	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Copperbelly water snake *(Nerodia erythrogaster neglecta)*	Threatened	Wooded and permanently wet areas such as oxbows, sloughs, brushy ditches and floodplain woods
	Eastern massasauga *(Sistrurus catenatus)*	Proposed as Threatened	Wetlands and adjacent uplands
	Clubshell *(Pleurobema clava)*	Endangered	Found in coarse sand and gravel areas of runs and riffles within streams and small rivers
	Rayed bean (*Villosa fabalis*)	Endangered	Smaller, headwater creeks, but they are sometimes found in large rivers
Harrison	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
Henry	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
Highland	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
Hocking	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Northern monkshood *(Aconitum noveboracense)*	Threatened	Cool, moist, shaded cliff faces or talus slopes in wooded ravines, near water seeps
	American burying beetle *(Nicrophorus americanus*)	Endangered	
	Running buffalo clover *(Trifolium stoloniferum)*	Endangered	Disturbed bottomland meadows; disturbed sites that have shade during part of each day
	Small whorled pogonia *(Isotria medeoloides*)	Threatened	Dry woodland; upland sites in mixed forests (second or third growth stage)
Holmes	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests

	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Eastern prairie fringed orchid *(Platanthera leucophaea)*	Threatened	Mesic to wet prairies and meadows
Huron	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Eastern massasauga *(Sistrurus catenatus)*	Proposed as Threatened	Wetlands and adjacent uplands
Jackson	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Running buffalo clover *(Trifolium stoloniferum)*	Endangered	Disturbed bottomland meadows; disturbed sites that have shade during part of each day
Jefferson	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
Knox	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
Lake	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Kirtland's warbler (*Dendroica kirtlandii*)	Endangered	Kirtland's warblers are known to migrate along the Lake Erie shoreline counties (Ashtabula, Cuyahoga, Erie, Lake, Lorain, Lucas, Ottawa, Sandusky counties) through Ohio in late April-May and late August-early October.
	Piping plover *(Charadrius melodus)*	Endangered	Beaches along shorelines of the Great Lakes
	Piping plover *(Charadrius melodus)*	Critical Habitat Designated	

	Red Knot (Rufa) *Calidris canutus rufa*	Threatened	Present in Ohio during spring and fall migration
	Snuffbox (*Epioblasma triquetra*)	Endangered	Small to medium-sized creeks and some larger rivers, in areas with a swift current
Lawrence	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	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 *(Cyprogenia stegaria)* *(=C. irrorata)*	Endangered	Found in areas of packed sand and gravel at locations in a good current
	Pink mucket pearlymussel *(Lampsilis abrupta)*	Endangered	The lower Ohio River and its larger tributaries
	Sheepnose (*Plethobasus cyphyus*)	Endangered	Shallow areas in larger rivers and streams
	Snuffbox (*Epioblasma triquetra*)	Endangered	Small to medium-sized creeks and some larger rivers, in areas with a swift current
	Running buffalo clover *(Trifolium stoloniferum)*	Endangered	Disturbed bottomland meadows; disturbed sites that have shade during part of each day
Licking	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Eastern massasauga *(Sistrurus catenatus)*	Proposed as Threatened	Wetlands and adjacent uplands
Logan	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Eastern massasauga *(Sistrurus catenatus)*	Proposed as Threatened	Wetlands and adjacent uplands
	Rayed bean (*Villosa fabalis*)	Endangered	Smaller, headwater creeks, but they are sometimes found in large rivers
Lorain	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests

	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Kirtland's warbler (*Dendroica kirtlandii*)	Endangered	Kirtland's warblers are known to migrate along the Lake Erie shoreline counties (Ashtabula, Cuyahoga, Erie, Lake, Lorain, Lucas, Ottawa, Sandusky counties) through Ohio in late April-May and late August-early October.
	Piping plover *(Charadrius melodus)*	Endangered	Beaches along shorelines of the Great Lakes
	Red Knot (Rufa) *Calidris canutus rufa*	Threatened	Present in Ohio during spring and fall migration
Lucas	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Kirtland's warbler (*Dendroica kirtlandii*)	Endangered	Kirtland's warblers are known to migrate along the Lake Erie shoreline counties (Ashtabula, Cuyahoga, Erie, Lake, Lorain, Lucas, Ottawa, Sandusky counties) through Ohio in late April-May and late August-early October.
	Piping plover *(Charadrius melodus)*	Endangered	Beaches along shorelines of the Great Lakes
	Red Knot (Rufa) *Calidris canutus rufa*	Threatened	Present in Ohio during spring and fall migration
	Eastern massasauga *(Sistrurus catenatus)*	Proposed as Threatened	Wetlands and adjacent uplands
	Karner blue butterfly *(Lycaeides melissa samuelis*)	Endangered	Pine barrens and oak savannas on sandy soils and containing wild lupines *(Lupinus perennis)*, the only known food plant of larvae.
	Rusty patched bumble bee *Bombus affinis*	Proposed as Endangered	Grasslands with flowering plants from April through October, underground and abandoned rodent cavities or clumps of grasses above ground as nesting sites, and undisturbed soil for hibernating queens to overwinter.
	Rayed bean (*Villosa fabalis*)	Endangered	Smaller, headwater creeks, but they are sometimes found in large rivers
	Eastern prairie fringed orchid *(Platanthera leucophaea)*	Threatened	Mesic to wet prairies and meadows
Madison	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Scioto madtom *(Noturus trautmani)*	Endangered	Stream riffles of moderate flow over sandy gravel bottom
	Clubshell *(Pleurobema clava*)	Endangered	Found in coarse sand and gravel areas of runs and riffles within streams and small rivers

	Northern riffleshell *(Epioblasma torulosa rangiana*)	Endangered	Large streams and small rivers in firm sand of riffle areas; also occurs in Lake Erie
	Rabbitsfoot *Quadrula cylindrica cylindrica*	Threatened	
	Rabbitsfoot *Quadrula cylindrica cylindrica*	Critical Habitat	Little Darby Creek
	Rayed bean (*Villosa fabalis*)	Endangered	Smaller, headwater creeks, but they are sometimes found in large rivers
	Snuffbox (*Epioblasma triquetra*)	Endangered	Small to medium-sized creeks and some larger rivers, in areas with a swift current
Mahoning	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Eastern massasauga *(Sistrurus catenatus)*	Proposed as Threatened	Wetlands and adjacent uplands
Marion	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Eastern massasauga *(Sistrurus catenatus)*	Proposed as Threatened	Wetlands and adjacent uplands
	Rayed bean (*Villosa fabalis*)	Endangered	Smaller, headwater creeks, but they are sometimes found in large rivers
Medina	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
Meigs	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	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 *(Cyprogenia stegaria (=C. irrorata)*	Endangered	Found in areas of packed sand and gravel at locations in a good current
	Pink mucket pearlymussel *(Lampsilis abrupta)*	Endangered	The lower Ohio River and its larger tributaries

	Sheepnose (*Plethobasus cyphyus*)	Endangered	Shallow areas in larger rivers and streams
	Snuffbox (*Epioblasma triquetra*)	Endangered	Small to medium-sized creeks and some larger rivers, in areas with a swift current
Mercer	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
Miami	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Rayed bean (*Villosa fabalis*)	Endangered	Smaller, headwater creeks, but they are sometimes found in large rivers
	Snuffbox (*Epioblasma triquetra*)	Endangered	Small to medium-sized creeks and some larger rivers, in areas with a swift current
Monroe	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
Montgomery	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Eastern massasauga *(Sistrurus catenatus)*	Proposed as Threatened	Wetlands and adjacent uplands
	Rayed bean (*Villosa fabalis*)	Endangered	Smaller, headwater creeks, but they are sometimes found in large rivers
	Snuffbox (*Epioblasma triquetra*)	Endangered	Small to medium-sized creeks and some larger rivers, in areas with a swift current

Morgan	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	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 *(Cyprogenia stegaria) (=C. irrorata)*	Endangered	Found in areas of packed sand and gravel at locations in a good current
	Pink mucket pearlymussel *(Lampsilis abrupta)*	Endangered	The lower Ohio River and its larger tributaries
	Sheepnose (*Plethobasus cyphyus*)	Endangered	Shallow areas in larger rivers and streams
	Snuffbox (*Epioblasma triquetra*)	Endangered	Small to medium-sized creeks and some larger rivers, in areas with a swift current
	American burying beetle *(Nicrophorus americanus*)	Endangered	
Morrow	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
Muskingum	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	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 *(Cyprogenia stegaria) (=C. irrorata)*	Endangered	Found in areas of packed sand and gravel at locations in a good current
	Rabbitsfoot *Quadrula cylindrica cylindrica*	Threatened	Muskingum River
	Sheepnose (*Plethobasus cyphyus*)	Endangered	Shallow areas in larger rivers and streams
	Snuffbox (*Epioblasma triquetra*)	Endangered	Small to medium-sized creeks and some larger rivers, in areas with a swift current
Noble	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.

