REVISED PRELIMINARY JURISDICTIONAL WATERS DELINEATION AND WETLANDS SCORING AT THE FORMER SATRALLOY FACILITY, STEUBENVILLE, JEFFERSON COUNTY, OHIO

Prepared for: U.S. Army Corps of Engineers

Prepared by: WestLand Resources, Inc.

Date: March 22, 2007

Project No: 1271.01 805 805

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INTRODUCTION

WestLand Resources, Inc. (WestLand) completed a preliminary jurisdictional delineation (JD) of areas that may be considered by the U.S. Army Corps of Engineers (ACOE) as waters of the United States[1] at the approximately 332-acre former Satralloy Site (the Property). This work has been completed to facilitate compliance with potential permitting requirements of the ACOE under Section 404 of the Clean Water Act (CWA) and the Ohio Environmental Protection Agency (OEPA), for proposed remediation activities being developed in cooperation with the OEPA Division of Emergency and Remedial Response.

The JD was originally submitted to the ACOE on December 4, 2006. Subsequently, the ACOE and OEPA requested more detailed information for the onsite wetland and drainage features. In addition, a survey was completed on the Property to determine the ownership boundaries, resulting in a modification of the Property boundary that was shown on our initial submittal. WestLand has revised the JD to include the requested information and to meet the submittal requirements of both agencies. This JD includes the following modifications and supplemental information:

- Additional topographic and aerial mapping of the onsite drainage and wetland features;
- Additional information and mapping of the onsite culvert drainage systems;
- Ohio Rapid Assessment Method (ORAM) data forms;
- Qualitative Habitat Evaluation Index (QHEI) forms for Cross Creek;
- Modification of all figures included in the previous JD submittal to reflect the new Property boundary.

This JD submittal replaces our initial JD submittal for the Property.

PROPERTY OWNER

The legal owners of the Property are Chemetall GmbH (Chemetall) and the Estate of Catherine Glorious; however, the previous owner, Cyprus Amax Minerals Company (Cyprus Amax), has agreed to address certain environmental conditions at the Property. Phelps Dodge Corporation subsequently acquired Cyprus Amax . In order to address the remediation concerns on the site, Cyprus Amax is currently in the process of acquiring ownership of the Property. The Cyprus Amax contact for the project is:

[1] Because the ACOE is the agency responsible for determining the jurisdictional status of drainages and other areas that may be considered waters of the United States, we refer to the waters delineated in this report as "potential" jurisdictional waters. WestLand's assessment of jurisdictional status is based upon previous experience with the ACOE and currently accepted protocols for delineating jurisdictional waters and their boundaries.

Barbara Nielsen
Manager, Remediation Projects

Phelps Dodge Corporation
One North Central Avenue
Phoenix, AZ 85004

Phone: (602) 366-8100
Fax: (602) 366-7313
Email: bnielsen@phelpsdodge.com

LOCATION OF THE PROPERTY

The Property is located in eastern Ohio, approximately 4.5 miles southwest of Steubenville, in Cross Creek Township, Jefferson County, Ohio (Township 2 North, Range 2 West, portions of Sections 2, 8, and 9; 40°18'34" N Latitude and 80°40'9" W Longitude; Figure 1).

DIRECTIONS TO THE PROPERTY

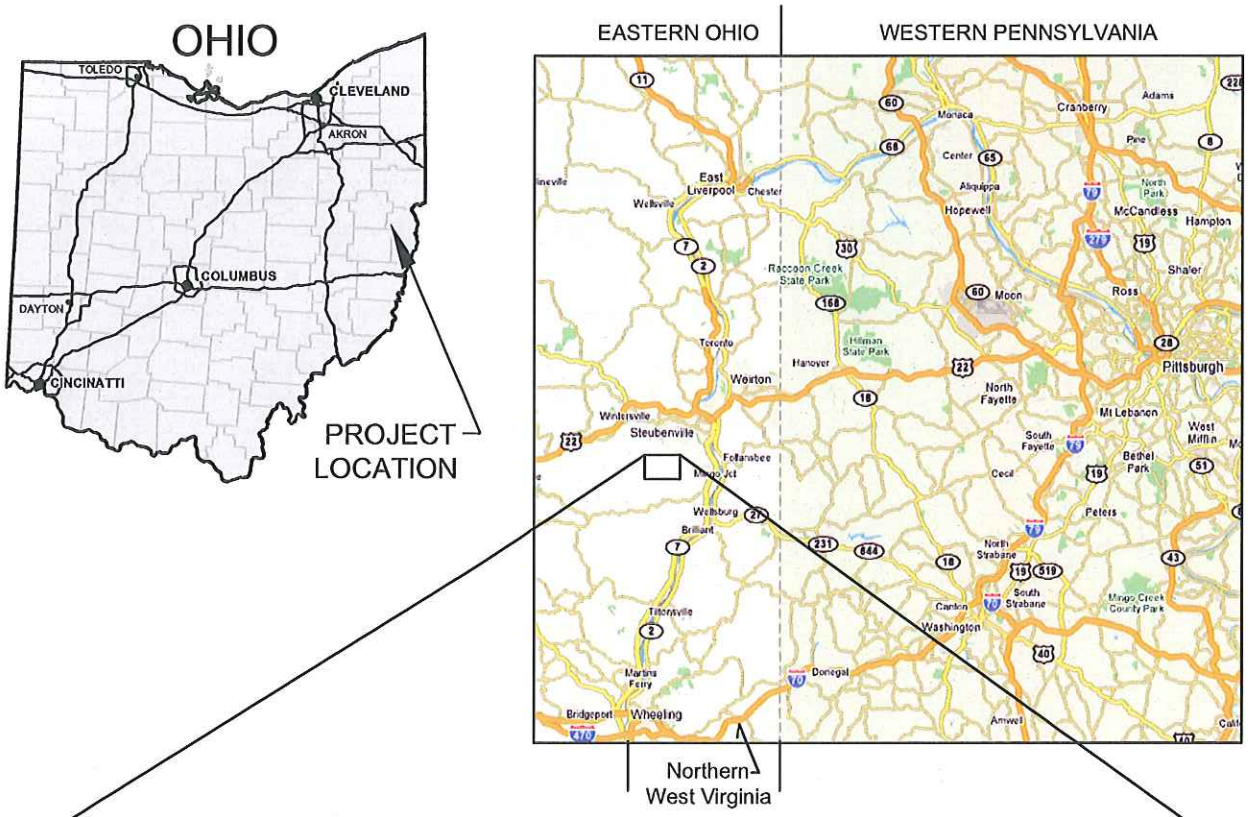
From Pittsburgh, travel west on U.S. 22 West to Ohio State Route (SR) 7 South. Continue through Steubenville to the SR 151 Smithville Exit. Turn right off the exit ramp and travel west on SR 151. Continue past the "Welcome to New Alexandria" sign (brown sign, yellow letters). The first road on the right past the New Alexandria sign is Scott Featner Road. Turn right on Scott Featner Road, cross the ridge, and continue to the bottom of the hill at Cross Creek. Turn left onto County Road 74 (Gould Road) over the Cross Creek bridge; the Property is approximately 0.5 mile west on Gould Road, on the right.

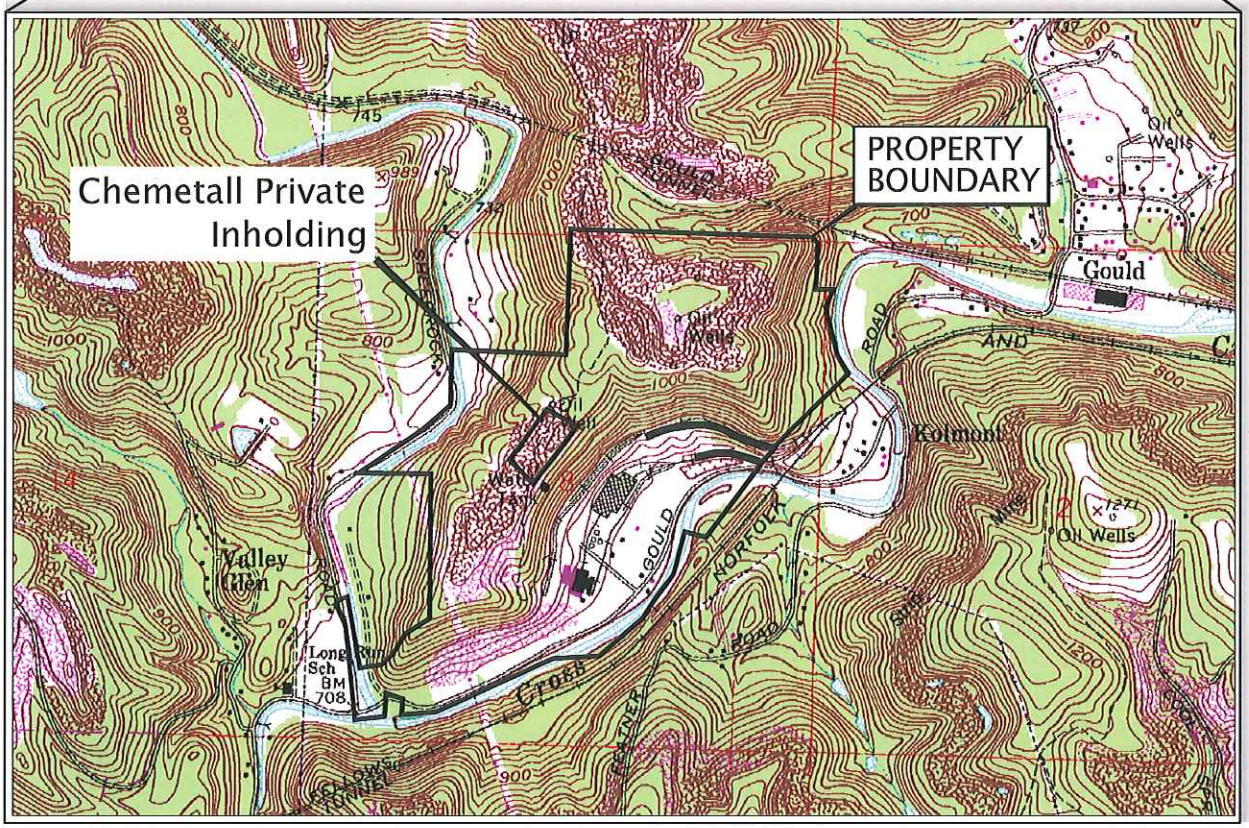
SITE DESCRIPTION

The Property is located on a finger ridge that is surrounded on three sides by the perennial Cross Creek. Topographically, the Property ranges from about 700 feet above mean sea level (amsl) at Cross Creek up to about 1,120 feet amsl on the ridge. The headwaters of Cross Creek are located west of Bloomingdale, about 12 miles west of the Property. Cross Creek flows into the Ohio River near Mingo Junction, about 4 miles downstream from the Property. Very steep slopes are located near the ridge top and near Cross Creek on the northwest side of the Property. The southeast side of the Property is flatter, likely an abandoned terrace of Cross Creek.

Second-growth hardwood forest covers much of the Property.

The Property is not currently used for any productive activity. In the past, the Property has been used for a variety of industrial purposes. Based on evidence visible in aerial photography, the disturbed areas cover roughly 33 percent of the Property. The most obvious past site uses are from the former operation of a





T.2N., R.2W., Portion of Sections 2, 8 & 9
Jefferson County, Steubenville West USGS 7.5' Quadrangle

WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 1000' 2000'
APPROX. SCALE: 1" = 2000'

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Former Satralloy Site

VICINITY MAP
Figure 1

DWG FullPath: M:...zs\1271.01\bel\Fig1-vicinity.dwg

ferro-chromium alloy processing plant, located on the flatter southeast portion of the Property. The plant operated from 1958 until 1982. Much of the processing equipment from the smelter has been removed from the Property, and the remaining structures are proposed to be demolished as a part of the site reclamation plan. Other disturbed areas of the Property, principally along the ridge line, are covered by slag from the processing plant operation. A network of roads, mostly related to the processing operation, access various portions of the Property. Two abandoned railroad spurs enter the Property from the east, near the trestle over Gould Road. Portions of the spur alignments are owned by the Norfolk & Western Railroad, which also owns the railroad alignment along the southeastern property boundary. Branches from these spurs provided rail access to all parts of the operation.

The plant site itself was formerly occupied by a small farm. Other past uses of the Property include both underground and strip coal mining, dating from the first half of the 1900s. There are traces of older roads related to the coal mining activities throughout the Property.

Currently, the Property is and has been heavily used as a recreation site by trespassing all-terrain vehicle riders. Most of this impact has been on the slag areas and the above-mentioned roads, but some new trails have been created through the forested areas.

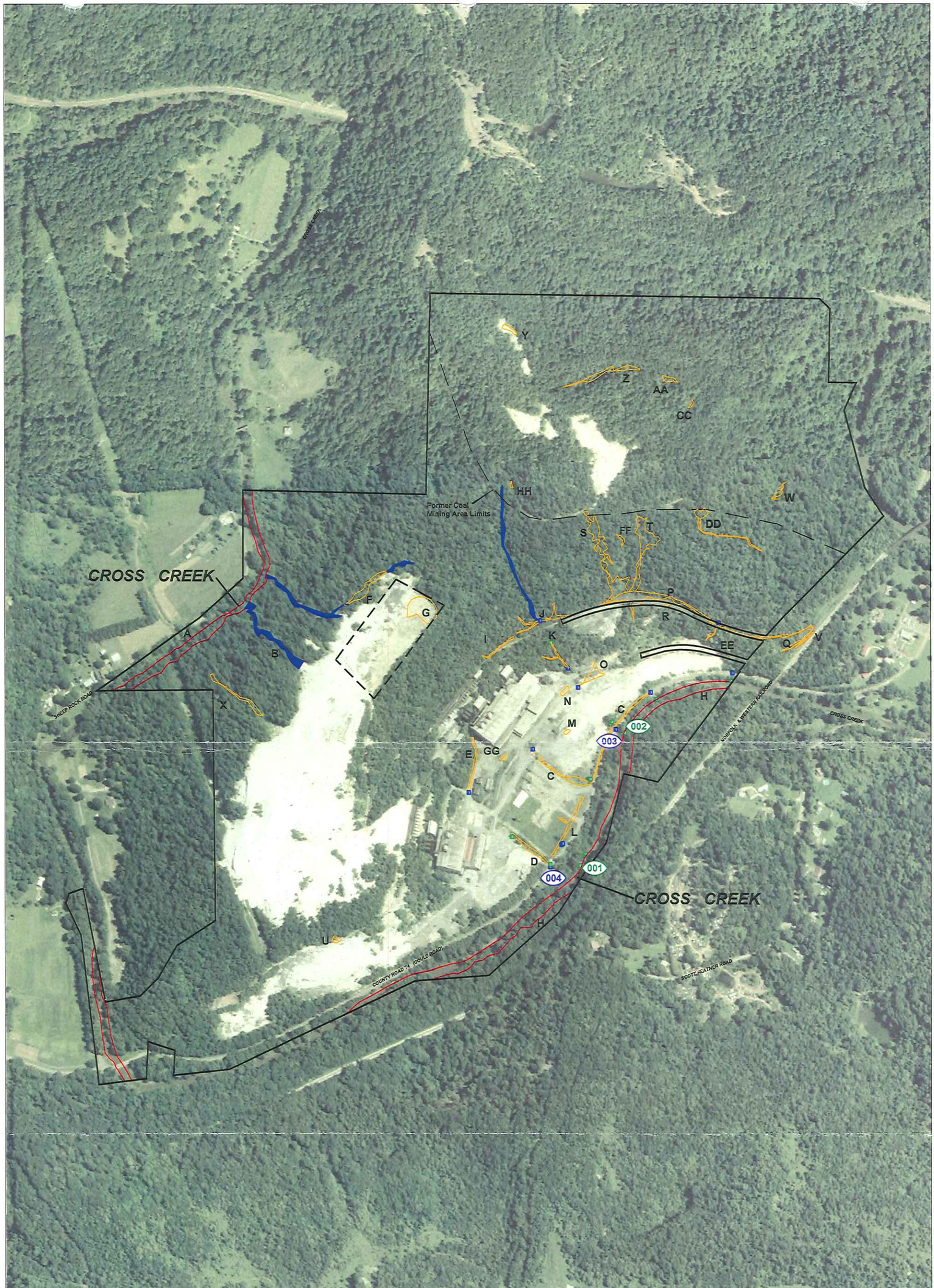
Modern activities in the Property vicinity include an active line of the Norfolk and Western Railroad, which is located on the slope south of Cross Creek and crosses the trestle over Gould Road. Another active rail line passes through the Gould Tunnel near the north boundary of the Property. An electric transmission line corridor crosses the western end of the Property. Low-density and semi-rural residential usage is also scattered around the area.

METHODS

WestLand performed a delineation of potential jurisdictional waters within the Property according to the practices described below and the Corps' *Wetland Delineation Manual* (Environmental Laboratory, 1987). WestLand biologists visited the Property on May 8 through May 12 and July 6 through July 12, 2006 to identify potentially jurisdictional surface water features and wetland features present on the Property. Aerial and topographic overviews of the Property, including wetland and drainage features identified during the site visit, are included as Figures 2 and 3.

JURISDICTIONAL WATERS DELINEATION

The lateral boundaries of potentially jurisdictional waters (Appendix A) are indicated by ordinary high-water marks, identified by the presence of one or more of the following characteristics: a well-defined channel (as indicated by an incision or scour line), debris line, change in substrate, water stains on bedrock, or the presence of riparian vegetation. Potentially jurisdictional drainage features were identified through aerial photograph and topographic map interpretation, along with onsite survey to collect data related to the physical characteristics



T.2N., R.2W., Portion of Sections 2, 8 & 9
Jefferson County, Steubenville West USGS
7.5' Quadrangle, Z17 NAD 27

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

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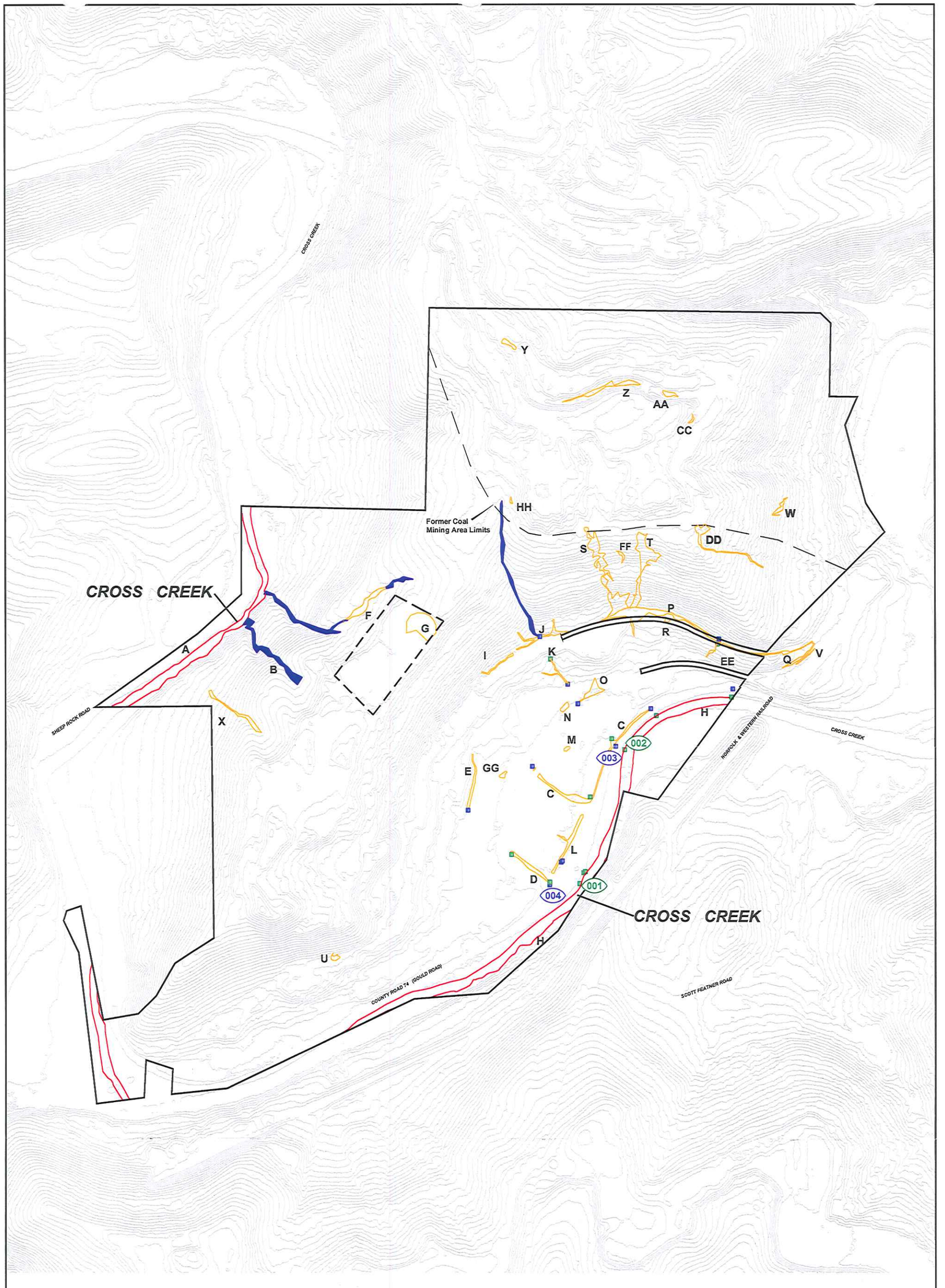
SCALE 1" = 600'

LEGEND

- Approximate Property Boundary
- Chemetall Private Inholding
- Perennial Water Features (Jurisdictional Waters of The U.S.)
- Wetland Feature (Non-jurisdictional Waters of The U.S.)
- Drainage Feature (Non-jurisdictional Waters of The U.S.)
- 001 NPDES Point Source Discharge Outfall Locations
- Culvert Inlet Locations
- Culvert Outlet Locations

Former Satralloy Site
Aerial Overview
Figure 2



T.2N., R.2W., Portion of Sections 2, 8 & 9
Jefferson County, Steubenville West USGS
7.5' Quadrangle, Z17 NAD 27

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SCALE 1" = 600'
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2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

Former Satralloy Site
Topographic Overview
Figure 3

(flow regime, width, etc.) of the drainages. Once the field data was evaluated, lateral boundaries were digitally drawn onto the corresponding 1" = 200' scale aerial photograph.

WETLAND DELINEATION

An evaluation of wetland features was completed based on the regulatory guidelines of both the ACOE and the OEPA (Appendix B). The wetland features were delineated during the onsite survey and physical characteristics of each feature (such as hydrology, soil, and vegetation) were recorded on corresponding data forms, as specified for each agency.[2] The field forms for both the ACOE and OEPA are provided in Appendix B and are sorted alphabetically. The wetland delineation and data collection process is described in greater detail below.

For the wetland delineation we reviewed the following materials:

- United States Geological Survey topographic 7.5-minute Quadrangle Map (Appendix C-1) for location, topographic details, indication of potential wetlands in the area, drainage patterns, and general land uses;
- Aerial photography of the Property and vicinity;
- Documentation provided to us by Golder Associates, Inc. relating to hydrologic and geologic features present on the Property;
- National Wetland Inventory (NWI) Map (Appendix C-2) and Federal Emergency Management Agency (FEMA) Flood Plain Map (Appendix C-3) for the Property and vicinity; and
- Jefferson County Soil Survey Map (Appendix C-4) and other resources to determine potential soil types in the area.

Representative pairs of data points were collected in each potential wetland feature, with one data point inside each potential wetland area boundary and the other point outside the boundary. Dominant plant species in each vegetation layer at each established data point were assessed visually and recorded on a data form. Indicator status of each dominant plant species was then recorded on the data form using the *National Wetland Indicator Status for Plant Species* (Natural Resources Conservation Service, 2006) for plants in Northeast Region 1. Species identification was confirmed using several botanical resources of plants occurring in Jefferson County and the Ohio region (Braun, 1967; Cooperrider, 1995; Cusick and Silberhorn, 1977; Fisher, 1988; Horn and Cathcart, 2005; Petrides, 1998; Rhoads and Block, 2000; Integrated Taxonomic Information System, 2006).

[2] WestLand established an alphabet character identification system to clearly distinguish between separate aquatic features. The field forms provided in Appendix B are sorted alphabetically.

Hydrology and soils at each data point were examined for primary and secondary wetland indicators. The area surrounding each data point was visually assessed to observe the extent of inundation, and soil samples were excavated using a soil auger, to 12 inches or less depending on soil composition. Soil characteristics (i.e., gleyed, mottled coloration), level of saturation, and any physical indicators of wetland hydrology were noted on the data forms.

The wetland delineation was then conducted based on results of wetland vegetation, hydrology, and soils parameters. Boundaries for the potential wetland areas were marked with sequentially numbered flagging at appropriate intervals along the boundary and mapped using a sub-meter accuracy handheld Trimble® Global Positioning System (GPS) unit. The areas were photographed to record current conditions of each potential wetland or drainage feature, including pertinent physical features and the surrounding area (Appendix B). As noted above, field data forms are provided in Appendix B, sorted alphabetically.

Data for the QHEI, developed by the OEPA, were collected at three locations in Cross Creek by BBL Sciences. One site was located upstream from the Property, near the west end of the Gould Tunnel. The second site was adjacent to and on the northwest side of the Property, above the confluence with McIntyre Creek. The third site was downstream from the Property, near the community of Kolmont and above the Gould Road bridge over Cross Creek. This procedure uses qualitative estimates of substrate, cover, channel morphology, and other characteristics to develop an overall evaluation of stream habitat quality. QHEI data for these three sites are included in Appendix B.

The ORAM for Wetlands, Version 5.0, was also applied to all wetland or aquatic features on the Property. This method makes use of a narrative rating system and a quantitative rating method to determine a wetland category for each feature. The narrative portion of this evaluation asks a series of questions to determine whether the wetland has special characteristics that would automatically place it in a Category 1 or Category 3. These characteristics include use by or habitat for threatened or endangered species, uncommon or high quality wetland features, or isolated and excavated features. The quantitative portion of this analysis requires input on six metrics, including size, buffers and surrounding land use, hydrology, habitat, special wetland communities, and plant communities. Numeric scores for each metric are totaled to give an overall score for the wetland feature. This score can then be compared with an established scale to determine the wetland category. Completed ORAM data forms for each wetland feature are also included in Appendix B.

A final tool for evaluating the habitat quality of the wetland features on the Property is the OEPA Headwater Habitat Evaluation Index (HHEI). This method is somewhat similar to the QHEI, but it is designed to evaluate conditions in primary headwater streams that influence downstream streams and rivers that could be evaluated with the QHEI. The intent of this method is to provide an estimate of stream habitat quality based on an evaluation of physical characteristics that can be observed in the field. The result of the analysis is to place a headwater stream into a three-tiered categorization scheme. However, this method is not an officially sanctioned policy or regulation of the OEPA, and its use at this time serves to provide additional information to

the agency for their final evaluation. Most wetland or channel features on the Property are hydrologically isolated with no downstream connection. Therefore those features do not constitute headwaters, and this method would not be appropriate in their evaluation. Four channels on the Property have drainage basins smaller than 1.0 mi^2 and a downstream connection to Cross Creek. These channels will be evaluated using the HHEI method during a site visit scheduled for April 2007, and the results will be provided as an addendum to this report.

CULVERT DRAINAGE SYSTEMS

WestLand field personnel also conducted an analysis to determine the extent of subsurface drainage flows through culverts within the former processing facility. Specifically, this analysis was intended to identify culvert inlet and outlet locations on and around the site to verify possible connections to Cross Creek. The methods used to determine the onsite culvert drainage system included a field investigation, the use of topographic mapping, and other relevant and available information for the Property.

The area on and around the processing facility was surveyed to determine drainage flow patterns, as well as the presence of culvert inlets and outlets. Each culvert inlet and outlet identified during the field investigation was mapped using aTrimble® GPS unit. In addition, photographs were taken to record the characteristics of each culvert feature as well as current drainage conditions. The figures showing the locations of the culverts and corresponding photographic documentation are included as Appendix D.

RESULTS

The following sections summarize our findings for the preliminary jurisdictional waters and wetland delineations and the onsite culvert drainage analysis.

JURISDICTIONAL WATERS DELINEATION

The Property was determined to contain one potentially jurisdictional stream, and no potentially federal jurisdictional wetlands, as defined by the ACOE. Areas determined by WestLand to meet the criteria for jurisdictional waters are delineated on the attached 1" = 200' aerial photograph with red lines and red hatching (Appendix A).

As indicated in Table 1, Cross Creek is a perennial stream and is anticipated to be determined as jurisdictional by the ACOE. Although a number of additional drainage and wetland features were identified within the Property, these features are not anticipated to be under the jurisdiction of the ACOE. Selected wetland features may be within the jurisdiction of the OEPA; others are likely not jurisdictional by any agency. For the purposes of this preliminary delineation, the extent of jurisdictional area of Cross Creek depicted in Appendix A is limited to that portion within the Property boundary, within which the proposed project would occur.

It should be noted that when the processing facility was active, discharges of storm and process water from the facility were covered under an individual National Pollutant Discharge Elimination System (NPDES) permit. Four discharge outfalls were established as part of the facility's permit (Appendix D). Outfall 002 was eventually removed from the permit. All of these outfalls discharge directly to Cross Creek. A "discharge" is defined, in part, at 40 CFR §122.2 as, "Any addition of any 'pollutant' or combination of pollutants to 'waters of the United States' from any 'point source'." By definition, therefore, Cross Creek is a water of the U.S., and drainage and wetland features upgradient of the identified discharge outfalls are not. As such, the majority of drainage and wetland features at the site are not jurisdictional. A more detailed description of the onsite culvert drainage system is included below in the Culvert Drainage Systems section.

Surface water features northwest of the slag pile (which do not discharge to Cross Creek through the NPDES outfalls) are comparable in structure, function, and values to drainage features J and K, upgradient of the NPDES outfalls. That is, the drainages are similar in width and flow regime, and the wetland features in size and connectivity to downgradient surface water features. As such, the surface water features northwest of the slag disposal areas (B and F) would likewise not be considered jurisdictional by the ACOE. In addition to the above, a number of onsite surface water features are hydrologically isolated from downstream receiving waters, (i.e. Cross Creek). In the absence of a migratory bird nexus, the primary remaining criteria for determining ACOE jurisdiction over isolated waters is the question of interstate commerce. Given the inactive status of the privately held Property, it would be difficult to establish an interstate commerce connection to the onsite, isolated waters. As such, these isolated surface water features would not be considered jurisdictional by the ACOE.

WETLAND DELINEATION

Table 1 provides a summary of identified surface water features on the Property and their potential regulatory status. Based on evaluation of site hydrology, soils, vegetation, and site conditions, it was determined that there are no potentially jurisdictional wetlands occurring within the Property. The wetland features were all determined to be OEPA Category 1 wetlands based on the results of the ORAM evaluation (Appendix B). These features support minimal wildlife habitat or hydrological function, provide no recreational function, and contain no threatened or endangered species or critical habitat. In addition, some of the ponds are acidic as a result of former coal mining activities and are isolated from other surface waters. As part of this analysis, WestLand submitted a Natural Heritage Data request to the Ohio Department of Natural Resources (ODNR) on June 27, 2006. The response provided by the ODNR dated June 28, 2006, confirmed that there are no records indicating the presence of any threatened or endangered species or other significant features within a three-mile radius of the site (Appendix E).

CULVERT DRAINAGE SYSTEMS

Stormwater discharges from the former processing facility generally flow from northwest to southeast across most of the site and downslope into a series of storm drains and ditches, some of which ultimately discharge into Cross Creek (Figure D-1). Although some of the subsurface drainage system connections were able to be

determined through field analysis, most of the connections from the former processing facility to the various stormwater drainage systems could not be verified. Given that the facility has not been operational for some time and multiple changes in Property ownership have occurred, site plans detailing the culvert drainage system were unavailable and it is unclear at this time if such plans exist for the former processing facility. Therefore, WestLand's analysis of the culvert drainage systems was based on the results of our visual observation, the use of topographic mapping, and our current understanding of former site operations, as well as previously permitted discharge activities.

During the onsite investigation, field personnel identified a total of six culvert drainage systems located on and around the main processing facility (Appendix D). Each of the culvert systems is discussed in Table 2.

CONCLUSIONS

WestLand evaluated the approximately 332-acre Property for potentially jurisdictional waters and wetlands. Results indicate that within the Property there is one potentially jurisdictional perennial stream and no potentially jurisdictional wetlands, as defined by the ACOE. All other wetland features on the Property are rated as Category 1 wetlands using the ORAM.

REFERENCES

Braun, E. L. 1967. The Monocotyledoneae – Cat-tails to Orchids. (A volume of The Vascular Flora of Ohio, a project of the Ohio Flora Committee and the Ohio Academy of Science). Ohio State University Press, Columbus. 464 pp.

Cooperrider, T. S. 1995. The Dicotyledoneae of Ohio. Part 2: Linaceae through Campanulaceae. (A volume of The Vascular Flora of Ohio, a project of the Ohio Flora Committee and the Ohio Academy of Science). Ohio State University Press, Columbus. 656 pp.

Cusick, A. W. and G. M. Silberhorn. 1977. The Vascular Plants of Unglaciated Ohio. Bulletin of the Ohio Geological Survey Vol. 5, No. 4. Ohio State University, Columbus, Ohio. 157 pp.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1. U.S. Army Corps of Engineers Waterways Experiment Station: Vicksburg, MS.

EPA and Corps. 2001. Memorandum: Supreme Court Ruling Concerning CWA Jurisdiction over Isolated Waters. January 19, 2001.

EPA and Corps. 2003. Advance Notice of Proposed Rulemaking on the Clean Water Act Regulatory Definition of "Waters of the United States." Federal Register Volume 68, Number 10; January 15, 2003, pages 1991-1998.

Fisher, T. R. 1988. The Dicotyledoneae of Ohio. Part 3: Asteraceae. (A volume of The Vascular Flora of Ohio, a project of the Ohio Flora Committee and the Ohio Academy of Science). Ohio State University Press, Columbus. 280 pp.

Horn, D. and T. Cathcart. 2005. Wildflowers of Tennessee, the Ohio Valley, and the Southern Appalachians. Lone Pine Publishing, Auburn, Washington. 495 pp.

Integrated Taxonomic Information System (ITIS). 2006. On-line data base of taxonomic information provided by an international partnership of government agencies and institutions. Internet site: http://www.itis.usda.gov. Accessed multiple dates, May-August, 2006.

Natural Resources Conservation Service (NRCS). 2006. National Wetland Indicator Status for Plant Species: List for Ohio (Northeast Region 1). Internet site: http://plants.nrcs.usda.gov/cgi_bin/topics.cgi?earl=wetland.html. Accessed multiple dates, May-August, 2006.

Petrides, G. A. 1998. Field Guide to Eastern Trees. Peterson Field Guide Series. Houghton Mifflin Company, New York. 424 pp.

Rhoads, A. F. and T. A. Block. 2000. The Plants of Pennsylvania. University of Pennsylvania Press, Philadelphia. 1061 pp.

Table 1. Potential Waters of the U.S. at the Former Satralloy Facility

Drainage/ Wetland Feature ID	Data Points	Comments	Potential 404 Jurisdiction
A	1 & 2	Cross Creek on north side of site. Perennial stream, flows into Ohio River about 4 miles downstream from site.	Yes
B	3 & 4	Small tributary to Cross Creek, segment A. Flow presumably perennial (observed in December, May, and July). Source in seepage areas at toe of slag pile. Original seepage zone may be buried by slag. Feature B is comparable to drainage Features J and K upgradient of designated discharge outfalls.	No
C	5 &6 7 & 8	Northwest area is wide, shallow drainage area across site, with no defined flow channel. Northeast area is confined by Gould Road and industrial site. Significant flow into this roadside area through culvert from Feature K. Outlet through culverts to Cross Creek, Segment H. Feature C is upgradient of the designated discharge outfalls.	No
D	9 & 10	Vegetated drainage channel across smelter site. Fed by culvert from Feature E. Downstream outlet through culvert to Cross Creek. Feature D is upgradient of the designated discharge outfalls.	No
E	11 &12	Vegetated drainage feature adjacent to processing building. Additional seepage from steep slope to the northwest. Culvert outlet flows to Feature D. Feature E is upgradient of designated discharge outfalls.	No
F	13 &14	Small tributary to Cross Creek, Segment A. Flow low but presumably perennial (observed in December, May, and July). Source in natural seepage areas east of slag pile. Feature F is comparable to drainage Features J and K upgradient of designated discharge outfalls.	No
G	15 &16	Human-induced wetland at east end of slag pile. Closed basin with no discharge. At high water levels, some possible discharge adjacent to slopes where it infiltrates. Feature G is hydrologically isolated from downstream receiving surface waters. This wetland feature is almost entirely within a private inholding within the Satralloy Property.	No
H	none	Continuation of Cross Creek on south side of site. Flow is greater than in Segment A because of addition of flow from McIntyre Creek.	Yes
I	21 & 22	Narrow, isolated basin at toe of slope, may have been created by construction of railroad grade. Feature I is hydrologically isolated from downstream receiving surface waters.	No
J	17 &18	Several small tributaries that combine to flow through a culvert under the abandoned railroad grade into Feature K. Mostly narrow channels, with some wider areas of seepage; in some areas OHWM was indistinct. Feature J is upgradient of the designated discharge outfalls.	No
K	19 & 20	Narrow drainage feature. Surface flow evident, fed by J drainage. Feature K is upgradient of the designated discharge outfalls.	No

Table 1. Potential Waters of the U.S. at the Former Satralloy Facility

Drainage/ Wetland Feature ID	Data Points	Comments	Potential 404 Jurisdiction
L	23 & 24	Vegetated shallow basin in front of smelter site. This feature appears to be the result of soil excavation activities during the construction of a berm along Gould Road. Feature L outlets through two culverts that discharge to Cross Creek. Feature L is upgradient of the designated discharge outfalls.	No
M	25 & 26	Man-induced feature in isolated, closed basin underlain by smelter slag. Feature M is hydrologically isolated from downstream receiving surface waters.	No
N	27 & 28	Man-induced feature in isolated, closed basin underlain by smelter slag. Feature N is hydrologically isolated from downstream receiving surface waters.	No
O	29 & 30	Small basin with ponded stormwater. Outlet at west end to culvert that appears to connect with outlet culvert from Feature K. Feature O is upgradient of the designated discharge outfalls.	No
P	35 & 36	Extensive saturated area along abandoned railroad grade. Outlets to drainage feature EE. Feature P is hydrologically isolated from downstream receiving surface waters.	No
Q	31 & 32	Extensive saturated area along abandoned railroad grade, east of Feature P. The surface flow continues down to another abandoned railroad grade at which point surface flow infiltrates. Feature Q is hydrologically isolated from downstream receiving surface waters.	No
R	33 & 34	Isolated, human-induced, closed basin near abandoned railroad grade. No downstream flow. Feature R is hydrologically isolated from downstream receiving surface waters.	No
S	39 & 40	Extensive area of channels and seepage on steep slope. Downstream end merges with Feature P across a wide saturated area. Upper end crossed by old road related to smelting and slag disposal operations. Feature S is hydrologically isolated from downstream receiving surface waters.	No
T	57 & 58	Extensive area of channels and seepage on steep slope. Downstream end merges with Feature P across a wide saturated area. Upper end appears to be impacted by waste disposal from coal mining operations. Feature T is hydrologically isolated from downstream receiving surface waters.	No
U	37 & 38	Isolated seepage area, underlain by slag material. Slag material stockpiled within the feature. Seepage feature is hydrologically isolated from downstream receiving surface waters.	No
V	41 & 42	Saturated area along the south side of the abandoned railroad grade. Surface water infiltrates. Feature V is hydrologically isolated from downstream receiving surface waters.	No
W	43 & 44	Isolated seepage area along an old mining road. Seepage feature W is hydrologically isolated from downstream receiving waters.	No

Table 1. Potential Waters of the U.S. at the Former Satralloy Facility

Drainage/ Wetland Feature ID	Data Points	Comments	Potential 404 Jurisdiction
X	67 & 68	Drainage feature located at the toe of existing slag pile, underlain by slag material. No evidence of surface flow; some areas within downgradient basin (below slag pile) were saturated. Feature X is hydrologically isolated from downstream receiving surface waters.	No
Y	47 & 48	Isolated, closed basin in abandoned coal strip mine. Also impacted by slag from chromium smelter. Supports aquatic vertebrates including frogs, salamanders, and turtles. Feature Y is hydrologically isolated from downstream receiving waters.	No
Z	51 & 52	Isolated, closed basin in abandoned coal strip mine. Feature Z is hydrologically isolated from downstream receiving surface waters.	No
AA	49 & 50	Isolated, closed basin in abandoned coal strip mine. Feature AA is hydrologically isolated from downstream receiving surface waters.	No
BB	N/A	This drainage feature was determined to be outside of the Property boundary and is not considered in this analysis.	N/A
CC	55 & 56	Isolated, closed basin in abandoned coal strip mine. Feature CC is hydrologically isolated from downstream receiving surface waters.	No
DD	53 & 54	Isolated, basin and channel in abandoned coal strip mine. Feature DD is hydrologically isolated from downstream receiving surface waters.	No
EE	61 & 62	Narrow channel with some flow at inlet from Feature P. All surface flow infiltrates at the toe of the slope. Feature EE is hydrologically isolated from downstream receiving surface waters.	No
FF	59 & 60	Small, isolated area of seepage on slope, may be related to old roadway. No downstream connection, flow disappears through infiltration. Feature FF is hydrologically isolated from downstream receiving surface waters.	No
GG	65 & 66	Human-induced feature in isolated, closed basin underlain by smelter slag. Feature GG is hydrologically isolated from downstream receiving surface waters.	No
HH	63 & 64	Small, isolated area upgradient of drainage feature J. Located adjacent to old roadway. No downstream connection. Feature HH is hydrologically isolated from downstream receiving surface waters.	No

Table 2. Culvert Drainage Systems at the Former Satralloy Facility

Culvert System Designator	Comments	Discharge to Cross Creek
CS1	Culvert System 1, consisting of a 36 inch corrugated metal pipe (CMP) inlet, originates at the southeast boundary of Feature E. It is presumed that subsurface flows discharge into Feature D. Surface flows at the downgradient end of Feature D are then captured by a 36 inch CMP inlet (NPDES outfall 004), which extends under Gould Road and discharges into Cross Creek (NPDES outfall 001) (Figures D-2 and D-3). Surface flow discharges were evident at the time of our site visit. In addition, a small 12 inch CMP outlet was located along the northeast side of Feature D, adjacent to the culvert inlet above Gould Road. No surface water discharge was evident from this outlet and the source of this CMP could not be determined.	Yes
CS2	Culvert System 2, consisting of two 12 inch CMPs, originates in the southwestern portion of Feature L (Figures D-4 and D-5). This section of Feature L was not inundated with surface water and discharge from the culvert was not evident at the time of the site visit, indicating that this system may have only ephemeral or seasonal flows. Evidence of concrete material was found covering both culvert inlets. Both culverts extend under Gould Road and discharge into Cross Creek.	Yes
CS3	Culvert System 3 consists of a series of inlet and outlet locations (Figures D-6 and D-7). The system originates at a 36 inch CMP inlet at the bottom of Feature J, above the abandoned railroad grade. The system discharges into Feature K and enters a 36 inch CMP inlet at the bottom of that feature. Subsurface flows continue across the site and appear to connect with the culvert inlet at Feature O. It is presumed that the system traverses the site and discharges into Feature C through a 36 inch culvert outlet. Surface flows then enter another 36 inch culvert inlet (NPDES outfall 003) along the southeastern boundary of Feature C. This culvert extends under Gould Road and discharges into Cross Creek (NPDES outfall 002). Surface flows and discharge were evident throughout most of the culvert system, indicating intermittent or perennial flow. Note that the culvert drainage systems and subsurface flows for the culvert inlet and outlet along the southwestern segment of Feature C could not be determined based on field analysis and available site information.	Yes
CS4	Culvert System 4, consisting of a 12 inch plastic pipe, originates along Gould Road at the northeast end of Feature C (Figures D-8 and D-9). At the time of the site visit, some surface water was collecting in the vegetated ditch, resulting in minimal discharge. The culvert system extends under Gould Road and discharges above Cross Creek.	Yes
CS5	Culvert System 5, consisting of a 12 inch CMP, originates at the southeast end of Feature P above the processing facility and extends under the abandoned railroad grade, discharging into Feature EE (Figures D-10 and D-11). Drainage Feature EE is isolated and does not extend onto the main processing plant site. Surface flows infiltrate at the southern end of this feature.	No

Table 2. Culvert Drainage Systems at the Former Satralloy Facility

Culvert System Designator	Comments	Discharge to Cross Creek
CS6	Culvert System 6 originates in a drainage ditch located along the north side of Gould Road at the southeast Property boundary (Figures D-12 and D-13). The 12 inch plastic culvert extends beneath the road and discharges above Cross Creek. This ditch appears to be carrying stormwater flows from the east and there is no evidence of flows or discharges in the direction of, or associated with, the Property.	Yes

Note: The subsurface drainage flows of these culvert systems are presumed based on field analysis and available information for the former processing facility.

APPENDIX A

PRELIMINARY SECTION 404 JURISDICTIONAL DELINEATION

APPENDIX B

WETLAND AND DRAINAGE ANALYSIS

Photo point: PP8
Photo reference: A-1
View: Cross Creek, downstream, north side of site

Photo point: PP9
Photo reference: A-2
View: Cross Creek, upstream, northwest side of site

Photo point: PP40
Photo reference: H-1
View: Cross Creek, downstream, southeast end of site

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Flowing channel of Cross Creek, tributary to Ohio River.*	Data Point No.:	*DP-1*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*No significant disturbances at this point.*	Location:	*~10' north of A-18.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Polygonum pensylvanicum*	*FACW*	*H*	8			
2	*Carex* sp.	*	*H*	9			
3	*Sorghum halepense*	*FACU*	*H*	10			
4				11			
5				12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *≥ 67%*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

* *Carex* sp. *is likely FAC, FACW, or OBL. All vegetation is on bank adjacent to stream channel.*

SOIL

Soil Type: *Tioga Silt Loam* Hydric Soils List: *Yes*

Horizon - Matrix Color: - Depth: - Gleyed? *No*

Mottles? *No* Mottle Colors: - Histic Epipedon? *No*

Other hydric soil indicators: *No soil present. Unconsolidated stream bed.*

Is the hydric soil criterion met? *No* Rationale: *No soil present.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *6"*

Is the soil saturated? -

Depth to free-standing water in probe hole: -

Other field evidence of hydrology: *Flowing channel of Cross Creek.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Inundated.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No hydric soil. However, site is a jurisdictional water of the United States. R3UB1*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, L. Rae*

Project No.: *1271.01* Date: *5/8/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*On slope above Cross Creek, near base of rocky cliff.*	Data Point No.:	*DP-2*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*No significant disturbances at this point.*	Location:	*~15' south of A-18.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Platanus occidentalis*	*FACW*	*T*	8			
2	*Acer negundo*	*FAC+*	*T*	9			
3	*Acer saccharum*	*FACU*	*T*	10			
4	*Trillium grandiflorum*	*UPL*	*H*	11			
5	*Alliaria petiolata*	*FACU*	*H*	12			
6	*Ranunculus* sp.	*	*H*	13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *50%*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

* *Ranunculus* sp. *is likely FAC, FACW, or OBL.*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: *10 YR 3/3* Depth: *8"* Gleyed? *No*

Mottles? *None* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *None. Poor soil development on steep slope.*

Is the hydric soil criterion met? *No* Rationale: *High chroma, no mottles.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *Some water on surface of rocks, but no saturation.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for soil or hydrology.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, L. Rae*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name:	Cross Creek

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Site is main channel of Cross Creek on northwest and southeast sides of property and defined by ordinary high water mark.

Final score 52.5	**Category**	2

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

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subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	5
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	1
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	1
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	3
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	4
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

15

subtotal

33

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	**YES** Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	**NO** Assign a score of 4 since there are no or no apparent modifications.	**NOT SURE** Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		score
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	4
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	5
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

9

subtotal

46.5

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	3
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

3

subtotal

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	5	
	Metric 2. Buffers and surrounding land use	8	
	Metric 3. Hydrology	20	
	Metric 4. Habitat	13.5	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	6	
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	52.5	Category based on score breakpoints 2

Complete Wetland Categorization Worksheet.

OhioEPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 76

Stream & Location: Cross Creek, Upstream **RM:** _ _ _._ **Date:** 08 / 22 / 06

Scorers Full Name & Affiliation: David Buys, BBL Sciences

River Code: _ _ _ - _ _ _ - _ _ _ **STORET #:** _ _ _ _ _ _ **Lat./ Long.:** (NAD 83 - decimal °) 40 . 3216 / 80 . 6757 Office verified location ☐

1] SUBSTRATE
Check **ONLY Two** substrate *TYPE BOXES*; estimate % or note every type present

Check ONE (*Or 2 & average*)

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐ ☐ BLDR /SLABS [10]			☐ ☐ HARDPAN [4]		
☐ ☐ BOULDER [9]			☐ ☐ DETRITUS [3]		
☐ ☒ COBBLE [8]			☐ ☐ MUCK [2]		
☐ ☒ GRAVEL [7]			☐ ☐ SILT [2]		
☐ ☐ SAND [6]			☐ ☐ ARTIFICIAL [0]		
☐ ☐ BEDROCK [5]					

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: ☒ 4 or more [2] ☐ 3 or less [0]

ORIGIN
☐ LIMESTONE [1] ☐ TILLS [1] ☐ WETLANDS [0] ☐ HARDPAN [0] ☒ SANDSTONE [0] ☐ RIP/RAP [0] ☐ LACUSTURINE [0] ☐ SHALE [-1] ☐ COAL FINES [-2]

QUALITY
SILT: ☐ HEAVY [-2] ☒ MODERATE [-1] ☒ NORMAL [0] ☐ FREE [1]
EMBEDDEDNESS: ☐ EXTENSIVE [-2] ☒ MODERATE [-1] ☒ NORMAL [0] ☐ NONE [1]

Comments

Substrate 16 *Maximum 20*

2] INSTREAM COVER
Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

___ UNDERCUT BANKS [1]	2 POOLS > 70cm [2]	___ OXBOWS, BACKWATERS [1]
___ OVERHANGING VEGETATION [1]	___ ROOTWADS [1]	___ AQUATIC MACROPHYTES [1]
2 SHALLOWS (IN SLOW WATER) [1]	2 BOULDERS [1]	2 LOGS OR WOODY DEBRIS [1]
___ ROOTMATS [1]		

AMOUNT
Check ONE (*Or 2 & average*)
☐ EXTENSIVE >75% [11] ☒ MODERATE 25-75% [7] ☐ SPARSE 5-<25% [3] ☐ NEARLY ABSENT <5% [1]

Comments

Cover Maximum 20 12

3] CHANNEL MORPHOLOGY
Check ONE in each category (*Or 2 & average*)

SINUOSITY
☐ HIGH [4] ☐ MODERATE [3] ☒ LOW [2] ☐ NONE [1]

DEVELOPMENT
☐ EXCELLENT [7] ☒ GOOD [5] ☐ FAIR [3] ☐ POOR [1]

CHANNELIZATION
☒ NONE [6] ☐ RECOVERED [4] ☐ RECOVERING [3] ☐ RECENT OR NO RECOVERY [1]

STABILITY
☒ HIGH [3] ☒ MODERATE [2] ☐ LOW [1]

Comments

Channel Maximum 20 15.5

4] BANK EROSION AND RIPARIAN ZONE
Check **ONE** in each category for *EACH BANK* (*Or 2 per bank & average*)

River right looking downstream

EROSION (L R)
☒ ☒ NONE / LITTLE [3] ☐ ☐ MODERATE [2] ☐ ☐ HEAVY / SEVERE [1]

RIPARIAN WIDTH (L R)
☐ ☒ WIDE > 50m [4] ☐ ☐ MODERATE 10-50m [3] ☒ ☐ NARROW 5-10m [2] ☐ ☐ VERY NARROW < 5m [1] ☐ ☐ NONE [0]

FLOOD PLAIN QUALITY (L R)
☒ ☒ FOREST, SWAMP [3] ☐ ☐ SHRUB OR OLD FIELD [2] ☐ ☐ RESIDENTIAL, PARK, NEW FIELD [1] ☐ ☐ FENCED PASTURE [1] ☐ ☐ OPEN PASTURE, ROWCROP [0]

(L R)
☐ ☐ CONSERVATION TILLAGE [1] ☐ ☐ URBAN OR INDUSTRIAL [0] ☐ ☐ MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian Maximum 10 9

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH
Check **ONE** (*ONLY!*)
☐ > 1m [6] ☒ 0.7-<1m [4] ☐ 0.4-<0.7m [2] ☐ 0.2-<0.4m [1] ☐ < 0.2m [0]

CHANNEL WIDTH
Check ONE (*Or 2 & average*)
☒ POOL WIDTH > RIFFLE WIDTH [2] ☐ POOL WIDTH = RIFFLE WIDTH [1] ☐ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY
Check ALL that apply
☐ TORRENTIAL [-1] ☐ VERY FAST [1] ☒ FAST [1] ☒ MODERATE [1] ☒ SLOW [1] ☐ INTERSTITIAL [-1] ☐ INTERMITTENT [-2] ☐ EDDIES [1]
Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current Maximum 12 9

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). ☐ NO RIFFLE [metric=0]

RIFFLE DEPTH
☒ BEST AREAS > 10cm [2] ☐ BEST AREAS 5-10cm [1] ☐ BEST AREAS < 5cm [metric=0]

RUN DEPTH
☐ MAXIMUM > 50cm [2] ☒ MAXIMUM < 50cm [1]

RIFFLE / RUN SUBSTRATE
☒ STABLE (e.g., Cobble, Boulder) [2] ☐ MOD. STABLE (e.g., Large Gravel) [1] ☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]

RIFFLE / RUN EMBEDDEDNESS
☒ NONE [2] ☒ LOW [1] ☐ MODERATE [0] ☐ EXTENSIVE [-1]

Comments

Riffle / Run Maximum 8 6.5

6] GRADIENT (15.3 ft/mi)
DRAINAGE AREA (82.67 mi²)

☐ VERY LOW - LOW [2-4] ☐ MODERATE [6-10] ☒ HIGH - VERY HIGH [10-6]

%POOL: %GLIDE: %RUN: %RIFFLE:

Gradient Maximum 10 8

OhioEPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 77

Stream & Location: Cross Creek, Adjacent **RM:** _ _ _._ **Date:** 08 / 22 / 06

Scorers Full Name & Affiliation: David Buys, BBL Sciences

River Code: _ _ _-_ _ _-_ _ _ **STORET #:** _ _ _ _ _ _ **Lat./Long.:** (NAD 83 - decimal °) 40 . 3115 / 80 . 6796 Office verified location ☐

1] SUBSTRATE
Check *ONLY* Two substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES	POOL	RIFFLE
☐ ☐ BLDR /SLABS [10]		
☐ ☐ BOULDER [9]		
☐ ☒ COBBLE [8]		
☐ ☒ GRAVEL [7]		
☐ ☐ SAND [6]		
☐ ☐ BEDROCK [5]		

OTHER TYPES	POOL	RIFFLE
☐ ☐ HARDPAN [4]		
☐ ☐ DETRITUS [3]		
☐ ☐ MUCK [2]		
☐ ☐ SILT [2]		
☐ ☐ ARTIFICIAL [0]		

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: ☒ 4 or more [2] ☐ 3 or less [0]

Check ONE (*Or 2 & average*)

ORIGIN
- ☐ LIMESTONE [1]
- ☐ TILLS [1]
- ☐ WETLANDS [0]
- ☐ HARDPAN [0]
- ☒ SANDSTONE [0]
- ☐ RIP/RAP [0]
- ☐ LACUSTURINE [0]
- ☐ SHALE [-1]
- ☐ COAL FINES [-2]

SILT / EMBEDDEDNESS

QUALITY
- ☐ HEAVY [-2]
- ☒ MODERATE [-1]
- ☒ NORMAL [0]
- ☐ FREE [1]
- ☐ EXTENSIVE [-2]
- ☒ MODERATE [-1]
- ☒ NORMAL [0]
- ☐ NONE [1]

Comments

Substrate 16 *Maximum 20*

2] INSTREAM COVER
Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

___ UNDERCUT BANKS [1]	2 POOLS > 70cm [2]	___ OXBOWS, BACKWATERS [1]	
___ OVERHANGING VEGETATION [1]	___ ROOTWADS [1]	2 AQUATIC MACROPHYTES [1]	
2 SHALLOWS (IN SLOW WATER) [1]	2 BOULDERS [1]	___ LOGS OR WOODY DEBRIS [1]	
___ ROOTMATS [1]			

AMOUNT Check ONE (*Or 2 & average*)
- ☐ EXTENSIVE >75% [11]
- ☒ MODERATE 25-75% [7]
- ☐ SPARSE 5-<25% [3]
- ☐ NEARLY ABSENT <5% [1]

Comments

Cover Maximum 20 12

3] CHANNEL MORPHOLOGY
Check ONE in each category (*Or 2 & average*)

SINUOSITY
- ☐ HIGH [4]
- ☐ MODERATE [3]
- ☐ LOW [2]
- ☒ NONE [1]

DEVELOPMENT
- ☐ EXCELLENT [7]
- ☒ GOOD [5]
- ☐ FAIR [3]
- ☐ POOR [1]

CHANNELIZATION
- ☒ NONE [6]
- ☐ RECOVERED [4]
- ☐ RECOVERING [3]
- ☐ RECENT OR NO RECOVERY [1]

STABILITY
- ☒ HIGH [3]
- ☐ MODERATE [2]
- ☐ LOW [1]

Comments

Channel Maximum 20 15

4] BANK EROSION AND RIPARIAN ZONE
Check ONE in each category for *EACH BANK* (*Or 2 per bank & average*)

River right looking downstream

EROSION

L	R	
☒	☒	NONE / LITTLE [3]
☐	☐	MODERATE [2]
☐	☐	HEAVY / SEVERE [1]

RIPARIAN WIDTH

L	R	
☒	☐	WIDE > 50m [4]
☐	☐	MODERATE 10-50m [3]
☐	☒	NARROW 5-10m [2]
☐	☒	VERY NARROW < 5m [1]
☐	☐	NONE [0]

