Former Satralloy Facility

Request for Section 404 Jurisdictional Determination

Prepared for

Cyprus Amax Minerals Company
333 North Central Avenue
Phoenix, Arizona 85004
602-366-8270

Prepared by

Vanasse Hangen Brustlin, Inc.
101 Walnut Street, Box 9151
Watertown, Massachusetts 02472
617-924-1770

May 2014

Request for a Jurisdictional Determination

This form can be used when you want to determine if areas on your property fall under regulatory requirements of the U.S. Army Corps of Engineers (USACE). Please supply the following information and supporting documents described below. This form can be filled out online and then printed. It **must be signed by the property owner** to be considered a formal request. Submitting this request authorizes the US Army Corps of Engineers to field inspect the property site, if necessary, to help in the determination process. The printed form and supporting documents should be mailed to:

Pittsburgh, Regulatory Branch
U.S. Army Corps of Engineers, Pittsburgh District
1000 Liberty Avenue
Pittsburgh, PA 15222

Please contact us at 412-395-7155 if you need any assistance with filling out this form.

Location and Information about Property to be subject to a Jurisdictional Determination

Property Address/Location: 4243 County Road 74 (Gould Road)

City (name) or Unincorporated: Mingo Junction State: OH Zip: 43938

County: Jefferson Township name: Cross Creek

Lat/Long in Decimal Degrees: 40.310 °N 80.671 °W

Size of Property in Acres: 332 (Include a survey of the property)

Prior or related USACE project number: 1271.01 805 805

Is the property subject to a conservation easement or deed restriction? (☐Yes or ■No)
If yes, please explain and submit details of the project area.

Was the property a site for mitigation pursuant to a project previously permitted by USACE? (☐Yes or ■No) If yes, please explain and submit details of the project area.

Is the property neighboring/adjacent to/bordering a project previously permitted by the USACE? (☐Yes or ■No) If yes, please explain and submit the name of the project, the permittee's name and/or address, and Corps permit number, if available:

Property Owner Contact Information:

Property Owner Name: Cyprus Amax Minerals Company

Mailing Address: 333 North Central Avenue

City: Phoenix State: AZ Zip: 85004

Daytime Telephone: 602-366-8270 Fax: N/A

E-Mail Address: Barbara_Nielsen@FMI.com

If the person requesting the Jurisdictional Determination is **not** the Property Owner, please also supply the Requestor's contact information here:

Requestor Name: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Daytime Telephone: _____ Fax: _____

E-Mail Address: _____

Please provide a map with the Latitude and Longitude for each water including wetlands; and/or copy of the plat of survey identifying the physical boundaries of the property. Additionally, if you have any of the following information, please include it with your request: wetland delineation, relevant maps, drain tile survey, topographic survey, and site photographs.

If you are considering doing work on the property, please identify on the required site map, plat of survey, or in a separate drawing: the footprint, location, and type of potential work. It will assist us in the determination process and reduce unnecessary delays of processing subsequent permits, if required.

I hereby certify that the information contained in the Request for a Jurisdictional Determination is accurate and complete:

Signature of Property Owner: Date:

Former Satralloy Facility

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Introduction

1.1 Purpose of this Document

This document is a request for a Section 404 Jurisdictional Determination (JD) for the former Satralloy Facility, located in Cross Creek Township, Jefferson County, Ohio (the Site). The Site is undergoing site investigation work that may require a nationwide permit from the U.S. Army Corps of Engineers (USACE) (Nationwide Permit No. 38, Cleanup of Hazardous and Toxic Waste). A JD was originally issued for the Site on August 6, 2007 and expired on August 6, 2012. Based on that expiration and planned upcoming work, a new JD is required to determine the aquatic resource areas that are currently considered jurisdictional under USACE regulations. This JD request provides the technical documentation required for the USACE to make a determination on the jurisdictional status of the wetlands and waterways on the Site and certain adjoining property that, in total, constitute the Project Area (Figure 1). We request that the USACE review and concur with the identification and delineation of the Waters of the United States within the Project Area, as described in this submittal.

This chapter of the JD request provides general information on the Project as well as an overview of jurisdictional authority pertaining to the Project Area. Table 1-1 summarizes pertinent Site information for the JD. Chapter 2 describes the regulatory definitions of wetland resource areas, as well as the methodology and criteria used to identify and delineate these resource areas. Chapter 3 identifies the jurisdictional and potentially jurisdictional waterways and wetlands of the United States within the Project Area. Appendix A provides relevant references. Appendix B provides figures showing the jurisdictional or potentially jurisdictional wetland resource areas in the Project Area. Appendix C provides the USACE Wetland Data Forms, using the format prescribed in the Eastern Mountains and Piedmont Regional Supplement (April 2012) of the USACE Wetlands Delineation Manual. Appendix D provides photographs of the jurisdictional or potentially jurisdictional wetland resource areas in the Project Area.

Table 1-1 Jurisdictional Determination Summary Information

Project Name	Former Satralloy Facility Remedial Investigation/Feasibility Study
Project Location	In Cross Creek Township near Steubenville, OH
Property Owner/Applicant	Cyprus Amax Minerals Company Barbara Nielsen, Manager, Remediation Projects 333 North Central Avenue Phoenix, AZ 85004
Location of Site	40.310°N, 80.671°W
Approximate Size of Site	332 acres
Approximate Size of Project Area	337 acres

1.2 Project Overview

The Site is the location of a former chromium smelting facility that was in operation from 1958 until 1982. Waste products (slag) from the smelting process have been deposited over a large area of the Site. Much of the smelter equipment has been removed from the Site, but the framework and exterior of several large industrial buildings are still in place. These buildings will be demolished as part of the current Project. The owner/applicant has rebuilt the lower of two rail spurs that serviced the facility during its operational phase, in order to be able to transport materials and equipment on and off the Site by rail; a portion of the rail spur is outside of the Site property boundary. This adjoining area, along with the Site, constitutes the Project Area. Since the original 2007 JD expired in August 2012, a new JD is needed in order to determine the extent of jurisdictional wetlands within the Project Area that may be impacted by the Project.

The purpose of the current Project is to conduct a Remedial Investigation/Feasibility Study (RI/FS), which may be followed by remediation activities. The field investigation will include a surface and subsurface investigation to determine the nature and extent of any contaminated environmental media (soils, groundwater, surface water) on the Site. Work to support the field investigation may include constructing or repairing roads, moving materials, and demolishing abandoned buildings and equipment. Some of these activities will occur near jurisdictional or potentially jurisdictional Waters of the U.S., and could result in the discharge of dredged or fill material. To the extent practical, the RI/FS field activities will be planned to avoid such discharges.

1.3 Site Description

The Site is located on Jefferson County Road 74 (CR74, also known as Gould Road), approximately 4.5 miles southwest of Steubenville, Ohio. The existing buildings are situated on a flat portion of land covering the southeastern half of the Site; the remainder of the Site is characterized by a ridge approximately 400 feet in height. The Site is surrounded to the north, west, and south by the perennial stream Cross Creek (Figure 1). An active rail line passes near the northeastern corner of the Site; the rail spurs mentioned above originate in this area and terminate at the industrial buildings.

The lower portion of the Site has little vegetation, and consists mainly of dirt and gravel driveways between the industrial buildings. The ridge is mostly covered with second growth forest and understory vegetation. Much of the Site is highly disturbed. A large portion of the ridge and some of the flat area is covered by waste slag, which has inhibited plant growth. A network of dirt trails and roads lead up the southeastern face of the ridge from the industrial buildings, and wind through the forest and disturbed areas at the top of the ridge. An electric transmission line crosses the western portion of the Site along a cleared easement.

1.4 Jurisdictional Authority

Federal regulations define the term *Waters of the United States*[1] (Waters of the U.S.). USACE has jurisdictional authority over Waters of the U.S., including wetlands associated with those waters.

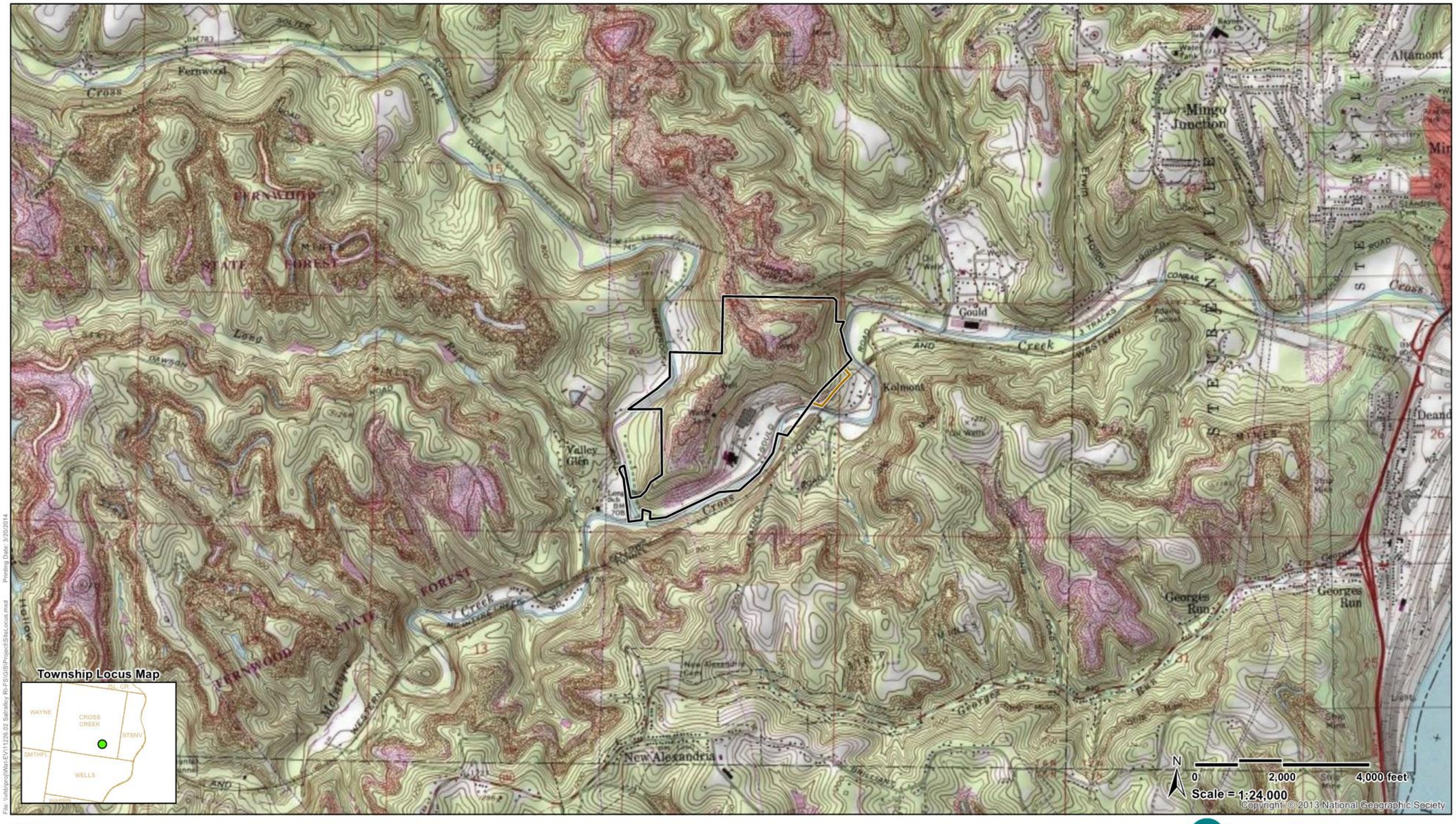
The USACE and the U.S. Environmental Protection Agency (USEPA) define wetlands as: "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."[2]

Isolated wetlands have no chemical, physical, or biological connection (nexus) to traditional navigable Waters of the U.S. Wetlands determined to be isolated do not fall under federal jurisdiction, but are protected by the Ohio Environmental Protection Agency (OEPA) Division of Surface Water (DSW). The OEPA jurisdiction stems from Sections 6111.02 through 6111.29 of the Ohio Revised Code.

[1] Code of Federal Regulations, *Definition of Waters of the United States.* 33 CFR 328.3.

[2] Environmental Laboratory, *U.S. Army Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-01*. (Vicksburg, Mississippi: U.S. Army Engineers Waterways Experiment Station, 1987).

A detailed discussion of regulatory definitions and their application in the field to identify and delineate Waters of the U.S. under the jurisdiction of the USACE and isolated wetlands under the jurisdiction of the OEPA DSW is provided in Chapter 2.



Legend
- Site Boundary
- Additional Project Area (Wheeling and Lake Erie Property)

VHB Vanasse Hangen Brustlin, Inc.

Figure 1
Former Satralloy Site
Project Area

Source: USGS, Golder Associates
Prepared by: VHB

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Regulatory Definitions and Methodology

This chapter describes the regulatory definitions upon which the determination of wetland resource area boundaries was based, and the methodology used to identify and evaluate jurisdictional wetlands and waterways within the Project Area.

2.1 Federal Regulatory Definitions

Although state and in some cases even local regulations exist to regulate waterways and wetland resource areas, jurisdiction over these areas ultimately derives from USACE regulations. The USACE is granted jurisdiction over waters of the U.S. under Section 404 of the Federal Water Pollution Control Act (commonly known as the Clean Water Act) and Section 10 of the Rivers and Harbors Act. The following sections describe the federal definition of the term "Waters of the United States," as well as the criteria used to determine whether areas are considered jurisdictional.

2.1.1 Waters of the United States

USACE's jurisdiction over Waters of the U.S. derives from federal regulations that define the term "Waters of the United States," 33 CFR 328.3 (a)(1)-(7.)[3] The regulation defines Waters of the U.S. to include:

- All waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide;

[3] Code of Federal Regulations, *Definition of Waters of the United States.* 33 CFR 328.3.

- All interstate waters including interstate wetlands;
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce;
- All impoundments of waters otherwise defined as Waters of the United States;
- Tributaries of waters;
- The territorial seas; and
- Wetlands adjacent to waters (other than waters that are themselves wetlands).

USACE jurisdiction of streams and tributaries (which may include some man-made ditches) extends to the ordinary high water mark of the defined waterway channel. The area below the ordinary high water mark is considered a USACE jurisdictional waterway.

2.1.2 Jurisdictional Wetlands

A number of wetland resource areas on the Site are federally regulated under Section 404 of the Clean Water Act. The 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual (1987 Corps Manual)[4] defines wetlands as: "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

The regulations in the 1987 Corps Manual require that the following three criteria ("diagnostic environmental characteristics") be met for an area to be classified as a jurisdictional wetland: the dominance of hydrophytic vegetation, the presence of hydric soils, and the evidence of wetland hydrology.

In 2009 (and subsequently in 2012) the USACE issued Regional Supplements to the 1987 Corps Manual; the site falls into the Eastern Mountains and Piedmont Region.[5] The purpose of the Regional Supplement is to "address regional wetland characteristics and improve the accuracy and efficiency of wetland-delineation procedures." The Regional Supplement provides a number of revised and refined defining characteristics and methods to be used to identify wetlands in the field, in

[4] Environmental Laboratory, *U.S. Army Corps of Engineers Wetlands Delineation Manual*, *Technical Report Y-87-01*. (Vicksburg, Mississippi: U.S. Army Engineers Waterways Experiment Station, 1987).