Ottawa	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Kirtland's warbler (*Dendroica kirtlandii*)	Endangered	Kirtland's warblers are known to migrate along the Lake Erie shoreline counties (Ashtabula, Cuyahoga, Erie, Lake, Lorain, Lucas, Ottawa, Sandusky counties) through Ohio in late April-May and late August-early October.
	Piping plover *(Charadrius melodus)*	Endangered	Beaches along shorelines of the Great Lakes
	Red Knot (Rufa) *Calidris canutus rufa*	Threatened	Present in Ohio during spring and fall migration
	Eastern massasauga *(Sistrurus catenatus)*	Proposed as Threatened	Wetlands and adjacent uplands
	Eastern prairie fringed orchid *(Platanthera leucophaea)*	Threatened	Mesic to wet prairies and meadows
	Lakeside daisy *(Hymenoxys herbacea*) (Formerly *H. acaulis) var. glabra*)	Threatened	Dry rocky prairies; limestone rock surfaces including outcrops and quarries
Paulding	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
Perry	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	American burying beetle *(Nicrophorus americanus*)	Endangered	
Pickaway	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Scioto madtom *(Noturus trautmani)*	Endangered	Stream riffles of moderate flow over sandy gravel bottom
	Clubshell *(Pleurobema clava)*	Endangered	Found in coarse sand and gravel areas of runs and riffles within streams and small rivers
	Northern riffleshell *(Epioblasma torulosa rangiana*)	Endangered	Large streams and small rivers in firm sand of riffle areas; also occurs in Lake Erie

	Rabbitsfoot *(Quadrula cylindrica cylindrica*)	Threatened	
	Rayed bean (*Villosa fabalis*)	Endangered	Smaller, headwater creeks, but they are sometimes found in large rivers
	Snuffbox (*Epioblasma triquetra*)	Endangered	Small to medium-sized creeks and some larger rivers, in areas with a swift current
Pike	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	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 *(Pleurobema clava)*	Endangered	Found in coarse sand and gravel areas of runs and riffles within streams and small rivers
	Northern riffleshell *(Epioblasma torulosa rangiana*)	Endangered	Large streams and small rivers in firm sand of riffle areas; also occurs in Lake Erie
	Rayed bean (*Villosa fabalis*)	Endangered	Smaller, headwater creeks, but they are sometimes found in large rivers
Portage	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Eastern massasauga *(Sistrurus catenatus)*	Proposed as Threatened	Wetlands and adjacent uplands
	Mitchell's satyr butterfly *(Neonympha mitchellii mitchellii)*	Endangered	Fens; wetlands characterized by calcareous soils which are fed by carbonate-rich water from seeps and springs
	Northern monkshood *(Aconitum noveboracense)*	Threatened	Cool, moist, shaded cliff faces or talus slopes in wooded ravines, near water seeps
Preble	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Eastern massasauga *(Sistrurus catenatus)*	Proposed as Threatened	Wetlands and adjacent uplands
Putnam	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests

	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
Richland	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Eastern massasauga *(Sistrurus catenatus)*	Proposed as Threatened	Wetlands and adjacent uplands
Ross	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	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 *(Pleurobema clava)*	Endangered	Found in coarse sand and gravel areas of runs and riffles within streams and small rivers
	Northern riffleshell *(Epioblasma torulosa rangiana*)	Endangered	Large streams and small rivers in firm sand of riffle areas; also occurs in Lake Erie
	Rayed bean (*Villosa fabalis*)	Endangered	Smaller, headwater creeks, but they are sometimes found in large rivers
	Snuffbox (*Epioblasma triquetra*)	Endangered	Small to medium-sized creeks and some larger rivers, in areas with a swift current
	Running buffalo clover *(Trifolium stoloniferum)*	Endangered	Disturbed bottomland meadows; disturbed sites that have shade during part of each day
Sandusky	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Kirtland's warbler (*Dendroica kirtlandii*)	Endangered	Kirtland's warblers are known to migrate along the Lake Erie shoreline counties (Ashtabula, Cuyahoga, Erie, Lake, Lorain, Lucas, Ottawa, Sandusky counties) through Ohio in late April-May and late August-early October.
	Piping plover *(Charadrius melodus)*	Endangered	Beaches along shorelines of the Great Lakes
	Red Knot (Rufa) *Calidris canutus rufa*	Threatened	Present in Ohio during spring and fall migration
	Eastern massasauga *(Sistrurus catenatus)*	Proposed as Threatened	Wetlands and adjacent uplands
	Eastern prairie fringed orchid *(Platanthera leucophaea)*	Threatened	Mesic to wet prairies and meadows

Scioto	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	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 *(Pleurobema clava)*	Endangered	Found in coarse sand and gravel areas of runs and riffles within streams and small rivers
	Fanshell *(Cyprogenia stegaria) (=C. irrorata)*	Endangered	Found in areas of packed sand and gravel at locations in a good current
	Northern riffleshell *(Epioblasma torulosa rangiana*)	Endangered	Large streams and small rivers in firm sand of riffle areas; also occurs in Lake Erie
	Pink mucket *(Lampsilis abrupta)*	Endangered	The lower Ohio River and its larger tributaries
	Rayed bean (*Villosa fabalis*)	Endangered	Smaller, headwater creeks, but they are sometimes found in large rivers
	Sheepnose (*Plethobasus cyphyus*)	Endangered	Shallow areas in larger rivers and streams
	Snuffbox (*Epioblasma triquetra*)	Endangered	Small to medium-sized creeks and some larger rivers, in areas with a swift current
	Running buffalo clover *(Trifolium stoloniferum)*	Endangered	Disturbed bottomland meadows; disturbed sites that have shade during part of each day
	Small whorled pogonia *(Isotria medeoloides*)	Threatened	Dry woodland; upland sites in mixed forests (second or third growth stage)
	Virginia spiraea *(Spirea virginiana*)	Threatened	Streambanks and floodplains
Seneca	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
Shelby	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Rayed bean (*Villosa fabalis*)	Endangered	Smaller, headwater creeks, but they are sometimes found in large rivers
Stark	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests

	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
Summit	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Northern monkshood *(Aconitum noveboracense*)	Threatened	Cool, moist, shaded cliff faces or talus slopes in wooded ravines, near water seeps
Trumbull	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Eastern massasauga *(Sistrurus catenatus)*	Proposed as Threatened	Wetlands and adjacent uplands
	Clubshell *(Pleurobema clava)*	Endangered	Found in coarse sand and gravel areas of runs and riffles within streams and small rivers
Tuscarawas	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
Union	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Scioto madtom *(Noturus trautmani)*	Endangered	Stream riffles of moderate flow over sandy gravel bottom
	Clubshell *(Pleurobema clava)*	Endangered	Found in coarse sand and gravel areas of runs and riffles within streams and small rivers
	Northern riffleshell *(Epioblasma torulosa rangiana*)	Endangered	Large streams and small rivers in firm sand of riffle areas; also occurs in Lake Erie
	Rabbitsfoot *Quadrula cylindrica cylindrica*	Threatened	
	Rabbitsfoot *Quadrula cylindrica cylindrica*	Critical Habitat	Little Darby Creek
	Rayed bean (*Villosa fabalis*)	Endangered	Smaller, headwater creeks, but they are sometimes found in large rivers

	Snuffbox (*Epioblasma triquetra*)	Endangered	Small to medium-sized creeks and some larger rivers, in areas with a swift current
Van Wert	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
Vinton	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	American burying beetle *(Nicrophorus americanus*)	Endangered	
	Running buffalo clover *(Trifolium stoloniferum)*	Endangered	Disturbed bottomland meadows; disturbed sites that have shade during part of each day
Warren	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Eastern massasauga *(Sistrurus catenatus)*	Proposed as Threatened	Wetlands and adjacent uplands
	Rayed bean (*Villosa fabalis*)	Endangered	Smaller, headwater creeks, but they are sometimes found in large rivers
	Running buffalo clover *(Trifolium stoloniferum)*	Endangered	Disturbed bottomland meadows; disturbed sites that have shade during part of each day
Washington	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	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 *(Cyprogenia stegaria) (=C. irrorata)*	Endangered	Found in areas of packed sand and gravel at locations in a good current
	Pink mucket pearlymussel *(Lampsilis abrupta)*	Endangered	The lower Ohio River and its larger tributaries
	Sheepnose (*Plethobasus cyphyus*)	Endangered	Shallow areas in larger rivers and streams

