



UNITED STATES  
ENVIRONMENTAL PROTECTION AGENCY  
REGION III

STATEMENT OF BASIS

GLOBAL ADVANCED METALS  
650 COUNTY LINE ROAD

BOYERTOWN, PENNSYLVANIA

EPA ID NO. PAD002335545

Prepared by  
Office of Pennsylvania Remediation  
Land and Chemicals Division  
August 2017

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## List of Acronyms

AOC	Area of Concern
AR	Administrative Record
AST	Above-ground Storage Tank
EPA	Environmental Protection Agency
MCL	Maximum Contaminant Level
PADEP	Pennsylvania Department of Environmental Protection
RCRA	Resource Conservation and Recovery Act
RSL	Regional Screening Level
SB	Statement of Basis
TCLP	Toxicity Characteristic Leachate Procedure
UST	Underground Storage Tank
VOC	Volatile Organic Compound

## Section 1: Introduction

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The United States Environmental Protection Agency (EPA) has prepared this Statement of Basis (SB) to solicit public comment on its proposed remedy for the Global Advanced Metals facility located in Boyertown, Pennsylvania (hereinafter referred to as the Facility or Site). EPA's proposed remedy for the Facility consists of implementing land and groundwater use restrictions and the establishment of a long-term groundwater monitoring program. This SB highlights key information relied upon by EPA in proposing its remedy for the Facility.

The Facility is subject to EPA's Corrective Action program under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§ 6901 *et seq.* (Corrective Action Program). The Corrective Action Program is designed to ensure that certain facilities subject to RCRA have been investigated and any releases of hazardous waste and hazardous constituents, usually in the form of soil or groundwater contamination, that have occurred at or from the property have been addressed. The Commonwealth of Pennsylvania (Commonwealth) is not authorized for the Corrective Action Program under Section 3006 of RCRA. Therefore, EPA retains primary authority in the Commonwealth for the Corrective Action Program.

EPA is providing a thirty (30) day public comment period on this SB. EPA may modify its proposed remedy based on comments received during this period. EPA will announce the selection of its final remedy for the Facility in a Final Decision and Response to Comments (Final Decision) after the public comment period has ended.

Information on the Corrective Action program as well as a fact sheet for the Facility can be found on the internet at <http://www.epa.gov/reg3wcmd/correctiveaction.htm>. The Administrative Record (AR) for the Facility contains all documents, including data and quality assurance information, on which EPA's proposed remedy is based. See *Section 8, Public Participation*, below, for information on how you may review the AR.

## Section 2: Facility Background

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The Facility is located at 650 County Line Road, Boyertown, Pennsylvania 19512. The approximately 288-acre Facility spans two counties (169 acres in Berks County and 119 acres in Montgomery County). West Swamp Creek borders the Facility to the west, and farmland and sparse residential development border the Facility to the north, south, and east. Two areas of the Facility have been the primary focus of environmental investigations: the Main Plant Area, which is generally defined as the southeastern portion of industrial operations located primarily within Montgomery County, and the East Impoundment Area, which includes two lined impoundments that are part of the Facility's wastewater treatment system and is located entirely within Berks County. A location map and Facility layout are attached as Figures 1 and 2, respectively.

Much of the Facility was constructed during the late 1940s and early 1950s on reclaimed low-lying, poorly drained land. The Kawecki Chemical Company began operations at the Facility in 1950 as a manufacturer of chemical compounds used in the aluminum industry. In 1978 the Facility was purchased by Cabot Corporation, a manufacturer of specialty metals, primarily tantalum and niobium products. Global Advanced Metals purchased the Facility in 2012 and continues to refine tantalum ore and manufacture tantalum products.

### Section 3: Summary of Environmental Investigations

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For all environmental investigations conducted at the Facility, groundwater concentrations were screened against federal Maximum Contaminant Levels (MCLs) promulgated pursuant to Section 42 U.S.C. §§ 300f et seq. of the Safe Drinking Water Act and codified at 40 CFR Part 141, or if there was no MCL, EPA Region III Screening Levels (RSL) for tap water. Soil concentrations were screened against EPA RSLs for residential soil and industrial soil.