FLOOD PLAIN QUALITY

L	R	
☒	☐	FOREST, SWAMP [3]
☐	☒	SHRUB OR OLD FIELD [2]
☐	☐	RESIDENTIAL, PARK, NEW FIELD [1]
☐	☐	FENCED PASTURE [1]
☐	☐	OPEN PASTURE, ROWCROP [0]

L	R	
☐	☐	CONSERVATION TILLAGE [1]
☐	☐	URBAN OR INDUSTRIAL [0]
☐	☐	MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian Maximum 10 8.25

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH Check ONE (*ONLY!*)
- ☒ > 1m [6]
- ☐ 0.7-<1m [4]
- ☐ 0.4-<0.7m [2]
- ☐ 0.2-<0.4m [1]
- ☐ < 0.2m [0]

CHANNEL WIDTH Check ONE (*Or 2 & average*)
- ☒ POOL WIDTH > RIFFLE WIDTH [2]
- ☐ POOL WIDTH = RIFFLE WIDTH [1]
- ☐ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY Check ALL that apply
- ☐ TORRENTIAL [-1]
- ☐ VERY FAST [1]
- ☒ FAST [1]
- ☒ MODERATE [1]
- ☒ SLOW [1]
- ☐ INTERSTITIAL [-1]
- ☐ INTERMITTENT [-2]
- ☐ EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current Maximum 12 11

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). ☐ NO RIFFLE [metric=0]

RIFFLE DEPTH
- ☒ BEST AREAS > 10cm [2]
- ☐ BEST AREAS 5-10cm [1]
- ☐ BEST AREAS < 5cm [metric=0]

RUN DEPTH
- ☒ MAXIMUM > 50cm [2]
- ☐ MAXIMUM < 50cm [1]

RIFFLE / RUN SUBSTRATE
- ☒ STABLE (e.g., Cobble, Boulder) [2]
- ☒ MOD. STABLE (e.g., Large Gravel) [1]
- ☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]

RIFFLE / RUN EMBEDDEDNESS
- ☐ NONE [2]
- ☒ LOW [1]
- ☐ MODERATE [0]
- ☐ EXTENSIVE [-1]

Comments

Riffle / Run Maximum 8 6.5

6] GRADIENT
(15.3 ft/mi)

DRAINAGE AREA
(82.67 mi²)

- ☐ VERY LOW - LOW [2-4]
- ☐ MODERATE [6-10]
- ☒ HIGH - VERY HIGH [10-6]

%POOL: %GLIDE:
%RUN: %RIFFLE:

Gradient Maximum 10 8

Ohio EPA — Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 81

Stream & Location: Cross Creek, Downstream **RM:** _ _ _._ **Date:** 08/22/06

Scorers Full Name & Affiliation: David Buys, BBL Sciences

River Code: _ _ _ - _ _ _ - _ _ _ **STORET #:** _ _ _ _ _ _ **Lat./Long.:** (NAD 83 - decimal °) 40.3105 /80.6610 Office verified location ☐

1] SUBSTRATE
Check *ONLY* Two substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐ ☐ BLDR /SLABS [10]			☐ ☐ HARDPAN [4]		
☐ ☒ BOULDER [9]			☐ ☐ DETRITUS [3]		
☐ ☒ COBBLE [8]			☐ ☐ MUCK [2]		
☐ ☐ GRAVEL [7]			☐ ☐ SILT [2]		
☐ ☐ SAND [6]			☐ ☐ ARTIFICIAL [0]		
☐ ☐ BEDROCK [5]					

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: ☒ 4 or more [2] ☐ 3 or less [0]

Check ONE (*Or 2 & average*)

ORIGIN	EMBEDDEDNESS	QUALITY
☐ LIMESTONE [1]	SILT	☐ HEAVY [-2]
☐ TILLS [1]		☒ MODERATE [-1]
☐ WETLANDS [0]		☒ NORMAL [0]
☐ HARDPAN [0]		☐ FREE [1]
☒ SANDSTONE [0]		☐ EXTENSIVE [-2]
☐ RIP/RAP [0]		☒ MODERATE [-1]
☐ LACUSTURINE [0]		☒ NORMAL [0]
☐ SHALE [-1]		☐ NONE [1]
☐ COAL FINES [-2]		

Substrate 18 *Maximum 20*

Comments

2] INSTREAM COVER
Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

___ UNDERCUT BANKS [1]	2 POOLS > 70cm [2]	___ OXBOWS, BACKWATERS [1]
___ OVERHANGING VEGETATION [1]	___ ROOTWADS [1]	2 AQUATIC MACROPHYTES [1]
2 SHALLOWS (IN SLOW WATER) [1]	2 BOULDERS [1]	___ LOGS OR WOODY DEBRIS [1]
___ ROOTMATS [1]		

AMOUNT (Check ONE (*Or 2 & average*))
☐ EXTENSIVE >75% [11]
☒ MODERATE 25-75% [7]
☐ SPARSE 5-<25% [3]
☐ NEARLY ABSENT <5% [1]

Comments

Cover Maximum 20 12

3] CHANNEL MORPHOLOGY
Check ONE in each category (*Or 2 & average*)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐ HIGH [4]	☐ EXCELLENT [7]	☒ NONE [6]	☒ HIGH [3]
☐ MODERATE [3]	☒ GOOD [5]	☐ RECOVERED [4]	☐ MODERATE [2]
☒ LOW [2]	☐ FAIR [3]	☐ RECOVERING [3]	☐ LOW [1]
☐ NONE [1]	☐ POOR [1]	☐ RECENT OR NO RECOVERY [1]	

Comments

Channel Maximum 20 16

4] BANK EROSION AND RIPARIAN ZONE
Check ONE in each category for *EACH BANK* (*Or 2 per bank & average*)
River right looking downstream

EROSION (L / R)	RIPARIAN WIDTH (L / R)	FLOOD PLAIN QUALITY (L / R)	(L / R)
☒ ☒ NONE / LITTLE [3]	☐ ☒ WIDE > 50m [4]	☒ ☒ FOREST, SWAMP [3]	☐ ☐ CONSERVATION TILLAGE [1]
☐ ☐ MODERATE [2]	☒ ☐ MODERATE 10-50m [3]	☐ ☐ SHRUB OR OLD FIELD [2]	☐ ☐ URBAN OR INDUSTRIAL [0]
☐ ☐ HEAVY / SEVERE [1]	☐ ☐ NARROW 5-10m [2]	☒ ☐ RESIDENTIAL, PARK, NEW FIELD [1]	☐ ☐ MINING / CONSTRUCTION [0]
	☐ ☐ VERY NARROW < 5m [1]	☐ ☐ FENCED PASTURE [1]	
	☒ ☐ NONE [0]	☐ ☐ OPEN PASTURE, ROWCROP [0]	

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian Maximum 10 8.25

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH (Check ONE (*ONLY!*))
☒ > 1m [6]
☐ 0.7-<1m [4]
☐ 0.4-<0.7m [2]
☐ 0.2-<0.4m [1]
☐ < 0.2m [0]

CHANNEL WIDTH (Check ONE (*Or 2 & average*))
☒ POOL WIDTH > RIFFLE WIDTH [2]
☐ POOL WIDTH = RIFFLE WIDTH [1]
☐ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY (Check ALL that apply)
☐ TORRENTIAL [-1] ☒ SLOW [1]
☐ VERY FAST [1] ☐ INTERSTITIAL [-1]
☒ FAST [1] ☐ INTERMITTENT [-2]
☒ MODERATE [1] ☐ EDDIES [1]
Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current Maximum 12 11

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). ☐ NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
☒ BEST AREAS > 10cm [2]	☒ MAXIMUM > 50cm [2]	☒ STABLE (e.g., Cobble, Boulder) [2]	☒ NONE [2]
☐ BEST AREAS 5-10cm [1]	☐ MAXIMUM < 50cm [1]	☐ MOD. STABLE (e.g., Large Gravel) [1]	☒ LOW [1]
☐ BEST AREAS < 5cm [metric=0]		☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☐ MODERATE [0]
			☐ EXTENSIVE [-1]

Comments

Riffle / Run Maximum 8 7.5

6] GRADIENT
(12.3 ft/mi)
DRAINAGE AREA
(124.5 mi²)

☐ VERY LOW - LOW [2-4]
☐ MODERATE [6-10]
☒ HIGH - VERY HIGH [10-6]

%POOL: %GLIDE:
%RUN: %RIFFLE:

Gradient Maximum 10 8

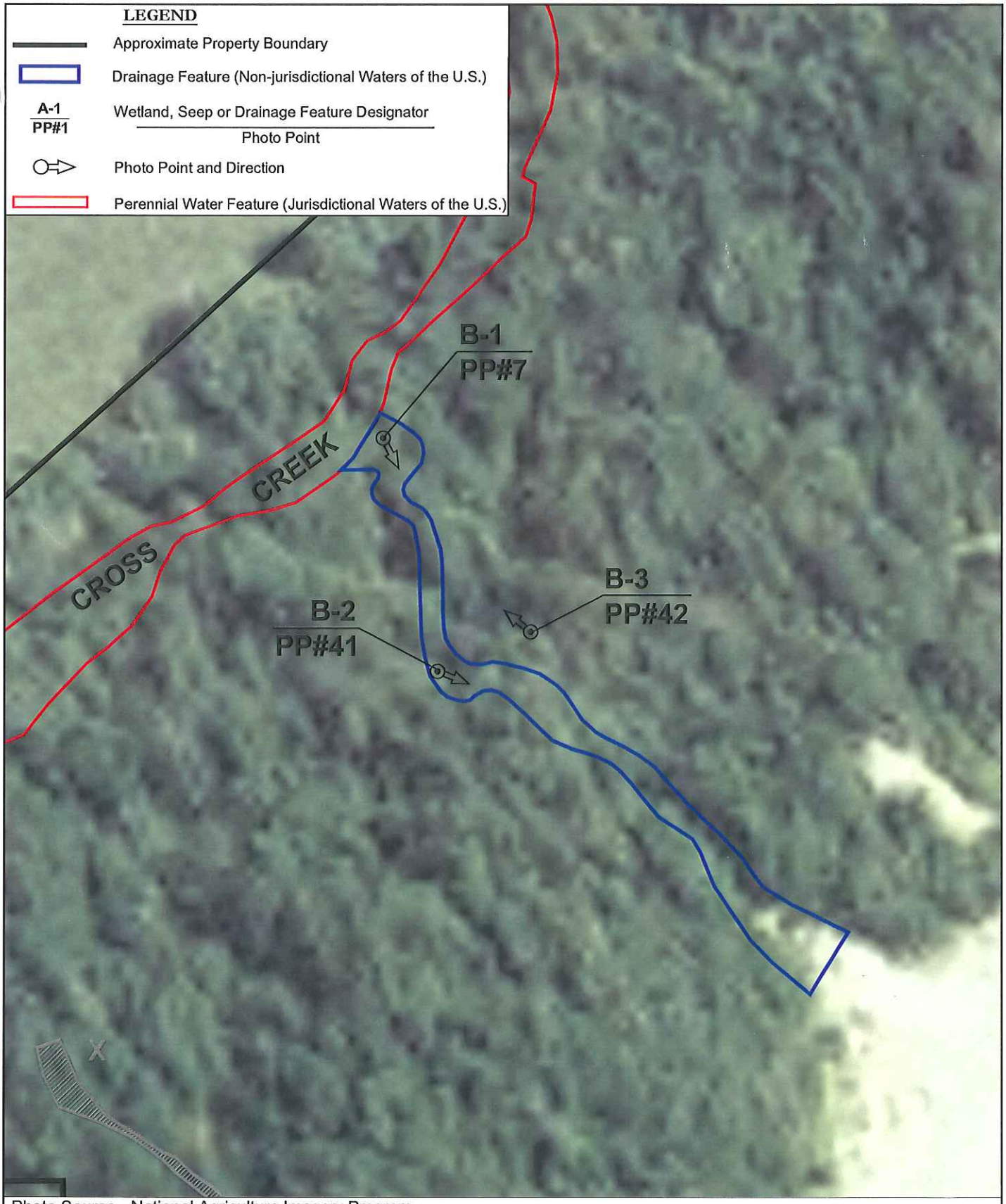


Photo Source - National Agriculture Imagery Program
Photo Date - 2004

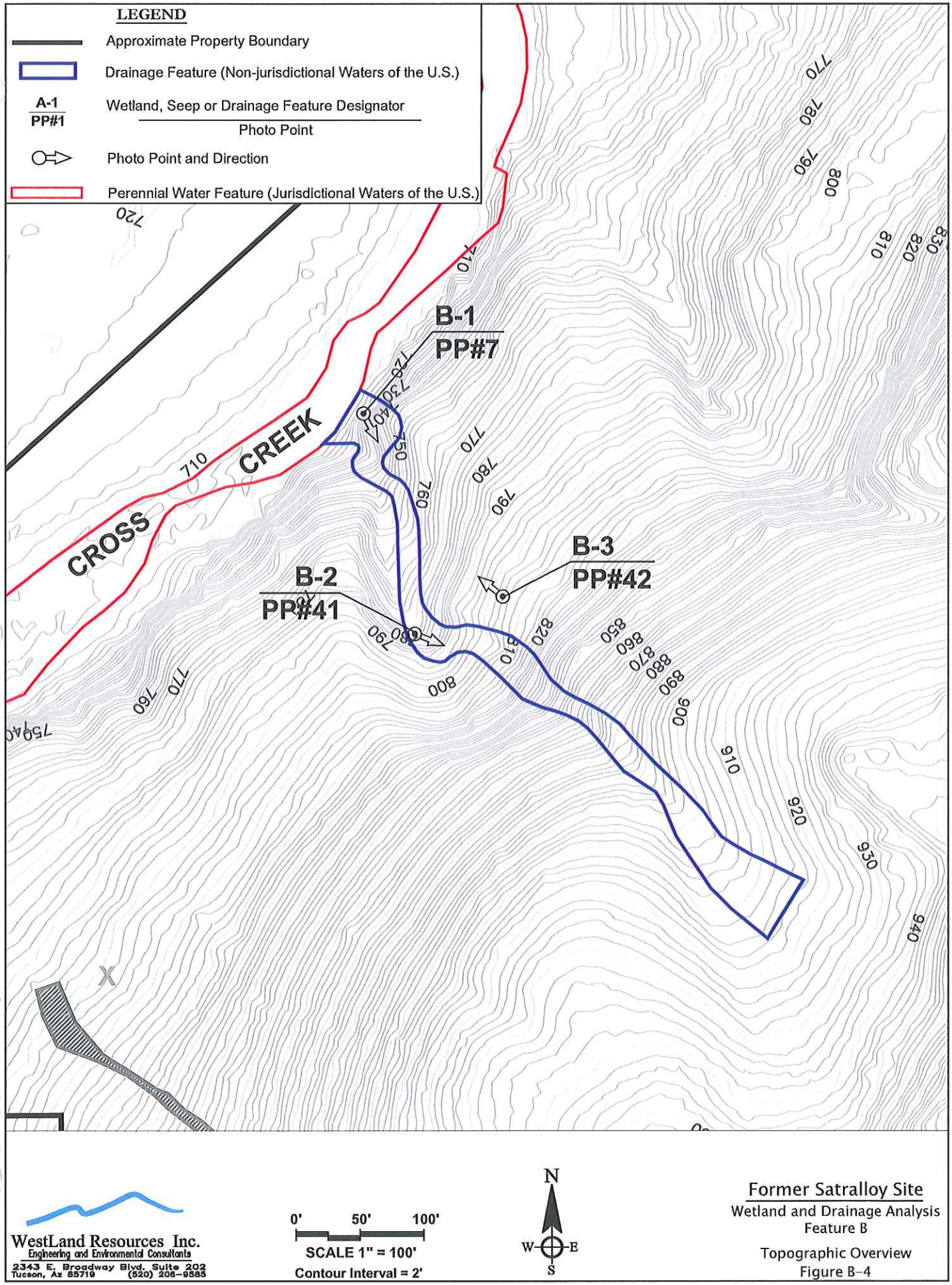
WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature B
Aerial Overview
Figure B-3

DWG FullPath: M:\...s\1271.01\JD\WETLAND FIGURES.dwg



DWG FullPath: M:\...s\1271.01\JD\WETLAND FIGURES.dwg

WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'
Contour Interval = 2'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature B
Topographic Overview
Figure B-4

Photo point: PP7
Photo reference: B-1
View: Lower end of tributary, upstream, facing upgradient

Photo point: PP41
Photo reference: B-2
View: Upslope at data collection point 3 (wetland feature), facing upgradient

Photo point: PP42
Photo reference: B-3
View: Downslope at data collection point 4 (upland), facing west

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Small channel tributary to Cross Creek. Wetland B.*	Data Point No.:	*DP-3*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*Steel drums in channel, mineral deposition from material leached from slag pile.*	Location:	*Between B-6 and B-26.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Acer negundo*	*FAC+*	*T*	8			
2	*Sambucus nigra* ssp. *canadensis*	*FACW*	*S*	9			
3	*Polystichum acrostichoides*	*FACU*	*H*	10			
4	*Unknown forb*		*H*	11			
5				12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *≥ 50%*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: *2.5 Y 4/1* Depth: *10"* Gleyed? *No*

Mottles? *Traces* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *Saturated conditions.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma, traces of mottles, saturated.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: *Saturated to surface.*

Other field evidence of hydrology: *Close to channel with low flow rate.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Saturated, flowing channel.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for all parameters.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, L. Rae*

Project No.: *1271.01* Date: *5/8/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions: *On slope above Wetland B.*		Data Point No.: *DP-4*
Do Normal Circumstances Exist on Site? *Yes*	Is Site a Potential Problem Area? *No*	
Site Disturbance? *Site appears to be old landslide area.*		Location: *~15' northeast of B-6.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Tsuga canadensis*	*FACU*	*T*	8			
2	*Acer saccharum*	*FACU*	*T*	9			
3	*Ulmus americana*	*FACW*	*T*	10			
4	*Ribes americanum*	*FACW*	*S*	11			
5	*Trillium grandiflorum*	*UPL*	*H*	12			
6	*Polystichum acrostichoides*	*FACU*	*H*	13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *33%*

Is the hydrophytic vegetation criterion met? *No* Rationale: *< 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: *2.5 Y 5/3* Depth: *10"* Gleyed? *No*

Mottles? *None* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *None. No significant topsoil development in old landslide area.*

Is the hydric soil criterion met? *No* Rationale: *High chroma, no mottles.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for any parameter.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, L. Rae*

Project No.: *1271.01* Date: *5/8/06*

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Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: B

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Site is an intermittent stream channel, draining small basin below slag pile. Discharge to Cross Creek.

Rated as Category 1 because of small size, lack of significant habitat, and extensive disturbance, per OAC Rule 3745-1-54 (c).

Final score 19	**Category**	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

6

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1 pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	1
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1 pt	**part of riparian or upland corridor.** See description above.	
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	2
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

8

subtotal

16

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

19

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.	
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	1	
	Metric 2. Buffers and surrounding land use	5	
	Metric 3. Hydrology	10	
	Metric 4. Habitat	3	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography		
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	19	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

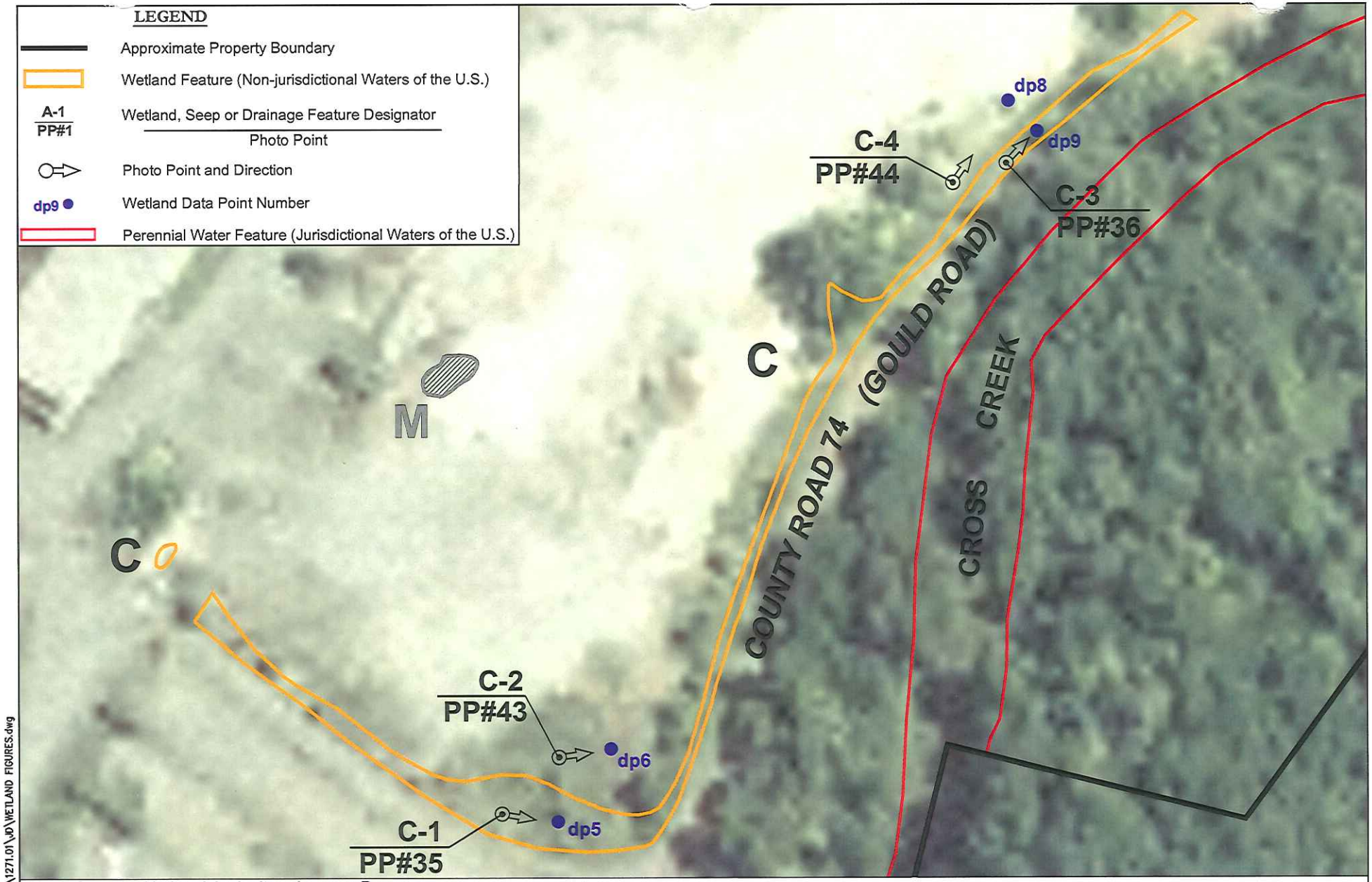

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

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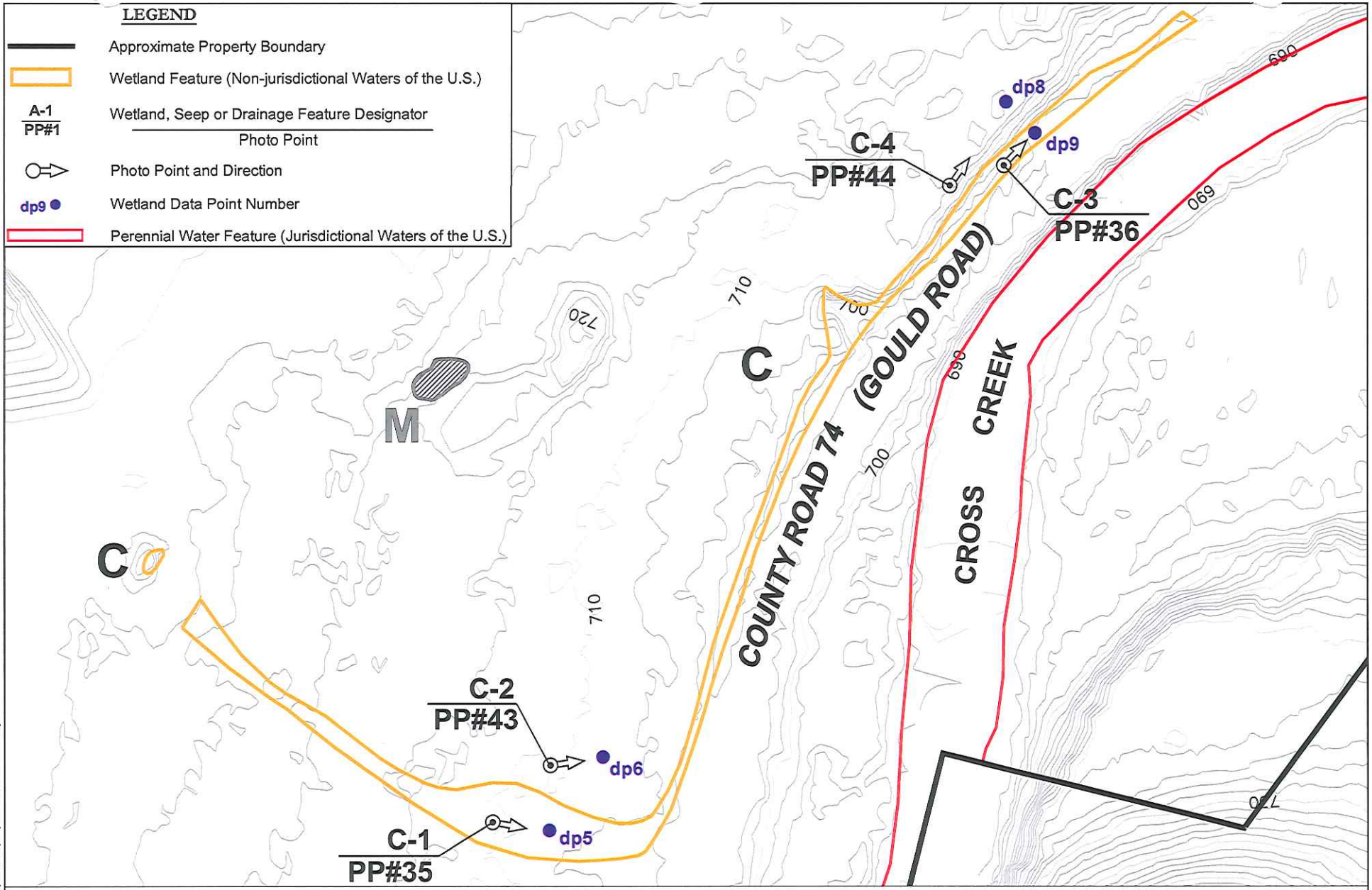
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature C
Aerial Overview
Figure B-5

DWG FullPath: M:\projects\1271.01\JD\WETLAND FIGURES.dwg



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2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

Former Satralloy Site
Wetland and Drainage Analysis
Feature C
Topographic Overview
Figure B-6

DWG FullPath: M:\projects\1271.01\00\WETLAND FIGURES.dwg

Photo point: PP35
Photo reference: C-1
View: Data collection point 5 (wetland feature), facing east.

Photo point: PP43
Photo reference: C-2
View: Data collection point 6 (upland), facing east

Photo point: PP36
Photo reference: C-3
View: Data collection point 7 (wetland feature), facing northeast

Photo point: PP44
Photo reference: C-4
View: Data collection point 8 (upland), facing east

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*East drainage channel across site.*	Data Point No.: *DP-5*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Drainage swale across industrial site, abandoned chromium smelter.*	Location: *~15' north of C-48.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Salix exigua*	*OBL*	*S*	8			
2	*Platanus occidentalis*	*FACW*	*S*	9			
3	*Ulmus americana*	*FACW*	*S*	10			
4	*Rosa virginiana*	*FAC*	*S*	11			
5	*Dipsacus fullonum*	*NI*	*H*	12			
6	*Scirpus cyperinus*	*FACW*	*H*	13			
7	*Achillea millefolium*	*FACU*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *83%*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: -

Horizon - Matrix Color: 10 YR 4/2 Depth: 6" Gleyed? *No*

Mottles? *Yes* Mottle Colors: *Various colors* Histic Epipedon? *No*

Other hydric soil indicators: *Heavily disturbed, poor soil develelopment over slag from smelter.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma with mottles.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: -

Is the soil saturated? *No*

Depth to free-standing water in probe hole: -

Other field evidence of hydrology: *Topographic low in swale draining to roadside ditch with connection to Cross Creek. Drift lines and sediment deposition. Upstream water diverted through culvert.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Site is intermittently inundated and supports hydrophytic vegetation.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for all parameters. There was probably a natural drainage in this vicinity prior to smelter construction and culverts.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, L. Rae*

Project No.: *1271.01* Date: *5/9/06*

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DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Cleared area in industrial site.*	Data Point No.: *DP-6*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Old slag pile.*	Location: *~15' southeast of C-49.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Taraxacum officinale*	*FACU*	*H*	8			
2	*Trifolium pratense*	*FACU*	*H*	9			
3	*Achillea millefolium*	*FACU*	*H*	10			
4				11			
5				12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *0%*

Is the hydrophytic vegetation criterion met? *No* Rationale: *< 50% FAC, FACW, or OBL*

Vegetation limited to weedy herbaceous species.

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: -

Horizon - Matrix Color: 10 YR 4/3 Depth: 4" Gleyed? *No*

Mottles? *None* Mottle Colors: - Histic Epipedon? *No*

Other hydric soil indicators: *None. No soil development. Could not get sample below 4".*

Is the hydric soil criterion met? *No* Rationale: *No soil development, lots of rock or slag.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: -

Is the soil saturated? *No*

Depth to free-standing water in probe hole: -

Other field evidence of hydrology: *None.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *Highly disturbed, but no positive indicators for any parameter.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, L. Rae*

Project No.: *1271.01* Date: *5/9/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Drainage ditch adjacent to Gould Road.*	Data Point No.: *DP-7*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Site has been disturbed by industrial activity related to chromium smelter.*	Location: *~20' east of C-30.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Typha angustifolia*	*OBL*	*H*	8			
2	*Juncus* sp.		*H*	9			
3	*Salix exigua*	*OBL*	*S*	10			
4				11			
5				12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *100 %*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

Juncus sp. *is likely FAC, FACW, or OBL.*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: -

Horizon *B* Matrix Color: 10 YR 4/2 Depth: 6" Gleyed? *No*

Mottles? *Traces* Mottle Colors: - Histic Epipedon? *No*

Other hydric soil indicators: *Saturated.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma with mottles. Poor soil development.*

Impenetrable layer below 6".

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: -

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: *To surface.*

Other field evidence of hydrology: *Matted leaf debris, sediments, drainage pattern in wetlands.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Saturated.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for all parameters. Ditch carries water that was probably in a natural drainage prior to smelter construction.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, L. Rae*

Project No.: *1271.01* Date: *5/9/06*

WestLand Resources, Inc.
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DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Cleared area of industrial site.*	Data Point No.: *DP-8*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Site is on edge of old slag pile.*	Location: *~15' north of DP-7.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Ulmus americana*	*FACW*	*S*	8			
2	*Acer negundo*	*FAC+*	*S*	9			
3	*Rubus occidentalis*	*UPL*	*S*	10			
4	*Rosa virginiana*	*FAC*	*S*	11			
5	*Toxicodendron radicans*	*FAC*	*S*	12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *80%*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: -

Horizon - Matrix Color: - Depth: - Gleyed? -

Mottles? - Mottle Colors: - Histic Epipedon? -

Other hydric soil indicators: *None. No soil.*

Is the hydric soil criterion met? *No* Rationale: *No soil. Site is on slag pile.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: -

Is the soil saturated? *No*

Depth to free-standing water in probe hole: -

Other field evidence of hydrology: *None. Site is ~8' above bottom of ditch.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for soil or hydrology. Vegetation is marginal.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, L. Rae*

Project No.: *1271.01* Date: *5/9/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: C

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Site is primarily a stormwater ditch with hydrophytic vegetation, adjacent to the County road and the access road to the abandoned chromium smelter. Collects water through culvert from Wetland K. Discharge through culvert to Cross Creek.

Final score 10	**Category**	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

2

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1 pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	1
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1 pt	**part of riparian or upland corridor.** See description above.	
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	2
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

5

subtotal

8

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

11

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points.		
	6a. Wetland Vegetation Communities. Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.	
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	1
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

1

subtotal

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	1	
	Metric 2. Buffers and surrounding land use	1	
	Metric 3. Hydrology	6	
	Metric 4. Habitat	3	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	-1	
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	10	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

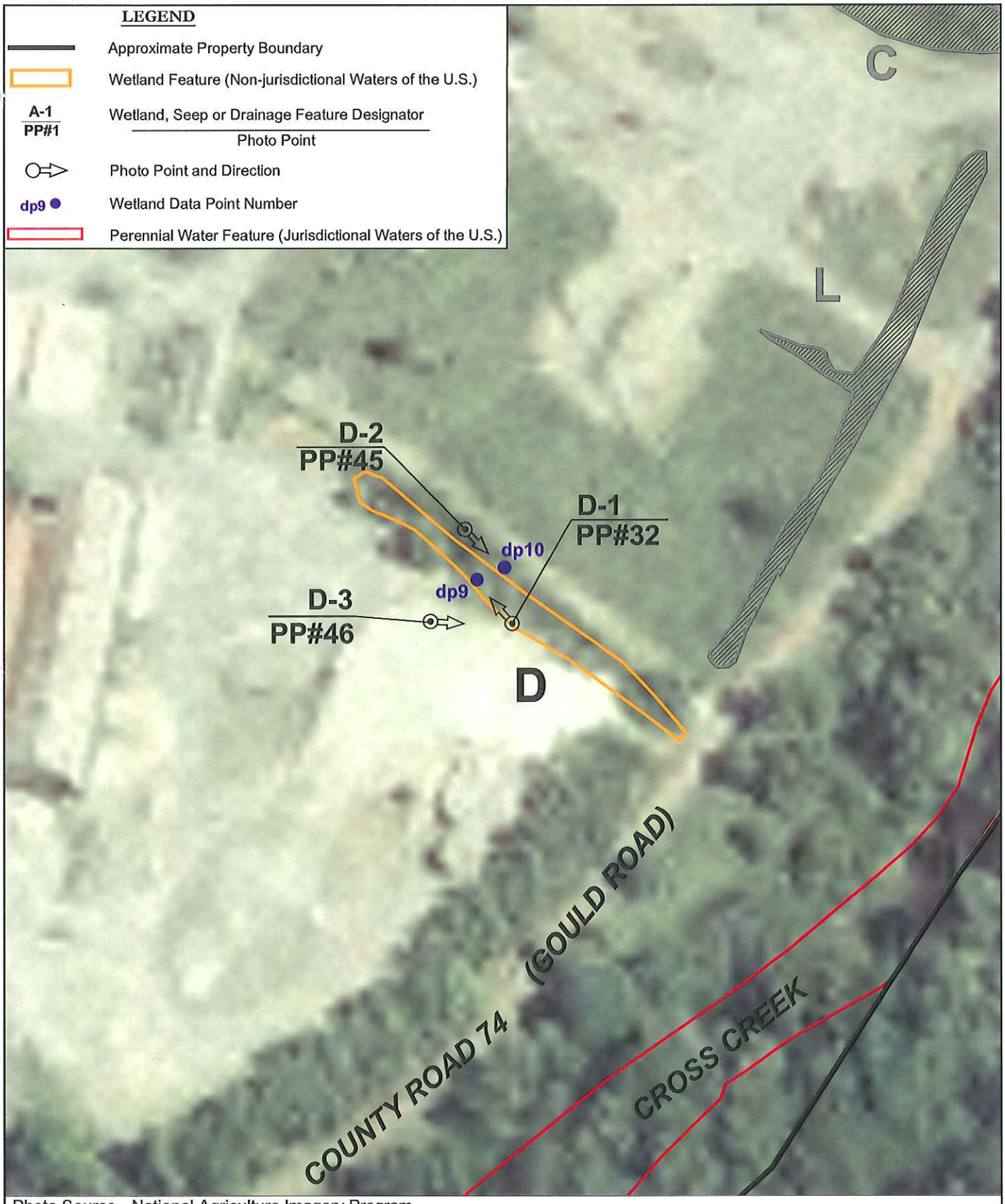

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

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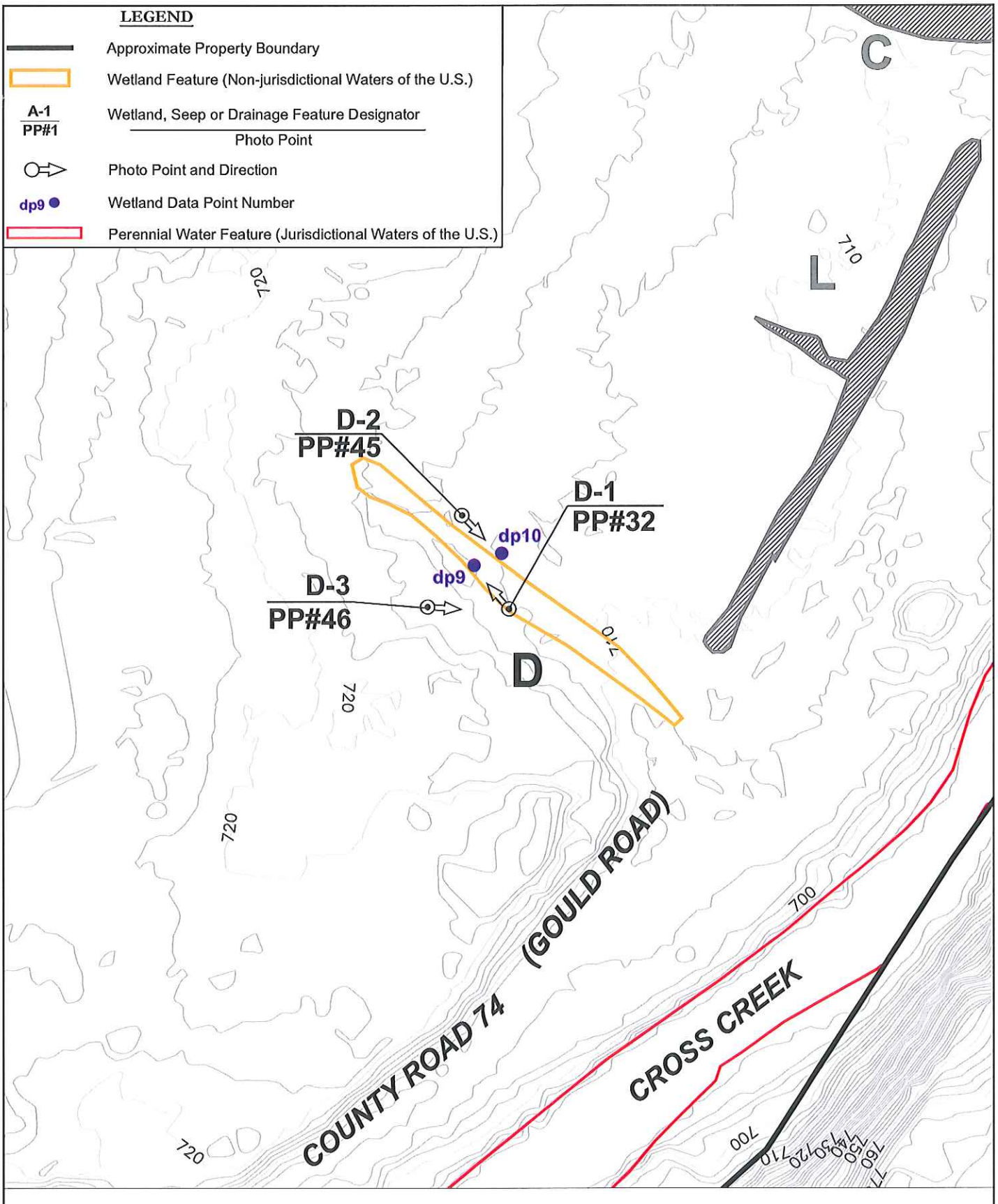
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature D
Aerial Overview
Figure B-7

DWG FullPath: M:\...s\1271.01\JD\WETLAND FIGURES.dwg



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0' 50' 100'
SCALE 1" = 100'
Contour Interval = 2'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature D
Topographic Overview
Figure B-8

DWG FullPath: M:\...\s\1271.01\JD\WETLAND FIGURES.dwg

Photo point: PP3
Photo reference: D-1
View: Data collection point 9 (wetland feature), facing northeast

Photo point: PP45
Photo reference: D-2
View: Data collection point 10 (upland), facing southeast

Photo point: PP46
Photo reference: D-3
View: Boat in Wetland D

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Flowing ditch across industrial site.*	Data Point No.: *DP-9*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Heavy disturbance related to chromium smelter.*	Location: *~10' northeast of D-13.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Ullmus americana*	*FACW*	*T*	8	*Sorghum halepense*	*FACU*	*H*
2	*Acer negundo*	*FAC+*	*T*	9	*Solidago* sp.		*H*
3	*Rosa virginiana*	*FAC*	*S*	10	*Alisma subcordatum*	*OBL*	*H*
4	*Rhus glabra*	*UPL*	*S*	11			
5	*Elaeagnus umbellata*	*UPL*	*S*	12			
6	*Toxicodendron radicans*	*FAC*	*S*	13			
7	*Typha angustifolia*	*OBL*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *71%*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: -

Horizon *B* Matrix Color: *5 GY 4/1* Depth: *10"* Gleyed? *Yes*

Mottles? *None* Mottle Colors: - Histic Epipedon? *No*

Other hydric soil indicators: *Saturated.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma, gleyed, saturated.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *2"*

Is the soil saturated? -

Depth to free-standing water in probe hole:

Other field evidence of hydrology: *Flowing channel in ditch across site. Outlet through culvert to Cross Creek.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Inundated.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for all parameters. Ditch carries seepage from slope above smelter to Cross Creek, passing through two culverts.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, L. Rae*

Project No.: *1271.01* Date: *5/9/06*

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Tucson, Arizona 85719

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Cleared area in chromium smelter industrial site.*	Data Point No.:	*DP-10*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*Old slag area.*	Location:	*~12' east of D-6.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Acer negundo*	*FAC+*	*S*	8			
2	*Rosa multiflora*	*FACU*	*S*	9			
3	*Rubus occidentalis*	*UPL*	*S*	10			
4	*Toxicodendron radicans*	*FAC*	*S*	11			
5	*Asclepias syriaca*	*UPL*	*H*	12			
6	*Trifolium pratense*	*FACU*	*H*	13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *33 %*

Is the hydrophytic vegetation criterion met? *No* Rationale: *< 50 % FAC, FACW, of OBL*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: -

Horizon - Matrix Color: - Depth: - Gleyed? -

Mottles? - Mottle Colors: - Histic Epipedon? -

Other hydric soil indicators: *No soil development. Vegetation in very thin layer over slag.*

Is the hydric soil criterion met? *No* Rationale: *No soil development.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: -

Is the soil saturated? *No*

Depth to free-standing water in probe hole: -

Other field evidence of hydrology: *None*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation. Up slope from bottom of channel.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for soil or hydrology. Vegetation undetermined.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, L. Rae*

Project No.: *1271.01* Date: *5/9/06*

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Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: D

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Site is primarily a stormwater ditch with hydrophytic vegetation, adjacent to roads and slag from abandoned chromium smelter. Receives water through culvert from Wetland E. Discharge through culvert to Cross Creek.

Final score 13	**Category**	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

		2
		subtotal from previous page
Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1 pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	1
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1 pt	**part of riparian or upland corridor.** See description above.	
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	3
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	
		6
		subtotal

9

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	**NO** Assign a score of 4 since there are no or no apparent modifications.	**NOT SURE** Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

12

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	1	
	Metric 2. Buffers and surrounding land use	1	
	Metric 3. Hydrology	7	
	Metric 4. Habitat	3	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	1	
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	13	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

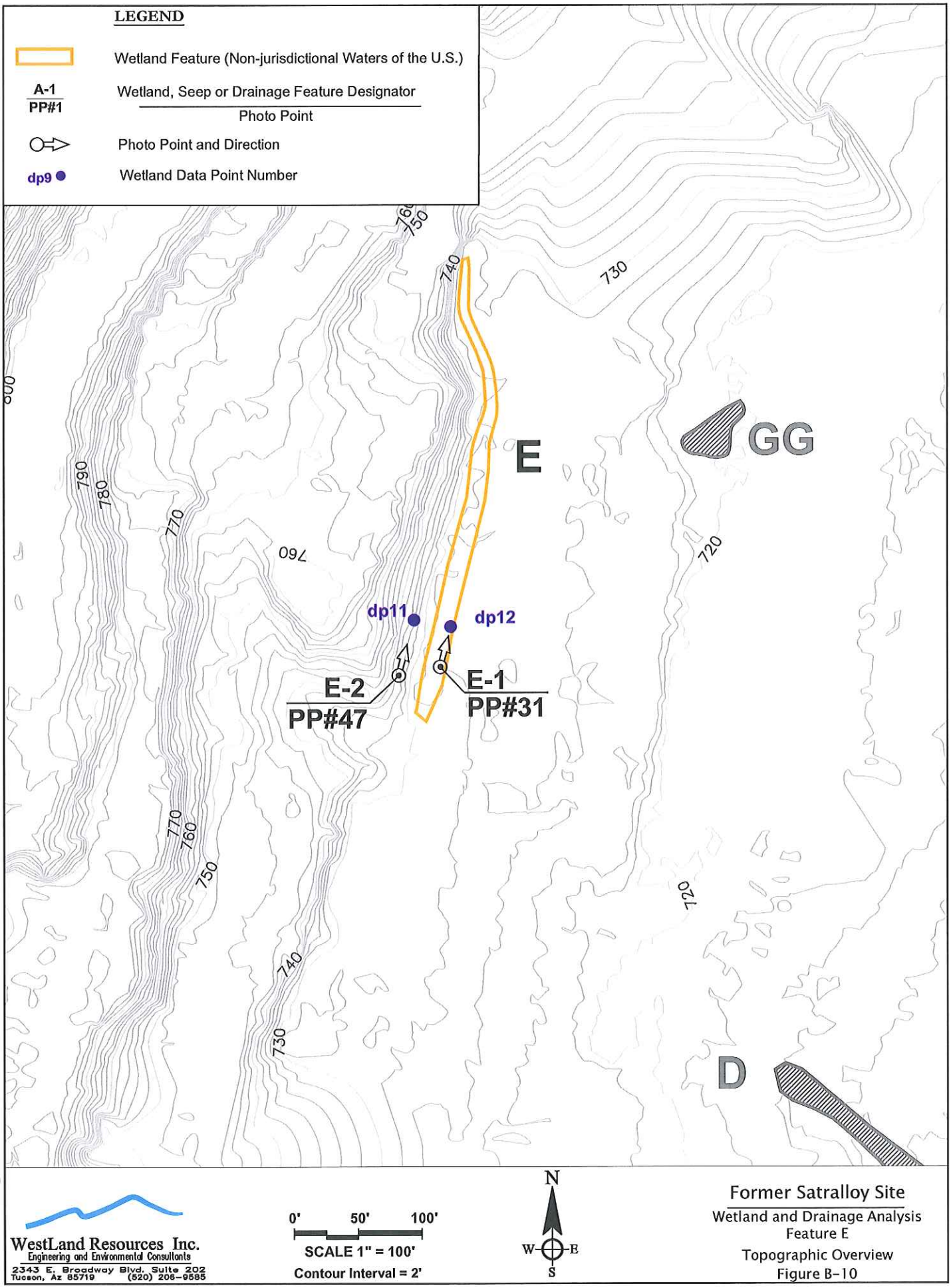
WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature E
Aerial Overview
Figure B-9

DWG FullPath: M:\...s\1271.01\JD\WETLAND FIGURES.dwg



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2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

Former Satralloy Site
Wetland and Drainage Analysis
Feature E
Topographic Overview
Figure B-10

DWG FullPath: M:\...s\1271.01\JD\WETLAND FIGURES.dwg

Photo point: PP31
Photo reference: E-1
View: Upstream, data collection point 12 (wetland feature), facing northeast

Photo point: PP47
Photo reference: E-2
View: Data collection point 11 (upland), facing northeast

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Slope above smelter site.*	Data Point No.: *DP-11*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*No significant disturbances at this point, but close to smelter site.*	Location: *~30' north of E-3.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Ulmus americana*	*FACW*	*T*	8			
2	*Rosa multiflora*	*FACU*	*S*	9			
3	*Lonicera japonica*	*FAC-*	*V*	10			
4				11			
5				12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *33 %*

Is the hydrophytic vegetation criterion met? *No* Rationale: *< 50 % FAC, FACW, or OBL.*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: 10 YR 3/6 Depth: 10" Gleyed? *No*

Mottles? *Some* Mottle Colors: 10 YR 3/3 Histic Epipedon? *No*

Other hydric soil indicators: *None. Slope above wetland.*

Is the hydric soil criterion met? *No* Rationale: *High chroma, reasonable soil structure.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: -

Is the soil saturated? *No*

Depth to free-standing water in probe hole: -

Other field evidence of hydrology: *None. On slope above wetland.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of saturation or inundation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for soil or hydrology. Vegetation undetermined.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, L. Rae*

Project No.: *1271.01* Date: *5/9/06*

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2343 E. Broadway Blvd., Suite 202
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DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Wetland at toe of slope near smelter.*	Data Point No.: *DP-12*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Site may have been excavated at toe of slope. Outlet to culvert.*	Location: *~5' north of E-3.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Platanus occidentalis*	*FACW*	*T*	8	*Carex interior*	*OBL*	*H*
2	*Fraxinus pennsylvanica*	*FACW*	*T*	9			
3	*Typha angustifolia*	*OBL*	*H*	10			
4	*Carex laevivaginata*	*OBL*	*H*	11			
5	*Alisma subcordatum*	*OBL*	*H*	12			
6	*Lemna minor*	*OBL*	*H*	13			
7	*Scirpus cyperinus*	*OBL*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *100%*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

Carex sp. *is likely FAC, FACW, or OBL.*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: *10 YR 4/1* Depth: *10"* Gleyed? *No*

Mottles? *None* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *Saturated*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma, saturated.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *12"*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *Low area at toe of slope. Outlet through culvert to drainage channel (Wetland D).*

Is the wetland hydrology criterion met? *Yes* Rationale: *Inundated, saturated.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for all parameters.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, L. Rae*

Project No.: *1271.01* Date: *5/9/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: E

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Site is an area of seepage at toe of slope, adjacent to abandoned chromium smelter, roads, and other structures.

Rated as Category 1 based on small size and extent of disturbance per OAC Rule 3745-1-54(c).