[5] U.S. Army Corps of Engineers, *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region*, April 2012.

order to increase the regional sensitivity of wetland delineation in the Eastern Mountains and Piedmont Region.

Although the Regional Supplement states that the determination of jurisdiction for a given wetland is still subject to Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act, it also provides information to replace sections of the 1987 Corps Manual, and states: "Where differences in the two documents occur, this Regional Supplement takes precedence over the Corps Manual for applications in the Eastern Mountains and Piedmont Region."[6]

2.1.2.1 Hydrophytic Vegetation

According to the 1987 Corps Manual, the prevalent vegetation in jurisdictional wetlands consists of macrophytes that are typically adapted to areas having the hydrologic and soil conditions that are described in the Manual's definition of wetlands. Hydrophytic species, due to morphological, physiological, and/or reproductive adaptations, have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions. Plant species have been compiled in a list[7] and are given a wetland indicator status to denote the hydrologic regime in which they are most often found. The indicator status can be, in order of decreasing preference for a wet regime, Obligate (OBL), Facultative Wetland (FACW), Facultative (FAC), Facultative Upland (FACU), or Upland (UPL). The use of (+) and (–) modifiers further refine those categories, with (+) designating a preference for a wetter regime. According to the 1987 Corps Manual, a plant with a status of FAC or wetter is considered to be a wetland plant, while a plant with a status of FAC- or drier is considered to be a non-wetland plant. The 1987 Corps Manual makes note of the fact that some plant species have broad ecological tolerances and occur in both wetlands and non-wetlands.

The Regional Supplement provides guidance on vegetation sampling and analysis to supplement the 1987 Corps Manual, including more precise definitions of plant strata and field techniques than are found in the Manual. Of particular note, the Regional Supplement alters the usage of indicator status for a given plant species by removing the (+) and (–) modifiers. Therefore, any plant with an indicator status of FAC-, which would have previously been considered a non-wetland plant, is now grouped with all other plants with an indicator status of FAC, identifying these plants as wetland plants.

[6] *Ibid.*

[7] Reed, P. B., Jr. 1988. *National list of plant species that occur in wetlands: 1988 national summary.* Biological Report 88(24). Washington, DC: U.S. Fish and Wildlife Service.

2.1.2.2 Hydric Soils

The 1987 Corps Manual defines a hydric soil as "a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation."[8] The Manual describes several characteristics and features that are used to identify soils as hydric, such as the presence of layers of organic material, reducing (low oxygen) soil conditions, and soil colors that result from prolonged saturation and/or inundation.

The Regional Supplement presents indicators that are designed to help identify hydric soils in the Eastern Mountains and Piedmont Region, along with accompanying photographs and identifying criteria. The Supplement does not change the core definition of a hydric soil in the 1987 Corps Manual, and notes that: "Indicators are not intended to replace or relieve the requirements contained in the definition of a hydric soil. Therefore, a soil that meets the definition of a hydric soil is hydric whether or not it exhibits indicators."[9]

2.1.2.3 Hydrology

The 1987 Corps Manual establishes criteria to identify wetland hydrology: "Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic and reducing conditions, respectively. Such characteristics are usually present in areas that are inundated or have soils that are saturated to the surface for sufficient duration to develop hydric soils and support vegetation typically adapted for life in periodically anaerobic soil conditions."[10] The Manual provides a number of identifying factors that are used in the field to determine the hydrology of an area, including direct observation of inundation, soil saturation, and evident drainage patterns.

The Regional Supplement presents indicators that are designed to help identify wetland hydrology in the Eastern Mountains and Piedmont Region, along with accompanying photographs and identifying criteria. According to the Regional Supplement, wetland hydrology indicators "provide evidence that the site has a *continuing* wetland hydrologic regime and that hydric soils and hydrophytic vegetation are not relicts of a past hydrologic regime."[11]

[8] Environmental Laboratory, *U.S. Army Corps of Engineers Wetlands Delineation Manual*, *Technical Report Y-87-01*. (Vicksburg, Mississippi: U.S. Army Engineers Waterways Experiment Station, 1987).

[9] U.S. Army Corps of Engineers, *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region*, April 2012.

[10] Environmental Laboratory, *U.S. Army Corps of Engineers Wetlands Delineation Manual*, *Technical Report Y-87-01*. (Vicksburg, Mississippi: U.S. Army Engineers Waterways Experiment Station, 1987).

[11] U.S. Army Corps of Engineers, *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region*, April 2012.

2.1.3 Guidance Memorandum

In 2007, the USACE and the USEPA issued a joint guidance memorandum on Clean Water Act jurisdiction following the U.S. Supreme Court's decision in *Rapanos v. United States* & *Carabell v. United States*.[12] The memorandum was revised after public comment and the revised document was issued on December 2, 2008. The memorandum provided guidance to USEPA regions and USACE districts, particularly in regard to situations in which the agencies should apply the "significant nexus" determination to determine whether or not to take jurisdiction over an area.

2.1.4 Isolated Wetlands

Isolated wetland areas that are non-jurisdictional under federal regulations are still within the jurisdiction of the OEPA DSW. Anyone who wishes to discharge dredged or fill material into isolated wetlands in Ohio must obtain an Isolated Wetland Permit from the OEPA. The DSW has developed the Ohio Rapid Assessment Method (ORAM) to evaluate isolated wetlands in order to determine an appropriate level of mitigation for any impacts to isolated wetlands based on their overall quality.

2.2 Methodology and Field Work

In order to identify and delineate the federal or state jurisdictional wetlands and waterways within the Project Area, field surveys were conducted in conjunction with mapping supplied as part of the JD approved by the USACE for the Site on August 6, 2007.

Waterways and wetland areas were delineated in the field in April 2012 and April 2013. These resource areas were marked with colored flagging, and the flag locations were recorded with a Trimble hand-held GPS device. Areas that were determined to be non-jurisdictional by the USACE in the 2007 JD and which had not changed since the previous JD delineation were not redelineated. Areas that were determined to be jurisdictional by the USACE in the 2007 JD were all redelineated, and any areas where changes had occurred since the previous delineation were also redelineated.

Wetlands and waterways were identified and delineated using the methods and criteria established in the 1987 Corps Manual as well as the Regional Supplement. According to this federal methodology, wetlands were identified by the presence of

[12] U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency, *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States*, June 6, 2007, revised December 2, 2008.

the three essential parameters: hydrophytic vegetation, hydric soils, and evidence of wetland hydrology. In the absence of significant disturbance, all three technical criteria are considered mandatory and must be met for an area to be identified as a wetland. Waterways (such as Cross Creek) were identified by the extent of the ordinary high water mark of perennial streams.

Potential waterways and wetland resource areas were examined by field investigators using these three criteria throughout the Project Area. For each identified wetland resource area, a representative observation point was selected, and field data sheets were completed describing the upland and wetland characteristics of the observation point. The results of these observations are provided in the Appendix B figures, Appendix C field data sheets, and Appendix D photographs.

2.2.1 Hydrophytic Vegetation

Visual estimates of species abundance were made for the upland and wetland plant communities at each observation point, and the dominant species were determined and recorded by genus and species on the field data sheets included in Appendix C. Dominant species were determined separately for each vegetative stratum as trees, saplings/shrubs, herbs, and vines. No field data sheets were prepared for waterways.

The wetland indicator status of each species was determined according to the 1988 *National List of Plant Species That Occur in Wetlands*, which is based on the national list[13]. According to the Regional Supplement, three separate procedures exist to determine whether an area has hydrophytic vegetation: the Rapid Test for hydrophytic vegetation, the Dominance Test, and the Prevalence Index. These procedures are briefly described below.

The Rapid Test for Hydrophytic Vegetation

This test is used in obvious cases where a site has or appears to have hydrophytic vegetation. If all dominant plant species in a sample vegetation plot are rated OBL or FACW, then the vegetation community is hydrophytic and no further vegetation analysis is required.

The Dominance Test

This test measures the relative dominance of plant species in a given sample plot to determine whether the overall vegetation is hydrophytic. If greater than 50 percent of the dominant plant species are rated OBL, FACW, or FAC, then the vegetation community is hydrophytic. This test accounts for communities where not all dominant plant species are hydrophytic.

[13] Reed, P. B., Jr. 1988. *National list of plant species that occur in wetlands: 1988 national summary.* Biological Report 88(24). Washington, DC: U.S. Fish and Wildlife Service.

The Prevalence Index

The Prevalence Index is a weighted-average indicator of all plant species in a given community. Plants are given a numeric value based on their indicator status and their abundance is used to calculate the Prevalence Index. The Prevalence Index is a more thorough measure of all plants in a given community.

These procedures are discussed in detail in the Regional Supplement. All three methods were considered when evaluating site conditions, and the results of all three methods are noted on the field data sheets prepared for each observation point.

2.2.2 Soils

Baseline soils information was determined from review of existing data, including the USDA Natural Resources Conservation Service (NRCS) *Soils Survey of Jefferson County, Ohio*, county and state lists of hydric soils, and data collected from the previous delineation.

During the wetland investigation, soils were examined with a hand auger to determine if hydric soil characteristics were present. Auger holes were excavated to a depth that confirmed the presence of hydric soils in wetland areas, or that eliminated the possibility of hydric soils in uplands. The colors of the soil matrix and any redoximorphic features were described using Munsell Soil Color Charts. Information describing the upland and wetland soil profiles was recorded on the field data sheets for each identified wetland.

2.2.3 Hydrology

Site hydrology was determined in the field based on properties such as soil saturation, inundation, oxidized root zones, manganese concretions, and drainage patterns. Hydrologic indicators were based on the 1987 Corps Manual and the Regional Supplement.

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Waters of the U.S. and Isolated Wetlands within the Project Area

This chapter provides a summary of the waterways and wetland resource areas found in the Project Area. Figures showing the delineated boundaries of all wetland resource areas are provided in Appendix B.

3.1 Overview of Findings

The Project Area contains or lies adjacent to seven waterways and wetland resource areas that were determined to be jurisdictional by the USACE as part of the 2007 JD process (Wetlands and Waterways A, D, E, F, H, J, and K). Three other areas (Wetlands P, Q and EE) were determined by the USACE to be isolated and non-jurisdictional in the 2007 JD, due to a lack of adjacency or significant nexus to a navigable waterway. Wetlands P and Q were redelineated as part of the current JD request to allow for reevaluation by the USACE.

As part of the most recent site inspection/delineation, one additional wetland resource area (Wetland YY) was identified that was not included in the previous JD request; this wetland was delineated and is included in this request for evaluation by the USACE. Table 3-1 outlines the jurisdictional and potentially jurisdictional wetlands located within the Project Area and the resources associated with each wetland.

Table 3-1 Jurisdictional and Potentially Jurisdictional Wetlands and Waterways

Waterway or Wetland Identifier	Flag Numbers	Wetland Description
A	BFA-100 to BFA-118	Cross Creek on north side of the Site. Perennial stream that flows into the Ohio River approximately 4 miles downstream. River bank adjacent to the site is steep and rocky.
D	WFD-100 to WFD-125	Vegetated drainage feature in the eastern portion of the site. Highly disturbed area that receives water from Wetland E and conveys it via culvert beneath Gould Road to Cross Creek.
E	WFE-93 to WFE-109	Area located west of the North Mill building. Water flows from a broken stormwater conveyance pipe, down a retaining wall, across a concrete slab and into the wetland. Water is conveyed from Wetland E to Wetland D via culvert.
F	BFF-78 to BFF-92, WFF-93 to WFF-109, BFF-110 to BFF-123	Small wetland area (WFF-93 to WFF-109) supplied by a seep and runoff, before transitioning to a channel tributary to Cross Creek.
H	BFH-100 to BFH-133 and BFH-200 to BFH-210	Portion of Cross Creek located along the southern and southwestern property boundaries. Increased flow through this section, as compared to A, as a result of water input from McIntyre Creek.
J	BFJ-74 to BFJ-97, WFJ-98 to WFJ-102, BFJ-103 to BFJ-121, WFJ-121A, BFJ-122	Small wetland area (WFJ-98 to WFJ-102) at the northern extent of Wetland J, which then transitions to the bank of a waterway. Wetland J connects to Wetland K (to the south) via culvert beneath the upper rail spur. A small wetland area (WFJ-121A) is present adjacent to the culvert.
K	BFK-90 to BFK-107	Channel connected to Wetland J via a culvert beneath the rail spur. Channel flows north to south before connecting to Cross Creek via a culvert beneath the southern portion of the site.
P	WFP-70 to WFP-121	Wetland area that has formed adjacent to the upper rail spur. Wetland becomes channelized before flowing via a culvert to Wetland EE. Not jurisdictional in the 2007 JD; however, work has been done in the channelized portion of this wetland since the last review, as authorized under an Isolated Wetland Permit.
Q	WFQ-71 to WFQ-122	Wetland area that has formed adjacent to the upper rail spur, but hydrologically separated from Wetland P. Work has been done on Wetland Q since the time of the last review to restore a collapsed berm that directed water away from the lower railroad spur and offsite toward Cross Creek, as authorized under an Isolated Wetland Permit.
EE	Not redelineated	Channel that receives flow from Wetland P via a culvert beneath the upper rail spur; water infiltrates into the ground shortly thereafter.
YY	WFYY-100 to WFYY-115	Wetland located immediately east of Cross Creek (Wetland H) near the southwestern corner of the site. No apparent hydrologic connection to Cross Creek.

Source: VHB, 2012

Notes: Wetlands and waterways are shown in Appendix B Figures.
The letters "BF" denote Bank Flags of a waterway; the letters "WF" denote Wetland Flags.

In accordance with federal regulations and guidance documents, the majority of the wetlands and waterways identified and delineated in this JD request and described herein are considered jurisdictional for the USACE because they are either:

- Traditional navigable waters;
- Wetlands adjacent to traditional navigable waters;
- Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months); or
- Wetlands that directly abut such tributaries.

Some of the wetlands within the Project Area were determined to be isolated (Wetlands P, Q, and EE), and therefore not federally regulated, due to a lack of adjacency or significant nexus to a navigable waterway. During the previous JD review these wetlands were determined to be non-jurisdictional by the USACE.

The 2007 JD determined that Wetland Q was an isolated wetland not federally jurisdictional as Waters of the U.S. In August 2010, the Ohio EPA Division of Surface Water authorized alterations to Wetland Q under the Ohio General Permit for Filling Category 1 and Category 2 Isolated Wetlands. The work was completed that same year.

Wetland YY was not identified as part of the 2007 JD process, as it was outside of the anticipated Project Area. However, due to its proximity to Cross Creek, this wetland was delineated and included in the current JD request so that it could be evaluated by the USACE.

3.2 Wetland and Waterway Descriptions

A brief description of each wetland and waterway is provided below. Supporting documentation is provided in the form of wetland delineation forms in Appendix C and site photographs in Appendix D.

3.2.1 Waterway A (Cross Creek)

Waterway A is the portion of Cross Creek as it flows along the northern side of the site. Cross Creek is a perennial stream with a stone and gravel bottom. Waterway A is at the bottom of a large and very steep slope that forms the northwestern face of the ridge on the Site. Waterway A receives discharge from Wetland/Waterway F, as well as several other non-jurisdictional upgradient intermittent channels.

