

P:\2015\153-230-GIS\Maps\RBC\153230 RBC Figure 4_19.mxd - 9/23/2016 - 11:29:07 AM (jvanskaik)



SOURCE: USDA FSA NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP) HAMILTON COUNTY MOSAIC. IMAGE DATE: 2015.
SOURCE: CAGIS 2-FOOT INTERVAL ELEVATION CONTOURS.

- Proposed Replacement Pipeline
- Variable Width Study Corridor
- Potential Running Buffalo Clover Habitat
- Voucher Specimen Location with Photograph Number
- Delineated Wetland**
- Palustrine Emergent (PEM)
- Palustrine Forested (PFO)
- Wetland Determination Sample Point Location
- Ohio River or Backwater Area
- Existing Culvert
- 2-Foot Contour Interval
- Photograph Location and Direction



Civil & Environmental Consultants, Inc.
5899 Montclair Boulevard - Cincinnati, OH 45150
513-985-0226 - 800-759-5614
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DUKE ENERGY
LINE D000B PIPELINE REPLACEMENT PROJECT
CINCINNATI, HAMILTON COUNTY, OHIO

RUNNING BUFFALO CLOVER SURVEY MAP

NOTES: FULL EXTENT OF STUDY CORRIDOR IS WITHIN 100-YEAR FLOODPLAIN.
NO STREAMS OR WATERBODIES WERE IDENTIFIED WITHIN THE STUDY CORRIDOR.



DRAWN BY: DMG	CHECKED BY: JAV	APPROVED BY: JAV*	FIGURE NO: 14
DATE: SEPTEMBER 23, 2016	DWG SCALE: 1" = 75'	PROJECT NO: 153-230	

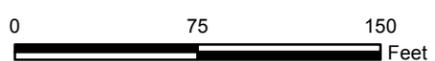
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RUNNING BUFFALO CLOVER SURVEY MAP		FIGURE NO: 15	
DRAWN BY: DMG DATE: SEPTEMBER 23, 2016	CHECKED BY: JAV DWG SCALE: 1" = 75'	APPROVED BY: JAV* PROJECT NO: 153-230	FIGURE NO: 15

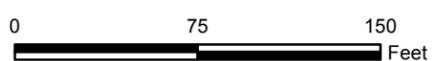
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SOURCE: USDA FSA NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP) HAMILTON COUNTY MOSAIC. IMAGE DATE: 2015.
SOURCE: CAGIS 2-FOOT INTERVAL ELEVATION CONTOURS.

- Proposed Replacement Pipeline
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- Potential Running Buffalo Clover Habitat
- Voucher Specimen Location with Photograph Number
- Palustrine Emergent (PEM)
- Palustrine Forested (PFO)
- Wetland Determination Sample Point Location
- Ohio River or Backwater Area
- Existing Culvert
- 2-Foot Contour Interval
- ↗ Photograph Location and Direction



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Civil & Environmental Consultants, Inc. 5899 Montclair Boulevard - Cincinnati, OH 45150 513-985-0226 - 800-759-5614 www.cecinc.com		RUNNING BUFFALO CLOVER SURVEY MAP	
DRAWN BY: DMG DATE: SEPTEMBER 23, 2016	CHECKED BY: JAV DWG SCALE: 1" = 75'	APPROVED BY: JAV* PROJECT NO: 153-230	FIGURE NO: 16

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SOURCE: USDA FSA NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP) HAMILTON COUNTY MOSAIC. IMAGE DATE: 2015.
SOURCE: CAGIS 2-FOOT INTERVAL ELEVATION CONTOURS.

- | | | |
|--|---|-----------------------------------|
| Proposed Replacement Pipeline | Delineated Wetland | Existing Culvert |
| Variable Width Study Corridor | Palustrine Emergent (PEM) | 2-Foot Contour Interval |
| Potential Running Buffalo Clover Habitat | Palustrine Forested (PFO) | Photograph Location and Direction |
| Voucher Specimen Location with Photograph Number | Wetland Determination Sample Point Location | NORTH |
| | Ohio River or Backwater Area | |

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RUNNING BUFFALO CLOVER SURVEY MAP

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DRAWN BY: DMG	CHECKED BY: JAV	APPROVED BY: JAV*	FIGURE NO: 17
DATE: SEPTEMBER 23, 2016	DWG SCALE: 1" = 75'	PROJECT NO: 153-230	