Environmental investigations of the Facility began in 1990 when Environmental Resources Management (ERM) conducted a hydrogeological investigation to assess groundwater conditions beneath the Facility. Chlorinated volatile organic compounds (VOCs) consisting mostly of trichloroethene (TCE) were discovered in groundwater samples primarily beneath the Main Plant Area. A fracture trace analysis of the vicinity of the Facility identified two primary fractures: one trending north-south and paralleling bedding strike, and another fracture trending east-west and intersecting the southeast quadrant of the Facility.

The 1992 Phase II Hydrogeological Investigation identified six localized “point” sources of VOC contamination in Main Plant Area soil that may have contributed to groundwater degradation. Since these areas were not extensive and were under an asphalt cover or obstructed by new construction, remediation of these areas was considered impractical. Additionally, given the shallow depth to groundwater, soil remediation would be of limited effectiveness; therefore, the investigation focused on groundwater conditions. Groundwater sampling and analysis from this investigation determined that the east-west-trending fracture controlled a major portion of groundwater flow and contaminant transport. Based on this investigation, which also included sampling of stream piezometers and private residential wells downgradient of the Facility and on the opposite (west) side of West Swamp Creek (Creek), the Creek was determined to be a discharge point and western-most boundary for groundwater beneath the Facility. ERM conducted a risk assessment that modeled the discharge of impacted groundwater to the Creek; for example, an average TCE concentration of 96 parts per billion (ppb) from two stream piezometers resulted in a modeled stream concentration of 0.68 ppb using a simple conservative dilution model. Results from this assessment suggested that no unacceptable level of risk to potential receptors was associated with use of the Creek.

In 2000, Environmental Standards (successor to ERM) conducted an investigation of the East Impoundment Area that included the characterization of soil and groundwater and confirmed the conceptual site model. Soil sampling results all met residential RSLs except for arsenic, which was considered a background condition and not attributable to operations at the Facility. Inorganics (metals) identified in groundwater were present in a limited area and concentrations of chlorinated VOCs were generally lower than 1990 concentrations. The investigations determined that natural attenuation of volatile contaminants was likely occurring in groundwater beneath the Facility as shown through contaminant reductions, the presence of contaminant breakdown products, and the presence of geochemical parameters that indicated favorable biological conditions in the aquifer.

Statement of Basis

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Surface water sampling from West Swamp Creek confirmed the modeled discharge of groundwater contaminants to surface water remained below relevant ambient water quality criteria. An annual groundwater monitoring program was initiated covering a 5-year period to confirm that natural attenuation was occurring in the aquifer beneath the Facility. This annual groundwater monitoring program continued through 2015.

Data collected after the first five years of natural attenuation monitoring suggested that natural attenuation of contamination was occurring in groundwater beneath the Facility, but at a slow and inconsistent rate. As a result, an in-situ biological remedy was implemented to enhance the natural degradation of groundwater contamination. Environmental Standards conducted a microcosm study to identify appropriate substrates and microbial cultures to remediate Facility groundwater. In 2008, under PADEP oversight, a pilot-scale test of the bioremediation indicated that substrate injections had effectively stimulated reductive dechlorination by native bacterial populations. Based on the successful results of the pilot test, full-scale bioremediation projects were completed in different areas of the southeast portion of the main plant area in 2010, 2012, and 2014.

Environmental Standards submitted a Remedial Investigation and Cleanup Plan in April 2016 and a Final Report in August 2016 on behalf of Global Advanced Metals under the One Cleanup Program with PADEP and EPA. The reports outlined the bioremediation activities and sampling that had occurred in groundwater beneath the Facility. Ecological screening and surface water modeling and sampling for VOCs demonstrated no impact to the Creek above ambient water quality criteria. A vapor intrusion assessment conducted in 2016 at two occupied buildings at the Facility located near the maximum groundwater contaminant concentrations demonstrated no unacceptable vapor risk to workers.