	Snuffbox (*Epioblasma triquetra*)	Endangered	Small to medium-sized creeks and some larger rivers, in areas with a swift current
Wayne	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Eastern massasauga *(Sistrurus catenatus)*	Proposed as Threatened	Wetlands and adjacent uplands
	Eastern prairie fringed orchid *(Platanthera leucophaea)*	Threatened	Mesic to wet prairies and meadows
Williams	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
	Copperbelly water snake *(Nerodia erythrogaster neglecta)*	Threatened	Wooded and permanently wet areas such as oxbows, sloughs, brushy ditches and floodplain woods
	Clubshell *(Pleurobema clava)*	Endangered	Found in coarse sand and gravel areas of runs and riffles within streams and small rivers
	Northern riffleshell *(Epioblasma torulosa rangiana*)	Endangered	Large streams and small rivers in firm sand of riffle areas; also occurs in Lake Erie
	Rabbitsfoot *Quadrula cylindrica cylindrica*	Threatened	
	Rabbitsfoot *Quadrula cylindrica cylindrica*	Critical Habitat	Fish Creek
	Rayed bean (*Villosa fabalis*)	Endangered	Smaller, headwater creeks, but they are sometimes found in large rivers
	White cat's paw pearlymussel *(Epioblasma obliquata perobliqua)*	Endangered	Firm sand or gravel riffles in small streams and medium to large rivers
Wood	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.
Wyandot	Indiana bat (*Myotis sodalis*)	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.

	Eastern massasauga *(Sistrurus catenatus)*	Proposed as Threatened	Wetlands and adjacent uplands

ATTACHMENT C

ODNR STATE LISTED WILDLIFE SPECIES FOR HAMILTON COUNTY

HAMILTON COUNTY

State Status	Federal Status	County	Category	Species	CommonName	Sensitive Species	Most Recent Record	FWS
Endangered		**Hamilton**	**Amphibian - Salamander**	**Cryptobranchus alleganiensis alleganiensis**	**Eastern Hellbender**	**Yes**	**1961**	
Endangered		Hamilton	Amphibian - Salamander	Eurycea lucifuga	Cave Salamander	No	2013	
Endangered		Hamilton	Fish	Lepisosteus platostomus	Shortnose Gar	No	2009	
Endangered		Hamilton	Fish	Macrhybopsis hyostoma	Shoal Chub	No	2012	
Endangered		Hamilton	Fish	Noturus stigmosus	Northern Madtom	No	2008	
Endangered		Hamilton	Insect - butterfly	Lycaena helloides	Purplish Copper	No	1917	
Endangered		Hamilton	Insect - butterfly	Speyeria idalia	Regal Fritillary	No	1946	
Endangered		Hamilton	Insect - odonate	Gomphus externus	Plains Clubtail	No	1995	
Endangered		Hamilton	Insect - odonate	Nannothemis bella	Elfin Skimmer	No	2002	
Endangered	Endangered	Hamilton	Invert. - fw bivalve	Cyprogenia stegaria	Fanshell	No	1887	*
Endangered		Hamilton	Invert. - fw bivalve	Ellipsaria lineolata	Butterfly	No	1997	
Endangered		Hamilton	Invert. - fw bivalve	Elliptio crassidens crassidens	Elephant-ear	No	1987	
Endangered	Endangered	Hamilton	Invert. - fw bivalve	Epioblasma obliquata obliquata	Purple Cat's Paw	No	1850	
Endangered	Endangered	Hamilton	Invert. - fw bivalve	Epioblasma torulosa rangiana	Northern Riffleshell	No	1850	
Endangered	Endangered	Hamilton	Invert. - fw bivalve	Epioblasma triquetra	Snuffbox	No	1850	*
Endangered		Hamilton	Invert. - fw bivalve	Fusconaia ebena	Ebonyshell	No	1997	
Endangered		Hamilton	Invert. - fw bivalve	Fusconaia maculata maculata	Long-solid	No	1997	
Endangered		Hamilton	Invert. - fw bivalve	Lampsilis ovata	Sharp-ridged Pocketbook	No	1850	
Endangered		Hamilton	Invert. - fw bivalve	Lampsilis teres	Yellow Sandshell	No	1943	
Endangered	Endangered	Hamilton	Invert. - fw bivalve	Lampsilis abrupta	Pink Mucket	No		*
Endangered		Hamilton	Invert. - fw bivalve	Megalonaias nervosa	Washboard	No	2013	
Endangered	Endangered	Hamilton	Invert. - fw bivalve	Plethobasus cyphyus	Sheepnose	No	1997	
Endangered	Endangered	Hamilton	Invert. - fw bivalve	Pleurobema clava	Clubshell	No	1850	
Endangered		Hamilton	Invert. - fw bivalve	Pleurobema cordatum	Ohio Pigtoe	No	1997	
Endangered		Hamilton	Invert. - fw bivalve	Pleurobema rubrum	Pyramid Pigtoe	No	1879	
Endangered	Threatened	Hamilton	Invert. - fw bivalve	Quadrula cylindrica cylindrica	Rabbitsfoot	No	1850	
Endangered		Hamilton	Invert. - fw bivalve	Quadrula metanevra	Monkeyface	No	1997	
Endangered		Hamilton	Invert. - fw bivalve	Quadrula nodulata	Wartyback	No	2013	
Endangered	Endangered	Hamilton	Invert. - fw bivalve	Villosa fabalis	Rayed Bean	No		*
Endangered	**Endangered**	**Hamilton**	**Mammal**	**Myotis sodalis**	**Indiana Myotis**	**Yes**		*
Threatened		Hamilton	Fish	Cycleptus elongatus	Blue Sucker	No	2010	
Threatened		Hamilton	Fish	Notropis boops	Bigeye Shiner	No	2012	
Threatened		Hamilton	Fish	Noturus eleutherus	Mountain Madtom	No	2013	
Threatened		Hamilton	Fish	Percina copelandi	Channel Darter	No	1996	
Threatened		Hamilton	Fish	Percina shumardi	River Darter	No	2009	
Threatened		Hamilton	Fish	Polyodon spathula	Paddlefish	No	1992	
Threatened		Hamilton	Invert. - decapod	Orconectes (Rhoadesius) sloanii	Sloan's Crayfish	No	1995	
Threatened		Hamilton	Invert. - fw bivalve	Ligumia recta	Black Sandshell	No	2013	
Threatened		Hamilton	Invert. - fw bivalve	Obliquaria reflexa	Threehorn Wartyback	No	2013	
Threatened		Hamilton	Invert. - fw bivalve	Truncilla donaciformis	Fawnsfoot	No	2012	
Threatened		Hamilton	Invert. - fw bivalve	Uniomerus tetralasmus	Pondhorn	No	1850	
Threatened		Hamilton	Mammal	Reithrodontomys humulis	Eastern Harvest Mouse	No	1945	
Threatened		Hamilton	Reptile - Snake	Clonophis kirtlandii	Kirtland's Snake	No	1937	
Species of Concern		Hamilton	Amphibian - Frog / Toad	Acris crepitans crepitans	Eastern Cricket Frog	No	2011	
Species of Concern		Hamilton	Bird	Dendroica cerulea	Cerulean Warbler	No	2006	
Species of Concern		Hamilton	Fish	Ammocrypta pellucida	Eastern Sand Darter	No	2013	
Species of Concern		Hamilton	Fish	Esox masquinongy	Muskellunge	No	2009	
Species of Concern		Hamilton	Fish	Ictalurus furcatus	Blue Catfish	No	2010	
Species of Concern		Hamilton	Fish	Moxostoma carinatum	River Redhorse	No	2010	
Species of Concern		Hamilton	Invert. - fw bivalve	Alasmidonta marginata	Elktoe	No	2007	
Species of Concern		Hamilton	Invert. - fw bivalve	Cyclonaias tuberculata	Purple Wartyback	No	1987	
Species of Concern		Hamilton	Invert. - fw bivalve	Lampsilis fasciola	Wavy-rayed Lampmussel	No	1850	
Species of Concern		Hamilton	Invert. - fw bivalve	Lasmigona compressa	Creek Heelsplitter	No	1850	
Species of Concern		Hamilton	Invert. - fw bivalve	Pleurobema sintoxia	Round Pigtoe	No	1987	
Species of Concern		Hamilton	Invert. - fw bivalve	Ptychobranchus fasciolaris	Kidneyshell	No	1850	
Species of Concern		Hamilton	Invert. - fw bivalve	Truncilla truncata	Deertoe	No	2012	
Species of Concern		Hamilton	Mammal	Eptesicus fuscus	Big Brown Bat	No	2011	
Species of Concern		Hamilton	Mammal	Lasionycteris noctivagans	Silver-haired Bat	No	1984	
Species of Concern		Hamilton	Mammal	Lasiurus borealis	Red Bat	No	2010	
Species of Concern		Hamilton	Mammal	Lasiurus cinereus	Hoary Bat	No	2010	
Species of Concern		Hamilton	Mammal	Microtus ochrogaster	Prairie Vole	No	1974	
Species of Concern		Hamilton	Mammal	Microtus pinetorum	Woodland Vole	No	1974	
Species of Concern		Hamilton	Mammal	Myotis lucifugus	Little Brown Bat	No	2010	
Species of Concern	Threatened	Hamilton	Mammal	Myotis septentrionalis	Northern Long-eared Bat	No	2009	
Species of Concern		Hamilton	Mammal	Perimyotis subflavus	Tri-colored Bat	No	2011	
Species of Concern		Hamilton	Mammal	Peromyscus maniculatus	Deer Mouse	No	2013	
Species of Concern		Hamilton	Mammal	Synaptomys cooperi	Southern Bog Lemming	No	1958	
Species of Concern		Hamilton	Mammal	Taxidea taxus	Badger	No	2006	
Species of Concern		Hamilton	Reptile - Snake	Opheodrys aestivus aestivus	Northern Rough Greensnake	No	1973	
Special Interest		Hamilton	Bird	Regulus satrapa	Golden-crowned Kinglet	No	2013	
Special Interest		Hamilton	Insect - moth	Catocala maestosa		No	1924	
Extirpated		Hamilton	Invert. - fw bivalve	Actinonaias ligamentina ligamentina	Mucket	No	1987	
Extirpated		Hamilton	Invert. - fw bivalve	Cumberlandia monodonta	Spectaclecase	No	1909	
Extirpated		Hamilton	Invert. - fw bivalve	Hemistena lata	Cracking Pearly Mussel	No	1850	
Extirpated		Hamilton	Invert. - fw bivalve	Leptodea leptodon	Scaleshell	No	1850	
Extirpated		Hamilton	Invert. - fw bivalve	Obovaria olivaria	Hickorynut	No	1965	
Extirpated		Hamilton	Invert. - fw bivalve	Obovaria retusa	Ring Pink	No	1987	
Extirpated		Hamilton	Invert. - fw bivalve	Plethobasus cicatricosus	White Wartyback	No	1850	
Extirpated		Hamilton	Invert. - fw bivalve	Plethobasus cooperianus	Orange-footed Pearly Mussel	No	1876	
Extirpated		Hamilton	Invert. - fw bivalve	Pleurobema plenum	Rought Pigtoe	No	1885	
Extirpated		Hamilton	Invert. - fw bivalve	Quadrula fragosa	Winged Mapleleaf	No	1850	
Extinct		Hamilton	Invert. - fw bivalve	Epioblasma flexuosa	Leafshell	No	1850	
Extinct		Hamilton	Invert. - fw bivalve	Epioblasma lewisi	Forkshell	No	1850	
Extinct		Hamilton	Invert. - fw bivalve	Epioblasma personata	Round Snuffbox	No	1850	
Extinct		Hamilton	Invert. - fw bivalve	Epioblasma phillipsi	Cincinnati Riffleshell	No	1850	
Extinct		Hamilton	Invert. - fw bivalve	Epioblasma torulosa torulosa	Tubercled Blossom	No	1850	

