

**Threatened and Endangered Species Survey Report for the  
Federally Endangered Small Whorled Pogonia  
(*Isotria medeoloides*) for the Preferred Alternative of the  
Portsmouth Bypass SCI-823-0.00/6.81 (PID 19415),  
Scioto County, Ohio**

**By**

**Len Mikles, Senior Ecologist, PWS, and  
Jason M. Earley, Senior Environmental Specialist**

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Small Whorled Pogonia (*Isoetia medeoloides*) for the Preferred Alternative of the  
Portsmouth Bypass SCI-823-0.00/6.81 (PID 19415), Scioto County, Ohio**

**By**

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Jason M. Earley, Senior Environmental Specialist**

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**Lead Agency: Ohio Department of Transportation**

**August 31, 2011**

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## **INTRODUCTION**

ASC Group, Inc., under contract with HDR Engineering, Inc., performed a species survey for the federally endangered small whorled pogonia (*Isotria medeoloides*) within an approximately 1,010-acre corridor located in Scioto County, Ohio (Appendix A: Figure 1, Sheets 1 and 2). The study area corridor is the proposed alignment for the Preferred Alternative of the Portsmouth Bypass Project SCI-823-0.00/6.81 (PID 19415). This report summarizes the results of the small whorled pogonia survey. Photographs (1–7) of the study are presented in Appendix B.

Previous field studies and subsequent reporting for the small whorled pogonia were conducted in 2003 and 2004 (Hook 2003, 2004) for the Portsmouth Bypass Project. Due to the time elapsed since the original small whorled pogonia survey, the United States Fish and Wildlife Service (USFWS) has requested an additional survey of the Preferred Alternative for additional species coordination for the project. Two alignments were examined during the original field surveys in 2004 and no individuals were identified. In 2004, nine sites were investigated within the potential alternative alignments. Since the issuance of the 2004 report, the Ohio Department of Transportation (ODOT) has finalized the alignment of the Preferred Alternative for the Portsmouth Bypass. Of these nine sites, only six fall within the limits of the Preferred Alternative and were proposed for re-evaluation during this survey. These sites included Small Whorled Pogonia Sample Plot 3 (WP-3), Small Whorled Pogonia Sample Plot 15 (WP-15), Small Whorled Pogonia Sample Plot 17 (WP-17), Small Whorled Pogonia Sample Plot 18 (WP-18), Small Whorled Pogonia Sample Plot 19 (WP-19), and Small Whorled Pogonia Sample Plot 22 (WP-22). In addition to these sites, ecologists from ASC proposed to investigate any areas that were determined to be suitable habitat based on the methods described in the 2003 report (Appendix C).

## **RESULTS**

A team of ecologists from ASC conducted the small whorled pogonia survey between May 9 and June 2, 2011. The goal of this survey was to re-evaluate the six previously investigated sites that are located within the Preferred Alternative and to evaluate any areas that exhibit suitable habitat not previously surveyed (Figure 2, Sheets 1–18). Ecologists spent approximately 1 hour at each sample plot while conducting the survey. Surveys began at the

reported coordinates for each site. Once the original sample plot was located, a meander survey was conducted focusing on areas of suitable habitat and populations of target associate species. Target associate species for the small whorled pogonia survey are presented in Table 1.

Table 1. Target Associate Species.

Scientific Name	Common Name
<i>Acer rubrum</i> (seedlings)	Red Maple
<i>Gaultheria procumbens</i>	Wintergreen
<i>Goodyera pubescens</i>	Rattlesnake Plantain
<i>Hamamelis virginiana</i>	Witch Hazel
<i>Isotria verticillata</i>	Large Whorled Pogonia
<i>Lycopodium</i> spp. (except <i>L. complanatum</i> )	Clubmosses
<i>Maiathemum canadense</i>	Canada Mayflower
<i>Medeola virginiana</i>	Indian Cucumber Root
<i>Mitchella repens</i>	Partridge Berry
<i>Thelypteris noveboracensis</i>	New York Fern
<i>Vaccinium pallidum</i> ( <i>vacillans</i> )	Sweet Lowbush Blueberry

The forested areas at plots WP-17 and WP-19 were clear cut and substantially impacted sometime after the 2004 survey. No potential habitat for the small whorled pogonia remained and no survey was conducted at these locations (Figure 2, Sheets 3 and 4).

The remaining sample plots—WP-3, WP-15, WP-18, and WP-22—were intact and surveys were completed for all four of these plots (Figure 2, Sheets 3, 6, 9, and 17). In general, species composition was similar between the previous surveys and the 2011 survey. Most notably absent from WP-3 and WP-18 were the large populations (100 to 150 individuals) of the large whorled pogonia (*Isotria verticillata*) reported in both the 2003 and 2004 surveys.

The surrounding forest habitat at WP-3 appeared to be intact; however, some logging was noted in the surrounding area. In addition, Japanese honeysuckle (*Lonicera japonica*) was found throughout much of the area, which was not reported in either of the two previous surveys.

One additional small whorled pogonia site was surveyed during the 2011 investigation. This site, identified as Small Whorled Pogonia Sample Plot A (WP-A), contained five of the 11 associate species for the small whorled pogonia (Figure 2, Sheet 14). As with the other sample plots, this site was surveyed for approximately one hour. No small whorled pogonia was found at this location.

## **CONCLUSIONS**

All four of the resurveyed sample plots appeared to be in conditions comparable to the 2004 survey, with many of the reported species once again identified. Although small whorled pogonia was not identified during the 2011 survey, areas of potential habitat remain within the vicinity of these sample plots. It is possible that the small whorled pogonia may not have been found as it is known to lie dormant for several years.

## REFERENCES CITED

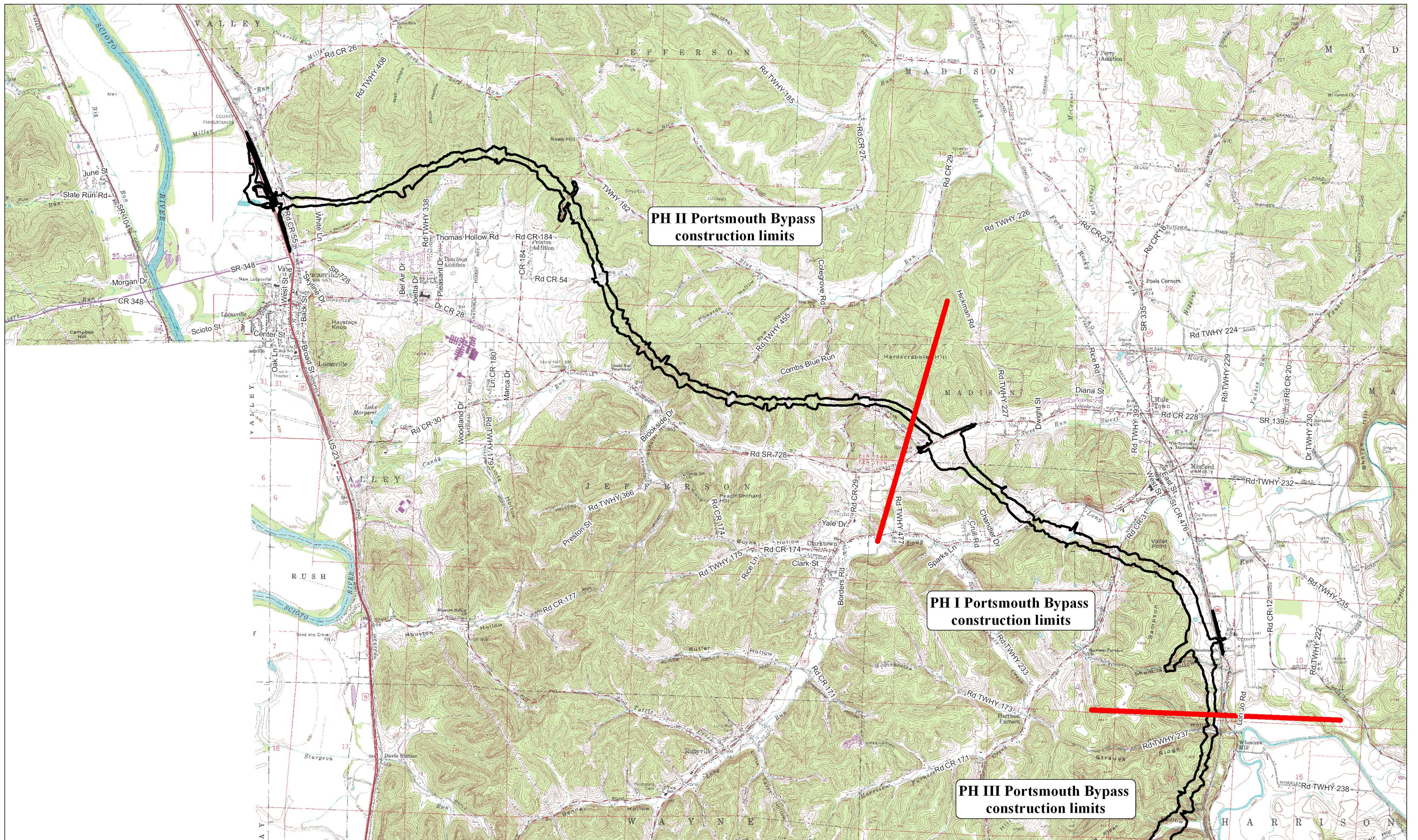
Hook, Rob

2003. *Status of Rare Plant Survey Portsmouth Bypass, SCI-823-0.00, PID 19415* (Technical Memorandum). CH2MHill, Columbus, Ohio. Submitted to the Ohio Department of Transportation, Columbus, Ohio. August 1, 2003.

2004. *Small Whorled Pogonia Survey, 2004 Portsmouth Bypass SCI-823-0.00, PID 19415* (Technical Memorandum). CH2MHill, Columbus, Ohio. Submitted to the Ohio Department of Transportation, Columbus, Ohio. June 7, 2004.

## **APPENDIX A: FIGURES**





- Construction limits
- Phase breaks

Base: 1988 Lucasville, 1990 Minford, 1988 Stockdale, and 1991 Wakefield, Ohio, 1975 Portsmouth KY-OH, 1988 New Boston, and 1985 Wheelersburg, OH-KY USGS 7.5' series quadrangles

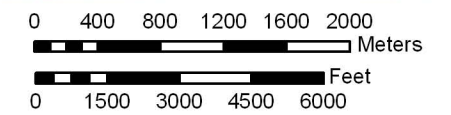


Figure 1. USGS 7.5' topographic map. (2 sheets)





**PH III Portsmouth Bypass  
construction limits**



- Construction limits
- Phase breaks

Base: 1988 Lucasville, 1990 Minford, 1988 Stockdale, and 1991 Wakefield, Ohio, 1975 Portsmouth KY-OH, 1988 New Boston, and 1985 Wheelersburg, OH-KY USGS 7.5' series quadrangles

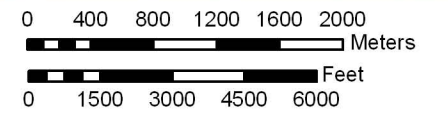


Figure 1. USGS 7.5' topographic map. (2 sheets)





- Construction limits
- - - Meander survey path
- Phase breaks
- ★ Small Whorled Pogonia  
 ★ Sampled  
 ★ Not sampled
- ⊙ Photograph location

Base: Aerial photograph 2009

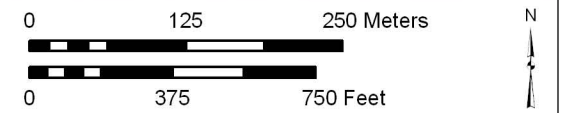
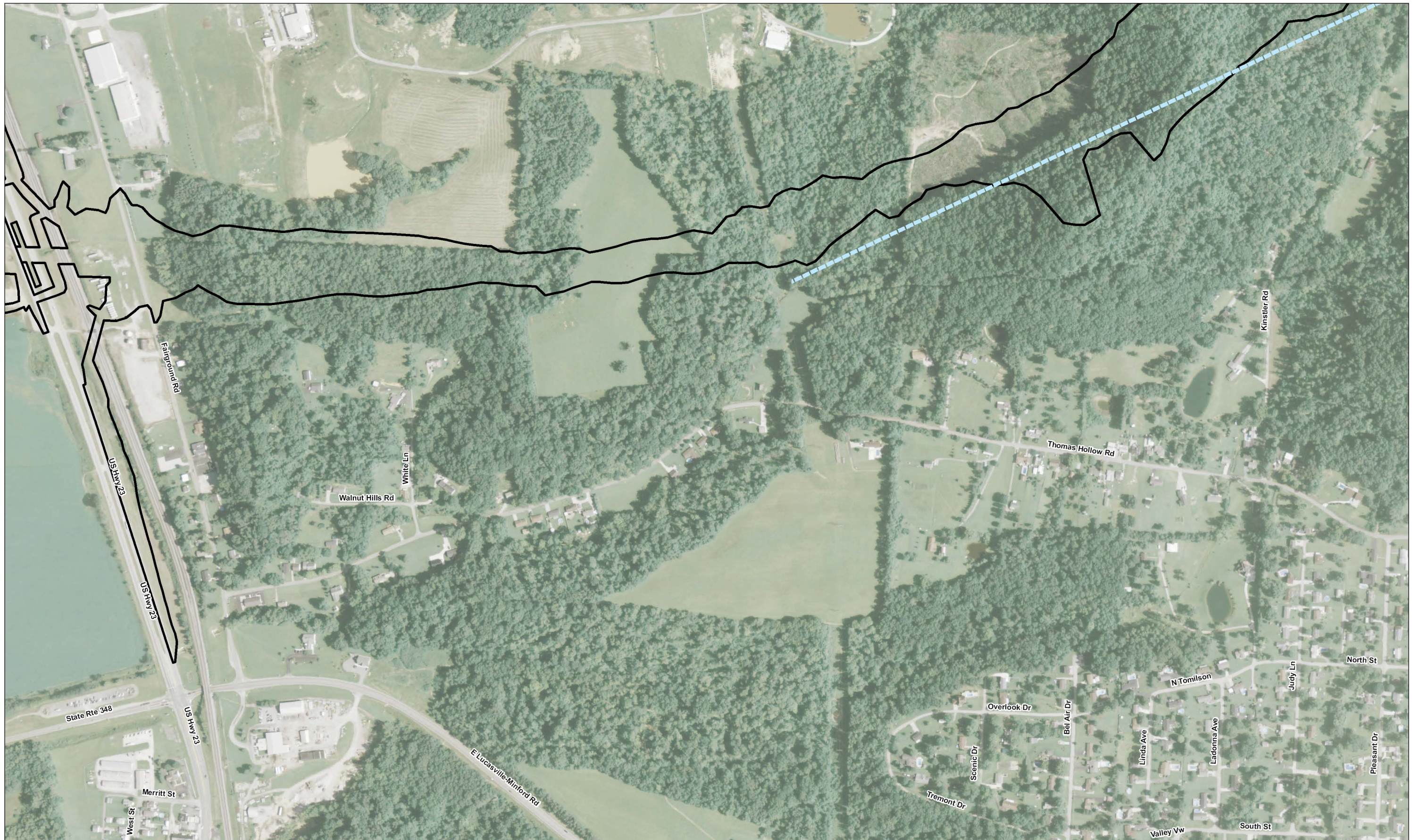