The Cleanup Plan included a proposed Post-Remediation Care Plan to ensure the long-term effectiveness and maintenance of the controls used to eliminate pathways to remaining soil and groundwater contamination, and an environmental covenant that will enforce the restrictions on land and groundwater use at the Facility. The Remedial Investigation and Cleanup Plan was approved by PADEP and EPA in July 2016, but the Final Report was disapproved in November 2016 due to a well-by-well statistical analysis that showed some wells with increasing contaminant concentration trends; however, all contaminants with increasing trends were degradation products of TCE, which are expected to increase when bioremediation efforts are successful. Over time, these degradation products are expected to return to stable or decreasing concentration trends, which is anticipated to be confirmed by quarterly sampling that is continuing throughout 2017.

## Section 4: Corrective Action Objectives

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### Soils

The Corrective Action objective for Facility soils is to:

- Prevent exposure to soils in the Main Plant Area where concentrations of TCE and its degradation products are above Industrial RSLs.

### Groundwater

EPA expects final remedies to return groundwater to its maximum beneficial use within a timeframe that is reasonable given the particular circumstances of the project. For facilities associated with aquifers that are either currently used for water supply or have the potential to be used for water supply, EPA will require the groundwater be remediated to MCLs, or to EPA Regional Screening Levels (RSLs) for tap water for chemicals for which there are no applicable MCLs.

Since the Facility has demonstrated that contaminant concentrations remaining in groundwater are not migrating off-site or impacting surface water above ambient water quality criteria, and both contaminant concentrations and the impacted area beneath the Facility are stable or decreasing, EPA expects that natural attenuation processes will restore the remaining impacted portion of the aquifer beneath the Facility within a reasonable timeframe. Because some contaminant concentrations remain in the groundwater beneath the Facility above their respective MCLs, the corrective action objective for groundwater is to:

- Prevent exposure to groundwater beneath and downgradient of the southeastern portion of the Main Plant Area where concentrations of TCE and its degradation products are above MCLs.

## **Section 5: Proposed Remedy**

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### **A. Soils**

EPA's proposed remedy for Facility soils is the following:

- 1) Engineering Controls – EPA's proposed remedy requires a Post-Remediation Care Plan be developed, for EPA approval, to include:
  - a. A soil management plan detailing work procedures and personal protective equipment (PPE) requirements for any intrusive operations conducted within the area of impacted groundwater, and
  - b. Inspection and maintenance requirements that ensure the long-term integrity of physical barriers (asphalt and building foundations) between soils within the area of impacted groundwater and potential receptors.
  
- 2) Institutional Control – EPA's proposed remedy requires the following use restrictions and requirements be implemented in an Institutional Control such as an enforceable permit, order and/or an Environmental Covenant pursuant to the Pennsylvania Uniform Environmental Covenants Act, 27 Pa. C.S. Sections 6501-6517 (UECA) to be recorded with the deed for the Facility property:
  - a. The Facility shall not be used for residential purposes unless it is demonstrated to EPA that such use will not pose a threat to the environment or adversely affect or interfere with the selected remedy and EPA provides prior written approval of such use.
  - b. Comply with the EPA-approved Post Remediation Care Plan.

### **B. Groundwater**

EPA's proposed remedy for Facility groundwater is the following:

- 1) Engineering Control – EPA's proposed remedy requires a Post-Remediation Care Plan be developed, for EPA approval, to include:
  - a. Work procedures and PPE requirements for any intrusive operations conducted within the area of impacted groundwater, and
  - b. A monitoring plan for groundwater to continue until MCLs are met or until EPA approves cessation of monitoring.
  
- 2) Institutional Control - EPA's proposed remedy requires the following use restrictions and requirements to be implemented in an Institutional Control such as an enforceable permit, order and/or an Environmental Covenant pursuant to the Pennsylvania Uniform Environmental Covenants Act, 27 Pa. C.S. Sections 6501-6517 (UECA) to be recorded with the deed for the Facility property:

Statement of Basis

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- a. Groundwater beneath the Facility shall not be used for any potable and/or domestic purpose unless it is, (a) demonstrated to EPA, in consultation with PADEP, that such use will not pose a threat to human health or the environment or adversely affect or interfere with the selected remedy and, (b) EPA provides prior written approval for such use.
- b. Comply with the EPA-approved Post Remediation Care Plan.