ATTACHMENT D

ODNR RARE NATIVE OHIO PLANTS STATUS LIST

Ohio Department of Natural Resources
RARE NATIVE OHIO PLANTS
Status List

The attached list of Ohio endangered, threatened, potentially threatened, and presumed extirpated native plant taxa was determined by the Department of Natural Resources, Division of Natural Areas and Preserves with the advice and guidance of the Ohio Rare Plants Advisory Committee pursuant to Ohio Revised Code Chapter 1518. This list replaces the 2012-13 status list.

The list is divided into six phylogenetic groups: Lichens, Bryophytes, Pteridophytes, Gymnosperms, Dicotyledons, and Monocotyledons. Within each group, families and their associated taxa are arranged in alphabetic order. Taxonomy and nomenclature of vascular plants generally follow The Flora of North America (1993+) and/or Gleason and Cronquist (1991). Vascular taxa not included in either manual are followed by a specific reference. Taxonomy and nomenclature of the non-vascular plants follow Anderson, Crum and Buck (1990) and Anderson (1990) for bryophytes and Brodo, Sharnoff and Sharnoff (2001) for lichens. Valuable taxonomic references specific to Ohio include Snider and Andreas (1996) for bryophytes, Showman and Flenniken (2004) for lichens, and Cooperrider, Cusick and Kartesz (2001) for vascular plants. The columns marked OH and US indicate status of the taxon as assigned by the Division of Natural Areas and Preserves (Ohio Administrative Rules 1501:18-1-01 through 1501:18-2-05) and by the U.S. Fish & Wildlife Service.

The current list contains 92 presumed extirpated, 254 endangered, 157 threatened, and 111 potentially threatened taxa, plus 4 plant taxa with no assigned status. Only data from January 1, 1994 through December 31, 2013 were considered in assigning endangerment status based upon information in the Ohio Natural Heritage Database.

The first status list, issued in 1980, was largely based on preliminary lists of rare plant species compiled in the 1970s for the Ohio Biological Survey. Since 1980, the status lists have been updated biennially. This list became effective on **December 15, 2014** and will be revised again in **2016**.

Information on these 614 plants is contained in the Ohio Natural Heritage Database and is generally accessible for research or environmental review through the Ohio Natural Heritage Database Program. A data request form may be obtained by contacting the Database Program within the Division of Wildlife or visiting its web site. Upon request, the Division will also provide an alphabetic status list of rare Ohio plants.

OHIO STATUS DESIGNATION CRITERIA

E Endangered Species

A native Ohio plant species may be designated endangered if, based on its known status in Ohio, one or more of the following criteria apply:

1. The species is a federal endangered species extant in Ohio.
2. The natural populations of the species in Ohio are limited to three or fewer occurrences.
3. The distribution of the natural populations of the species in Ohio is limited to a geographic area delineated by three or fewer U.S. Geological Survey 7.5 minute quadrangle maps.
4. The number of plants in all the natural populations of the species in Ohio is limited to one hundred or fewer individual, physically unconnected plants.

T Threatened Species

A native Ohio plant species may be designated threatened if, based on its known status in Ohio, one or more of the following criteria apply:

1. The species is a federal threatened species extant in Ohio but not on the state endangered species list.
2. The natural populations of the species in Ohio are limited to no less than four or more than 10 occurrences.
3. The distribution of the natural populations of the species in Ohio is limited to a geographic area delineated by no less than four or more than seven U.S. Geological Survey 7.5 minute quadrangle maps.

X Presumed Extirpated Species

A native Ohio plant species may be designated presumed extirpated when no natural populations of the species have been documented since 1994.

P Potentially Threatened Species

A native Ohio plant species may be designated potentially threatened if one or more of the following criteria apply:

1. The species is extant in Ohio and does not qualify as a state endangered or threatened species, but it is a proposed federal endangered or threatened species or a species listed in the *Federal Register* as under review for such proposal.
2. The natural populations of the species are imperiled to the extent that the species could conceivably become a threatened species in Ohio within the foreseeable future.
3. The natural populations of the species, even though they are not threatened in Ohio at the time of designation, are believed to be declining in abundance or vitality at a significant rate throughout all or large portions of the state.

A Added Species

A native Ohio plant species recently added to the rare plant inventory and sufficient information has not yet been obtained to determine the Ohio endangerment status.

FEDERAL LISTED OHIO PLANT SPECIES

Ohio-selected scientific and common names are listed first. Federal-selected names are shown in parentheses if they differ from the names on the Ohio list.