Final score 15	**Category**	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

3		

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. **Sources of Water.** Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1 pts	Precipitation	
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. **Connectivity.** Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1 pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1 pt	**part of riparian or upland corridor.** See description above.	
3c. **Maximum water depth.** Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. **Duration of inundation/saturation.** Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	4
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

8	

subtotal

12

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

15

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Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	1	
	Metric 2. Buffers and surrounding land use	2	
	Metric 3. Hydrology	9	
	Metric 4. Habitat	3	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	0	
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	15	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

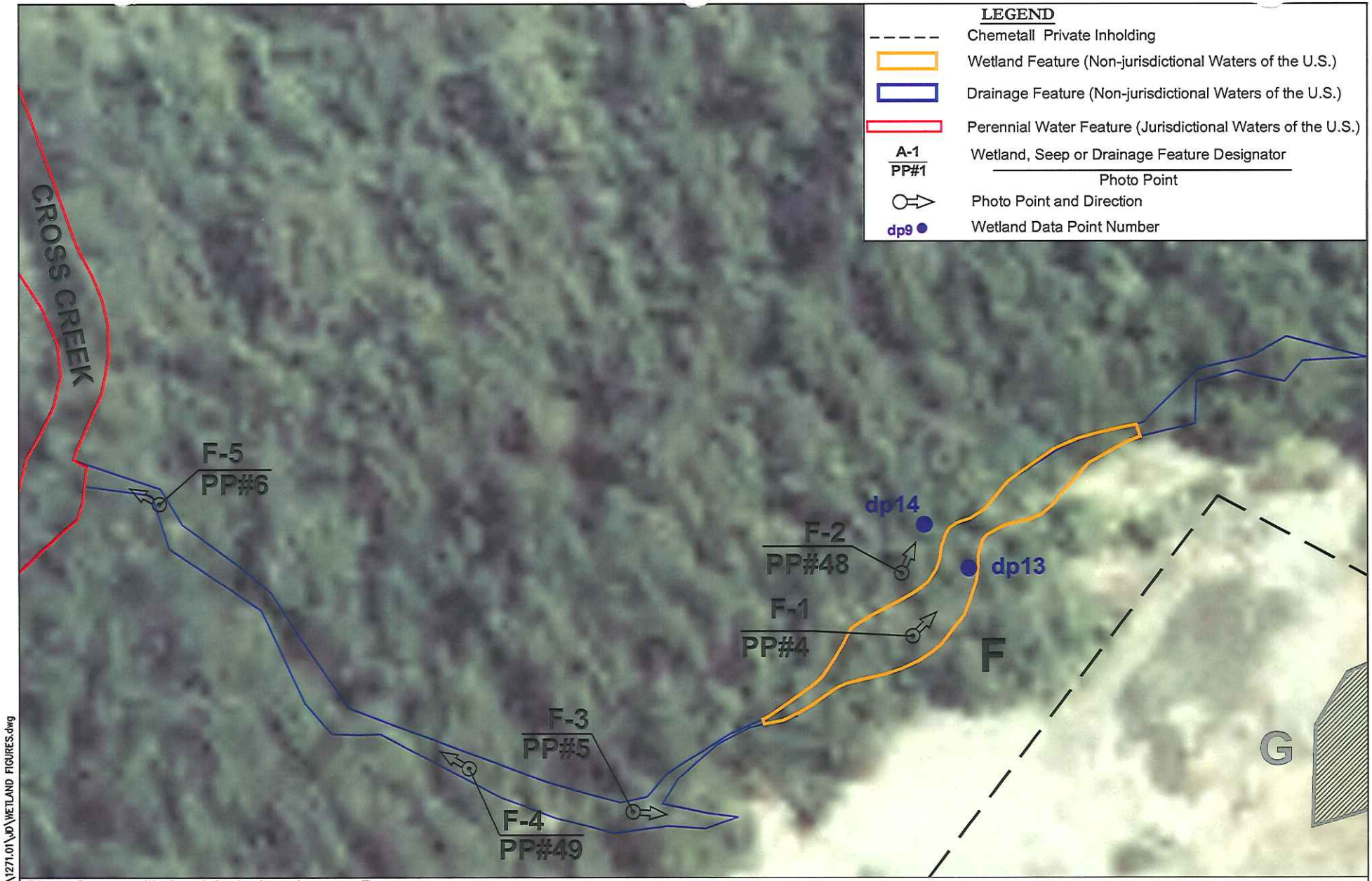

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
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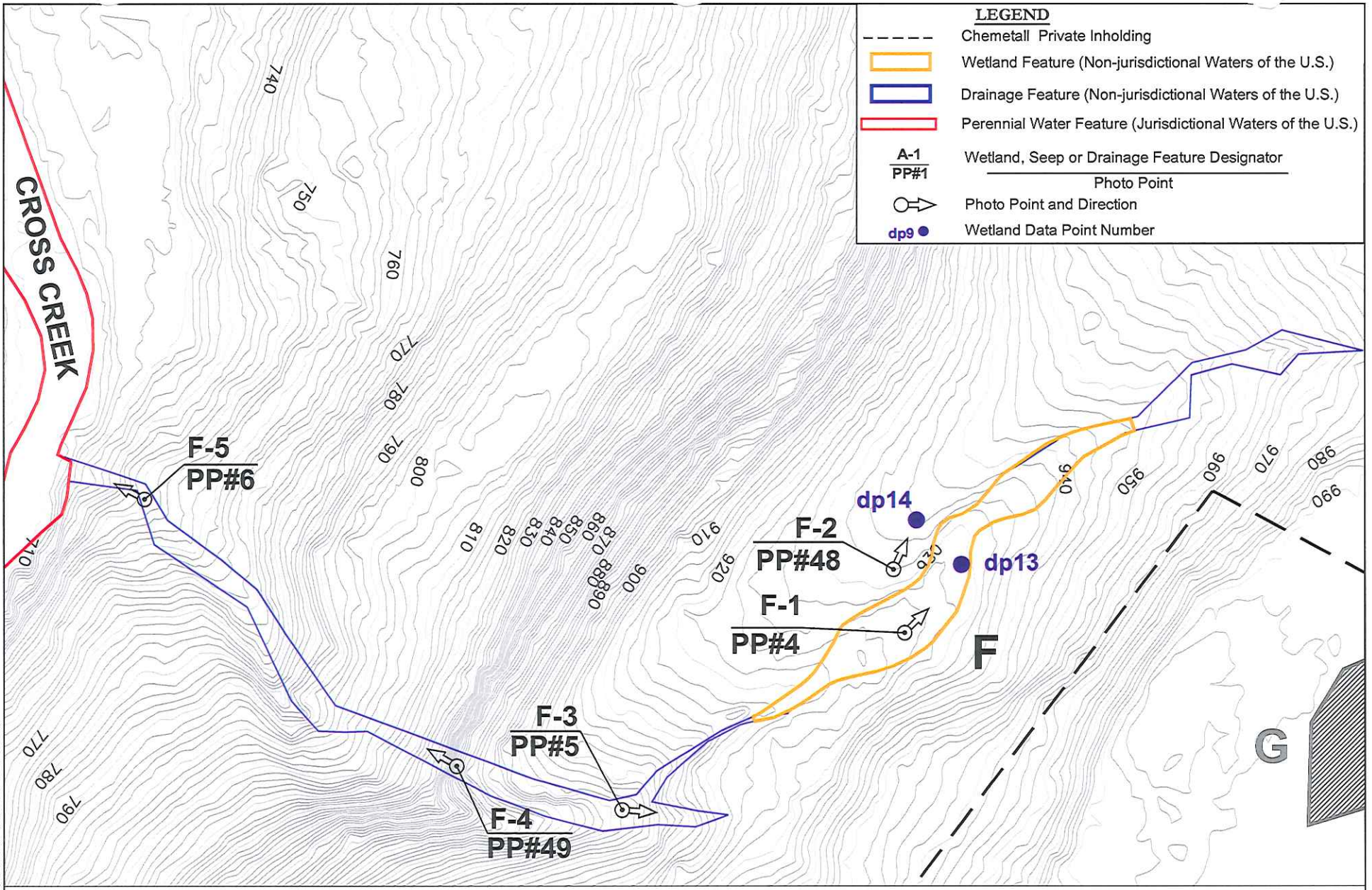
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature F
Aerial Overview
Figure B-11

DWG FullPath: M:\projects\1271.01\JD\WETLAND FIGURES.dwg



WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'
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Former Satralloy Site

Wetland and Drainage Analysis
Feature F
Topographic Overview
Figure B-12

DWG FullPath: M:\projects\1271.01\D\WETLAND FIGURES.dwg

Photo point: PP4
Photo reference: F-1
View: Data collection point 13 (wetland feature), facing northeast

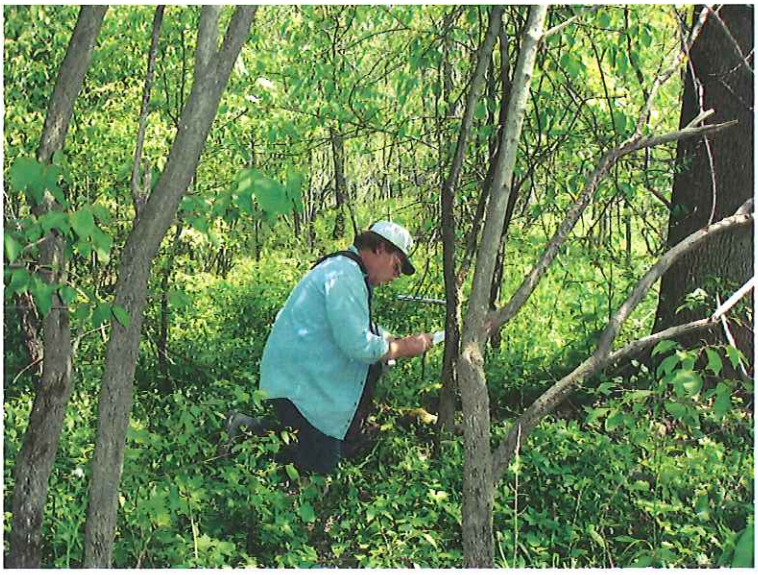

Photo point: PP48
Photo reference: F-2
View: Data collection point 14 (upland), facing northeast

Photo point: PP5
Photo reference: F-3
View: Tributary to Cross Creek, facing upgradient

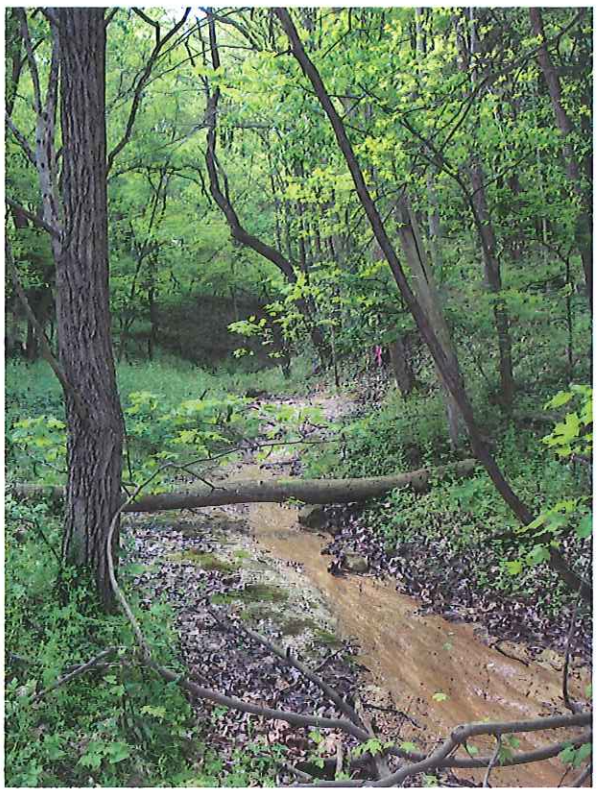

Photo point: PP49
Photo reference: F-4
View: Tributary to Cross Creek, facing downgradient

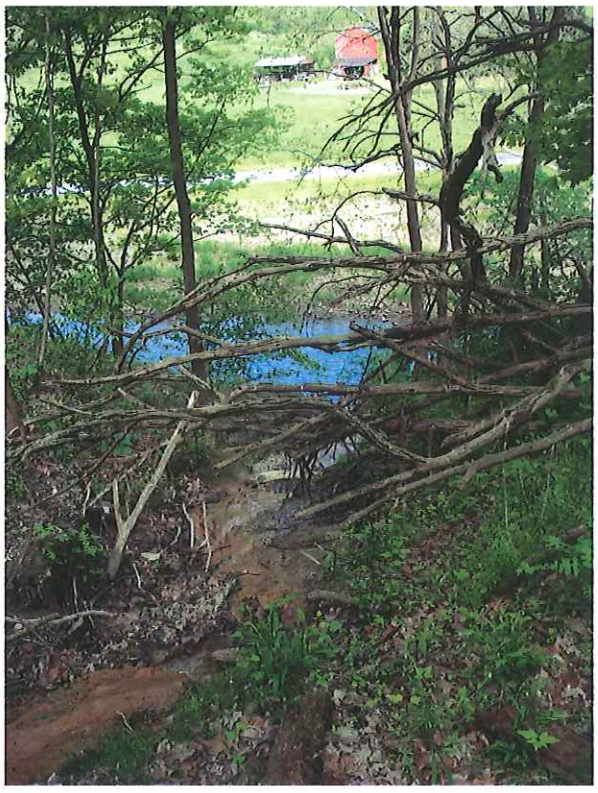

Photo point: PP6
Photo reference: F-5
View: Lower end of tributary to Cross Creek, facing downgradient

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Broad area within drainage channel, tributary to Cross Creek.*	Data Point No.: *DP-13*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Site has been impacted by sediment and chemical precipitate from slag pile.*	Location: *~13' north of F-12.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Ulmus ameriana*	*FACW*	*T*	8			
2	*Rubus occidentalis*	*UPL*	*S*	9			
3	*Carex* sp.		*H*	10			
4	*Poa palustris*	*FACW*	*H*	11			
5				12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *≥ 75%*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

Carex sp. *is likely FAC, FACW, or OBL.*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *-* Matrix Color: *5 GY 3/1* Depth: *10"* Gleyed? *Yes*

Mottles? *No* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *Saturated. No topsoil or soil stratification.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma, gleyed, saturated.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: *8"*

Other field evidence of hydrology: *Within one foot of flowing channel in drainage. Sediment deposits.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Saturated, drainage pattern..*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for all parameters.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, L. Rae*

Project No.: *1271.01* Date: *5/10/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Forested ridge above stream channel.*	Data Point No.: *DP-14*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*No significant disturbances at this point.*	Location: *~15' north of F-59.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Fraxinus pennsylvanica*	*FACW*	*T*	8			
2	*Juglans nigra*	*FACU*	*T*	9			
3	*Viburnum prunifolium*	*FACU*	*S*	10			
4	*Symphoricarpos albus*	*FACU*	*S*	11			
5	*Crataegus chrysocarpa* var. *chrysocarpa*	*UPL*	*S*	12			
6	*Viola blanda*	*FACW*	*H*	13			
7	*Galium aparine*	*FACU*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *29%*

Is the hydrophytic vegetation criterion met? *No* Rationale: *< 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: *No*

Horizon *B* Matrix Color: *10 YR 5/6* Depth: *10"* Gleyed? *No*

Mottles? *No* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *None*

Is the hydric soil criterion met? *No* Rationale: *High chroma, no mottles.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None. Slope above stream channel.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for any parameter.*

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Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: F

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Site is mainly an intermittent stream channel, with a wider flat area with wetland conditions. Site is impacted by slag disposal and leaching at upper end. Water flows into Cross Creek.

Rated as Category 1 because of small size, lack of significant habitat, and disturbances, per OAC Rule 3745-1-54(c).

Final score 25.5	**Category**	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

		9
		subtotal from previous page
Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	1
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	1
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	1
		8
		subtotal

19

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	**NO** Assign a score of 4 since there are no or no apparent modifications.	**NOT SURE** Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	√
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	√

1.5

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	2
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	

3.5

subtotal

24.5

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
√	**Emergent.** Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
√	**Forested.** Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	NO	If yes, Category 1.
	Question 6. Bogs	YES	NO	If yes, Category 3.
	Question 7. Fens	YES	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2		
	Metric 2. Buffers and surrounding land use	7		
	Metric 3. Hydrology	10		
	Metric 4. Habitat	5.5		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	1		
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	25.5		Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

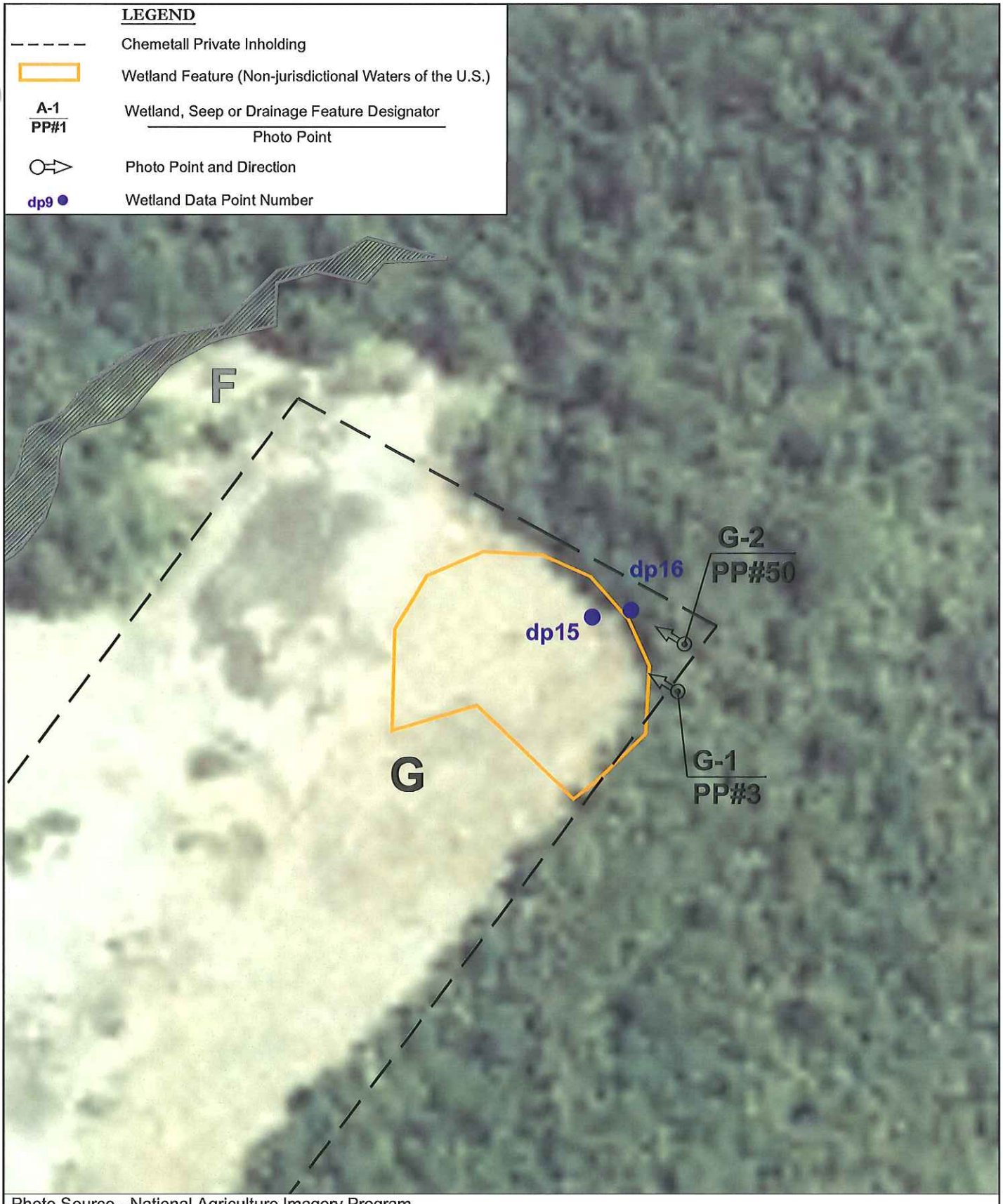

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
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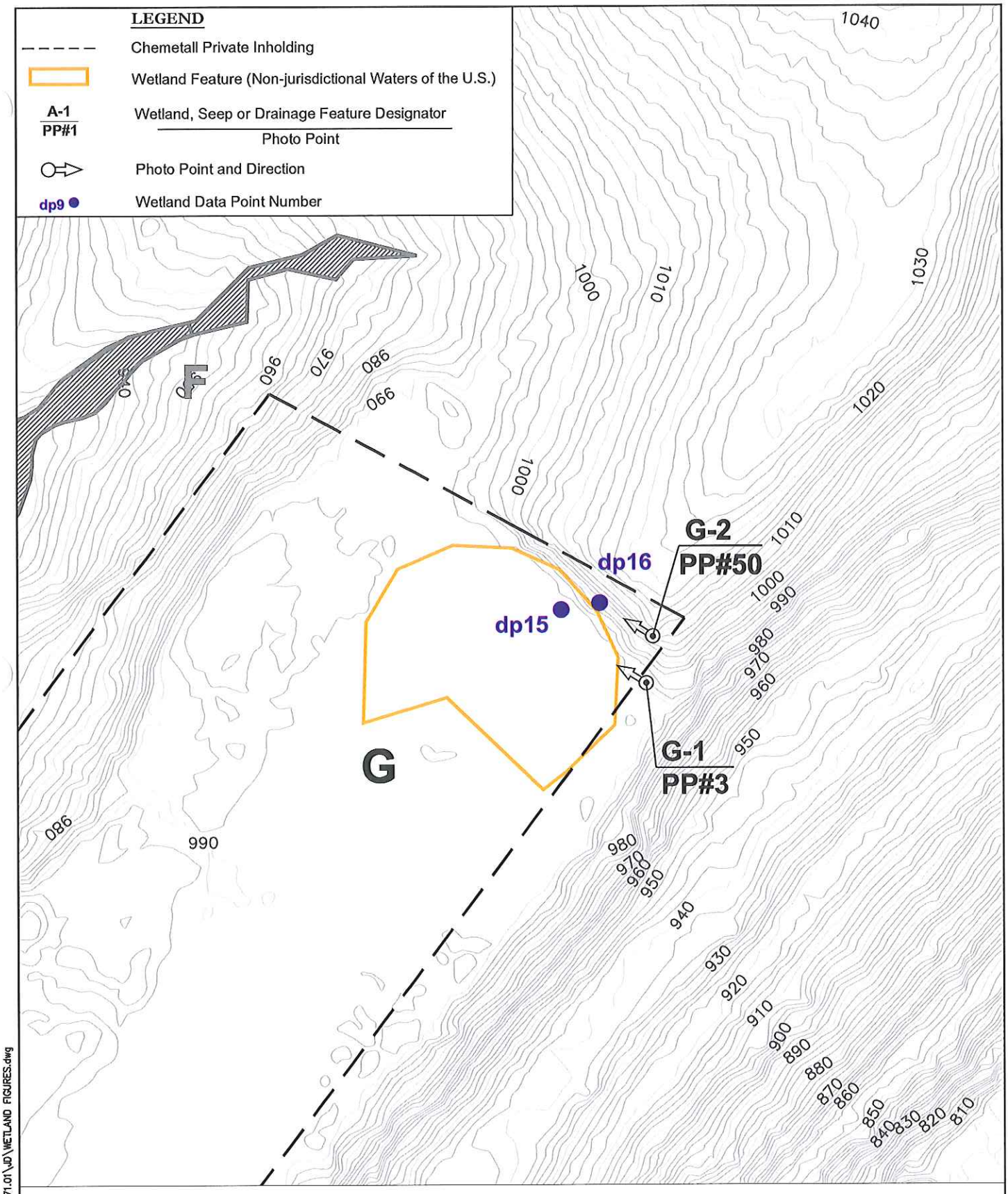
Former Satralloy Site
Wetland and Drainage Analysis
Feature G
Aerial Overview
Figure B-13

DWG FullPath: M:\...s\1271.01\JD\WETLAND FIGURES.dwg



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2343 E. Broadway Blvd. Suite 202
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0' 50' 100'
SCALE 1" = 100'
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Former Satralloy Site
Wetland and Drainage Analysis
Feature G
Topographic Overview
Figure B-14

DWG FullPath: M:\...cts\1271.01\JD\WETLAND FIGURES.dwg

Photo point: PP3
Photo reference: G-1
View: (wetland feature G), facing northwest

Photo point: PP50
Photo reference: G-2
View: Data collection point 16 (upland), facing northwest

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions: *Small basin on top of slag pile, near edge.*		Data Point No.: *DP-15*
Do Normal Circumstances Exist on Site? *Yes*	Is Site a Potential Problem Area? *No*	
Site Disturbance? *Human-induced basin on slag pile.*		Location: *~10' southwest of G-10.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Schoenoplectus tabernaemontani*	*OBL*	*H*	8			
2	*Alisma subcordatum*	*OBL*	*H*	9			
3	*Juncus brachycephalus*	*OBL*	*H*	10			
4	*Typha angustifolia*	*OBL*	*H*	11			
5				12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *100%*
Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: -
Horizon - Matrix Color: - Depth: - Gleyed? *No*
Mottles? - Mottle Colors: - Histic Epipedon? *No*
Other hydric soil indicators: *No soil development. Impenetrable slag ~3" below surface.*
Is the hydric soil criterion met? *No* Rationale: *No soil present.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: -
Is the soil saturated? *Yes*
Depth to free-standing water in probe hole: *Saturated to surface.*
Other field evidence of hydrology: *Drirft lines, sediment deposits, within 4' of surface water.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Inundated.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*
Rationale for wetland decision: *Positive indicators for hydrology and vegetation. Soil criteria need not be met in man-induced wetland.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*
Field Investigator(s): *T. Strong, L. Rae*
Project No.: *1271.01* Date: *5/10/06*

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DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
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Describe General Site Conditions:	*Steep slope above slag pile.*	Data Point No.: *DP-16*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Slope may have been excavated at time of slag deposition.*	Location: *~14' upslope from G--10.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Fraxinus pennsylvanica*	*FACW*	*T*	8	*Solidago* sp.		*H*
2	*Robinia pseudoacacia*	*FACU*	*T*	9			
3	*Ulmus americana*	*FACW*	*T*	10			
4	*Cercis canadensis*	*FACU*	*S*	11			
5	*Toxicodendron radicans*	*FAC*	*S*	12			
6	*Rosa* sp.		*S*	13			
7	*Achillea millefolium*	*FACU*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *Undetermined.*
Is the hydrophytic vegetation criterion met? *?* Rationale:

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: -
Horizon - Matrix Color: 10 YR 3/3 Depth: 4" Gleyed? *No*
Mottles? *None* Mottle Colors: - Histic Epipedon? *No*
Other hydric soil indicators: *None. Poor soil development, bedrock exposed on steep slope.*
Is the hydric soil criterion met? *No* Rationale: *High chroma, no mottles.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: -
Is the soil saturated? *No*
Depth to free-standing water in probe hole: -
Other field evidence of hydrology: *None. Steep slope above wetland.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*
Rationale for wetland decision: *No positive indicators for soil or hydrology.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*
Field Investigator(s): *T. Strong, L. Rae*
Project No.: *1271.01* Date: *5/10/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: G

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Area is a man-induced wetland on edge of slag deposit from chromium smelter, at toe of slope. Slag appears to be impermeable. Shallow basin collects rainfall. Runoff from slope.

Final score 9	Category	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

		7
		subtotal from previous page
Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		0
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	3
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

5

subtotal

13

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	**NO** Assign a score of 4 since there are no or no apparent modifications.	**NOT SURE** Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

6

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	1
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	1
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

2

subtotal

ORAM Summary Worksheet

		circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	NO	If yes, Category 1.
	Question 6. Bogs	YES	NO	If yes, Category 3.
	Question 7. Fens	YES	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2		
	Metric 2. Buffers and surrounding land use	5		
	Metric 3. Hydrology	6		
	Metric 4. Habitat	3		
	Metric 5. Special Wetland Communities	-10		
	Metric 6. Plant communities, interspersion, microtopography	3		
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	9		Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

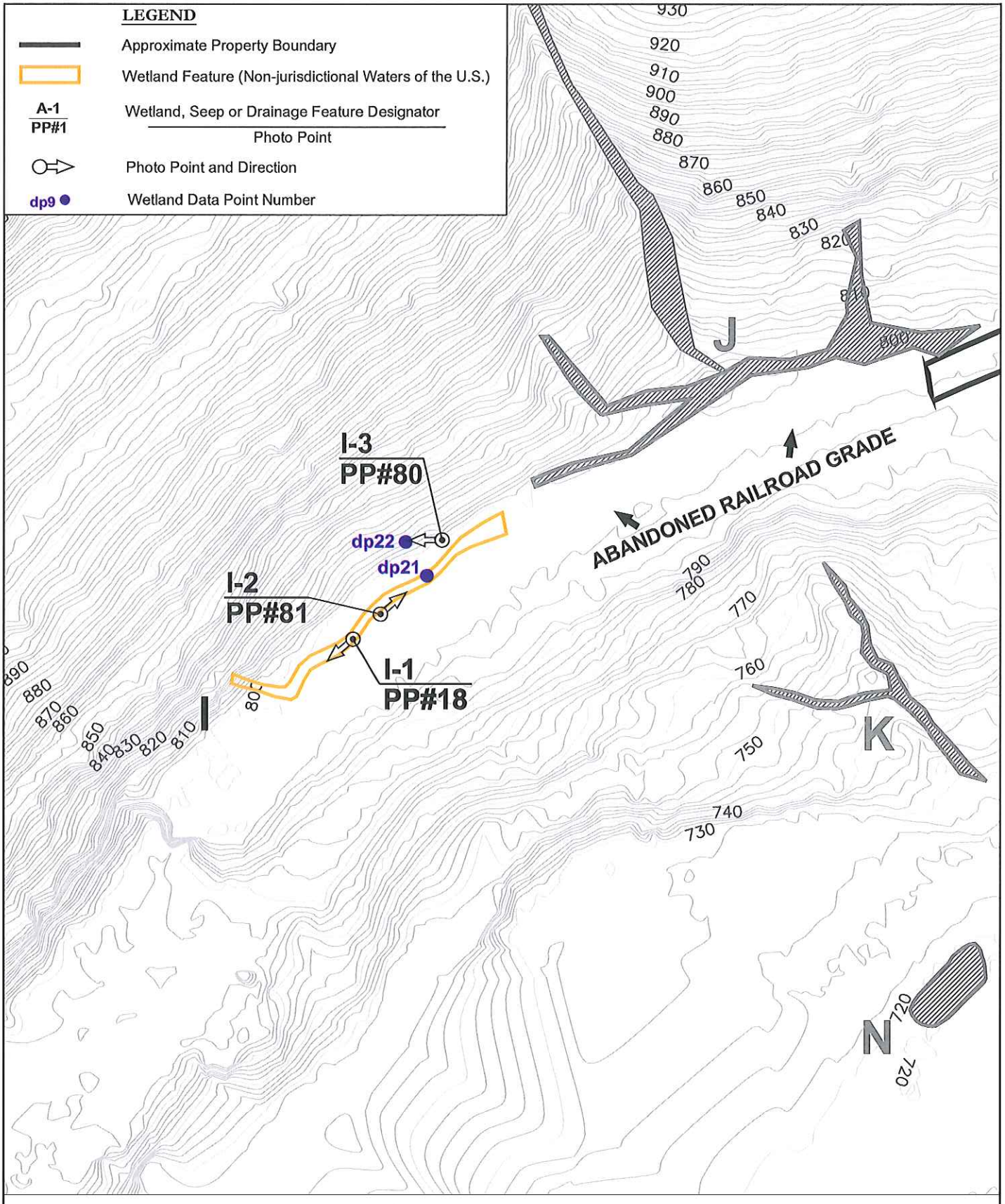
WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature I
Aerial Overview
Figure B-15

DWG FullPath: M:\...cts\1271.01\JD\WETLAND FIGURES.dwg



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Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'
Contour Interval = 2'

N
W E
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Former Satralloy Site
Wetland and Drainage Analysis
Feature I
Topographic Overview
Figure B-16

DWG FullPath: M:\...cts\1271.01\JD\WETLAND FIGURES.dwg

Photo point: PP18
Photo reference: I-1
View: West end, facing southwest

Photo point: PP81
Photo reference: I-2
View: Data collection point 21 (wetland feature), facing northeast

Photo point: PP80
Photo reference: I-3
View: Data collection point 22 (upland), facing northwest

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Wetland I. Small basin at toe of slope by old RR grade.*	Data Point No.:	*DP-21*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*Site is adjacent to old RR grade, at toe of slope above smelter.*	Location:	*~5' NW of I-6.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Ulmus americana*	*FACW*	*T*	8			
2	*Populus deltoides*	*FAC*	*T*	9			
3	*Acer negundo*	*FAC+*	*T*	10			
4	*Rosa multiflora*	*FACU*	*S*	11			
5	*Lonicera japonica*	*FAC-*	*V*	12			
6	*Tussilago farfara*	*FACU*	*H*	13			
7	*Chamerion angustifolium ssp. angustifolium*	*FAC*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *57%*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: *5 Y 4/1* Depth: *10"* Gleyed? *No*

Mottles? *Yes* Mottle Colors: *7.5 YR 3/4* Histic Epipedon? *No*

Other hydric soil indicators: *Saturated conditions, sulfur smell.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma, mottles, saturated.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *1"*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: -

Other field evidence of hydrology: *Center of channel at toe of slope. No obvious flow.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Inundated and saturated.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for all parameters.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/7/06*

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2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*On slope above Wetland I.*	Data Point No.: *DP-22*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*No recent disturbances.*	Location: *~15' northeast of DP-21.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Ulmus americana*	*FACW*	*T*	8			
2	*Crataegus crus-galli*	*FACU*	*S*	9			
3	*Lonicera canadensis*	*FACU*	*S*	10			
4	*Rubus occidentalis*	*UPL*	*S*	11			
5	*Toxicodendron radicans*	*FAC*	*S*	12			
6	*Tussilago farfara*	*FACU*	*H*	13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *33%*

Is the hydrophytic vegetation criterion met? *No* Rationale: *< 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: 10 YR 4/3 Depth: 10" Gleyed? *No*

Mottles? *None* Mottle Colors: - Histic Epipedon? *No*

Other hydric soil indicators: *None*

Is the hydric soil criterion met? *No* Rationale: *High chroma, no mottles.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: -

Is the soil saturated? *No*

Depth to free-standing water in probe hole: -

Other field evidence of hydrology: *None*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for any parameter.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/7/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
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Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: |

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Site is primarily a ditch adjacent to an abandoned railroad grade, at toe of slope, above abandoned chromium smelter. Isolated. No defined inlet. No outlet.

Rated as Category 1 because of small size, hydrologic isolation, adjacency to disturbance, and lack of significant habitat, per OAC Rule 3745-1-54(c).

Final score 20.5	Category	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

		7
		subtotal from previous page
Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1 pts	Precipitation	
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	3
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	
		7
		subtotal

16

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	**NO** Assign a score of 4 since there are no or no apparent modifications.	**NOT SURE** Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	√
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	√

1.5

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2.5

subtotal

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points.		
	6a. Wetland Vegetation Communities. Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.	
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

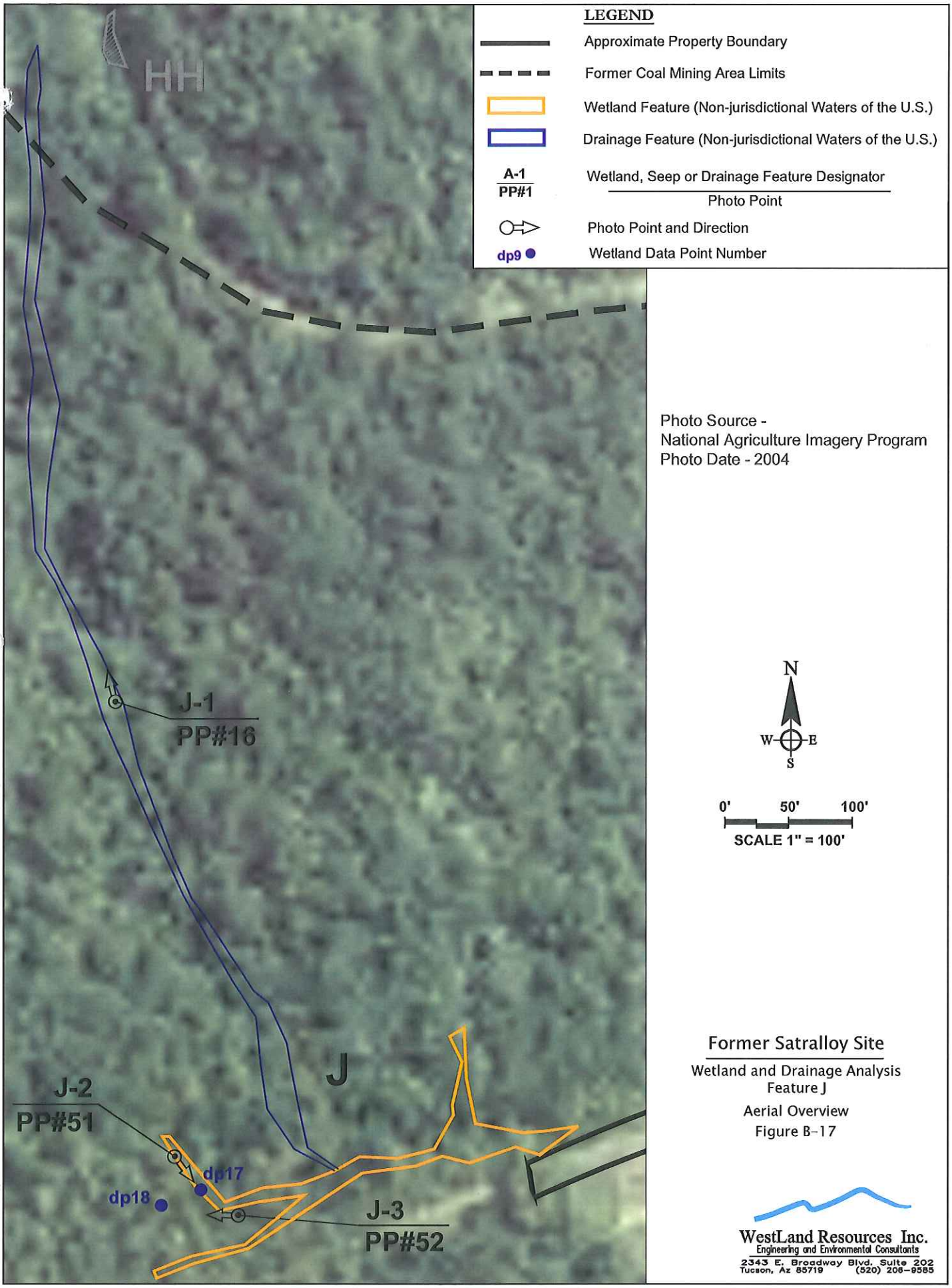
0

subtotal

ORAM Summary Worksheet

		circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	NO	If yes, Category 1.
	Question 6. Bogs	YES	NO	If yes, Category 3.
	Question 7. Fens	YES	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0		
	Metric 2. Buffers and surrounding land use	7		
	Metric 3. Hydrology	9		
	Metric 4. Habitat	4.5		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	0		
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	20.5		Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.



Former Satralloy Site

Wetland and Drainage Analysis
Feature J
Aerial Overview
Figure B-17

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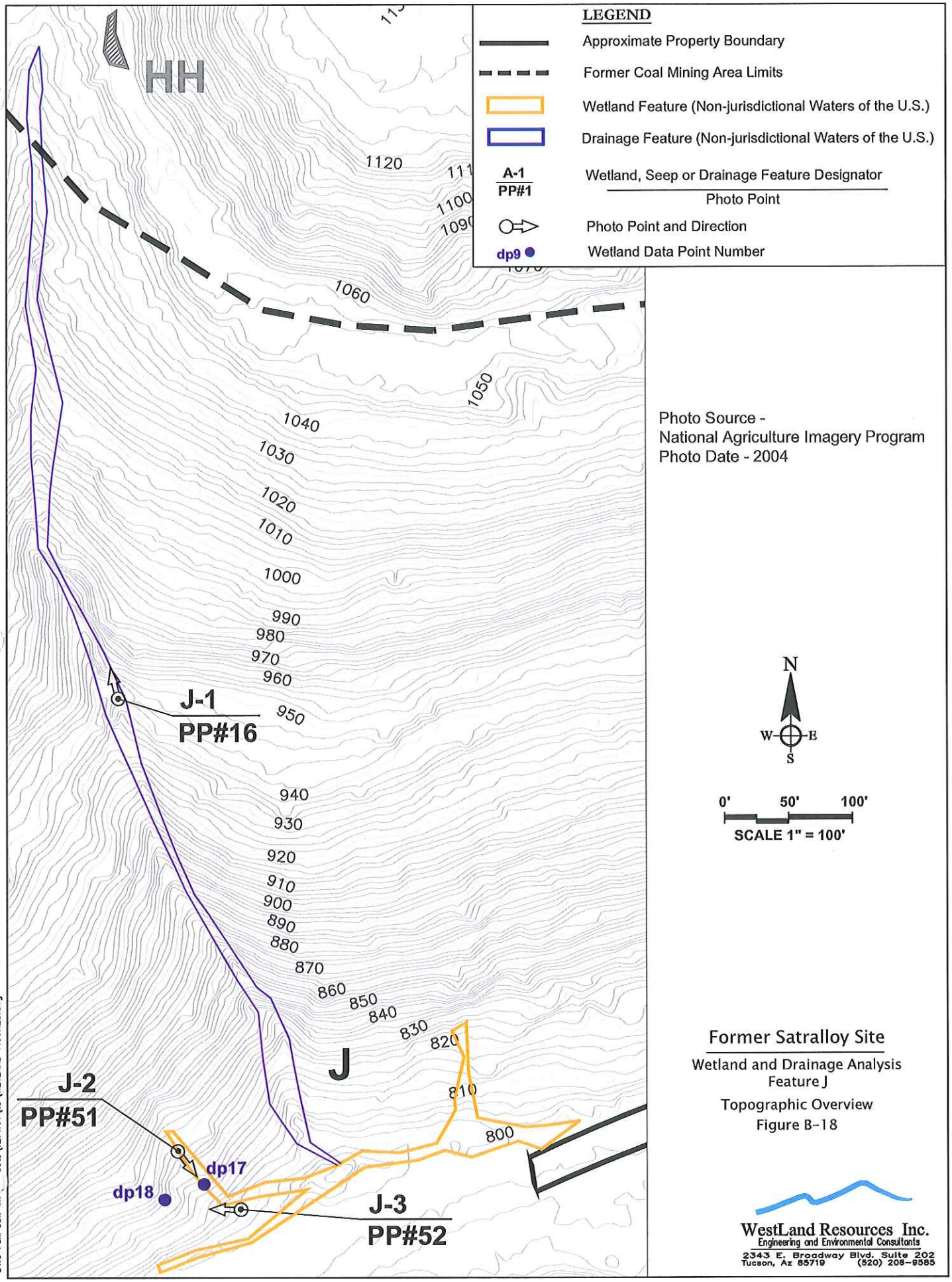
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

DWG FullPath: M:\...cts\1271.01\JD\WETLAND FIGURES.dwg


LEGEND
Approximate Property Boundary
Former Coal Mining Area Limits
Wetland Feature (Non-jurisdictional Waters of the U.S.)
Drainage Feature (Non-jurisdictional Waters of the U.S.)
A-1
PP#1
Wetland, Seep or Drainage Feature Designator
Photo Point
Photo Point and Direction
dp9
Wetland Data Point Number
HH
1120
1100
1090
1060
1050
1040
1030
1020
1010
1000
990
980
970
960
950
940
930
920
910
900
890
880
870
860
850
840
830
820
810
800
J-1
PP#16
J-2
PP#51
J-3
PP#52
J
dp17
dp18
Photo Source -
National Agriculture Imagery Program
Photo Date - 2004
N
W
E
S
0'
50'
100'
SCALE 1" = 100'
Former Satralloy Site
Wetland and Drainage Analysis
Feature J
Topographic Overview
Figure B-18
WestLand Resources Inc.
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2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719
(520) 206-9585
DWG FullPath: M:\...cts\1271.01\JD\WETLAND FIGURES.dwg

Photo point: PP16
Photo reference: J-1
View: Upper end of drainage feature, facing upgradient

Photo point: PP51
Photo reference: J-2
View: Data collection point 17 (wetland feature), facing southeast

Photo point: PP52
Photo reference: J-3
View: Data collection point 18 (upland), facing west

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Small drainage channel on steep, wooded slope.*	Data Point No.: *DP-17*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*No recent disturbances at this point.*	Location: *~10' east of J-9.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Acer negundo*	*FAC+*	*T*	8			
2	*Rosa virginiana*	*FAC*	*S*	9			
3	*Rumex crispus*	*FACU*	*H*	10			
4	*Geum laciniatum*	*FAC+*	*H*	11			
5	*Boehmeria cylindrica*	*FACW*	*H*	12			
6	*Lonicera japonica*	*FAC-*	*V*	13			
7	*Parthenocissus quinquefolia*	*FACU*	*V*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *57 %*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: 10 YR 3/1 Depth: 10" Gleyed? *No*

Mottles? *No* Mottle Colors: - Histic Epipedon? *No*

Other hydric soil indicators: *Saturated*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma, saturated.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: -

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: *Saturated to surface.*

Other field evidence of hydrology: *Seepage area in small stream channel, about 2 feet from flowing water.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Saturated.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for all parameters.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/7/06*

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Tucson, Arizona 85719

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Steep slope above stream channel J.*	Data Point No.: *DP-18*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*No recent disturbances at this point.*	Location: *~15' west of J-9.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Ulmus americana*	*FACW*	*T*	8			
2	*Fraxinus pennsylvanica*	*FACW*	*T*	9			
3	*Rosa multiflora*	*FACU*	*S*	10			
4	*Boehmeria cylindrica*	*FACW*	*H*	11			
5	*Pycnanthemum loomisii*	*UPL*	*H*	12			
6	*Geum canadense*	*FACU*	*H*	13			
7	*Vitus labrusca*	*FACU*		14			

Percent of dominant species that are OBL, FACW, and/or FAC: *43 %*

Is the hydrophytic vegetation criterion met? *No* Rationale: *< 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: *10 YR 4/3* Depth: *10"* Gleyed? *No*

Mottles? *None* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *None*

Is the hydric soil criterion met? *No* Rationale: *High chroma, no mottles.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None. Slope above bottom of channel.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for any parameter.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/7/06*

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2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: J

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Site is an intermittent stream channel supported by zones of groundwater seepage. Outlet at culvert under abandoned railroad grade to Wetland K.

Rated as Category 1 because of small size, lack of significant habitat, and disturbances.

Final score 27	Category	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

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subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	1
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	3
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

9

subtotal

19

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	2
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	2
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	

4

subtotal

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	1	
	Metric 2. Buffers and surrounding land use	7	
	Metric 3. Hydrology	11	
	Metric 4. Habitat	6	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	2	
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	27	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

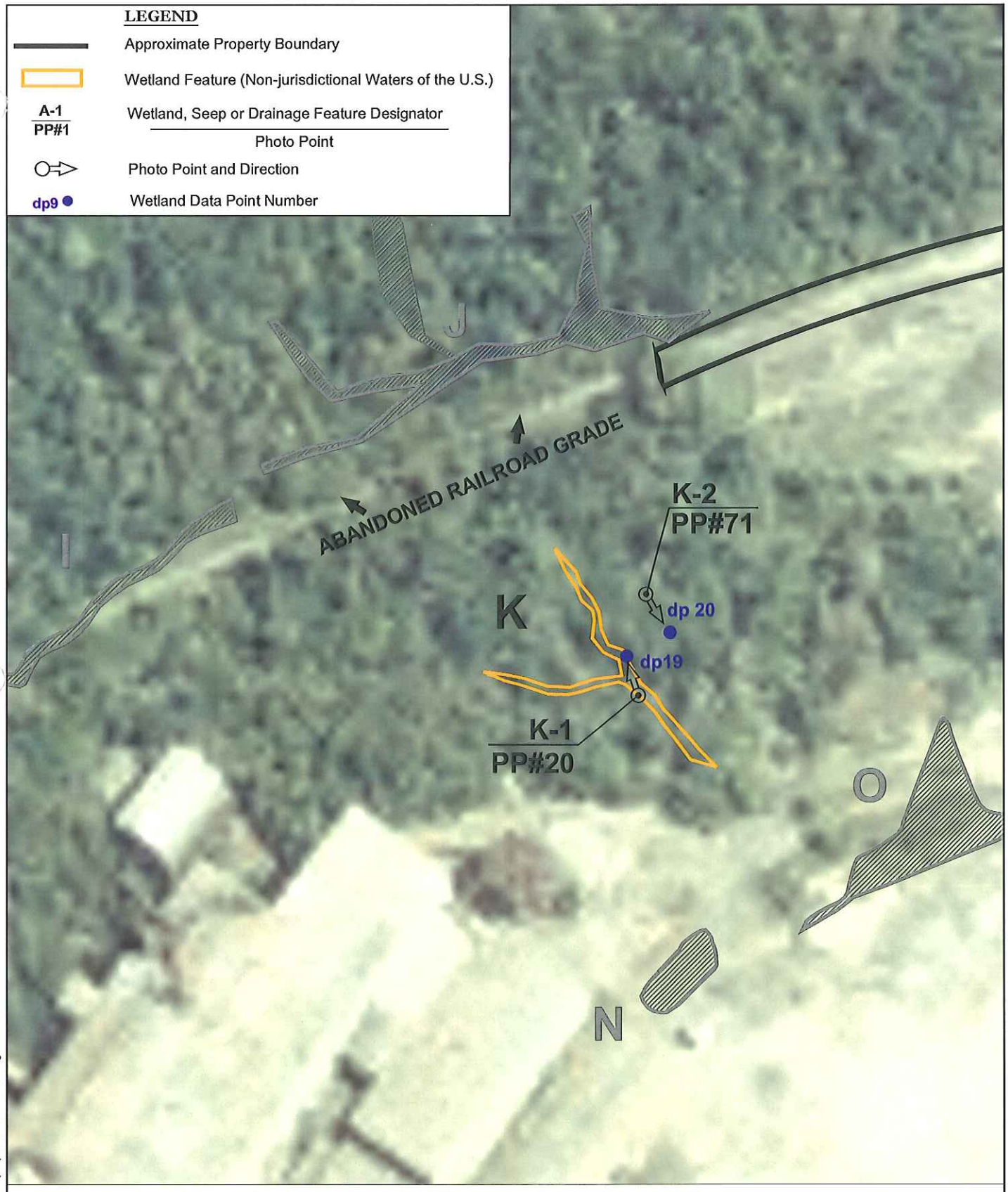

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

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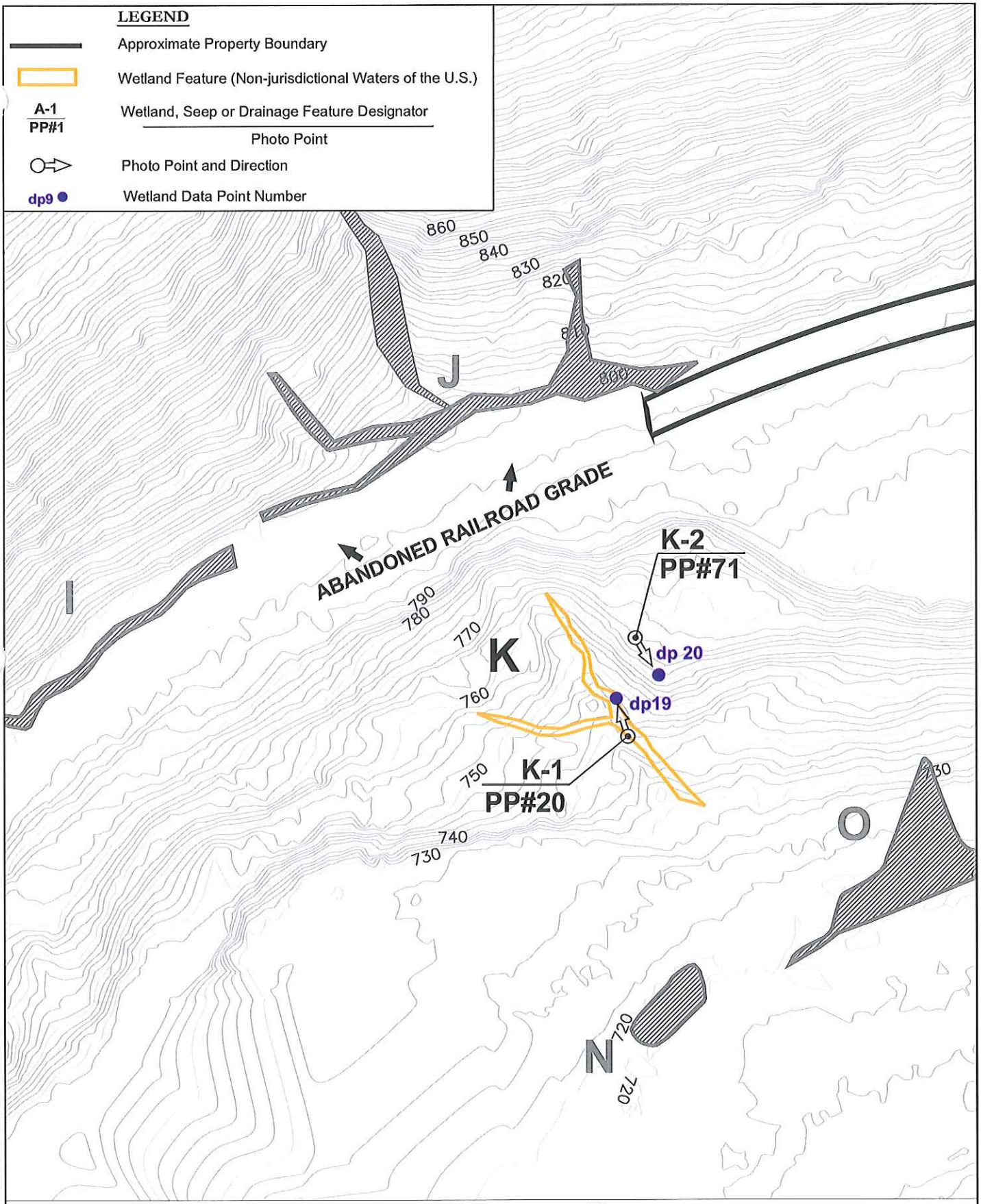
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature K
Aerial Overview
Figure B-19

DWG FullPath: M. ...cts\1271.01\JD\WETLAND FIGURES.dwg



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0' 50' 100'
SCALE 1" = 100'
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N
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Former Satralloy Site
Wetland and Drainage Aanalysis
Feature K
Topographic Overview
Figure B-20

DWG FullPath: M:\s\1271.01\JD\WETLAND FIGURES.dwg

Photo point: PP20
Photo reference: K-1
View: Drainage feature K, data collection point 19 (drainage feature), facing northwest

Photo point: PP72
Photo reference: K-2
View: Data collection point 20 (upland), facing southeast

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Wooded slope along small drainage feature northeast of Bag House and below old railroad grade.*	Data Point No.:	*DP-19*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area?	*No*
Site Disturbance?	*No recent disturbance at this point.*	Location:	*~ 7 meters east of K-38*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Ulmus americana*	*FACW*	*T*	8			
2	*Acer negundo*	*FAC+*	*T*	9			
3	*Laportea canadensis*	*FACW*	*H*	10			
4	*Glechoma hederacea*	*FACU*	*H*	11			
5	*Geum canadense*	*FACU*	*H*	12			
6	*Rubus idaeus*	*FACU*	*H*	13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *≤ 27%*

Is the hydrophytic vegetation criterion met? *No* Rationale: *≤ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: *10YR 3/3* Depth: *10"* Gleyed? *No*

Mottles? *No* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *None*

Is the hydric soil criterion met? *No* Rationale: *High chroma, no mottles, no saturation.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for any parameter.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *L. Rae, J. Ginter*

Project No.: *1271.01* Date: *7/7/06*

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Tucson, Arizona 85719

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Small drainage feature adjacent to Bag House.*	Data Point No.: *DP-20*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Scrap metal and pipe materials present in channel and large amount of scrap metal above culvert inlet.*	Location: *Between K-38 and K-32*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Acer negundo*	*FAC+*	*T*	8			
2	*Ulmus americana*	*FACW*	*T*	9			
3	*Ailanthus altissima*	*NI*	*T*	10			
4	*Geum canadense*	*FACU*	*H*	11			
5	*Sedum ternatum*	*UPL*	*H*	12			
6	*Polygonum sachalinense*	*UPL*	*H*	13			
7	*Glechoma hederacea*	*FACU*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *33%*

Is the hydrophytic vegetation criterion met? *No* Rationale: *≤ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: *7.5YR 5/2* Depth: *8"* Gleyed? *No*

Mottles? *Yes* Mottle Colors: *7.5YR 2.5/1* Histic Epipedon? *No*

Other hydric soil indicators: *Saturated conditions.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma, mottles, saturated.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *~ 0.5"- 1"*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: -

Other field evidence of hydrology: *Center of channel exhibits low level surface flow.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Inundated and saturated.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for soil and hydrology, facultative wet plant species present.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *L. Rae, J. Ginter*

Project No.: *1271.01* Date: *7/7/06*

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Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

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Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: K

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Site is an intermittent stream channel in the second growth forest. Receives input from Wetland J through culvert. Discharges through long culvert to Wetland C.

Rated as Category 1 because of small size, extensive surrounding disturbances, and lack of high-quality habitat.

Final score 20	**Category**	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

5

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	1
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	2
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

8

subtotal

15

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	**NO** Assign a score of 4 since there are no or no apparent modifications.	**NOT SURE** Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	2
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

3

subtotal

20

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	5	
	Metric 3. Hydrology	10	
	Metric 4. Habitat	5	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	0	
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	20	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

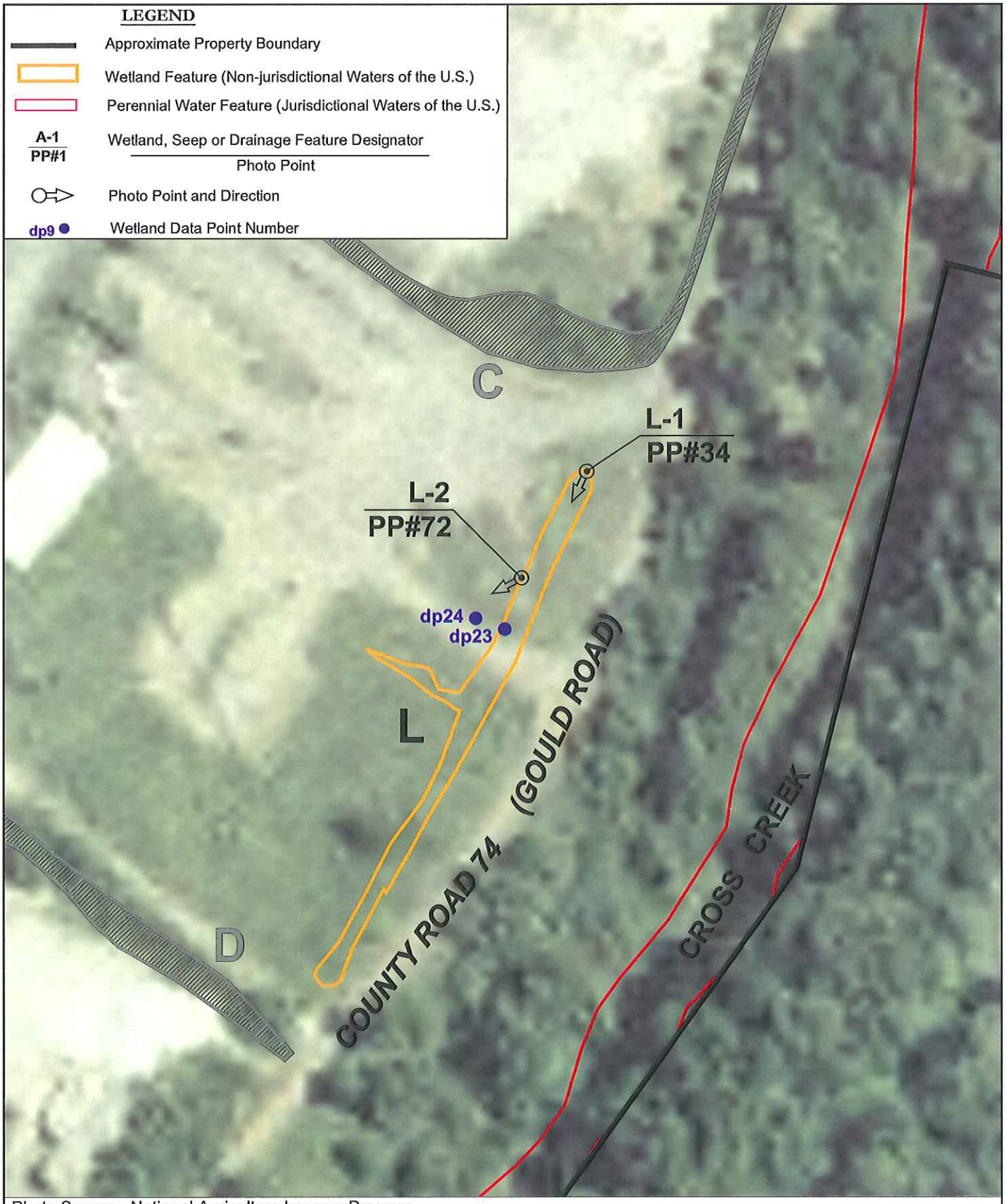

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

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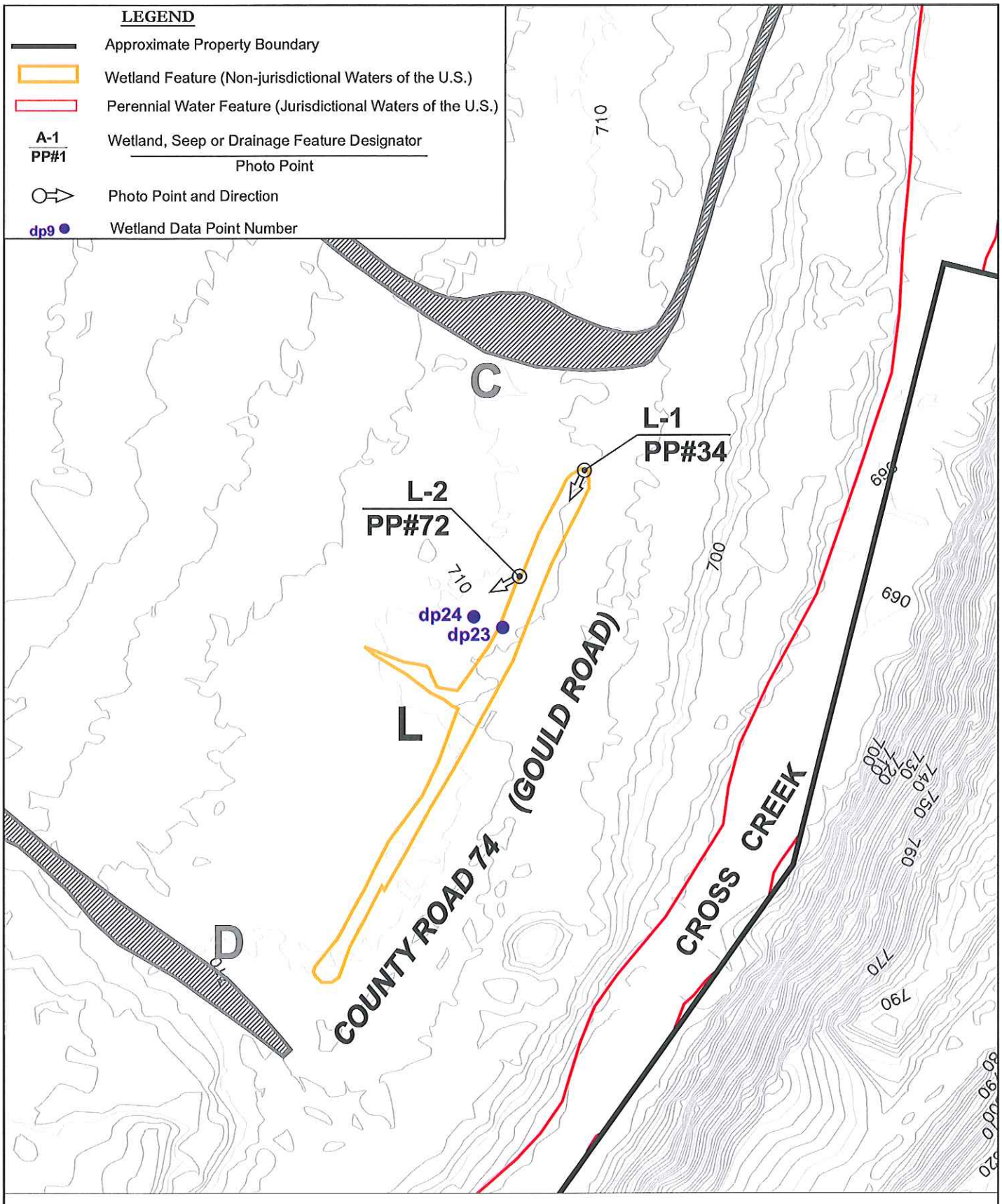
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature L
Aerial Overview
Figure B-21

DWG FullPath: W:\...\jects\1271.01\JD\WETLAND FIGURES.dwg



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2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'
Contour Interval = 2'

N
W E
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Former Satralloy Site
Wetland and Drainage Analysis
Feature L
Topographic Overview
Figure B-22

DWG FullPath: M:\...\cts\1271.01\JD\WETLAND FIGURES.dwg

Photo point: PP34
Photo reference: L-1
View: Ponded area by berm, facing southwest

Photo point: PP72
Photo reference: L-2
View: Upland area adjacent to Feature L, facing west

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Wetland L. Basin in front of site along Gould Road*	Data Point No.:	*DP-23*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*This retention area is a result of a man-made earthen berm parallel to Gould Road.*	Location:	*~ 20 feet east of L-10*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratu		Dominant Plant Species	Indicator Status	Stratu
1	*Salix exigua*	*OBL*	*S*	8			
2	*Eleocharis* sp.	*FACW or OBL*	*H*	9			
3	*Agrostis gigantea*	*FACW*	*H*	10			
4	*Polygonum persicaria*	*FACW or OBL*	*H*	11			
5	*Trifolium pratense*	*FACU*	*H*	12			
6	*Rumex crispus*	*FACU*	*H*	13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *87%*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: *No*

Horizon *B* Matrix Color: Gley 2 4/5BG Depth: 6 "- 8" Gleyed? *Yes*

Mottles? *Yes* Mottle Colors: *Various Colors.* Histic Epipedon? *No*

Other hydric soil indicators: *Saturated, hydrogen sulfide odor.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma, gleyed, saturated.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *~ 6"*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: -

Other field evidence of hydrology: *Depression is inundated with water, up to 3' in some areas.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Saturated, inundated.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for all parameters. Basin collects seepage from industrial area in front of buildings in to Cross Creek, passing through two culverts.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *L. Rae, J. Ginter*

Project No.: *1271.01* Date: *7/7/06*

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Tucson, Arizona 85719

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Cleared area northeast of Wetland L basin.*	Data Point No.: *DP-24*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Site has been disturbed by industrial activity related to the chromium smelter.*	Location: *~ 20 feet north of DP-23*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Plantago lanceolata*	*UPL*	*H*	8			
2	*Erigeron strigosus*	*FACU+*	*H*	9			
3	*Festuca obtusa*	*FACU*	*H*	10			
4	*Trifolium pratense*	*FACU*	*H*	11			
5	*Centaurea maculosa*	*UPL*	*H*	12			
6	*Daucus carota*	*UPL*	*H*	13			
7	*Trifolium campestre*	*UPL*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *0%*

Is the hydrophytic vegetation criterion met? *No* Rationale: *≤ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: *No*

Horizon *-* Matrix Color: *10YR 4/3* Depth: *5"* Gleyed? *No*

Mottles? *No* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *None*

Is the hydric soil criterion met? *No* Rationale: *High chroma, no mottles, no saturation.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *Highly disturbed with no positive indicators for any parameter.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *L. Rae, J. Ginter*

Project No.: *1271.01* Date: *7/7/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: L

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Site is primarily a stormwater drainage feature. Partially excavated. Dischage through culvert to Cross Creek.