Figure 2. Survey results. (18 sheets)





- Construction limits
- - - Meander survey path
- Phase breaks
- ★ Small Whorled Pogonia  
 ★ Sampled  
 ★ Not sampled
- ⊙ Photograph location

Base: Aerial photograph 2009

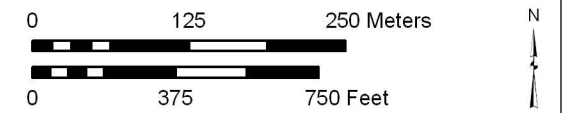


Figure 2. Survey results. (18 sheets)





- Construction limits
- - - Meander survey path
- Phase breaks
- ★ Small Whorled Pogonia
- ★ Sampled
- ★ Not sampled
- ⊙ Photograph location

Base: Aerial photograph 2009

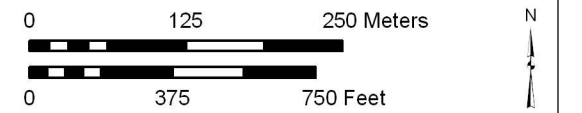
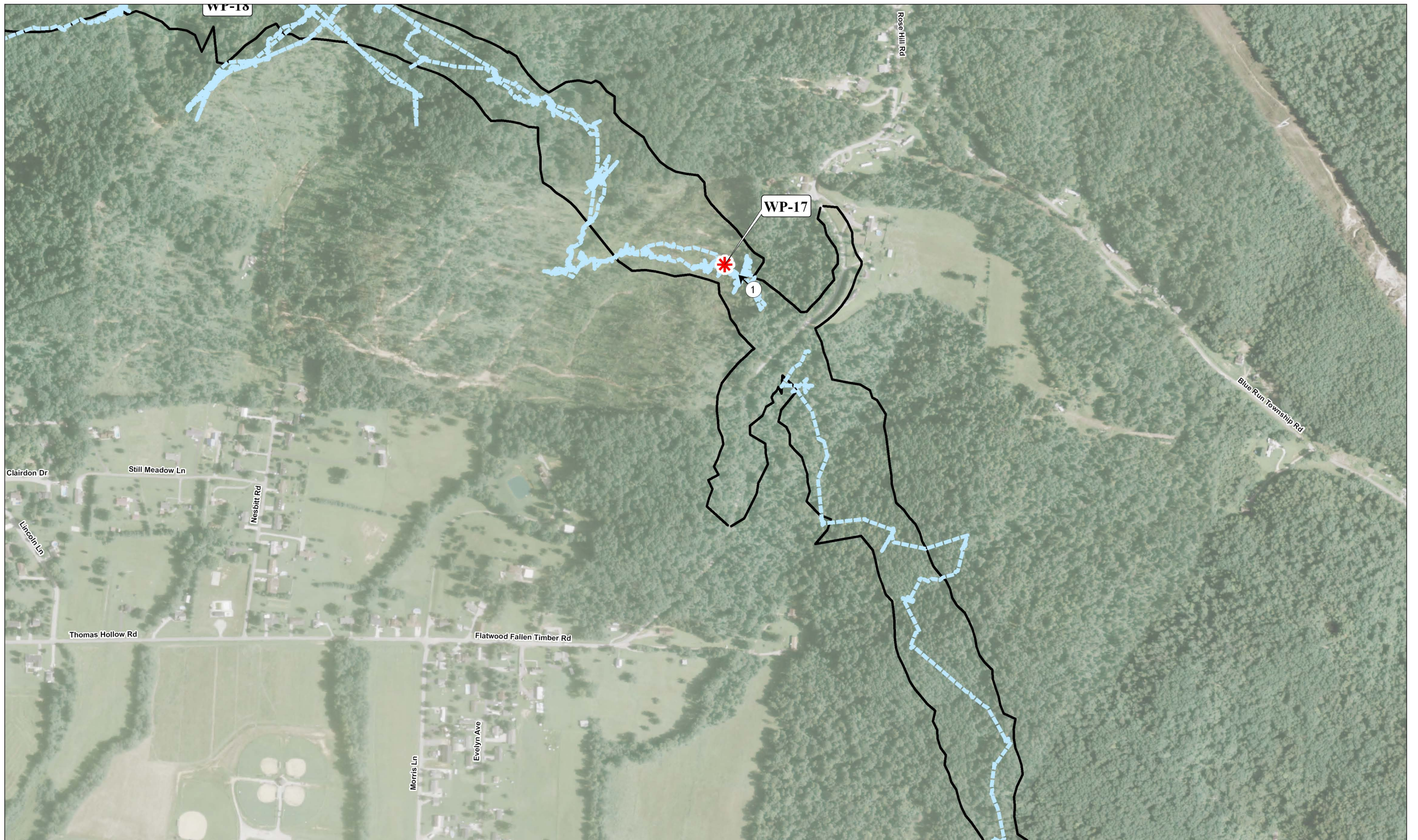


Figure 2. Survey results. (18 sheets)















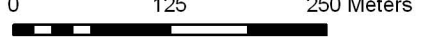


   	 Construction limits  Meander survey path  Phase breaks	Small Whorled Pogonia  Sampled  Not sampled	 Photograph location	Base: Aerial photograph 2009	 0 125 250 Meters  0 375 750 Feet  N
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Figure 2. Survey results. (18 sheets)





- Construction limits
- - - Meander survey path
- Phase breaks
- Small Whorled Pogonia
- \* Sampled
- \* Not sampled
- ← Photograph location

Base: Aerial photograph 2009

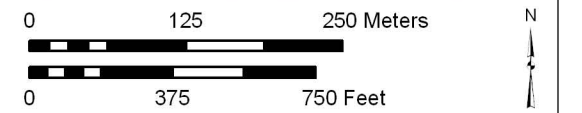
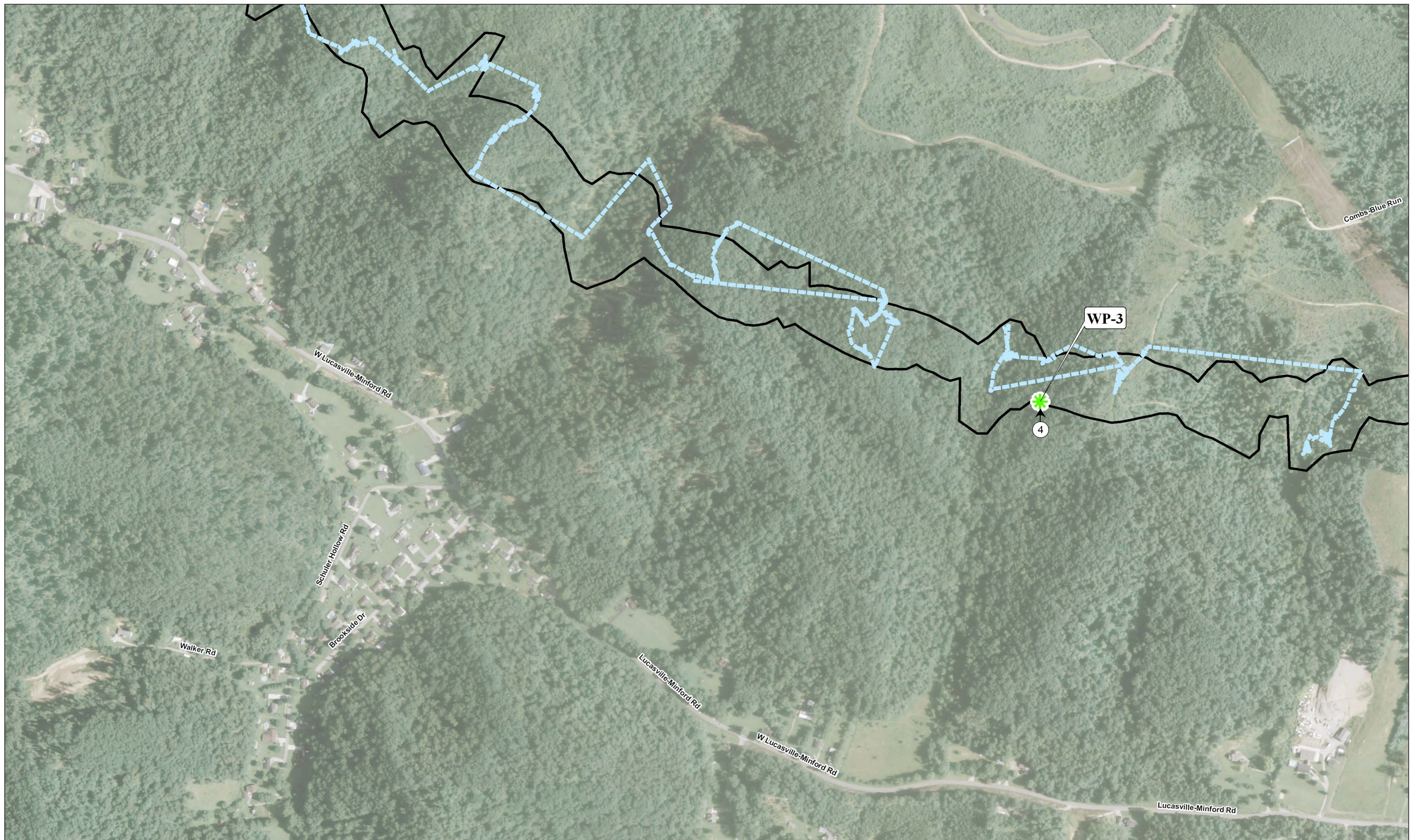


Figure 2. Survey results. (18 sheets)





- Construction limits
- - - Meander survey path
- Phase breaks
- ★ Small Whorled Pogonia  
 ★ Sampled  
 ★ Not sampled
- ⊙ Photograph location

Base: Aerial photograph 2009

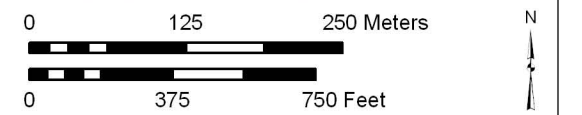
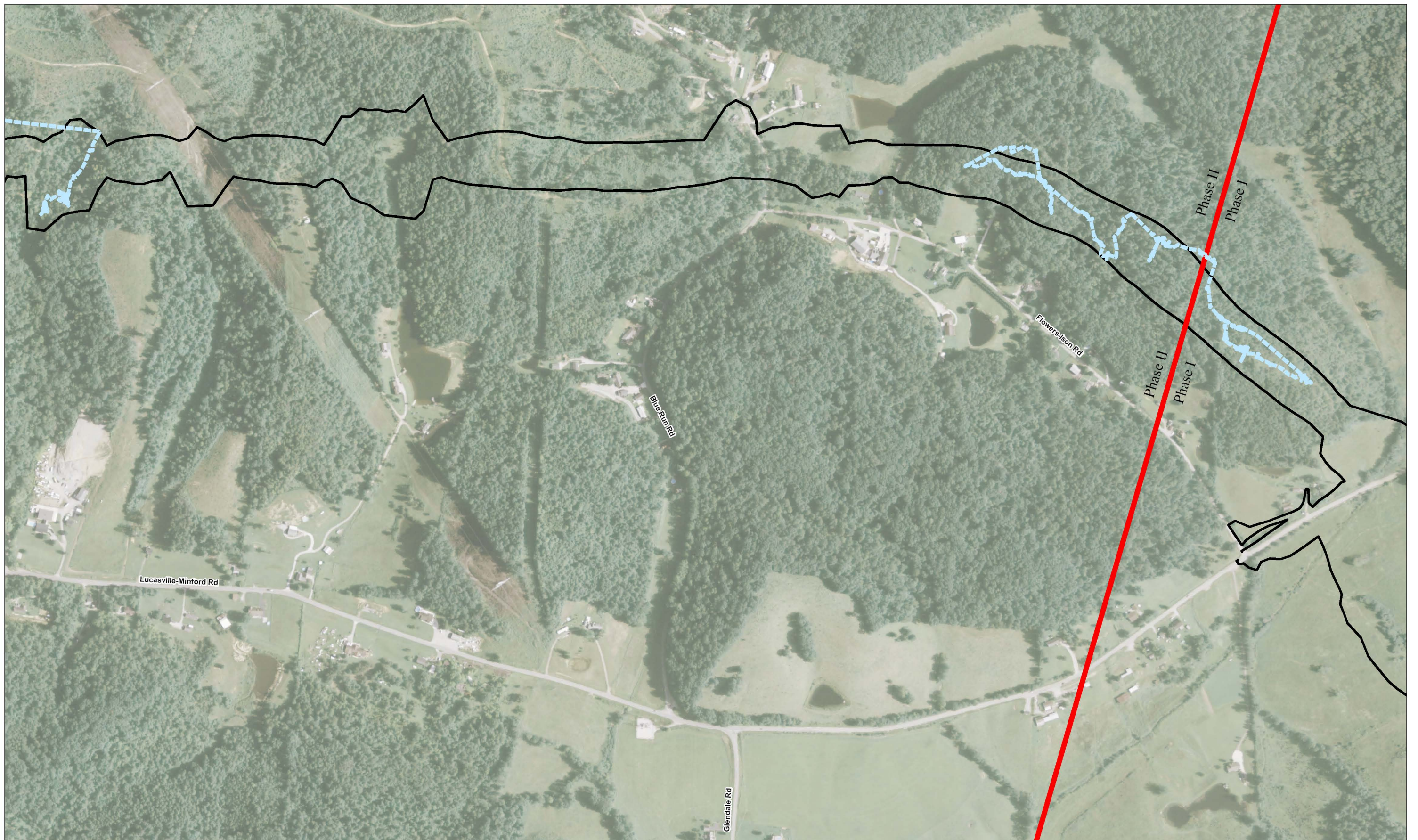


Figure 2. Survey results. (18 sheets)