**C. Additional Requirements**

- 1) EPA, PADEP and/or their authorized agents and representatives, shall have access to the Facility to inspect and evaluate the continued effectiveness of the final remedy and if necessary, to conduct additional remediation to ensure the protection of the public health and safety and the environment upon the final remedy selection in the FDRTC.
- 2) EPA will require the Facility owner to include a coordinate and metes and bounds survey of the Facility boundary in the enforceable mechanism which implements the final remedy. At a minimum, the coordinate survey would be in a form amenable to publicly accessible mapping programs (e.g., Google Earth<sup>®</sup> or Google Maps<sup>®</sup>) and include boundaries of each area under a use restriction defined as polygons using the World Geodetic System (WGS) 1984 datum, with the latitude and longitude of each polygon vertex in decimal degrees format to at least seven decimal places and a negative sign used for west longitude.

## Section 6: Evaluation of Proposed Remedy

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This section provides a description of the criteria EPA used to evaluate the proposed remedy consistent with EPA guidance. The criteria are applied in two phases. In the first phase, EPA evaluates three decision threshold criteria as general goals. In the second phase, for those remedies which meet the threshold criteria, EPA then evaluates seven balancing criteria.

Threshold Criteria	Evaluation
1) Protect human health and the environment	EPA's proposed remedy for the Facility protects human health and the environment by eliminating, reducing, or controlling potential unacceptable risk from exposure to contaminated media through the implementation and maintenance of land and groundwater use restrictions and engineering controls.
2) Achieve media cleanup objectives	EPA's proposed remedy meets the media cleanup objectives based on assumptions regarding current and reasonably anticipated land and water resource use(s). Facility soils in the East Impoundment Area meet residential RSLs except for arsenic, which is considered a background condition not attributable to Facility operations. Exposure to potentially-contaminated soils beneath the Main Plant Area is limited due to this area being extensively capped with buildings and asphalt and the proposed engineering controls to protect workers during intrusive operations. Exposures to remaining groundwater contamination beneath the southern portion of the Facility will be minimized due to the prohibition on potable or domestic use and the use of proper controls during any intrusive operations. Natural attenuation processes are expected to restore this portion of the aquifer within a reasonable timeframe. The remedy proposed in this SB is based on the current and future anticipated land use at the Facility as commercial or industrial.
3) Remediating the Source of Releases	In all proposed remedies, EPA seeks to eliminate or reduce further releases of hazardous wastes and hazardous constituents that may pose a threat to human health and the environment. Global Advanced Metals has met this objective by completing several rounds of bioremediation within the areas of highest VOC concentrations in groundwater. There are no remaining large, discrete sources of waste from which constituents would be released to the environment. Therefore, EPA has determined that this criterion has been met.

Balancing Criteria	Evaluation
4) Long-term effectiveness	The long-term effectiveness of the proposed remedy for the Facility will be maintained by the implementation of land and groundwater use restrictions that will run with the land, and require adherence to the post-remediation care plan.
5) Reduction of toxicity, mobility, or volume of the Hazardous Constituents	Reduction of toxicity has occurred in groundwater beneath the Facility through both natural attenuation and enhanced bioremediation, which have mostly degraded TCE into less-hazardous by-products. Reduction of the volume of hazardous constituents in groundwater has also been achieved through natural attenuation and several rounds of biological amendment injections, which significantly increased the destruction of TCE and its hazardous degradation products to non-hazardous end products.
6) Short-term effectiveness	EPA's proposed remedy does not involve any activities such as construction or excavation that would pose short-term risks to workers, residents, and/or the environment. EPA anticipates that the land and groundwater use restrictions and engineering controls will be fully implemented shortly after the issuance of the Final Decision and Response to Comments.
7) Implementability	EPA's proposed remedy is readily implementable. EPA proposes to implement the land and groundwater use restrictions and post-remediation care plan through an enforceable mechanism such as an Environmental Covenant, permit, or order.
8) Cost	EPA's proposed remedy is cost effective. Most of the costs associated with this proposed remedy have already been incurred and the remaining costs to implement an enforceable mechanism for the land and groundwater use restrictions and engineering controls are minimal.
9) Community Acceptance	EPA will evaluate community acceptance of the proposed remedy during the public comment period, and it will be described in the Final Decision and Response to Comments.
10) State/Support Agency Acceptance	PADEP has reviewed and concurred with the proposed remedy for the Facility.