Final score 12	**Category**	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

		2
		subtotal from previous page
Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	1
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	2
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

5

subtotal

8

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	**NO** Assign a score of 4 since there are no or no apparent modifications.	**NOT SURE** Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

11

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	NO	If yes, Category 1.
	Question 6. Bogs	YES	NO	If yes, Category 3.
	Question 7. Fens	YES	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	1		
	Metric 2. Buffers and surrounding land use	1		
	Metric 3. Hydrology	6		
	Metric 4. Habitat	3		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	1		
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	12		Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

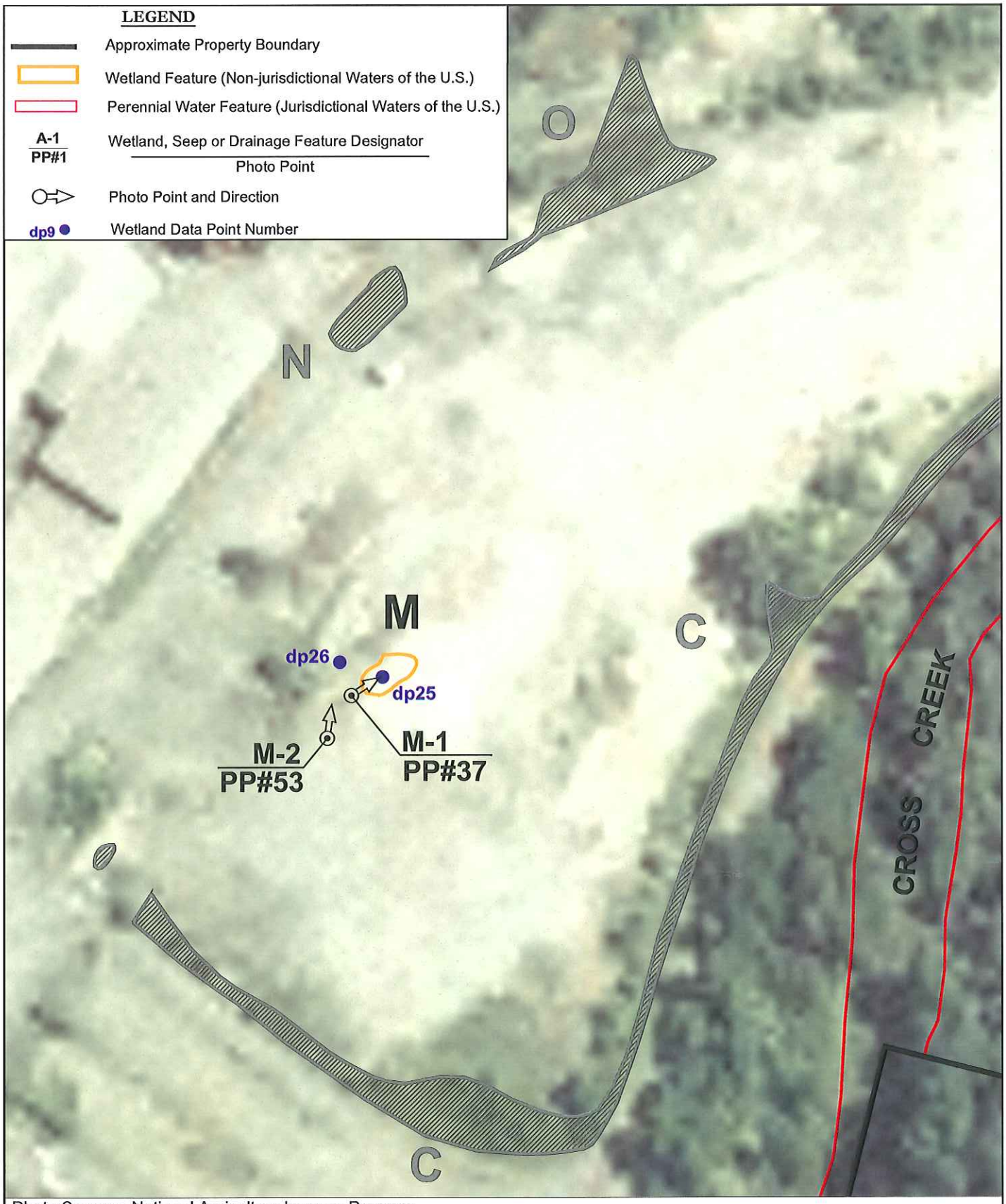

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

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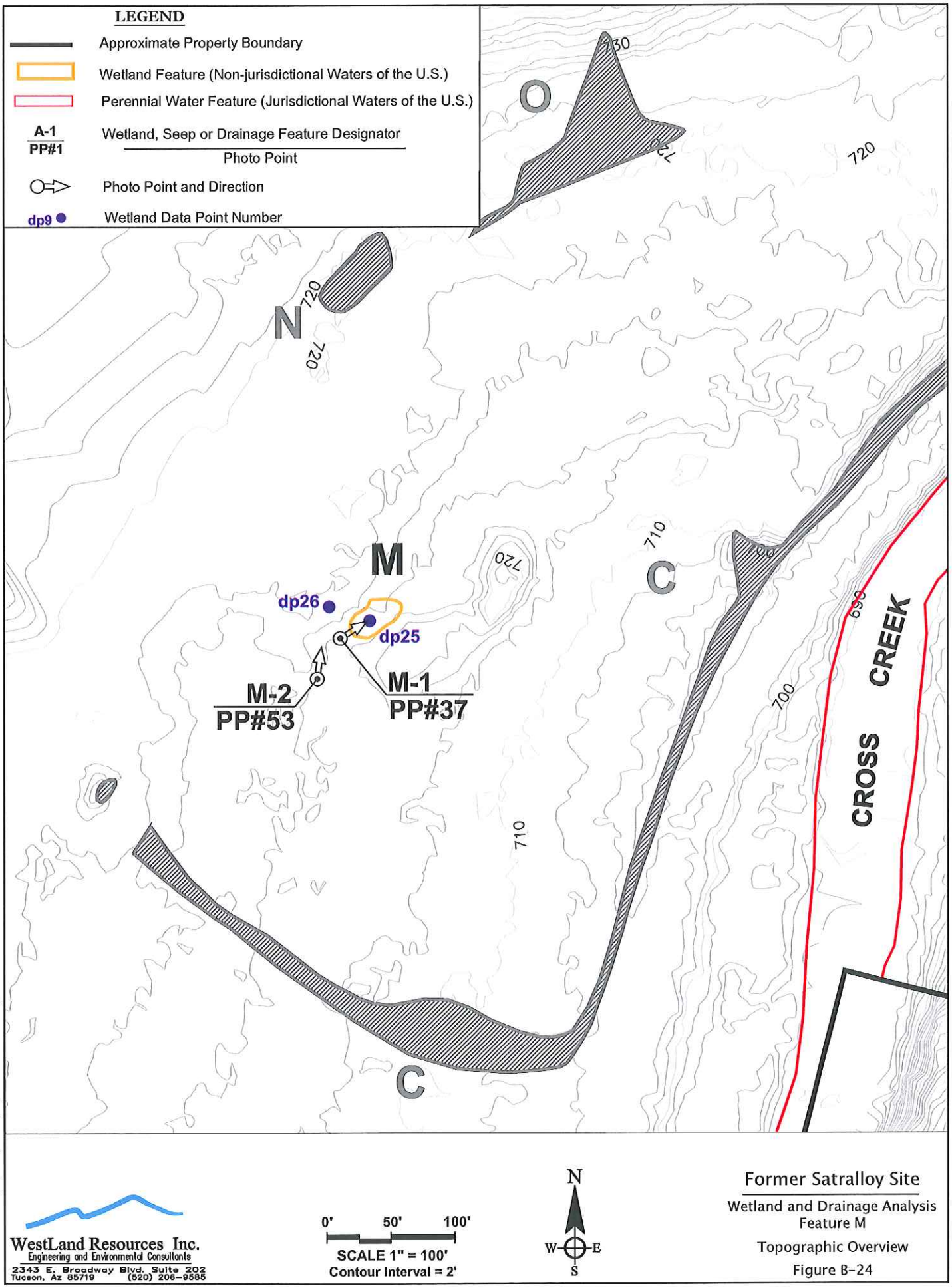
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature M
Aerial Overview
Figure B-23

DWG FullPath: M:_cts\1271.01\JD\WETLAND FIGURES.dwg



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0' 50' 100'
SCALE 1" = 100'
Contour Interval = 2'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature M
Topographic Overview
Figure B-24

Photo point: PP37
Photo reference: M-1
View: Data collection point 25 (wetland feature), facing northeast

Photo point: PP53
Photo reference: M-2
View: Data collection point 26 (upland), facing north

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Isolated low area near smelter.*	Data Point No.: *DP-25*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Man-induced wetland in disturbed area near smelter, surrounded by slag..*	Location: *Near center of basin.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Carex laevivaginata*	*OBL*	*H*	8			
2	*Apocynum cannabinum*	*FACU*	*H*	9			
3	*Agrostis gigantea*	*FACW*	*H*	10			
4	*Eupatorium perfoliatum*	*FACW*	*H*	11			
5				12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *75%*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: *No*

Horizon *-* Matrix Color: *10 YR 4/2* Depth: *6"* Gleyed? *No*

Mottles? *Yes* Mottle Colors: *Various colors.* Histic Epipedon? *No*

Other hydric soil indicators: *Saturated. No soil develelopment. Thin sediments over slag from smelter.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma with mottles.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *1"*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *Isolated, closed topographic basin in highly disturbed area.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Site is inundated and supports hydrophytic vegetation. Insufficient time for soil development.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for vegetation and hydrology. Highly disturbed soil conditions.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D.*

Project No.: *1271.01* Date: *7/7/06*

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DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Cleared area in industrial site.*	Data Point No.: *DP-26*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Heavily disturbed, slag area near concrete pad.*	Location: *~15' north of M-7.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Populus deltoides*	*FAC*	*T*	8			
2	*Toxidodendron radicans*	*FAC*	*S*	9			
3	*Melilotus officinalis*	*FACU*	*H*	10			
4	*Centaurea stoebe* ssp. *micranthos*	*UPL*	*H*	11			
5				12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *50%*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

Vegetation limited to weedy herbaceous species.

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: *No*

Horizon *-* Matrix Color: *-* Depth: *-* Gleyed? *No*

Mottles? *None* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *None. No soil development. Nothing but broken slag from smelter.*

Is the hydric soil criterion met? *No* Rationale: *No soil development, lots of slag.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *Highly disturbed, no positive indicators for soil or hydrology.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/7/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: M

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Site is man-induced wetland in low area near abandoned chromium smelter. Water is isolated, perched on impermeable slag layer.

Final score 0	Category	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

1

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	2
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

4

subtotal

6

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	**NO** Assign a score of 4 since there are no or no apparent modifications.	**NOT SURE** Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

-1

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	NO	If yes, Category 1.
	Question 6. Bogs	YES	NO	If yes, Category 3.
	Question 7. Fens	YES	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0		
	Metric 2. Buffers and surrounding land use	1		
	Metric 3. Hydrology	5		
	Metric 4. Habitat	3		
	Metric 5. Special Wetland Communities	-10		
	Metric 6. Plant communities, interspersion, microtopography	1		
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	0		Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

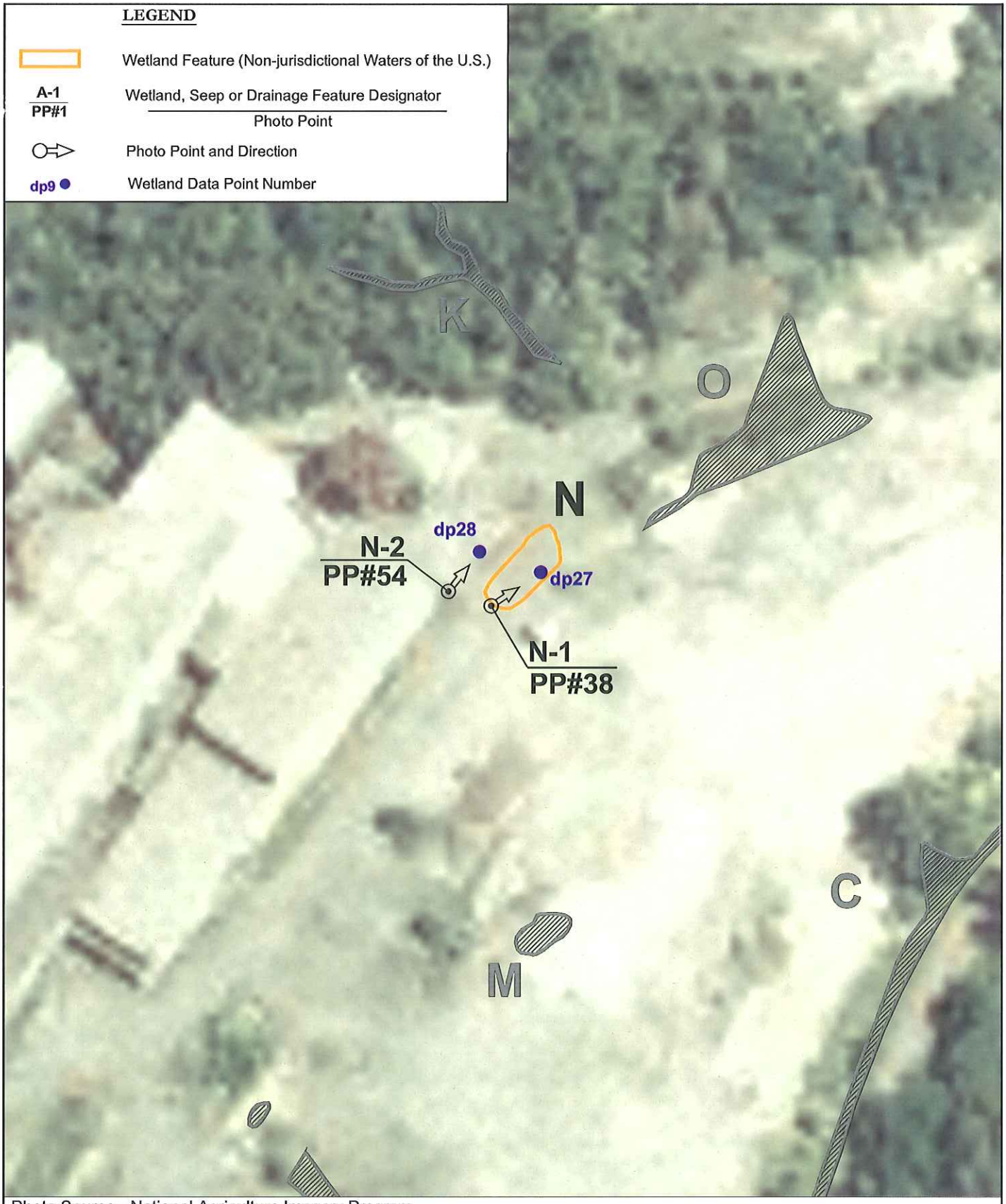

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

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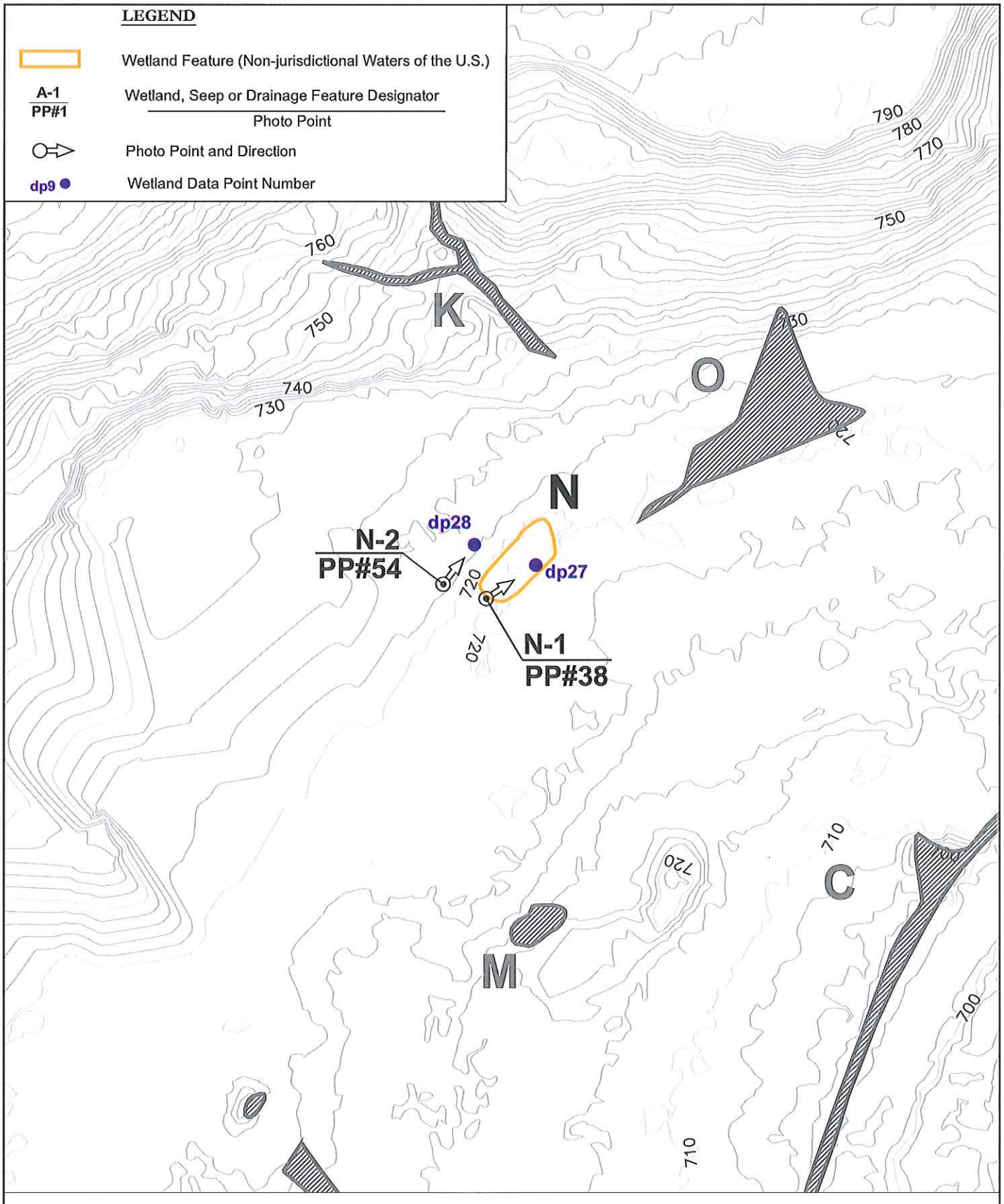
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature N
Aerial Overview
Figure B-25

DWG FullPath: M:\...cts\1271.01\JD\WETLAND FIGURES.dwg



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0' 50' 100'
SCALE 1" = 100'
Contour Interval = 2'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature N
Topographic Overview
Figure B-26

DWG FullPath: M:\...cts\1271.01\JD\WETLAND FIGURES.dwg

Photo point: PP38
Photo reference: N-1
View: Data collection point 27 (wetland feature), facing northeast

Photo point: PP54
Photo reference: N-2
View: Data collection point 28 (upland), facing northeast

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Isolated low area near smelter.*	Data Point No.:	*DP-27*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area?	*No*
Site Disturbance?	*Man-induced wetland in disturbed area near smelter, surrounded by slag.*	Location:	*Near center, Wetland N.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Typha angustifolia*	*OBL*	*H*	8			
2	*Juncus tenuis*	*FAC*	*H*	9			
3	*Apocynum cannabinum*	*FACU*	*H*	10			
4				11			
5				12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *67 %*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: -

Horizon *B* Matrix Color: 2.5 Y 4/1 Depth: 4" Gleyed? *No*

Mottles? *None* Mottle Colors: - Histic Epipedon? *No*

Other hydric soil indicators: *Saturated.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma. No soil development.*

Some sediments collected over slag.

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *~4"*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: *To surface.*

Other field evidence of hydrology: *Small, closed basin. Lots of tadpoles.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Inundated and saturated.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for all parameters.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/7/06*

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DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Slag area near driveway, northeast of smelter..*	Data Point No.:	*DP-28*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*Slag area near driveway.*	Location:	*~15' northwest of N-4.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Melilotus officinalis*	*FACU*	*H*	8			
2	*Centaurea stoebe* ssp. *micranthos*	*UPL*	*H*	9			
3	*Cichorium intybus*	*UPL*	*H*	10			
4				11			
5				12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *0 %*

Is the hydrophytic vegetation criterion met? *No* Rationale: *≤ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: *No*

Horizon - Matrix Color: - Depth: - Gleyed? -

Mottles? - Mottle Colors: - Histic Epipedon?

Other hydric soil indicators: *None. No soil.*

Is the hydric soil criterion met? *No* Rationale: *No soil. Site is on broken slag*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: -

Is the soil saturated? *No*

Depth to free-standing water in probe hole: -

Other field evidence of hydrology: *None. Site is ~3' above standing water.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for any parameter.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/7/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: N

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Site is man-induced wetland in low area near abandoned chromium smelter. Water is isolated, perched on impermeable slag layer.

Final score 0	Category	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

1

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	2
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

4

subtotal

6

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		score
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

-1

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points.		
	6a. Wetland Vegetation Communities. Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.	
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES **NO**	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES **NO**	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES **NO**	If yes, Category 3.
	Question 4. Significant bird habitat	YES **NO**	If yes, Category 3.
	Question 5. Category 1 Wetlands	**YES** NO	If yes, Category 1.
	Question 6. Bogs	YES **NO**	If yes, Category 3.
	Question 7. Fens	YES **NO**	If yes, Category 3.
	Question 8a. Old Growth Forest	YES **NO**	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES **NO**	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES **NO**	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES **NO**	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES **NO**	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES **NO**	If yes, Category 3
	Question 11. Relict Wet Prairies	YES **NO**	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	1	
	Metric 3. Hydrology	5	
	Metric 4. Habitat	3	
	Metric 5. Special Wetland Communities	-10	
	Metric 6. Plant communities, interspersion, microtopography	1	
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	0	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

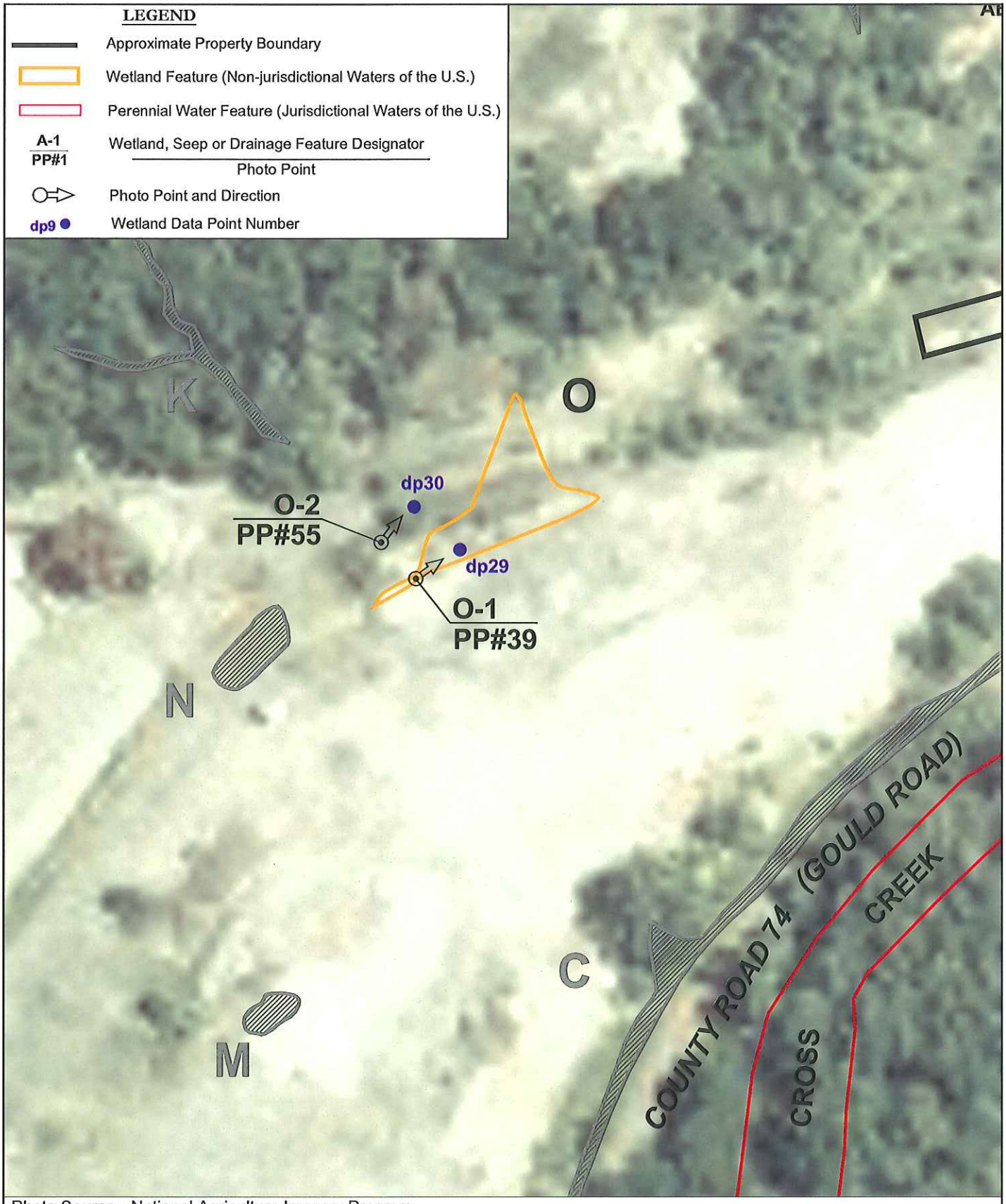

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

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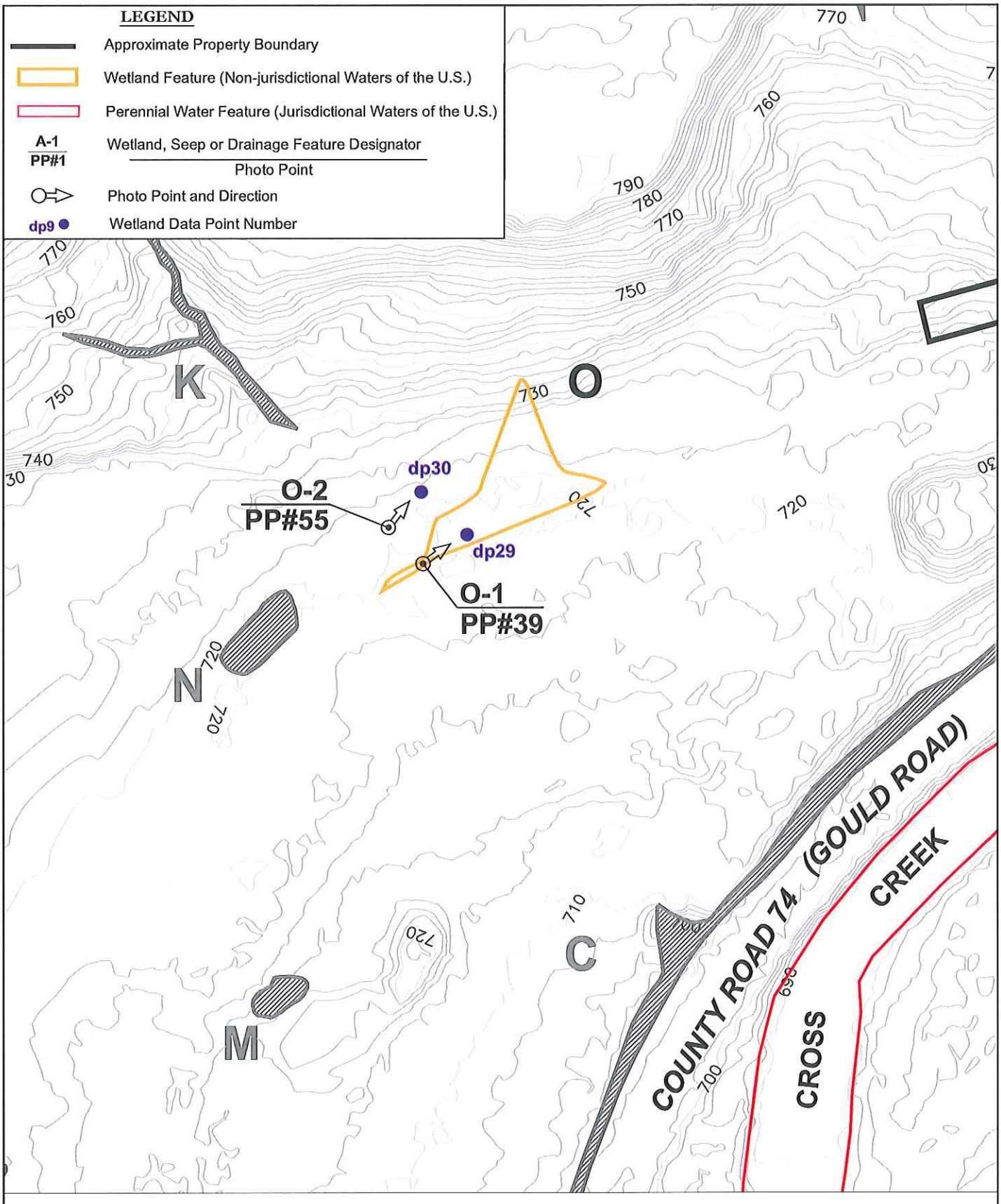
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature O
Aerial Overview
Figure B-27

DWG FullPath: M:\...cts\1271.01\JD\WETLAND FIGURES.dwg



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0' 50' 100'
SCALE 1" = 100'
Contour Interval = 2'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature O
Topographic Overview
Figure B-28

DWG FullPath: i:\...\cts\1271.01\JD\WETLAND FIGURES.dwg

Photo point: PP39
Photo reference: O-1
View: Data collection point 29 (wetland feature), facing northeast

Photo point: PP55
Photo reference: O-2
View: Data collection point 30 (upland), facing northeast

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Drainage ditch leading to culvert..*	Data Point No.: *DP-29*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Disturbed area near smelter, site is crossed by old railroad grade.*	Location: *~10' west of 0-4.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Platanus occidentalis*	*FACW*	*T*	8			
2	*Typha angustifolia*	*OBL*	*H*	9			
3	*Agrostis gigantea*	*FAC*	*H*	10			
4	*Apocynum cannabinum*	*FACU*	*H*	11			
5				12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *75%*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: *No*

Horizon *B* Matrix Color: 10 YR 4/3 Depth: *5"* Gleyed? *No*

Mottles? *None* Mottle Colors: - Histic Epipedon? *No*

Other hydric soil indicators: *Saturated. Disturbed conditions.*

Is the hydric soil criterion met? *Yes* Rationale: *Saturated.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *~1"*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: -

Other field evidence of hydrology: *Drainage channel. Outlet through culvert to Cross Creek.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Inundated and saturated.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for all parameters. Ditch carries runoff from smelter to Cross Creek, passing through two culverts.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/7/06*

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DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Cleared area in chromium smelter industrial site.*	Data Point No.:	*DP-30*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*Old railroad bed, some ties still in place.*	Location:	*~15' northwest of O-11.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Platanus occidentalis*	*FACW*	*T*	8			
2	*Acer negundo*	*FAC+*	*T*	9			
3	*Toxicodendron radicans*	*FAC*	*S*	10			
4	*Melilotus officinalis*	*FACU*	*H*	11			
5	*Centaurea stoebe* ssp. *micranthos*	*UPL*	*H*	12			
6	*Eupatorium altissimum*	*UPL*	*H*	13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *50 %*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50 % FAC, FACW, or OBL*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: *No*

Horizon *-* Matrix Color: *2.5 Y 4/2* Depth: *~5"* Gleyed? *No*

Mottles? *None* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *No soil development. Very sandy, gravelly.*

Is the hydric soil criterion met? *No* Rationale: *No soil development, low chroma without mottles.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None. ~2' above water in ditch.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for soil or hydrology. Vegetation marginal.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/7/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: O

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Site is man-induced wetland in low area near abandoned chromium smelter. Water is mostly perched on impermeable slag layer.

Final score -1	Category	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

		2
		subtotal from previous page
Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	2
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

4	
subtotal	

7

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	**NO** Assign a score of 4 since there are no or no apparent modifications.	**NOT SURE** Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

0

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	NO	If yes, Category 1.
	Question 6. Bogs	YES	NO	If yes, Category 3.
	Question 7. Fens	YES	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	1		
	Metric 2. Buffers and surrounding land use	1		
	Metric 3. Hydrology	5		
	Metric 4. Habitat	3		
	Metric 5. Special Wetland Communities	-10		
	Metric 6. Plant communities, interspersion, microtopography			
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	-1		Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

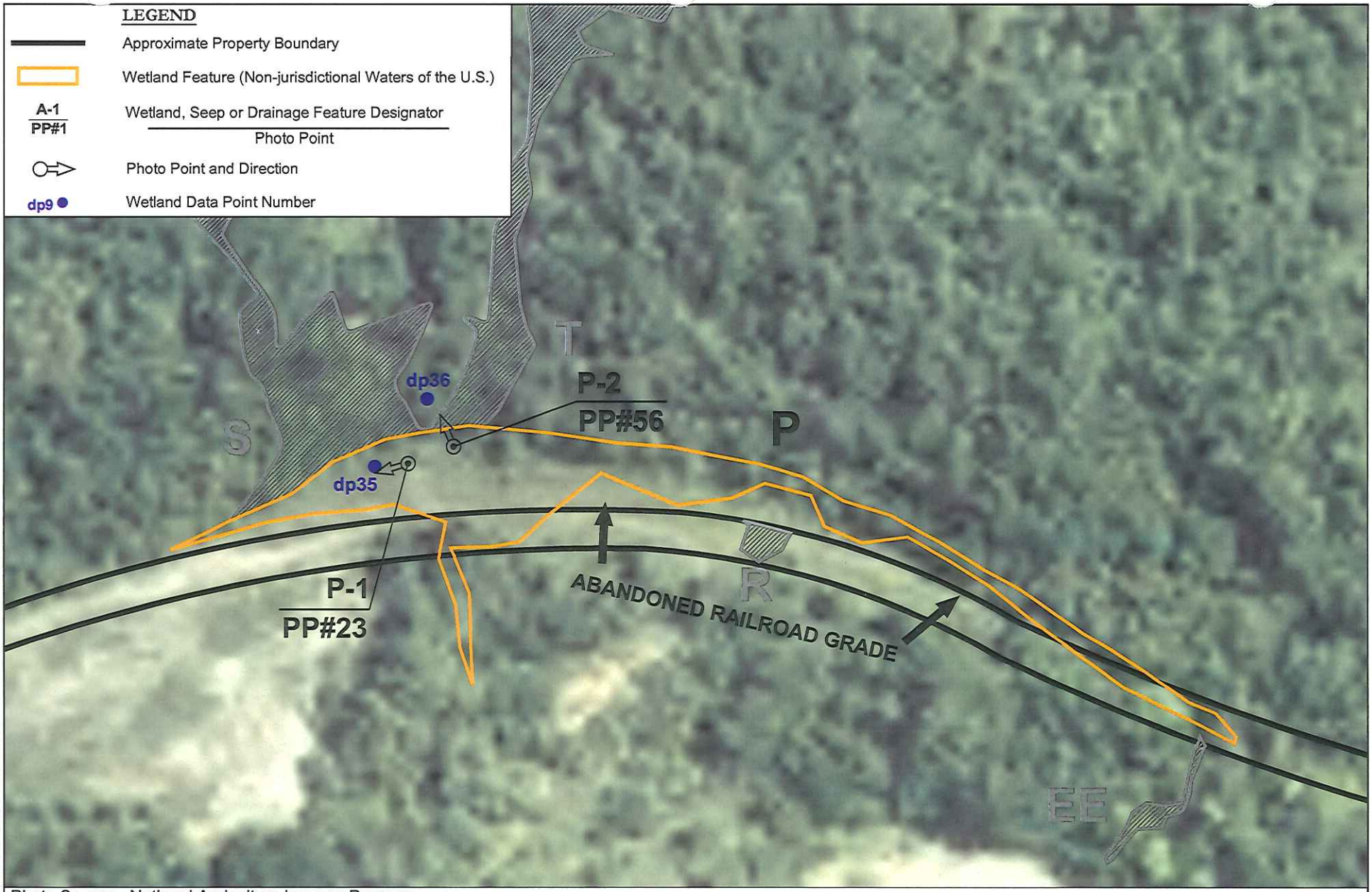


Photo Source - National Agriculture Imagery Program
Photo Date - 2004

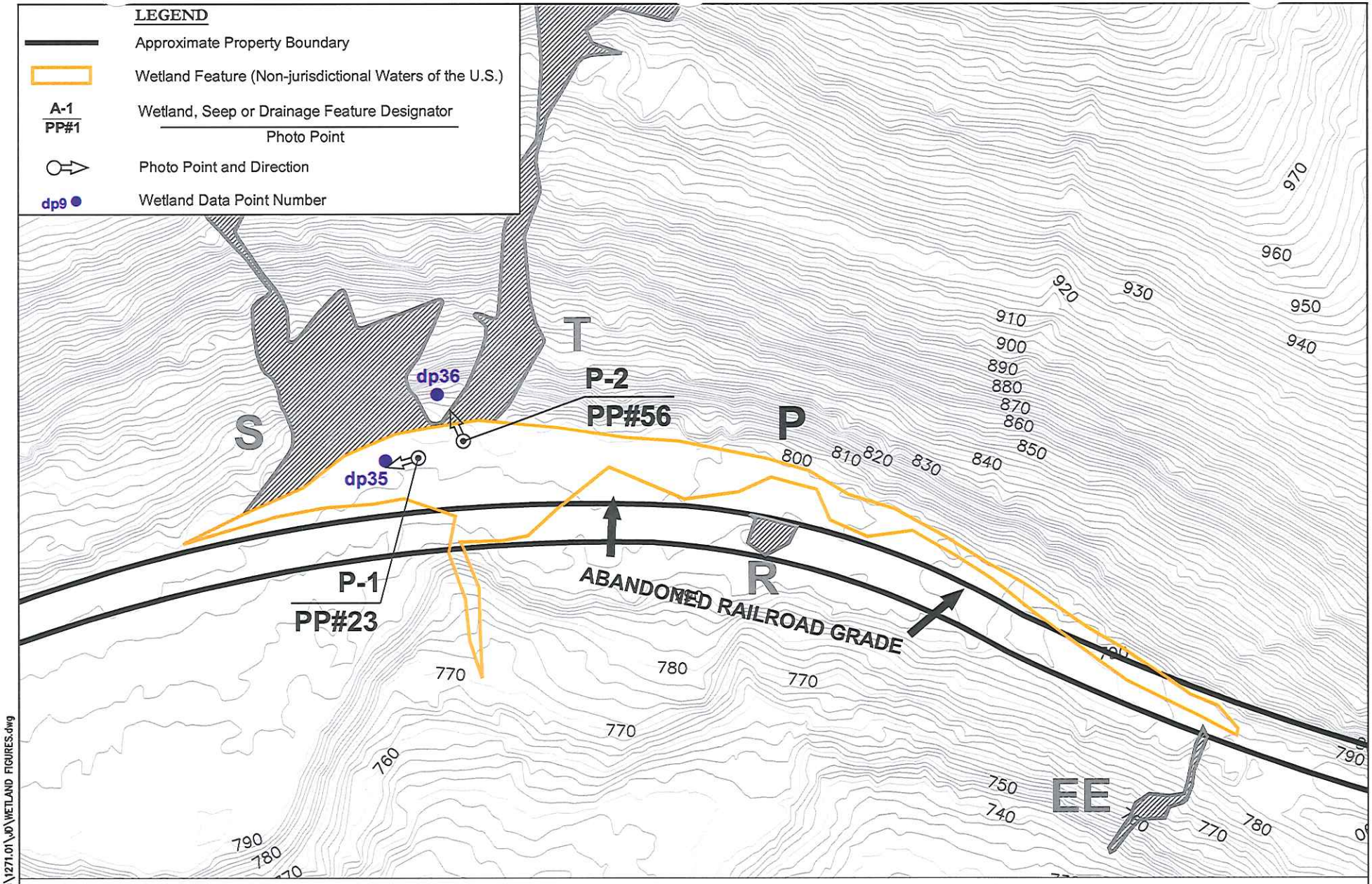
WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature P
Aerial Overview
Figure B-29

DWG FullPath: M:\projects\1271.01\JD\WETLAND FIGURES.dwg



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Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'
Contour Interval = 2'

N
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Former Satralloy Site

Wetland and Drainage Analysis
Feature P
Topographic Overview
Figure B-30

DWG FullPath: M:\projects\1271.01\JD\WETLAND FIGURES.dwg

Photo point: PP23
Photo reference: P-1
View: Data collection point 35 (wetland feature), facing west

Photo point: PP56
Photo reference: P-2
View: Data collection point 36 (upland), facing northwest

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Wet area between toe of slope and railroad grade.*	Data Point No.: *DP-35*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Disturbed by railroad grade, excavation at toe of slope.*	Location: *~15' southwest of P-22.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Crataegus chrysocarpa*	*UPL*	*S*	8			
2	*Rosa multiflora*	*FACU*	*S*	9			
3	*Typha angustifolia*	*OBL*	*H*	10			
4	*Tussilago farfara*	*FACU*	*H*	11			
5				12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *25%*

Is the hydrophytic vegetation criterion met? *No* Rationale: *≤ 50% FAC, FACW, or OBL*

Shrubs may be rooted in upland soils.

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: *No*

Horizon *-* Matrix Color: *5 Y 3/1* Depth: *10"* Gleyed? *Yes*

Mottles? *No* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *Saturated. Sulfur smell.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma, sulfur smell, saturated.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *~6"*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *Low area at toe of slope. Lots of ranid frogs.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Inundated, saturated.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for soil and hydrology, obligate plant species present.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/8/06*

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Tucson, Arizona 85719

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions: *Forested slope above wetland.*		Data Point No.: *DP-36*
Do Normal Circumstances Exist on Site? *Yes*	Is Site a Potential Problem Area? *No*	
Site Disturbance?	*No recent disturbances.*	Location: *~30' north of DP-35.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Rhus typhina*	*UPL*	*T*	8	*Tussilago farfara*	*FACU*	*H*
2	*Ulmus americana*	*FACW*	*T*	9			
3	*Crataegus chrysocarpa*	*UPL*	*T*	10			
4	*Symphoricarpos albus*	*FACU*	*S*	11			
5	*Lonicera canadensis*	*FACU*	*S*	12			
6	*Toxicodendron radicans*	*FAC*	*S*	13			
7	*Rosa multiflora*	*FACU*	*S*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *25 %*
Is the hydrophytic vegetation criterion met? *No* Rationale: *< 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*
Horizon *B* Matrix Color: *10 YR 3/3* Depth: *10"* Gleyed? *No*
Mottles? *Some* Mottle Colors: *7.5 YR 3/4* Histic Epipedon? *No*
Other hydric soil indicators: *None. Looks like old slide area.*
Is the hydric soil criterion met? *No* Rationale: *High chroma.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: -
Is the soil saturated? *No*
Depth to free-standing water in probe hole: -
Other field evidence of hydrology: *None. ~8' above water level.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*
Rationale for wetland decision: *No positive indicators for any parameter.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*
Field Investigator(s): *T. Strong, D. Ward*
Project No.: *1271.01* Date: *7/8/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: P

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Site is a wetland area at toe of the slope, created or enhanced by clearing and construction of railroad grade to serve chromium smelter. Current outlet is through culvert to Wetland EE. Prior to disturbance, flow probably continued downslope below Wetlands S and T.

Rated as Category 1 because of disturbances, hydrologic isolation, and invasive species.

Final score 24	Category	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

9

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	1
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	4
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

10

subtotal

20

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	**NO** Assign a score of 4 since there are no or no apparent modifications.	**NOT SURE** Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	2
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	

3

subtotal

24

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	1
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

1

subtotal

ORAM Summary Worksheet

		circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	NO	If yes, Category 1.
	Question 6. Bogs	YES	NO	If yes, Category 3.
	Question 7. Fens	YES	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2		
	Metric 2. Buffers and surrounding land use	7		
	Metric 3. Hydrology	11		
	Metric 4. Habitat	4		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	0		
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	24		Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

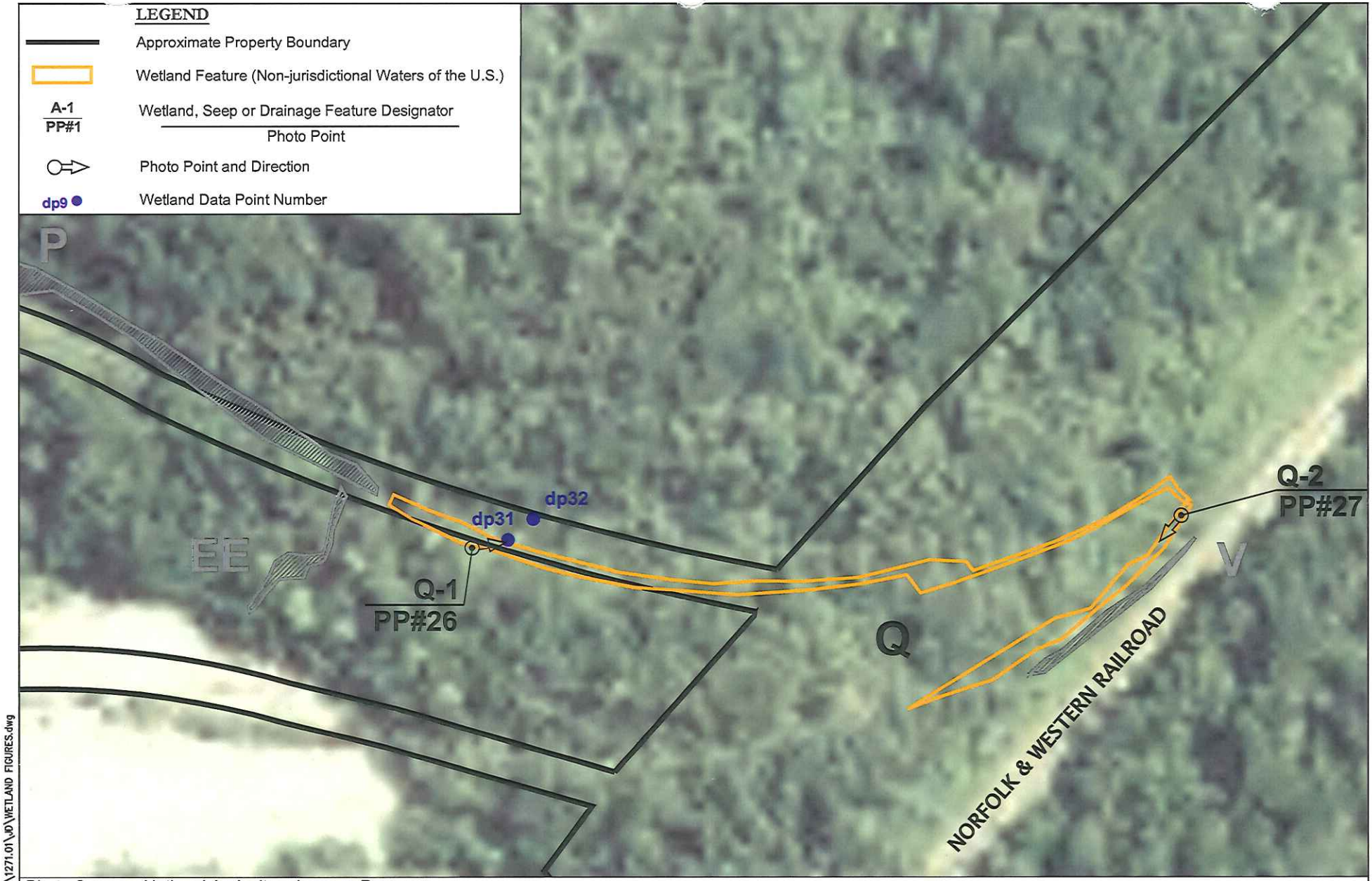

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
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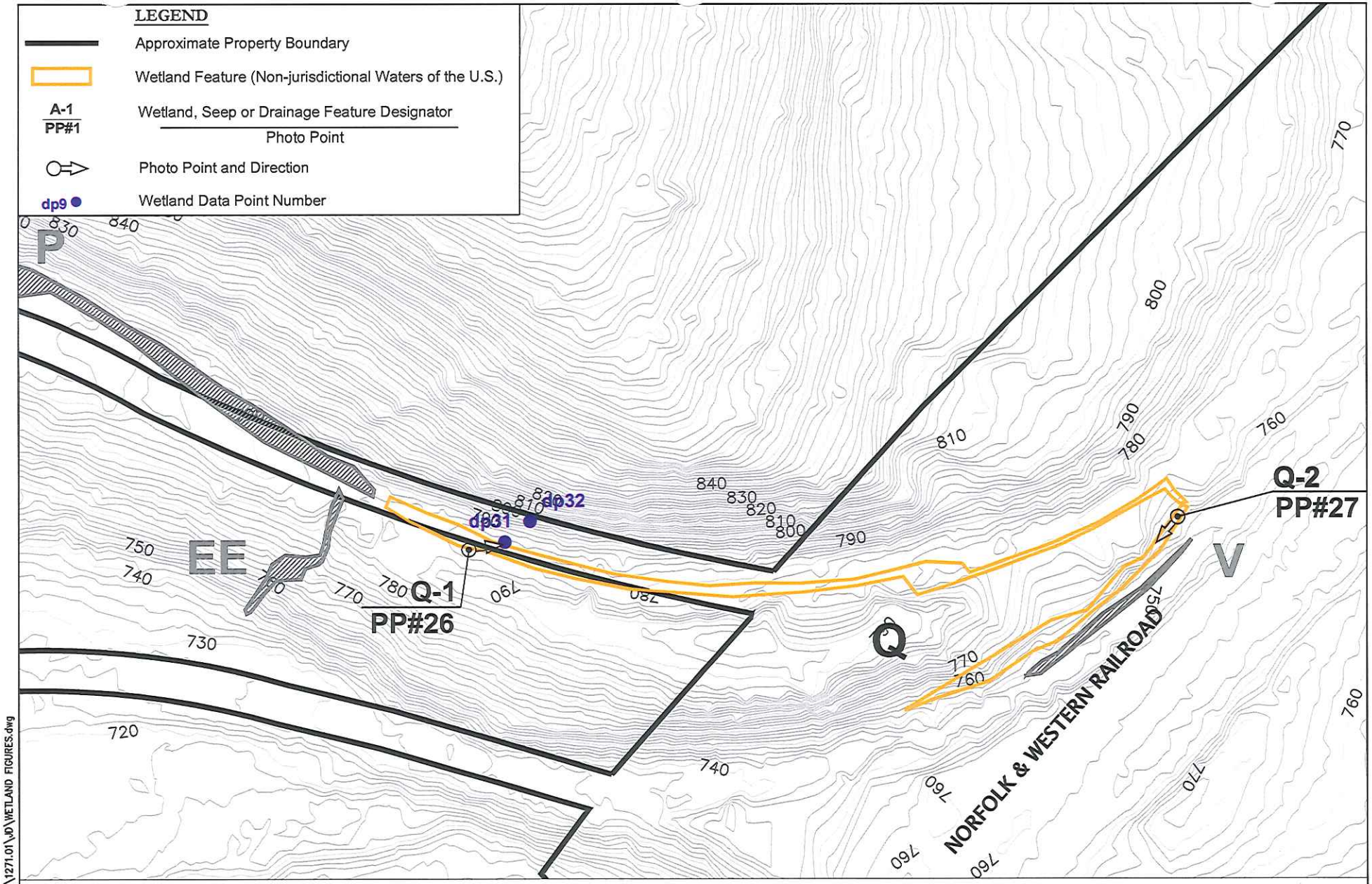
Former Satralloy Site
Wetland and Drainage Analysis
Feature Q
Aerial Overview
Figure B-31

DWG FullPath: M:\projects\1271.01\D\WETLAND FIGURES.dwg



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Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'
Contour Interval = 2'

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Former Satralloy Site
Wetland and Drainage Analysis
Feature Q
Topographic Overview
Figure B-32

DWG FullPath: M:\projects\1271.01\JD\WETLAND FIGURES.dwg

Photo point: PP26
Photo reference: Q-1
View: Wetland feature, facing east (along old railroad grade)

Photo point: PP27
Photo reference: Q-2
View: East end of wetland feature, facing southwest

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Wetland Q between old railroad grade and toe of slope.*	Data Point No.: *DP-31*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Disturbed by old railroad grade, railroad materials deposited along the toe of the slope.*	Location: *~ 5 feet southeast of Q-4*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Cercis canadensis*	*FACU*	*T*	8			
2	*Typha angustifolia*	*OBL*	*H*	9			
3	*Equisetum arvense*	*FAC*	*H*	10			
4	*Elymus hystrix*	*UPL*	*H*	11			
5	*Chamerion angustifolium*	*UPL*	*H*	12			
6	*Tussilago farfara*	*FACU*	*H*	13			
7	*Hordeum pusillum*	*FAC*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *43 %*

Is the hydrophytic vegetation criterion met? *No* Rationale: *≤ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: *No*

Horizon *-* Matrix Color: *2.5 Y 5/1* Depth: *10"* Gleyed? *Yes*

Mottles? *No* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *Saturated. Sulfur smell.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma, sulfur smell, saturated.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *~ 4"*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *Low area at toe of slope.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Inundated, saturated.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for soil and hydrology, obligate plant species present.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *L. Rae, J. Ginter*

Project No.: *1271.01* Date: *7/8/06*

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Tucson, Arizona 85719

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Forested slope above wetland feature Q.*	Data Point No.: *DP-32*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Steep slope with evidence of erosion.*	Location: *~10' north of Q-4*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Cercis canadensis*	*FACU*	*T*	8	*Chamerion angustifolium*	*UPL*	*H*
2	*Rhus typhina*	*UPL*	*T*	9	*Parthenocissus quinquefolia*	*FACU*	*H*
3	*Fraxinus pennsylvanica*	*FACW*	*T*	10			
4	*Fraxinus pennsylvanica*	*UPL*	*S*	11			
5	*Rubus occidentalis*	*UPL*	*S*	12			
6	*Equisetum arvense*	*FAC*	*H*	13			
7	*Tussilago farfara*	*FACU*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *25 %*

Is the hydrophytic vegetation criterion met? *No* Rationale: *≤ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: *No*

Horizon *B* Matrix Color: *10 YR 4/3* Depth: *8"* Gleyed? *No*

Mottles? *No* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *None*

Is the hydric soil criterion met? *No* Rationale: *High chroma.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None. ~ 10 feet above surface water level.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for any parameters.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *L. Rae, J. Ginter*

Project No.: *1271.01* Date: *7/8/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: Q

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Artificially induced wetland along abandoned railroad grades cut into slope.

Rated as Category 1 because of small size, lack of significant habitat, and extensive disturbance.