- Construction limits
- - - Meander survey path
- Phase breaks
- ★ Small Whorled Pogonia  
★ Sampled
- ★ Not sampled
- ⊙ Photograph location

Base: Aerial photograph 2009

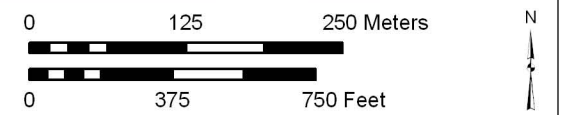
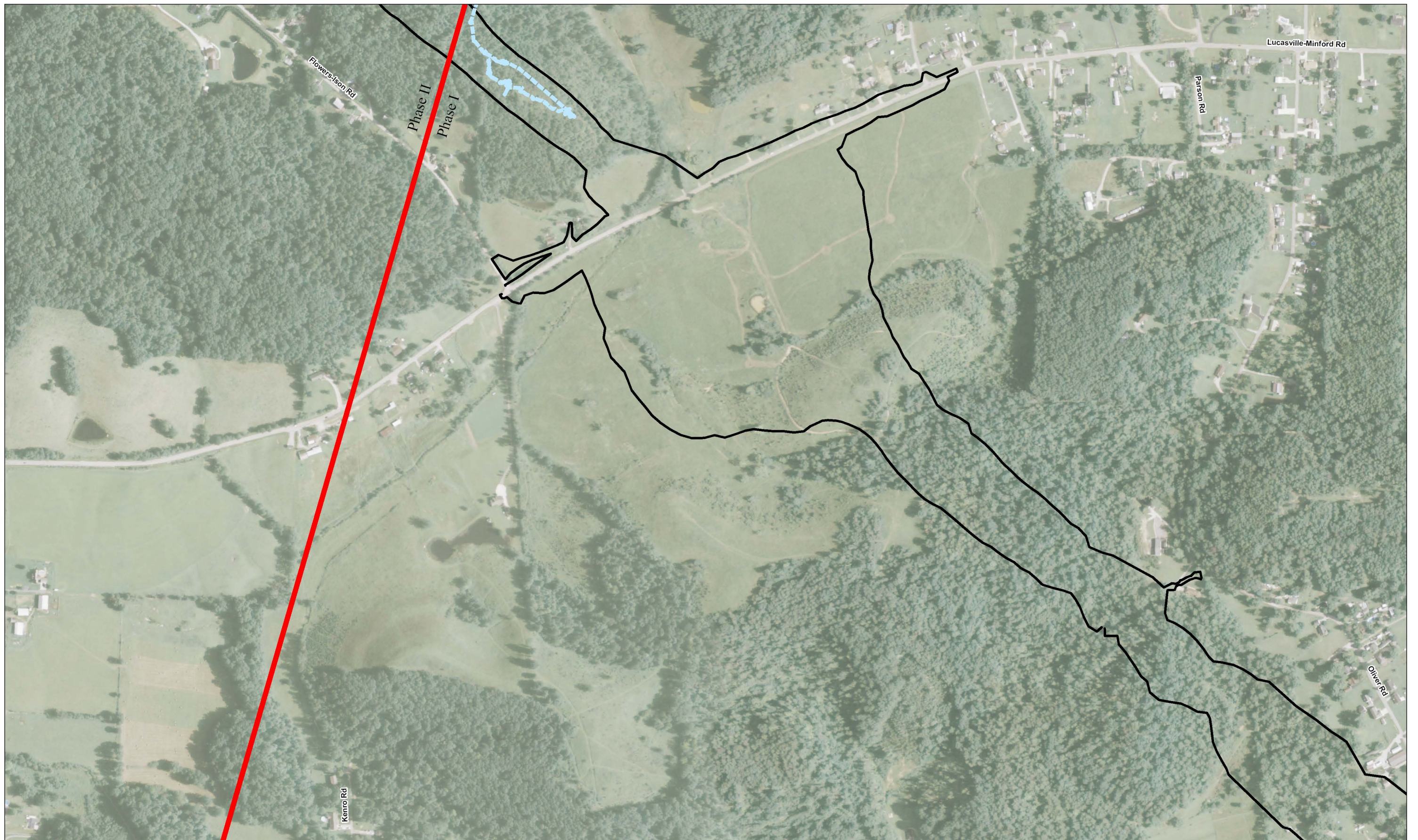


Figure 2. Survey results. (18 sheets)





- Construction limits
- - - Meander survey path
- Phase breaks
- ★ Small Whorled Pogonia
- ★ Sampled
- ★ Not sampled
- ⊙ Photograph location

Base: Aerial photograph 2009

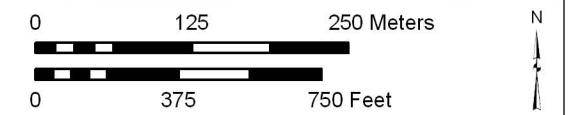
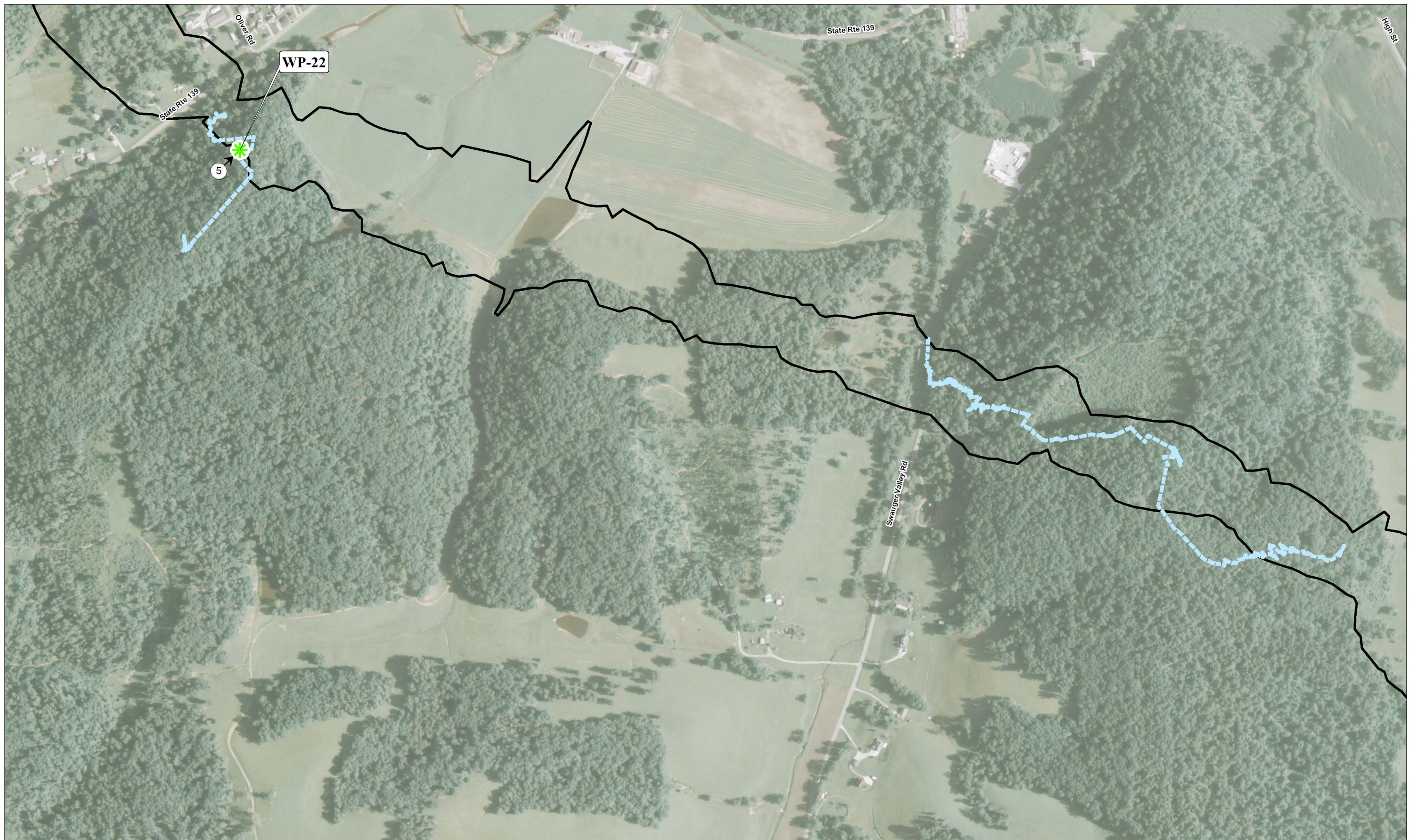


Figure 2. Survey results. (18 sheets)





- Construction limits
- - - Meander survey path
- Phase breaks
- ★ Small Whorled Pogonia
- ★ Sampled
- ★ Not sampled
- ⊙ Photograph location

Base: Aerial photograph 2009

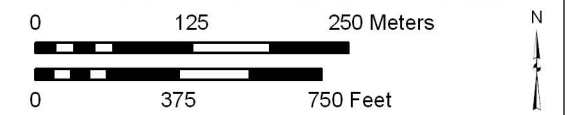
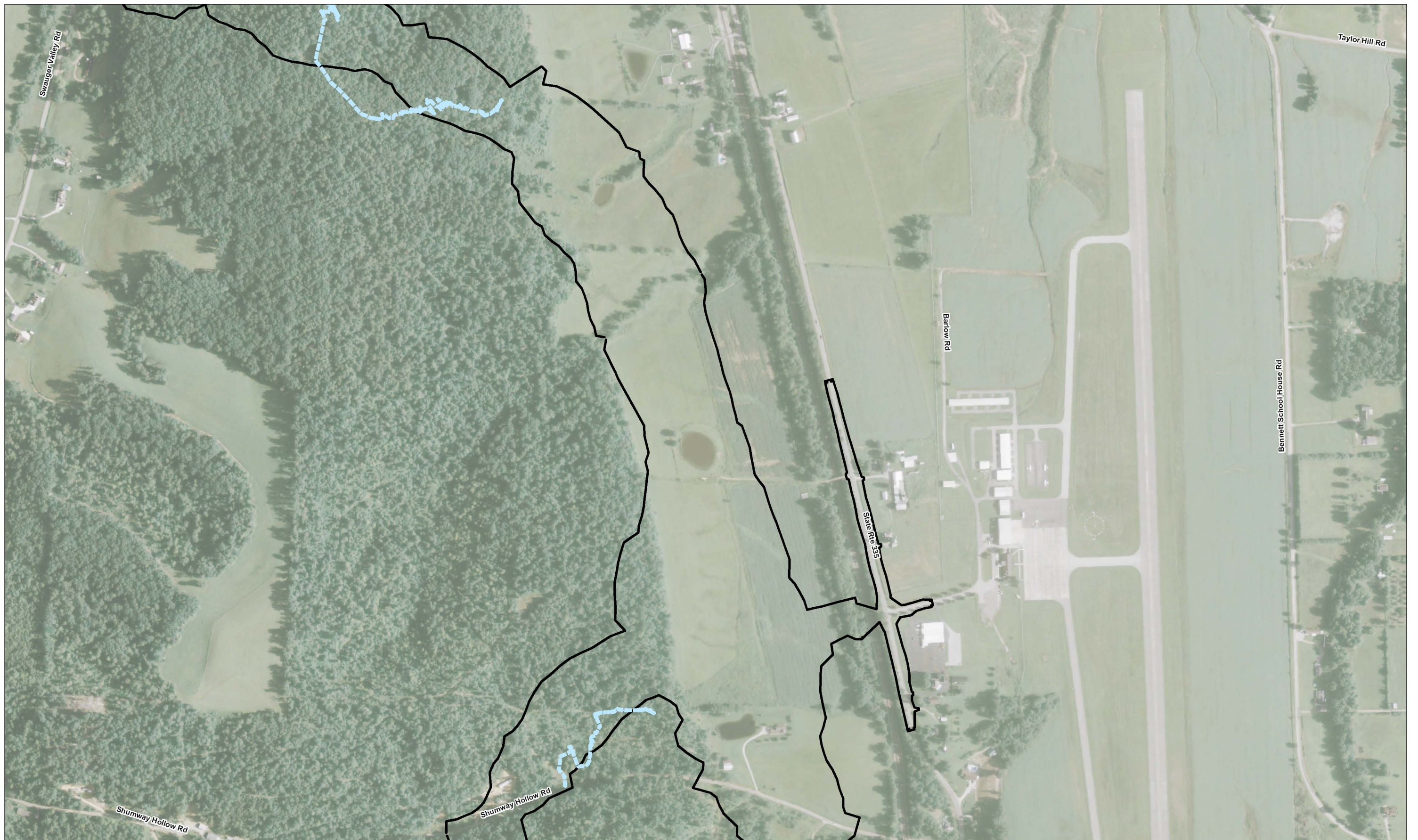


Figure 2. Survey results. (18 sheets)





- Construction limits
- - - Meander survey path
- - - Phase breaks
- Small Whorled Pogonia
- ★ Sampled
- ✱ Not sampled
- ⊙ Photograph location

Base: Aerial photograph 2009

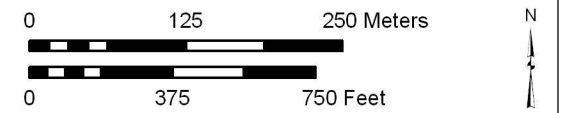


Figure 2. Survey results. (18 sheets)





- Construction limits
- - - Meander survey path
- Phase breaks
- ★ Small Whorled Pogonia
- ★ Sampled
- ★ Not sampled
- ⊙ Photograph location

Base: Aerial photograph 2009

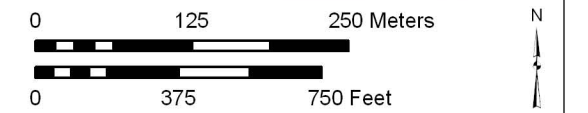


Figure 2. Survey results. (18 sheets)





- Construction limits
- - - Meander survey path
- Phase breaks
- ★ Small Whorled Pogonia
- ★ Sampled
- ★ Not sampled
- ⊙ Photograph location

