RPD	FD RPD (-)	QC Rinse Blank	Field Blank	Trip Blank	

Surrogate/Tracer Outliers for 8082

DoD Limits (lab criteria); (TCMX: 14-128%; DCB: 10-132%))

Sample ID	TCMX	DCB												
Decachlorobiphenyl (DCB)		148%												

Comments: The recovery for surrogate DCB was slightly over the upper control limit. This would indicate a possible high bias for the reported results. However, no PCBs were detected in the sediment sample., therefore no data were qualified.

A = Acceptable
NA = Not Applicable

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-79957-1
Client Project/Site: Monroe Ditch

For:
Kemron Environmental Services, Inc.
2343-A State Route 821
Marietta, Ohio 45750

Attn: Bruce Patterson

Authorized for release by:
5/30/2017 1:25:28 PM

Debbie Olszowka, Project Manager II
(513)733-5700
debbie.olszowka@testamericainc.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: Kemron Environmental Services, Inc.
Project/Site: Monroe Ditch

TestAmerica Job ID: 240-79957-1

Job ID: 240-79957-1

Laboratory: TestAmerica Canton

Narrative

Job Narrative
240-79957-1

Comments
No additional comments.

Receipt
The sample was received on 5/24/2017 12:25 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.6º C.

GC Semi VOA
Method(s) 8082: The following sample required a tetrabutylammonium sulfite (TBA) clean-up to reduce matrix interferences caused by sulfur: IT SIDE #1 SEDIMENT (240-79957-1).

Method(s) 8082: Two surrogates are used for this analysis. The laboratory's SOP allows one of these surrogates to be outside acceptance criteria without performing re-extraction/re-analysis. The following sample contained an allowable number of surrogate compounds outside limits: IT SIDE #1 SEDIMENT (240-79957-1). These results have been reported and qualified.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: Kemron Environmental Services, Inc.
Project/Site: Monroe Ditch

TestAmerica Job ID: 240-79957-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Sample Summary

Client: Kemron Environmental Services, Inc.
Project/Site: Monroe Ditch

TestAmerica Job ID: 240-79957-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-79957-1	IT SIDE #1 SEDIMENT	Solid	05/23/17 11:15	05/24/17 12:25

Client Sample Results

Client: Kemron Environmental Services, Inc.
Project/Site: Monroe Ditch

TestAmerica Job ID: 240-79957-1

Client Sample ID: IT SIDE #1 SEDIMENT

Lab Sample ID: 240-79957-1

Date Collected: 05/23/17 11:15
Date Received: 05/24/17 12:25

Matrix: Solid
Percent Solids: 82.4

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	<30		63	30	ug/Kg	☼	05/25/17 07:57	05/26/17 22:58	1
Aroclor-1221	<29		63	29	ug/Kg	☼	05/25/17 07:57	05/26/17 22:58	1
Aroclor-1232	<20		63	20	ug/Kg	☼	05/25/17 07:57	05/26/17 22:58	1
Aroclor-1242	<25		63	25	ug/Kg	☼	05/25/17 07:57	05/26/17 22:58	1
Aroclor-1248	<22		63	22	ug/Kg	☼	05/25/17 07:57	05/26/17 22:58	1
Aroclor-1254	<18		63	18	ug/Kg	☼	05/25/17 07:57	05/26/17 22:58	1
Aroclor-1260	<23		63	23	ug/Kg	☼	05/25/17 07:57	05/26/17 22:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*123*		*14 - 128*	*05/25/17 07:57*	*05/26/17 22:58*	*1*
DCB Decachlorobiphenyl	*148*	*X*	*10 - 132*	*05/25/17 07:57*	*05/26/17 22:58*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**82.4**		0.1	0.1	%			05/25/17 08:24	1

Surrogate Summary

Client: Kemron Environmental Services, Inc.
Project/Site: Monroe Ditch

TestAmerica Job ID: 240-79957-1

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)								
		TCX2	DCB2							
Lab Sample ID	Client Sample ID	(14-128)	(10-132)							
240-79957-1	IT SIDE #1 SEDIMENT	123	148 X							
LCS 240-280363/12-A	Lab Control Sample	64	83							
MB 240-280363/11-A	Method Blank	65	77							