Final score 21	**Category**	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

10

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	2
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

7

subtotal

18

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	**NO** Assign a score of 4 since there are no or no apparent modifications.	**NOT SURE** Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

21

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	1
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

1

subtotal

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	3	
	Metric 2. Buffers and surrounding land use	7	
	Metric 3. Hydrology	8	
	Metric 4. Habitat	3	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	0	
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	21	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

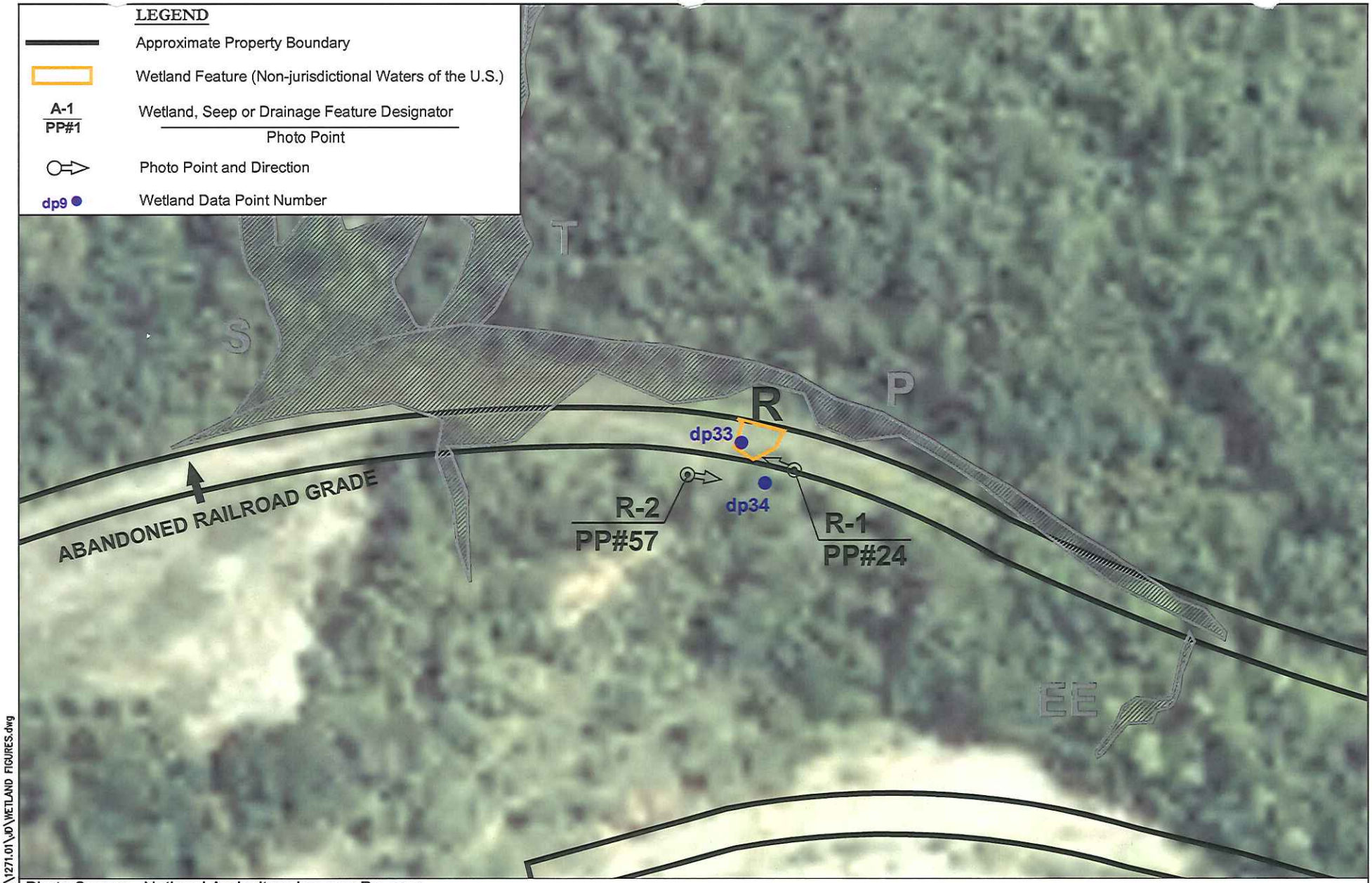

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

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Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

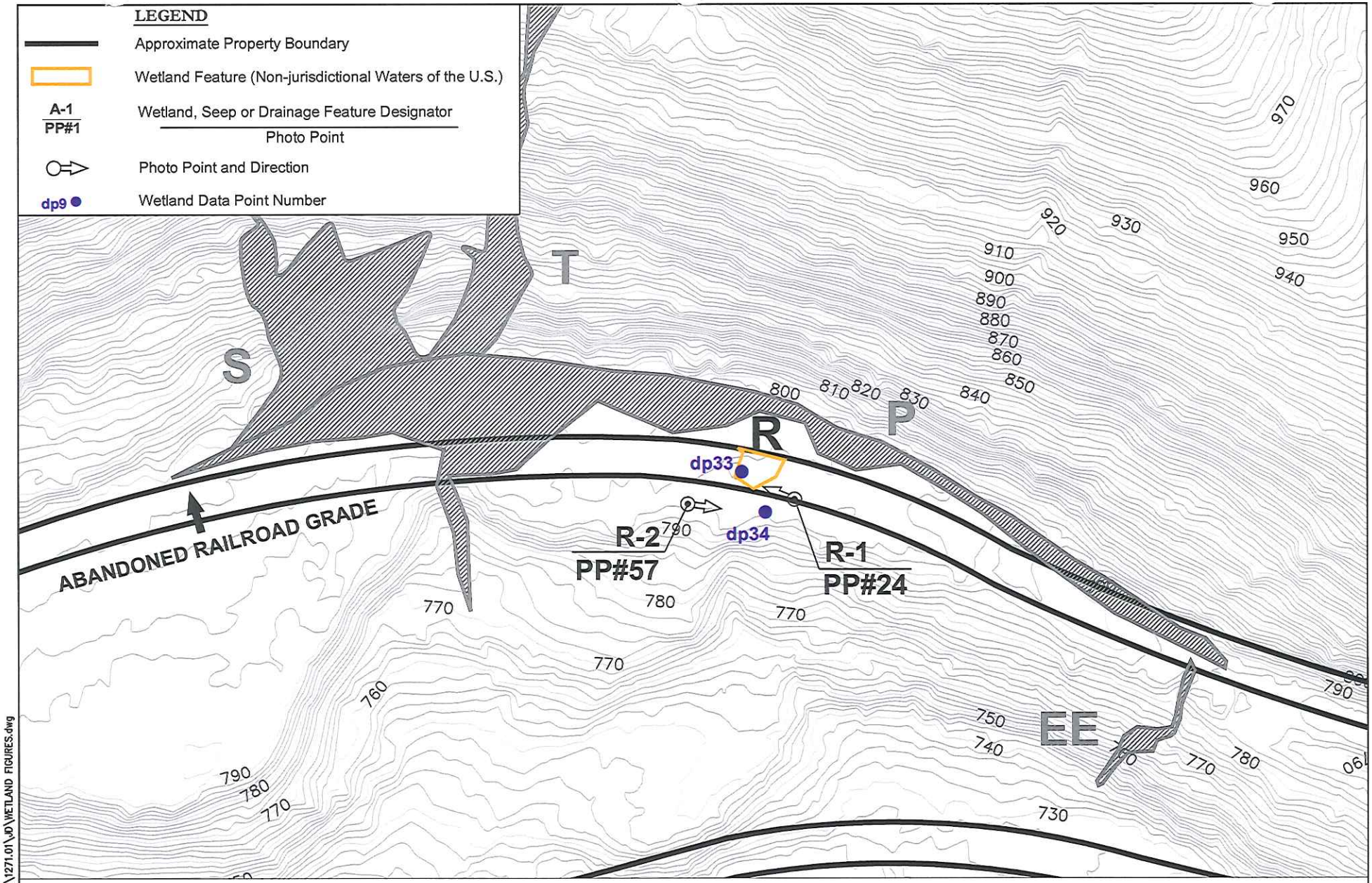
0' 50' 100'
SCALE 1" = 100'

N
W E
S

Former Satralloy Site

Wetland and Drainage Analysis
Feature R
Aerial Overview
Figure B-33

DWG FullPath: M:\projects\1271.01\JD\WETLAND FIGURES.dwg



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0' 50' 100'
SCALE 1" = 100'
Contour Interval = 2'

N
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Former Satralloy Site
Wetland and Drainage Analysis
Feature R
Topographic Overview
Figure B-34

DWG FullPath: M:\projects\1271.01\JD\WETLAND FIGURES.dwg

Photo point: PP24
Photo reference: R-1
View: Data collection point 33 (wetland feature), facing west

Photo point: PP57
Photo reference: R-2
View: Data collection point 34 (upland), facing east

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Small, isolated wetland adjacent to railroad grade.*	Data Point No.:	*DP-33*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*Disturbed by past clearing, grading.*	Location:	*~15' north of R-3.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Salix exigua*	*OBL*	*S*	8	*Alisma subcordatum*	*OBL*	*H*
2	*Toxicodendron radicans*	*FAC*	*S*	9			
3	*Typha angustifolia*	*OBL*	*H*	10			
4	*Carex vulpinoidea*	*OBL*	*H*	11			
5	*Agrostis gigantea*	*FACW*	*H*	12			
6	*Scirpus pendulus*	*OBL*	*H*	13			
7	*Melilotus officinalis*	*FACU*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *87 %*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50 % FAC, FACW. or OBL*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: *No*

Horizon *B* Matrix Color: *2.5 Y 5/2* Depth: *10"* Gleyed? *No*

Mottles? *Yes* Mottle Colors: *10 YR 4/3* Histic Epipedon? *No*

Other hydric soil indicators: *Saturated.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma, mottles, saturated.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *~10"*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: -

Other field evidence of hydrology: *Small closed basin.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Inundated and saturated.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for all parameters.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/8/06*

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Tucson, Arizona 85719

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Top of steep slope.*	Data Point No.:	*DP-34*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*Disturbed, berm on top of steep slope.*	Location:	*~10' south of R-3.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Acer negundo*	*FAC+*	*T*	8			
2	*Prunus serotina*	*FACU*	*T*	9			
3	*Platanus occidentalis*	*FACW*	*T*	10			
4	*Ulmus americanus*	*FACW*	*T*	11			
5	*Rosa multiflora*	*FACU*	*S*	12			
6	*Toxicodendron radicans*	*FAC*	*S*	13			
7	*Boehmeria cylindrica*	*FACW*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *71%*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: *No*

Horizon *-* Matrix Color: *-* Depth: *-* Gleyed? *No*

Mottles? *None* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *Slag, other debris, no soil development.*

Is the hydric soil criterion met? *No* Rationale: *No soil stratification.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None. ~1' above water level. Berm on edge of steep slope.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No.*

Rationale for wetland decision: *No positive indicators for soil or hydrology.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/8/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: R

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Site is very small. Isolated pond, dominated by typha angustifolia. Adjacent to abandoned railroad grade. Above wooded slope.

Rated as Category 1 based on small size, lack of significant habitat, isolation, and invasive plants.

Final score 14	**Category**	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

4

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' Isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	4
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

6

subtotal

13

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

16

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	4	
	Metric 3. Hydrology	9	
	Metric 4. Habitat	3	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	-2	
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	14	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

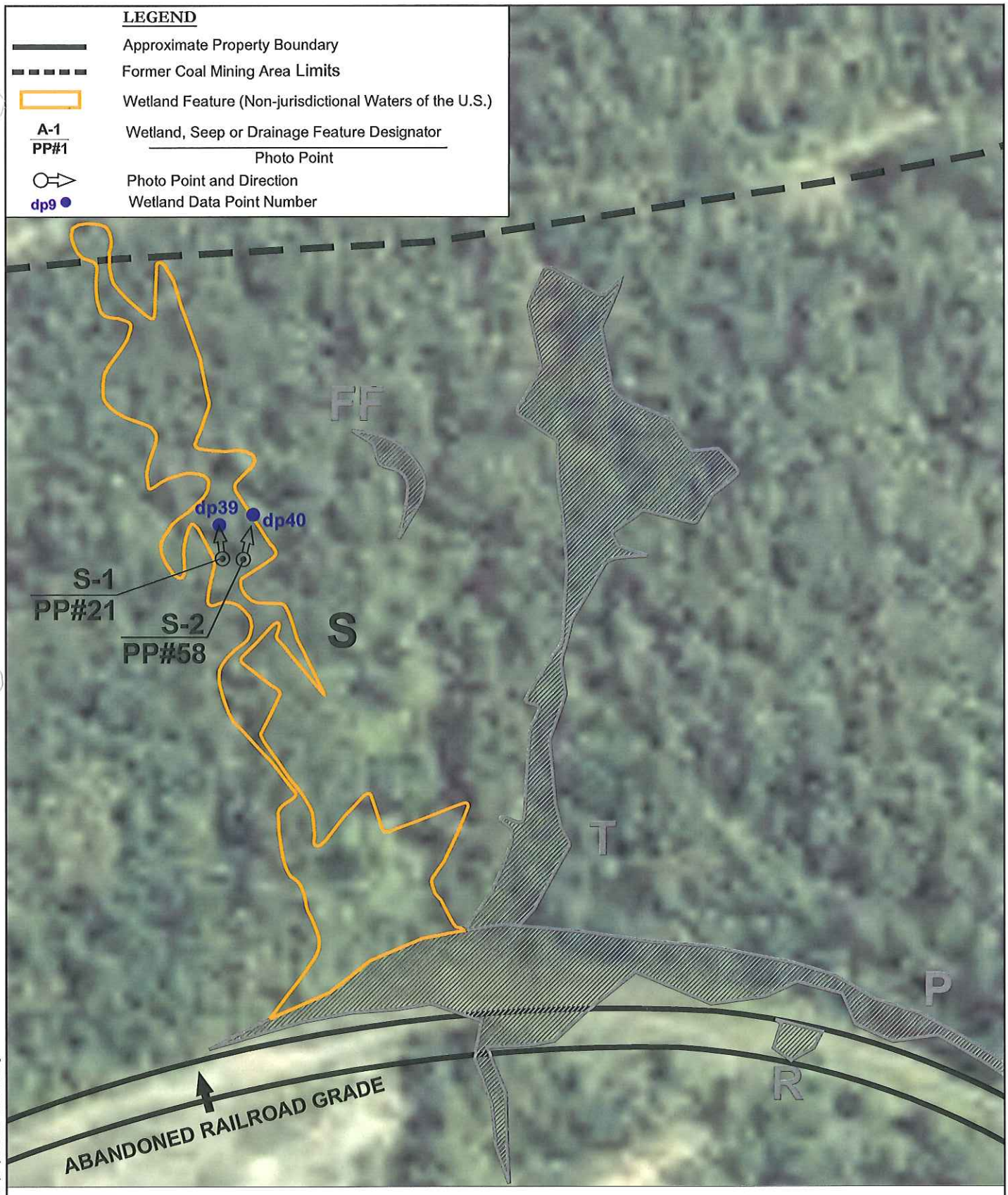

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

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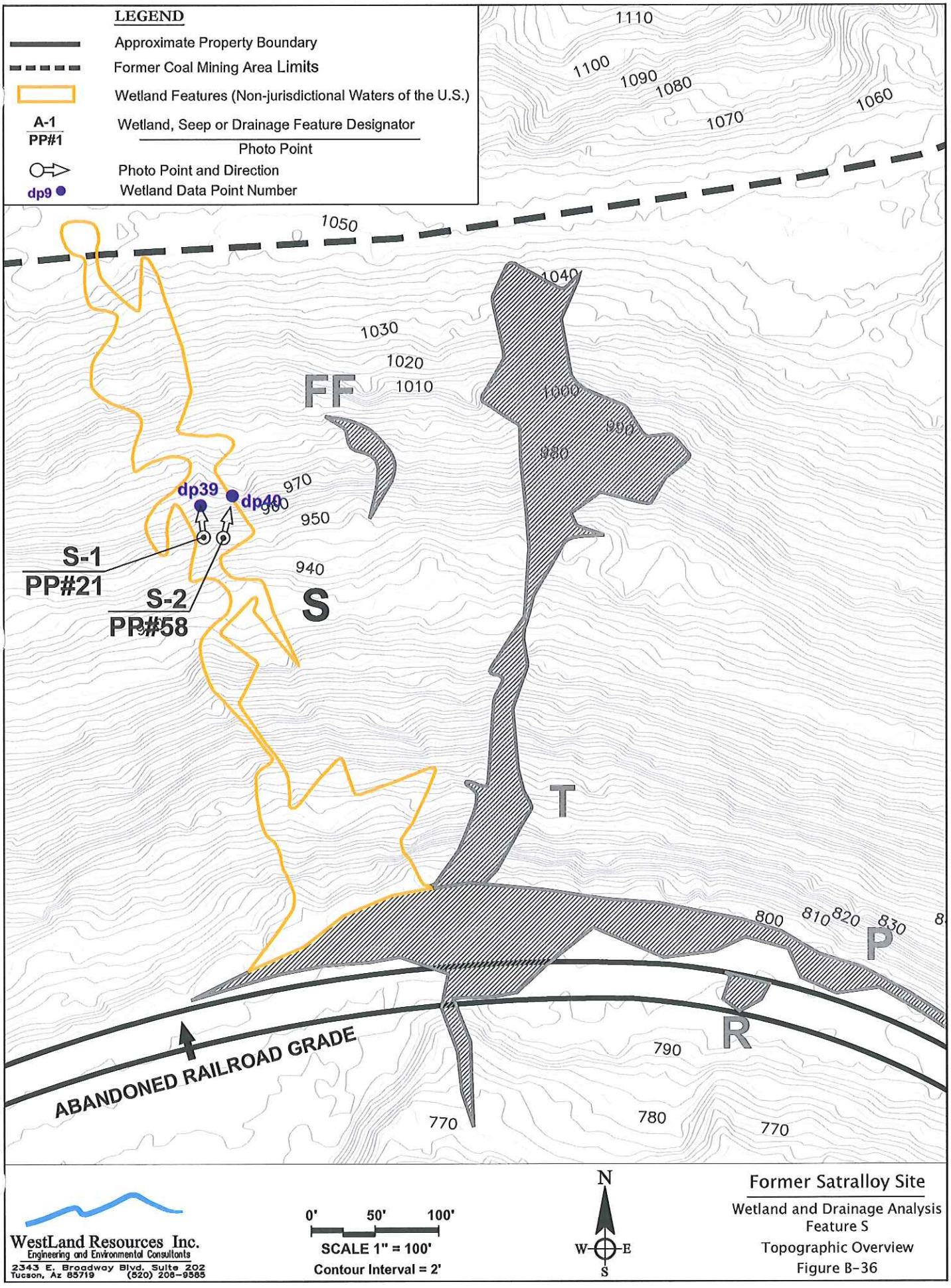
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature S
Aerial Overview
Figure B-35

DWG FullPath: M:\...cts\1271.01\JD\WETLAND FIGURES.dwg


LEGEND
Approximate Property Boundary
Former Coal Mining Area Limits
Wetland Features (Non-jurisdictional Waters of the U.S.)
A-1 / PP#1
Wetland, Seep or Drainage Feature Designator
Photo Point
Photo Point and Direction
dp9
Wetland Data Point Number
1110
1100
1090
1080
1070
1060
1050
1040
1030
1020
1010
1000
990
980
970
960
950
940
930
FF
S
T
P
R
dp39
dp40
S-1
PP#21
S-2
PP#58
ABANDONED RAILROAD GRADE
800
810
820
830
790
780
770
770
0'
50'
100'
SCALE 1" = 100'
Contour Interval = 2'
N
W
E
S
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Former Satralloy Site
Wetland and Drainage Analysis
Feature S
Topographic Overview
Figure B-36
DWG FullPath: M:\ts\1271.01\JD\WETLAND FIGURES.dwg

Photo point: PP21
Photo reference: S-1
View: Upslope, data collection point 39 (wetland feature), facing northwest

Photo point: PP58
Photo reference: S-2
View: Data collection point 40 (upland), facing northeast

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Broad area of seepage on steep slope..*	Data Point No.:	*DP-39*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*No recent disturbances.*	Location:	*~15' west of S-45.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Fraxinus pennsylvanica*	*FACW*	*T*	8			
2	*Quercus bicolor*	*FACW*	*T*	9			
3	*Rosa multiflora*	*FACU*	*S*	10			
4	*Rubus armeniacus*	*NI*	*S*	11			
5	*Toxicodendron radicans*	*FAC*	*S*	12			
6	*Staphylea trifolia*	*FAC*	*S*	13			
7	*Parthenocissus quinquefolia*	*FACU*	*V*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *67%*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: *2.5 Y 4/2* Depth: *10"* Gleyed? *No*

Mottles? *Yes* Mottle Colors: *10 YR 5/6* Histic Epipedon? *No*

Other hydric soil indicators: *High clay content.*

Is the hydric soil criterion met? *Yes.* Rationale: *Low chroma with mottles.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: *Satureated to surface.*

Other field evidence of hydrology: *Wide area of seepage on slope.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Saturated to surface.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for all parameters.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/9/06*

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DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Steep slope adjacent to seepage zone.*	Data Point No.:	*DP-40*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*No recent disturbances.*	Location:	*~15' east of S-45.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Quercus prinus*	*UPL*	*T*	8			
2	*Ulmus americana*	*FACW*	*T*	9			
3	*Rosa multiflora*	*FACU*	*S*	10			
4	*Toxicodendron radicans*	*FAC*	*S*	11			
5	*Vitis labrusca*	*FACU*	*V*	12			
6	*Parthenocissus quinquefolia*	*FACU*	*V*	13			
7	*Boehmeria cylindrica*	*FACW*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *43%*

Is the hydrophytic vegetation criterion met? *No* Rationale: *< 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: *10 YR 3/4* Depth: *10"* Gleyed? *No*

Mottles? *None* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *None.*

Is the hydric soil criterion met? *No* Rationale: *High chroma, no mottles.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None. ~4' above stream channel.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for any parameter.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/9/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: S

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Site is an intermittent stream channel with areas of groundwater seepage and infiltration. Flow is north to south, originating near abandoned coal mine and chromium slag dump. Joins Wetland P at toe of slope.

Rated as Category 1 because of hydrologic isolation, disturbances, and invasive species.

Final score 28.5	Category	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygademus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	1
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	4
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

21

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		score
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	√
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	√

1.5

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	2
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	

3.5

subtotal

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. 6a. Wetland Vegetation Communities. Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	1
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

1

subtotal

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2	
	Metric 2. Buffers and surrounding land use	7	
	Metric 3. Hydrology	12	
	Metric 4. Habitat	5.5	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	2	
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	28.5	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

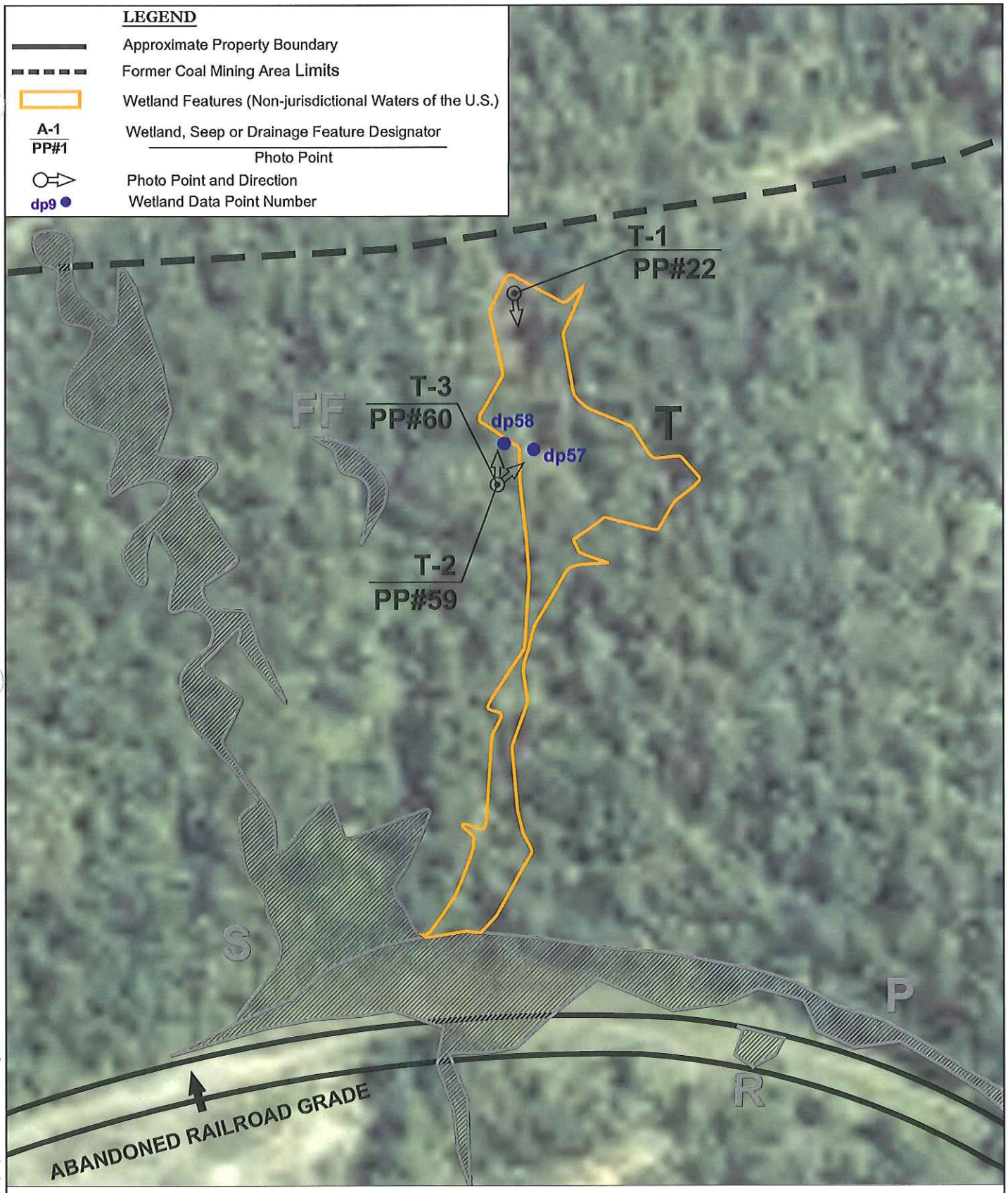

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

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Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
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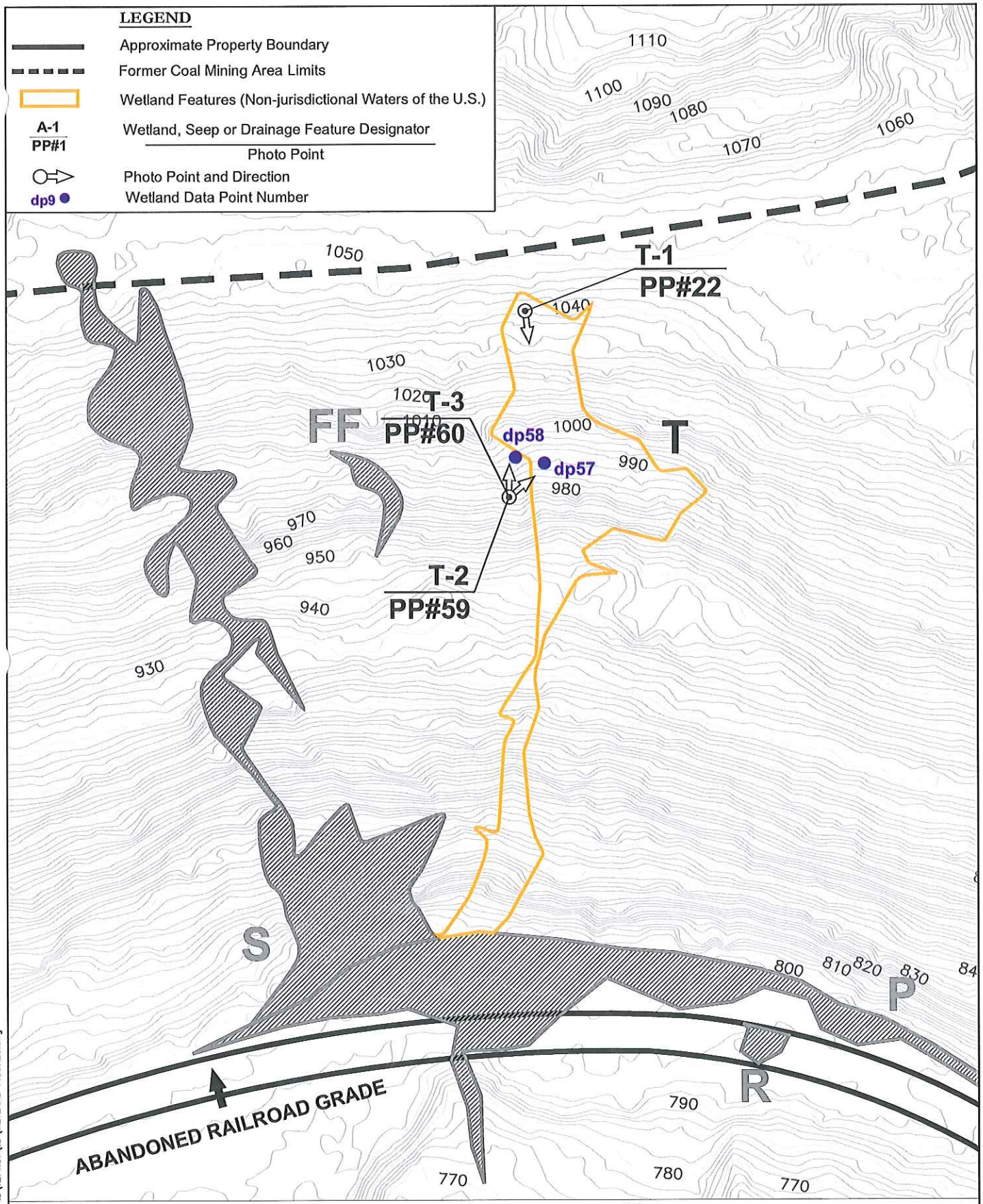
Former Satralloy Site
Wetland and Drainage Analysis
Feature T
Aerial Overview
Figure B-37

DWG FullPath: M...cts\1271.01\JD\WETLAND FIGURES.dwg



0' 50' 100'

SCALE 1" = 100'

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Former Satralloy Site

Wetland and Drainage Analysis
Feature T
Topographic Overview
Figure B-38

DWG FullPath: M:\ts\1271.01\JD\WETLAND FIGURES.dwg

Photo point: PP22
Photo reference: T-1
View: Downgradient from upper end of drainage feature T

Photo point: PP59
Photo reference: T-2
View: Data collection point 57 within drainage feature, facing northeast

Photo point: PP60
Photo reference: T-3
View: Data collection point 58 (upland), facing north

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Cattail marsh on steep slope.*	Data Point No.: *DP-57*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Disturbed area near abandoned coal mine, old landslide or debris dump from mine.*	Location: *~15' east of T-12*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Quercus bicolor*	*FACW*	*T*	8			
2	*Rubus occidentalis*	*UPL*	*S*	9			
3	*Typha angustifolia*	*OBL*	*H*	10			
4	*Scirpus pendulus*	*OBL*	*H*	11			
5	*Dichanthelium commutatum*	*FACU*	*H*	12			
6	*Unknown Mint*		*H*	13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *At least 50 %*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL, with two obligate species.*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: 2.5 Y 4/3 Depth: 10" Gleyed? *No*

Mottles? *Yes* Mottle Colors: 2.5 Y 5/6 Histic Epipedon? *No*

Other hydric soil indicators: *Saturated. Disturbed conditions. Debris dump from abandoned mine.*

Is the hydric soil criterion met? *Yes* Rationale: *Saturated.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: -

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: *At surface.*

Other field evidence of hydrology: *Saturated to surface. Wide area of flow/seepage on slope.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Saturated.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for all parameters.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/11/06*

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Tucson, Arizona 85719

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Steep wooded slope.*	Data Point No.: *DP-58*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*No obvious disturbances.*	Location: *~10' west of T-12.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Sassafras albidum*	*FACU*	*T*	8			
2	*Quercus bicolor*	*FACW*	*T*	9			
3	*Fraxinus pennsylvanica*	*FACW*	*T*	10			
4	*Rosa multiflora*	*FACU*	*S*	11			
5	*Toxicodendron radicans*	*FAC*	*S*	12			
6	*Shepherdia canadensis*	*NI*	*S*	13			
7	*Parthenocissus quinquefolia*	*FACU*	*V*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *43 %*

Is the hydrophytic vegetation criterion met? *No* Rationale: *< 50 % FAC, FACW, or OBL*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: *10 YR 4/4* Depth: *10"* Gleyed? *No*

Mottles? *None* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *None.*

Is the hydric soil criterion met? *No* Rationale: *High chroma, no mottles.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None. On slope outside zone of seepage.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for any parameter.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/11/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: T

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Site is an intermittent stream channel with areas of forested and emergent wetland conditions. Flow is north to south, originating near abandoned coal mine and chromium slag dump. Discharge to Wetland P at toe of slope. Upper end is bare soil with orange mineral deposit.

Rated as Category 1 because of hydrologic isolation, disturbances, and invasive species.

Final score 24	Category	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	1
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	4
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

20

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	1
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from welland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the welland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

1

subtotal

ORAM Summary Worksheet

		circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	NO	If yes, Category 1.
	Question 6. Bogs	YES	NO	If yes, Category 3.
	Question 7. Fens	YES	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2		
	Metric 2. Buffers and surrounding land use	7		
	Metric 3. Hydrology	11		
	Metric 4. Habitat	3		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	1		
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	24		Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

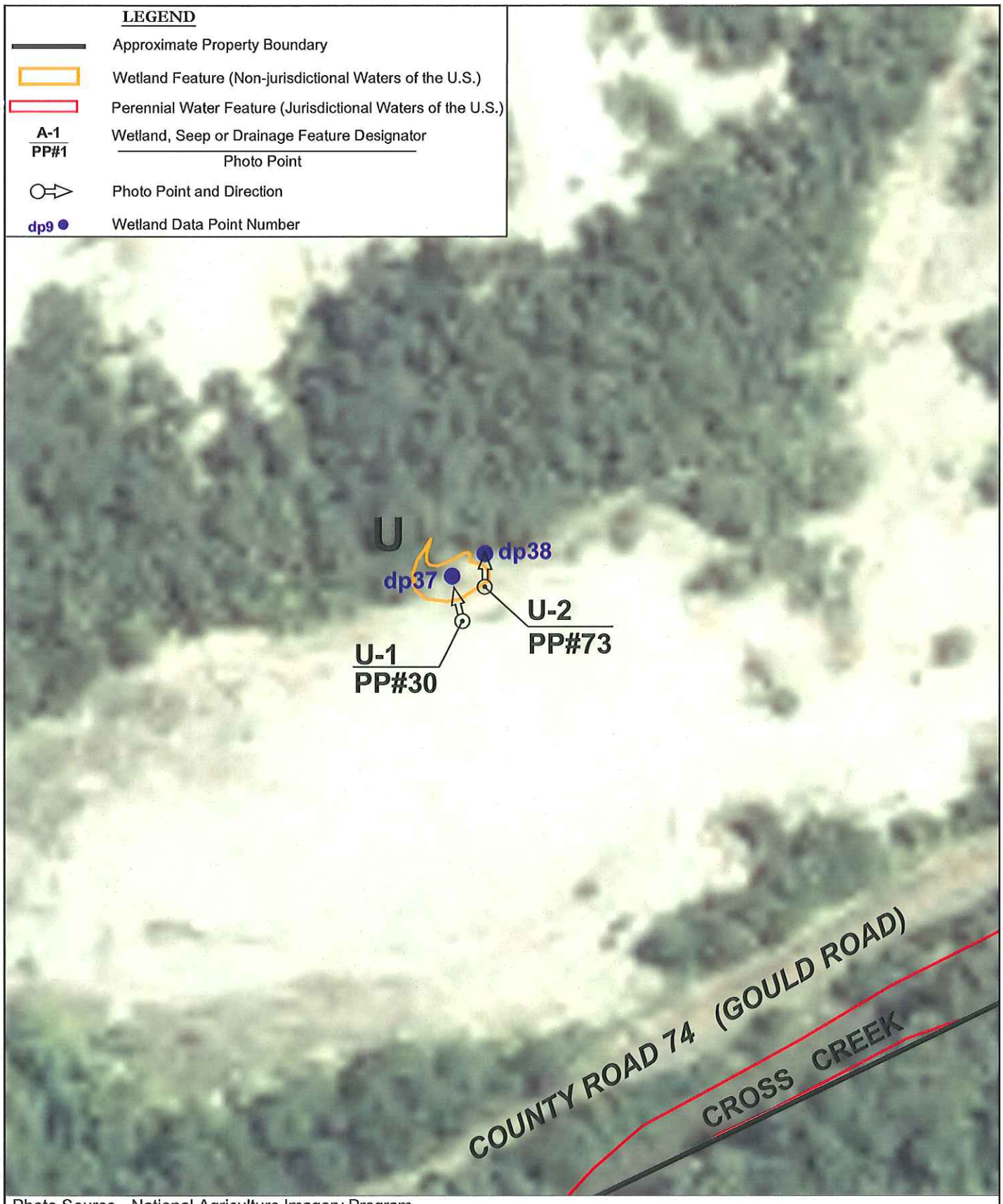

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

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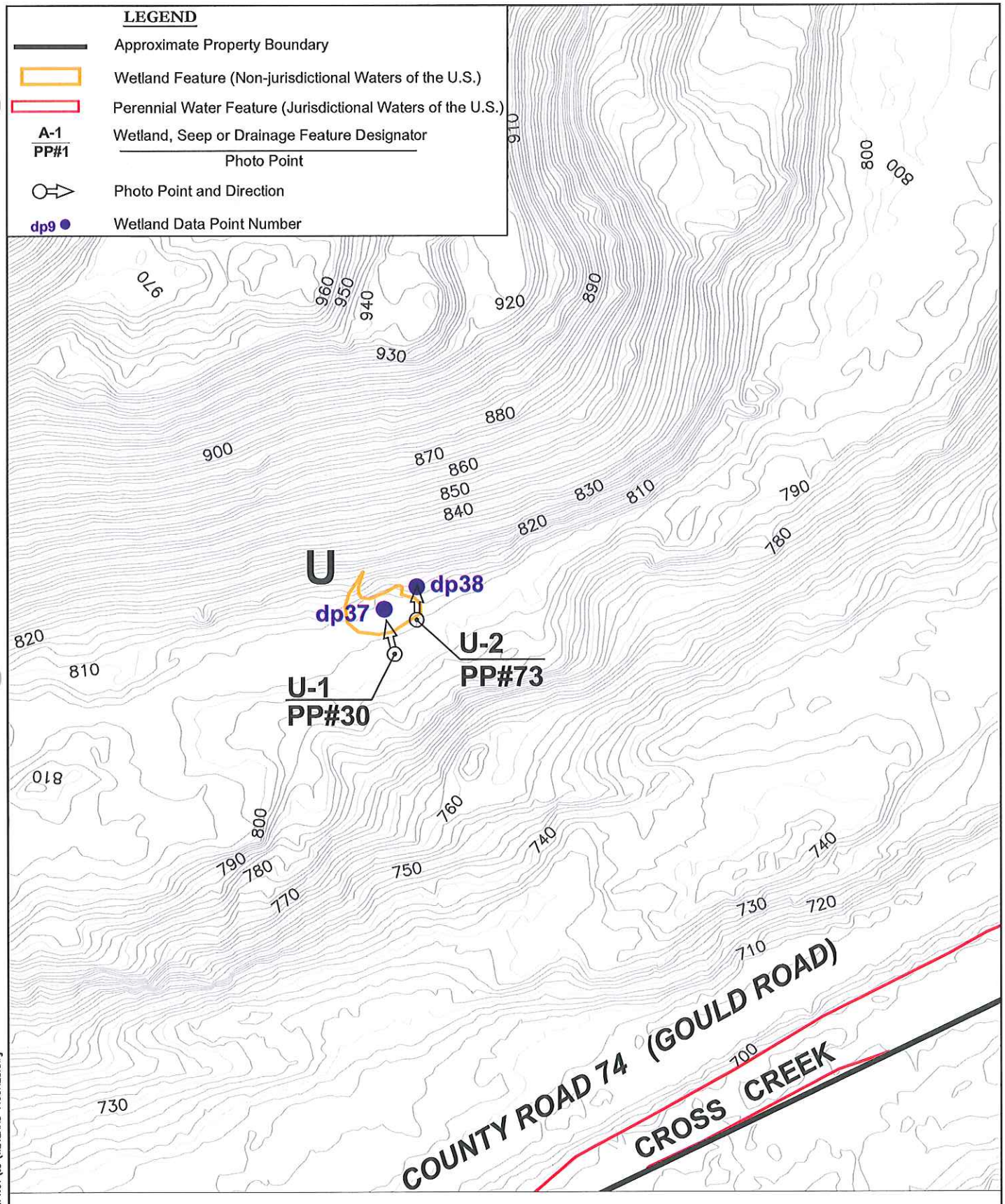
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature U
Aerial Overview
Figure B-39

DWG FullPath: M:\...jects\1271.01\JD\WETLAND FIGURES.dwg



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0' 50' 100'
SCALE 1" = 100'
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Former Satralloy Site
Wetland and Drainage Analysis
Feature U
Topographic Overview
Figure B-40

DWG FullPath: M:\...\cts\1271.01\JD\WETLAND FIGURES.dwg

Photo point: PP30
Photo reference: U-1
View: Data collection point 37 within seepage area, facing north

Photo point: PP73
Photo reference: U-2
View: Data collection point 38 (upland), facing northeast

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Seepage area U above slag pile at the toe of steep slope.*	Data Point No.:	*DP-37*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*Slag pilings and seepage evident at toe of slope.*	Location:	*~ 4 feet from U-4*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Agrostis gigantea*	*FACW*	*H*	8	*Equisetum arvense*	*FAC*	*H*
2	*Rubus occidentalis*	*UPL*	*S*	9	*Bromus japonicus*	*FACU-*	*H*
3	*Smallanthus uvedalius*	*UPL*	*H*	10	*Apocynum cannabinum*	*FACU*	*H*
4	*Dipsacus fullonum*	*NI*	*H*	11			
5	*Hordeum jubatum*	*FAC*	*H*	12			
6	*Tussilago farfara*	*FACU*	*H*	13			
7	*Chamerion angustifolium*	*UPL*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *17 %*

Is the hydrophytic vegetation criterion met? *No* Rationale: *≤ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: *No*

Horizon *-* Matrix Color: *2 YR 5/2* Depth: *2.5"* Gleyed? *No*

Mottles? *No* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *None. No real soil development, material consists of hard layer of slag deposition.*

Is the hydric soil criterion met? *Undetermined.* Rationale: *Low chroma, but no real soil development.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *≤ 1"*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *Evidence of seepage and surface water collecting within feature.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Inundated and saturated.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *Highly disturbed. Positive indicator for hydrology, but soil parameter undetermined.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *L. Rae, J. Ginter*

Project No.: *1271.01* Date: *7/9/06*

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Tucson, Arizona 85719

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions: *Seepage area on steep slope.*		Data Point No.: *DP-38*
Do Normal Circumstances Exist on Site? *Yes*	Is Site a Potential Problem Area? *No*	
Site Disturbance? *Highly disturbed. Evidence of seepage and erosion.*		Location: *~ 12' above U-3*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Ailanthus altissima*	*NI*	*T*	8	*Ribes cynosbati*	*UPL*	*S*
2	*Ulmus americana*	*FACW*	*T*	9	*Boehmeria cylindrica*	*FACW+*	*H*
3	*Carya ovata*	*FACU*	*T*	10	*Tussilago farfara*	*FACU*	*H*
4	*Acer saccharum*	*FACU*	*T*	11	*Dryopteris campyloptera*	*UPL*	*H*
5	*Aesculus glabra*	*FACU+*	*T*	12			
6	*Lonicera canadensis*	*FACU*	*S*	13			
7	*Toxicodendron radicans*	*FAC*	*S*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *27%*

Is the hydrophytic vegetation criterion met? *No* Rationale: *≤ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: *No*

Horizon *B* Matrix Color: *2.5 YR 4/3* Depth: *8"* Gleyed? *No*

Mottles? *No* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *None. Outside of seepage area.*

Is the hydric soil criterion met? *No* Rationale: *High chroma.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None. Outside of seepage area.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for any parameter.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *L. Rae, J. Ginter*

Project No.: *1271.01* Date: *7/9/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: U

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

The site is a small basin on edge of the slag pile, adjacent to the abandoned road. Hydrologically isolated.

Final score 13	Category	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

		2
		subtotal from previous page
Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	2
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

7	
subtotal	

10

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		score
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the welland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	NO	If yes, Category 1.
	Question 6. Bogs	YES	NO	If yes, Category 3.
	Question 7. Fens	YES	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0		
	Metric 2. Buffers and surrounding land use	2		
	Metric 3. Hydrology	8		
	Metric 4. Habitat	3		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	0		
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	13		Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

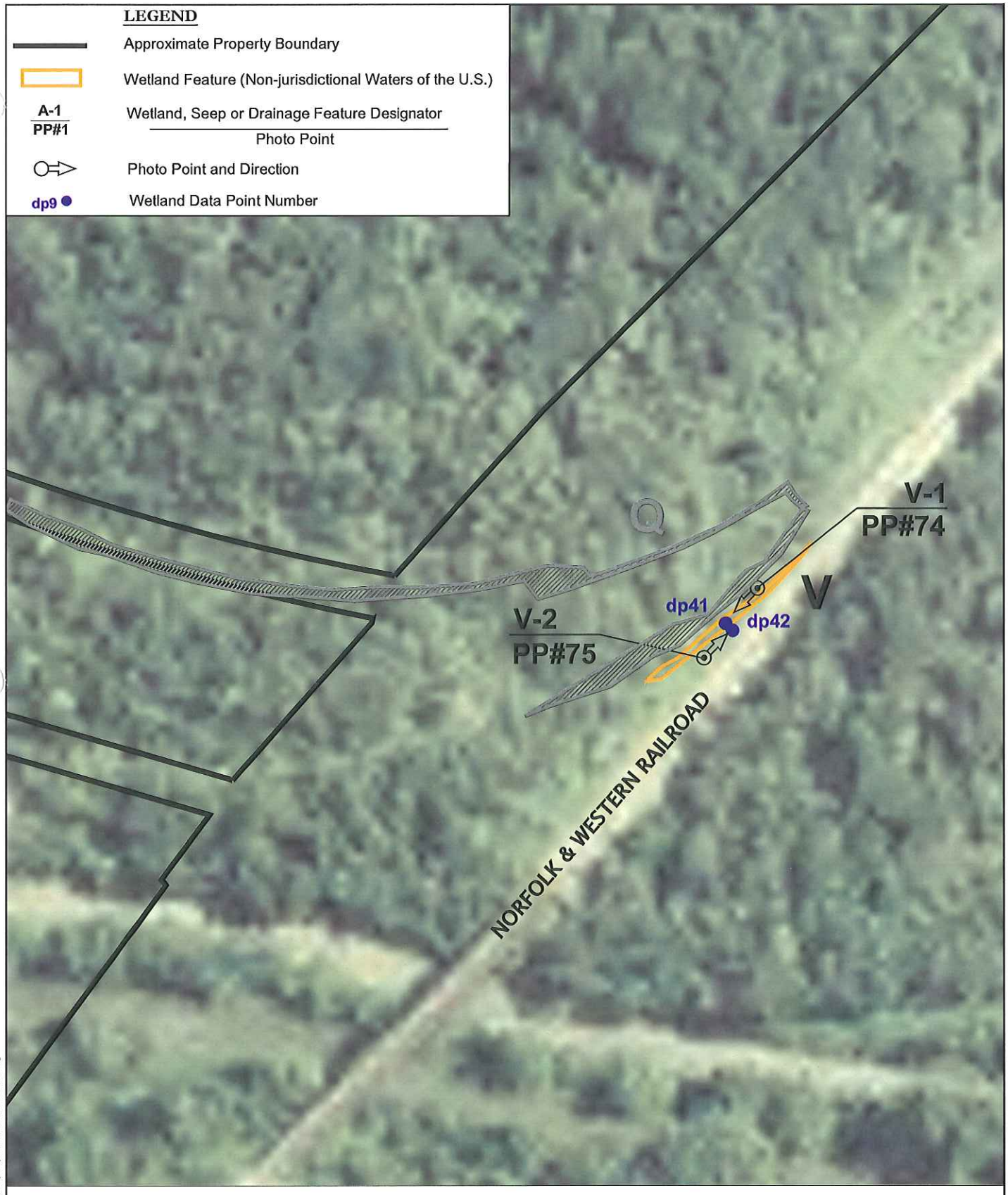

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

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Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
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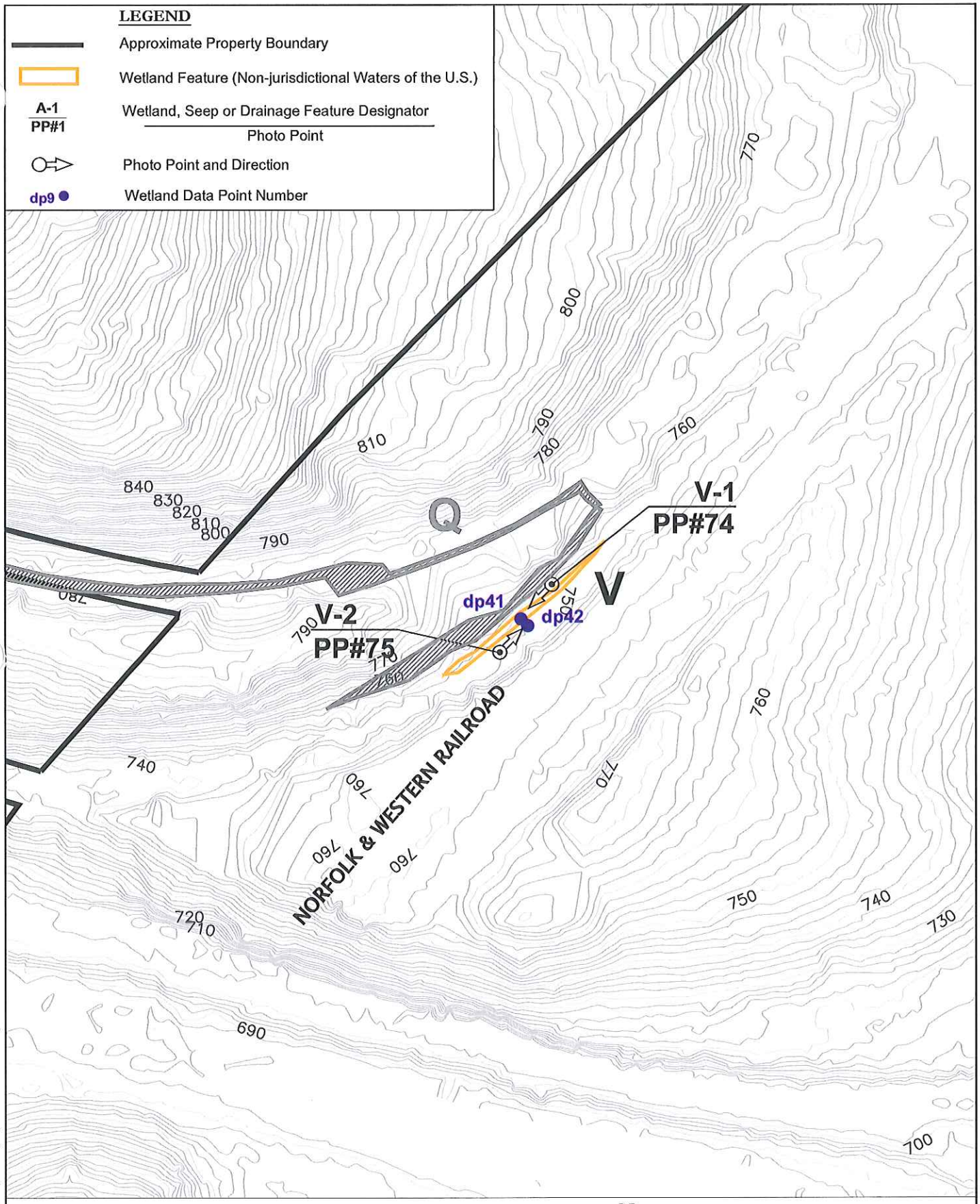
Former Satralloy Site
Wetland and Drainage Analysis
Feature V
Aerial Overview
Figure B-41

DWG FullPath: M..._cts\1271.01\JD\WETLAND FIGURES.dwg



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0' 50' 100'
SCALE 1" = 100'
Contour Interval = 2'

N
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Former Satralloy Site
Wetland and Drainage Analysis
Feature V
Topographic Overview
Figure B-42

DWG FullPath: M:\...\Js\1271.01\D\WETLAND FIGURES.dwg

Photo point: PP74
Photo reference: V-1
View: Data collection point 41 (wetland feature), facing northeast

Photo point: PP75
Photo reference: V-2
View: Data collection point 42 (upland), facing northeast

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Wetland V. Small basin below old railroad grade and parallel to Norfolk & Western Railroad.*	Data Point No.: *DP-41*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Site is between old railroad grade and existing railroad at toe of steep slope.*	Location: *~ 2' from V-11*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Physocarpus opulifolius*	*FACW-*	*T*	8			
2	*Pastinaca sativa*	*UPL*	*H*	9			
3	*Chamerion angustifolium*	*UPL*	*H*	10			
4	*Typha angustifolia*	*OBL*	*H*	11			
5	*Tussilago farfara*	*FACU*	*H*	12			
6	*Juncus gerardii*	*FACW+*	*H*	13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *63%*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Clarksburg silt loam* Hydric Soils List: *No*

Horizon *B* Matrix Color: *2.5 YR 6/6* Depth: *10"* Gleyed? *Yes*

Mottles? *Yes* Mottle Colors: *2.5 Y 5/1* Histic Epipedon? *No*

Other hydric soil indicators: *Sulfur odor.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma mottles, sulfur smel, saturated.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *~ 4"*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: -

Other field evidence of hydrology: *Channel at toe of slope. No obvious flow.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Inundation and saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for all parameters.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *L. Rae, J. Ginter*

Project No.: *1271.01* Date: *7/9/06*

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DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Steep slope below existing railroad.*	Data Point No.: *DP-42*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Steep slope between existing railroad and old railroad grade.*	Location: *~ 4 feet above V-11*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Ulmus americana*	*FACW*	*T*	8			
2	*Rubus occidentalis*	*UPL*	*S*	9			
3	*Chamerion angustifolium*	*UPL*	*H*	10			
4	*Tussilago farfara*	*FACU*	*H*	11			
5	*Pastinaca sativa*	*UPL*	*H*	12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *23%*
Is the hydrophytic vegetation criterion met? *No* Rationale: *≤ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Clarksburg silt loam* Hydric Soils List: *No*
Horizon *B* Matrix Color: *7.5 YR 4/3* Depth: *8"* Gleyed? *No*
Mottles? *No* Mottle Colors: *-* Histic Epipedon? *No*
Other hydric soil indicators: *None*
Is the hydric soil criterion met? *No* Rationale: *High chroma.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*
Is the soil saturated? *No*
Depth to free-standing water in probe hole: *-*
Other field evidence of hydrology: *None, ~ 6' above the surface water level.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*
Rationale for wetland decision: *No positive indicators for any parameter.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*
Field Investigator(s): *L. Rae, J. Ginter*
Project No.: *1271.01* Date: *7/9/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: V

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

The site is a small isolated basin between abandoned railroad grade and existing railroad line.