Base: Aerial photograph 2009

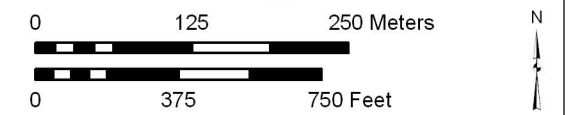
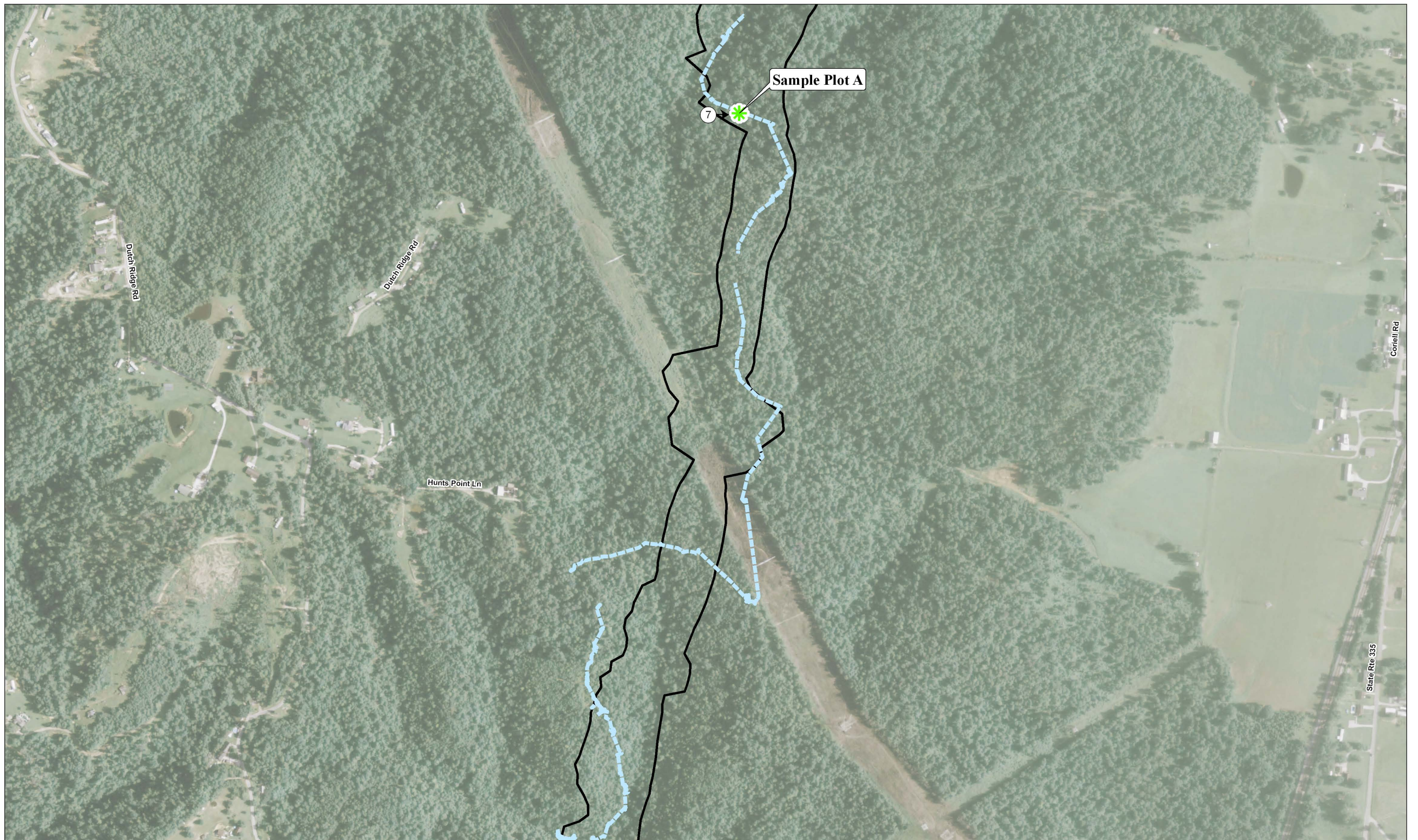


Figure 2. Survey results. (18 sheets)





- Construction limits
- - - Meander survey path
- Phase breaks
- Small Whorled Pogonia
- ★ Sampled
- ✱ Not sampled
- ←○ Photograph location

Base: Aerial photograph 2009

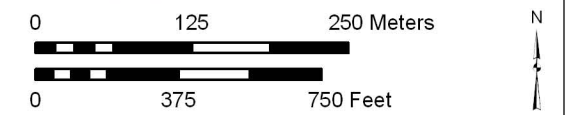


Figure 2. Survey results. (18 sheets)





- Construction limits
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- Phase breaks
- ★ Small Whorled Pogonia  
 ★ Sampled  
 ★ Not sampled
- ⊙ Photograph location

Base: Aerial photograph 2009

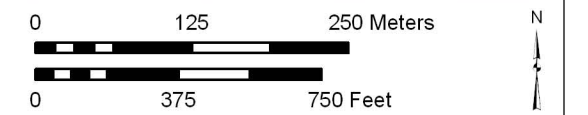


Figure 2. Survey results. (18 sheets)





- Construction limits
- - - Meander survey path
- Phase breaks
- ★ Small Whorled Pogonia
- ★ Sampled
- ★ Not sampled
- ⊙ Photograph location

Base: Aerial photograph 2009

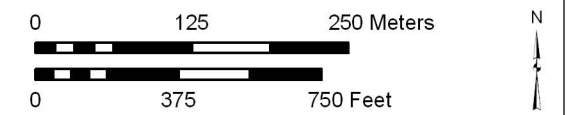


Figure 2. Survey results. (18 sheets)





- Construction limits
- - - Meander survey path
- Phase breaks
- ★ Small Whorled Pogonia
- ★ Sampled
- ★ Not sampled
- ⊙ Photograph location

Base: Aerial photograph 2009

0 125 250 Meters

0 375 750 Feet

N

Figure 2. Survey results. (18 sheets)



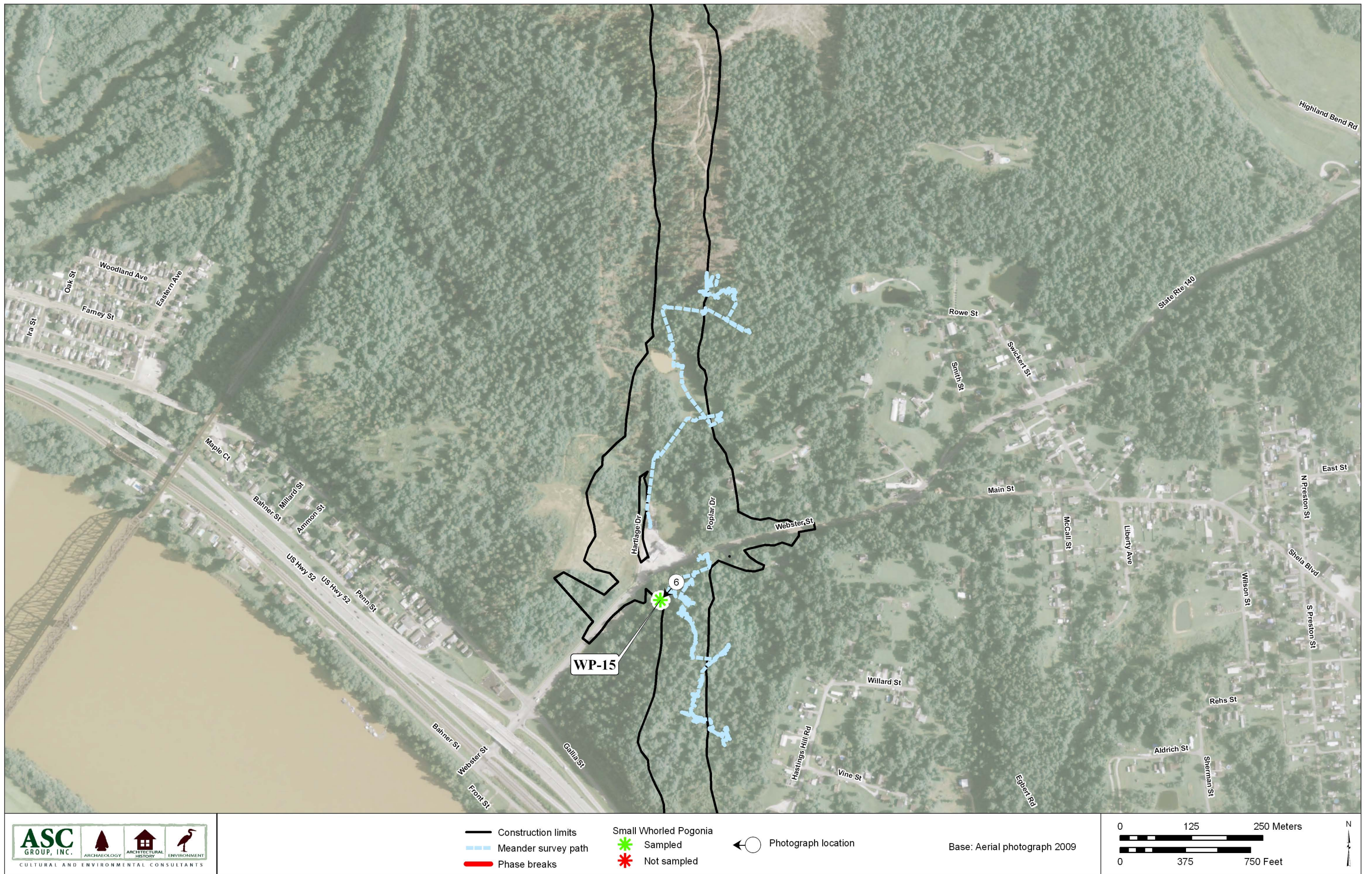


Figure 2. Survey results. (18 sheets)





- Construction limits
- - - Meander survey path
- Phase breaks
- ★ Small Whorled Pogonia  
 ★ Sampled  
 ★ Not sampled
- ⊙ Photograph location

Base: Aerial photograph 2009

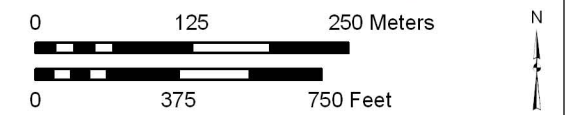
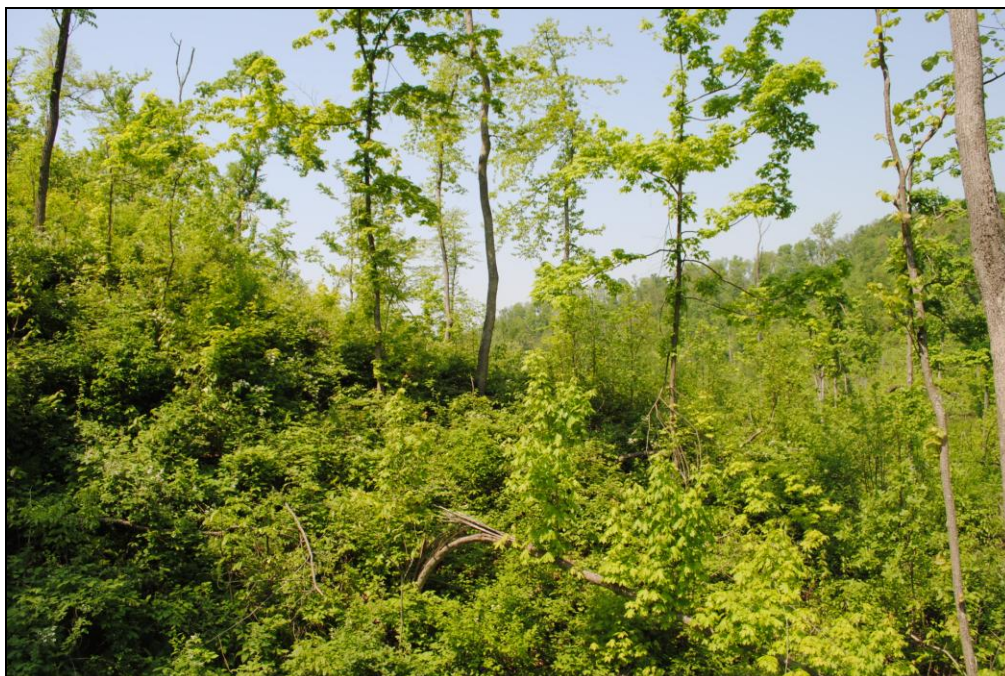


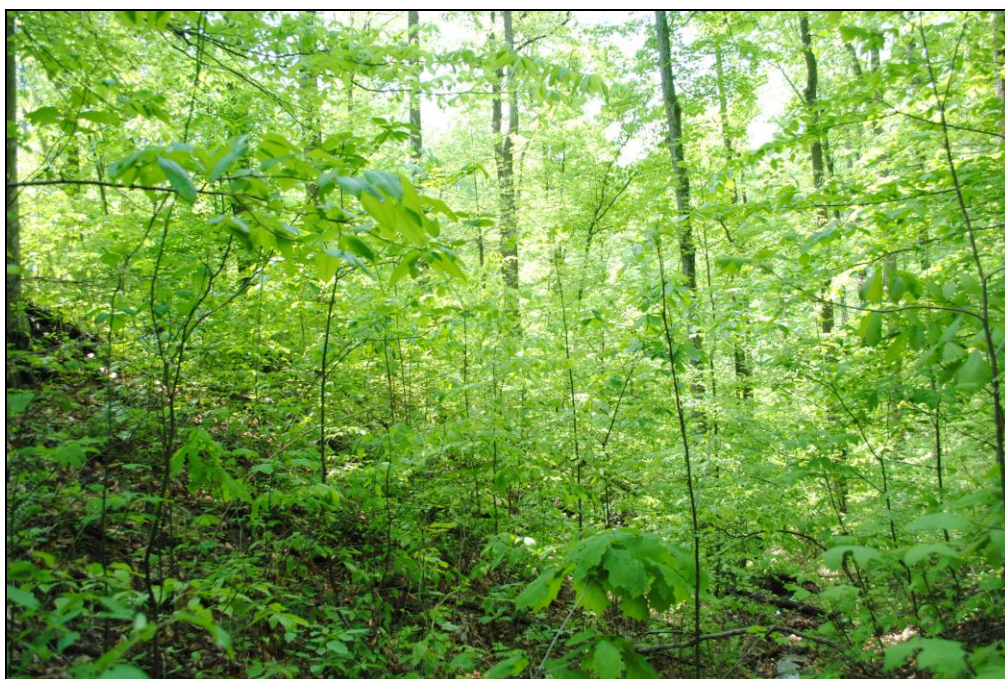
Figure 2. Survey results. (18 sheets)



**APPENDIX B: PHOTOGRAPHS AND LOCATION MAP**



Photograph 1. View of WP-17 facing northwest. The area was clear cut and dominated by shrubby thickets.



Photograph 2. View of WP-18, facing southwest.





Photograph 3. View of WP-19, facing northeast. The area was clear cut and dominated by shrubby thickets.