Surrogate Legend

TCX = Tetrachloro-m-xylene

DCB = DCB Decachlorobiphenyl

QC Sample Results

Client: Kemron Environmental Services, Inc.
Project/Site: Monroe Ditch

TestAmerica Job ID: 240-79957-1

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 240-280363/11-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 280740 — **Prep Batch: 280363**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	<24		50	24	ug/Kg		05/25/17 07:57	05/28/17 19:21	1
Aroclor-1221	<23		50	23	ug/Kg		05/25/17 07:57	05/28/17 19:21	1
Aroclor-1232	<16		50	16	ug/Kg		05/25/17 07:57	05/28/17 19:21	1
Aroclor-1242	<20		50	20	ug/Kg		05/25/17 07:57	05/28/17 19:21	1
Aroclor-1248	<17		50	17	ug/Kg		05/25/17 07:57	05/28/17 19:21	1
Aroclor-1254	<14		50	14	ug/Kg		05/25/17 07:57	05/28/17 19:21	1
Aroclor-1260	<18		50	18	ug/Kg		05/25/17 07:57	05/28/17 19:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*65*		*14 - 128*	*05/25/17 07:57*	*05/28/17 19:21*	*1*
DCB Decachlorobiphenyl	*77*		*10 - 132*	*05/25/17 07:57*	*05/28/17 19:21*	*1*

Lab Sample ID: LCS 240-280363/12-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 280740 — **Prep Batch: 280363**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Aroclor-1016			1000	606		ug/Kg		61	47 - 120		
Aroclor-1260			1000	659		ug/Kg		66	46 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*64*		*14 - 128*
DCB Decachlorobiphenyl	*83*		*10 - 132*

Method: Moisture - Percent Moisture

Lab Sample ID: 240-79957-1 DU — **Client Sample ID: IT SIDE #1 SEDIMENT**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 280373

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Solids	82.4			84.6		%				3	20

QC Association Summary

Client: Kemron Environmental Services, Inc.
Project/Site: Monroe Ditch

TestAmerica Job ID: 240-79957-1

GC Semi VOA

Prep Batch: 280363

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79957-1	IT SIDE #1 SEDIMENT	Total/NA	Solid	3540C	
MB 240-280363/11-A	Method Blank	Total/NA	Solid	3540C	
LCS 240-280363/12-A	Lab Control Sample	Total/NA	Solid	3540C	

Analysis Batch: 280649

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79957-1	IT SIDE #1 SEDIMENT	Total/NA	Solid	8082	280363

Analysis Batch: 280740

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-280363/11-A	Method Blank	Total/NA	Solid	8082	280363
LCS 240-280363/12-A	Lab Control Sample	Total/NA	Solid	8082	280363

General Chemistry

Analysis Batch: 280373

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79957-1	IT SIDE #1 SEDIMENT	Total/NA	Solid	Moisture	
240-79957-1 DU	IT SIDE #1 SEDIMENT	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Kemron Environmental Services, Inc.
Project/Site: Monroe Ditch

TestAmerica Job ID: 240-79957-1

Client Sample ID: IT SIDE #1 SEDIMENT

Lab Sample ID: 240-79957-1

Date Collected: 05/23/17 11:15

Matrix: Solid

Date Received: 05/24/17 12:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	280373	05/25/17 08:24	PW	TAL CAN

Client Sample ID: IT SIDE #1 SEDIMENT

Lab Sample ID: 240-79957-1

Date Collected: 05/23/17 11:15

Matrix: Solid

Date Received: 05/24/17 12:25

Percent Solids: 82.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3540C			280363	05/25/17 07:57	DT	TAL CAN
Total/NA	Analysis	8082		1	280649	05/26/17 22:58	SEM	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Kemron Environmental Services, Inc.
Project/Site: Monroe Ditch