## **Section 7: Financial Assurance**

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EPA has evaluated whether financial assurance for corrective action is necessary to implement EPA's proposed remedy at the Facility. Given that EPA's proposed remedy does not require any further actions to remediate soil or groundwater at this time, and given that the cost of implementing institutional and engineering controls at the Facility is expected to be less than \$20,000 annually, EPA is proposing that no financial assurance be required.

## Section 8: Public Participation

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Interested persons are invited to comment on EPA's proposed remedy. The public comment period will last thirty (30) calendar days from the date that notice is published in a local newspaper. Comments may be submitted by mail, fax, or electronic mail to Mr. Griff Miller at the contact information listed below.

A public meeting may be held upon request. Requests for a public meeting should be submitted to Mr. Miller in writing at the contact information listed below. A meeting will not be scheduled unless one is requested.

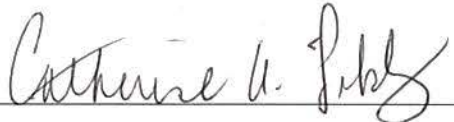
The Administrative Record contains all the information considered by EPA for the proposed remedy at this Facility. The Administrative Record is available at the following location:

U.S. EPA Region III  
1650 Arch Street  
Philadelphia, PA 19103  
Contact: Mr. Griff Miller (3LC20)  
Phone: (215) 814-3407  
Fax: (215) 814-3113  
Email: [miller.griff@epa.gov](mailto:miller.griff@epa.gov)

### **Attachments:**

Figure 1: Location Map  
Figure 2: Property Diagram

Date: 8-22-17



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Catherine A. Libertz, Acting Director  
Land and Chemicals Division  
U.S. EPA Region III

Statement of Basis

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## **Section 9: Index to Administrative Record**

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Phase II Hydrogeologic Investigation Results – Cabot Corporation Electronic Materials Plant Boyertown, prepared by Environmental Resources Management, 1992.

Environmental Indicator Inspection Report for Cabot Corporation, prepared by United States Army Corps of Engineers Philadelphia District, May 1999.

Comprehensive Water Quality Report – Cabot Performance Materials Plant, prepared by Environmental Standards, July 2000.

Focused East Impoundment Area Investigation – Cabot Performance Materials Plant, prepared by Environmental Standards, August 2000.

Supplemental Assessment of March 2000 Water Sampling Program – Cabot Performance Materials Plant, prepared by Environmental Standards, August 2000.

Report – EPA Removal Assessment, Boyertown Farms, prepared by USEPA, November 2000.