Final score 8	Category	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

1

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	2
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

4

subtotal

6

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		score
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

9

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. 6a. Wetland Vegetation Communities. Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	1	
	Metric 3. Hydrology	5	
	Metric 4. Habitat	3	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	-1	
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	8	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

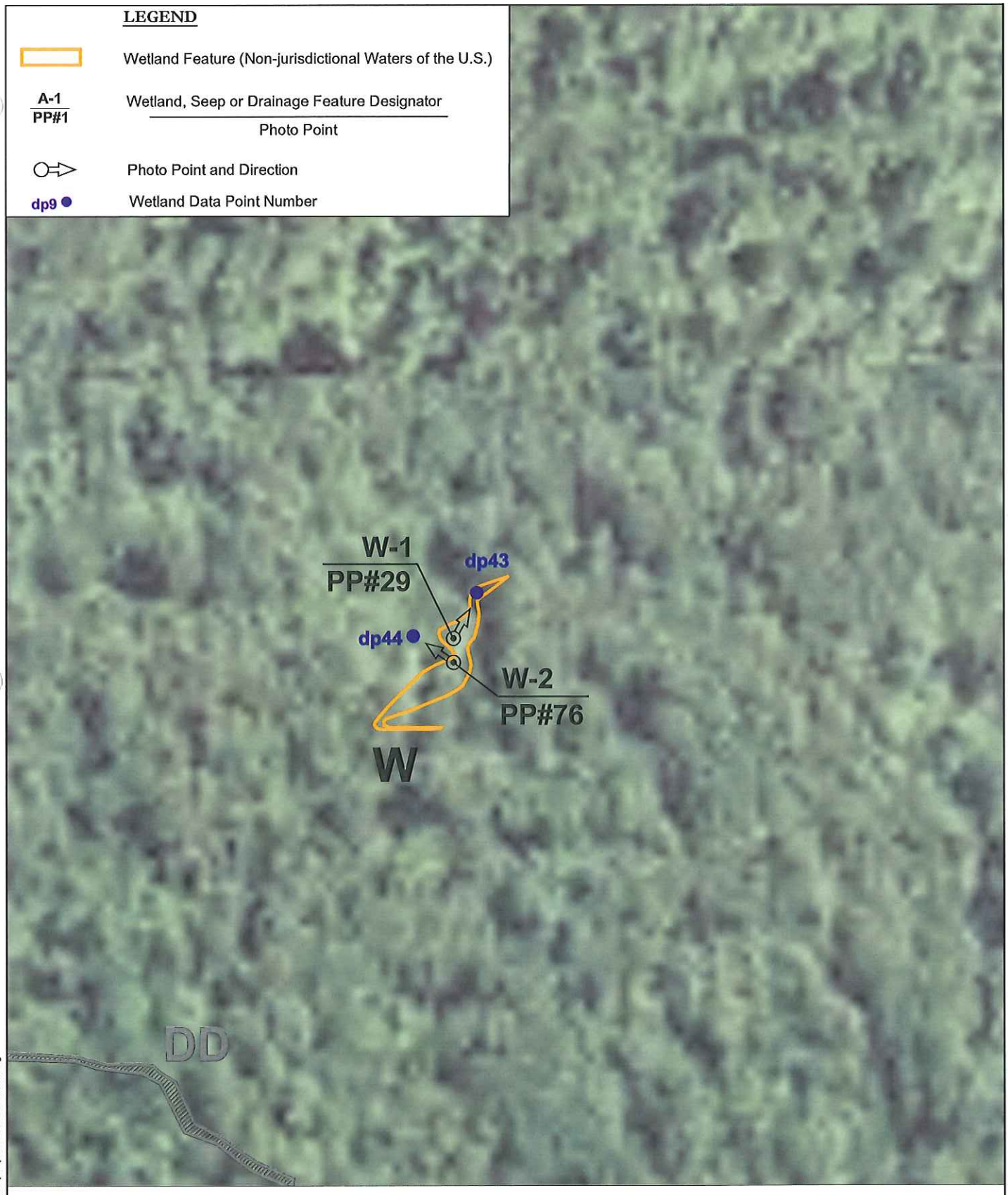

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

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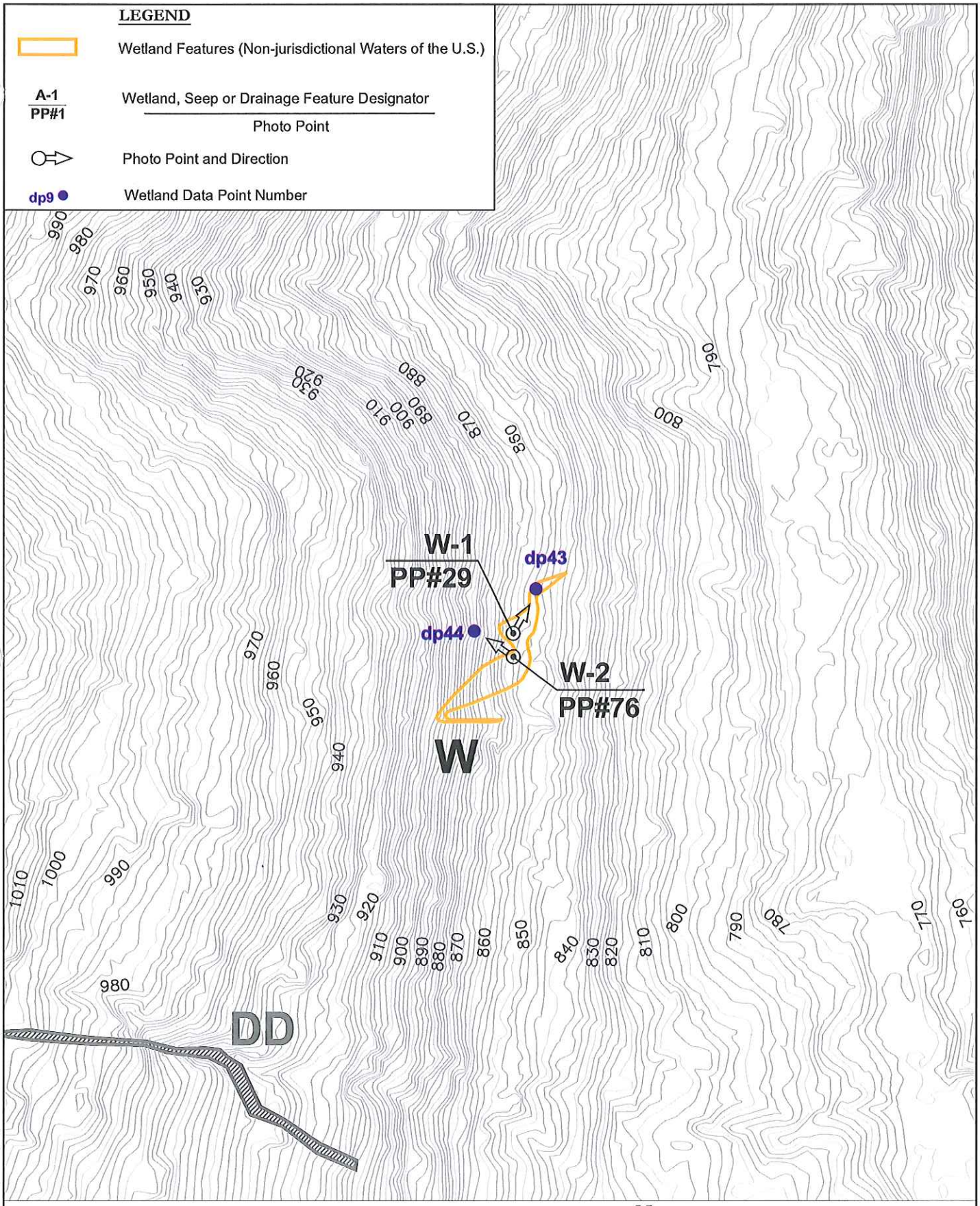
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature W
Aerial Overview
Figure B-43

DWG FullPath: M:\...\cts\1271.01\JD\WETLAND FIGURES.dwg



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0' 50' 100'
SCALE 1" = 100'
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N
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Former Satralloy Site
Wetland and Drainage Analysis
Feature W
Topographic Overview
Figure B-44

DWG FullPath: M:\...\1271.01\D\WETLAND FIGURES.dwg

Photo point: PP29
Photo reference: W-1
View: Data collection point 43 (seepage area) facing south

Photo point: PP76
Photo reference: W-2
View: Data collection point 44 (upland), facing west

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Seepage area along old mining road.*	Data Point No.: *DP-43*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Highly disturbed seepage area from abandoned coal mine.*	Location: *~ 2' from W-3*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Rubus idaeus*	*FAC-*	*H*	8			
2	*Glechoma hederacea*	*FACU*	*H*	9			
3	*Equisetum arvense*	*FAC*	*H*	10			
4	*Tussilago farfara*	*FACU*	*H*	11			
5	*Asclepias syriaca*	*UPL*	*H*	12			
6	*Boehmeria cylindrica*	*FACW+*	*H*	13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *37%*

Is the hydrophytic vegetation criterion met? *No* Rationale: *≤ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: *10YR 4/2* Depth: *10"* Gleyed? *No*

Mottles? *Yes* Mottle Colors: *5 Y 4/1* Histic Epipedon? *No*

Other hydric soil indicators: *Sulfur odor. Evidence of coal seepage.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma mottles, saturated.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *1"*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: -

Other field evidence of hydrology: *Small depression along road collecting water from adjacent steep slope.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Evidence of saturation and inundation.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for soil and hydrology.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *L. Rae, J. Ginter*

Project No.: *1271.01* Date: *7/9/06*

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Tucson, Arizona 85719

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Steep slope above old mine road.*	Data Point No.: *DP-44*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Highly disturbed as a result of coal mining. Erosion and exposed coal along steep slope.*	Location: *~ 5' above W-18*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Ulmus americana*	*FACW*	*T*	8	*Equisetum arvense*	*FAC*	*H*
2	*Cornus florida*	*FACU*	*S*	9			
3	*Viburnum prunifolium*	*FACU*	*S*	10			
4	*Tussilago farfara*	*FACU*	*H*	11			
5	*Boehmeria cylindrica*	*FACW+*	*H*	12			
6	*Glechoma hederacea*	*FACU*	*H*	13			
7	*Rubus idaeus*	*FAC-*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *27%*

Is the hydrophytic vegetation criterion met? *No* Rationale: *≤ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *-* Matrix Color: *2.5 YR 5/4* Depth: *8"* Gleyed? *No*

Mottles? *Yes* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *None*

Is the hydric soil criterion met? *No* Rationale: *High chroma.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None. ~ 6' above surface water.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for any parameter.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *L. Rae, J. Ginter*

Project No.: *1271.01* Date: *7/9/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: W

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Isolated zone of seepage on hillside in second growth forest.

Rated as Category 1 because of small size, hydrologic isolation, disturbance, and lack of significant habitat.

Final score 23	**Category**	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

7

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1 pts	Precipitation	
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	1

5

subtotal

13

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.	
4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance. Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.	

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		score
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.		
7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	NO	If yes, Category 1.
	Question 6. Bogs	YES	NO	If yes, Category 3.
	Question 7. Fens	YES	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0		
	Metric 2. Buffers and surrounding land use	7		
	Metric 3. Hydrology	6		
	Metric 4. Habitat	3		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	0		
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	16		Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

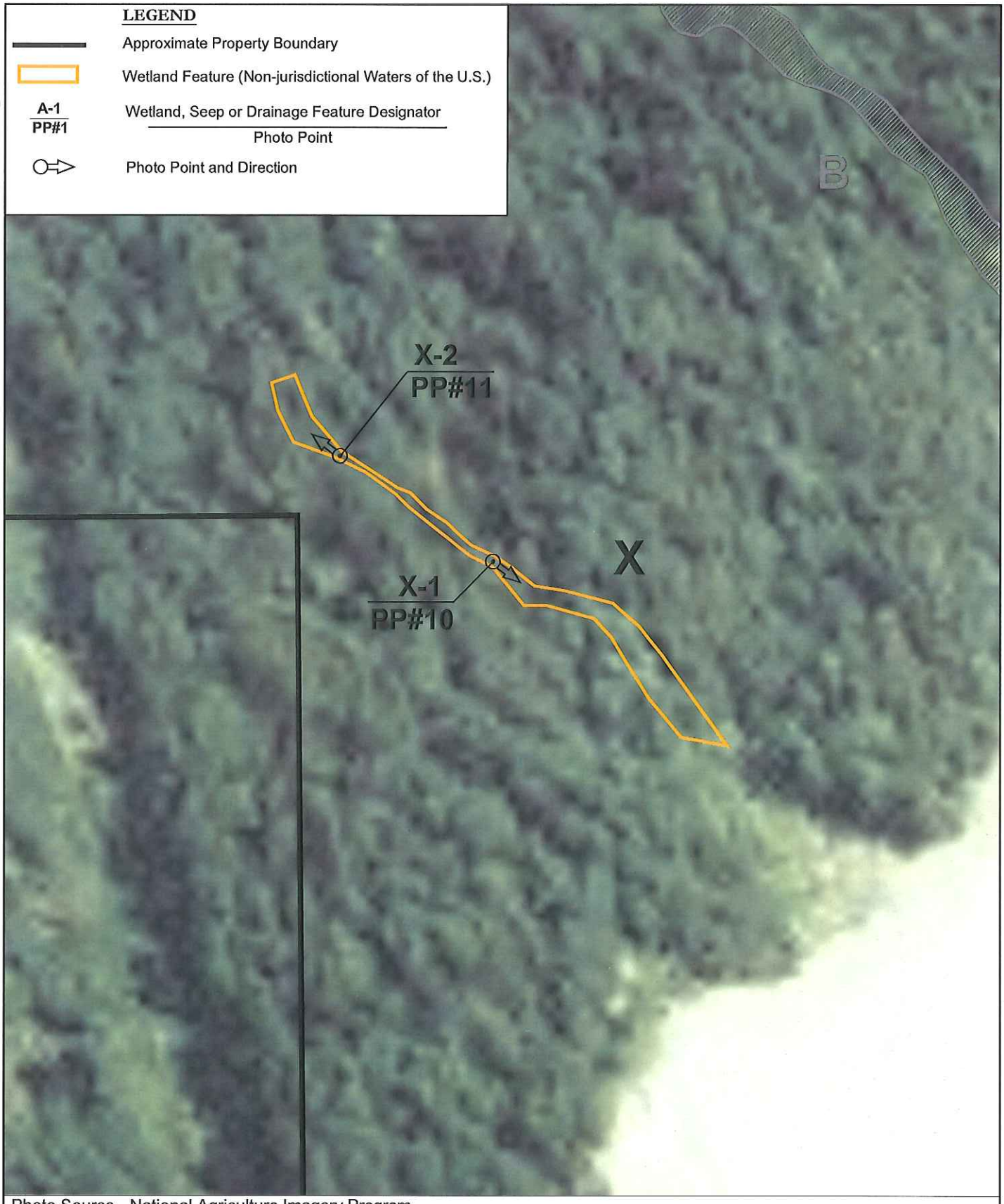

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

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Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
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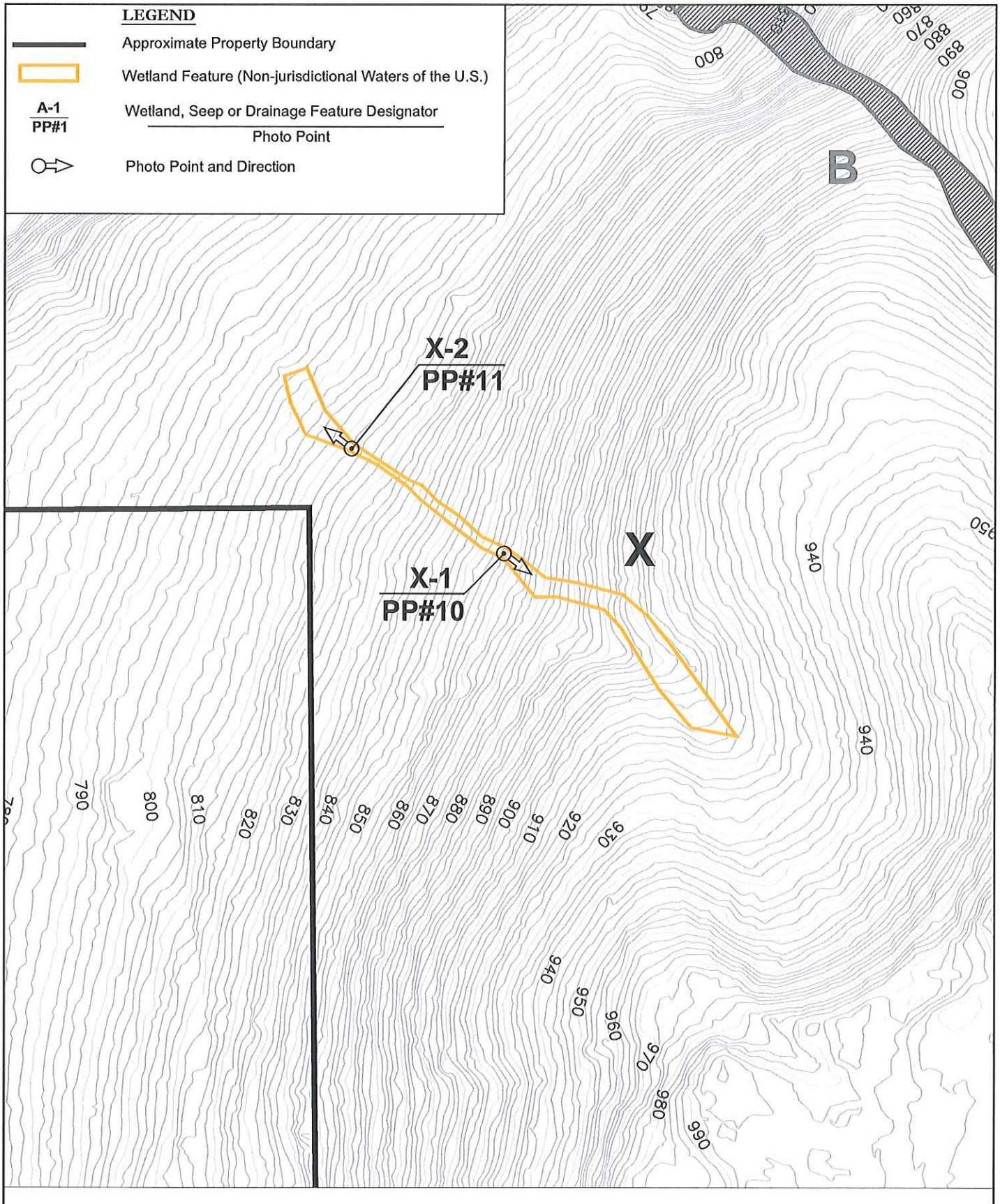
Former Satralloy Site
Wetland And Drainage Analysis
Feature X
Aerial Overview
Figure B-45

DWG FullPath: M:\...\jects\1271.01\JD\WETLAND FIGURES.dwg



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0' 50' 100'
SCALE 1" = 100'
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Former Satralloy Site
wetland And Drainage Analysis
Feature X
Topographic Overview
Figure B-46

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Photo point: PP10
Photo reference: X-1
View: Central segment of drainage feature X, facing downgradient

Photo point: PP11
Photo reference: X-2
View: Area at the lower segment of drainage feature X, facing downgradient

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Drainage feature X located at toe of existing slag pile*	Data Point No.:	*DP-67*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*	
Site Disturbance?	*Isolated drainage channel below slag pile. Infiltration at downgradient basin.*	Location:	*Between X-14 and X-29.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Acer negundo*	*FAC+*	*T*	8			
2	*Aesculus glabra*	*FACU+*	*S*	9			
3	*Polystichum acrostichoides*	*FACU*	*H*	10			
4	*Parthencissus quinquefolia*	*FACU*	*H*	11			
5				12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *10%*

Is the hydrophytic vegetation criterion met? *No* Rationale: *< 50 % FAC, FACW, of OBL*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon - Matrix Color: - Depth: - Gleyed? -

Mottles? - Mottle Colors: - Histic Epipedon? -

Other hydric soil indicators: *Unable to obtain sample. Area underlain by a hard layer of slag material.*

Is the hydric soil criterion met? *Undetermined* Rationale: *No soil development.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *~1"*

Is the soil saturated? *Undetermined.*

Depth to free-standing water in probe hole: -

Other field evidence of hydrology: *Wet leaf debris.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Evidence of flow down slope.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for vegetation. Soil parameter undetermined.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *L. Rae, J. Ginter*

Project No.: *1271.01* Date: *7/10/06*

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DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*On slope above Feature X.*	Data Point No.:	*DP-68*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*No recent disturbance.*	Location:	*~15' above X-14.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Acer saccharum*	*FACU*	*T*	8			
2	*Polystichum acrostichoides*	*FACU*	*H*	9			
3	*Glechoma hederacea*	*FACU*	*H*	10			
4	*Polystichum acrostichoides*	*FACU*	*H*	11			
5	*Toxicodendron radicans*	*FAC*	*H*	12			
6	*Athyrium filix-femina*	*FAC*	*H*	13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *22%*

Is the hydrophytic vegetation criterion met? *No* Rationale: *< 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: *2.5 Y 5/3* Depth: *10"* Gleyed? *No*

Mottles? *None* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *None. No significant topsoil development.*

Is the hydric soil criterion met? *No* Rationale: *High chroma, no mottles.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for any parameter.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *L. Rae, J. Ginter*

Project No.: *1271.01* Date: *7/10/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: X

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Site is an intermittent stream channel below chromium slag dump. Water lost to infiltration; no surface connection to Cross Creek.

Rated as Category 1 because of isolation, small size, lack of significant habitat, and past disturbance.

Final score 19	Category	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

8

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	1
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	2
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

5

subtotal

14

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	2
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

3

subtotal

18

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points.		
	6a. Wetland Vegetation Communities. Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.	
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	NO	If yes, Category 1.
	Question 6. Bogs	YES	NO	If yes, Category 3.
	Question 7. Fens	YES	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	1		
	Metric 2. Buffers and surrounding land use	7		
	Metric 3. Hydrology	6		
	Metric 4. Habitat	4		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	1		
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	19		Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

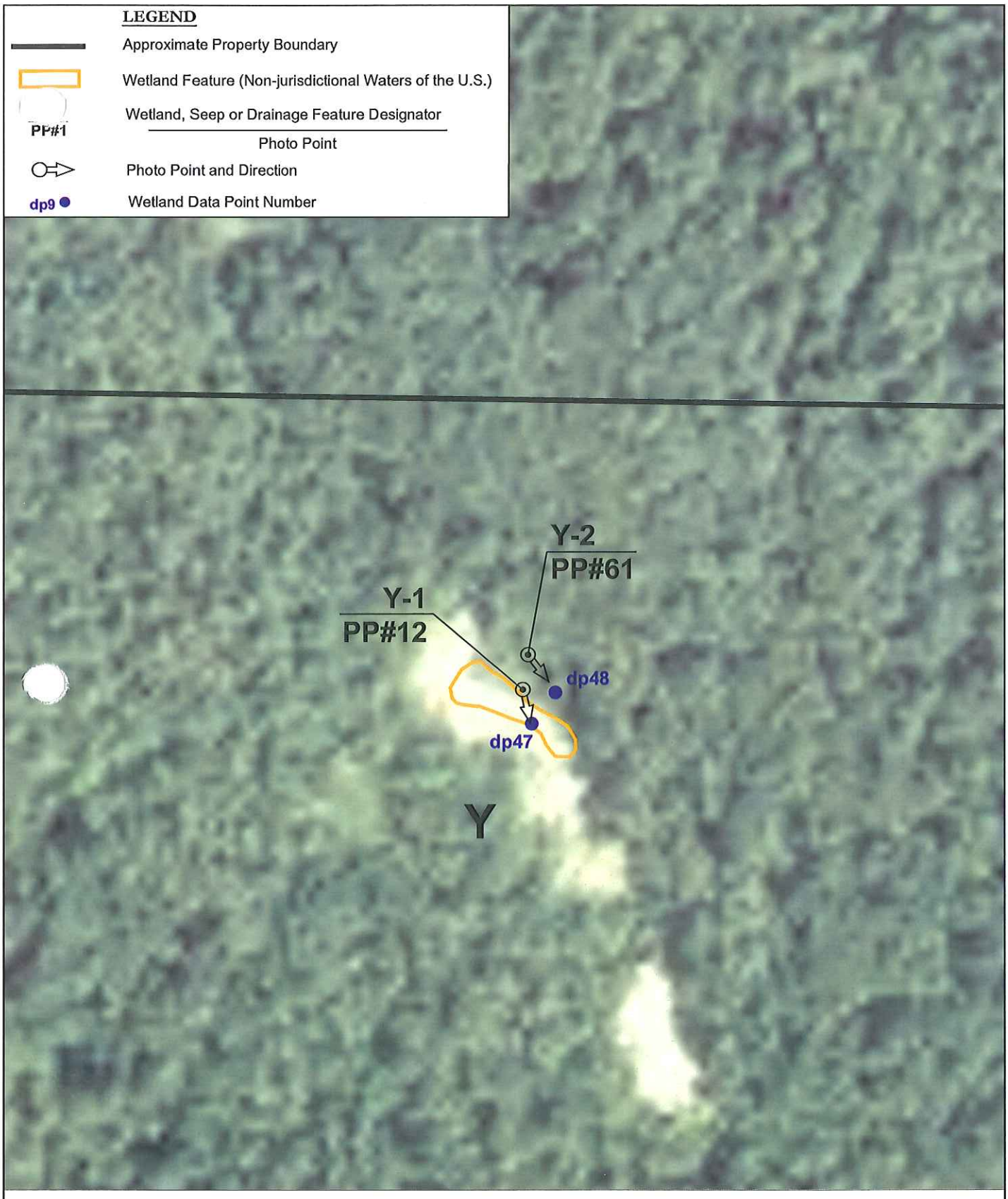

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

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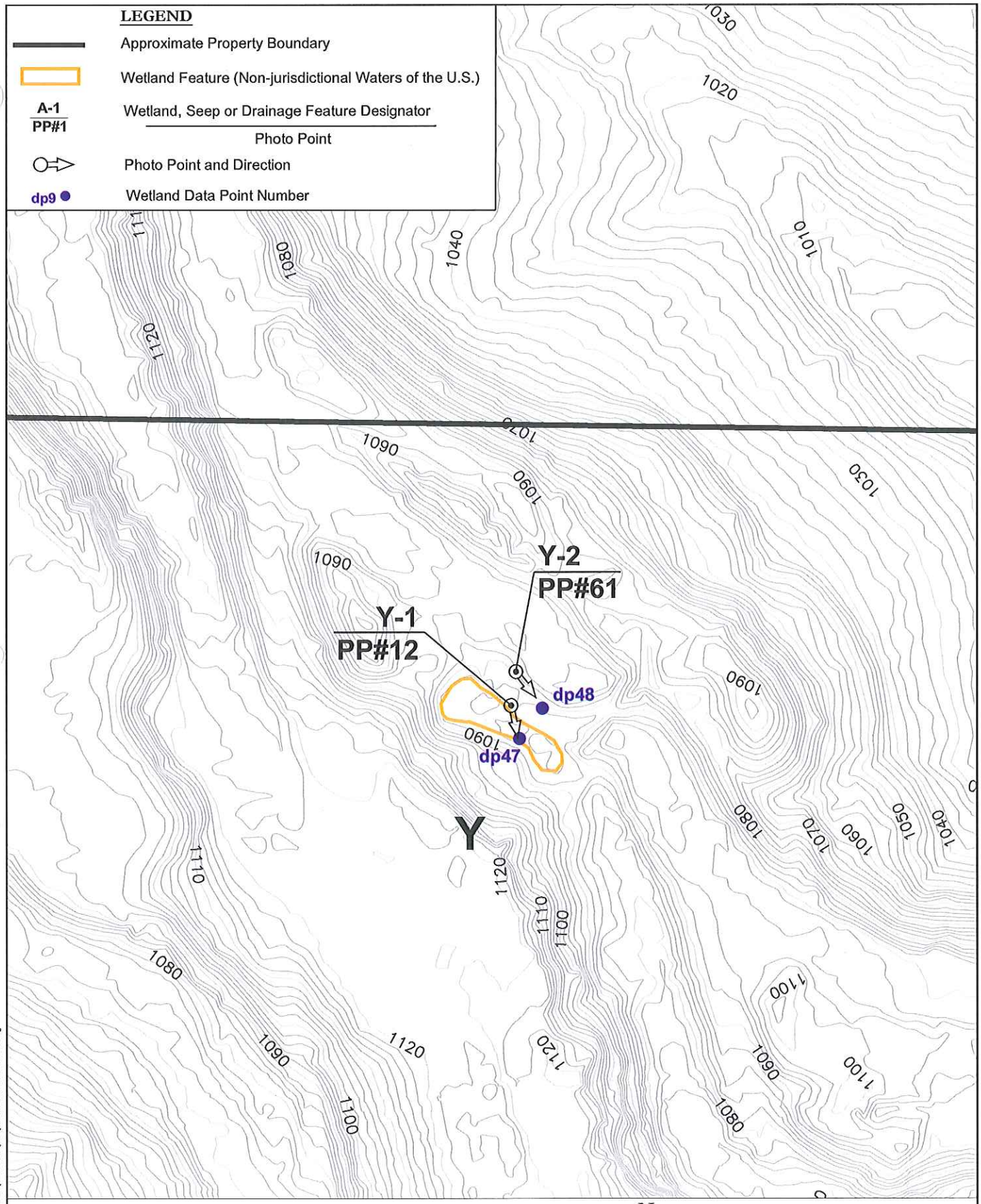
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature Y
Aerial Overview
Figure B-47



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0' 50' 100'
SCALE 1" = 100'
Contour Interval = 2'

N
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Former Satralloy Site
Wetland and Drainage Analysis
Feature Y
Topographic Overview
Figure B-48

DWG FullPath: M:\...\ts\1271.01\AD\WETLAND FIGURES.dwg

Photo point: PP12
Photo reference: Y-1
View: Data collection point 47 (wetland feature), facing south

Photo point: PP61
Photo reference: Y-2
View: Data collection point 48 (upland), facing southeast

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Wetland Y. Closed basin in abandoned coal mine.*	Data Point No.: *DP-47*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Abandoned coal mine, impacted by slag from chromium smelter.*	Location: *~15' west of Y-9.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Salix exigua*	*OBL*	*T*	8			
2	*Carex vulpinoidea*	*OBL*	*H*	9			
3	*Carex frankii*	*OBL*	*H*	10			
4	*Juncus tenuis*	*FAC*	*H*	11			
5	*Cyperus* sp.		*H*	12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *100 %*
Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*
Cyperus sp. *is either FACW or OBL*

SOIL

Soil Type: *Bethesda very channery clay loam* Hydric Soils List: *Yes*
Horizon - Matrix Color: - Depth: - Gleyed? *No*
Mottles? *No* Mottle Colors: - Histic Epipedon? *No*
Other hydric soil indicators: *No soil. Auger will not penetrate slag.*
Is the hydric soil criterion met? *Undetermined.* Rationale: *Saturated, but no real soil development.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *6"*
Is the soil saturated? *Yes*
Depth to free-standing water in probe hole: -
Other field evidence of hydrology: *Closed basin in abandoned coal mine, with layer of slag.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Inundated and saturated.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*
Rationale for wetland decision: *Positive indicators for hydrology and vegetation. Insufficient time for soil development.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*
Field Investigator(s): *T. Strong, D. Ward*
Project No.: *1271.01* Date: *7/10/06*

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DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions: *Spoils pile from abandoned coal mine.*		Data Point No.: *DP-48*
Do Normal Circumstances Exist on Site? *Yes*	Is Site a Potential Problem Area? *No*	
Site Disturbance? *Spoils pile from abandoned coal mine.*		Location: *~15' east of Y-9.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Ulmus americana*	*FACW*	*T*	8			
2	*Fraxinus pennsylvanica*	*FACW*	*T*	9			
3	*Acer saccharum*	*FACU*	*T*	10			
4	*Rosa virginiana*	*FAC*	*S*	11			
5	*Lonicera canadensis*	*FACU*	*S*	12			
6	*Boehmeria cylindrica*	*FACW*	*H*	13			
7	*Elymus hystrix*	*UPL*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *57 %*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Bethesda very channery clay loam* Hydric Soils List: *Yes*

Horizon *-* Matrix Color: *2.5 Y 4/1* Depth: *8"* Gleyed? *No*

Mottles? *Trace* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *None. No real soil development, material is from coal mine spoils.*

Is the hydric soil criterion met? *Undetermined* Rationale: *Low chroma, but no real soil developmemt.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None. ~6' above water level..*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for hydrology, insufficient time for soil development.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/10/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: Y

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

This site is in an abandoned coal strip mine, partially filled with slag from chromium smelter. Isolated from other waters.

Final score 14	Category	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

6

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1 pts	Precipitation	
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	3
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	4
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

10

subtotal

17

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland. .

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

10

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	NO	If yes, Category 1.
	Question 6. Bogs	YES	NO	If yes, Category 3.
	Question 7. Fens	YES	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0		
	Metric 2. Buffers and surrounding land use	6		
	Metric 3. Hydrology	11		
	Metric 4. Habitat	3		
	Metric 5. Special Wetland Communities	-10		
	Metric 6. Plant communities, interspersion, microtopography	4		
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	14		Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

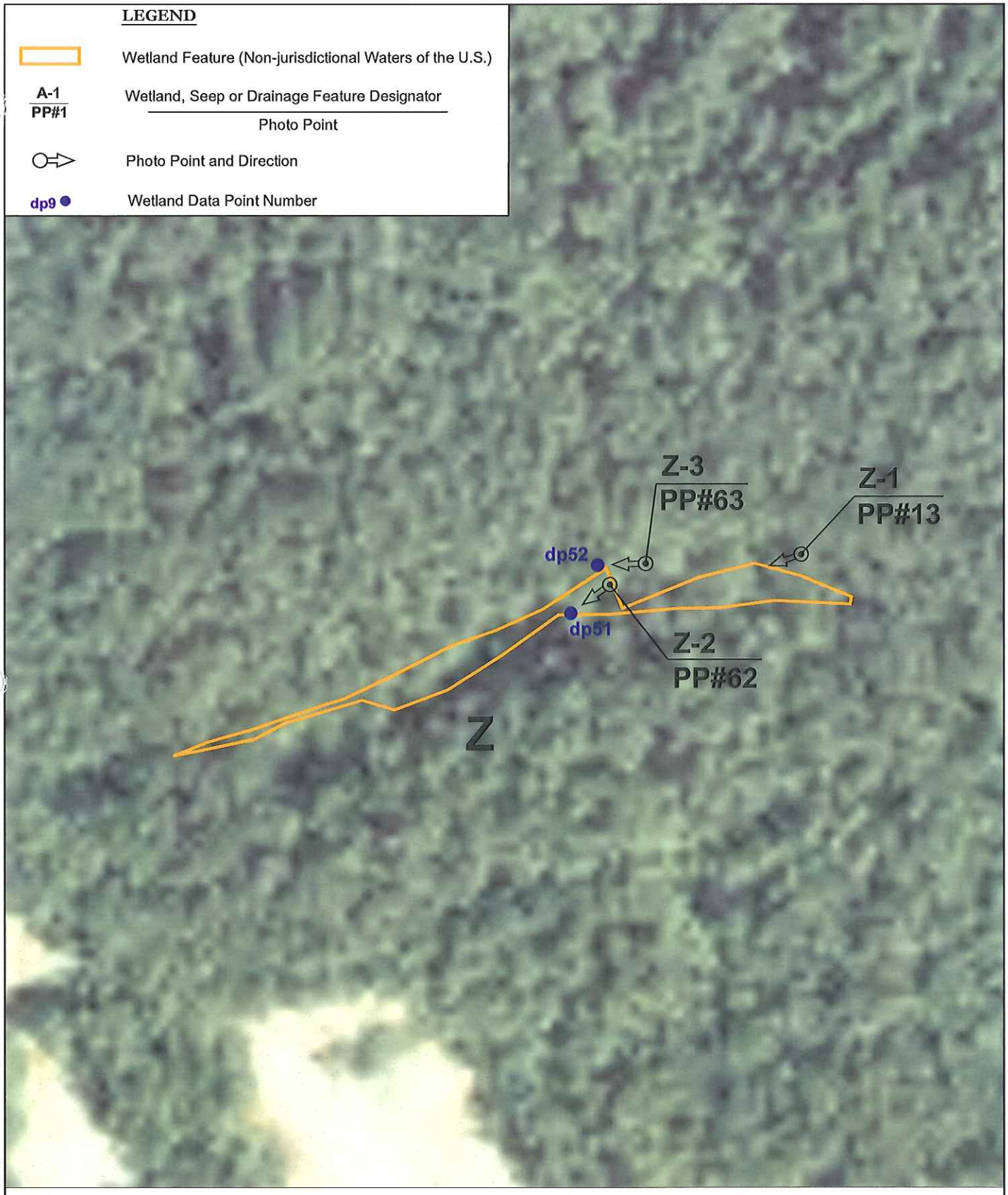

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

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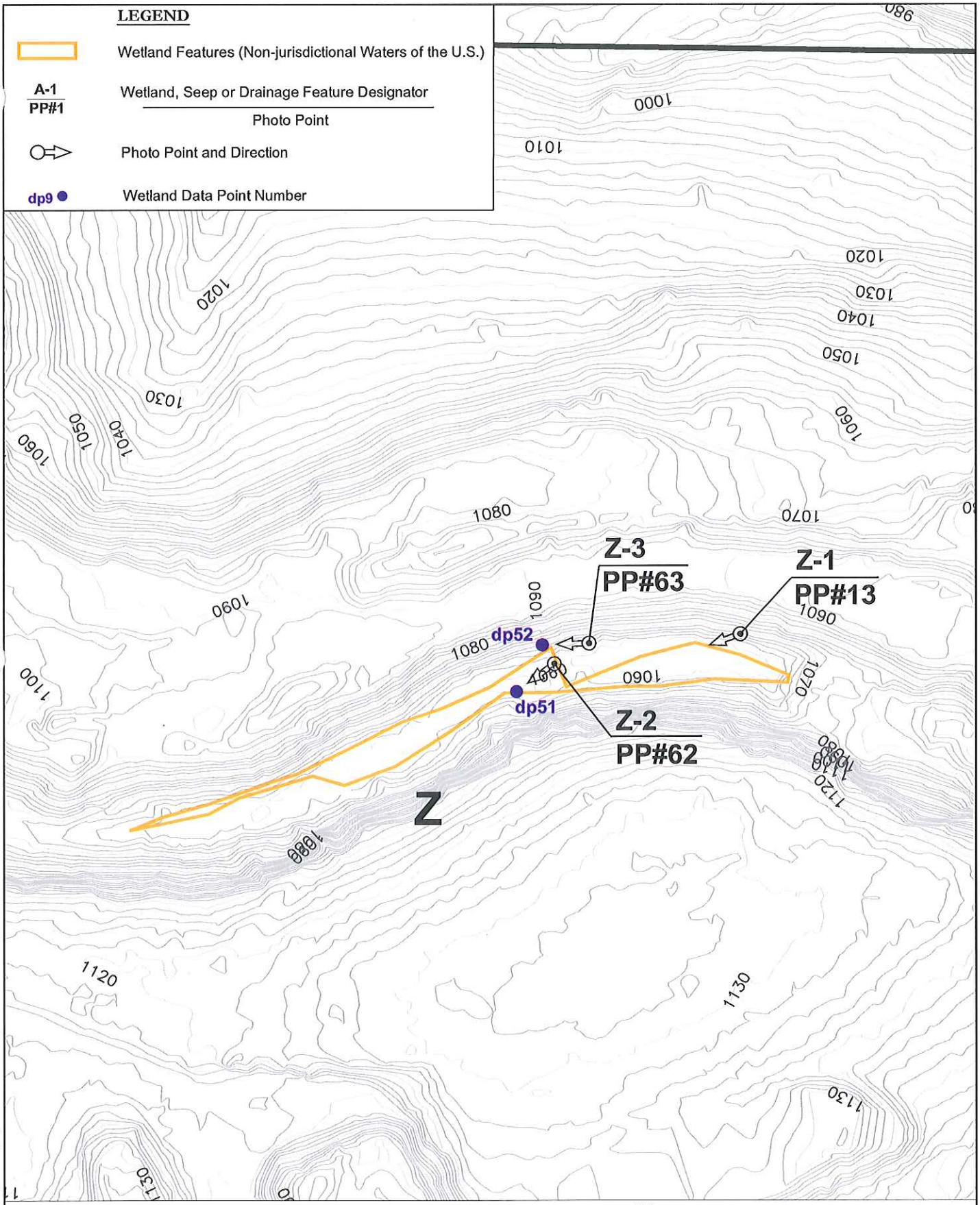
0' 50' 100'
SCALE 1" = 100'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature Z
Aerial Overview
Figure B-49

DWG FullPath: M ...cts\1271.01\JD\WETLAND FIGURES.dwg



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0' 50' 100'
SCALE 1" = 100'
Contour Interval = 2'

N
W E
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Former Satralloy Site
Wetland and Drainage Analysis
Feature Z
Topographic Overview
Figure B-50

Photo point: PP13
Photo reference: Z-1
View: East end of wetland feature Z, facing west

Photo point: PP62
Photo reference: Z-2
View: Data collection point 51 (wetland feature), facing southwest

Photo point: PP63
Photo reference: Z-3
View: Data collection point 52 (upland), facing west

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Wetland Z. Closed basin in abandoned coal mine.*	Data Point No.: *DP-51*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Man-induced wetland in abandoned coal mine.*	Location: *~15' west of Z-20.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Fraxinus pennsylvanica* *	*FACW*	*T*	8			
2	*Ulmus americana* *	*FACW*	*T*	9			
3	*Toxicodendron racidans* *	*FAC*	*S*	10			
4	*Rubus occidentalis* *	*UPL*	*S*	11			
5	*Boehmeria cylindrica* *	*FACW*	*H*	12			
6	*Poa compressa* *	*FACU*	*H*	13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *67 %*

Is the hydrophytic vegetation criterion met? *?* Rationale: ** No aquatic vegetation.*

All plants listed above rooted on dry slope above water.

SOIL

Soil Type: *Bethesda very channery clay loam* Hydric Soils List: *Yes*

Horizon *-* Matrix Color: *7.5 YR 3/2* Depth: *6"* Gleyed? *No*

Mottles? *Trace* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *Saturated. Poor soil develelopment. Sandy gravelly mine debris.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma with mottles.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *12"*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *Isolated, closed basin in abandoned coal mine.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Inundated and saturated.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for soil and hydrology. No aquatic vegetation.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/10/06*

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DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Wooded spoils pile from abandoned coal mine.*	Data Point No.:	*DP-52*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*Spoils pile from abandoned coal mine.*	Location:	*~15' northwest of Z-20.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Fraxinus pennsylvanica*	*FACW*	*T*	8	*Parthenocissus quinquefolia*	*FACU*	*V*
2	*Quercus bicolor*	*FACW*	*T*	9			
3	*Ulmus americana*	*FACW*	*T*	10			
4	*Sassafras albidum*	*FACU*	*T*	11			
5	*Fagus grandiflora*	*FACU*	*T*	12			
6	*Boehmeria cylindrica*	*FACW*	*H*	13			
7	*Osmorhiza claytonii*	*FACU*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *50%*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Bethesda very channery clay loam* Hydric Soils List: *Yes*

Horizon *-* Matrix Color: *2.5 Y 4/3* Depth: *10"* Gleyed? *No*

Mottles? *Trace* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *None. Poor soil development. Sandy, gravelly mine debris.*

Is the hydric soil criterion met? *No* Rationale: *High chroma. Poor soil development.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None. ~ 8 feet above water.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *Highly disturbed, no positive indicators for soil or hydrology.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/10/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: Z

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

This site is in an abandoned coal strip mine, isolated from other waters. Water appears to be stagnant; no aquatic vegetation.

Final score 13	Category	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

10

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	3
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	4
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

8

subtotal

19

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		score
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

12

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. 6a. Wetland Vegetation Communities. Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	NO	If yes, Category 1.
	Question 6. Bogs	YES	NO	If yes, Category 3.
	Question 7. Fens	YES	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0		
	Metric 2. Buffers and surrounding land use	10		
	Metric 3. Hydrology	9		
	Metric 4. Habitat	3		
	Metric 5. Special Wetland Communities	-10		
	Metric 6. Plant communities, interspersion, microtopography	1		
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	13		Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

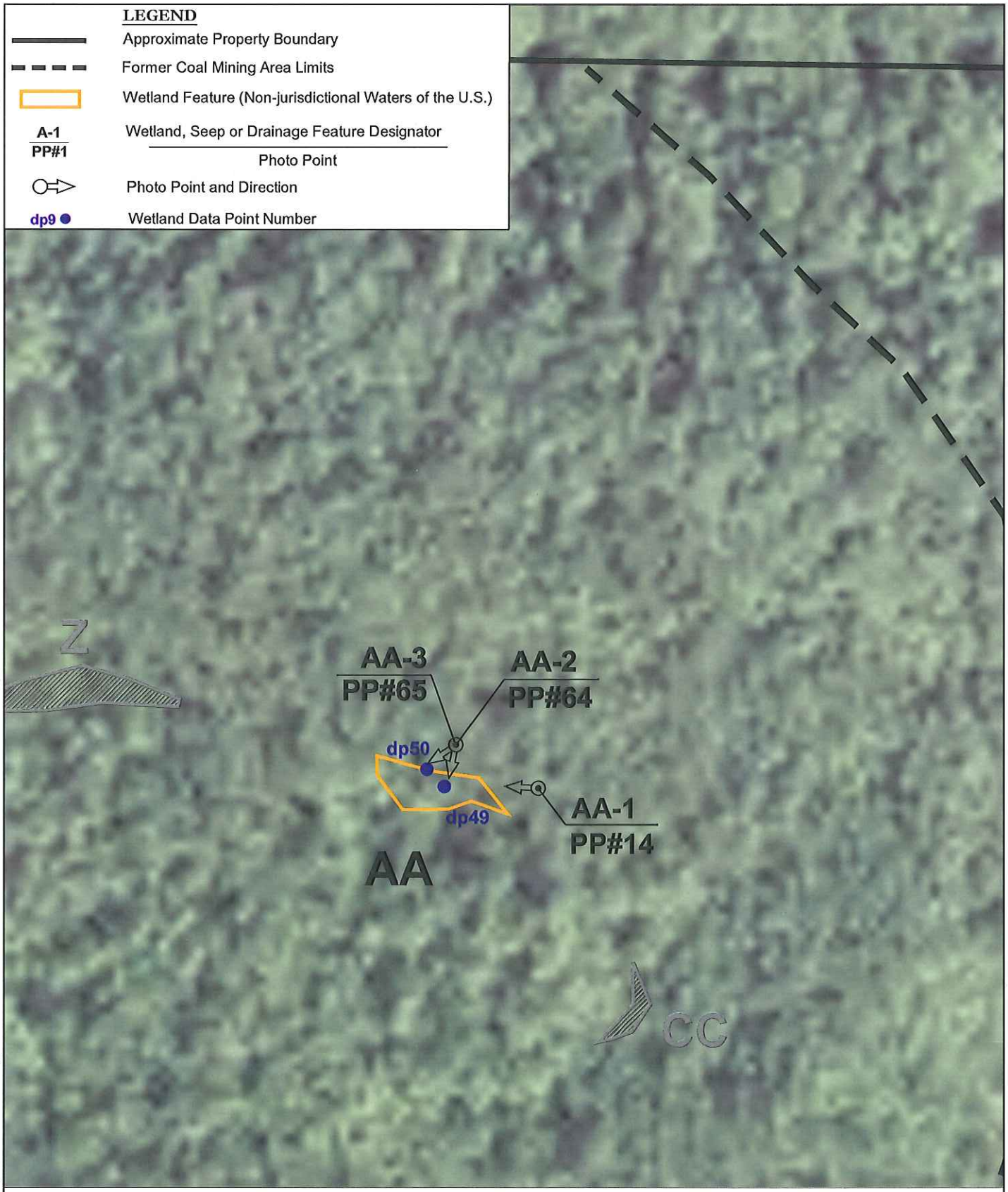

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

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0' 50' 100'
SCALE 1" = 100'

N
W E
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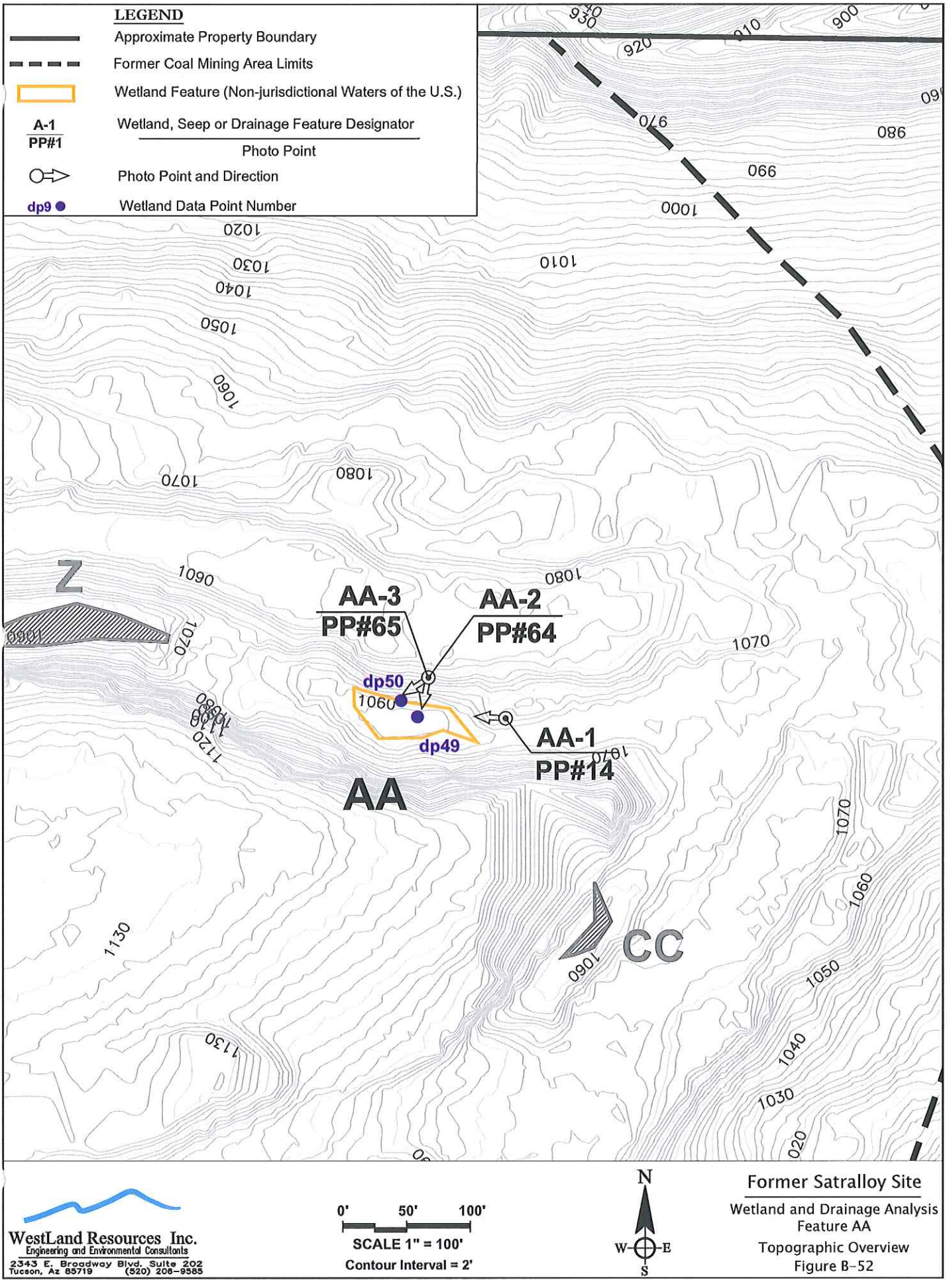
Former Satralloy Site
Wetland And Drainage Analysis
Feature AA
Aerial Overview
Figure B-51

DWG FullPath: M:\...\jects\1271.01\JD\WETLAND FIGURES.dwg



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0' 50' 100'
SCALE 1" = 100'
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Former Satralloy Site
Wetland and Drainage Analysis
Feature AA
Topographic Overview
Figure B-52

DWG FullPath: M: ...ts\1271.01\d\WETLAND FIGURES.dwg

Photo point: PP14
Photo reference: AA-1
View: Wetland feature AA, facing west

Photo point: PP64
Photo reference: AA-2
View: Data collection point 49 (wetland feature), facing south

Photo point: PP65
Photo reference: AA-3
View: Data collection point 50 (upland), facing west

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Wetland AA. Closed basin in abandoned coal mine.*	Data Point No.:	*DP-49*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*Man-induced wetland in abandoned coal mine.*	Location:	*~5' southwest of AA-8.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Robinia pseudoacacia* *	*FACU*	*T*	8			
2	*Quercusprinus* sp.*	*UPL*	*T*	9			
3	*Fraxinus pennsylvanica* *	*FACW*	*T*	10			
4				11			
5				12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *33%*

Is the hydrophytic vegetation criterion met? *?* Rationale: ** No aquatic vegetation except for submerged moss or algae. All plants listed above rooted on dry slope above water.*

SOIL

Soil Type: *Bethesda very channery clay loam* Hydric Soils List: *Yes*

Horizon *-* Matrix Color: *5 Y 4/1* Depth: *4"* Gleyed? *No*

Mottles? *No* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *Saturated conditions.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma, saturated. No real soil, just material collected at bottom of abandoned mine.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *8"*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *Closed basin in abandoned coal mine.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Inundated and saturated.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for soil and hydrology. No vegetation in wetland.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/10/06*

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DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*On slope above Wetland AA.*	Data Point No.: *DP-50*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Spoils pile from abandoned coal mine.*	Location: *~15' northeast of AA-8*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Fraxinus pennsylvanica*	*FACW*	*T*	8			
2	*Acer saccharum*	*FACU*	*T*	9			
3	*Quercus prinus*	*UPL*	*T*	10			
4	*Ulmus americana*	*FACW*	*T*	11			
5	*Platanus occidentalis*	*FACW*	*T*	12			
6	*Boehmeria cylindrica*	*FACW*	*H*	13			
7	*Parthenocissus quinquefolia*	*FACU*	*V*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *57%*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Bethesda very channery clay loam* Hydric Soils List: *Yes*

Horizon *-* Matrix Color: *2.5 Y 2.5/1* Depth: *10"* Gleyed? *No*

Mottles? *None* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *None.*

Is the hydric soil criterion met? *No* Rationale: *No soil development, debris from abandoned coal mine.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None. ~8 feet above water level.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for soil or hydrology.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/10/06*

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2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: AA

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

This site is in an abandoned coal strip mine, isolated from other waters. Water appears to be stagnant; no aquatic vegetation.

Final score 15	**Category**	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

12

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	3
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	4
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

8

subtotal

21

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	**NO** Assign a score of 4 since there are no or no apparent modifications.	**NOT SURE** Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

14

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	NO	If yes, Category 1.
	Question 6. Bogs	YES	NO	If yes, Category 3.
	Question 7. Fens	YES	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0		
	Metric 2. Buffers and surrounding land use	12		
	Metric 3. Hydrology	9		
	Metric 4. Habitat	3		
	Metric 5. Special Wetland Communities	-10		
	Metric 6. Plant communities, interspersion, microtopography	1		
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	15		Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

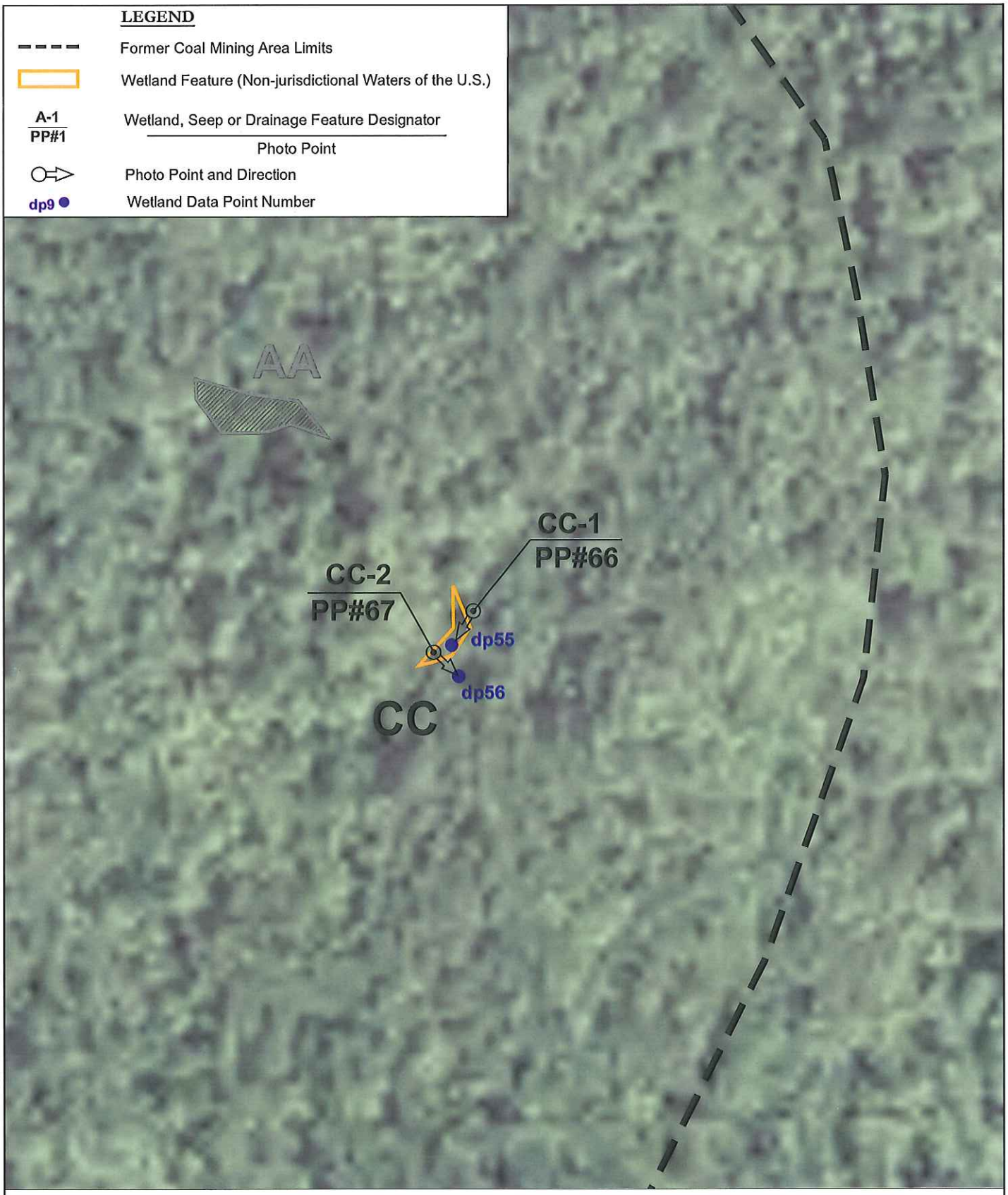

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

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0' 50' 100'
SCALE 1" = 100'

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Former Satralloy Site
Wetland and Drainage Analysis
Feature CC
Aerial Overview
Figure B-53

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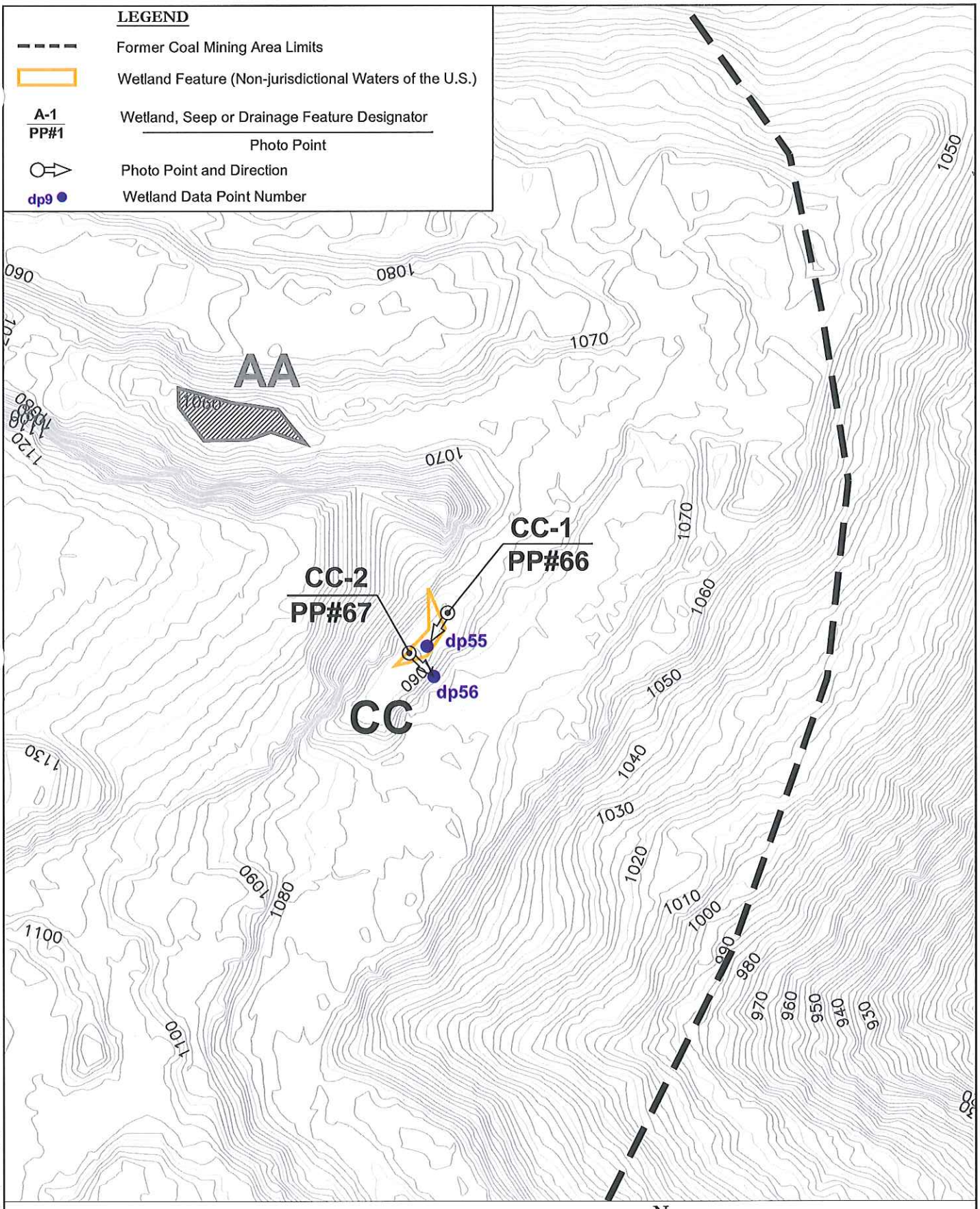

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Former Satralloy Site
Wetland and Drainage Analysis
Feature CC
Topographic Overview
Figure B-54

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Photo point: PP66
Photo reference: CC-1
View: Data collection point 55 (wetland feature), facing southwest

Photo point: PP67
Photo reference: CC-2
View: Data collection point 56 (upland), facing southeast

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Closed basin in abandoned coal mine.*	Data Point No.:	*DP-55*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*Man-induced wetland in abamdoned coal mine.*	Location:	*Near center, Wetland CC.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Fraxinus pennsylvanica* *	*FACW*	*T*	8			
2	*Ulmus americana* *	*FACW*	*T*	9			
3	*Malus pumila* *	*UPL*	*T*	10			
4				11			
5				12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *67 %*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: ** No aquatic vegetation.*

All plants listed above rooted adjacent to wetland.