E = Federal endangered

T = Federal threatened

Note: Lists and information about federal listed, proposed and candidate species can be obtained from the U.S. Fish & Wildlife Service web site at http://endangered.fws.gov/wildlife.html. At this time, there are no Ohio plants designated as either proposed for listing or on the federal candidate species list.

US Status	OH Status	Scientific Name	Common Name(s)
T	E	Aconitum noveboracense	Northern Monkshood (Northern Wild Monkshood)
T	E	Tetraneuris herbacea	Lakeside Daisy
T	E	Isotria medeoloides	Small Whorled Pogonia
T	T	Platanthera leucophaea	Prairie Fringed Orchid (Eastern Prairie Fringed Orchid)
T	E	Spiraea virginiana	Appalachian Spiraea (Virginia Spiraea)
E	E	Trifolium stoloniferum	Running Buffalo Clover

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ATTACHMENT E

RUNNING BUFFALO CLOVER REPORT

September 23, 2016

Mr. Steve Lane, CPESC, AICP, PMP
Senior Environmental Scientist
Duke Energy Corporation
139 East Fourth Street, Room EM740
Cincinnati, OH 45202

Dear Mr. Lane:

Subject: Running Buffalo Clover Survey Report
Line D000B Pipeline Replacement Project
Cincinnati, Hamilton County, Ohio
CEC Project 153-230

Civil & Environmental Consultants, Inc. (CEC) is pleased to present the attached running buffalo clover (RBC) survey report for the Duke Energy Corporation (Duke Energy) Line D000B Pipeline Replacement Project, located in Cincinnati, Hamilton County, Ohio. CEC's services were provided in accordance with the Master Consulting Services Agreement, effective June 1, 2015, between Duke Energy and CEC, and our revised proposal dated February 1, 2016. We appreciate the opportunity to be of service to Duke Energy on this project. Please call us if you have any questions regarding the attached report.

Sincerely,

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

Dustin M. Giesler
Staff Scientist

Joseph A. Van Skaik
Project Manager

Attachment: Running Buffalo Clover Survey Report

RUNNING BUFFALO CLOVER SURVEY REPORT

LINE D000B PIPELINE REPLACEMENT PROJECT
CINCINNATI, HAMILTON COUNTY, OHIO

PREPARED FOR:

DUKE ENERGY CORPORATION
139 EAST FOURTH STREET
CINCINNATI, OHIO 45202

PREPARED BY:

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
CINCINNATI, OHIO

CEC Project 153-230

September 23, 2016

TABLE OF CONTENTS

Page

LIST OF FIGURES

Figure

LIST OF APPENDICES

Appendix

P:\2015\153-230\-Final Documents\RBC\R - Final - 153-230 RBC Survey Report.docx

EXECUTIVE SUMMARY

On May 16, 18, and 19, 2016, Civil & Environmental Consultants, Inc. conducted a running buffalo clover (RBC) (*Trifolium stoloniferum*; federally-listed endangered) survey within the Duke Energy Corporation's (Duke Energy) Line D000B Pipeline Replacement Project study corridor (Project area), located in Cincinnati, Hamilton County, Ohio. The total potential RBC habitat that was surveyed was approximately 5.06 acres or about 6 percent of the total Project area. The remaining areas within the Project study corridor do not provide suitable habitat conditions for the RBC based on one or more of the following habitat considerations: extent of disturbance, solar exposure, soil saturation, and/or a dense understory. No RBC individuals or populations were observed during the survey. The survey was conducted following standard methods for endangered plant surveys, as approved by the United States Fish and Wildlife Service (USFWS), which included species-specific surveys within potentially suitable habitat during the timeframe when local RBC populations were within a vegetative state that allowed for positive identification of this species. Therefore, it is CEC's professional opinion that the proposed project is not likely to adversely affect the RBC.

1.0 INTRODUCTION

This report presents the findings of a running buffalo clover (RBC) (*Trifolium stoloniferum*; federally-listed endangered) survey conducted by Civil & Environmental Consultants, Inc. (CEC) for the Duke Energy Corporation (Duke Energy) within the Line D000B Pipeline Replacement study corridor, located in Cincinnati's East End, Hamilton County, Ohio. CEC understands that Duke is proposing to replace approximately 3.45 miles (18,200 feet) of a single existing 20- and 24-inch spiral welded bare steel high pressure natural gas pipeline with a new 24-inch corrosion protected steel pipe. The variable width Project study corridor, averaging 200-foot wide, is approximately 3.45 miles in length and totals approximately 84.2 acres and was extended beyond the pipeline easement and associated workspace. The pipeline easement is at maximum 50 feet in width, with another 20 to 50 feet of additional temporary workspace where available. Approximately 2.47 miles or 13,303 feet of the replacement pipeline is proposed to be collocated within the existing pipeline ROW, while the remaining 0.98 mile (5,162 feet) of replacement pipeline will be located within new pipeline ROW. Approximately 96 percent (4,939 feet) of the new pipeline ROW will be located in areas previously disturbed, including Kellogg Avenue, unnamed private roads, and several businesses. The existing pipeline is proposed to be abandoned in-place.

CEC conducted a RBC species habitat assessment, followed by a presence-absence survey within the Project study corridor on May 16, 18, and 19, 2016. The habitat survey revealed approximately 5.06 acres or about 6 percent of the Project study corridor met the habitat considerations as potential RBC habitat (Figures 4-19). CEC subsequently conducted a RBC survey on the potential habitat that was identified in the Project area. The survey was conducted following standard methods and guidelines for endangered plant surveys, as approved by the USFWS, which included a species-specific survey within potentially suitable habitat during the flowering period from late spring to early summer, as to allow for positive identification of the species. Detailed information on RBC life history and distribution, survey methods employed, and survey results are included in this report.

2.0 BACKGROUND

The Project study corridor is located entirely within Cincinnati's East End neighborhood. The Project area is bound by Duke Energy's East End natural gas distribution center to the north, the Little Miami River to the south, State Route 52 to the east, and the Ohio River to the west. Topography within the Project area consists of level to gently sloping terrain, with a steeply sloped embankment at the southern extent of the Project area. Elevations within the Project study corridor are mapped to range from approximately 470 feet to 515 feet above mean sea level (AMSL). Hydrologic features within the Project area include six wetlands (Figures 3-19). Drainage within the Project area is to the Little Miami and Ohio Rivers. The full extent of the Project study corridor is located within the Federal Emergency Management Agency (FEMA) 100-year floodplain.

The general types of habitats where the RBC survey was conducted included mowed park habitat with scattered overstory trees, periodically disturbed trail habitat that is located on an embankment that formerly functioned as a railroad corridor, mixed early successional/right-of-way (ROW) habitat, and second growth floodplain forest habitat (Figures 4-19). Representative photographs of the habitats are provided in Appendix A. The RBC survey was conducted within the Project area based on the presence of potentially suitable RBC survey habitat and the potential for this species to occur within Hamilton, Ohio (Appendix B).

3.0 RUNNING BUFFALO NATURAL HISTORY

3.1 REASON FOR LISTING

RBC was listed by the USFWS as federally endangered on July 6, 1987 (50 FR 21478-21480) (USFWS 2007). Specific threats identified by the RBC Recovery Team in 1995 were: 1) any irreversible, catastrophic disturbance, such as road construction that completely destroys the habitat and/or kills all plants and seeds within the path of the disturbance; 2) the closing of forest canopies through succession to the point of severe shading, leading to reduced flower and fruit production; 3) the elimination of bison leading to reduced seed dispersal and release of competing vegetation; 4) low population size and associated fragility and susceptibility to catastrophe (including genetic diversity concerns); 5) excessive herbivory; 6) viral and fungal diseases; 7) reduction in pollinators; and 8) competition from non-native, invasive plant species (USFWS 2007).

3.2 DESCRIPTION

RBC is a member of the Fabaceae (pea) family that produces erect flowering stems, 10 to 30 centimeters (cm) tall, that send out long basal runners (stolons) (USFWS 2007). The basal runners root at the nodes and produce leaves that have 1 to 2 cm long ovate-lanceolate stipules, whose tips gradually narrow to a distinctive point (USFWS 2007). The plant produces 9 to 12 millimeter (mm) long round white flowers from mid-April to June, with fruiting occurring from May to July. A single plant is defined as an individual rooted crown (USFWS 2007). These crowns may occur singly or be attached to other rooted crowns by stolons. Brooks (1983) provides a more comprehensive description of this species.