Waterway A was determined to be federally jurisdictional in the 2007 JD due to its nature as a perennial stream. The 2012 and 2013 field investigations determined that

no characteristics of this resource area have substantively changed in the interim. Additional information on Waterway A is provided in Figure 3 and Photos 1 through 3.

3.2.2 Wetland D

Wetland D is part of the drainage system that carries water from in and around the Site buildings to Cross Creek via a series of culverts under Gould Road. Wetland D is a manmade open channel located between the Site buildings and Gould Road. The channel receives water via a culvert from Wetland E and discharges it through another culvert under Gould Road to Cross Creek. Wetland D is a palustrine scrub-shrub wetland along with emergent vegetation along the bottom of the channel. The area is disturbed, with a pile of discarded tires lining part of the channel.

Wetland D was determined to be federally jurisdictional in the 2007 JD due to the presence of wetland vegetation, soils, and hydrology in the channel, which has a direct connection with Cross Creek through the culvert under Gould Road. The 2012 and 2013 field investigations determined that no characteristics of this resource area have substantively changed in the interim. Additional information on Wetland D is provided in the wetland delineation form in Appendix C, Figure 4, and Photos 4 through 5.

3.2.3 Wetland E

Wetland E is part of the drainage system that carries water from in and around the Site buildings to Cross Creek via a series of culverts under Gould Road. Wetland E is a manmade open channel located next to a concrete pad adjacent to one of the Site buildings. Wetland E connects to Wetland D via a culvert; Wetland D subsequently discharges to Cross Creek through another culvert under Gould Road. Wetland E is a palustrine scrub-shrub wetland along with emergent vegetation along a portion of the channel.

Wetland E was determined to be federally jurisdictional in the 2007 JD due to the presence of wetland vegetation, soils, and hydrology in the channel, which has a direct connection with Cross Creek through Wetland D. The 2012 and 2013 field investigations determined that no characteristics of this resource area have substantively changed in the interim. Additional information on Wetland E is provided in the wetland delineation form in Appendix C, Figure 5, and Photos 6 through 7.

3.2.4 Wetland/Waterway F

Wetland/Waterway F is a drainageway that flows down the steep northern slope of the Site and discharges to Cross Creek. Wetland/Waterway F begins as a palustrine forested swale that receives water from the surrounding slope as well as from the large slag pile on top of the ridge. The wetland then becomes a defined channel and flows down the slope to Cross Creek.

Wetland/Waterway F was determined to be federally jurisdictional in the 2007 JD due to the presence of wetland vegetation, soils, and hydrology in an area with a direct hydrologic connection to Cross Creek. The 2012 and 2013 field investigations determined that no characteristics of this resource area have substantively changed in the interim. Additional information on Wetland/Waterway F is provided in the wetland delineation form in Appendix C, Figure 6, and Photos 8 through 11.

3.2.5 Waterway H (Cross Creek)

Waterway H is the portion of Cross Creek as it flows along the western and southern sides of the site. Cross Creek is a perennial stream with a stone and gravel bottom. At the intersection of Gould Road and Sheep Rock Road, Cross Creek is joined by McIntyre Creek. Waterway H is a well-defined channel and is bounded by steep slopes and Gould Road for most of its length. Waterway H receives discharge from Wetland D, as well as several other non-jurisdictional upgradient intermittent channels, via culverts underneath Gould Road.

Waterway H was determined to be federally jurisdictional in the 2007 JD due to its nature as a perennial stream. The 2012 and 2013 field investigations determined that no characteristics of this resource area have substantively changed in the interim. Additional information on Waterway H is provided in the wetland delineation form in Appendix C, Figures 7 and 8, and Photos 12 through 15.

3.2.6 Wetland/Waterway J

Wetland/Waterway J is a drainageway that flows down the steep southern face of the ridge in the northern portion of the Site. Wetland/Waterway J begins as a palustrine forested depression that receives water from the surrounding forested area. The wetland then becomes a defined channel and flows down the ridge face. The channel is connected to Waterway K through a culvert under an access road; Waterway K subsequently discharges to Cross Creek through another culvert under Gould Road.

Wetland/Waterway J was determined to be federally jurisdictional in the 2007 JD due to the presence of wetland vegetation, soils, and hydrology in an area with a direct hydrologic connection to Cross Creek. The 2012 and 2013 field investigations

determined that no characteristics of this resource area have substantively changed in the interim. Additional information on Wetland/Waterway J is provided in the wetland delineation form in Appendix C, Figure 9, and Photos 16 through 18.

3.2.7 Waterway K

Waterway K is a drainageway that flows down the steep southern face of the ridge in the northern portion of the Site. Waterway K is a manmade open channel that receives water via a culvert from Wetland/Waterway J; Waterway K then discharges through another culvert under a portion of the Site and under Gould Road to Cross Creek. Waterway K is surrounded by the palustrine forested slope; the area is disturbed, with a pile of construction debris adjacent to the culvert that discharges into Waterway K from under the access road.

Waterway K was determined to be federally jurisdictional in the 2007 JD due to its connection between Wetland/Waterway J upgradient and Cross Creek downgradient. The 2012 and 2013 field investigations determined that no characteristics of this resource area have substantively changed in the interim. Additional information on Waterway K is provided in the wetland delineation form in Appendix C, Figure 10, and Photo 19.

3.2.8 Wetland P

Wetland P is a palustrine emergent wetland that has formed in the area where the upper rail spur into the Site was located when the smelting facility was still functional. The rails and ties of the spur have been removed; Wetland P has formed on the remaining flat rail bed and surrounding area. Water flows from this area down a manmade drainage ditch alongside the path of the rail spur toward the existing Norfolk and Western Railroad. The drainage ditch has degraded over time and has filled in partially, becoming a palustrine emergent vegetated swale. Water then flows through a culvert under the rail bed and into Wetland EE, where it dissipates into the ground.

The 2007 JD determined that Wetland P was an isolated wetland, not federally jurisdictional as a Water of the U.S. In August 2010, the Ohio EPA Division of Surface Water authorized alterations to Wetland P under the Ohio General Permit for Filling Category 1 and Category 2 Isolated Wetlands. Work was subsequently performed on Wetland P in anticipation of rebuilding the lower rail spur as part of remedial activities on the Site. The work to Wetland P included rebuilding the drainage ditch along the upper rail spur. The work in Wetland P was completed in 2010.

As a result of the work, the shape and extent of Wetland P have changed slightly since 2007, so the area was redelineated as part of the field work in 2012 and 2013 to

allow for reinspection by the USACE. Field investigations show that Wetland P is still an isolated wetland not subject to federal jurisdiction. Wetland P is not contiguous with or adjacent to any other Water of the U.S., and it does not have a surface or upper subsurface hydrologic connection with any other area under federal jurisdiction. Additional information on Wetland P is provided in Figure 11 and Photos 20 through 22.

3.2.9 Wetland Q

Wetland Q is a palustrine emergent wetland that, like Wetland P, has formed in the area of the upper rail spur. Wetland Q begins just downgradient of the culvert where water flows from Wetland P into Wetland EE. Wetland Q consists of the same partially degraded drainage ditch along the old rail bed, which has become a palustrine emergent vegetated swale.

The 2007 JD determined that Wetland Q was an isolated wetland, not federally jurisdictional as a Water of the U.S. In August 2010, the Ohio EPA Division of Surface Water authorized alterations to Wetland Q under the Ohio General Permit for Filling Category 1 and Category 2 Isolated Wetlands. Work was subsequently performed on Wetland Q in anticipation of rebuilding the lower rail spur as part of remedial activities on the Site. The work to Wetland Q included rebuilding the drainage ditch along the upper rail spur and regrading the area to prevent water from flowing off of the upper rail spur, down an embankment, and onto the lower rail spur. The work in Wetland Q was completed in 2010.

As a result of the work, water from Wetland Q no longer flows down the embankment between the upper and lower rail spur, but instead flows down the rebuilt drainage ditch and off the Site to the northeast, where it dissipates into the ground. Because of the alterations to Wetland Q, the area was redelineated as part of the field work in 2012 and 2013 to allow for reinspection by the USACE. Field investigations show that Wetland Q is still an isolated wetland not subject to federal jurisdiction. Wetland Q is not contiguous with or adjacent to any other Water of the U.S., and it does not have a surface or upper subsurface hydrologic connection with any other area under federal jurisdiction. Additional information on Wetland Q is provided in Figure 12 and Photos 23 through 24.

3.2.10 Wetland EE

Wetland EE is a small isolated wetland that receives flow from Wetland P via a culvert under the upper rail spur bed. Water flows from the culvert down the steep face of the ridge between the upper and lower rail spurs. However, the flow from the culvert is not enough to develop a distinct channel, and the water dissipates into the ground before reaching another wetland or waterway.

Wetland EE was determined to be an isolated wetland not subject to federal jurisdiction in the 2007 JD request. The 2012 and 2013 field investigations determined that Wetland EE is still an isolated wetland not subject to federal jurisdiction. Wetland EE is not contiguous with or adjacent to any other Water of the U.S., and it does not have a surface or upper subsurface hydrologic connection with any other area under federal jurisdiction. Additional information on Wetland EE is provided in Figure 13.

3.2.11 Wetland YY

Wetland YY is an isolated wetland at the southwest corner of the Site, adjacent to the bridge that carries Gould Road over Cross Creek. Wetland YY is also adjacent to an access road that leads from Gould Road to a gun club and firing range to the north. The area is a confined basin depression within the surrounding palustrine forested area between the access road and Cross Creek. The depression appears to hold standing water for much of the year.

Wetland YY was not included in the original 2007 JD request, so no jurisdictional determination was made on this area. While no work related to the Site remediation efforts would occur in or near Wetland YY, the area was delineated in 2012 to allow for inspection by the USACE. Field investigations show that Wetland YY appears to be an isolated wetland not subject to federal jurisdiction. Wetland YY is not contiguous with or adjacent to any other Water of the U.S., and it does not have a surface or upper subsurface hydrologic connection with any other area under federal jurisdiction. Additional information on Wetland YY is provided in the wetland delineation form in Appendix C, Figure 14, and Photos 25 through 26.

3.3 Conclusion

The Applicant, Cyprus Amax Minerals Company, respectfully requests that the U.S. Army Corps of Engineers review the information included in this request for a Section 404 Jurisdictional Determination (JD) for the former Satralloy Facility, located in Cross Creek Township, Jefferson County, Ohio. The Applicant requests that the USACE review and concur with the identification and delineation of the Waters of the United States within the Project Area, as described in this submittal.

Appendix A
References

References

Code of Federal Regulations, *Definition of Waters of the United States.* 33 CFR 328.3, January 2012.

Cowardin, L,M,, V. Carter, F.E. Golet and E.T. LaRoe, 1979. *Classification of Wetlands and Deepwater Habitats of the United States.* U.S. Fish and Wildlife Service, Washington D.C.

Environmental Laboratory, *U.S. Army Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-01.* (Vicksburg, Mississippi: U.S. ArmyEngineers Waterways Experiment Station, 1987).

Reed, P. B., Jr. 1988. *National list of plant species that occur in wetlands: 1988 national summary.* Biological Report 88(24). Washington, DC: U.S. Fish and Wildlife Service.

U.S. Army Corps of Engineers, *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region*, April 2012.

U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency, *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States*, June 6, 2007, revised December 2, 2008.

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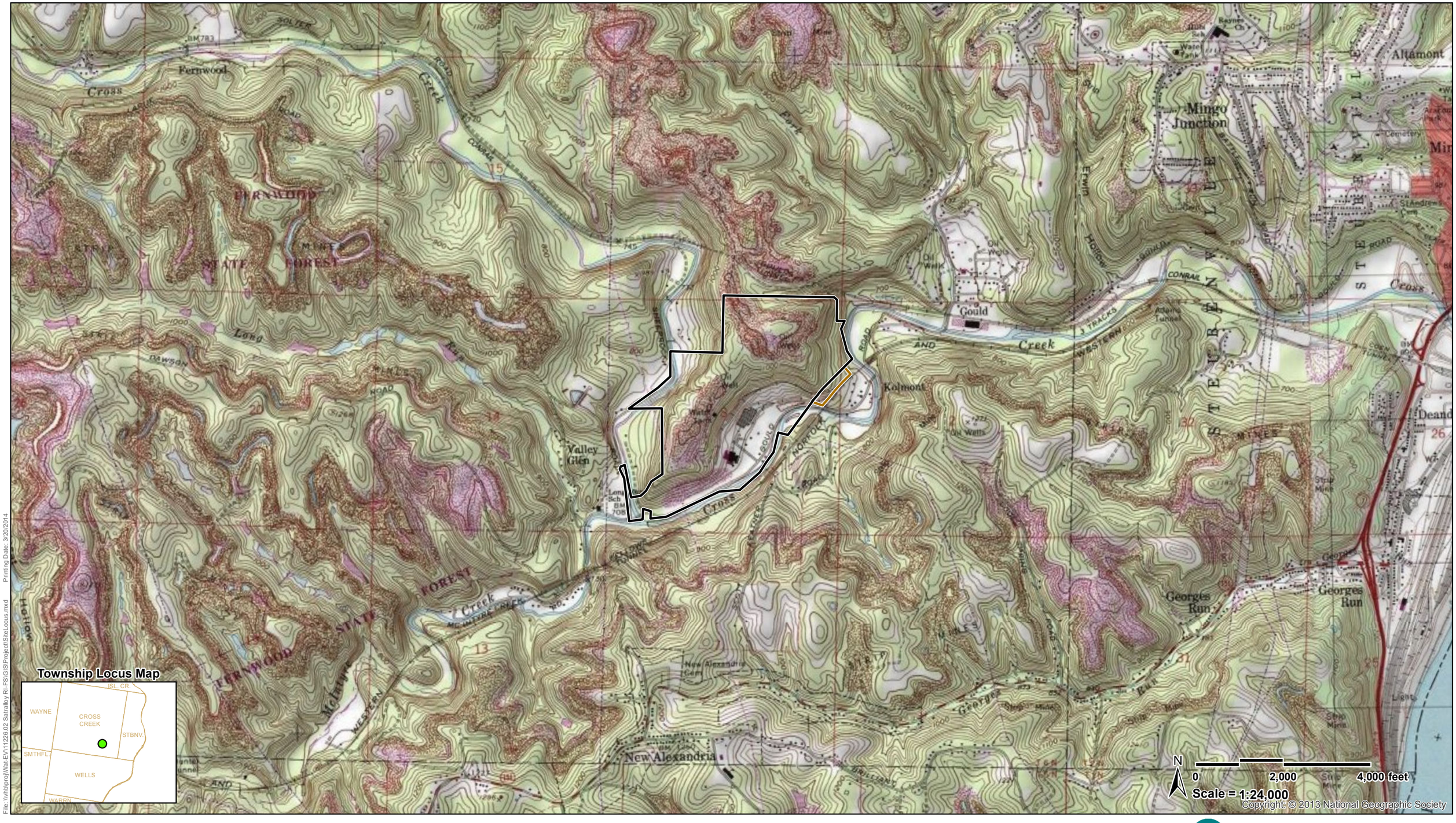
Appendix B
Figures