SOIL

Soil Type: *Bethesda very channery clay loam* Hydric Soils List: *Yes*

Horizon *-* Matrix Color: *2.5 Y 4/2* Depth: *10"* Gleyed? *No*

Mottles? *Traces* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *Saturated. Sticky, high clay content. Poor soil development.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma with mottles.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *~4"*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: *To surface.*

Other field evidence of hydrology: *Small, closed basin. Matted leaf debris.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Inundated and saturated.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for all parameters.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/10/06*

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DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Wooded slope adjacent to Wetland CC.*	Data Point No.: *DP-56*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Some spoils from abandoned coal mine.*	Location: *~15' southwest of CC-6*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Acer saccharum*	*FACU*	*T*	8	*Boehmeria cylindrica*	*FACW*	*H*
2	*Fraxinus pennsylvaniica*	*FACW*	*T*	9			
3	*Quercus bicolor*	*FACW*	*T*	10			
4	*Ulmus americana*	*FACW*	*T*	11			
5	*Malus pumila*	*UPL*	*T*	12			
6	*Platanus occidentalis*	*FACW*	*T*	13			
7	*Dryopteris carthusiana*	*FAC+*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *75 %*

Is the hydrophytic vegetation criterion met? *No* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Bethesda very channery clay loam* Hydric Soils List: *Yes*

Horizon *B* Matrix Color: *2.5 Y 4/3* Depth: *12"* Gleyed? *No*

Mottles? *Yes* Mottle Colors: *10 YR 5/6* Histic Epipedon? *No*

Other hydric soil indicators: *None. Poor soil development.*

Is the hydric soil criterion met? *No* Rationale: *High chroma. Poor soil development.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: -

Is the soil saturated? *No*

Depth to free-standing water in probe hole:

Other field evidence of hydrology: *None. Site is ~4' above standing water.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for soil or hydrology.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/10/06*

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Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: CC

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

This site is in an abandoned coal strip mine, isolated from other waters. Water appears to be stagnant; no aquatic vegetation.

Final score 10	Category	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

10

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	3
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

5

subtotal

16

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	**NO** Assign a score of 4 since there are no or no apparent modifications.	**NOT SURE** Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

9

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	NO	If yes, Category 1.
	Question 6. Bogs	YES	NO	If yes, Category 3.
	Question 7. Fens	YES	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0		
	Metric 2. Buffers and surrounding land use	10		
	Metric 3. Hydrology	6		
	Metric 4. Habitat	3		
	Metric 5. Special Wetland Communities	-10		
	Metric 6. Plant communities, interspersion, microtopography	1		
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	10		Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

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2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

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Former Satralloy Site
Wetland and Drainage Analysis
Feature DD
Aerial Overview
Figure B-55

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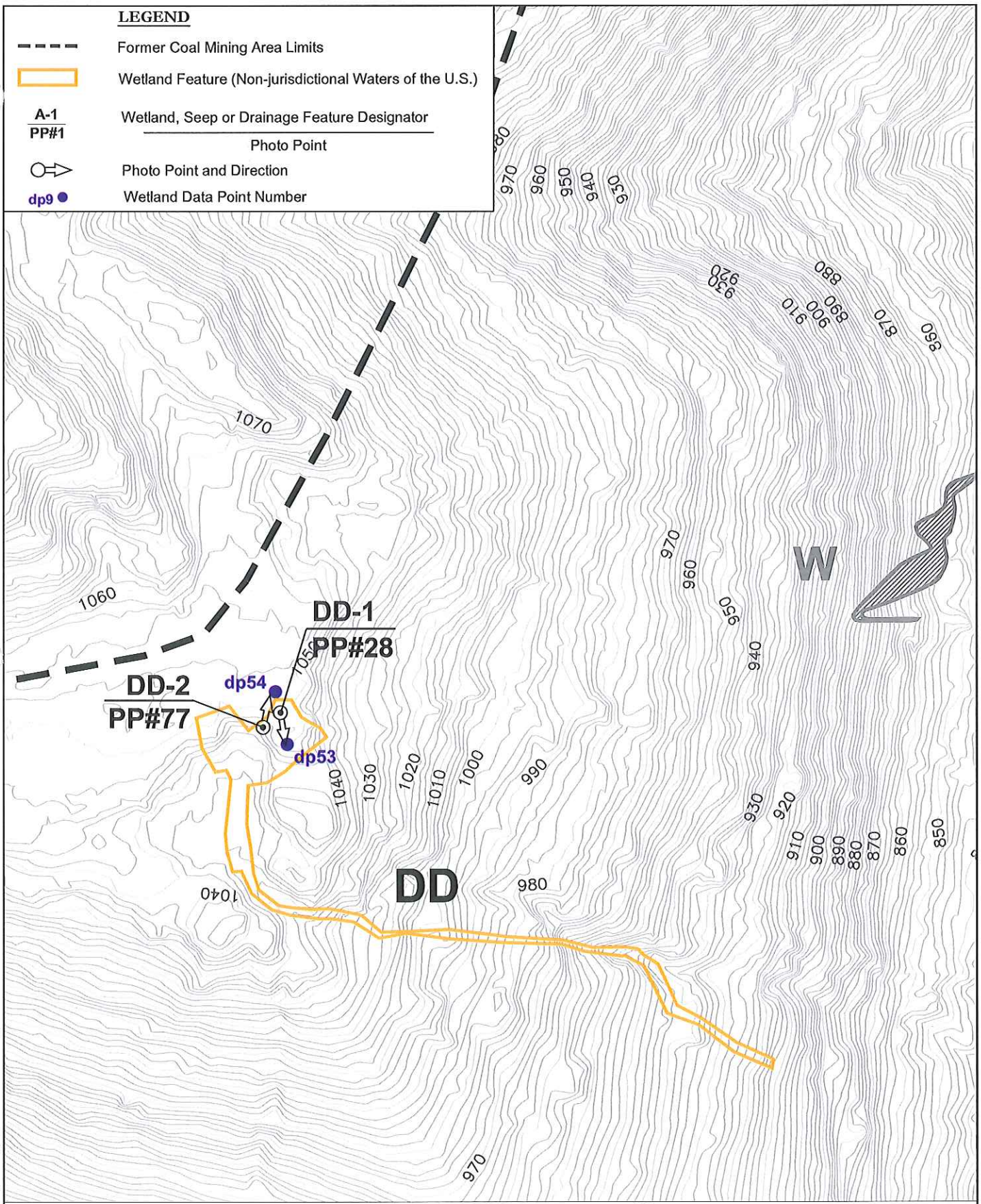

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Former Satralloy Site
Wetland and Drainage Analysis
Feature DD
Topographic Overview
Figure B-56

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Photo point: PP28
Photo reference: DD-1
View: Data collection point 53 (wetland feature), facing southeast

Photo point: PP77
Photo reference: DD-2
View: Data collection point 54 (upland), facing northeast

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Broad area of seepage on steep slope below old mining road.*	Data Point No.:	*DP-53*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*Highly disturbed area near abandoned coal mine. Debris from mine and seepage are evident.*	Location:	*~ 10' south of DD-1*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*			8			
2				9			
3				10			
4				11			
5				12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *0%*

Is the hydrophytic vegetation criterion met? *?* Rationale: ** No aquatic vegetation, except for submerged moss and algae, with no overstory immediately above data point.*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: *Gley 1 5/5GY* Depth: *10"* Gleyed? *Yes*

Mottles? *Traces* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *Saturated conditions, slight sulfur odor.*

Is the hydric soil criterion met? *Yes* Rationale: *Saturated, sulfur odor.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *6"*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: *To surface.*

Other field evidence of hydrology: *Broad basin, matted leaf debris.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Evidence of inundation and saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for soil and hydrology. No wetland vegetation.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *L. Rae, J. Ginter*

Project No.: *1271.01* Date: *7/11/06*

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Tucson, Arizona 85719

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Steep wooded slope adjacent to seepage area.*	Data Point No.: *DP-54*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Highly disturbed area near abandoned coal mine. Debris from mine and seepage are evident.*	Location: *~ 8' north of DD-1*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Ulmus americana*	*FACW*	*T*	8	*Parthenocissus quinquefolia*	*FACU*	*V*
2	*Liriodendron tulipifera*	*FACU*	*T*	9	*Dichanthelium commutatum*	*FACU+*	*H*
3	*Quercus rubra*	*FACU*	*T*	10			
4	*Acer negundo*	*FAC+*	*T*	11			
5	*Rosa multiflora*	*FACU*	*S*	12			
6	*Achillea millefolium*	*FACU*	*H*	13			
7	*Toxicodendron radicans*	*FAC*	*S*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *23%*

Is the hydrophytic vegetation criterion met? *No* Rationale: *≤ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: 2.5 Y 5/3 Depth: 6" Gleyed? *No*

Mottles? *No* Mottle Colors: - Histic Epipedon? *No*

Other hydric soil indicators: *None. Highly disturbed, poor soil formation.*

Is the hydric soil criterion met? *No* Rationale: *High chroma.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: -

Is the soil saturated? *No*

Depth to free-standing water in probe hole: -

Other field evidence of hydrology: *None. ~ 10' above surface water.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for any parameter.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *L. Rae, J. Ginter*

Project No.: *1271.01* Date: *7/11/06*

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2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: DD

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Zone of seepage and intermittent stream channel on the steep slope. Hydrologically isolated. Water lost to infiltration.

Rated as Category 1 because of small size, hydrologic isolation, lack of significant habitat, and disturbance from coal mining, per OAC Rule 3745-1-54(c).

Final score 30	**Category**	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

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subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	1
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	3
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

9

subtotal

24

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	**NO** Assign a score of 4 since there are no or no apparent modifications.	**NOT SURE** Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	1
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

1

subtotal

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2	
	Metric 2. Buffers and surrounding land use	12	
	Metric 3. Hydrology	10	
	Metric 4. Habitat	3	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	3	
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	30	Category based on score breakpoints 1 or 2

Complete Wetland Categorization Worksheet.

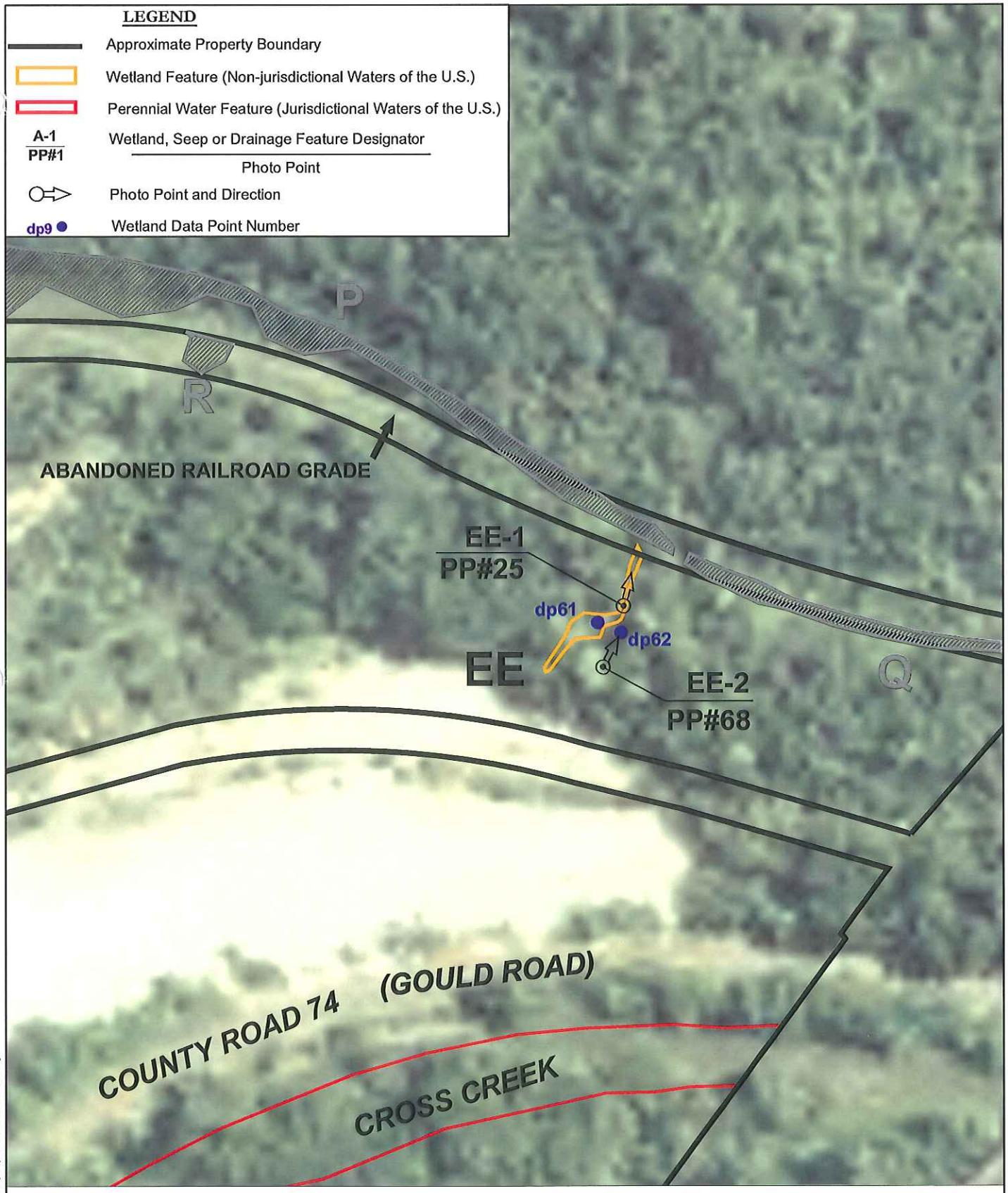

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

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Former Satralloy Site
Wetland and Drainage Analysis
Feature EE
Aerial Overview
Figure B-57

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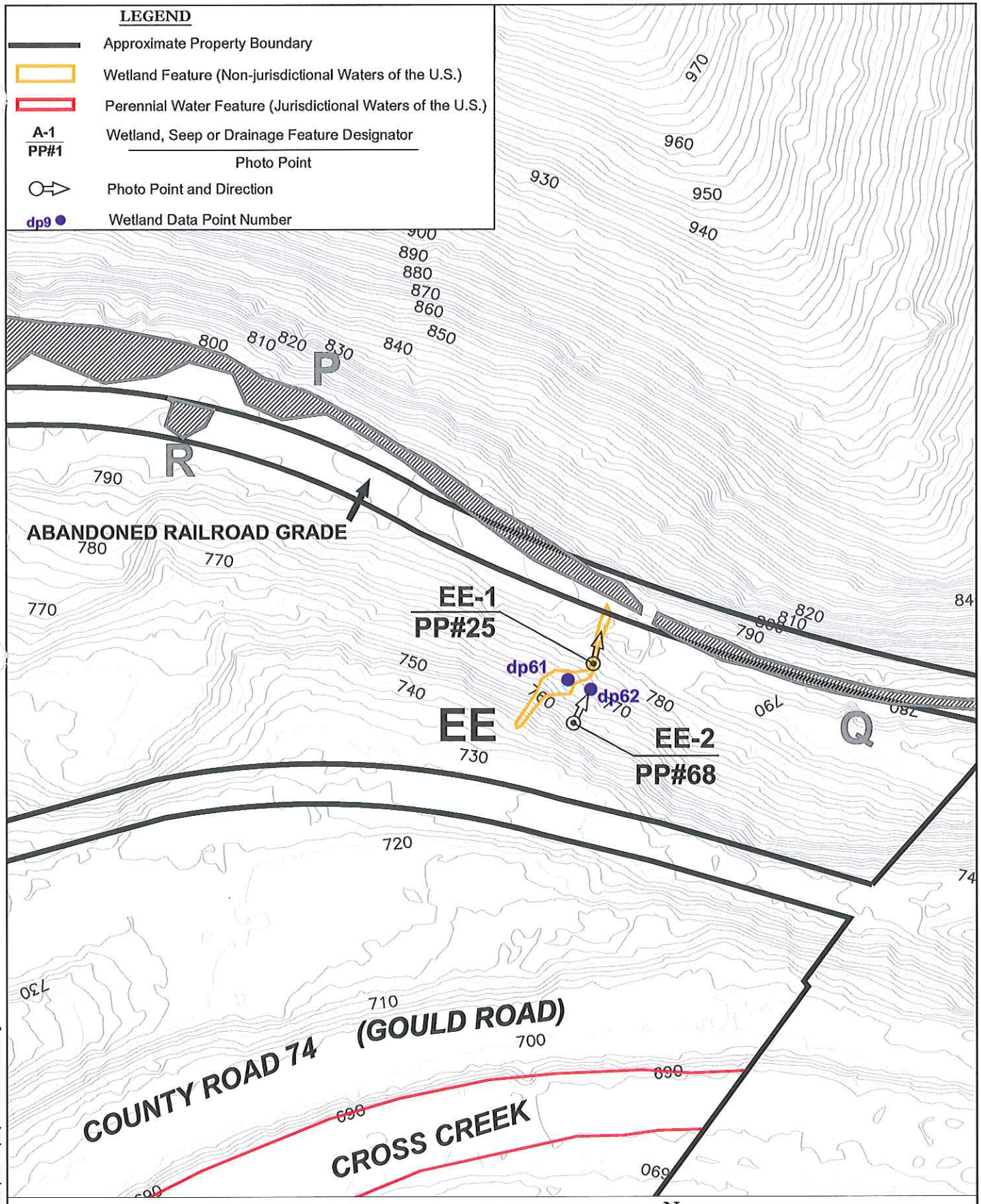

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0' 50' 100'
SCALE 1" = 100'
Contour Interval = 2'

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Former Satralloy Site
Wetland and Drainage Analysis
Feature EE
Topographic Overview
Figure B-58

Photo point: PP25
Photo reference: EE-1
View: North end of drainage feature EE, facing upgradient

Photo point: PP68
Photo reference: EE-2
View: Data collection point 61 (wetland feature), facing northeast

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Wetland EE. Small channel on wooded slope.*	Data Point No.: *DP-61*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area? *No*
Site Disturbance?	*Below culvert on old railroad grade.*	Location: *~10' west of E-6.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Cercis canadensis*	*FACU*	*T*	8			
2	*Rubus occidentalis*	*UPL*	*S*	9			
3	*Glyceria striata*	*OBL*	*H*	10			
4	*Sorghum halepense*	*FACU*	*H*	11			
5	*Tussilago farfara*	*FACU*	*H*	12			
6	*Carex vulpinoidea*	*OBL*	*H*	13			
7	*Hydrophyllum virginianum*	*FAC*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *43%*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≤ 50% FAC, FACW, or OBL, but two obligate species present.*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: *No*

Horizon *B* Matrix Color: *10 YR 3/1* Depth: *10"* Gleyed? *Yes*

Mottles? *No* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *Saturated, sandy.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma, saturated.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *~1"*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *Small channel flowing down steep slope.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Inundated, saturated.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for soil and hydrology, obligate plant species present.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/11/06*

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Tucson, Arizona 85719

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions: *Dry, wooded slope..*		Data Point No.: *DP-62*
Do Normal Circumstances Exist on Site? *Yes*	Is Site a Potential Problem Area? *No*	
Site Disturbance? *No recent disturbances. Slope below old railroad grade.*		Location: *~15' north of EE-7.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Cercis canadensis*	*FACU*	*T*	8			
2	*Ulmus americana*	*FACW*	*T*	9			
3	*Staphylea trifolia*	*FAC*	*T*	10			
4	*Toxicodendron radicans*	*FAC*	*S*	11			
5	*Elymus hystrix*	*UPL*	*H*	12			
6	*Parthenocissus quinquefolia*	*FACU*	*V*	13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *50 %*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Udorthents, loamy* Hydric Soils List: *No*

Horizon *B* Matrix Color: *2.5 Y 4/4* Depth: *12"* Gleyed? *No*

Mottles? *No* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *None. Good soil stratification.*

Is the hydric soil criterion met? *No* Rationale: *High chroma, no mottles.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None. Dry slope adjacent to channel.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for soil or hydrology.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/11/06*

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2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: EE

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

Site is an intermittent stream channel with a wider area with wetland conditions in the second growth forest. Receives input from Wetland P through culvert. Isolated from other waters by infiltration on slope above chromium smelter slag dump.

Rated as Category 1 because of small size, low habitat quality , adjacent disturbance, and isolation from downstream waters.

Final score 19.5	Category	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

5		

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	1
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	2
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

8	

subtotal

15

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	**YES** (circled) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	**NO** Assign a score of 4 since there are no or no apparent modifications.	**NOT SURE** Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	√
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	√

1.5

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2.5

subtotal

19.5

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	NO	If yes, Category 1.
	Question 6. Bogs	YES	NO	If yes, Category 3.
	Question 7. Fens	YES	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0		
	Metric 2. Buffers and surrounding land use	5		
	Metric 3. Hydrology	10		
	Metric 4. Habitat	4.5		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	0		
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	19.5		Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

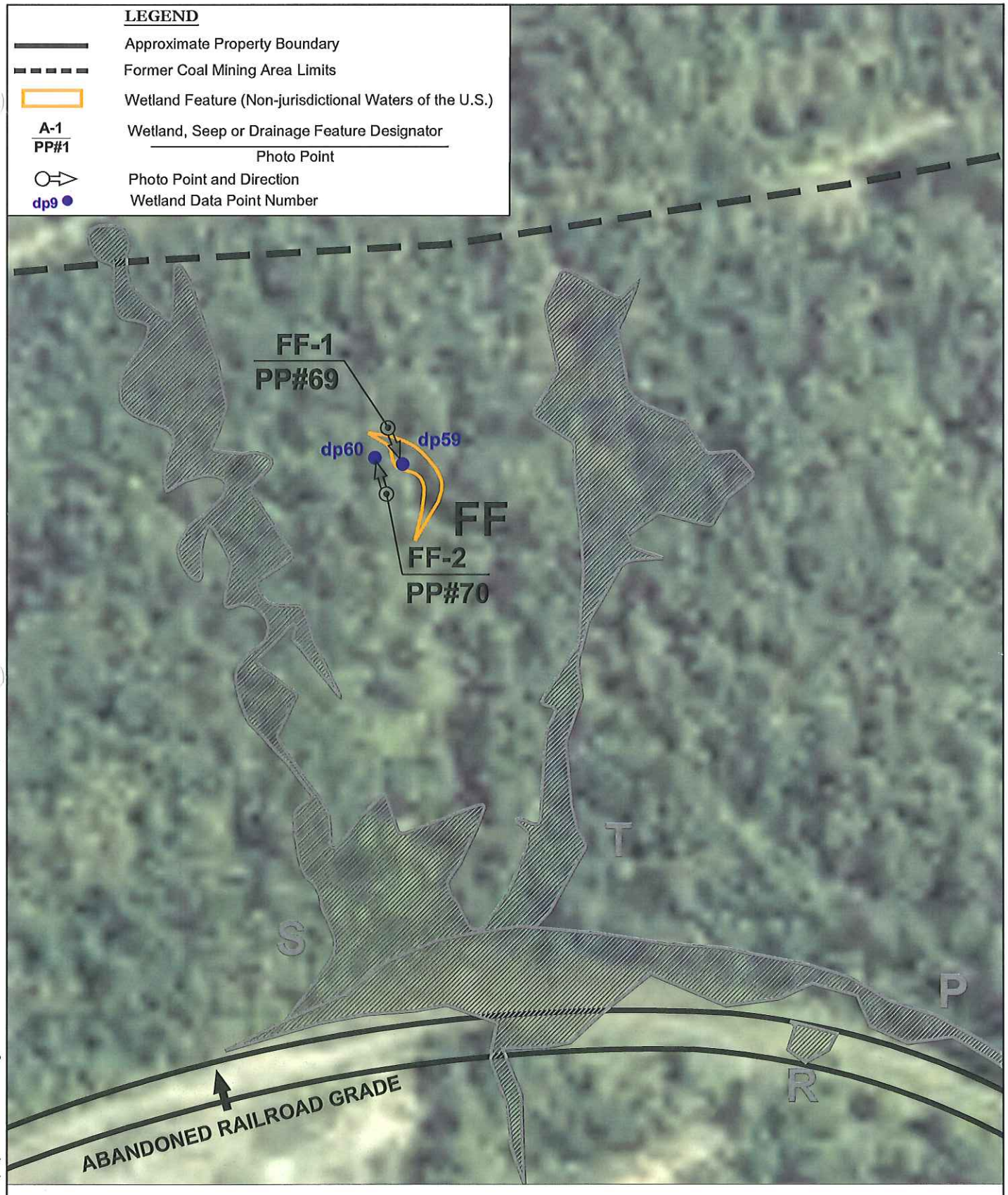


Photo Source - National Agriculture Imagery Program
Photo Date - 2004

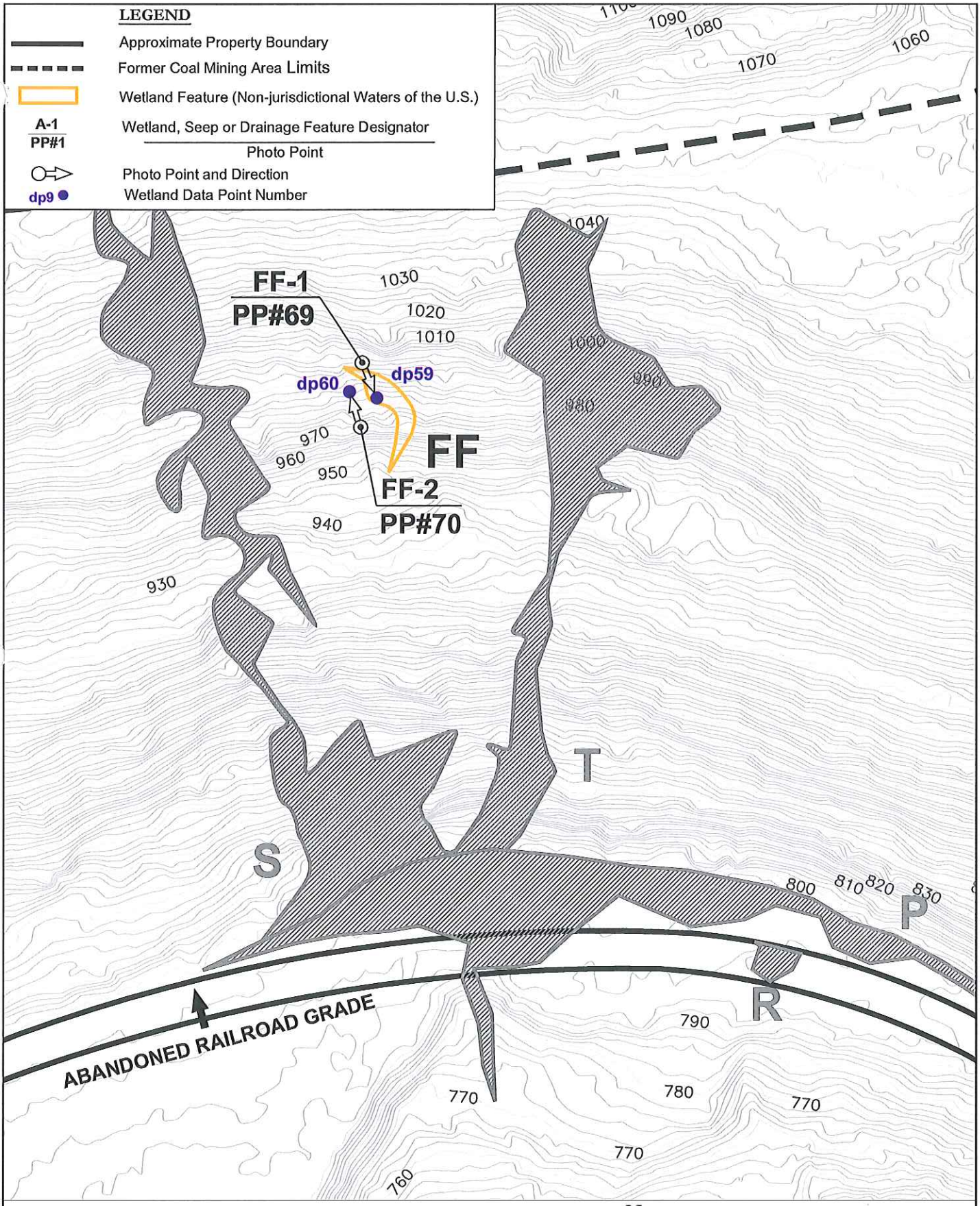
WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature FF
Aerial Overview
Figure B-59

DWG FullPath: W:\jts\1271.01\JD\WETLAND FIGURES.dwg



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Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'
Contour Interval = 2'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature FF
Topographic Overview
Figure B-60

DWG FullPath: M:\1271.01\D\WETLAND FIGURES.dwg

Photo point: PP69
Photo reference: FF-1
View: Data collection point 59 (wetland feature), facing southeast

Photo point: PP70
Photo reference: FF-2
View: Data collection point 60 (upland), facing northwest

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Wetland FF. Small, isolated area of seepage on steep slope.*	Data Point No.:	*DP-59*
Do Normal Circumstances Exist on Site? *Yes*		Is Site a Potential Problem Area?	*No*
Site Disturbance?	*Possible landslide or old mining road through wet area.*	Location:	*Between FF-1 and FF-4*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Quercus bicolor*	*FACW*	*T*	8			
2	*Lonicera canadensis*	*FACU*	*S*	9			
3	*Rosa multiflora*	*FACU*	*S*	10			
4	*Toxicodendron radicans*	*FAC*	*S*	11			
5	*Geum canadense*	*FACU*	*H*	12			
6	*Tussilago farfara*	*FACU*	*H*	13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *33 %*

Is the hydrophytic vegetation criterion met? *No* Rationale: *< 50 % FAC, FACW. or OBL*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: 2.5 Y 4/2 Depth: 10" Gleyed? *No*

Mottles? *Yes* Mottle Colors: 10 YR 3/6 Histic Epipedon? *No*

Other hydric soil indicators: *Saturated. High clay content.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma, mottles, saturated.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: -

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: *At surface.*

Other field evidence of hydrology: *Zone of seepage on steep slope.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Saturated.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for vegetation.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/11/06*

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2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Steep, wooded slope.*	Data Point No.:	*DP-60*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*No obvious disturbances.*	Location:	*~15' west of FF-4.*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Fraxinus pennsylvanica*	*FACW*	*T*	8	*Poa compressa*	*FACU*	*H*
2	*Quercus prinus*	*UPL*	*T*	9			
3	*Rosa multiflora*	*FACU*	*S*	10			
4	*Rubus occidentalis*	*UPL*	*S*	11			
5	*Toxicodendron radicans*	*FAC*	*S*	12			
6	*Parthenocissus quinquefolia*	*FACU*	*V*	13			
7	*Tussilago farfara*	*FACU*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *25%*

Is the hydrophytic vegetation criterion met? *No* Rationale: *< 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Westmoreland-Lowell Complex* Hydric Soils List: *No*

Horizon *B* Matrix Color: *10YR 4/4* Depth: *10"* Gleyed? *No*

Mottles? *None* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *None*

Is the hydric soil criterion met? *No* Rationale: *High chroma, no mottles.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None. Outside zone of seepage.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for any parameter.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *T. Strong, D. Ward*

Project No.: *1271.01* Date: *7/11/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: FF

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

This site is a small zone of seepage on a steep slope. Infiltration precludes connection to other wetlands.

Site is rated as Category 1 because of extremely small size, hydrologic isolation, and lack of significant habitat, per OAC Rule 3745-1-54(c).

Final score 41	**Category**	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

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subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1 pts	Precipitation	
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	3
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

7

subtotal

31

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	**YES** Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	**NO** Assign a score of 4 since there are no or no apparent modifications.	**NOT SURE** Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	4
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	2
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	

6

subtotal

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points.		
	6a. Wetland Vegetation Communities. Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.	
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	12	
	Metric 3. Hydrology	19	
	Metric 4. Habitat	9	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	1	
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	41	Category based on score breakpoints Modified 2

Complete Wetland Categorization Worksheet.

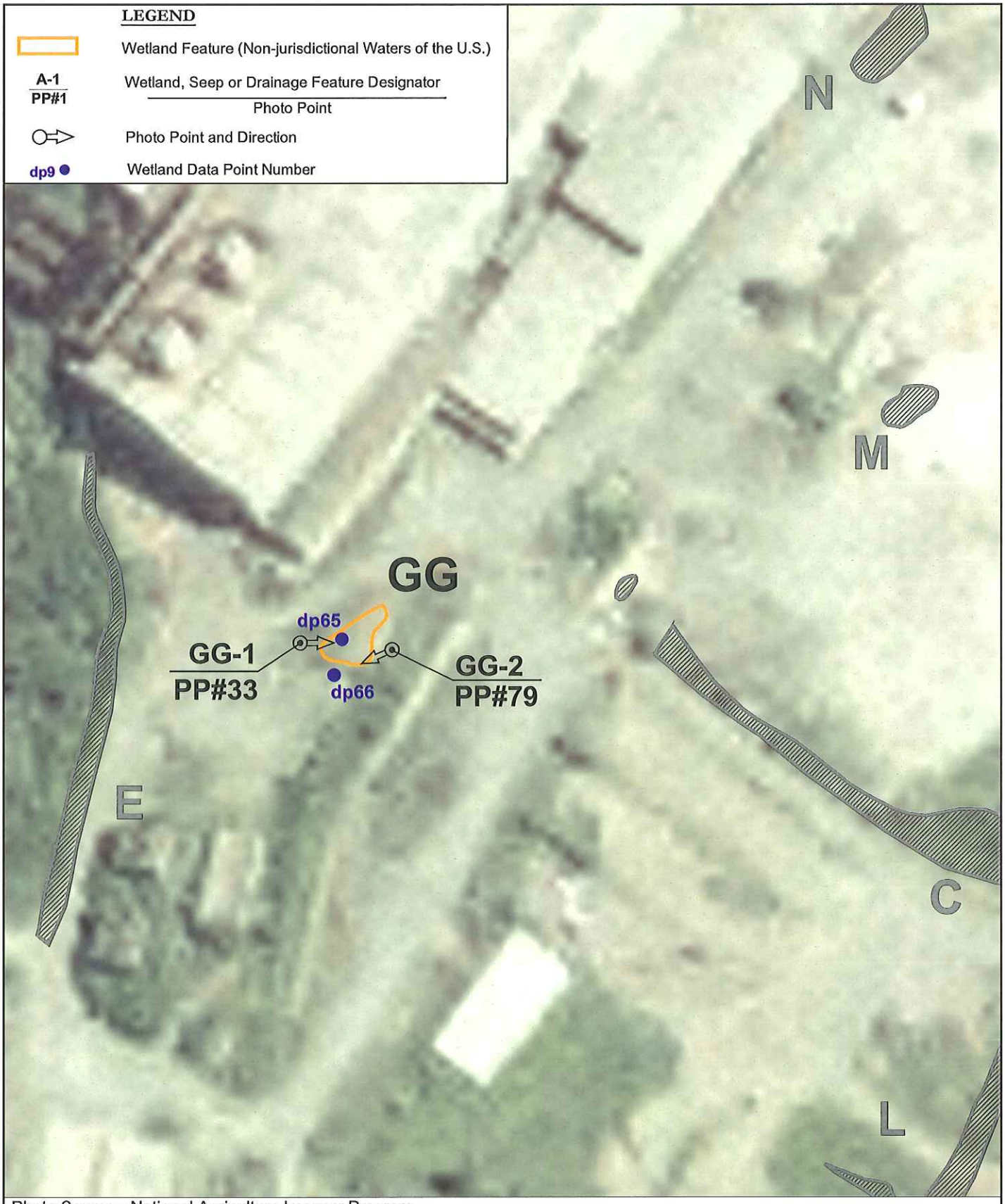

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
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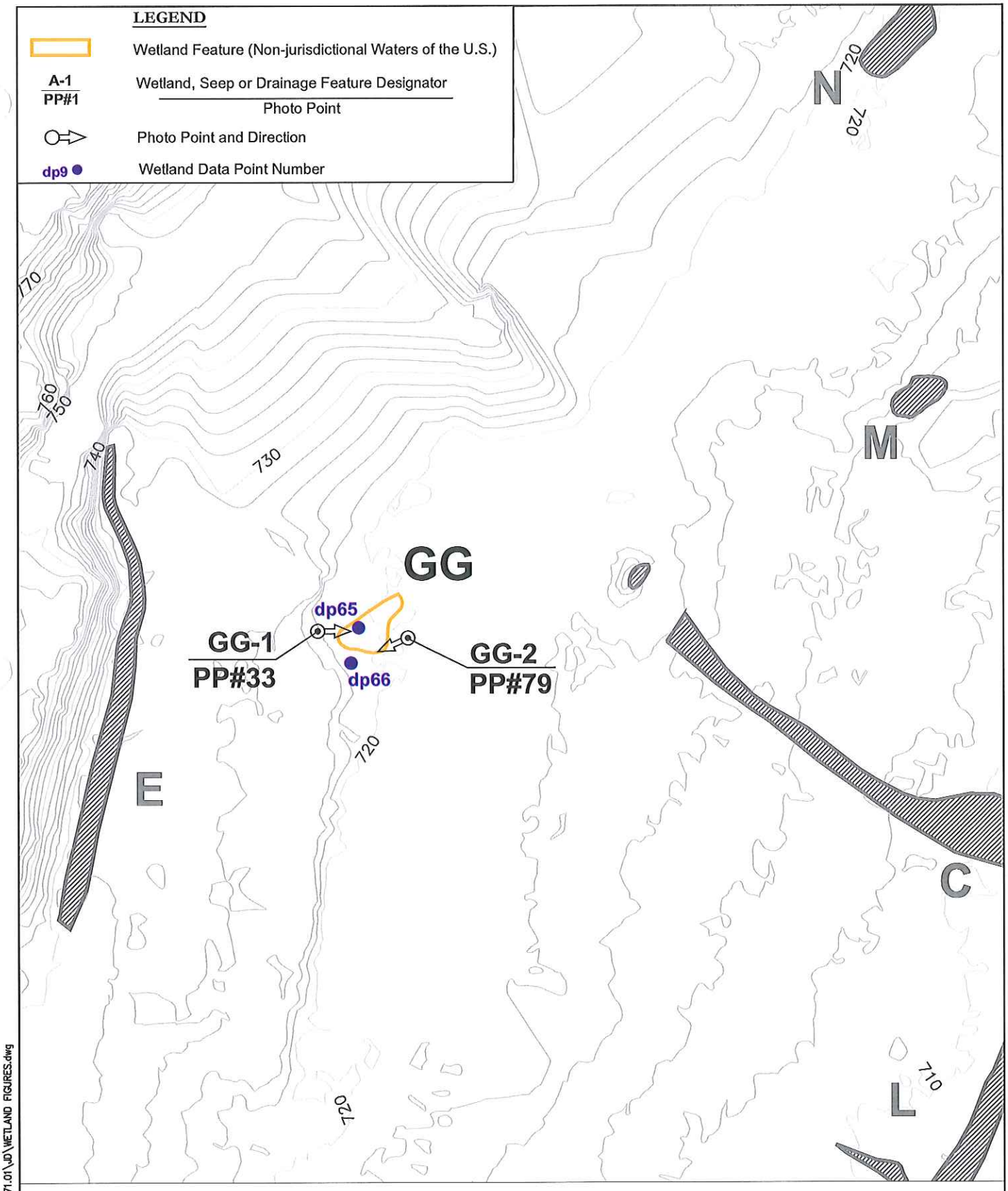
Former Satralloy Site
Wetland and Drainage Analysis
Feature GG
Aerial Overview
Figure B-61

DWG FullPath: M:\...cts\1271.01\JD\WETLAND FIGURES.dwg



WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'
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N
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Former Satralloy Site
Wetland and Drainage Analysis
Feature GG
Topographic Overview
Figure B-62

DWG FullPath: M:_____cts\1271.01\JD\WETLAND FIGURES.dwg

Photo point: PP33
Photo reference: GG-1
View: Data collection point 65 (wetland feature), facing east

Photo point: PP79
Photo reference: GG-2
View: Data collection point 66 (upland), facing southwest

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Wetland GG. Cleared area adjacent to main building.*	Data Point No.:	*DP-65*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*Heavily disturbed area. Slag pilings along driveway.*	Location:	*~ 5' from GG-3*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Platanus occidentalis*	*FACW*	*T*	8			
2	*Populus grandidentata*	*FACU-*	*S*	9			
3	*Toxicodendron radicans*	*FAC*	*S*	10			
4	*Typha angustifolia*	*OBL*	*H*	11			
5	*Scirpus cyperinus*	*FACW+*	*H*	12			
6	*Bromus japonicus*	*FACU-*	*H*	13			
7	*Elymus hystrix*	*UPL*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *53%*

Is the hydrophytic vegetation criterion met? *Yes* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Undorthents, loamy* Hydric Soils List: *No*

Horizon - Matrix Color: - Depth: - Gleyed? -

Mottles? - Mottle Colors: - Histic Epipedon? *No*

Other hydric soil indicators: *No soil development. Vegetation in very thin layer over slag.*

Is the hydric soil criterion met? *No* Rationale: *No soil development.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: -

Is the soil saturated? *No*

Depth to free-standing water in probe hole: -

Other field evidence of hydrology: *Isolated topographic low adjacent to driveway.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Site is intermittently inundated and supports hydrophytic vegetation.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for hydrology and vegetation.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *L. Rae, J. Ginter*

Project No.: *1271.01* Date: *7/12/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Gravel and slag pile area above Wetland GG.*	Data Point No.:	*DP-66*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*Gravel and slag pile adjacent to driveway.*	Location:	*~ 7' above GG-10*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Toxicodendron radicans*	*FAC*	*S*	8			
2	*Trifolium repens*	*FACU*	*H*	9			
3	*Vicia sativa*	*FACU-*	*H*	10			
4	*Chamerion angustifolium*	*UPL*	*H*	11			
5	*Centaurea stoebe* ssp. *maculosa*	*UPL*	*H*	12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *21%*

Is the hydrophytic vegetation criterion met? *No* Rationale: *≤ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Undorthents, loamy* Hydric Soils List: *No*

Horizon *-* Matrix Color: *-* Depth: *-* Gleyed? *-*

Mottles? *-* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *No soil development. Vegetation in very thin layer over slag and gravel.*

Is the hydric soil criterion met? *No* Rationale: *No soil development*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None. Slope of slag and gravel pile.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for any parameter.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *L. Rae, J. Ginter*

Project No.: *1271.01* Date: *7/12/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: GG

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

The site is a man-induced wetland in a low area near abandoned chromium smelter. Water is isolated. Perched on impermeable slag layer.

Final score -2	Category	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

		1

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	2
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

	4

subtotal

6

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		score
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

2

subtotal

-1

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

		circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	NO	If yes, Category 1.
	Question 6. Bogs	YES	NO	If yes, Category 3.
	Question 7. Fens	YES	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0		
	Metric 2. Buffers and surrounding land use	1		
	Metric 3. Hydrology	5		
	Metric 4. Habitat	3		
	Metric 5. Special Wetland Communities	-10		
	Metric 6. Plant communities, interspersion, microtopography	-1		
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	-2		Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

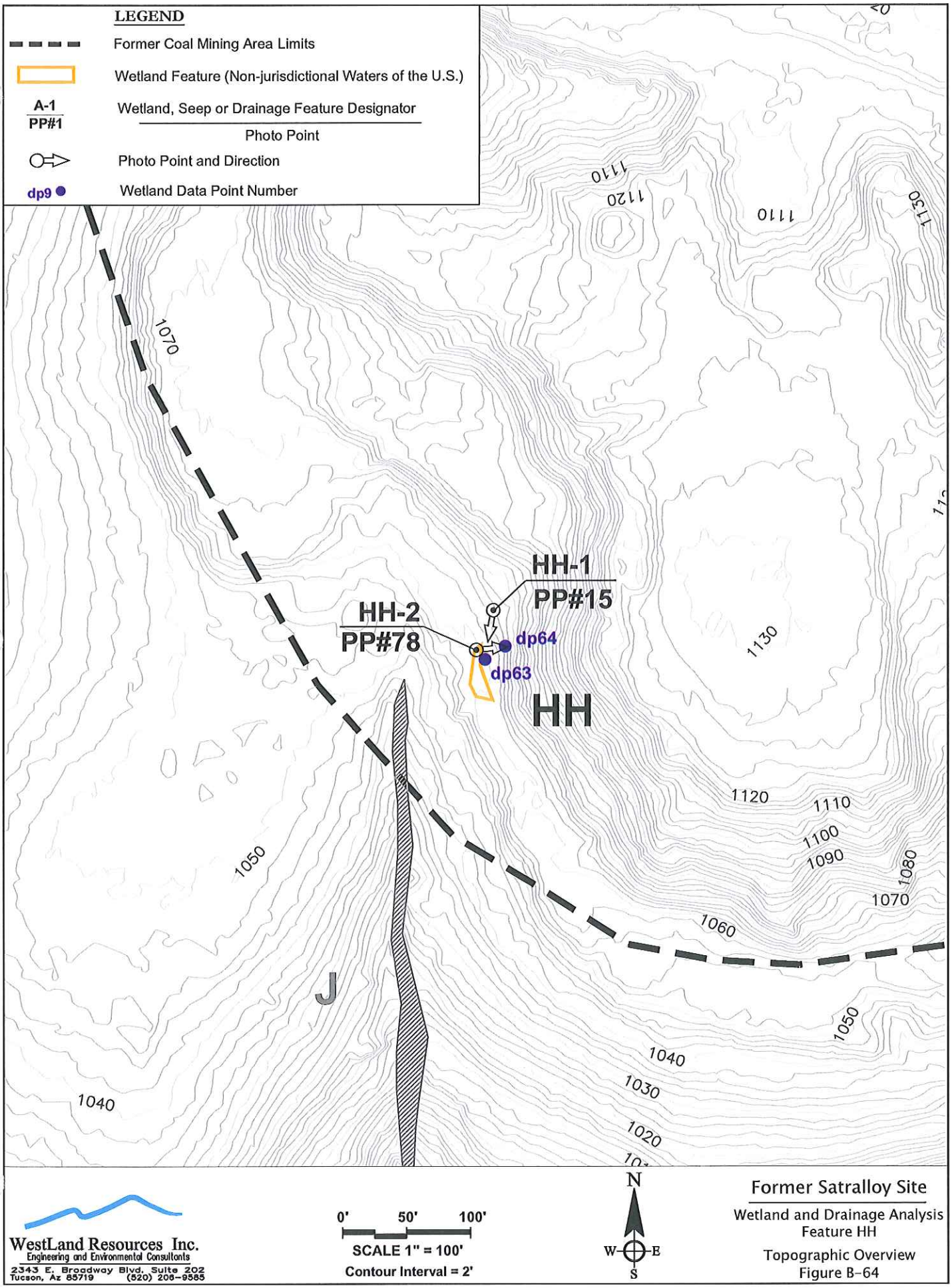
WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 50' 100'
SCALE 1" = 100'

N
W E
S

Former Satralloy Site
Wetland and Drainage Analysis
Feature HH
Aerial Overview
Figure B-63

DWG FullPath: M...cts\1271.01\JD\WETLAND FIGURES.dwg



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Tucson, Az 85719 (520) 206-9585

Former Satralloy Site
Wetland and Drainage Analysis
Feature HH
Topographic Overview
Figure B-64

DWG FullPath: M:\1271.01\JD\WETLAND FIGURES.dwg

Photo point: PP15
Photo reference: HH-1
View: Data collection point 63 (wetland feature), facing south

Photo point: PP78
Photo reference: HH-2
View: Data collection point 64 (upland), facing northeast

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Wetland H. Closed basin along roadway above drainage feature J.*	Data Point No.:	*DP-63*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*No recent disturbances.*	Location:	*~ 3' from HH-1*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Scirpus polyphyllus*	*OBL*	*H*	8			
2	*Cicuta maculata*	*OBL*	*H*	9			
3	*Dichanthelium commutatum*	*FACU+*	*H*	10			
4				11			
5				12			
6				13			
7				14			

Percent of dominant species that are OBL, FACW, and/or FAC: *87%*

Is the hydrophytic vegetation criterion met? *No* Rationale: *≥ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Undorthents, loamy* Hydric Soils List: *No*

Horizon *B* Matrix Color: 2.5 Y 5/2 Depth: 8" Gleyed? *No*

Mottles? *Traces.* Mottle Colors: - Histic Epipedon? *No*

Other hydric soil indicators: *Saturated conditions.*

Is the hydric soil criterion met? *Yes* Rationale: *Low chroma, saturated.*

HYDROLOGY

Is the ground surface inundated? *Yes* Surface water depth: *~ 6"*

Is the soil saturated? *Yes*

Depth to free-standing water in probe hole: -

Other field evidence of hydrology: *Closed basin, saturated.*

Is the wetland hydrology criterion met? *Yes* Rationale: *Evidence of inundation and saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *Yes*

Rationale for wetland decision: *Positive indicators for all parameters.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *L. Rae, J. Ginter*

Project No.: *1271.01* Date: *7/11/06*

WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, Arizona 85719

DATA FORM
ROUTINE ONSITE WETLAND DETERMINATION
1987 CORPS OF ENGINEERS MANUAL

Describe General Site Conditions:	*Steep slope opposite Wetland H and roadway.*	Data Point No.:	*DP-64*
Do Normal Circumstances Exist on Site?	*Yes*	Is Site a Potential Problem Area?	*No*
Site Disturbance?	*No recent disturbance.*	Location:	*~ 10' above H-1*

VEGETATION

	Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1	*Acer rubrum*	*FAC*	*T*	8			
2	*Quercus alba*	*FACU-*	*T*	9			
3	*Liriodendron tulipifera*	*FACU*	*T*	10			
4	*Ulmus americana*	*FACW*	*S*	11			
5	*Gleditsia triacanthos*	*FAC*	*S*	12			
6	*Rosa multiflora*	*FACU*	*S*	13			
7	*Chamerion angustifolium*	*UPL*	*H*	14			

Percent of dominant species that are OBL, FACW, and/or FAC: *33%*

Is the hydrophytic vegetation criterion met? *No* Rationale: *≤ 50% FAC, FACW, or OBL*

SOIL

Soil Type: *Undorthents, loamy* Hydric Soils List: *No*

Horizon *B* Matrix Color: *2.5 Y 6/4* Depth: *8"* Gleyed? *No*

Mottles? *No* Mottle Colors: *-* Histic Epipedon? *No*

Other hydric soil indicators: *None. Steep slope with poorly soil formation.*

Is the hydric soil criterion met? *No* Rationale: *High chroma.*

HYDROLOGY

Is the ground surface inundated? *No* Surface water depth: *-*

Is the soil saturated? *No*

Depth to free-standing water in probe hole: *-*

Other field evidence of hydrology: *None. Steep slope opposite road, above surface water.*

Is the wetland hydrology criterion met? *No* Rationale: *No evidence of inundation or saturation.*

WETLAND DETERMINATION

Are wetland criteria met? *No*

Rationale for wetland decision: *No positive indicators for any parameter.*

Project Name: *Satralloy – Steubenville, Ohio, Phelps-Dodge*

Field Investigator(s): *L. Rae, J. Ginter*

Project No.: *1271.01* Date: *7/11/06*

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Version 5.0	Ohio Rapid Assessment Method for Wetlands	
	Background Information **Score Boundary** Worksheet **Narrative Rating** **Quantitative Rating** **Categorization Worksheets** **Field Scoring Form**	Ohio EPA, Division of Surface Water Final: February 1, 2001
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW		

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The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Name: HH

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

See attached Figure.

Comments, Narrative Discussion, Justification of Category Changes

The site is a small, isolated basin at head of drainage above Wetland J.

Rated as Category 1 because of very small size and lack of significant habitat.