Photograph 4. View of a portion of WP-3, facing north.





Photograph 5. View of WP-22, facing northeast.



Photograph 6. View of WP-15, facing southwest.





Photograph 7. View of WP-A (New Plot), facing east.

**APPENDIX C: 2003 SMALL WHORLED POGONIA SURVEY PROTOCOL**

**Technical Approach Summary  
Small Whorled Pogonia and  
Virginia Spiraea Survey  
Portsmouth Bypass (SCI-823-0.00)  
Miscellaneous Environmental Related Services Agreement  
POL(OES)/CH-03-09-01  
June 10, 2003**

**Introduction**

Pursuant to coordination with the US Fish and Wildlife Service and the attached Request for Proposal, CH2MHILL proposes to conduct a field survey for the federally endangered Small Whorled Pogonia and threatened Virginia Spiraea for the Portsmouth Bypass project. The methodology for this program is based on habitat characteristics provided in USFWS and other publications, including physical habitat conditions, predominant vegetation types, and associated species, in association with field data from ecological survey for the project.

The Small Whorled Pogonia generally occurs in acidic forests with somewhat open canopies. The survey will focus on woodlands (mature and successional) which fall on acidic soil types, as mapped in the county soil survey. Using the project GIS, plots will initially be located approximately one each kilometer along the centerline of each alignment where they pass through this habitat. The sampling density will be approximately one per 15 acres of suitable habitat; the total number of plots is estimated to be 20. Additional plots will be established if populations of associated ground layer species (Table 1 below) are identified between the pre-determined plot locations. The coordinates of target sampling plots will be determined in advance, although the actual site of the plot will be adjusted to the most suitable habitat, as needed, and recorded in the field using GPS. The maximum number of Small Whorled Pogonia plot samples will be 35.

In Ohio, the Virginia Spiraea is known to occur along periodically flood-scoured streams with sandstone bedrock and along sand/gravel bars with riparian debris. The target survey areas for this species will be each location where one of the alignments crosses a perennial stream, as identified during the ecological survey field studies.

**Sampling Methodology**

For this study, the associate species for the Small Whorled Pogonia will be the following, based on literature obtained from the world wide web:

**TABLE 1**  
Ground Layer Associate Species.

<b>SCIENTIFIC NAME</b>	<b>COMMON NAME</b>
<i>Vaccinium pallidum (vacillans)</i>	Sweet lowbush blueberry
<i>Mitchella repens</i>	Partridge berry
<i>Acer rubrum (seedlings)</i>	Red maple
<i>Gaultheria procumbens</i>	Wintergreen
<i>Medeola virginiana</i>	Indian cucumber root
<i>Thelypteris noveboracensis</i>	New York fern



**TABLE 1**  
Ground Layer Associate Species.

<b>SCIENTIFIC NAME</b>	<b>COMMON NAME</b>
<i>Goodyera pubescens</i>	Rattlesnake plantain
<i>Maianthemum canadense</i>	Canada mayflower
<i>Lycopodium spp</i>	Clubmosses

The standard procedure at each one-quarter acre plot (approximately 60-foot diameter circle) for the Small Whorled Pogonia will be:

1. Flag the center of the plot and locate it with a handheld GPS unit. Label the flag with the plot number.
2. Complete a data form for each site, including:
  - a. Slope position (lower, middle, upper), slope aspect, and slope angle near the center of the plot or at the associate/target species population.
  - b. Description of a soil sample to characterize the texture and color of the upper 12 inches of soil within the plot.
  - c. Visual estimate of percent canopy closure.
  - d. A list of species present within the plot by stratum (canopy, subcanopy [shrubs, small trees], and ground layer) based on a minimum 20-minute search.
3. If rare species are located, flag the location anonymously and record the position with the GPS unit.
4. Photograph a typical view within each plot, and any rare species populations identified.

As possible, travel between adjacent plots will be generally along the centerline of the alternatives to note plant communities and habitat conditions between the plot sites.

The standard procedure for the Virginia Spiraea will be to document the conditions of each stream crossing relative to the preferred habitat conditions of the Virginia Spiraea, as described in USFWS and other publications. Each site will also be photographed.

### **Schedule**

Surveys for the Small Whorled Pogonia will be completed before June 30 to meet the flowering period. The area of sampling will depend on the receipt of notice to proceed. Survey for the Virginia Spiraea may extend to the second week of July. CH2MHILL will coordinate the notification process. If needed, CH2MHILL will generate a draft notification letter for ODOT-OES approval and provide TranSystems with a list of property owners to notify. Proper notification must be in place before sampling can occur.

### **Reporting**

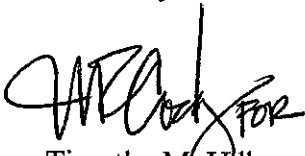
At the completion of sampling, a summary report will be prepared. This report will include: Introduction/Background, Methods, Results and plot location mapping. The report will include data forms and photographs for each sampling plot/site.



1. Flag the center of the plot and locate it with a handheld GPS unit. Label the flag with the plot number.
2. Compile a list of species present within the plot by stratum (canopy, subcanopy [shrubs, small trees], and ground layer) based on a minimum 20-minute search.
3. Obtain a single soil sample to characterize the texture and color of the upper 10 inches of soil within the plot.
4. Visually estimate percent canopy closure.
5. Record slope position (lower, middle, upper), slope aspect, and slope angle near the center of the plot or at the associate/target species population.
6. If rare species are located, flag the location anonymously and record the position with the GPS unit.

Please review the two survey procedures and provide us with comments at your earliest convenience Contact William R. Cody, at 614-466-5198, or John Baird, at 614-466-1913 of this office with questions of comments.

Sincerely,



Timothy M. Hill

Administrator

Office of Environmental Services

Attachment

TMH:WRC

c: Tony Durm(D-10) - R. Miller(CH2Hill) - Baird - Cody - File - Reading File





**OHIO DEPARTMENT OF TRANSPORTATION**  
 CENTRAL OFFICE, P.O. BOX 899, COLUMBUS, OHIO 43216-0899

Mary Knapp, Supervisor  
 U.S. Fish and Wildlife Service  
 6950 Americana Parkway, Suite H  
 Reynoldsburg, Ohio 43068

MAY 28, 2003

OES-Project Filing

**Re: Potential Sampling Methodologies – Small Whorled Pogonia  
 Portsmouth Bypass, SCI-823-0.00  
 PID 19415**

MAY 28 2003

File From: RCL  
 File By: SAB

Dear Dr. Knapp:

Since there are no definitive guidelines regarding small whorled pogonia (*Isotria medeoloides*) survey methodology, we have developed two approaches for your consideration. They vary in intensity and have their own pros and cons. Overall, we believe that either of the proposed methodologies should be adequate for USFWS to make/defend a determination relative to the presence or absence of the federally-listed plant species known to occur in Scioto County<sup>1</sup>.

Sampling Methodology Summaries:

**1. Comprehensive Survey Limited to Areas of Suitable Soil and/or Elevation**

A team will comprehensively survey (0.5 hours per acre) all wooded areas within the Hill and Valley Alternatives that have suitable soil type and elevation characteristics. For the purposes of this survey, suitable soil types are defined as low pH (less than 6) and low nutrient content (as organic matter). This description is in accordance with some literature sources. Within Scioto County, the following soils meet this description - Brownsville, Steinberg and Tilsit.

Approximately 30% of the wooded portions of the Hill and Valley Alternatives (310 of 1024 acres) are mapped with these soils types. Suitable elevation is defined as all areas above 800 feet msl. Assuming that a total 250 acres meet all three criteria (wooded, soils, elevation), an estimated 250 man-hours would be required to complete this survey.

**2. Survey Based on Professional Judgement of Quality Habitat**

A team will survey all wooded areas within the Hill and Valley Alternatives that have "Quality Habitat" based on the project team's professional experience and the data obtained during the project's Ecological Survey. Plot sampling will be used to survey the selected areas. At a

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<sup>1</sup> Regarding the other plant species of concern, the Virginia spiraea, we propose to re-survey those locations where the Hill and Valley alignments cross perennial streams. We will document the conditions of the streams at these crossing, and indicate the presence or absence of the plant and important habitat features, as described in USFWS literature/website.



minimum, a one-quarter acre plot will be located for each 15 acres of selected habitat. If populations of associated ground layer or canopy species are identified in transit between areas or plots, additional plots will be centered around these populations. Assuming a total of 200 acres of "Quality Habitat" and approximately 20 plots, an estimated 130 man-hours would be required to complete this survey.

### Definition of Associates and Plot Sampling Protocols

For this study, the associate species for the small whorled pogonia will be the following, based on literature obtained from the world wide web:

**TABLE 1: Canopy Associate Species.**

SCIENTIFIC NAME	COMMON NAME
<i>Acer rubrum</i>	Red Maple
<i>Tsuga canadensis</i>	Eastern Hemlock (Canada hemlock)
<i>Fagus grandifolia</i>	American Beech
<i>Quercus rubra</i>	Northern Red Oak
<i>Quercus alba</i>	White Oak
<i>Quercus coccinea</i>	Scarlet Oak

**TABLE 2: Ground Layer Associate Species.**

SCIENTIFIC NAME	COMMON NAME
<i>Vaccinium pallidum (vacillans)</i>	Sweet lowbush blueberry
<i>Mitchella repens</i>	Partridge berry
<i>Acer rubrum (seedlings)</i>	Red maple
<i>Gaultheria procumbens</i>	Wintergreen
<i>Medeola virginiana</i>	Indian Cucumber root
<i>Thelypteris noveboracensis</i>	New York Fern
<i>Maianthemum canadense</i>	Canada Mayflower
<i>Lycopodium spp</i>	Clubmosses

In each option, the standard procedure at each one-quarter acre plot (approximately 60-foot diameter circle) will be:

**APPENDIX D: PREVIOUS SURVEY DATA FORMS AND 2011 SPECIES LISTS**



## Rare plant species survey data form

Date: June 20, 2003 County, State: Scioto Co. OHIO

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: PL3 Plot size: 1/2 Acre

Coordinates: N 38° 52.077 W 82° 55.673

Investigator(s): Rob Hook & Stuart Jennings

Survey Begin Time: 1:18 Survey End Time: 1:48

Slope position (U, M, L): Middle Slope angle (%): 35°

Slope aspect:    N    NE    E    SE    S    SW    W    NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
0-1in	Litter				
0-2	A	10YR 3-3	-	-	Silty
2-8	B	2.5Y 6-4	-	-	Silty clay
8+	Stone	-	-	-	-

General Site Description/Notes:

- Leaf Litter variable. Deep in patches  
good Hummus Layer Below.

- good moss cover

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6/3/04 RESURVEY - BEGIN 2:20PM END 3:10 PM  
General forest condition intact.

1:18 - 1:48

PLOT ID 3

Canopy Species Visual estimate of canopy closure (%): 60%

<i>Acer rubrum</i>	8", 12"
<i>Quercus prinus</i>	6", 18", 12"
<i>Nyssa sylvatica</i>	6"

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%): 50%

<i>Fagus grandifolia</i>
<i>Sassafras albidum</i>
<i>Oxydendrum arboreum</i>
<i>Amelanchier albor.</i>
<i>Sulfax rotundifolia</i>



PLOT ID 3

Ground Layer (non-woody plants and woody < 1 meter height)

Visual estimate of total ground cover (%): 60%

*Oxydendrum arboreum*

*Quercus prinus*

*Medeola virg.* - abundant - Confirmed 6/3/04

*Rhododendron* sp.

*Sassafras alb.*

*Acer rubrum*

*Cypripedium* sp.

Whorled loosestrife

*Nyssa sylv.*

*Vaccinium vacillans*

*Panicum* spp.

*Aralia nudicaulis*

*Epigaea repens*

*Smilax glauca*

*Fagus grand.*

*Smilax rotund.*

*Polygonatum acrost.* (few)

*Smilax bona-nox*

*Dioscorea quaternata*

*Smilacina* (few)

*Prenanthes* sp.

*Liriodendron tulip.* (few)

*Isotria verticillata* } downslope within 150' of flag  
*Goodenura*

6/3/04 - *Isotria verticillata* - ± 100 plants total  
in a band 30-50' wide along slope  
contour, below flag location.

Also - *Luzula multiflora*

Site: SCI-823, Isotria medeoloides Plot 3  
 Locale: Portsmouth, Scioto County, Ohio  
 By: Len Mikles, Jason Earley, & Richard Paul  
 File: c:\FQA\studies\SCI-823\Iso Plot 3.inv

FLORISTIC QUALITY DATA		Native	55	93.2%	Adventive	4	6.8%
55	NATIVE SPECIES	Tree	18	30.5%	Tree	0	0.0%
59	Total Species	Shrub	2	3.4%	Shrub	2	3.4%
4.8	NATIVE MEAN C	W-Vine	3	5.1%	W-Vine	1	1.7%
4.5	W/Adventives	H-Vine	2	3.4%	H-Vine	0	0.0%
35.9	NATIVE FQI	P-Forb	21	35.6%	P-Forb	0	0.0%
34.6	W/Adventives	B-Forb	0	0.0%	B-Forb	0	0.0%
3.1	NATIVE MEAN W	A-Forb	1	1.7%	A-Forb	1	1.7%
3.1	W/Adventives	P-Grass	1	1.7%	P-Grass	0	0.0%
AVG:	Fac. Upland	A-Grass	0	0.0%	A-Grass	0	0.0%
		P-Sedge	5	8.5%	P-Sedge	0	0.0%
		A-Sedge	0	0.0%	A-Sedge	0	0.0%
		Fern	2	3.4%	Fern	0	0.0%