File: \\vhb\proj\Wat-EV\11226.02 Satralloy RI-FS\GIS\Project\SiteLocus.mxd Printing Date: 3/20/2014

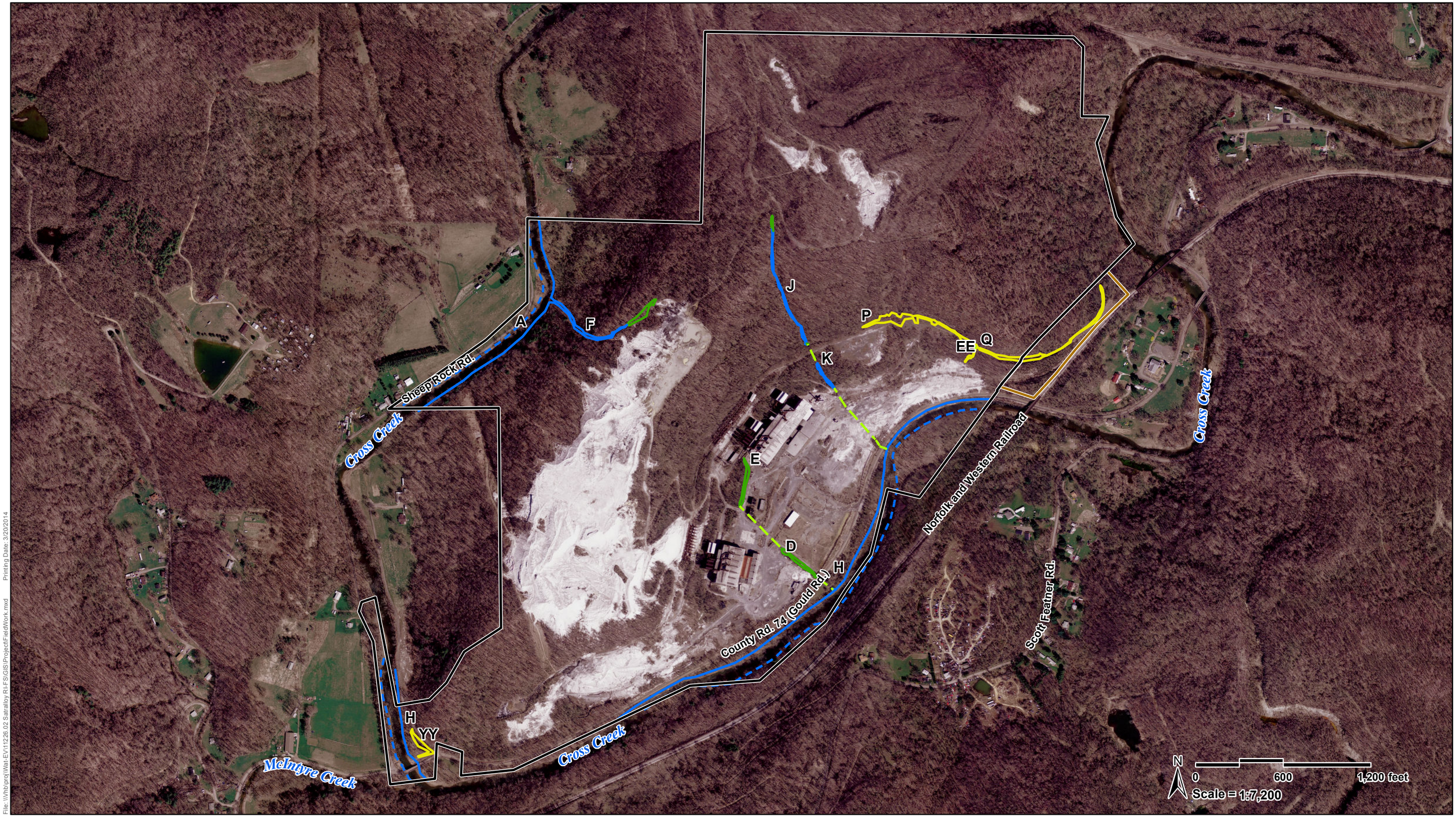
Legend

- Site Boundary
- Additional Project Area
  (Wheeling and Lake Erie Property)

Vanasse Hangen Brustlin, Inc.

Figure 1
Former Satralloy Site
Project Area

Source: USGS, Golder Associates
Prepared by: VHB



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Legend

- Site Boundary
- Additional Project Area (Wheeling and Lake Erie Property)
- Federally Jurisdictional Waterway
- Federal Waterway (Estimated Boundary)
- Federally Jurisdictional Wetland
- Culvert/Hydrologic Connection
- Isolated Wetland

Vanasse Hangen Brustlin, Inc.

Figure 2
Former Satralloy Site
Delineated Wetlands and Waterways

Source: Ohio EPA 2006-2010, VHB
Prepared by: VHB

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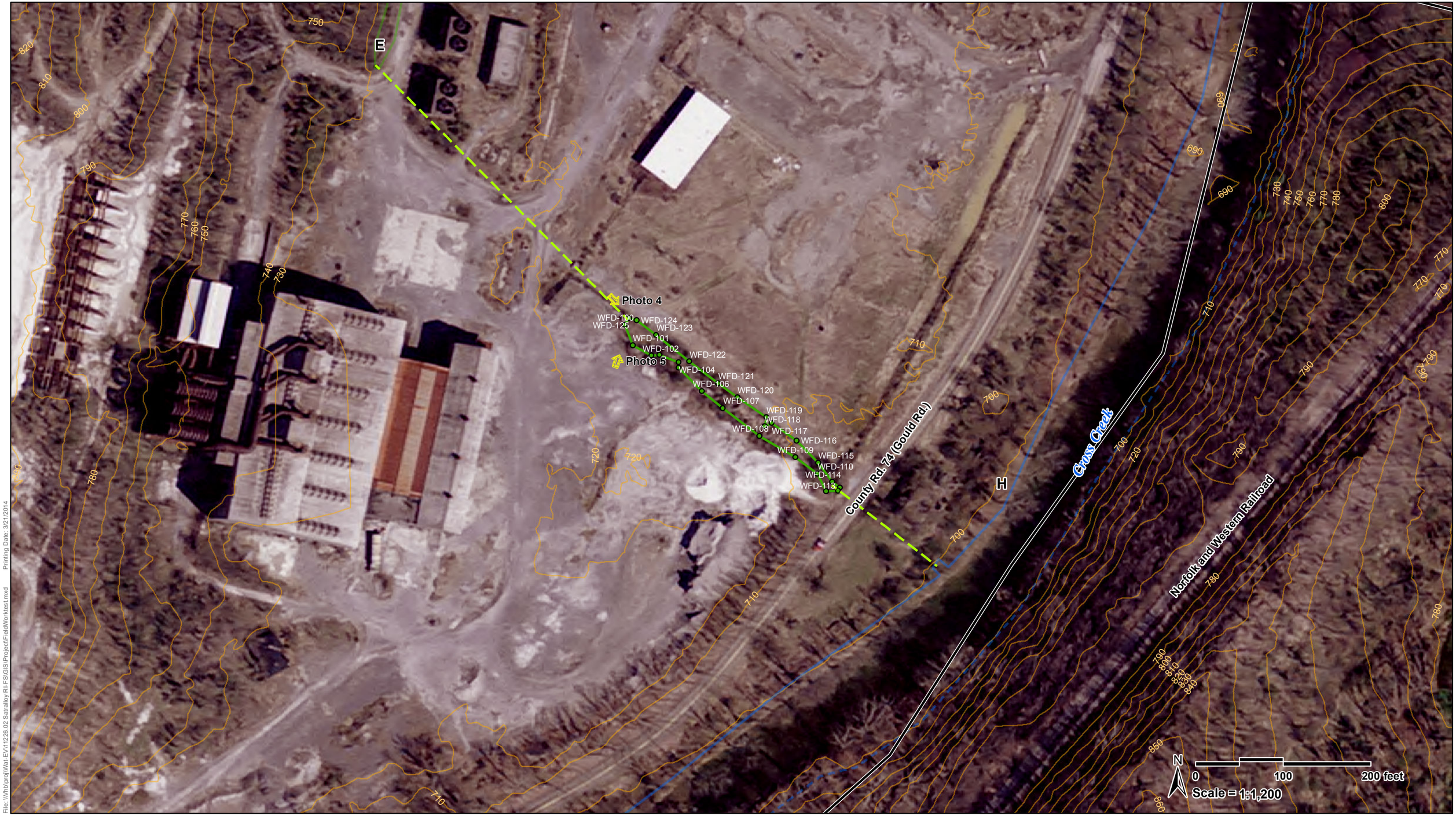
Legend

- Site Boundary
- Additional Project Area (Wheeling and Lake Erie Property)
- Elevation Contour
- Photo Location and Direction
- Federally Jurisdictional Waterway
- Federal Waterway (Estimated Boundary)
- Federally Jurisdictional Wetland
- Culvert/Hydrologic Connection
- Isolated Wetland

Vanasse Hangen Brustlin, Inc.

Figure 3
Former Satralloy Site
Waterway A (Cross Creek)

Source: Ohio EPA 2006-2010, VHB
Prepared by: VHB



Legend

- Site Boundary
- Additional Project Area (Wheeling and Lake Erie Property)
- Elevation Contour
- Photo Location and Direction
- Federally Jurisdictional Waterway
- Federal Waterway (Estimated Boundary)
- Federally Jurisdictional Wetland
- Culvert/Hydrologic Connection
- Isolated Wetland

Vanasse Hangen Brustlin, Inc.

Figure 4
Former Satralloy Site
Wetland D

Source: Ohio EPA 2006-2010, VHB
Prepared by: VHB

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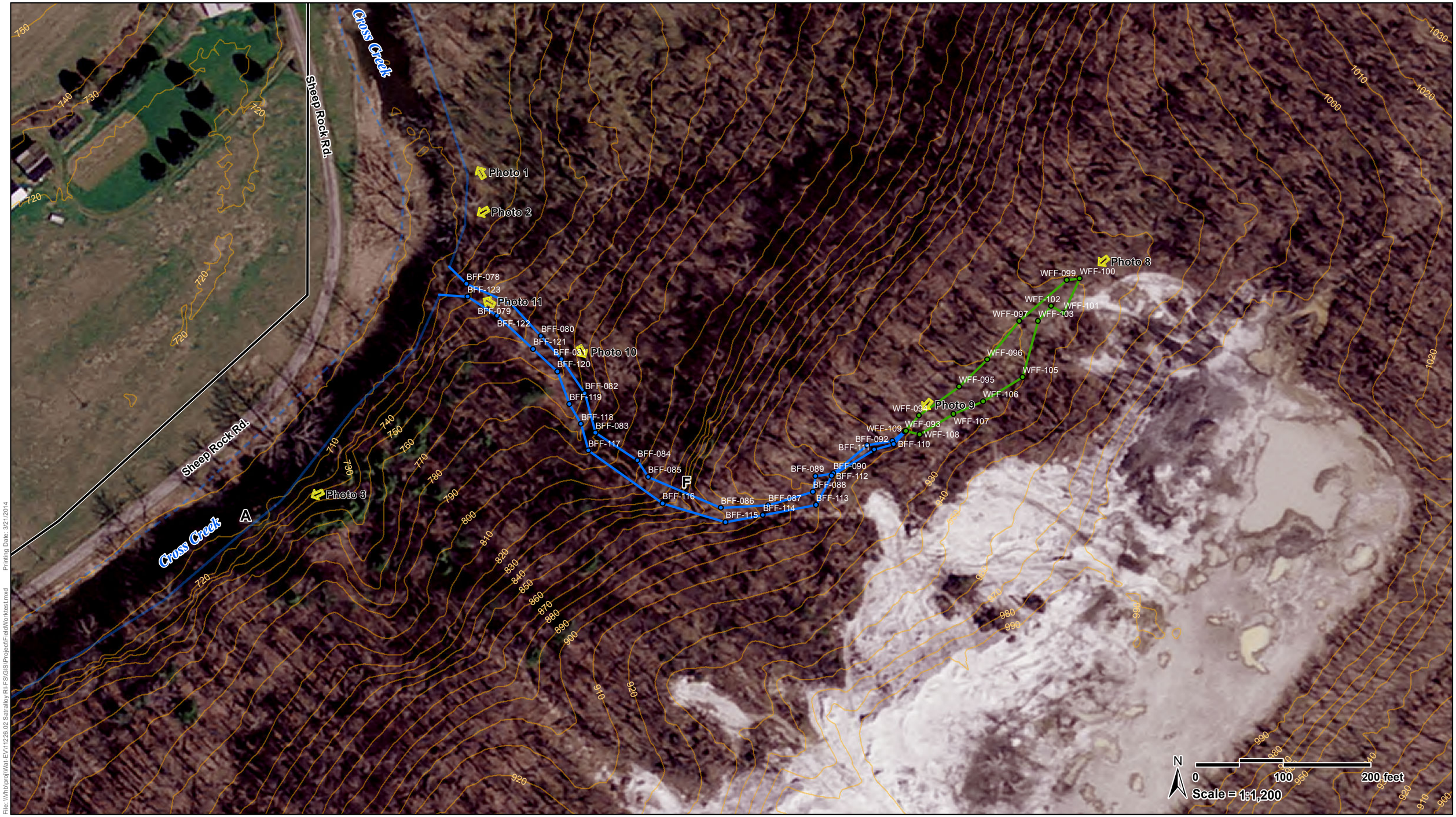
Legend

- Site Boundary
- Additional Project Area (Wheeling and Lake Erie Property)
- Elevation Contour
- Photo Location and Direction
- Federally Jurisdictional Waterway
- Federal Waterway (Estimated Boundary)
- Federally Jurisdictional Wetland
- Culvert/Hydrologic Connection
- Isolated Wetland

Vanasse Hangen Brustlin, Inc.

Figure 5
Former Satralloy Site
Wetland E

Source: Ohio EPA 2006-2010, VHB
Prepared by: VHB



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Legend

- Site Boundary
- Additional Project Area (Wheeling and Lake Erie Property)
- Elevation Contour
- Photo Location and Direction
- Federally Jurisdictional Waterway
- Federal Waterway (Estimated Boundary)
- Federally Jurisdictional Wetland
- Culvert/Hydrologic Connection
- Isolated Wetland

Vanasse Hangen Brustlin, Inc.

Figure 6
Former Satralloy Site
Wetland/Waterway F

Source: Ohio EPA 2006-2010, VHB
Prepared by: VHB

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Legend

- Site Boundary
- Additional Project Area (Wheeling and Lake Erie Property)
- Elevation Contour
- Photo Location and Direction
- Federally Jurisdictional Waterway
- Federal Waterway (Estimated Boundary)
- Federally Jurisdictional Wetland
- Culvert/Hydrologic Connection
- Isolated Wetland

Vanasse Hangen Brustlin, Inc.