Final score 20	Category	1

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1 2 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/odnr/dnap/. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as 'critical habitat' for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis,* or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

7

subtotal from previous page

Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.		
3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	
1 pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score.		
1pt	**100 year floodplain.** 'Floodplain' isdefined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. 'Different adjacent land uses' include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**part of wetlands or upland (e.g. forest, paraire) complex.** Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply.	
1pt	**part of riparian or upland corridor.** See description above.	1
3c. Maximum water depth. Select only one and assign score. The Rater *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	2
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

5

subtotal

14

subtotal from previous page

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be 'natural.'?	(YES) Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	**NO** Assign a score of 4 since there are no or no apparent modifications.	**NOT SURE** Double check 'none or none apparent' and 'recovered' and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		**score**
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	2
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to not be a good example of its type or class because of past or present disturbances, successional state, etc.	1

3

subtotal

subtotal from previous page

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points. **6a. Wetland Vegetation Communities.** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	0
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

0

subtotal

ORAM Summary Worksheet

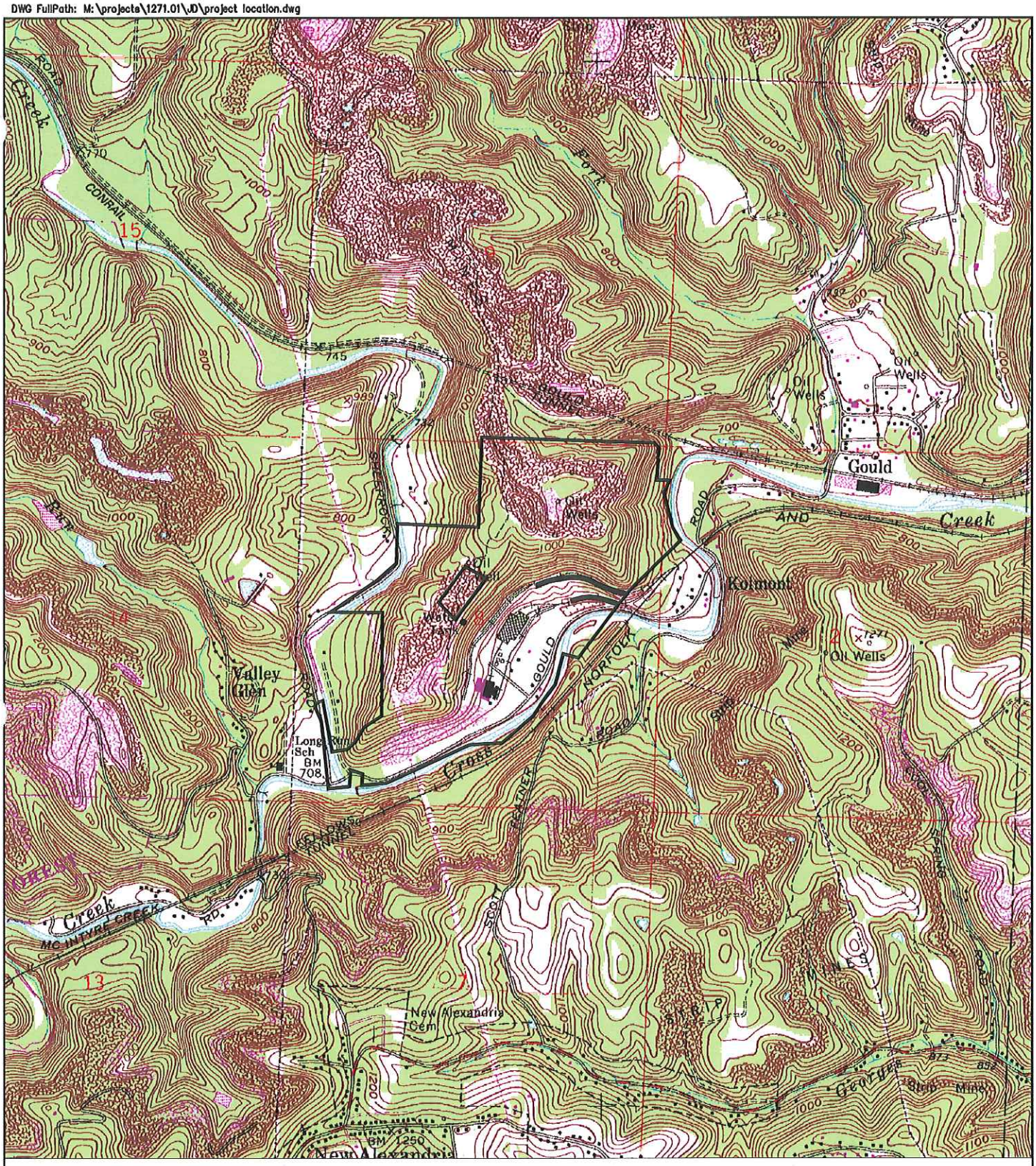
		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	7	
	Metric 3. Hydrology	7	
	Metric 4. Habitat	5	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	1	
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.html to determine the wetland's category based on its quantitative score	20	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

APPENDIX C

WETLAND SUPPORTIVE MAPPING

DWG FullPath: M:\projects\1271.01\JD\project location.dwg



T.2N., R.2W., Portion of Sections 2, 8 & 9
Jefferson County, Steubenville West
USGS 7.5' Quadrangle

N
W E
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0' 1000' 2000'
SCALE 1" = 2000'

Legend
Property Boundary

CYPRUS AMAX
Former Satralloy Site

USGS Quadrangle Map

Figure C-1

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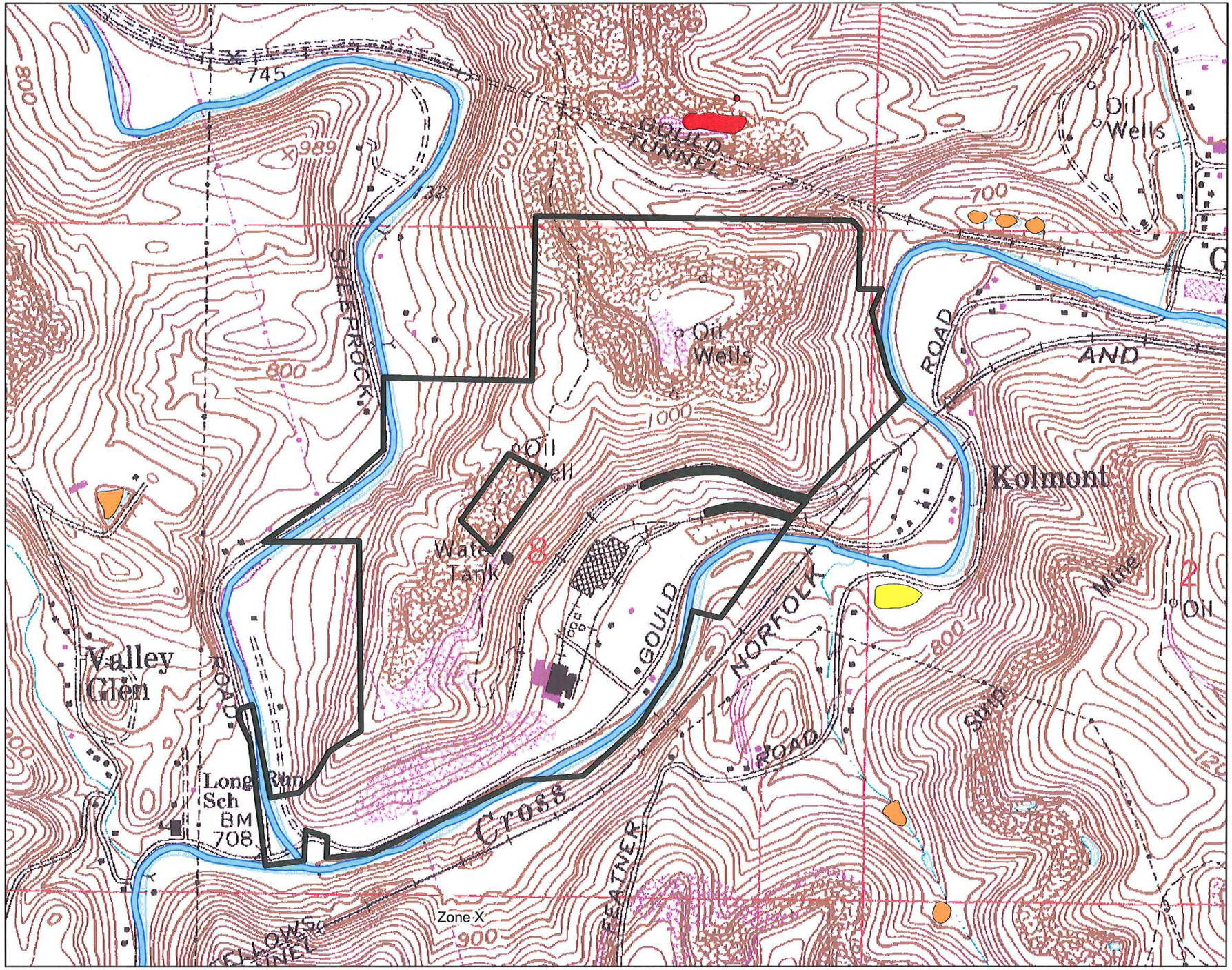

Legend

- Palustrine-Scrub Shrub- Broad Leaved Deciduous-Saturated/Semipermanent/Seasonal
- Palustrine-Unconsolidated-Intermittently Exposed/Permanent
- Palustrine-Unconsolidated-Intermittently Exposed/Permanent/Excavated
- Riverine-Upper Perennial-Unconsolidated Bottom-Permanently Flooded

Data Source: National Wetlands Inventory
Date Aquired: Aug 23, 2006
Quad: Steubenville West

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Engineering and Environmental Consultants

CYPRUS AMAX

Former Satralloy Site

National Wetlands Iventory

Figure C-2

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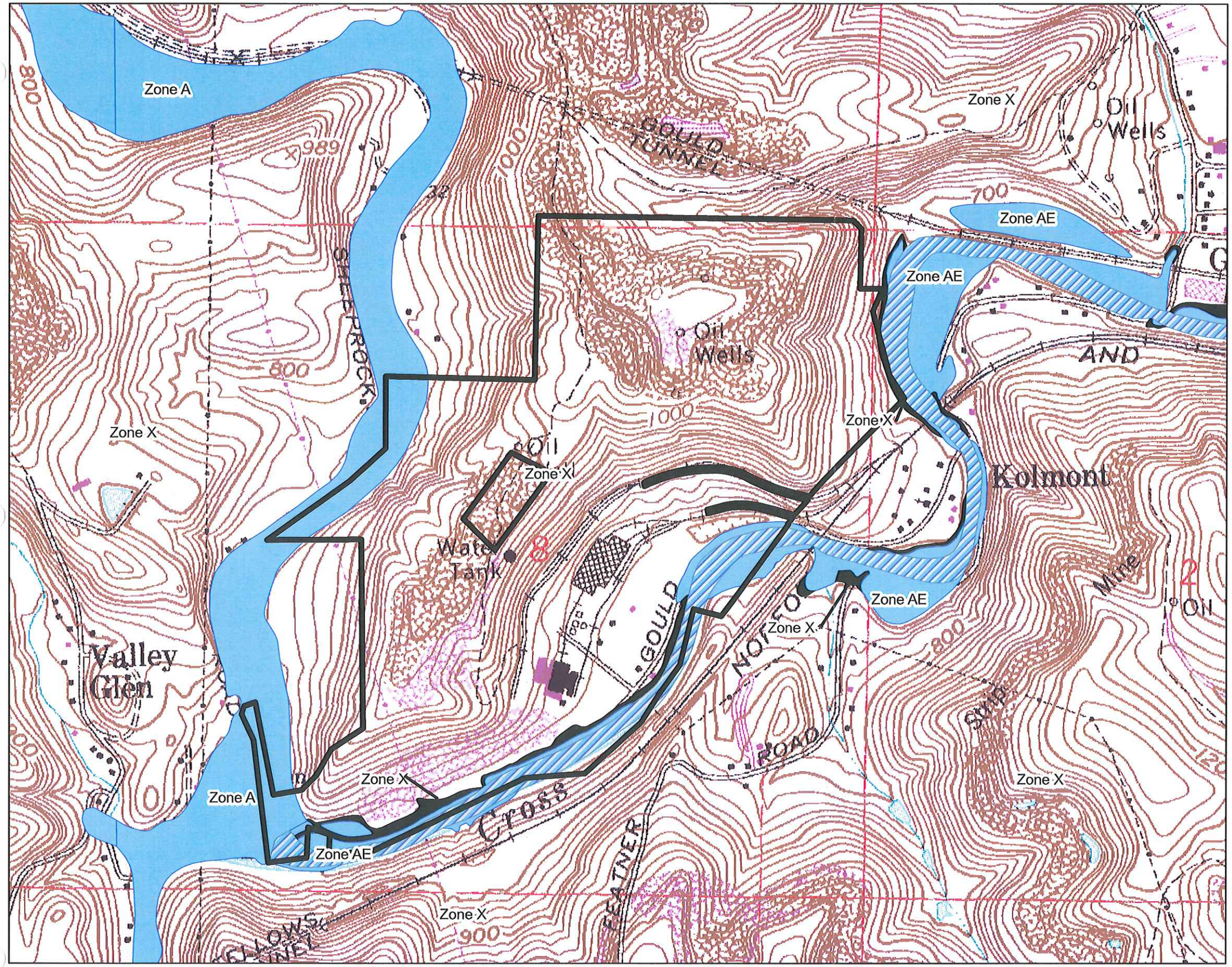

Legend

Special Flood Hazard Areas (SFHAs)

Zone A
Areas with a 1% annual chance of flooding. Because detailed analyses are not performed for such areas, no depths or base flood elevations are shown within these zones.

Zone AE
Areas with a 1% annual chance of flooding. In most instances, base flood elevations derived from detailed analyses are shown at selected intervals within these zones.

Floodway Areas in Zone AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood hieghts.

Other Flood Areas

Zone X
Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

Data Source: Ohio Dept. of Natural Resources GIMS
Date Aquired: Aug 23, 2006
Quad: Steubenville West

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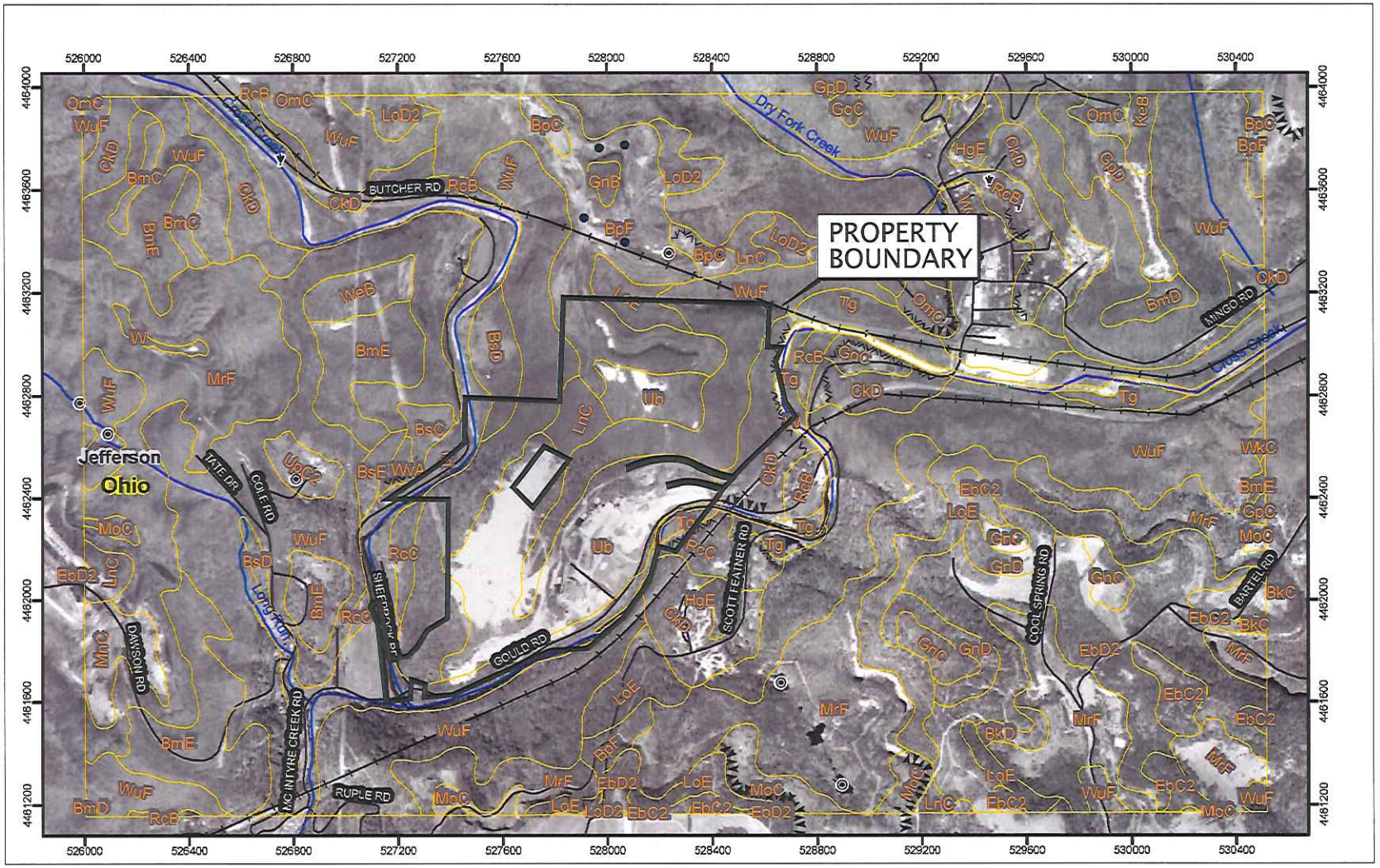
CYPRUS AMAX
Former Satralloy Site

FEMA FLOOD MAP

Figure C-3



Data Source: NCRS Web Survey
Date Aquired: Aug 23, 2006

N
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0' 1000' 2000'

SCALE 1" = 2000'

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CYPRUS AMAX

Former Satralloy Site

Soil Survey of Jefferson County, Ohio

Figure C-4

DWG FullPath: M:\projects\1271.01\JD\soils map.dwg

APPENDIX D

CULVERT DRAINAGE SYSTEM ANALYSIS

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

T.2N., R.2W., Portion of Sections 2, 8 & 9
Jefferson County, Steubenville West USGS 7.5' Quadrangle, Z17 NAD 27

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LEGEND

- Approximate Property Boundary
- Culvert Inlet Locations
- Culvert Outlet Locations
- Wetland Features and Drainage Features (Non-jurisdictional Waters of the U.S.)
- CS1-1 / PP#1 — Culvert Feature Designator / Photo Point
- Photo Point and Direction
- 001 — NPDES Point Source Discharge Outfall Locations
- Presumed Subsurface Flow

N
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0 80'
SCALE: 1" = 80'

FORMER SATRALLOY SITE

Culvert System 1 (CS1) Aerial Overview

Figure D–2

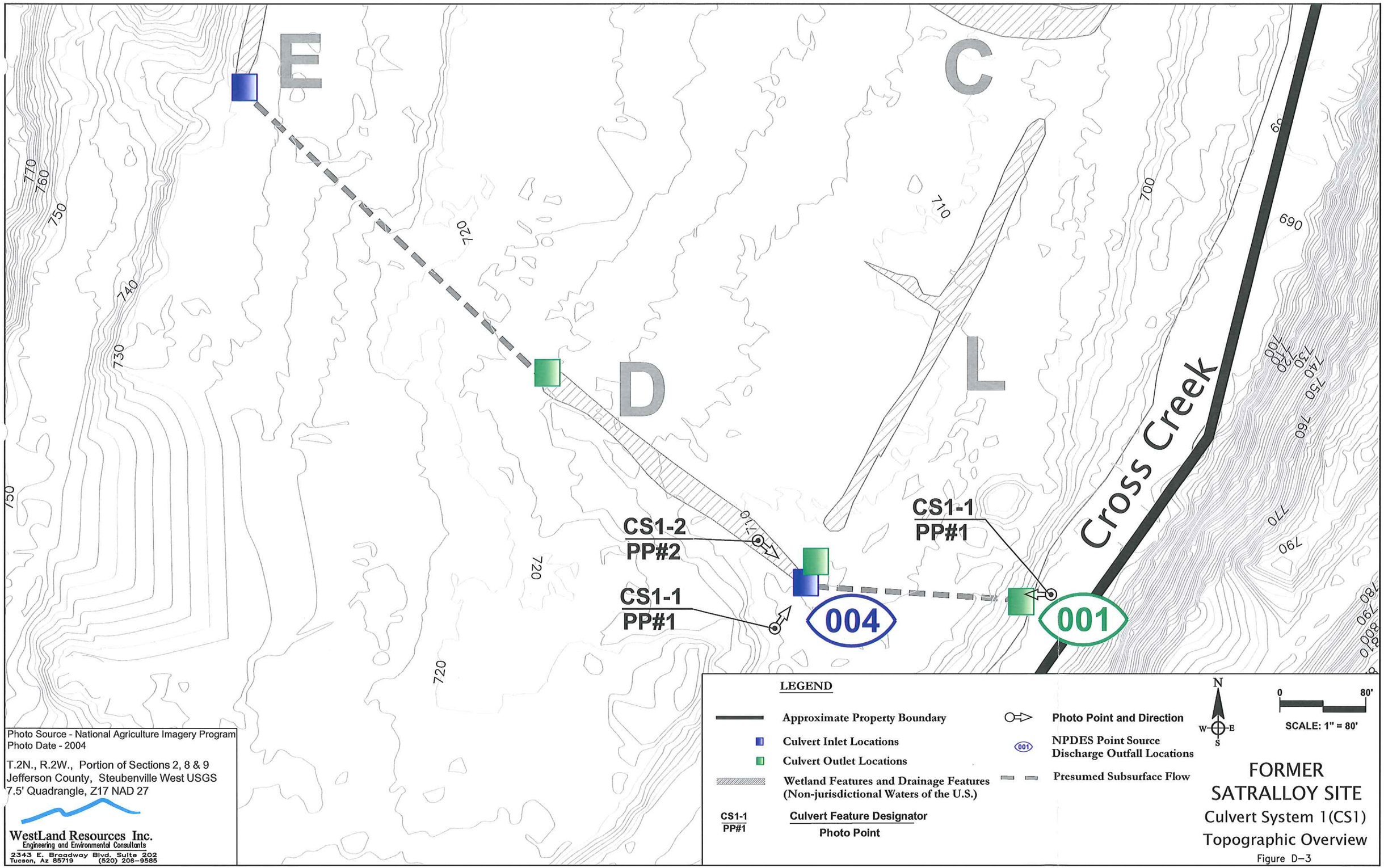

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

T.2N., R.2W., Portion of Sections 2, 8 & 9
Jefferson County, Steubenville West USGS
7.5' Quadrangle, Z17 NAD 27

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FORMER SATRALLOY SITE

Culvert System 1(CS1) Topographic Overview

Figure D-3

Photo point: PP1
Data point: CS1-1
View: 12 inch culvert outlet, facing northeast in Feature D.

Photo point: PP2
Data point: CS1-2
View: 36 inch culvert inlet, facing downgradient in Feature D. Culvert discharges under road and into Cross Creek.

Photo point: PP3
Data point: CS1-3
View: 36 inch culvert outlet, facing northwest. Culvert discharges from Feature D into Cross Creek.

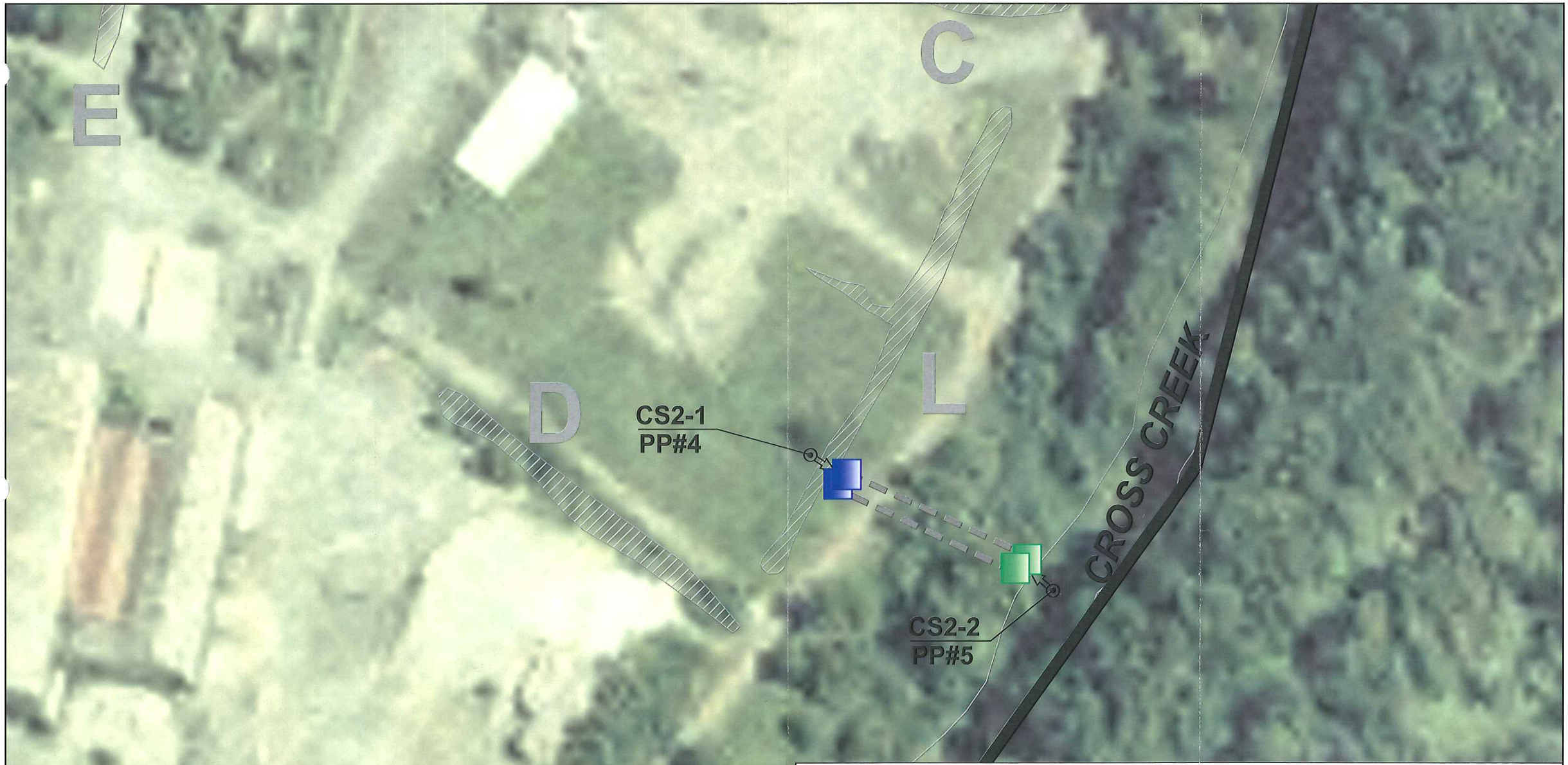

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

T.2N., R.2W., Portion of Sections 2, 8 & 9
Jefferson County, Steubenville West USGS
7.5' Quadrangle, Z17 NAD 27

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LEGEND

- Approximate Property Boundary
- Culvert Inlet Locations
- Culvert Outlet Locations
- Wetland Features and Drainage Features (Non-jurisdictional Waters of the U.S.)
- CS1-1 / PP#1 — Culvert Feature Designator / Photo Point
- Photo Point and Direction
- 001 — NPDES Point Source Discharge Outfall Locations
- Presumed Subsurface Flow

N
W E
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0 80'
SCALE: 1" = 80'

FORMER SATRALLOY SITE

Culvert System 2(CS2) Aerial Overview

Figure D–4

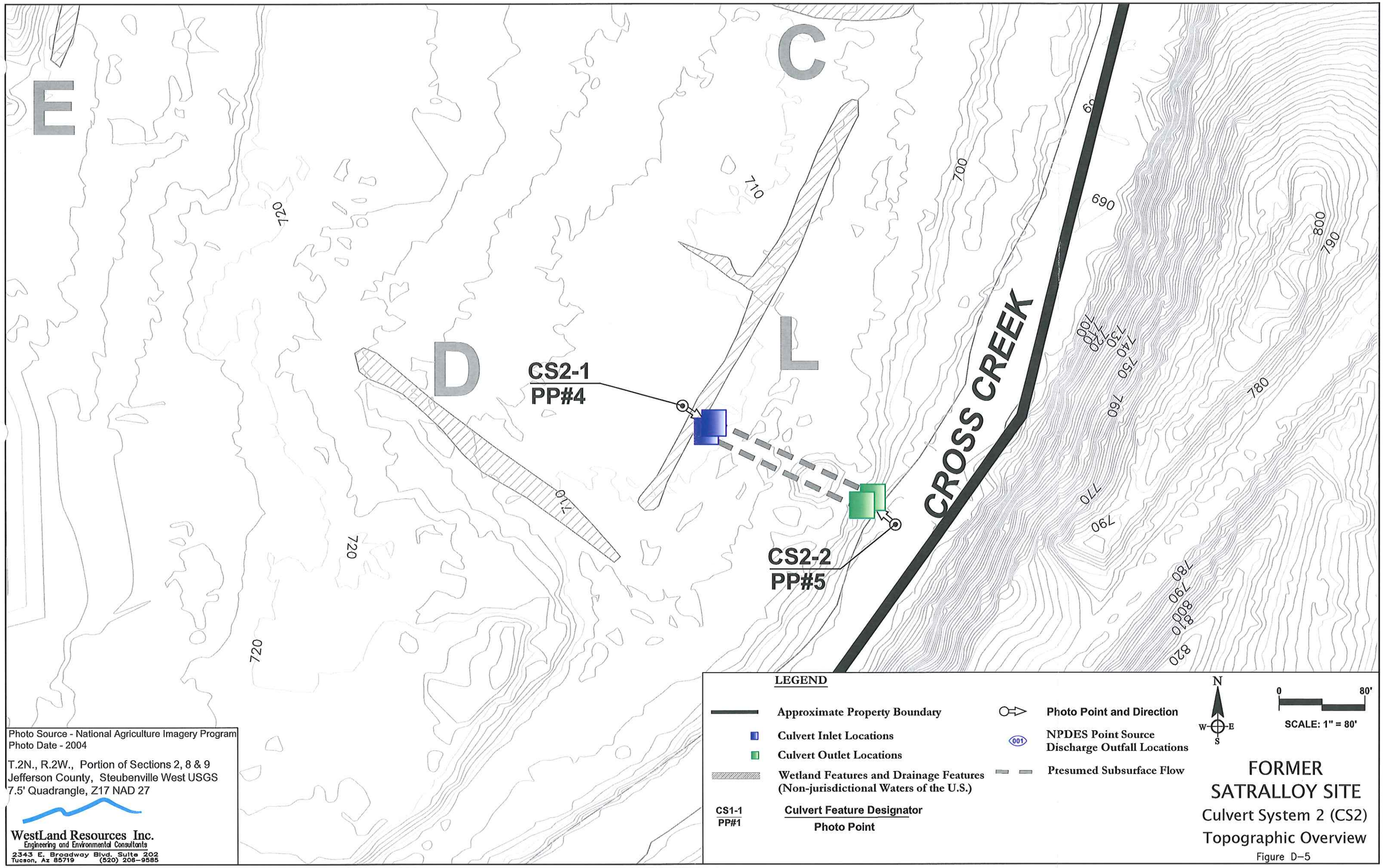

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

T.2N., R.2W., Portion of Sections 2, 8 & 9
Jefferson County, Steubenville West USGS
7.5' Quadrangle, Z17 NAD 27

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LEGEND

- Approximate Property Boundary
- Culvert Inlet Locations
- Culvert Outlet Locations
- Wetland Features and Drainage Features (Non-jurisdictional Waters of the U.S.)
- CS1-1 / PP#1 — Culvert Feature Designator / Photo Point
- Photo Point and Direction
- 001 — NPDES Point Source Discharge Outfall Locations
- Presumed Subsurface Flow

N
W E
S

0 80'
SCALE: 1" = 80'

FORMER SATRALLOY SITE

Culvert System 2 (CS2) Topographic Overview

Figure D–5

Photo point: PP4
Data point: CS2-1-1
View: Two 12 inch culvert inlets in Feature L. Both culverts appear to be draining under the road and discharging to Cross Creek.

Photo point: PP5
Data point: CS2-2
View: Two 12 inch culvert outlets discharging from Feature L to Cross Creek.

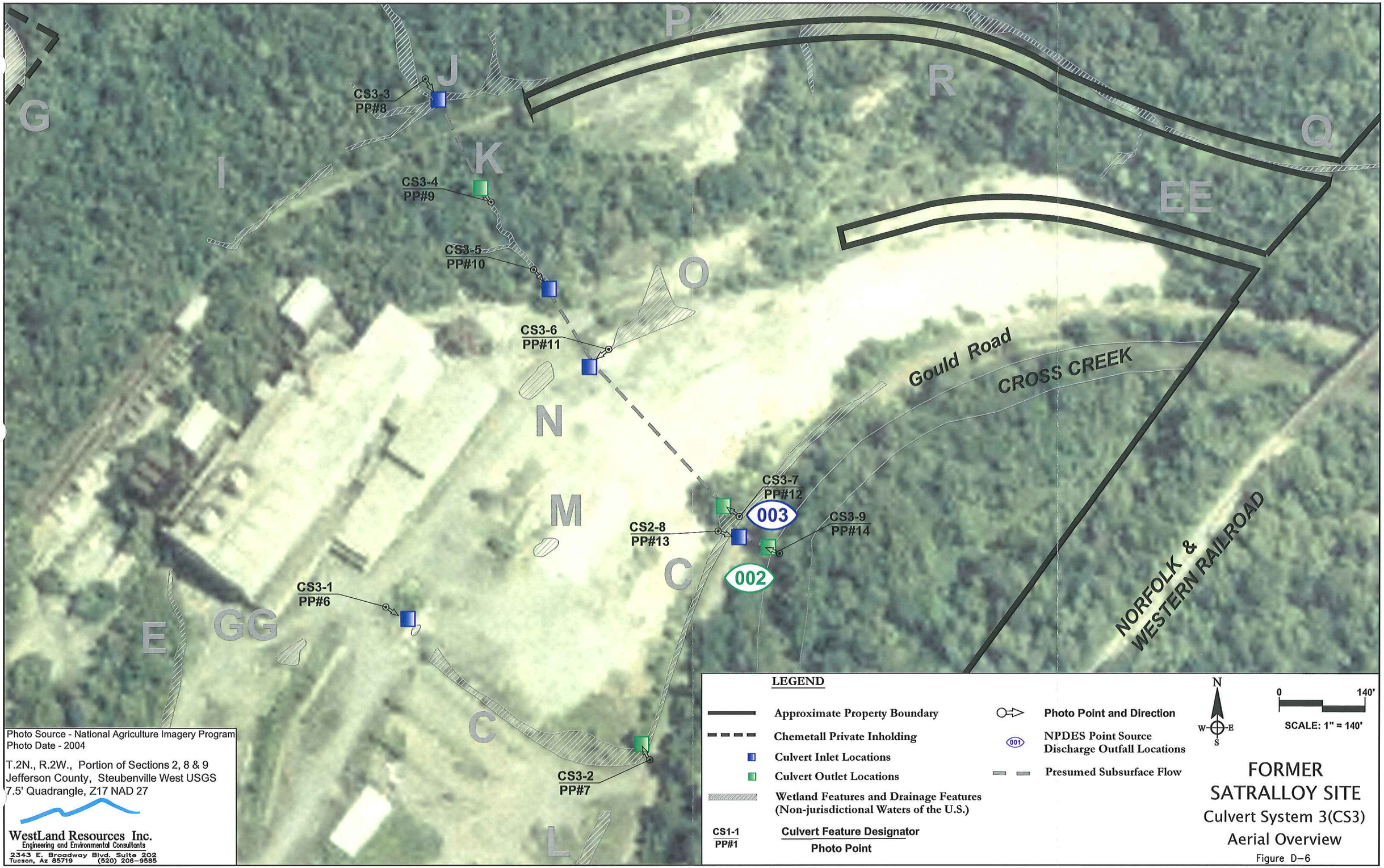

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

T.2N., R.2W., Portion of Sections 2, 8 & 9
Jefferson County, Steubenville West USGS
7.5' Quadrangle, Z17 NAD 27

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2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

LEGEND

- Approximate Property Boundary
- Chemetall Private Inholding
- Culvert Inlet Locations
- Culvert Outlet Locations
- Wetland Features and Drainage Features (Non-jurisdictional Waters of the U.S.)
- CS1-1 / PP#1 — Culvert Feature Designator / Photo Point
- Photo Point and Direction
- 001 — NPDES Point Source Discharge Outfall Locations
- Presumed Subsurface Flow

N
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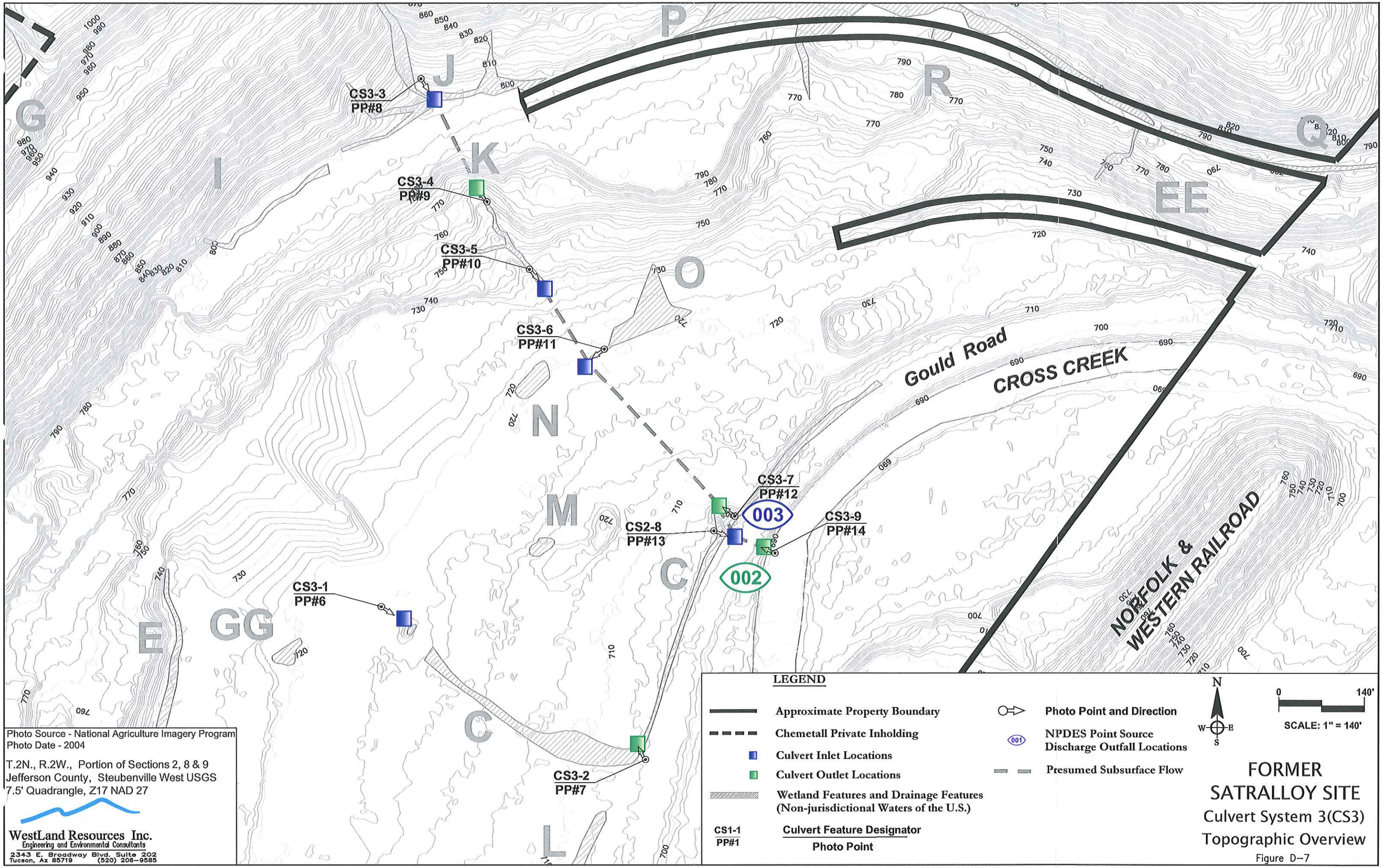
0 140'
SCALE: 1" = 140'

FORMER SATRALLOY SITE

Culvert System 3(CS3) Aerial Overview

Figure D-6



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Culvert System 3(CS3) Topographic Overview

Figure D–7

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Photo point: PP6
Data point: CS3-1
View: Facing downgradient along area of discharge near the northwest culvert inlet in Feature C.

Photo point: PP7
Data point: CS3-2
View: 36 inch culvert outlet in Feature C.

Photo point: PP8
Data point: CS3-4
View: 36 inch culvert inlet in Feature J, facing downgradient.

Photo point: PP9
Data point: CS3-5
View: 36 inch culvert outlet in Feature K, facing upgradient.

Photo point: PP10
Data point: CS3-6
View: 36 inch culvert inlet in Feature K, facing downgradient.

Photo point: PP11
Data point: CS3-7
View: 36 inch culvert inlet in Feature O, facing west.

Photo point: PP12
Data point: CS3-8
View: 36 inch culvert outlet in Feature C, facing upgradient.

Photo point: PP13
Data point: CS3-9
View: 36 inch culvert inlet in Feature C, facing downgradient. Culvert flows under Gould Road and discharges into Cross Creek.

Photo point: PP14
Data point: CS3-10
View: 36 inch culvert outlet discharging from Feature C into Cross Creek.

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

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7.5' Quadrangle, Z17 NAD 27

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LEGEND

- Approximate Property Boundary
- Culvert Inlet Locations
- Culvert Outlet Locations
- Wetland Features and Drainage Features (Non-jurisdictional Waters of the U.S.)
- CS1-1 / PP#1 — Culvert Feature Designator / Photo Point
- Photo Point and Direction
- 001 — NPDES Point Source Discharge Outfall Locations
- Presumed Subsurface Flow

N
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0 80'
SCALE: 1" = 80'

FORMER SATRALLOY SITE

Culvert System 4(CS4) Aerial Overview

Figure D-8

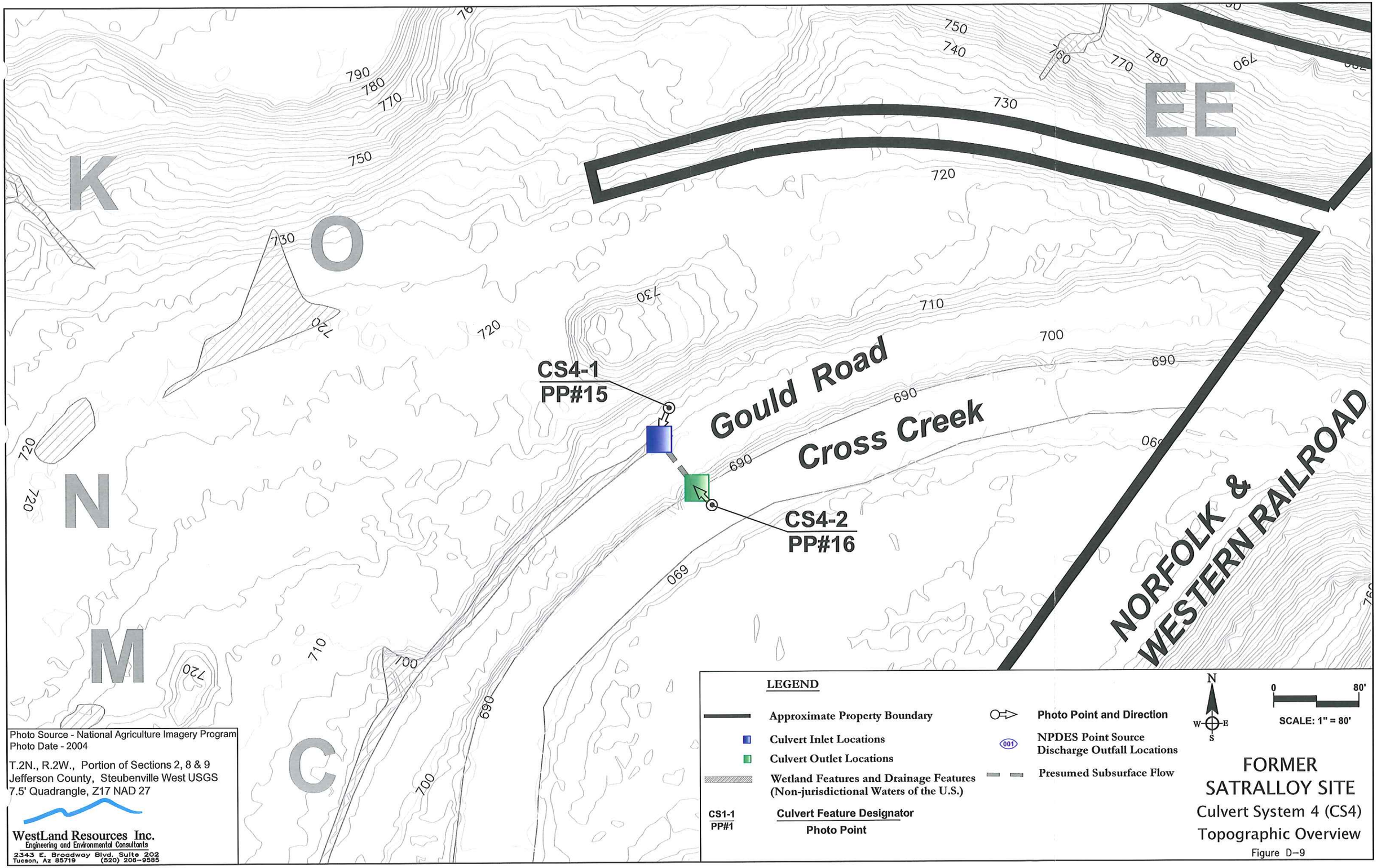

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

T.2N., R.2W., Portion of Sections 2, 8 & 9
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Culvert System 4 (CS4) Topographic Overview

Figure D-9

Photo point: PP15
Data point: CS4-1
View: 12 inch culvert inlet at the northeast end of Feature C. Culvert flows under Gould Road and discharges above Cross Creek.

Photo point: PP16
Data point: CS4-2
View: 12 inch culvert outlet. Culvert discharges above Cross Creek from Feature C.

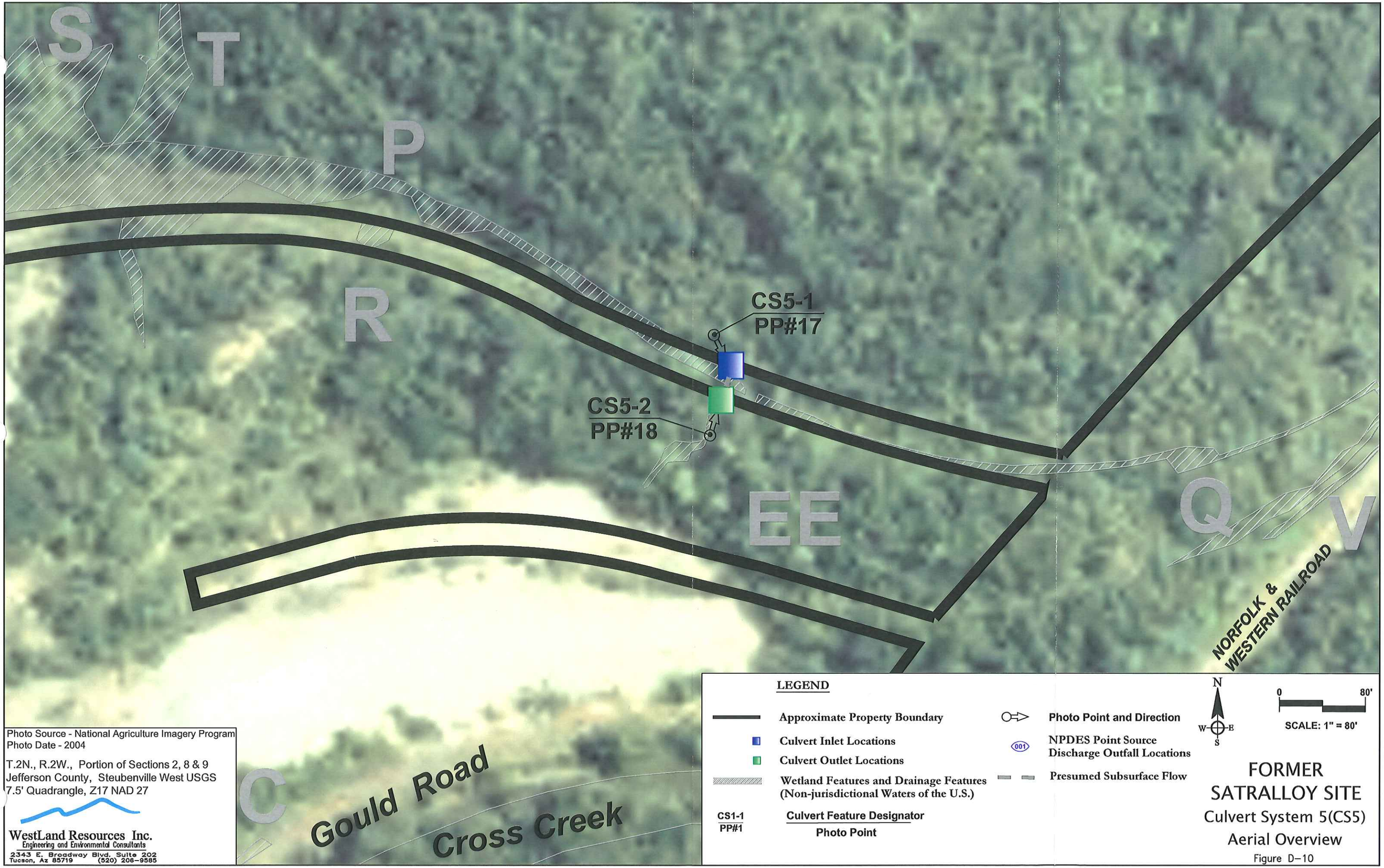

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

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Jefferson County, Steubenville West USGS
7.5' Quadrangle, Z17 NAD 27

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LEGEND

- Approximate Property Boundary
- Culvert Inlet Locations
- Culvert Outlet Locations
- Wetland Features and Drainage Features (Non-jurisdictional Waters of the U.S.)
- CS1-1 / PP#1 — Culvert Feature Designator / Photo Point
- Photo Point and Direction
- 001 — NPDES Point Source Discharge Outfall Locations
- Presumed Subsurface Flow

N
W E
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0 80'
SCALE: 1" = 80'

FORMER SATRALLOY SITE

Culvert System 5(CS5) Aerial Overview

Figure D–10

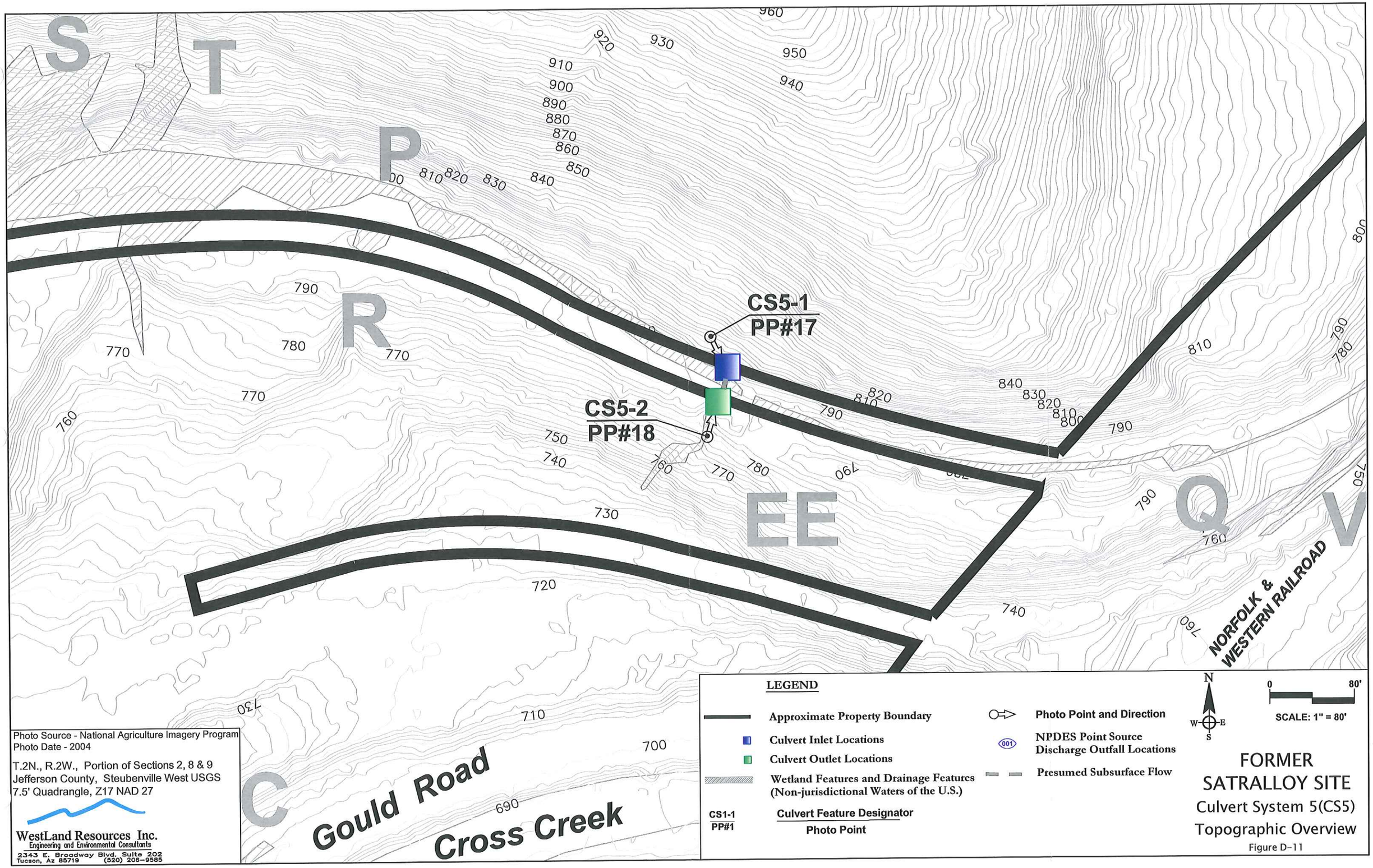

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

T.2N., R.2W., Portion of Sections 2, 8 & 9
Jefferson County, Steubenville West USGS
7.5' Quadrangle, Z17 NAD 27

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LEGEND

- Approximate Property Boundary
- Culvert Inlet Locations
- Culvert Outlet Locations
- Wetland Features and Drainage Features (Non-jurisdictional Waters of the U.S.)
- CS1-1 / PP#1 — Culvert Feature Designator / Photo Point
- Photo Point and Direction
- NPDES Point Source Discharge Outfall Locations (001)
- Presumed Subsurface Flow

N
W E
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0 80'
SCALE: 1" = 80'

FORMER SATRALLOY SITE

Culvert System 5(CS5) Topographic Overview

Figure D-11

Photo point: PP17
Data point: CS5-1
View: 12 inch culvert inlet at the southeast end of Feature P. Culvert flows under abandoned railroad grade and discharges into Feature EE.

Photo point: PP18
Data point: CS5-2
View: 12 inch culvert outlet in Feature EE, facing upgradient.

Photo Source - National Agriculture Imagery Program
Photo Date - 2004

T.2N., R.2W., Portion of Sections 2, 8 & 9
Jefferson County, Steubenville West USGS
7.5' Quadrangle, Z17 NAD 27

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LEGEND

- Approximate Property Boundary
- Culvert Inlet Locations
- Culvert Outlet Locations
- Wetland Features and Drainage Features (Non-jurisdictional Waters of the U.S.)
- CS1-1 / PP#1 — Culvert Feature Designator / Photo Point
- Photo Point and Direction
- 001 — NPDES Point Source Discharge Outfall Locations
- Presumed Subsurface Flow

N
W E
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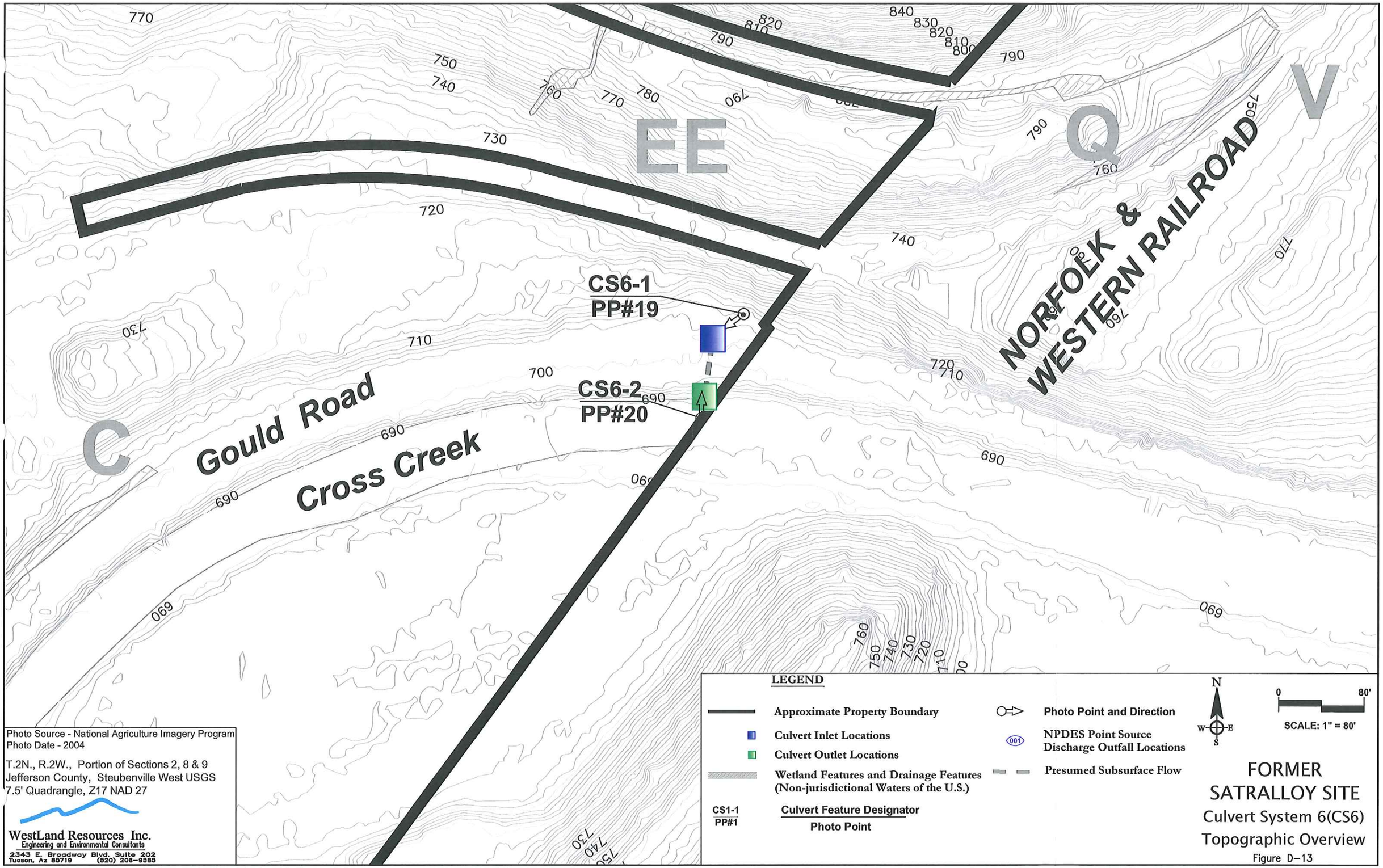
0 80'
SCALE: 1" = 80'

FORMER SATRALLOY SITE

Culvert System 6(CS6) Aerial Overview

Figure D-12



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Culvert System 6(CS6) Topographic Overview

Figure D-13

Photo point: PP19
Data point: CS6-1
View: 12 inch culvert inlet in the stormwater drainage ditch along the southeastern Property boundary.

Photo point: PP20
Data point: CS6-2
View: 12 inch stormwater culvert outlet discharges above Cross Creek.

APPENDIX E

OHIO DEPARTMENT OF NATURAL RESOURCES LETTER

Ohio Department of Natural Resources

BOB TAFT, GOVERNOR

SAMUEL W. SPECK, DIRECTOR

Division of Natural Areas and Preserves
Tom Linkous, Chief
2045 Morse Rd., Bldg. F-1
Columbus, OH 43229-6693
Phone: (614) 265-6453; Fax: (614) 267-3096

June 28, 2006

JUL - 3 2006

Lynn Rae
WestLand Resources, Inc.
2343 E. Broadway Blvd., Suite 202
Tucson, AZ 85719

Dear Ms. Rae:

I have reviewed our Natural Heritage maps and files for the 377 acre Former Satralloy Facility project area, including a three mile radius, in sections 2, 8 and 9 of Cross Creek Township, Jefferson County, Ohio, and on the Steubenville West Quad (1271.01 A 110). We have no records for rare or endangered species or other significant natural features within the project area. However, please note the location of the Fernwood State Forest, within the three mile radius of the project site, as shown in green on the attached map.

There are no existing or proposed state nature preserves or scenic rivers at the project site. We are also unaware of any unique ecological sites, geologic features, breeding or non-breeding animal concentrations or state parks or wildlife areas in the project vicinity.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Please note that although we inventory all types of plant communities, we only maintain records on the highest quality areas. Also, we do not have data for all Ohio wetlands. For National Wetlands Inventory maps, please contact Madge Fitak in the Division of Geological Survey at 614-265-6576.

Please contact me at 614-265-6818 if I can be of further assistance.

Sincerely,

Debbie Woischke

Debbie Woischke, Ecological Analyst
Natural Heritage Program