3.3 DISTRIBUTION

Historically, RBC was found from the central plains to the Appalachian Mountains. The species was once considered extinct until a single population was rediscovered in West Virginia in 1983 (Brooks 1983). Since then, populations have been discovered in Indiana, Kentucky, Missouri,

and Ohio. Current populations are divided into three regions based on proximity to each other and overall habitat similarities. These regions are Appalachian (West Virginia and southeastern Ohio), Bluegrass (southwestern Ohio, central Kentucky, and southeast Indiana), and Ozark (Missouri) (USFWS 2007). A total of 108 populations of RBC are currently known from Ohio, Indiana, Kentucky, Missouri, and West Virginia (NatureServe 2015; USFWS 2007, 2008).

3.4 HABITAT

Habitat for RBC typically includes locations with partial or filtered sunlight and with moist, fertile soils that have been exposed to long-term moderate patterns of disturbance (CPC 2016). It is thought that large herbivores like bison and cattle provided the necessary scarification of the soil for plants to germinate. Populations of this species are often found in the ecotone between forest and tallgrass prairie habitats (CPC 2016).

Additionally, others describe the habitat of this species as including mesophytic woodlands (Isely 1998), moist, well-drained disturbed woods associated with streams (Gleason and Cronquist 1991), and open woods, borders, and forest clearings (Cusick 1989). It has been reported from a variety of habitats, including mesic woodlands, savannahs, floodplains, stream banks, sandbars (especially where old trails cross or parallel intermittent streams), grazed woodlots, forested lawn areas or trails that are infrequently mowed (e.g. in cemeteries, parks, and residential lawns), old logging roads, jeep trails, skidder trails, mowed wildlife openings within mature forest, and steep ravines (USFWS 2007). No critical habitat has been designated for this species (NatureServe 2015).

3.5 RECENT HISTORY OF SPECIES IN OHIO

RBC was rediscovered in Ohio in 1988 and is listed as endangered by the state of Ohio. According to the USFWS (2007), 18 extant populations and eight extirpated populations were known from Ohio, as of 2005. Populations have been primarily found in mesic forest and lawn habitats in Hamilton, Clermont, Brown, and Lawrence counties. Most of the known populations are reportedly located on county park lands and have been managed as to protect and encourage

RBC. The first population on Federal land in Ohio was located in 2005 on Wayne National Forest (USFWS 2007).

4.0 SURVEY METHODOLOGY

4.1 LITERATURE REVIEW

A literature review of pertinent articles relating to the RBC was conducted as part of the background data acquisition activities for this study. The USFWS County Distribution List of Federally-Listed Threatened, Endangered, Proposed, and Candidate Species in Ohio was reviewed during the initial stages of this project to obtain information concerning known threatened and endangered species populations within the area (USFWS 2016). The USFWS Hamilton County, Ohio listing reported that the Project area was within the known range of the RBC, though site specific species occurrences were not known. Several additional articles from the scientific literature were obtained and reviewed for additional information of use to the field study program (as cited in the references section). This information collected prior to conducting the field study was useful in supplementing the information concerning the preferred habitat conditions of known RBC populations in the region.

4.2 PRE-SURVEY KNOWN POPULATION FIELD VERIFICATION

In addition to the literature review, a pre-survey verification of a known RBC population was conducted at the Dinsmore Woods State Nature Preserve in Boone County, Kentucky. The purpose of this verification was to determine the precise flowering period and "phenophase" of the known population. This would allow the field survey to be conducted knowing the growth condition of the species to assist in better observation and species presence determinations. During the pre-survey site verification, photographs of the condition of the existing known population were made and the specific plant growth stage was noted. In addition, attention was directed toward observation of plant associations, soils, amount of vegetative shading, duration of disturbance, and amount of disturbance that were habitat characteristics of the known RBC population. Appendix A-1 contains representative photographs of the RBC population that was observed in Dinsmore Woods State Nature Preserve, as photographed by CEC on May 6, 2016.

4.3 POTENTIAL RBC HABITAT AND PRESENCE-ABSENCE SURVEY

On May 16, 18, and 19, 2016, CEC biologist and USFWS approved RBC surveyor Joey Van Skaik conducted an RBC habitat survey, followed by an RBC presence-absence survey of the Project area. This two-phased approach involved an initial ground truthing effort to identify areas within the Project study corridor that contained suitable habitat for the RBC. The areas that were identified as potential RBC habitat were subsequently and systematically searched to determine the presence or absence of the species.

The presence-absence survey involved walking transects spaced approximately 10 to 15 feet apart, depending on the density of vegetation in the understory. Observed species of clover (*Trifolium* spp.), or with clover-like leaves, were visually reviewed when encountered. A Trimble GeoXT Global Positioning System (GPS) was used to guide the field survey relative to the limits of the Project study corridor and to establish approximate coordinates of photograph points, voucher specimen locations, and other features of interest. CEC surveyed maintained, early successional park habitat with scattered overstory trees, periodically disturbed trail habitat that is located on an embankment that formerly functioned as a railroad corridor, mixed early successional/right-of-way (ROW) habitat, and second growth floodplain forest habitat within the Project area.

Dominant plant species in the overstory, understory, and herbaceous ground cover were documented. See Appendix A-2 for representative photographs of the areas that were surveyed for RBC within the Project study corridor. It is worth noting that Appendix A-2 also includes site reconnaissance photographs that were taken as part of the wetland and waterbody delineation effort. Areas that lacked potentially suitable habitat and/or contained dense vegetation were not included in the transect survey.

5.0 RESULTS

The RBC survey results for the Project study corridor and reference population location are presented below on Table 1.

TABLE 1
RUNNING BUFFALO CLOVER SURVEY RESULTS

Survey Date	Site Name	Latitude	Longitude	Site Location	Habitat Type	RBC Present/ Absent
May 5, 2016	Reference Population	39.000841	-84.814890	Dinsmore Woods State Nature Preserve Boone County, Kentucky	Walking trail leading to ridge top and adjacent cemetery. Site receives periodic disturbance and filtered sunlight.	Present
May 16 & 18, 2016	1	39.080896	-84.427648	Near Four Seasons Marina and the confluence of the Little Miami and Ohio Rivers	Bottomland hardwood forest bisected by a pipeline right-of-way/early successional habitat. Site receives periodic disturbance and filtered sunlight.	Absent
May 18, 2016	2	39.082402	-84.427663	Near Four Seasons Marina and the confluence of the Little Miami and Ohio Rivers	Trail or two track habitat that is located on an embankment that formerly functioned as a railroad corridor. Site receives periodic disturbance and filtered sunlight.	Absent
May 19, 2016	3A 3B 3C 3D	39.115040 39.115381 39.115666 39.115969	-84.443193 -84.443573 -84.443945 -84.444430	Adjacent to Turkey Ridge Park, the Ohio River Trail, and Humbert Avenue	Mowed park habitat with scattered overstory trees. Site receives periodic disturbance and filtered sunlight.	Absent
May 19, 2016	4	39.118429	-84.448547	Located at Schmidt Recreation Complex and adjacent to the Ohio River Trail	Mowed park habitat with scattered overstory trees. Site receives periodic disturbance and filtered sunlight.	Absent

The observation and photo documentation of the known RBC population at the Dinsmore Woods State Nature Preserve in Boone County, Kentucky assisted significantly in identifying the stage of growth and flowering of the species in the area.

Although potentially suitable habitat for the RBC was present within the Project study corridor, no RBC individuals or populations were identified during the survey conducted by CEC on May 16, 18, and 19, 2016. Four RBC look-alikes were observed during the survey, including three plants from the leguminous pea family and one plant from the wood-sorrel family. These four species of RBC look-alikes include white clover (*Trifolium repens*), red clover (*Trifolium pratense*), low hop clover/field clover (*Trifolium campestre*), and common yellow oxalis (*Oxalis stricta*), respectively.

Site 1 is a bottomland hardwood forest bisected by an existing pipeline right-of-way that is maintained in an early successional habitat state. The site receives periodic disturbance as evidenced by the occasional mowing along the ROW and flood events from the Ohio and Little Miami Rivers. The site receives filtered solar exposure and is located on rich soil. Representative photographs of this habitat type are included in Appendix A-2.