Figure 7
Former Satralloy Site
Waterway H (1 of 2) (Cross Creek)

Source: Ohio EPA 2006-2010, VHB
Prepared by: VHB

BFH-210
BFH-209
BFH-208
BFH-207
BFH-206
BFH-205
BFH-204
BFH-203
BFH-202
BFH-201
BFH-200
Sheep Rock Rd.
Cross Creek
H
YY
Photo 15
Photo 14
Photo 25
Photo 26
County Rd. 74 (Gould Rd.)
McIntyre Creek
N
0 100 200 feet
Scale = 1:1,200

Printing Date: 3/21/2014
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Legend

- Site Boundary
- Additional Project Area (Wheeling and Lake Erie Property)
- Elevation Contour
- Photo Location and Direction
- Federally Jurisdictional Waterway
- Federal Waterway (Estimated Boundary)
- Federally Jurisdictional Wetland
- Culvert/Hydrologic Connection
- Isolated Wetland

VHB Vanasse Hangen Brustlin, Inc.

Figure 8
Former Satralloy Site
Waterway H (2 of 2) (Cross Creek)

Source: Ohio EPA 2006-2010, VHB
Prepared by: VHB

Printing Date: 3/21/2014

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Legend

- Site Boundary
- Additional Project Area (Wheeling and Lake Erie Property)
- Elevation Contour
- Photo Location and Direction
- Federally Jurisdictional Waterway
- Federal Waterway (Estimated Boundary)
- Federally Jurisdictional Wetland
- Culvert/Hydrologic Connection
- Isolated Wetland

Vanasse Hangen Brustlin, Inc.

Figure 9
Former Satralloy Site
Wetland/Waterway J

Source: Ohio EPA 2006-2010, VHB
Prepared by: VHB

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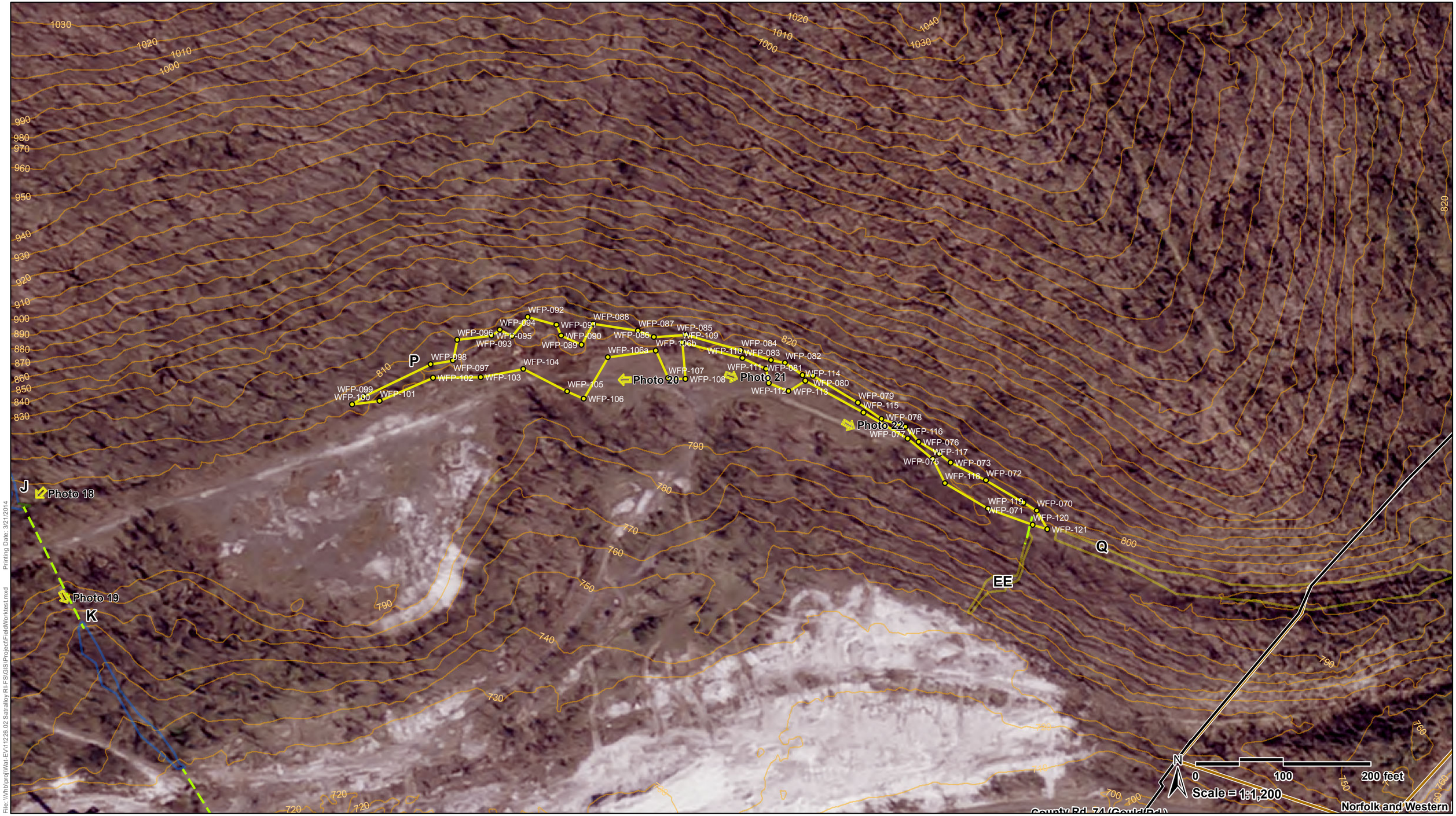
Legend

- Site Boundary
- Additional Project Area (Wheeling and Lake Erie Property)
- Elevation Contour
- Photo Location and Direction
- Federally Jurisdictional Waterway
- Federal Waterway (Estimated Boundary)
- Federally Jurisdictional Wetland
- Culvert/Hydrologic Connection
- Isolated Wetland

VHB Vanasse Hangen Brustlin, Inc.

Figure 10
Former Satralloy Site
Wetland K

Source: Ohio EPA 2006-2010, VHB
Prepared by: VHB



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Legend

- Site Boundary
- Additional Project Area (Wheeling and Lake Erie Property)
- Elevation Contour
- Photo Location and Direction
- Federally Jurisdictional Waterway
- Federal Waterway (Estimated Boundary)
- Federally Jurisdictional Wetland
- Culvert/Hydrologic Connection
- Isolated Wetland

VHB Vanasse Hangen Brustlin, Inc.

Figure 11
Former Satralloy Site
Wetland P

Source: Ohio EPA 2006-2010, VHB
Prepared by: VHB

Printing Date: 3/21/2014

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Legend

- Site Boundary
- Additional Project Area (Wheeling and Lake Erie Property)
- Elevation Contour
- Photo Location and Direction
- Federally Jurisdictional Waterway
- Federal Waterway (Estimated Boundary)
- Federally Jurisdictional Wetland
- Culvert/Hydrologic Connection
- Isolated Wetland

Vanasse Hangen Brustlin, Inc.

Figure 12
Former Satralloy Site
Wetland Q

Source: Ohio EPA 2006-2010, VHB
Prepared by: VHB

Printing Date: 3/21/2014

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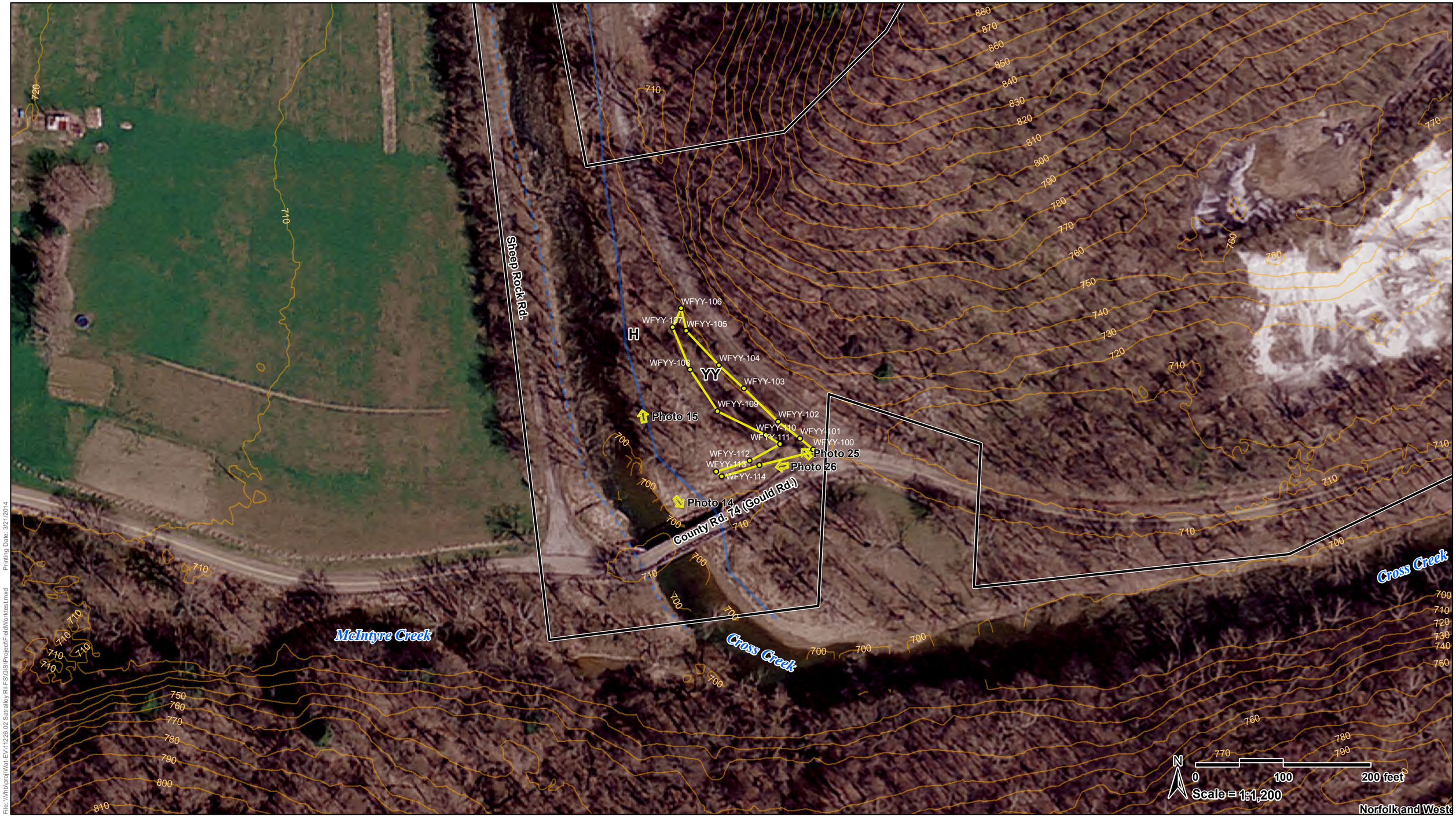
Legend

- Site Boundary
- Additional Project Area (Wheeling and Lake Erie Property)
- Elevation Contour
- Photo Location and Direction
- Federally Jurisdictional Waterway
- Federal Waterway (Estimated Boundary)
- Federally Jurisdictional Wetland
- Culvert/Hydrologic Connection
- Isolated Wetland

Vanasse Hangen Brustlin, Inc.

Figure 13
Former Satralloy Site
Wetland EE (not redelineated)

Source: Ohio EPA 2006-2010, VHB
Prepared by: VHB



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Legend

- Site Boundary
- Additional Project Area (Wheeling and Lake Erie Property)
- Elevation Contour
- Photo Location and Direction
- Federally Jurisdictional Waterway
- Federal Waterway (Estimated Boundary)
- Federally Jurisdictional Wetland
- Culvert/Hydrologic Connection
- Isolated Wetland

Vanasse Hangen Brustlin, Inc.

Figure 14
Former Satralloy Site
Wetland YY

Source: Ohio EPA 2006-2010, VHB
Prepared by: VHB

Appendix C
USACE Wetland Data Forms

WETLAND DELINEATION DATA FORM - Eastern Mountains and Piedmont

Upgradient

Project/Site: **Former Satralloy Site** City/County: **Mingo Junction/Jefferson** Sampling Date: **4/26/2012**

Applicant/Owner: **Cyprus Amax Minerals Company** State: **OH** Sampling Point: **WF-D**

Investigator(s): **KK, CW** Section, Township, Range: **Cross Creek**

Landform (hillslope, terrace, etc.): **disturbed/developed** Local relief (concave, convex, none): **concave** Slope (%):

Subregion (LRR or MLRA): **LRR N** Lat: **80.6701° W** Long: **40.3084° N** Datum: **NAD 1983**

Soil Map Unit Name: **Udorthents, loamy** NWI classification: **None**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes **X** No (If no, explain in Remarks.)

Are Vegetation **X**, Soil **X**, or Hydrology **X** significantly disturbed? Are "Normal Circumstances" present? Yes No **X**

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No **X**	**Is the Sampled Area**		
Hydric Soil Present?	Yes	No **X**	**Within a Wetland?**	**Yes**	**No X**
Wetland Hydrology Present?	Yes	No **X**	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)
Highly disturbed area adjacent to site buildings. Drainageway receives water from Wetland E and discharges under County Rd. 74 to Cross Creek. See Appendix B, Figures 2, 4; Appendix D, Photos 4-5.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Seconary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No **X**	Depth (inches):
Water Table Present?	Yes	No **X**	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No **X**	Depth (inches):

Wetland Hydrology Present? **Yes** **No X**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION *Upgradient*

Sampling Point: **WF-D**

	Common Name	Scientific Name	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)					
1.	none				
2.					
3.					
4.					
5.					
6.					
7.					
			0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)					
1.	tartarian honeysuckle	*Lonicera tatarica*	38	yes	FACU
2.	rubus	*Rubus sp.*	10.5	yes	NI
3.					
4.					
5.					
6.					
7.					
			48.5	= Total Cover	
Herb Stratum (Plot size: 5' radius)					
1.	upland grass	*Gramineae sp.*	38	yes	NI
2.	yarrow	*Achillea millefolium*	10.5	no	FACU
3.	bull thistle	*Cirsium vulgare*	10.5	no	FACU
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
			59	= Total Cover	
Woody Vine Stratum (Plot size:)					
1.	none				
2.					
3.					
4.					
			0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	59	x 4 =	236
UPL species	0	x 5 =	0
Column Totals:	59 (A)		236 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤ 3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** **X**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL *Upgradient*

Sampling Point: **WF-D**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12+								gravelly fill
12-15+	10YR 4/4	50						half fill,
								half C Horizon

[1]Type: C=Concentration, D=Depletion, RM=Redox Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M-Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136,122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

WETLAND DELINEATION DATA FORM - Eastern Mountains and Piedmont

Downgradient

Project/Site: **Former Satralloy Site** City/County: **Mingo Junction/Jefferson** Sampling Date: **4/26/2012**

Applicant/Owner: **Cyprus Amax Minerals Company** State: **OH** Sampling Point: **WF-D**

Investigator(s): **KK, CW** Section, Township, Range: **Cross Creek**

Landform (hillslope, terrace, etc.): **disturbed/developed** Local relief (concave, convex, none): **concave** Slope (%):

Subregion (LRR or MLRA): **LRR N** Lat: **80.6701° W** Long: **40.3084° N** Datum: **NAD 1983**

Soil Map Unit Name: **Udorthents, loamy** NWI classification: **PEM**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes **X** No (If no, explain in Remarks.)