ACRONYM	C SCIENTIFIC NAME	W WETNESS	PHYSIOGNOMY	COMMON NAME
ACERUR	5 Acer rubrum v. rubrum	0 FAC	Nt Tree	RED MAPLE
ACESAS	4 Acer saccharum s. saccharum	3 FACU	Nt Tree	SUGAR MAPLE
AGEALT	2 Ageratina altissima	3 FACU	Nt P-Forb	WHITE SNAKEROOT
AMEARB	6 Amelanchier arborea	3 FACU	Nt Tree	JUNEBERRY
AMPBRB	5 Amphicarpaea bracteata v. bracteata	0 FAC	Nt H-Vine	HOG PEANUT
ARITRI	4 Arisaema triphyllum	-2 FACW-	Nt P-Forb	INDIAN TURNIP
ARISER	8 Aristolochia serpentaria	5 UPL	Nt P-Forb	BIRTHWORT
ARNATR	6 Arnoglossum atriplicifolium	5 UPL	Nt P-Forb	PALE INDIAN PLANTAIN
ASPPLA	3 Asplenium platyneuron	3 FACU	Nt Fern	EBONY SPLEENWORT
BERTHU	0 BERBERIS THUNBERGII	4 FACU-	Ad Shrub	JAPANESE BARBERRY
CXALBU	7 Carex albursina	5 UPL	Nt P-Sedge	BLUNT-SCALED WOOD SEDGE
CXBLAN	1 Carex blanda	0 FAC	Nt P-Sedge	COMMON WOOD SEDGE
CXDIGI	7 Carex digitalis	5 UPL	Nt P-Sedge	NARROW-LEAVED WOOD SEDGE
CXLXCO	5 Carex laxiculmis v. copulata	5 UPL	Nt P-Sedge	SPREADING SEDGE
CXVIRE	8 Carex virescens	3 FACU	Nt P-Sedge	SLENDER GREEN SEDGE
CARGLA	4 Carya glabra	3 FACU	Nt Tree	PIGNUT HICKORY
CERCAN	3 Cercis canadensis	3 FACU	Nt Tree	EASTERN REDBUD
CIRLUC	2 Circaea lutetiana s. canadensis	3 FACU	Nt P-Forb	ENCHANTER'S NIGHTSHADE
COLCAN	8 Collinsonia canadensis	0 FAC	Nt P-Forb	CITRONELLA HORSE BALM
CORFLO	4 Cornus florida	4 FACU-	Nt Tree	FLOWERING DOGWOOD
DELTRI	5 Delphinium tricorne	5 UPL	Nt P-Forb	DWARF LARKSPUR
DEGLU	6 Desmodium glutinosum	5 UPL	Nt P-Forb	POINTED TICK TREFOLL
DICBOS	4 Dichanthelium boscii	5 UPL	Nt P-Grass	BEARDED PANIC GRASS
DIOQUA	5 Dioscorea quaternata	3 FACU	Nt H-Vine	FOUR-LEAF WILD YAM
FAGGRA	8 Fagus grandifolia	3 FACU	Nt Tree	AMERICAN BEECH
FRAAME	4 Fraxinus americana	3 FACU	Nt Tree	WHITE ASH
GALSPE	7 Galearis spectabilis	5 UPL	Nt P-Forb	SHOWY ORCHIS
GALCIC	7 Galium circaezans v. circaezans	4 FACU-	Nt P-Forb	SMOOTH WILD LICORICE
IRICRI	7 Iris cristata	5 UPL	Nt P-Forb	DWARF CRESTED IRIS
KRIBIF	5 Krigia biflora v. biflora	3 FACU	Nt P-Forb	TWO-FLOWER FALSE DANDELION
LIRTUL	4 Liriodendron tulipifera	2 FACU+	Nt Tree	TULIP POPLAR
LONJAP	0 LONICERA JAPONICA	3 FACU	Ad W-Vine	JAPANESE HONEYSUCKLE
LUZMUL	6 Luzula multiflora	3 FACU	Nt P-Forb	COMMON WOOD RUSH
LYSQUL	6 Lysimachia quadrifolia	5 UPL	Nt P-Forb	WHORLED LOOSESTRIFE
MEDVIR	7 Medeola virginiana	5 UPL	Nt P-Forb	INDIAN CUCUMBER ROOT
NYSSYS	5 Nyssa sylvatica	5 UPL	Nt Tree	BLACK GUM
OXAGRA	8 Oxalis grandis	5 UPL	Nt P-Forb	GREAT YELLOW WOOD SORREL
OXYARB	8 Oxydendron arboreum	3 FACU	Nt Tree	SOURWOOD
PARQUI	2 Parthenocissus quinquefolia	1 FAC-	Nt W-Vine	VIRGINIA CREEPER
PLAOCC	3 Platanus occidentalis	-3 FACW	Nt Tree	SYCAMORE
PODPEL	3 Podophyllum peltatum	3 FACU	Nt P-Forb	MAY APPLE
POLAVA	0 POLYGONUM AVICULARE v. AVICULARE	1 FAC-	Ad A-Forb	COMMON KNOTWEED
POLACR	5 Polystichum acrostichoides	5 UPL	Nt Fern	CHRISTMAS FERN
POTSIM	2 Potentilla simplex	4 FACU-	Nt P-Forb	COMMON CINQUEFOIL
QUEALB	5 Quercus alba	3 FACU	Nt Tree	WHITE OAK
QUEPRI	7 Quercus prinus	5 UPL	Nt Tree	ROCK CHESTNUT OAK
QUERUB	4 Quercus rubra	3 FACU	Nt Tree	NORTHERN RED OAK
ROBPSE	1 Robinia pseudoacacia	4 FACU-	Nt Tree	BLACK LOCUST
ROSMUL	0 ROSA MULTIFLORA	3 FACU	Ad Shrub	JAPANESE ROSE
RUBALL	2 Rubus allegheniensis	2 FACU+	Nt Shrub	COMMON BLACKBERRY
SASALB	1 Sassafras albidum	3 FACU	Nt Tree	SASSAFRAS
SMIROT	4 Smilax rotundifolia	0 FAC	Nt W-Vine	CAT BRIER
SOLCAE	7 Solidago caesia	3 FACU	Nt P-Forb	BLUESTEM GOLDENROD
TOXRAR	1 Toxicodendron radicans s. radicans	3 FACU	Nt W-Vine	POISON IVY
TRIGRA	8 Trillium grandiflorum	5 UPL	Nt P-Forb	LARGE WHITE TRILLIUM
TRDPER	2 Triodanis perfoliata	0 FAC	Nt A-Forb	VENUS'S LOOKING GLASS
ULMAME	3 Ulmus americana	-2 FACW-	Nt Tree	AMERICAN ELM



UVUPER 7 *Uvularia perfoliata*  
VACPAL 5 *Vaccinium pallidum*

5 UPL Nt P-Forb PERFOLIATE BELLWORT  
5 UPL Nt Shrub LATE LOW BLUEBERRY

## Rare plant species survey data form

Date: June 24, 2003 County, State: Scioto Co., Ohio

Project Title: PIB

Target Species: Isotria Medeoloides

Plot ID: PL 15 Plot size: 1/4 - 1/2 acre

Coordinates: N 38° 45. 201 W 82° 52. 404

Investigator(s): Rob Hook & Stewart Jamming

Survey Begin Time: 8:40 A Survey End Time: 9:00 A

Slope position (U, M, L): Middle Slope angle (%): 30°

Slope aspect:    N    NE    E    SE    S    SW    W    NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
2 in	Litter	—	—	—	Good Hummus
0-2	A	10yr R 3-2	—	—	silty clay
2-6	B	2.5y 5-4	—	—	silty clay

General Site Description/Notes:

- Very Steep slope !! Near Route 140  
 - Possible wind / ice damage  
 - Difficult to keep one's Balance on this slope

6/3/04 RESURVEY - BEGIN 5:45 PM END 6:25 PM

General forest condition - open canopy has allowed ground layer vegetation to increase. Survey extended south to somewhat more developed canopy area. Logging along top of slope east of site.



PLOT ID 15

Canopy Species

Visual estimate of canopy closure (%):

40%

*Fagus grandifolia* 30", 10", 10", 12", 12", 6", 6"

*Quercus prinus* 24"

*Nyssa sylvatica* 6" ice/wind damaged area

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%):

20%

*Acer saccharum*

*Viburnum acerifolium*

*Oxydendrum arboreum*

*Vitis* sp.

*Fagus grandifolia*

PLOT ID 15

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 30% - 40%

*Medeola virginiana* - in plot - expanding East around slope to

*Acer rubrum*

*Smilax rotundifolia*

*Epitagus Virg.*

*Acoela* sp.

*Polystichum acrostichoides*

*Nyssa sylvatica*

*Fagus grand.*

*Prunus serotina*

*Polygonatum*

*Unica japonica* (low end - steep slope)

*Cornus florida* - small, scattered.

*Fraxinus* seedlings

*Lindera* (few)

*Juncus* sp.

*Aesculus glabra*

*Amelanchier* (few)

*Quercus* seedlings.

*Arisaema*

*Panicum* sp (upslope)

(nice crop) 100' from flag

(M.V. Also located 2-3000' South of plot)

population confirmed 6/3/04  
2 small populations of *Medeola* found south of original plot

6/3/04 - Add. species in plot

*Oxydendrum*

*Vaccinium* sp.

*Saxatrac*



Site: SCI-823, Isotria medeoloides Plot 15  
 Locale: Portsmouth, Scioto County, Ohio  
 By: Len Mikles, Jason Earley, & Richard Paul  
 File: c:\FQA\studies\SCI-823\Iso Plot 15.inv

FLORISTIC QUALITY DATA		Native		Adventive			
35	NATIVE SPECIES	Tree	15	39.5%	Tree	0	0.0%
38	Total Species	Shrub	5	13.2%	Shrub	1	2.6%
5.3	NATIVE MEAN C	W-Vine	2	5.3%	W-Vine	1	2.6%
4.8	W/Adventives	H-Vine	1	2.6%	H-Vine	0	0.0%
31.1	NATIVE FQI	P-Forb	10	26.3%	P-Forb	1	2.6%
29.8	W/Adventives	B-Forb	0	0.0%	B-Forb	0	0.0%
3.1	NATIVE MEAN W	A-Forb	0	0.0%	A-Forb	0	0.0%
3.1	W/Adventives	P-Grass	0	0.0%	P-Grass	0	0.0%
AVG: Fac. Upland		A-Grass	0	0.0%	A-Grass	0	0.0%
		P-Sedge	1	2.6%	P-Sedge	0	0.0%
		A-Sedge	0	0.0%	A-Sedge	0	0.0%
		Fern	1	2.6%	Fern	0	0.0%

ACRONYM	C SCIENTIFIC NAME	W WETNESS	PHYSIOGNOMY	COMMON NAME
ACERUR	5 Acer rubrum v. rubrum	0 FAC	Nt Tree	RED MAPLE
ACESAS	4 Acer saccharum s. saccharum	3 FACU	Nt Tree	SUGAR MAPLE
AESFLA	10 Aesculus flava	5 UPL	Nt Tree	YELLOW BUCKEYE
AGEALT	2 Ageratina altissima	3 FACU	Nt P-Forb	WHITE SNAKEROOT
AMEARB	6 Amelanchier arborea	3 FACU	Nt Tree	JUNEBERRY
ASITRI	6 Asimina triloba	0 FAC	Nt Tree	PAPAW
CXDIGI	7 Carex digitalis	5 UPL	Nt P-Sedge	NARROW-LEAVED WOOD SEDGE
CORFLO	4 Cornus florida	4 FACU-	Nt Tree	FLOWERING DOGWOOD
DIOQUA	5 Dioscorea quaternata	3 FACU	Nt H-Vine	FOUR-LEAF WILD YAM
EPIVIR	8 Epifagus virginiana	5 UPL	Nt P-Forb	BEECH DROPS
FAGGRA	8 Fagus grandifolia	3 FACU	Nt Tree	AMERICAN BEECH
FRAAME	4 Fraxinus americana	3 FACU	Nt Tree	WHITE ASH
GALCIC	7 Galium circaezans v. circaezans	4 FACU-	Nt P-Forb	SMOOTH WILD LICORICE
GLEHED	0 GLECHOMA HEDERACEA	3 FACU	Ad P-Forb	GROUND IVY
HAMVIR	5 Hamamelis virginiana	3 FACU	Nt Shrub	WITCH HAZEL
LINBEN	5 Lindera benzoin	-5 OBL	Nt Shrub	HAIRY SPICEBUSH
LIRTUL	4 Liriodendron tulipifera	2 FACU+	Nt Tree	TULIP POPLAR
LONJAP	0 LONICERA JAPONICA	3 FACU	Ad W-Vine	JAPANESE HONEYSUCKLE
MEDVIR	7 Medeola virginiana	5 UPL	Nt P-Forb	INDIAN CUCUMBER ROOT
NYSSYS	5 Nyssa sylvatica	5 UPL	Nt Tree	BLACK GUM
OXYARB	8 Oxydendron arboreum	3 FACU	Nt Tree	SOURWOOD
PARQUI	2 Parthenocissus quinquefolia	1 FAC-	Nt W-Vine	VIRGINIA CREEPER
PODPEL	3 Podophyllum peltatum	3 FACU	Nt P-Forb	MAY APPLE
POLBIF	4 Polygonatum biflorum	3 FACU	Nt P-Forb	SMALL SOLOMON'S SEAL
POLACR	5 Polystichum acrostichoides	5 UPL	Nt Fern	CHRISTMAS FERN
PREALT	5 Prenanthes altissima	3 FACU	Nt P-Forb	TALL WHITE LETTUCE
PRUSER	1 Prunus serotina	3 FACU	Nt Tree	WILD BLACK CHERRY
QUEPRI	7 Quercus prinus	5 UPL	Nt Tree	ROCK CHESTNUT OAK
ROSMUL	0 ROSA MULTIFLORA	3 FACU	Ad Shrub	JAPANESE ROSE
SASALB	1 Sassafras albidum	3 FACU	Nt Tree	SASSAFRAS
SMIROT	4 Smilax rotundifolia	0 FAC	Nt W-Vine	CAT BRIER
SOLCAE	7 Solidago caesia	3 FACU	Nt P-Forb	BLUESTEM GOLDENROD
STEPUB	7 Stellaria pubera	5 UPL	Nt P-Forb	GREAT CHICKWEED
SYMCOR	5 Symphyotrichum cordifolium	5 UPL	Nt P-Forb	HEART-LEAVED ASTER
TILAMA	5 Tilia americana v. americana	3 FACU	Nt Tree	AMERICAN LINDEN
VACANG	5 Vaccinium angustifolium	3 FACU	Nt Shrub	EARLY LOW BLUEBERRY
VACPAL	5 Vaccinium pallidum	5 UPL	Nt Shrub	LATE LOW BLUEBERRY
VIBACE	8 Viburnum acerifolium	5 UPL	Nt Shrub	MAPLE-LEAVED ARROWWOOD



Rare plant species survey data form

Date: 6/30/03 County, State: Scioto OH

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: 18 Plot size: 1/2 acre

Coordinates: N 38° 53.875' W 82° 57.822'

Investigator(s): Hook / Olson

Survey Begin Time: 1:55 Survey End Time: 2:40

Slope position (U, M, L): M Slope angle (%): 10° - 20°

Slope aspect: N NE E SE S (SW) W (NW)

Soil description to 12 inches: *(see also opposing slope on sketch)*

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
<1"	Litter				
0-3	A	15YR 3/2			silt loam
3+					Stony

General Site Description/Notes:

Selective cut on going - plot in undisturbed area, above temporary valley.