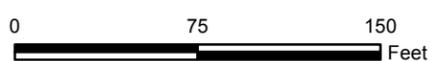
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Civil & Environmental Consultants, Inc. 5899 Montclair Boulevard - Cincinnati, OH 45150 513-985-0226 - 800-759-5614 www.cecinc.com		RUNNING BUFFALO CLOVER SURVEY MAP	
DRAWN BY: DMG DATE: SEPTEMBER 23, 2016	CHECKED BY: JAV DWG SCALE: 1" = 75'	APPROVED BY: JAV* PROJECT NO: 153-230	FIGURE NO: 18

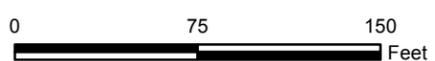
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SOURCE: USDA FSA NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP) HAMILTON COUNTY MOSAIC. IMAGE DATE: 2015.
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DRAWN BY: DMG DATE: SEPTEMBER 23, 2016	CHECKED BY: JAV DWG SCALE: 1" = 75'	APPROVED BY: JAV* PROJECT NO: 153-230	FIGURE NO: <div style="font-size: 24pt; font-weight: bold; text-align: center;">19</div>

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APPENDIX A

PHOTOGRAPHS

APPENDIX A-1

**REFERENCE POPULATION –
DINSMORE WOODS STATE NATURE PRESERVE**



Photograph 1. RBC reference specimen from the Dinsmore Woods State Nature Preserve in Boone County, Kentucky. Note the opposite leaflets on the flowering stem.

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Cincinnati, Hamilton County, Ohio
CEC Project 153-230
Photographed on May 6, 2016



Photograph 2. Another view of RBC reference specimens from the Dinsmore Woods State Nature Preserve. Note the presence of stipules, an identifying characteristic.

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CEC Project 153-230
Photographed on May 6, 2016



Photograph 3. Comparison of RBC look-alike white clover to running buffalo clover at the Dinsmore Woods State Nature Preserve.



Photograph 4. RBC reference population habitat at the Dinsmore Woods State Nature Preserve.

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Cincinnati, Hamilton County, Ohio
CEC Project 153-230
Photographed on May 6, 2016



Photograph 5. RBC reference population habitat at the Dinsmore Woods State Nature Preserve.

Line D000B Pipeline Replacement Project
Cincinnati, Hamilton County, Ohio
CEC Project 153-230
Photographed on May 6, 2016

APPENDIX A-2

SITE PHOTOGRAPHS



Photograph 6. View of maintained Line D000B ROW, south of proposed southern terminus of Project. Photograph taken facing south-southeast.



Photograph 7. View of existing Line D000B ROW at the southern terminus of study corridor. Photograph taken facing south.

Line D000B Pipeline Replacement Project
Cincinnati, Hamilton County, Ohio
CEC Project 153-230
Photographed on May 16, 18 and 19, 2016



Photograph 8. Representative view of the PEM portion of Wetland 1. Photograph taken facing north-northwest along existing, maintained utility ROW.



Photograph 9. Common yellow oxalis (*Oxalis stricta*) voucher specimen.

Line D000B Pipeline Replacement Project
Cincinnati, Hamilton County, Ohio
CEC Project 153-230
Photographed on May 16, 18 and 19, 2016



Photograph 10. White clover voucher specimen.



Photograph 11. View of the PFO portion of Wetland 1 along the west side of the Line D000B ROW near the southern terminus of the Project.
Photograph taken facing west.

Line D000B Pipeline Replacement Project
Cincinnati, Hamilton County, Ohio
CEC Project 153-230
Photographed on May 16, 18 and 19, 2016



Photograph 12. Representative view of elevated and maintained ROW, bisecting Wetland 1 at wetland determination SP-6. Photograph taken facing south.



Photograph 13. Representative view of elevated and maintained Line D000B ROW, bisecting Wetland 1. Photograph taken facing north.

Line D000B Pipeline Replacement Project
Cincinnati, Hamilton County, Ohio
CEC Project 153-230
Photographed on May 16, 18 and 19, 2016



Photograph 14. White and red clover (*Trifolium pratense*) voucher specimens.



Photograph 15. Elevated view of existing bermed, maintained Line D000B ROW, bisecting Wetland 1. Photograph taken facing south.

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Cincinnati, Hamilton County, Ohio
CEC Project 153-230
Photographed on May 16, 18 and 19, 2016



Photograph 16. View of white clover and other herbaceous vegetation growing along trail or two track that is located on an embankment that formerly functioned as railroad corridor, facing southwest.



Photograph 17. View of the PEM portion of Wetland 2, facing south.