Are Vegetation **X**, Soil **X**, or Hydrology **X** significantly disturbed? Are "Normal Circumstances" present? Yes No **X**

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes **X**	No	**Is the Sampled Area**		
Hydric Soil Present?	Yes **X**	No	**Within a Wetland?**	**Yes X**	**No**
Wetland Hydrology Present?	Yes **X**	No	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)
Highly disturbed area adjacent to site buildings. Drainageway receives water from Wetland E and discharges under County Rd. 74 to Cross Creek. See Appendix B, Figures 2, 4; Appendix D, Photos 4, 5.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- **X** Surface Water (A1)
- **X** High Water Table (A2)
- **X** Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Seconary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- **X** Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes **X** No	Depth (inches):	6
Water Table Present?	Yes **X** No	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes **X** No	Depth (inches):	0

Wetland Hydrology Present? **Yes X** **No**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION *Downgradient*

Sampling Point: **WF-D**

	Common Name	Scientific Name	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum	(Plot size: 30' radius)				
1.	red maple	*Acer rubrum*	10.5	yes	FAC*
2.					
3.					
4.					
5.					
6.					
7.					
			10.5	= Total Cover	
Sapling/Shrub Stratum	(Plot size: 15' radius)				
1.	black willow	*Salix nigra*	10.5	yes	FACW*
2.					
3.					
4.					
5.					
6.					
7.					
			10.5	= Total Cover	
Herb Stratum	(Plot size: 5' radius)				
1.	narrow-leaf cattail	*Typha angustifolia*	63	yes	OBL*
2.	water plantain	*Alisma subcordatum*	10.5	no	OBL*
3.	duckweed	*Lemna sp.*	3	no	OBL*
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
			76.5	= Total Cover	
Woody Vine Stratum	(Plot size:)				
1.	none				
2.					
3.					
4.					
			0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	76.5	x 1 =	76.5
FACW species	10.5	x 2 =	21
FAC species	10.5	x 3 =	31.5
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	97.5 (A)		129 (B)

Prevalence Index = B/A = 1.32

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- **X** Dominance Test is >50%
- **X** Prevalence Index is ≤ 3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes X** **No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL *Downgradient*

Sampling Point: **WF-D**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15+	Gley 4/5G_/1							infiltrated sandy silt

[1]Type: C=Concentration, D=Depletion, RM=Redox Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M-Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- **X** Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136,122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** **X** **No** ___

Remarks:

WETLAND DELINEATION DATA FORM - Eastern Mountains and Piedmont

Upgradient

Project/Site: **Former Satralloy Site** City/County: **Mingo Junction/Jefferson** Sampling Date: **4/26/2012**

Applicant/Owner: **Cyprus Amax Minerals Company** State: **OH** Sampling Point: **WF-E**

Investigator(s): **KK, CW** Section, Township, Range: **Cross Creek**

Landform (hillslope, terrace, etc.): **disturbed/developed** Local relief (concave, convex, none): **concave** Slope (%):

Subregion (LRR or MLRA): **LRR N** Lat: **80.6718° W** Long: **40.3100° N** Datum: **NAD 1983**

Soil Map Unit Name: **Udorthents, loamy** NWI classification: **None**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes **X** No (If no, explain in Remarks.)

Are Vegetation **X**, Soil **X**, or Hydrology **X** significantly disturbed? Are "Normal Circumstances" present? Yes No **X**

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No **X**	**Is the Sampled Area**		
Hydric Soil Present?	Yes	No **X**	**Within a Wetland?**	**Yes**	**No X**
Wetland Hydrology Present?	Yes	No **X**	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)
Highly disturbed depressional area adjacent to site buildings, concrete pad. Water flows from a broken stormwater conveyance pipe down a retaining wall, across a concrete slab and into the wetland, then discharges to Wetland D through a culvert. See Appendix B, Figures 2, 5; Appendix D, Photos 6-7.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Seconary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No **X**	Depth (inches):
Water Table Present?	Yes	No **X**	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No **X**	Depth (inches):

Wetland Hydrology Present? **Yes** **No X**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION *Upgradient*

Sampling Point: **WF-E**

	Common Name	Scientific Name	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum	(Plot size: 30' radius)				
1.	none				
2.					
3.					
4.					
5.					
6.					
7.					
			0	= Total Cover	
Sapling/Shrub Stratum	(Plot size: 15' radius)				
1.	black willow	*Salix nigra*	20.5	yes	FACW*
2.	multiflora rose	*Rosa multiflora*	10.5	yes	FACU
3.	tartarian honeysuckle	*Lonicera tatarica*	10.5	yes	FACU
4.					
5.					
6.					
7.					
			41.5	= Total Cover	
Herb Stratum	(Plot size: 5' radius)				
1.	black swallow-wort	*Cynanchum nigrum*	20.5	yes	NI
2.	yarrow	*Achillea millefolium*	10.5	yes	FACU
3.	Canada goldenrod	*Solidago canadensis*	10.5	yes	FACU
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
			41.5	= Total Cover	
Woody Vine Stratum	(Plot size:)				
1.	none				
2.					
3.					
4.					
			0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 16.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	0	x 1 =	0
FACW species	20.5	x 2 =	41
FAC species	0	x 3 =	0
FACU species	42	x 4 =	168
UPL species	0	x 5 =	0
Column Totals:	62.5	(A)	209 (B)

Prevalence Index = B/A = 3.34

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤ 3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** **X**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL *Upgradient*

Sampling Point: **WF-E**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15+								ballast, fill

[1]Type: C=Concentration, D=Depletion, RM=Redox Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M-Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136,122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

WETLAND DELINEATION DATA FORM - Eastern Mountains and Piedmont

Downgradient

Project/Site: **Former Satralloy Site** City/County: **Mingo Junction/Jefferson** Sampling Date: **4/26/2012**

Applicant/Owner: **Cyprus Amax Minerals Company** State: **OH** Sampling Point: **WF-E**

Investigator(s): **KK, CW** Section, Township, Range: **Cross Creek**

Landform (hillslope, terrace, etc.): **disturbed/developed** Local relief (concave, convex, none): **concave** Slope (%):

Subregion (LRR or MLRA): **LRR N** Lat: **80.6698° W** Long: **40.3119° N** Datum: **NAD 1983**

Soil Map Unit Name: **Udorthents, loamy** NWI classification: **PEM**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes **X** No (If no, explain in Remarks.)

Are Vegetation **X**, Soil **X**, or Hydrology **X** significantly disturbed? Are "Normal Circumstances" present? Yes No **X**

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes **X**	No	**Is the Sampled Area**		
Hydric Soil Present?	Yes **X**	No	**Within a Wetland?**	**Yes X**	**No**
Wetland Hydrology Present?	Yes **X**	No	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)
Highly disturbed depressional area adjacent to site buildings, concrete pad. Water flows from a broken stormwater conveyance pipe down a retaining wall, across a concrete slab and into the wetland, then discharges to Wetland D through a culvert. See Appendix B, Figures 2, 5; Appendix D, Photos 6-7.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- **X** Surface Water (A1)
- **X** High Water Table (A2)
- **X** Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- **X** Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Seconary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes **X** No	Depth (inches):	18
Water Table Present?	Yes **X** No	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes **X** No	Depth (inches):	0

Wetland Hydrology Present? **Yes X** **No**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION *Downgradient*

Sampling Point: **WF-E**

	Common Name	Scientific Name	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum	(Plot size: 30' radius)				
1.	none				
2.					
3.					
4.					
5.					
6.					
7.					
			0	= Total Cover	
Sapling/Shrub Stratum	(Plot size: 15' radius)				
1.	black willow	*Salix nigra*	20.5	yes	FACW*
2.					
3.					
4.					
5.					
6.					
7.					
			20.5	= Total Cover	
Herb Stratum	(Plot size: 5' radius)				
1.	carex folliculata	*Carex folliculata*	38	yes	OBL*
2.	horsetail	*Equisetum sp.*	10.5	no	NI
3.	water plantain	*Alisma subcordatum*	10.5	no	OBL*
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
			59	= Total Cover	
Woody Vine Stratum	(Plot size:)				
1.	none				
2.					
3.					
4.					
			0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	48.5	x 1 =	48.5
FACW species	20.5	x 2 =	41
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	69 (A)		89.5 (B)

Prevalence Index = B/A = 1.30

Hydrophytic Vegetation Indicators:

- **X** Rapid Test for Hydrophytic Vegetation
- **X** Dominance Test is >50%
- **X** Prevalence Index is ≤ 3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes X** **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL *Downgradient*

Sampling Point: **WF-E**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12+	2.5Y 4/2							infiltrated silt

[1]Type: C=Concentration, D=Depletion, RM=Redox Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M-Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- **X** Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136,122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** **X** **No** ___

Remarks:

WETLAND DELINEATION DATA FORM - Eastern Mountains and Piedmont

Upgradient

Project/Site: **Former Satralloy Site** City/County: **Mingo/Jefferson** Sampling Date: **4/26/2012**

Applicant/Owner: **Cyprus Amax Minerals Company** State: **OH** Sampling Point: **WF-F**

Investigator(s): **KK, CW** Section, Township, Range: **Cross Creek**

Landform (hillslope, terrace, etc.): **hillslope** Local relief (concave, convex, none): **concave** Slope (%): ____

Subregion (LRR or MLRA): **LRR N** Lat: **80.6740° W** Long: **40.3133° N** Datum: **NAD 1983**

Soil Map Unit Name: **Udorthents, loamy** NWI classification: **None**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes **X** No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology **X** significantly disturbed? Are "Normal Circumstances" present? Yes ____ No **X**

Are Vegetation ____, Soil ____, or Hydrology **X** naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No **X**	**Is the Sampled Area**		
Hydric Soil Present?	Yes ____	No **X**	**Within a Wetland?**	**Yes** ____	**No X**
Wetland Hydrology Present?	Yes ____	No **X**	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)

The entire area lies directly below and to the northwest of the main area of slag on the central ridge of the site. This area receives runoff from the slag pile, as well as sedimentation over time from unconsolidated material on the pile. This area also receives water from a small groundwater breakout (seep) upgradient; the area immediately around the seep lacks a predominance of wetland vegetation or hydric soils. This sampling point (Wetland F-98 UG) is just above the edge of the lowest area of the channel, which collects groundwater from the seep as well as runoff from the slag pile. See Appendix B, Figures 2, 6; Appendix D, Photos 8-11.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Seconary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No **X**	Depth (inches): ____
Water Table Present?	Yes ____	No **X**	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No **X**	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No X**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION *Upgradient*

Sampling Point: **WF-F**

	Common Name	Scientific Name	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)					
1.	red maple	*Acer rubrum*	38	yes	FAC*
2.	black birch	*Betula lenta*	20.5	yes	FACU
3.	American sycamore	*Platanus occidentalis*	10.5	no	FACW*
4.	American elm	*Ulmus americana*	10.5	no	FACW*
5.	common hackberry	*Celtis occidentalis*	3	no	FACU
6.					
7.					
			82.5	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)					
1.	multiflora rose	*Rosa multiflora*	38	yes	FACU
2.					
3.					
4.					
5.					
6.					
7.					
			38	= Total Cover	
Herb Stratum (Plot size: 5' radius)					
1.	garlic mustard	*Alliaria petiolata*	38	yes	FACU
2.	spreading sandwort	*Arenaria lanuginosa*	20.5	yes	FAC*
3.	wild strawberry	*Fragaria virginiana*	10.5	no	FACU
4.	violet	*Viola sp.*	3	no	NI
5.	bittersweet nightshade	*Solanum dulcamara*	3	no	FAC*
6.					
7.					
8.					
9.					
10.					
11.					
12.					
			75	= Total Cover	
Woody Vine Stratum (Plot size:)					
1.	fox grape	*Vitis labrusca*	38	yes	FACU
2.					
3.					
4.					
			38	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	21	x 2 =	42
FAC species	61.5	x 3 =	184.5
FACU species	148	x 4 =	592
UPL species	0	x 5 =	0
Column Totals:	230.5 (A)		818.5 (B)

Prevalence Index = B/A = 3.55

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤ 3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** **X**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL *Upgradient*

Sampling Point: **WF-F**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/2							A Horizon silt loam
3-10	10YR 4/3							Bw1 Horizon silt loam
10-15+	10YR 5/4							Bw2 Horizon silt clay loam

[1]Type: C=Concentration, D=Depletion, RM=Redox Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M-Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136,122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

WETLAND DELINEATION DATA FORM - Eastern Mountains and Piedmont

Downgradient

Project/Site: **Former Satralloy Site** City/County: **Mingo/Jefferson** Sampling Date: **4/26/2012**

Applicant/Owner: **Cyprus Amax Minerals Company** State: **OH** Sampling Point: **WF-F**

Investigator(s): **KK, CW** Section, Township, Range: **Cross Creek**

Landform (hillslope, terrace, etc.): **hillslope** Local relief (concave, convex, none): **concave** Slope (%): ____

Subregion (LRR or MLRA): **LRR N** Lat: **80.6740° W** Long: **40.3134° N** Datum: **NAD 1983**

Soil Map Unit Name: **Udorthents, loamy** NWI classification: **PFO**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes **X** No ____ (If no, explain in Remarks.)