TestAmerica Job ID: 240-79957-1

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-18
Connecticut	State Program	1	PH-0590	12-31-17
Florida	NELAP	4	E87225	06-30-17 *
Illinois	NELAP	5	200004	07-31-17 *
Kansas	NELAP	7	E-10336	01-31-18
Kentucky (UST)	State Program	4	58	02-23-18
Kentucky (WW)	State Program	4	98016	12-31-17
Minnesota	NELAP	5	039-999-348	12-31-17
Minnesota (Petrofund)	State Program	1	3506	07-31-17 *
Nevada	State Program	9	OH-000482008A	07-31-17 *
New Jersey	NELAP	2	OH001	06-30-17 *
New York	NELAP	2	10975	03-31-18
Ohio VAP	State Program	5	CL0024	09-14-17
Oregon	NELAP	10	4062	02-23-18
Pennsylvania	NELAP	3	68-00340	08-31-17 *
Texas	NELAP	6	T104704517-15-5	08-31-17 *
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-17
Washington	State Program	10	C971	01-12-18
West Virginia DEP	State Program	3	210	12-31-17
Wisconsin	State Program	5	999518190	08-31-17 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

bpatterson@kemron.com

2.6 / C2

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: BRUCE PATTERSON	Lab PM: Olszowka, Debbie	Carrier Tracking No(s):	COC No:
Client Contact: ~~Okey Tucker~~ BRUCE PATTERSON	Phone:	E-Mail: debbie.olszowka@testamericainc.com		Page:
Company: Kemron Environmental Services, Inc.				Job #:
Address: 2343-A State Route 821	Due Date Requested:			
City: Marietta	TAT Requested (days):			
State, Zip: OH, 45750				
Phone:	PO #: Purchase Order not required			
Email: olucker@kemron.com	WO #:			
Project Name: Kemron Dicks Creek Surface Water	Project #: ~~24012579~~ 24011139			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8082 PCBs	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
IT SIDE #1 SEDIMENT	05/23/2017	11:15	G	~~Water~~ Sediment ~~Water~~			X		
				~~Water~~					
				Water					
				Water					
				Water					

210 Dayton

240-79957 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
B Pat	05/23/2017 1235		ME Miley	5/23/17 1235	TA
			POP	5-24-17 800	TAC

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 74957
Canton Facility

Client KEMRON Site Name ——— Cooler unpacked by: POP

Cooler Received on 5-24-17 Opened on 5-24-17

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **-0.4** °C) Observed Cooler Temp. — °C Corrected Cooler Temp. — °C
   IR GUN #36 (CF +0°C) Observed Cooler Temp. 2.6 °C Corrected Cooler Temp. 2.6 °C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 11-15 have been checked at the originating laboratory.
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC697954**
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
14. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
15. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

16. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

17. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

18. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____.

Ref: SOP NC-SC-0005, Sample Receiving

\\tacorp\corp\QA\QA_Facilities\Canton-QA\Document-Management\Work-Instruction\Word Version Work Instructions\WI-NC-099-052317 Cooler Receipt Form.doc djl

Attachment 2

Seep Inspection Form

KEMRON ENVIRONMENTAL SERVICES

SEEP INSPECTION LOG SHEET

Date: _____

Project: _____ **Location:** _____

Inspector #1: _____ **Inspector #2:** _____

Current Day Weather Conditions: _____

Previous Day Weather Conditions: _____

Note: Seeps persisting from previous inspections that satisfy RAO performance measures will not be measured for pH or analyzed for PCBs.

	Seep #____	Seep #____	Seep #____	Seep #____	Seep #____
LOCATION					
GPS Coordinates					
SEEP DESCRIPTION					
Digital Photograph Taken (Y/N)					
Seep Flow Rate					
Seep Width					
Seep Depth					
Seep Color					
Seep Odor					
SURFACE WATER DESCRIPTION					
Observed Effects in Stream					
Width of Observed Effects in Stream					
Length of Observed Efffects in Stream					
SAMPLE INFORMATION					
Sample ID Number					
Sample Date					
Sample Time					
pH Measurement					
PCB Sample Bottles Filled (#)					