The forested vegetation community is dominated by silver maple (*Acer saccharinum*), cottonwood (*Populus deltoids*), box elder (*Acer negundo*), and American elm (*Ulmus americana*), while the herbaceous plant community included creeping jenny (*Lysimachia nummularia*), false nettle (*Boehmeria cylindrica*), white clover (*Trifolium repens*), red clover (*Trifolium pratense*), giant ironweed (*Vernonia gigantea*), narrowleaf plantain (*Plantago lanceolata*), common yellow oxalis (*Oxalis strica*), stickywilly (*Galium aparine*), hog peanut (*Amphicarpa bracteata*), wingstem (*Verbesina alternifolia*), violets (*Viola* spp.), poison ivy (*Toxicodendron radicans*), Canadian honewort (*Cryptotaenia canadensis*), sedges (*Carex* spp.) and stinging nettle (*Urtica dioica*).

Site 2 is a trail or two-track that is located on an embankment that formerly functioned as a railroad corridor. The site receives occasional to periodic disturbance and filtered solar exposure. Representative photographs of this habitat type are included in Appendix A-2.

Common herbaceous plant species along this trail or two-track included white clover (*Trifolium repens*), red clover (*Trifolium pratense*), black medic (*Medicago lupulina*), curly dock (*Rumex crispus*), broadleaf plantain (*Plantago major*), sedges, common chickweed (*Stellaria media*), and grasses (*Poa* and *Festuca* spp.)

Site 3 (A, B, C, and D) is mowed park habitat that is separated by Worth Street, Hoboken Alley, and Strader Avenue, respectively. This site is bound to the west by Humbert Avenue, the Ohio River Trail, Turkey Ridge Club, and the Ohio River Launch Club. The site receives periodic disturbance from occasional mowing and recreational play, varied filtered solar exposure, and is located on rich soil. Representative photographs of this habitat type are included in Appendix A-2.

The overstory vegetation includes cottonwood, hackberry (*Celtis occidentalis*), maples (*Acer* spp.), and oaks, (*Quercus* spp.), while the herbaceous plant community includes white clover, red clover, narrowleaf plantain (*Plantago lanceolata),* violets, broadleaf plantain, yellow nutsedge (*Cyperus esculentus*), common mallow (*Malva neglecta*), common purslane (*Portulaca oleracea*), and grasses.

Site 4 is mowed park habitat that is located at Schmidt Recreation Complex, adjacent to the Ohio River Trail. The site receives periodic disturbance from occasional mowing and recreational play, varied filtered solar exposure from scattered overstory trees in the area, and is located on rich soil. Representative photographs of this habitat type are included in Appendix A-2.

The overstory vegetation includes oaks and maples, while the herbaceous plant community includes white clover, red clover, dandelion (*Taraxacum officinale*), narrowleaf plantain (*Plantago lanceolata),* violets, and grasses.

6.0 CONCLUSION

Bottomland hardwood forest and early successional habitat receiving filtered solar exposure, mowed areas, and trails are present within the Project area and surrounding vicinity. Based on the presence of these habitats, there is a potential for the presence of RBC. The RBC survey that was conducted by CEC on May 16, 18, and 19, 2016, did not reveal RBC individuals or populations within the Project area (Figures 4-19). Therefore, it is CEC's professional opinion that the proposed project is not likely to adversely affect the RBC.

7.0 REFERENCES

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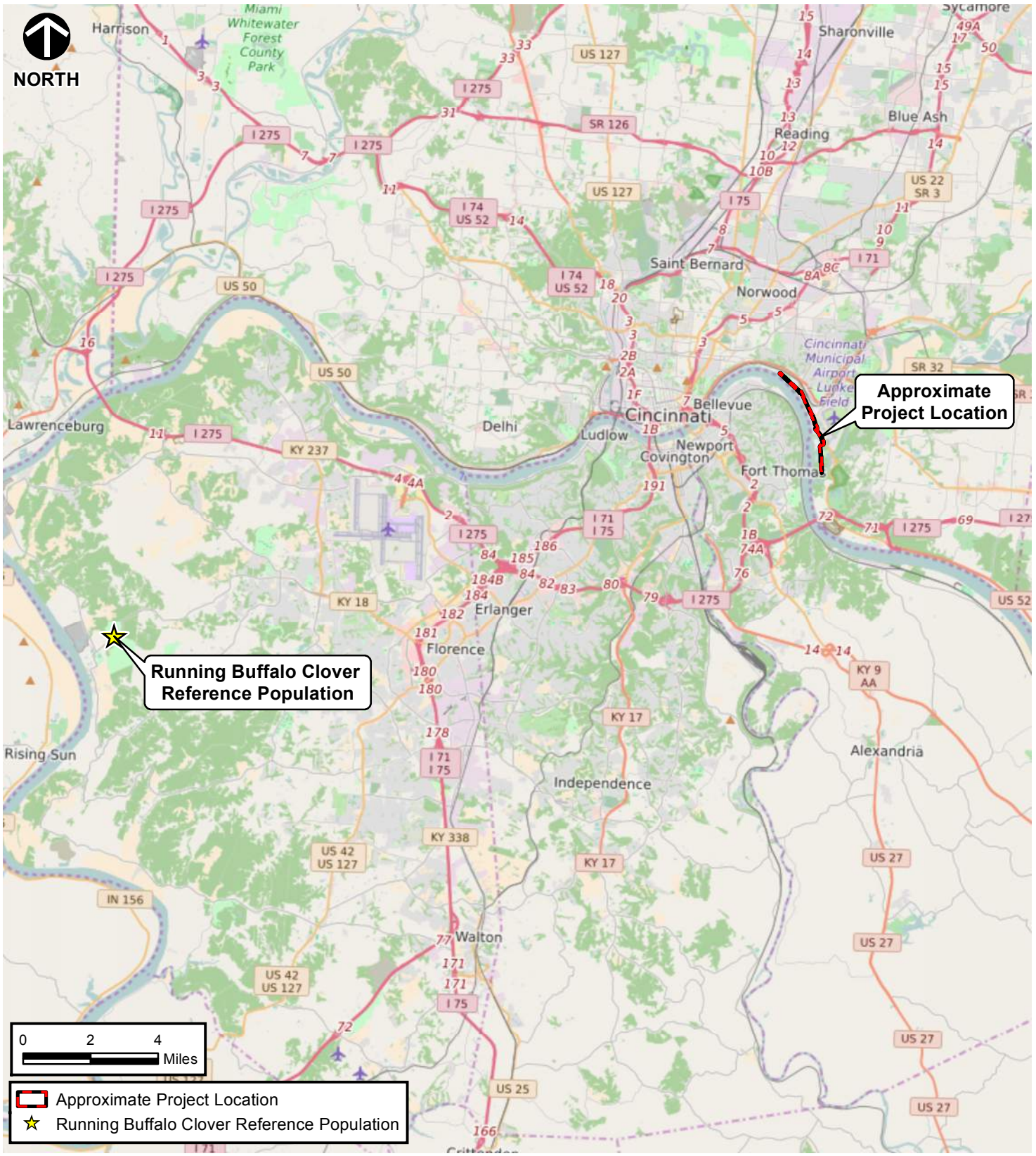
FIGURES



SOURCE: ESRI WORLD STREET MAP, 2016.

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REGIONAL LOCATION MAP

DRAWN BY:	DMG	CHECKED BY:	JAV	APPROVED BY:	JAV*	FIGURE NO:	1
DATE:	SEPTEMBER 23, 2016	DWG SCALE:	1 " = 4 miles	PROJECT NO:	153-230		