Are Vegetation **X**, Soil **X**, or Hydrology **X** significantly disturbed? Are "Normal Circumstances" present? Yes ____ No **X**

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes **X**	No ____	**Is the Sampled Area**		
Hydric Soil Present?	Yes **X**	No ____	**Within a Wetland?**	**Yes X**	**No** ____
Wetland Hydrology Present?	Yes **X**	No ____	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)

The entire area lies directly below and to the northwest of the main area of slag on the central ridge of the site. This area receives runoff from the slag pile, as well as sedimentation over time from unconsolidated material on the pile. This area also receives water from a small groundwater breakout (seep) upgradient; the area immediately around the seep lacks a predominance of wetland vegetation or hydric soils. This sampling point (Wetland F-98 UG) is just above the edge of the lowest area of the channel, which collects groundwater from the seep as well as runoff from the slag pile. See Appendix B, Figures 2, 6; Appendix D, Photos 8-11.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- **X** Surface Water (A1)
- **X** High Water Table (A2)
- **X** Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Seconary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- **X** Sparsely Vegetated Concave Surface (B8)
- **X** Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- **X** Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes **X** No ____	Depth (inches): 0	
Water Table Present?	Yes **X** No ____	Depth (inches): 0	
Saturation Present? (includes capillary fringe)	Yes **X** No ____	Depth (inches): 0	**Wetland Hydrology Present?** **Yes X** **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION *Downgradient*

Sampling Point: **WF-F**

	Common Name	Scientific Name	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)					
1.	American elm	*Ulmus americana*	38	yes	FACW*
2.	ash-leaf maple	*Acer negundo*	10.5	no	FAC*
3.	common hackberry	*Celtis occidentalis*	10.5	no	FACU
4.					
5.					
6.					
7.					
			59	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)					
1.	multiflora rose	*Rosa multiflora*	20	yes	FACU
2.					
3.					
4.					
5.					
6.					
7.					
			20	= Total Cover	
Herb Stratum (Plot size: 5' radius)					
1.	sedge	*Carex sp.*	50	yes	NI
2.	late goldenrod	*Solidago gigantea*	20	yes	FACW*
3.	spring avens	*Geum vernum*	5	no	FACU
4.	red maple	*Acer rubrum*	3	no	FAC*
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
			78	= Total Cover	
Woody Vine Stratum (Plot size:)					
1.	fox grape	*Vitis labrusca*	20	yes	FACU
2.					
3.					
4.					
			20	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	58	x 2 =	116
FAC species	13.5	x 3 =	40.5
FACU species	55.5	x 4 =	222
UPL species	0	x 5 =	0
Column Totals:	127 (A)		378.5 (B)

Prevalence Index = B/A = 2.98

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- ___ Dominance Test is >50%
- **X** Prevalence Index is ≤ 3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes X** **No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL *Downgradient*

Sampling Point: **WF-F**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/2							A Horizon mucky mineral
refusal								

[1]Type: C=Concentration, D=Depletion, RM=Redox Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M-Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136,122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: refusal from underlying slag pile

Depth (inches): 5

Hydric Soil Present? **Yes** X **No** ___

Remarks:

WETLAND DELINEATION DATA FORM - Eastern Mountains and Piedmont

Upgradient

Project/Site: **Former Satralloy Site** City/County: **Mingo Junction/Jefferson** Sampling Date: **4/26/2012**

Applicant/Owner: **Cyprus Amax Minerals Company** State: **OH** Sampling Point: **WF-H (200 series)**

Investigator(s): **KK, CW** Section, Township, Range: **Cross Creek**

Landform (hillslope, terrace, etc.): **river embankment** Local relief (concave, convex, none): **concave** Slope (%): ____

Subregion (LRR or MLRA): **LRR N** Lat: **80.6803° W** Long: **40.3051° N** Datum: **NAD 1983**

Soil Map Unit Name: **Tioga silt loam** NWI classification: **None**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes **X** No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____ , or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes **X** No ____

Are Vegetation ____, Soil ____ , or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes **X**	No ____	**Is the Sampled Area**		
Hydric Soil Present?	Yes ____	No **X**	**Within a Wetland?**	**Yes** ____	**No X**
Wetland Hydrology Present?	Yes ____	No **X**	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)
Embankment of Cross Creek, near junction with McIntyre Creek. See Appendix B, Figures 2, 8; Appendix D, Photos 12-15.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Seconary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No **X**	Depth (inches): ____
Water Table Present?	Yes ____	No **X**	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No **X**	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No X**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION *Upgradient*

Sampling Point: **WF-H (200 series)**

	Common Name	Scientific Name	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum	(Plot size: 30' radius)				
1.	American sycamore	*Platanus occidentalis*	63	yes	FACW*
2.					
3.					
4.					
5.					
6.					
7.					
			63	= Total Cover	
Sapling/Shrub Stratum	(Plot size: 15' radius)				
1.	Ohio buckeye	*Aesculus glabra*	20.5	yes	FACU
2.					
3.					
4.					
5.					
6.					
7.					
			20.5	= Total Cover	
Herb Stratum	(Plot size: 5' radius)				
1.	common bluebell	*Hyacinthoides non-sc*	38	yes	NI
2.	sarsaparilla	*Aralia nudicaulis*	10.5	yes	FACU
3.	garlic mustard	*Alliaria petiolata*	3	no	FACU
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
			51.5	= Total Cover	
Woody Vine Stratum	(Plot size:)				
1.	none				
2.					
3.					
4.					
			0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	63	x 2 =	126
FAC species	0	x 3 =	0
FACU species	34	x 4 =	136
UPL species	0	x 5 =	0
Column Totals:	97 (A)		262 (B)

Prevalence Index = B/A = 2.70

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

X Prevalence Index is ≤ 3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes X** **No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL *Upgradient*

Sampling Point: **WF-H (200 series)**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15+	10YR 4/4							Floodplain soil sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Redox Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M-Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136,122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: refusal

Depth (inches): 8

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

WETLAND DELINEATION DATA FORM - Eastern Mountains and Piedmont

Downgradient

Project/Site: **Former Satralloy Site** City/County: **Mingo Junction/Jefferson** Sampling Date: **4/26/2012**

Applicant/Owner: **Cyprus Amax Minerals Company** State: **OH** Sampling Point: **WF-H (200 series)**

Investigator(s): **KK, CW** Section, Township, Range: **Cross Creek**

Landform (hillslope, terrace, etc.): **river embankment** Local relief (concave, convex, none): **concave** Slope (%): ____

Subregion (LRR or MLRA): **LRR N** Lat: **80.6803° W** Long: **40.3051° N** Datum: **NAD 1983**

Soil Map Unit Name: **Tioga silt loam** NWI classification: **R1US**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes **X** No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes **X** No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes **X**	No ____	**Is the Sampled Area**		
Hydric Soil Present?	Yes **X**	No ____	**Within a Wetland?**	**Yes X**	**No** ____
Wetland Hydrology Present?	Yes **X**	No ____	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)
Embankment of Cross Creek, near junction with McIntyre Creek. See Appendix B, Figures 2, 8; Appendix D, Photos 12-15.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- **X** Surface Water (A1)
- **X** High Water Table (A2)
- **X** Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Seconary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- **X** Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes **X** No ____	Depth (inches):	12
Water Table Present?	Yes **X** No ____	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes **X** No ____	Depth (inches):	0

Wetland Hydrology Present? **Yes X** **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION *Downgradient*

Sampling Point: **WF-H (200 series)**

Common Name	Scientific Name	Absolute	Dominant	Indicator
Tree Stratum (Plot size: 30' radius)		% Cover	Species?	Status
1. none				
2.				
3.				
4.				
5.				
6.				
7.				
		0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)				
1. none				
2.				
3.				
4.				
5.				
6.				
7.				
		0	= Total Cover	
Herb Stratum (Plot size: 5' radius)				
1. carex folliculata	*Carex folliculata*	38	yes	OBL*
2. yellow rocket	*Barbarea vulgaris*	3	no	FACU
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
		41	= Total Cover	
Woody Vine Stratum (Plot size:)				
1. none				
2.				
3.				
4.				
		0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	38	x 1 =	38
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	3	x 4 =	12
UPL species	0	x 5 =	0
Column Totals:	41 (A)		50 (B)

Prevalence Index = B/A = 1.22

Hydrophytic Vegetation Indicators:

- **X** Rapid Test for Hydrophytic Vegetation
- **X** Dominance Test is >50%
- **X** Prevalence Index is ≤ 3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes X** **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL *Downgradient*

Sampling Point: **WF-H (200 series)**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/3							A Horizon medium sandy silty loam
3-8+	2.5Y 4/2							B Horizon medium sand

[1]Type: C=Concentration, D=Depletion, RM=Redox Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M-Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- **X** Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136,122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** **X** **No** ___

Remarks:

WETLAND DELINEATION DATA FORM - Eastern Mountains and Piedmont

Upgradient

Project/Site: **Former Satralloy Site** City/County: **Mingo Junction/Jefferson** Sampling Date: **4/26/2012**

Applicant/Owner: **Cyprus Amax Minerals Company** State: **OH** Sampling Point: **WF-J**

Investigator(s): **KK, CW** Section, Township, Range: **Cross Creek**

Landform (hillslope, terrace, etc.): **hillslope** Local relief (concave, convex, none): **concave** Slope (%): ____

Subregion (LRR or MLRA): **LRR N** Lat: **80.6709° W** Long: **40.3149° N** Datum: **NAD 1983**

Soil Map Unit Name: **Lowell silt loam** NWI classification: **None**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes **X** No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____ , or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes **X** No ____

Are Vegetation ____, Soil ____ , or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No **X**	**Is the Sampled Area**		
Hydric Soil Present?	Yes ____	No **X**	**Within a Wetland?**	**Yes** ____	**No X**
Wetland Hydrology Present?	Yes ____	No **X**	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)

Wetland J begins as a small depression on the slope of the ridge which collects groundwater and surface seepage, then channelizes down the steep slope of the ridge. The wetland discharges to Wetland K through a culvert. See Appendix B, Figures 2, 9; Appendix D, Photos 16-18.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Seconary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No **X**	Depth (inches): ____
Water Table Present?	Yes ____	No **X**	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No **X**	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No X**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION *Upgradient*

Sampling Point: **WF-J**

	Common Name	Scientific Name	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)					
1.	common hackberry	*Celtis occidentalis*	38	yes	FACU
2.	red maple	*Acer rubrum*	10.5	no	FAC*
3.	American elm	*Ulmus americana*	10.5	no	FACW*
4.					
5.					
6.					
7.					
			59	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)					
1.	multiflora rose	*Rosa multiflora*	10.5	yes	FACU
2.	common hackberry	*Celtis occidentalis*	10.5	yes	FACU
3.					
4.					
5.					
6.					
7.					
			21	= Total Cover	
Herb Stratum (Plot size: 5' radius)					
1.	mayapple	*Podophyllum peltatum*	38	yes	FACU
2.	spreading sandwort	*Arenaria lanuginosa*	38	yes	FAC*
3.	early buttercup	*Ranunculus fascicular*	3	no	FACU
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
			79	= Total Cover	
Woody Vine Stratum (Plot size:)					
1.	none				
2.					
3.					
4.					
			0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10.5	x 2 =	21
FAC species	48.5	x 3 =	145.5
FACU species	100	x 4 =	400
UPL species	0	x 5 =	0
Column Totals:	159	(A)	566.5 (B)

Prevalence Index = B/A = 3.56

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤ 3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** **X**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL *Upgradient*

Sampling Point: **WF-J**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2							A Horizon silt loam
4-8	10YR 3/4							B1 Horizon silt loam
8-12+	10YR 4/6							B2 Horizon silt loam

[1]Type: C=Concentration, D=Depletion, RM=Redox Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M-Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136,122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

WETLAND DELINEATION DATA FORM - Eastern Mountains and Piedmont

Downgradient

Project/Site: **Former Satralloy Site** City/County: **Mingo Junction/Jefferson** Sampling Date: **4/26/2012**

Applicant/Owner: **Cyprus Amax Minerals Company** State: **OH** Sampling Point: **WF-J**

Investigator(s): **KK, CW** Section, Township, Range: **Cross Creek**

Landform (hillslope, terrace, etc.): **hillslope** Local relief (concave, convex, none): **concave (channel)** Slope (%): ____

Subregion (LRR or MLRA): **LRR N** Lat: **80.6710° W** Long: **40.3149° N** Datum: **NAD 1983**

Soil Map Unit Name: **Lowell silt loam** NWI classification: **PFO**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes **X** No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes **X** No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes **X**	No ____	**Is the Sampled Area**		
Hydric Soil Present?	Yes **X**	No ____	**Within a Wetland?**	**Yes X**	**No** ____
Wetland Hydrology Present?	Yes **X**	No ____	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)
Wetland J begins as a small depression on the slope of the ridge which collects groundwater and surface seepage, then channelizes down the steep slope of the ridge. The wetland discharges to Wetland K through a culvert. See Appendix B, Figures 2, 9; Appendix D, Photos 16-18.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- **X** Surface Water (A1)
- **X** High Water Table (A2)
- **X** Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Seconary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- **X** Sparsely Vegetated Concave Surface (B8)
- **X** Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- **X** Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes **X** No ____	Depth (inches): 0	
Water Table Present?	Yes **X** No ____	Depth (inches): 0	
Saturation Present? (includes capillary fringe)	Yes **X** No ____	Depth (inches): 0	**Wetland Hydrology Present?** **Yes X** **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION *Downgradient*

Sampling Point: **WF-J**

	Common Name	Scientific Name	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum	(Plot size: 30' radius)				
1.	none				
2.					
3.					
4.					
5.					
6.					
7.					
			0	= Total Cover	
Sapling/Shrub Stratum	(Plot size: 15' radius)				
1.	multiflora rose	*Rosa multiflora*	38	yes	FACU
2.	green ash	*Fraxinus pennsylvanic*	10.5	yes	FACW*
3.					
4.					
5.					
6.					
7.					
			48.5	= Total Cover	
Herb Stratum	(Plot size: 5' radius)				
1.	carex folliculata	*Carex folliculata*	38	yes	OBL*
2.	multiflora rose	*Rosa multiflora*	3	no	FACU
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
			41	= Total Cover	
Woody Vine Stratum	(Plot size:)				
1.	none				
2.					
3.					
4.					
			0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.67% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	38	x 1 =	38
FACW species	10.5	x 2 =	21
FAC species	0	x 3 =	0
FACU species	41	x 4 =	164
UPL species	0	x 5 =	0
Column Totals:	89.5 (A)		223 (B)

Prevalence Index = B/A = 2.49

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- **X** Dominance Test is >50%
- **X** Prevalence Index is ≤ 3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes X** **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL *Downgradient*

Sampling Point: **WF-J**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-0								O Horizon muck
0-9	2.5Y 4/1							A Horizon silty sand
9-15+	2.5Y 3/1							BC Horizon silty sand

[1]Type: C=Concentration, D=Depletion, RM=Redox Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M-Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136,122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

WETLAND DELINEATION DATA FORM - Eastern Mountains and Piedmont

Upgradient

Project/Site: **Former Satralloy Site** City/County: **Mingo Junction/Jefferson** Sampling Date: **4/26/2012**

Applicant/Owner: **Cyprus Amax Minerals Company** State: **OH** Sampling Point: **WF-K**

Investigator(s): **KK, CW** Section, Township, Range: **Cross Creek**

Landform (hillslope, terrace, etc.): **hillslope** Local relief (concave, convex, none): **concave** Slope (%): ____

Subregion (LRR or MLRA): **LRR N** Lat: **80.6698° W** Long: **40.3119° N** Datum: **NAD 1983**

Soil Map Unit Name: **Udorthents, loamy** NWI classification: **None**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes **X** No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____ , or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes **X** No ____

Are Vegetation ____, Soil ____ , or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No **X**	**Is the Sampled Area**		
Hydric Soil Present?	Yes ____	No **X**	**Within a Wetland?**	**Yes** ____	**No X**
Wetland Hydrology Present?	Yes ____	No **X**	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)
Wetland K is a channelized wetland which carries flow from Wetland J down the slope of the ridge. Wetland K discharges to Cross Creek through a culvert. See Appendix B, Figures 2, 10; Appendix D, Photo 19.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Seconary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No **X**	Depth (inches): ____
Water Table Present?	Yes ____	No **X**	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No **X**	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No X**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION *Upgradient*

Sampling Point: **WF-K**

	Common Name	Scientific Name	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum	(Plot size: 30' radius)				
1.	ash-leaf maple	*Acer negundo*	85.5	yes	FAC*
2.					
3.					
4.					
5.					
6.					
7.					
			85.5	= Total Cover	
Sapling/Shrub Stratum	(Plot size: 15' radius)				
1.	ash-leaf maple	*Acer negundo*	20.5	yes	FAC*
2.	multiflora rose	*Rosa multiflora*	10.5	yes	FACU
3.					
4.					
5.					
6.					
7.					
			31	= Total Cover	
Herb Stratum	(Plot size: 5' radius)				
1.	Canada white violet	*Viola canadensis*	20.5	yes	NI
2.	garlic mustard	*Alliaria petiolata*	3	no	FACU
3.	hairy wood mint	*Blephilia hirsuta*	3	no	FACU
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
			26.5	= Total Cover	
Woody Vine Stratum	(Plot size:)				
1.	none				
2.					
3.					
4.					
			0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	106	x 3 =	318
FACU species	16.5	x 4 =	66
UPL species	0	x 5 =	0
Column Totals:	122.5 (A)		384 (B)