Line D000B Pipeline Replacement Project
Cincinnati, Hamilton County, Ohio
CEC Project 153-230
Photographed on May 16, 18 and 19, 2016



Photograph 18. View of maintained Line D000B ROW, east of Four Seasons Marina.
Photograph taken facing south-southeast.



Photograph 19. View of maintained Line D000B ROW, along Kellogg Avenue Park and Stites Road. Photograph taken facing east-northeast.

Line D000B Pipeline Replacement Project
Cincinnati, Hamilton County, Ohio
CEC Project 153-230
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Photograph 20. View of dense Amur honeysuckle in wooded area along Anchorage Road.



Photograph 21. View of mowed park habitat receiving filtered sunlight and periodic disturbance along east side of Humbert Avenue. Photograph taken facing north-northwest.

Line D000B Pipeline Replacement Project
Cincinnati, Hamilton County, Ohio
CEC Project 153-230
Photographed on May 16, 18 and 19, 2016



Photograph 22. View of groundcover from mowed park habitat along east side of Humbert Avenue.



Photograph 23. Another view of mowed park habitat along east side of Humbert Avenue. Photograph taken facing east.

Line D000B Pipeline Replacement Project
Cincinnati, Hamilton County, Ohio
CEC Project 153-230
Photographed on May 16, 18 and 19, 2016



Photograph 24. View of trail and mowed park habitat on west side of Strader Avenue. Photograph taken facing north-northwest.



Photograph 25. View of mowed park habitat with filtered sunlight on the west side of Strader Avenue. Photograph taken facing north.

Line D000B Pipeline Replacement Project
Cincinnati, Hamilton County, Ohio
CEC Project 153-230
Photographed on May 16, 18 and 19, 2016



Photograph 26. View of mowed park habitat with filtered sunlight at Schmidt Recreation Complex. Photograph taken facing south-southwest.

Line D000B Pipeline Replacement Project
Cincinnati, Hamilton County, Ohio
CEC Project 153-230
Photographed on May 16, 18 and 19, 2016

APPENDIX B

**COUNTY DISTRIBUTION OF FEDERALLY-LISTED THREATENED,
ENDANGERED, PROPOSED, AND CANDIDATE SPECIES IN
HAMILTON COUNTY, OHIO**

Excerpt from September 2016 USFWS State of Ohio County Distribution List of Federally-Listed Threatened, Endangered, Proposed, and Candidate Species

	Rayed bean (<i>Villosa fabalis</i>)	Endangered	Smaller, headwater creeks, but they are sometimes found in large rivers
	Snuffbox (<i>Epioblasma triquetra</i>)	Endangered	Small to medium-sized creeks and some larger rivers, in areas with a swift current
Guernsey	Indiana bat (<i>Myotis sodalis</i>)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat <i>Myotis septentrionalis</i>	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
Hamilton	Indiana bat (<i>Myotis sodalis</i>)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat <i>Myotis septentrionalis</i>	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Fanshell (<i>Cypragenia stegaria</i>) (= <i>C. irrorata</i>)	Endangered	Found in areas of packed sand and gravel at locations in a good current
	Pink mucket pearl mussel (<i>Lampsilis abrupta</i>)	Endangered	The lower Ohio River and its larger tributaries
	Rayed bean (<i>Villosa fabalis</i>)	Endangered	Smaller, headwater creeks, but they are sometimes found in large rivers
	Sheepnose (<i>Plethobasus cyphus</i>)	Endangered	Shallow areas in larger rivers and streams
	Snuffbox (<i>Epioblasma triquetra</i>)	Endangered	Small to medium-sized creeks and some larger rivers, in areas with a swift current
	Running buffalo clover (<i>Trifolium stoloniferum</i>)	Endangered	Disturbed bottomland meadows; disturbed sites that have shade during part of each day
Hancock	Indiana bat (<i>Myotis sodalis</i>)	Endangered	Hibernacula = Caves and mines; maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat <i>Myotis septentrionalis</i>	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Clubshell (<i>Pleurobema clava</i>)	Endangered	Found in coarse sand and gravel areas of runs and riffles within streams and small rivers
	Rayed bean (<i>Villosa fabalis</i>)	Endangered	Smaller, headwater creeks, but they are sometimes found in large rivers
Hardin	Indiana bat (<i>Myotis sodalis</i>)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests

APPENDIX C

RUNNING BUFFALO CLOVER SCHEMATIC

Running Buffalo Clover Schematic