LWD site NW of PL 18 approx ± 150' on SW slope across valley

~~6/3/04 RESURVEY - BEGIN 9:40 END 10:40~~

General forest condition intact.



LWP site - SW slope

GL

25%  
T0000

*Isotria verticillata*  
*Medeola*

*Fagus*

*Oxydendron*

*Sassafras*

*Acer rubrum*

*Amelanchier*

*Smilax rotund.*

*Vaccinium* sp.

*Fris*

*Hieracium*

*Koeleria* sp.

*Liriodendron*

overstory - 75%

*D. prinus*

*Acer rubrum*

*Fagus grandifolia*

Under

30%

*Nyssa*

*Fagus*

*Sassafras*

6/3/04 *Medeola* abundant.

*Isotria vert.* - ± 150 plants  
counted

*Goodyera* also present.

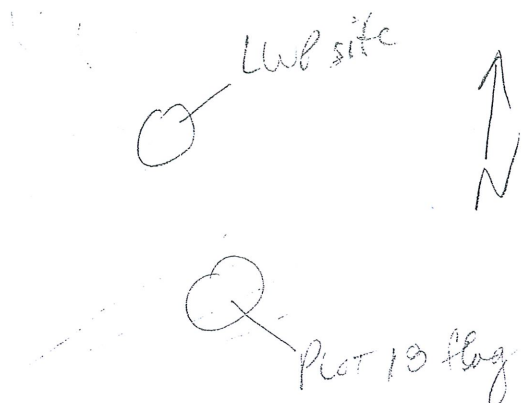
Litter

1" - compacted/stable

Unmarked flag.

20° slope

SW





June 30, 2005

PLOT ID 18

Canopy Species

Visual estimate of canopy closure (%):

25

*Liriodendron tulipifera* tulip poplar

*Fagus grandifolia* beech

*Oxydendron arboreum* sourwood

*Acer saccharum* sugar maple

*Nyssa sylvatica* Black gum

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%):

20

*Acer saccharum* sugar maple

*Nyssa sylvatica* black gum

*Fagus grandifolia* beech

*Prinna triloba* paw paw

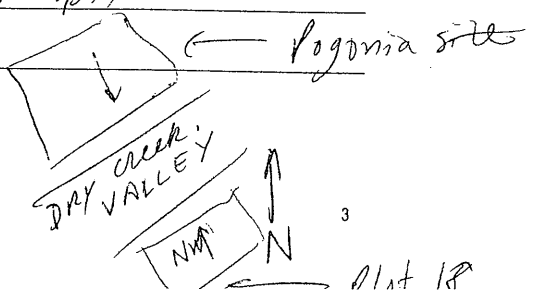


Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%):

<i>Iris cristata</i>	dwarf crested iris
<i>Smilax</i>	briar
<i>Prenanthes alba</i>	lions foot
<i>Medeola virginiana</i>	cucumber root
<i>Collinsonia</i>	horse balm
<i>Dioscorea</i>	wild yam
<i>Solidago caesia</i> (flexicaulis?)	zig-zag goldenrod
<i>Carex cf. pennsylvanica</i>	Pennsylvania sedge
<i>Polystichum archrosticoides</i>	Christmas fern
<i>Sanicula marylandica</i>	snake root
<i>Quercus rubra</i>	N. red oak
<i>Fagus grandifolia</i>	beech
<i>Amphicarpa bracteata</i>	hog plant
<i>Botrichium virginiana</i>	grape fern
<i>Cimicifuga racemosa</i>	bugbane
* <del><i>Pogonia</i></del> <i>verticillata</i>	large-whorled <i>Pogonia</i>
<i>Sassafras albidum</i>	wild sassafras
<i>Carpinus</i> (?)	
<i>Viola</i> (heart-shaped lv) sp.	violet sp.
<i>Oxularia perfoliata</i>	bell flower
<i>Oxydendron arboreum</i>	sourwood
<i>Rosa multiflora</i>	multiflora rose
<i>Rubus</i> (allegheniensis)	raspberry
<i>Thalictrum</i> sp.	me.
<i>Carex plantaginea</i>	sedge
<i>Disporum maculatum</i>	fairbelle
<i>Arisaema triphyllum</i>	j-se-tle-plant

50' on slope opposite of plot. Plot faces NW. *Pogonia* slope faces Southeast to SW





Site: SCI-823, Isotria medeoloides Plot 18  
 Locale: Portsmouth, Scioto County, Ohio  
 Date: May 11, 2011 1 hours  
 By: Len Mikles, Jason Earley, & Richard Paul  
 File: c:\FQA\studies\SCI-823\Iso Plot 18.inv

FLORISTIC QUALITY DATA		Native	49	98.0%	Adventive	1	2.0%
49	NATIVE SPECIES	Tree	13	26.0%	Tree	0	0.0%
50	Total Species	Shrub	4	8.0%	Shrub	1	2.0%
5.4	NATIVE MEAN C	W-Vine	3	6.0%	W-Vine	0	0.0%
5.3	W/Adventives	H-Vine	2	4.0%	H-Vine	0	0.0%
37.9	NATIVE FQI	P-Forb	17	34.0%	P-Forb	0	0.0%
37.5	W/Adventives	B-Forb	1	2.0%	B-Forb	0	0.0%
2.5	NATIVE MEAN W	A-Forb	0	0.0%	A-Forb	0	0.0%
2.5	W/Adventives	P-Grass	0	0.0%	P-Grass	0	0.0%
AVG: Fac. Upland		A-Grass	0	0.0%	A-Grass	0	0.0%
		P-Sedge	4	8.0%	P-Sedge	0	0.0%
		A-Sedge	0	0.0%	A-Sedge	0	0.0%
		Fern	5	10.0%	Fern	0	0.0%

ACRONYM	C SCIENTIFIC NAME	W WETNESS	PHYSIOGNOMY	COMMON NAME
ACERUR	5 Acer rubrum v. rubrum	0 FAC	Nt Tree	RED MAPLE
ACESAS	4 Acer saccharum s. saccharum	3 FACU	Nt Tree	SUGAR MAPLE
AGEALT	2 Ageratina altissima	3 FACU	Nt P-Forb	WHITE SNAKEROOT
AMEARB	6 Amelanchier arborea	3 FACU	Nt Tree	JUNEBERRY
AMPBRB	5 Amphicarpaea bracteata v. bracteata	0 FAC	Nt H-Vine	HOG PEANUT
ASITRI	6 Asimina triloba	0 FAC	Nt Tree	PAPAW
ATHFIN	6 Athyrium filix-femina s. angustum	0 FAC	Nt Fern	LADY FERN
CARCON	4 Cardamine concatenata	4 FACU	Nt P-Forb	TOOTHWORT
CXCOMM	8 Carex communis	5 UPL	Nt P-Sedge	COMMON BEECH SEDGE
CXDIGI	7 Carex digitalis	5 UPL	Nt P-Sedge	NARROW-LEAVED WOOD SEDGE
CXLXCO	5 Carex laxiculmis v. copulata	5 UPL	Nt P-Sedge	SPREADING SEDGE
CXVIRE	8 Carex virescens	3 FACU	Nt P-Sedge	SLENDER GREEN SEDGE
COLCAN	8 Collinsonia canadensis	0 FAC	Nt P-Forb	CITRONELLA HORSE BALM
CYPACA	10 Cyripedium acaule	-3 FACW	Nt P-Forb	MOCCASIN FLOWER
DIOQUA	5 Dioscorea quaternata	3 FACU	Nt H-Vine	FOUR-LEAF WILD YAM
DRYINT	10 Dryopteris intermedia	0 FAC	Nt Fern	COMMON WOOD FERN
FAGGRA	8 Fagus grandifolia	3 FACU	Nt Tree	AMERICAN BEECH
FRAAME	4 Fraxinus americana	3 FACU	Nt Tree	WHITE ASH
GOOPUB	5 Goodyera pubescens	0 FAC	Nt P-Forb	RATTLESNAKE PLANTAIN
HOUCAE	4 Houstonia caerulea	0 FAC	Nt P-Forb	BLUETS
HUPLUC	5 Huperzia lucidula	-1 FAC+	Nt Fern	SHINING CLUBMOSS
IRICRI	7 Iris cristata	5 UPL	Nt P-Forb	DWARF CRESTED IRIS
KALLAT	10 Kalmia latifolia	4 FACU-	Nt Shrub	MOUNTAIN LAUREL
KRIBIF	5 Krigia biflora v. biflora	3 FACU	Nt P-Forb	TWO-FLOWER FALSE DANDELION
LINBEN	5 Linderia benzoin	-5 OBL	Nt Shrub	HAIRY SPICEBUSH
LIRTUL	4 Liriodendron tulipifera	2 FACU+	Nt Tree	TULIP POPLAR
LUZMUL	6 Luzula multiflora	3 FACU	Nt P-Forb	COMMON WOOD RUSH
LYSQUL	6 Lysimachia quadrifolia	5 UPL	Nt P-Forb	WHORLED LOOSESTRIFE
MEDVIR	7 Medeola virginiana	5 UPL	Nt P-Forb	INDIAN CUCUMBER ROOT
NYSSYS	5 Nyssa sylvatica	5 UPL	Nt Tree	BLACK GUM
OSMCLI	3 Osmorhiza claytonii	4 FACU-	Nt P-Forb	HAIRY SWEET CICELY
OSTVIR	5 Ostrya virginiana	4 FACU-	Nt Tree	HOP HORNBEAM
OXYARB	8 Oxydendron arboreum	3 FACU	Nt Tree	SOURWOOD
PARQUI	2 Parthenocissus quinquefolia	1 FAC-	Nt W-Vine	VIRGINIA CREEPER
PHEHEX	7 Phegopteris hexagonoptera	1 FAC-	Nt Fern	BROAD BEECH FERN
PODPEL	3 Podophyllum peltatum	3 FACU	Nt P-Forb	MAY APPLE
POLACR	5 Polystichum acrostichoides	5 UPL	Nt Fern	CHRISTMAS FERN
QUEPRI	7 Quercus prinus	5 UPL	Nt Tree	ROCK CHESTNUT OAK
QUERUB	4 Quercus rubra	3 FACU	Nt Tree	NORTHERN RED OAK
ROSMUL	0 ROSA MULTIFLORA	3 FACU	Ad Shrub	JAPANESE ROSE
RUBALL	2 Rubus allegheniensis	2 FACU+	Nt Shrub	COMMON BLACKBERRY
SANCAC	2 Sanicula canadensis	2 FACU+	Nt B-Forb	CANADIAN BLACK SNAKEROOT
SASALB	1 Sassafras albidum	3 FACU	Nt Tree	SASSAFRAS
SMIROT	4 Smilax rotundifolia	0 FAC	Nt W-Vine	CAT BRIER
SOLCAE	7 Solidago caesia	3 FACU	Nt P-Forb	BLUESTEM GOLDENROD
THATHA	7 Thalictrum thalictroides	5 UPL	Nt P-Forb	RUE ANEMONE
TOXRAR	1 Toxicodendron radicans s. radicans	3 FACU	Nt W-Vine	POISON IVY
UVUPER	7 Uvularia perfoliata	5 UPL	Nt P-Forb	PERFOLIATE BELLWORT
VACPAL	5 Vaccinium pallidum	5 UPL	Nt Shrub	LATE LOW BLUEBERRY
VIOPUB	5 Viola pubescens	4 FACU-	Nt P-Forb	DOWNY YELLOW VIOLET



# Rare plant species survey data form

Date: 7/1/03 County, State: Scioto, OH

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: 22 Plot size: 1/2 acre

Coordinates: N 38° 51.209' W 82° 52.940'

Investigator(s): Hook/Olson

Survey Begin Time: 3:45 Survey End Time: 4:20

Slope position (U, M, L): Upper-Middle Slope angle (%): 30°

Slope aspect:    N    NE    E    SE    S    SW    W    NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1.5	Litter				slightly compacted
0-1		10YR 3/2			silt loam
1-4		2.5Y 5/4			silt loam
4+					stony

General Site Description/Notes:

Plot area roughly ± 100' and west of flag  
 medeola/rodgersia primary associates.

**6/4/04 - RESURVEY**      BEGIN ~~9:30~~ **9:30** AM    END 10:30

General forest condition intact.  
 Survey extended across both alternatives.  
 Lowest slope position has dense understory



PLOT ID #22

Canopy Species

Visual estimate of canopy closure (%): 50%

*Acer saccharum*

*Quercus prinus*

*Carya glabra*

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%): 35%

*Liriodendron tulipifera*

*Ostrya virginiana*

*Oxydendron arboreum*

*Cornus florida*



Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%):

*Smilacina racemosa*

*Medeola virginiana*

*Vaccinium vacillans*

*Dioscorea*

*Q. prinus*

*Amphicarpa bracteata*,

*Smilax rotundifolia*,

*Prunus serotina*,

*Nyssa sylvatica*

*Goodyera pubescens* (4 ind. about 100 ft down slope),

*Parthenocissus quin.*

*Viburnum acerifolium*,

*Ostrya virginiana*

*Quercus robur*,

*Azalea* sp.

*Desmodium* sp.

→ *Mitchella repens* partridge berry, 3 individuals

↳ extends NE along contour ± 200'

Plot 1 flag  
30 feet NE of flag

6/4/04

*Medeola* - scattered population across slope, down hill from flag.

*Mitchella* - additional population found ± 100 yds. N of flag.

Other spp.:

associated w *Medeola*.