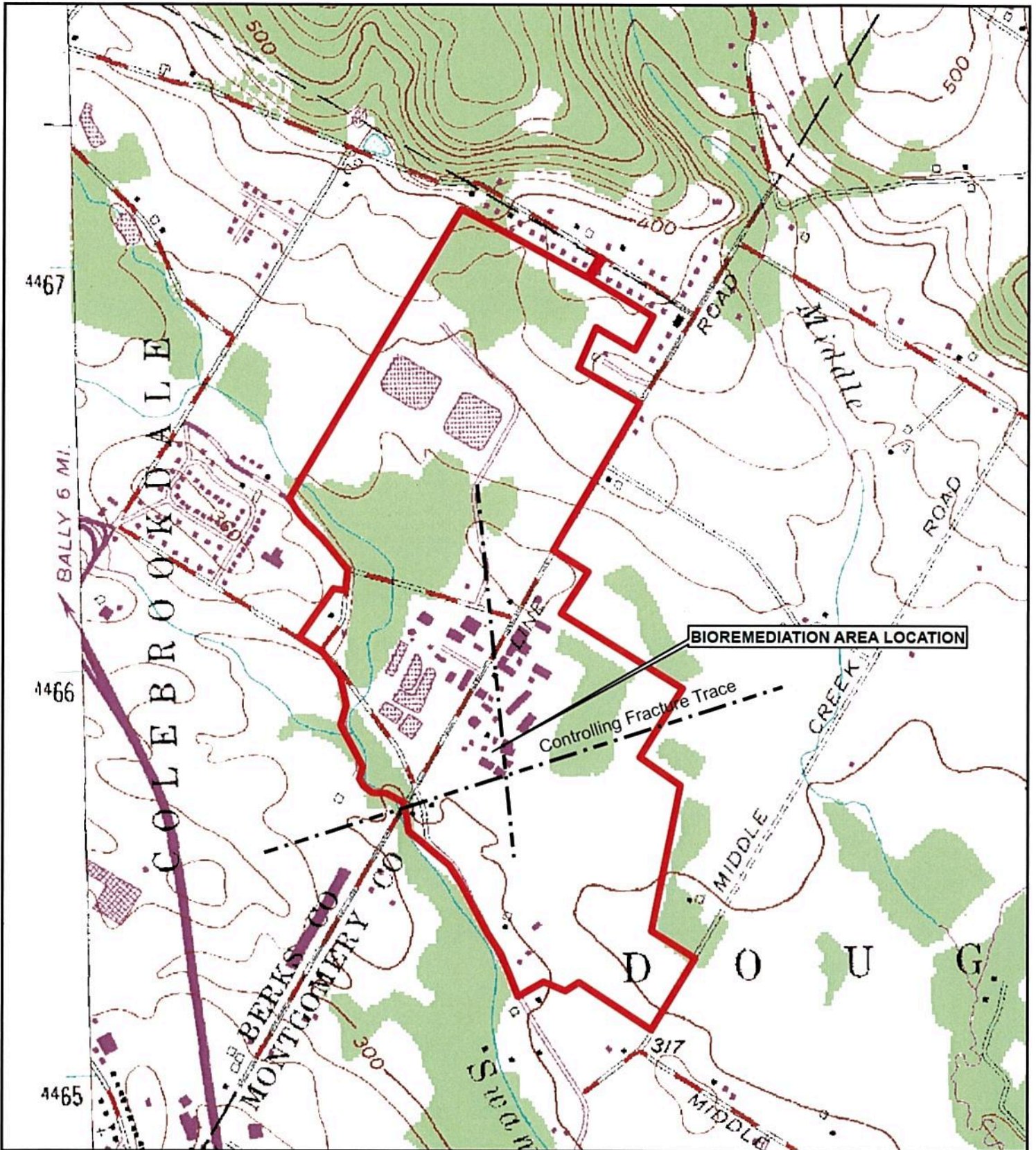
B015 Area Bioremediation Report – former Cabot Supermetals, prepared by Environmental Standards, October 2012.

B040 Area Bioremediation Report – former Cabot Supermetals, prepared by Environmental Standards, June 2014.

Groundwater Sampling Report – Global Advanced Metals, prepared by Environmental Standards, August 2014.

Combined Remedial Investigation Report and Cleanup Plan – Global Advanced Metals, prepared by Environmental Standards, April 2016.

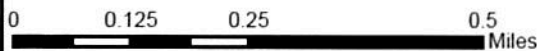
Final Report, Demonstration of Attainment of Statewide Health and Site-Specific Remediation Standards for Site Groundwater – Global Advanced Metals, prepared by Environmental Standards, August 2016.