Prevalence Index = B/A = 3.13

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤ 3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** **X**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL *Upgradient*

Sampling Point: **WF-K**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/2							A Horizon fine sandy loam
5-15+	10YR 4/3							B1 Horizon fine sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Redox Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M-Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136,122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

WETLAND DELINEATION DATA FORM - Eastern Mountains and Piedmont

Downgradient

Project/Site: **Former Satralloy Site** City/County: **Mingo Junction/Jefferson** Sampling Date: **4/26/2012**

Applicant/Owner: **Cyprus Amax Minerals Company** State: **OH** Sampling Point: **WF-K**

Investigator(s): **KK, CW** Section, Township, Range: **Cross Creek**

Landform (hillslope, terrace, etc.): **hillslope** Local relief (concave, convex, none): **concave** Slope (%): ____

Subregion (LRR or MLRA): **LRR N** Lat: **80.6698° W** Long: **40.3119° N** Datum: **NAD 1983**

Soil Map Unit Name: **Lowell silt loam** NWI classification: **PFO**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes **X** No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes **X** No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes **X**	No ____	**Is the Sampled Area**		
Hydric Soil Present?	Yes **X**	No ____	**Within a Wetland?**	**Yes X**	**No** ____
Wetland Hydrology Present?	Yes **X**	No ____	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)
Wetland K is a channelized wetland which carries flow from Wetland J down the slope of the ridge. Wetland K discharges to Cross Creek through a culvert. See Appendix B, Figures 2, 10; Appendix D, Photo 19.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- **X** Surface Water (A1)
- **X** High Water Table (A2)
- **X** Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Seconary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- **X** Sparsely Vegetated Concave Surface (B8)
- **X** Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- **X** Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes **X** No ____	Depth (inches): 0	
Water Table Present?	Yes **X** No ____	Depth (inches): 0	
Saturation Present? (includes capillary fringe)	Yes **X** No ____	Depth (inches): 0	**Wetland Hydrology Present?** **Yes X** **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION *Downgradient*

Sampling Point: **WF-K**

Common Name	Scientific Name	Absolute	Dominant	Indicator
Tree Stratum (Plot size: 30' radius)		% Cover	Species?	Status
1. none				
2.				
3.				
4.				
5.				
6.				
7.				
		0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)				
1. none				
2.				
3.				
4.				
5.				
6.				
7.				
		0	= Total Cover	
Herb Stratum (Plot size: 5' radius)				
1. carex folliculata	*Carex folliculata*	38	yes	OBL*
2. great waterleaf	*Hydrophyllum append*	3	no	NI
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
		41	= Total Cover	
Woody Vine Stratum (Plot size:)				
1. none				
2.				
3.				
4.				
		0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	38	x 1 =	38
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	38 (A)		38 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

- **X** Rapid Test for Hydrophytic Vegetation
- **X** Dominance Test is >50%
- **X** Prevalence Index is ≤ 3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes X** **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL *Downgradient*

Sampling Point: **WF-K**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	2.5Y 4/1							A Horizon silty sandy loam
3-15+	10YR 5/3		10YR 6/8	10	C	M		BC Horizon silt loam

[1]Type: C=Concentration, D=Depletion, RM=Redox Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M-Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- **X** Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136,122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** **X** **No** ___

Remarks:

WETLAND DELINEATION DATA FORM - Eastern Mountains and Piedmont

Upgradient

Project/Site: **Former Satralloy Site** City/County: **Mingo Junction/Jefferson** Sampling Date: **4/26/2012**

Applicant/Owner: **Cyprus Amax Minerals Company** State: **OH** Sampling Point: **WF-YY**

Investigator(s): **KK, CW** Section, Township, Range: **Cross Creek**

Landform (hillslope, terrace, etc.): **near river embankment** Local relief (concave, convex, none): **concave** Slope (%): ____

Subregion (LRR or MLRA): **LRR N** Lat: **80.6800° W** Long: **40.3052° N** Datum: **NAD 1983**

Soil Map Unit Name: **Tioga silt loam** NWI classification: **None**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes **X** No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____ , or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes **X** No ____

Are Vegetation ____, Soil ____ , or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No **X**	**Is the Sampled Area**		
Hydric Soil Present?	Yes ____	No **X**	**Within a Wetland?**	**Yes** ____	**No X**
Wetland Hydrology Present?	Yes ____	No **X**	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)
Wetland YY is a small depression between Gould Road and Cross Creek at the southwestern corner of the Site. The wetland holds water for most if not all of the year. See Appendix B, Figures 2, 14; Appendix D, Photos 25-26.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Seconary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No **X**	Depth (inches): ____
Water Table Present?	Yes ____	No **X**	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No **X**	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No X**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION *Upgradient*

Sampling Point: **WF-YY**

	Common Name	Scientific Name	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)					
1.	American sycamore	*Platanus occidentalis*	38	yes	FACW*
2.	common hackberry	*Celtis occidentalis*	20.5	yes	FACU
3.					
4.					
5.					
6.					
7.					
			58.5	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)					
1.	Ohio buckeye	*Aesculus glabra*	38	yes	FACU
2.					
3.					
4.					
5.					
6.					
7.					
			38	= Total Cover	
Herb Stratum (Plot size: 5' radius)					
1.	red maple	*Acer rubrum*	10.5	yes	FAC*
2.	woodland phlox	*Phlox divaricata*	10.5	yes	FACU
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
			21	= Total Cover	
Woody Vine Stratum (Plot size:)					
1.	none				
2.					
3.					
4.					
			0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	38	x 2 =	76
FAC species	10.5	x 3 =	31.5
FACU species	69	x 4 =	276
UPL species	0	x 5 =	0
Column Totals:	117.5 (A)		383.5 (B)

Prevalence Index = B/A = 3.26

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤ 3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** **X**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL *Upgradient*

Sampling Point: **WF-YY**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/3							Ap Horizon fine sandy loam
6-18+	10YR 3/4							Bw Horizon fine sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Redox Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M-Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136,122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: refusal

Depth (inches): 8

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

WETLAND DELINEATION DATA FORM - Eastern Mountains and Piedmont

Downgradient

Project/Site: **Former Satralloy Site** City/County: **Mingo Junction/Jefferson** Sampling Date: **4/26/2012**

Applicant/Owner: **Cyprus Amax Minerals Company** State: **OH** Sampling Point: **WF-YY**

Investigator(s): **KK, CW** Section, Township, Range: **Cross Creek**

Landform (hillslope, terrace, etc.): **near river embankment** Local relief (concave, convex, none): **concave** Slope (%): ____

Subregion (LRR or MLRA): **LRR N** Lat: **80.6800° W** Long: **40.3052° N** Datum: **NAD 1983**

Soil Map Unit Name: **Tioga silt loam** NWI classification: **PFO**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes **X** No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____ , or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes **X** No ____

Are Vegetation ____, Soil ____ , or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes **X**	No ____	**Is the Sampled Area**		
Hydric Soil Present?	Yes **X**	No ____	**Within a Wetland?**	**Yes X**	**No** ____
Wetland Hydrology Present?	Yes **X**	No ____	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)
Wetland YY is a small depression between Gould Road and Cross Creek at the southwestern corner of the Site. The wetland holds water for most if not all of the year. See Appendix B, Figures 2, 14; Appendix D, Photos 25-26.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- **X** Surface Water (A1)
- **X** High Water Table (A2)
- **X** Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Seconary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- **X** Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes **X** No ____	Depth (inches):	12
Water Table Present?	Yes **X** No ____	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes **X** No ____	Depth (inches):	0

Wetland Hydrology Present? **Yes X** **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION *Downgradient*

Sampling Point: **WF-YY**

	Common Name	Scientific Name	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)					
1.	american elm	*Ulmus americana*	38	yes	FACW*
2.	Ohio buckeye	*Aesculus glabra*	10.5	yes	FACU
3.					
4.					
5.					
6.					
7.					
			48.5	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)					
1.	Ohio buckeye	*Aesculus glabra*	10.5	yes	FACU
2.					
3.					
4.					
5.					
6.					
7.					
			10.5	= Total Cover	
Herb Stratum (Plot size: 5' radius)					
1.	duckweed	*Lemna trinervis*	10.5	yes	NI
2.	red maple	*Acer rubrum*	10.5	yes	FAC*
3.	early buttercup	*Ranunculus fascicular*	10.5	yes	FACU
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
			31.5	= Total Cover	
Woody Vine Stratum (Plot size:)					
1.	none				
2.					
3.					
4.					
			0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	38	x 2 =	76
FAC species	10.5	x 3 =	31.5
FACU species	31.5	x 4 =	126
UPL species	0	x 5 =	0
Column Totals:	80	(A)	233.5 (B)

Prevalence Index = B/A = 2.92

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- ___ Dominance Test is >50%
- **X** Prevalence Index is ≤ 3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

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Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes X** **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL *Downgradient*

Sampling Point: **WF-YY**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/3							Ap Horizon fine sandy loam
6-12+	2.5Y 4/2							Bg Horizon fine sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Redox Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M-Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- **X** Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136,122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** **X** **No** ___

Remarks:

Appendix D
Project Area Photographs

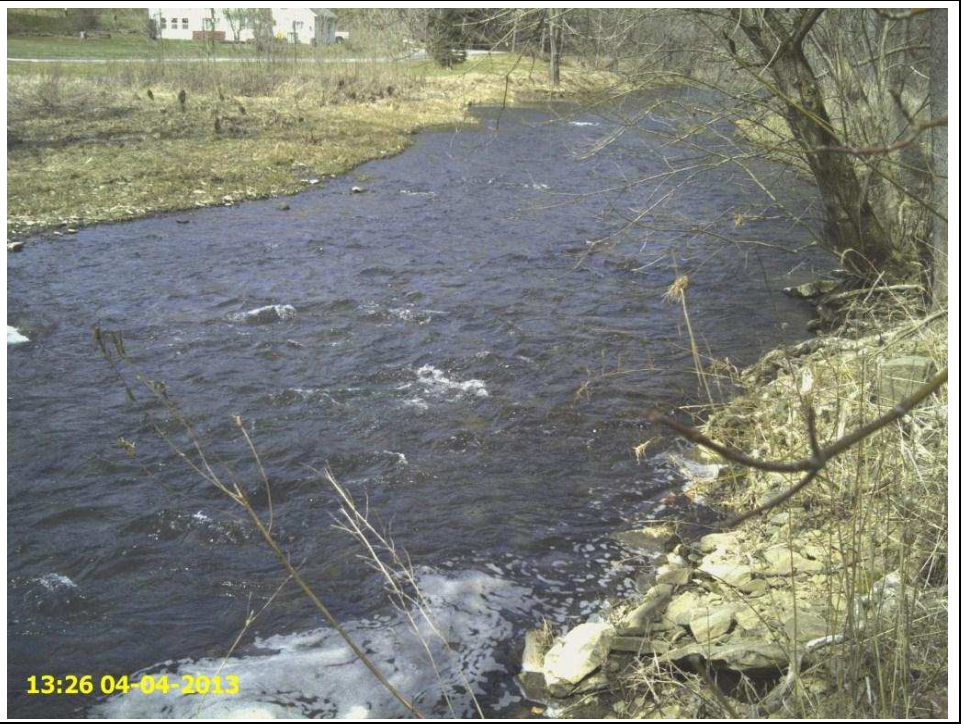
Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 1 | **Date:** 4/4/13

Description:
Waterway A (Cross Creek), at bend in creek, looking north.



Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 2 | **Date:** 4/4/13

Description:
Waterway A (Cross Creek), at bend in creek, looking southwest.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 3 | **Date:** 4/4/13

Description:

Waterway A (Cross Creek), looking southwest.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 4 | **Date:** 4/24/12

Description:

Wetland D, at northwestern end of wetland, looking southeast.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 5 | **Date:** 4/24/12

Description:

Wetland D, culvert and headwall at northwestern end, looking northeast.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 6 | **Date:** 4/24/12

Description:

Wetland E, at northern end of wetland, looking south.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus	**Site Location:** Former Satralloy Site	**Project No**: 11226.02

Photo No. : 7 **Date:** 4/26/12

Description:

Wetland E, in center of channel, looking north.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus	**Site Location:** Former Satralloy Site	**Project No**: 11226.02

Photo No. : 8 **Date:** 4/4/13

Description:

Wetland/Waterway F, at northeastern end of vegetated wetland, looking southwest.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 9 **Date:** 4/4/13

Description:

Wetland/Waterway F, flow from vegetated wetland dropping into well-defined channel, looking southwest.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 10 **Date:** 4/4/13

Description:

Wetland/Waterway F, near bottom of channel, looking southeast.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 11 | **Date:** 4/4/13

Description:

Wetland/Waterway F, at intersection with Waterway A (Cross Creek), looking northwest.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 12 | **Date:** 4/23/12

Description:

Waterway H (Cross Creek), at eastern property border, looking east.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 13 | **Date:** 4/3/13

Description:

Waterway H (Cross Creek), at southern property boundary, looking northeast.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 14 | **Date:** 4/3/13

Description:

Waterway H (Cross Creek), at bridge by western property border, looking south.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 15 | **Date:** 4/3/13

Description:

Waterway H (Cross Creek), at bridge by western property border, looking north.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 16 | **Date:** 4/25/12

Description:

Wetland/Waterway J, at northern end of wetland, looking north.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 17 | **Date:** 4/4/13

Description:

Wetland/Waterway J, at southern end of wetland, looking north.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 18 | **Date:** 4/4/13

Description:

Wetland/Waterway J, culvert at southern end, looking southwest.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus	**Site Location:** Former Satralloy Site	**Project No**: 11226.02

Photo No. : 19 **Date:** 4/4/13

Description:

Waterway K, from access road separating Wetlands J and K, looking southeast.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus	**Site Location:** Former Satralloy Site	**Project No**: 11226.02

Photo No. : 20 **Date:** 4/3/13

Description:

Wetland P, at edge of former rail spur, looking west.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 21 | **Date:** 4/3/13

Description:
Wetland P, at edge of former rail spur, looking east.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 22 | **Date:** 4/3/13

Description:
Wetland P, water flowing down former rail spur, looking southeast.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 23 | **Date:** 4/3/13

Description:

Wetland Q, water flowing along berm separating upper and lower rail spurs, looking southwest.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 24 | **Date:** 4/3/13

Description:

Wetland Q, at eastern end of wetland, looking north.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 25 | **Date:** 4/3/13

Description:
Wetland YY, at southeastern end of wetland, looking northwest.

Vanasse Hangen Brustlin, Inc.

PHOTOGRAPHIC LOG

Client Name: Cyprus | **Site Location:** Former Satralloy Site | **Project No**: 11226.02

Photo No. : 26 | **Date:** 4/3/13

Description:
Wetland YY, at southeastern end of wetland, looking west.