*Uvularia*

*Acer rubrum*

*Smilax glauca*

*Sassafras*

*Carex rosea*



Site: SCI-823, Isotria medeoloides Plot 22  
 Locale: Portsmouth, Scioto County, Ohio  
 By: Len Mikles, Jason Earley, & Richard Paul  
 File: c:\FQA\studies\SCI-823\Iso Plot 22.inv

FLORISTIC QUALITY DATA		Native	59	96.7%	Adventive	2	3.3%
59	NATIVE SPECIES	Tree	19	31.1%	Tree	0	0.0%
61	Total Species	Shrub	5	8.2%	Shrub	1	1.6%
5.5	NATIVE MEAN C	W-Vine	2	3.3%	W-Vine	1	1.6%
5.3	W/Adventives	H-Vine	2	3.3%	H-Vine	0	0.0%
42.3	NATIVE FQI	P-Forb	24	39.3%	P-Forb	0	0.0%
41.6	W/Adventives	B-Forb	1	1.6%	B-Forb	0	0.0%
2.8	NATIVE MEAN W	A-Forb	0	0.0%	A-Forb	0	0.0%
2.9	W/Adventives	P-Grass	0	0.0%	P-Grass	0	0.0%
AVG:	Fac. Upland	A-Grass	0	0.0%	A-Grass	0	0.0%
		P-Sedge	2	3.3%	P-Sedge	0	0.0%
		A-Sedge	0	0.0%	A-Sedge	0	0.0%
		Fern	4	6.6%	Fern	0	0.0%

ACRONYM	C	SCIENTIFIC NAME	W	WETNESS	PHYSIOGNOMY	COMMON NAME
ACERUR	5	Acer rubrum v. rubrum	0	FAC	Nt Tree	RED MAPLE
ACESAS	4	Acer saccharum s. saccharum	3	FACU	Nt Tree	SUGAR MAPLE
ACOUNC	9	Aconitum uncinatum	3	FACU	Nt P-Forb	HOOKEED MUNKSHOOD
ACTPAC	7	Actaea pachypoda	5	UPL	Nt P-Forb	DOLL'S-EYES
ADIPED	7	Adiantum pedatum	1	FAC-	Nt Fern	MAIDENHAIR FERN
AMPBRB	5	Amphicarpaea bracteata v. bracteata	0	FAC	Nt H-Vine	HOG PEANUT
ARITRI	4	Arisaema triphyllum	-2	FACW-	Nt P-Forb	INDIAN TURNIP
ASACAN	5	Asarum canadense	5	UPL	Nt P-Forb	CANADA WILD GINGER
ASITRI	6	Asimina triloba	0	FAC	Nt Tree	PAPAW
ATHFIN	6	Athyrium filix-femina s. angustum	0	FAC	Nt Fern	LADY FERN
CARCON	4	Cardamine concatenata	4	FACU	Nt P-Forb	TOOTHWORT
CXDIGI	7	Carex digitalis	5	UPL	Nt P-Sedge	NARROW-LEAVED WOOD SEDGE
CXLXCO	5	Carex laxiculmis v. copulata	5	UPL	Nt P-Sedge	SPREADING SEDGE
CARPCA	5	Carpinus caroliniana s. virginiana	0	FAC	Nt Tree	BLUE BEECH
CARGLA	4	Carya glabra	3	FACU	Nt Tree	PIGNUT HICKORY
CASDEN	10	Castanea dentata	5	UPL	Nt Tree	AMERICAN CHESTNUT
CIMRAC	9	Cimicifuga racemosa	0	FAC	Nt P-Forb	FALSE BUGBANE
COLCAN	8	Collinsonia canadensis	0	FAC	Nt P-Forb	CITRONELLA HORSE BALM
CORFLO	4	Cornus florida	4	FACU-	Nt Tree	FLOWERING DOGWOOD
CUNORI	5	Cunila origanoides	5	UPL	Nt P-Forb	DITTANY
DIOQUA	5	Dioscorea quaternata	3	FACU	Nt H-Vine	FOUR-LEAF WILD YAM
FAGGRA	8	Fagus grandifolia	3	FACU	Nt Tree	AMERICAN BEECH
FRAAME	4	Fraxinus americana	3	FACU	Nt Tree	WHITE ASH
GALCIC	7	Galium circaezans v. circaezans	4	FACU-	Nt P-Forb	SMOOTH WILD LICORICE
GALCON	5	Galium concinnum	3	FACU	Nt P-Forb	SHINING BEDSTRAW
HOUCAE	4	Houstonia caerulea	0	FAC	Nt P-Forb	BLUETS
IRICRI	7	Iris cristata	5	UPL	Nt P-Forb	DWARF CRESTED IRIS
LINBEN	5	Lindera benzoin	-5	OBL	Nt Shrub	HAIRY SPICEBUSH
LIRTUL	4	Liriodendron tulipifera	2	FACU+	Nt Tree	TULIP POPLAR
LONJAP	0	LONICERA JAPONICA	3	FACU	Ad W-Vine	JAPANESE HONEYSUCKLE
LUZMUL	6	Luzula multiflora	3	FACU	Nt P-Forb	COMMON WOOD RUSH
LYSQUL	6	Lysimachia quadrifolia	5	UPL	Nt P-Forb	WHORLED LOOSESTRIFE
MAIRAC	4	Maianthemum racemosum	3	FACU	Nt P-Forb	FEATHERY FALSE SOLOMON SEAL
MEDVIR	7	Medeola virginiana	5	UPL	Nt P-Forb	INDIAN CUCUMBER ROOT
MITREP	8	Mitchella repens	2	FACU+	Nt Shrub	PARTRIDGE BERRY
NYSSYS	5	Nyssa sylvatica	5	UPL	Nt Tree	BLACK GUM
OSTVIR	5	Ostrya virginiana	4	FACU-	Nt Tree	HOP HORNBEAM
OXYARB	8	Oxydendron arboreum	3	FACU	Nt Tree	SOURWOOD
PARQUI	2	Parthenocissus quinquefolia	1	FAC-	Nt W-Vine	VIRGINIA CREEPER
PODPEL	3	Podophyllum peltatum	3	FACU	Nt P-Forb	MAY APPLE
POLACR	5	Polystichum acrostichoides	5	UPL	Nt Fern	CHRISTMAS FERN
PREALT	5	Prenanthes altissima	3	FACU	Nt P-Forb	TALL WHITE LETTUCE
PRUSER	1	Prunus serotina	3	FACU	Nt Tree	WILD BLACK CHERRY
QUEALB	5	Quercus alba	3	FACU	Nt Tree	WHITE OAK
QUEPRI	7	Quercus prinus	5	UPL	Nt Tree	ROCK CHESTNUT OAK
QUERUB	4	Quercus rubra	3	FACU	Nt Tree	NORTHERN RED OAK
ROSMUL	0	ROSA MULTIFLORA	3	FACU	Ad Shrub	JAPANESE ROSE
SANCAC	2	Sanicula canadensis	2	FACU+	Nt B-Forb	CANADIAN BLACK SNAKEROOT
SASALB	1	Sassafras albidum	3	FACU	Nt Tree	SASSAFRAS
SMIROT	4	Smilax rotundifolia	0	FAC	Nt W-Vine	CAT BRIER
SOLCAE	7	Solidago caesia	3	FACU	Nt P-Forb	BLUESTEM GOLDENROD
STEPUB	7	Stellaria pubera	5	UPL	Nt P-Forb	GREAT CHICKWEED
SYMCOR	5	Symphyotrichum cordifolium	5	UPL	Nt P-Forb	HEART-LEAVED ASTER
THATHA	7	Thalictrum thalictroides	5	UPL	Nt P-Forb	RUE ANEMONE
THENOV	5	Thelypteris noveboracensis	-1	FAC+	Nt Fern	NEW YORK FERN
TILAMA	5	Tilia americana v. americana	3	FACU	Nt Tree	AMERICAN LINDEN
TRIGRA	8	Trillium grandiflorum	5	UPL	Nt P-Forb	LARGE WHITE TRILLIUM
UVUGRA	7	Uvularia grandiflora	5	UPL	Nt P-Forb	LARGE-FLOWER BELLWORT
VACANG	5	Vaccinium angustifolium	3	FACU	Nt Shrub	EARLY LOW BLUEBERRY
VACPAL	5	Vaccinium pallidum	5	UPL	Nt Shrub	LATE LOW BLUEBERRY
VIBACE	8	Viburnum acerifolium	5	UPL	Nt Shrub	MAPLE-LEAVED ARROWWOOD



### Rare plant species survey data form

Date 6/1/2011 County, State Scioto, OH  
 Project PORTSMOUTH BYPASS  
 Target Species: SMALL whorled Pogonia  
 Plot ID: A Plot Size: 1/2 ACRE +/-  
 Coordinates: 38° 47' 51.92" N, 82° 51' 50.89" W  
 Investigator(s): LEN MIKES / RICK PAUL  
 Survey Begin Time: 2:26 pm Survey End Time: 3:32 pm

Slope Position (U, M, L): \_\_\_\_\_ Slope Angle (~~°~~): 30° +/-  
 Slope Aspect:        N    NE    E    SE    S    SW    (W)    NW

Soil Description to 12 inches:

Depth (inches)	Layer	Matrix Color	Mottle Color	Mottle Abundance	Texture/Notes
1"	Litter				
1"-4"	A	10YR 5/6	/	/	LOAM
4"+					Rocky

General Site Description/Notes:

General Forest condition is tract with several mature 2nd growth trees (*Acer saccharum* & *Quercus prinus*). *Fagus grandifolia*, *Nyssa sylvatica* in understory. Many *Isoetes* Associates observed. *Vaccinium pallidum*, *Melicope virginiana*, *Thelypteris noveboracensis*, and *Goodyera pubescens* were found.

Plot located midslope near an ephemeral channel.











Site: SCI-823, Isotria medeoloides Plot A  
 Locale: Portsmouth, Scioto County, Ohio  
 By: Len Mikles, Jason Earley, & Richard Paul  
 File: c:\FQA\studies\SCI-823\Iso Plot A.inv

FLORISTIC QUALITY DATA		Native		Adventive			
37	NATIVE SPECIES	Tree	12	30.8%	Tree	0	0.0%
39	Total Species	Shrub	3	7.7%	Shrub	1	2.6%
5.4	NATIVE MEAN C	W-Vine	2	5.1%	W-Vine	1	2.6%
5.1	W/Adventives	H-Vine	2	5.1%	H-Vine	0	0.0%
32.9	NATIVE FQI	P-Forb	13	33.3%	P-Forb	0	0.0%
32.0	W/Adventives	B-Forb	1	2.6%	B-Forb	0	0.0%
2.9	NATIVE MEAN W	A-Forb	0	0.0%	A-Forb	0	0.0%
2.9	W/Adventives	P-Grass	0	0.0%	P-Grass	0	0.0%
AVG: Fac. Upland		A-Grass	0	0.0%	A-Grass	0	0.0%
		P-Sedge	1	2.6%	P-Sedge	0	0.0%
		A-Sedge	0	0.0%	A-Sedge	0	0.0%
		Fern	3	7.7%	Fern	0	0.0%

ACRONYM	C SCIENTIFIC NAME	W WETNESS	PHYSIOGNOMY	COMMON NAME
ACERUR	5 Acer rubrum v. rubrum	0 FAC	Nt Tree	RED MAPLE
ACESAS	4 Acer saccharum s. saccharum	3 FACU	Nt Tree	SUGAR MAPLE
ADIPED	7 Adiantum pedatum	1 FAC-	Nt Fern	MAIDENHAIR FERN
AMPBRB	5 Amphicarpaea bracteata v. bracteata	0 FAC	Nt H-Vine	HOG PEANUT
CXDIGI	7 Carex digitalis	5 UPL	Nt P-Sedge	NARROW-LEAVED WOOD SEDGE
COLCAN	8 Collinsonia canadensis	0 FAC	Nt P-Forb	CITRONELLA HORSE BALM
DIOQUA	5 Dioscorea quaternata	3 FACU	Nt H-Vine	FOUR-LEAF WILD YAM
FAGGRA	8 Fagus grandifolia	3 FACU	Nt Tree	AMERICAN BEECH
GALCIC	7 Galium circaeazans v. circaeazans	4 FACU-	Nt P-Forb	SMOOTH WILD LICORICE
GERMAC	4 Geranium maculatum	3 FACU	Nt P-Forb	WILD GERANIUM
GOOPUB	5 Goodyera pubescens	0 FAC	Nt P-Forb	RATTLESNAKE PLANTAIN
IRICRI	7 Iris cristata	5 UPL	Nt P-Forb	DWARF CRESTED IRIS
LINBEN	5 Lindera benzoin	-5 OBL	Nt Shrub	HAIRY SPICEBUSH
LIRTUL	4 Liriodendron tulipifera	2 FACU+	Nt Tree	TULIP POPLAR
LONJAP	0 LONICERA JAPONICA	3 FACU	Ad W-Vine	JAPANESE HONEYSUCKLE
MEDVIR	7 Medeola virginiana	5 UPL	Nt P-Forb	INDIAN CUCUMBER ROOT
NYSSYS	5 Nyssa sylvatica	5 UPL	Nt Tree	BLACK GUM
OSTVIR	5 Ostrya virginiana	4 FACU-	Nt Tree	HOP HORNBEAM
OXYARB	8 Oxydendron arboreum	3 FACU	Nt Tree	SOURWOOD
PANQUI	7 Panax quinquefolius	5 UPL	Nt P-Forb	GINSENG
PARQUI	2 Parthenocissus quinquefolia	1 FAC-	Nt W-Vine	VIRGINIA CREEPER
POLACR	5 Polystichum acrostichoides	5 UPL	Nt Fern	CHRISTMAS FERN
PREALT	5 Prenanthes altissima	3 FACU	Nt P-Forb	TALL WHITE LETTUCE
PRUSER	1 Prunus serotina	3 FACU	Nt Tree	WILD BLACK CHERRY
QUEALB	5 Quercus alba	3 FACU	Nt Tree	WHITE OAK
QUEPRI	7 Quercus prinus	5 UPL	Nt Tree	ROCK CHESTNUT OAK
ROSMUL	0 ROSA MULTIFLORA	3 FACU	Ad Shrub	JAPANESE ROSE
SANCAC	2 Sanicula canadensis	2 FACU+	Nt B-Forb	CANADIAN BLACK SNAKEROOT
SASALB	1 Sassafras albidum	3 FACU	Nt Tree	SASSAFRAS
SMIROT	4 Smilax rotundifolia	0 FAC	Nt W-Vine	CAT BRIER
SOLCAE	7 Solidago caesia	3 FACU	Nt P-Forb	BLUESTEM GOLDENROD
SYMCOR	5 Symphyotrichum cordifolium	5 UPL	Nt P-Forb	HEART-LEAVED ASTER
THATHA	7 Thalictrum thalictroides	5 UPL	Nt P-Forb	RUE ANEMONE
THENOV	5 Thelypteris noveboracensis	-1 FAC+	Nt Fern	NEW YORK FERN
TILAMA	5 Tilia americana v. americana	3 FACU	Nt Tree	AMERICAN LINDEN
TRIGRA	8 Trillium grandiflorum	5 UPL	Nt P-Forb	LARGE WHITE TRILLIUM
VACPAL	5 Vaccinium pallidum	5 UPL	Nt Shrub	LATE LOW BLUEBERRY
VIBACE	8 Viburnum acerifolium	5 UPL	Nt Shrub	MAPLE-LEAVED ARROWWOOD
VIOPAA	5 Viola palmata	5 UPL	Nt P-Forb	CLEFT VIOLET