SOURCE: USGS 7.5" TOPOGRAPHIC QUADRANGLE; SASSAMANSVILLE (2006), PENNSYLVANIA

**LEGEND**

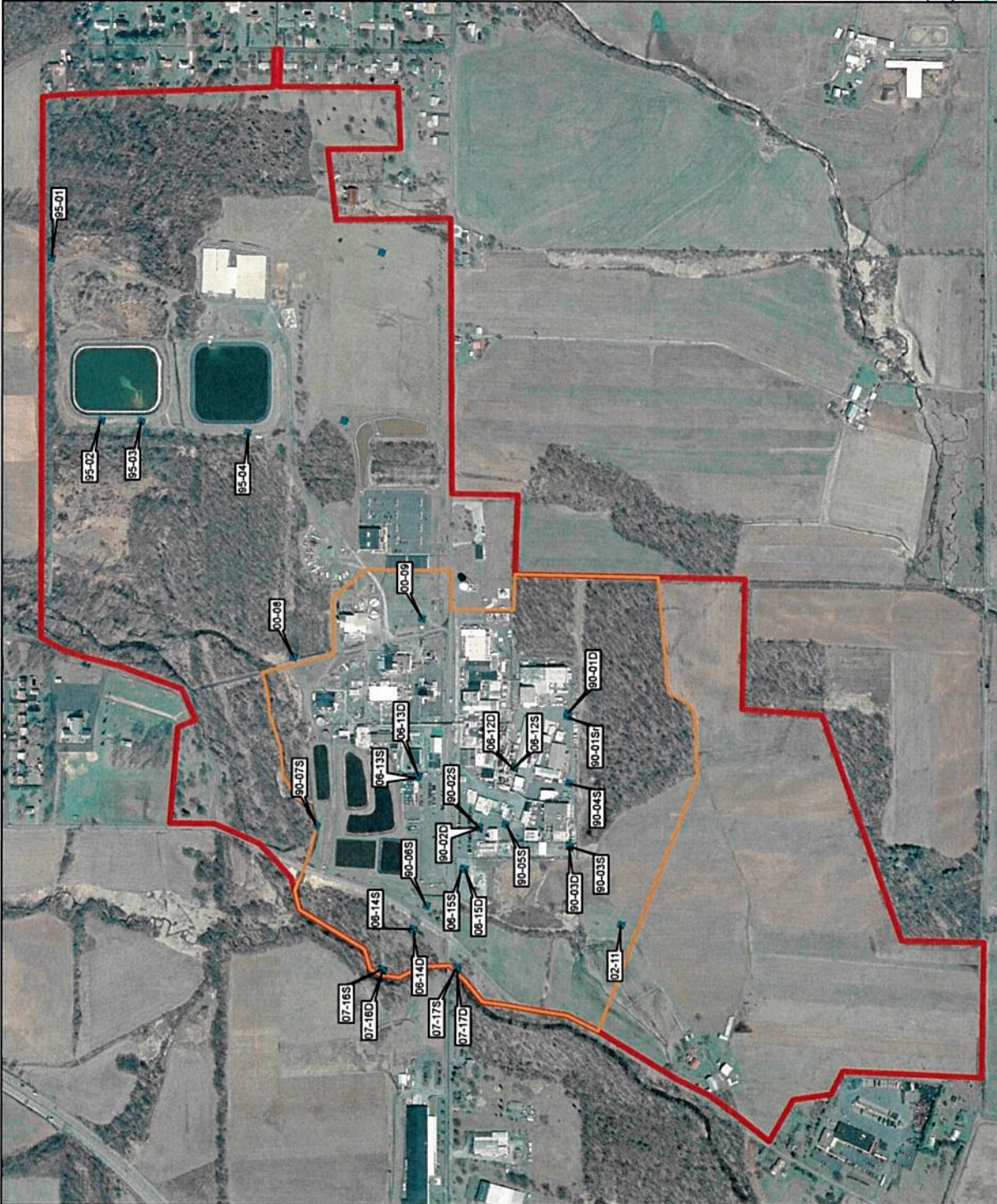
-  FRACTURE TRACE
-  PROPERTY BOUNDARY



CREATION DATE: DECEMBER 16, 2015		PROJECT NO: 20146653.A		<b>FIGURE 4: CONCEPTUAL GROUNDWATER FLOW MODEL OF FRACTURE FLOW NEAR THE ACTIVE PLANT AREA</b>  GLOBAL ADVANCED METALS SITE BOYERTOWN, PENNSYLVANIA
DRAWN BY: KWF		APPRYD BY: GLK		
CHK'D BY: KWF		REVISION: 0		







**LEGEND**  
 MONITORING WELL LOCATIONS (APPROXIMATE) ACT  
 Potable groundwater and residential use prohibition area  
 PROPERTY BOUNDARY



CREATION DATE August 8, 2017	PROJECT NO. 20146653.A	APPROVED BY KWF	REVISION 0
ENVIRONMENTAL STANDARDS		FIGURE 2, ACT 2 SITE BOUNDARY	
GLOBAL ADVANCED METALS SITE BOTETOWN, PENNSYLVANIA			

SOURCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE, SALEM/MASSVILLE CROSS, PENNSYLVANIA © 2015 Environmental Standards, Inc. All rights reserved.