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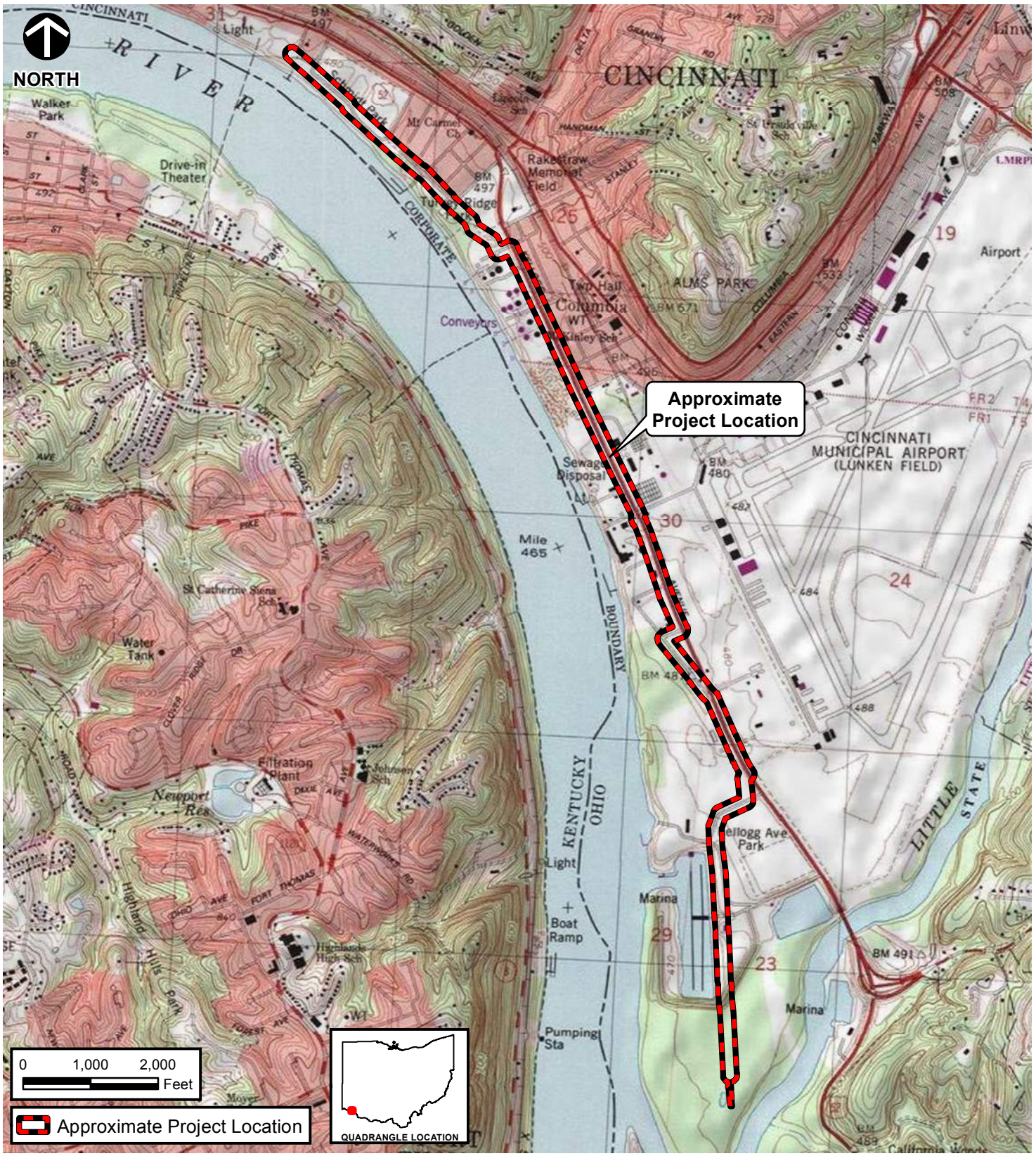

SOURCE: PORTION OF THE USGS 7.5-MINUTE SERIES TOPOGRAPHIC QUADRANGLE MAP OF NEWPORT, KENTUCKY-OHIO - 1984.

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PROJECT LOCATION MAP

DRAWN BY:	DMG	CHECKED BY:	JAV	APPROVED BY:	JAV*	FIGURE NO:	2
DATE:	SEPTEMBER 23, 2016	DWG SCALE:	1 " = 2,000 '	PROJECT NO:	153-230		

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NORTH

Figure 4
Figure 5
Figure 6
Figure 7
Figure 8
Figure 9
Figure 10
Figure 11
Figure 12
Figure 13
Figure 14
Figure 15
Figure 16
Figure 17
Figure 18
Figure 19

Ohio River

Little Miami River

SOURCE: USDA FSA NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP) HAMILTON COUNTY MOSAIC. IMAGE DATE: 2015.

Variable Width Study Corridor

600 0 600 1,200
Feet

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RUNNING BUFFALO CLOVER SURVEY
INDEX MAP

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DATE:	SEPTEMBER 23, 2016	DWG SCALE:	1 " = 1,200 '	PROJECT NO:	153-230		

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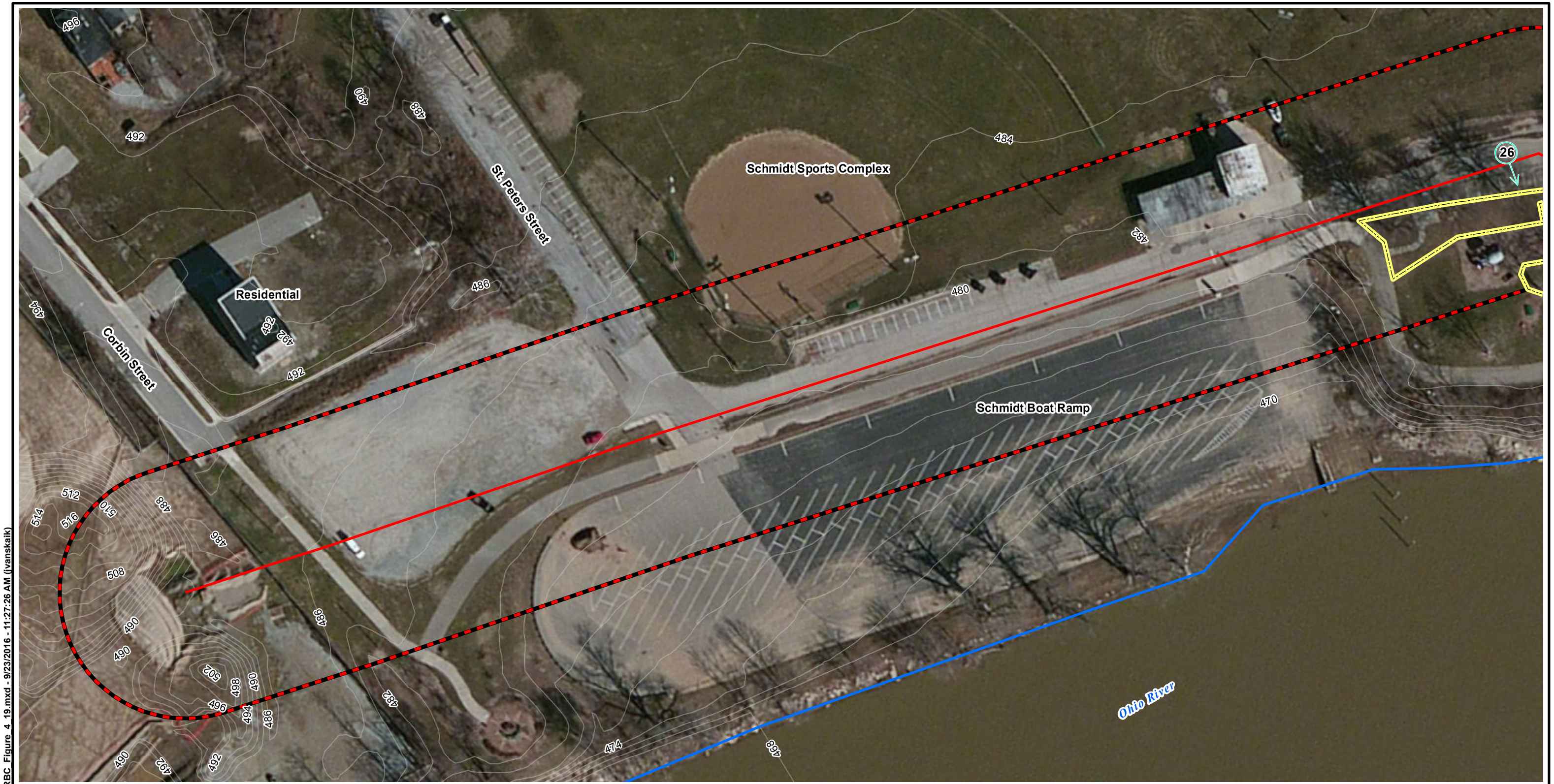

SOURCE: USDA FSA NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP) HAMILTON COUNTY MOSAIC. IMAGE DATE: 2015.
SOURCE: CAGIS 2-FOOT INTERVAL ELEVATION CONTOURS.

- Proposed Replacement Pipeline
- 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

NORTH

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

0 75 150 Feet

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RUNNING BUFFALO CLOVER SURVEY MAP

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DATE:	SEPTEMBER 23, 2016	DWG SCALE:	1 " = 75 '	PROJECT NO:	153-230	4

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SOURCE: CAGIS 2-FOOT INTERVAL ELEVATION CONTOURS.

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DATE:	SEPTEMBER 23, 2016	DWG SCALE:	1 " = 75 '	PROJECT NO:	153-230	5

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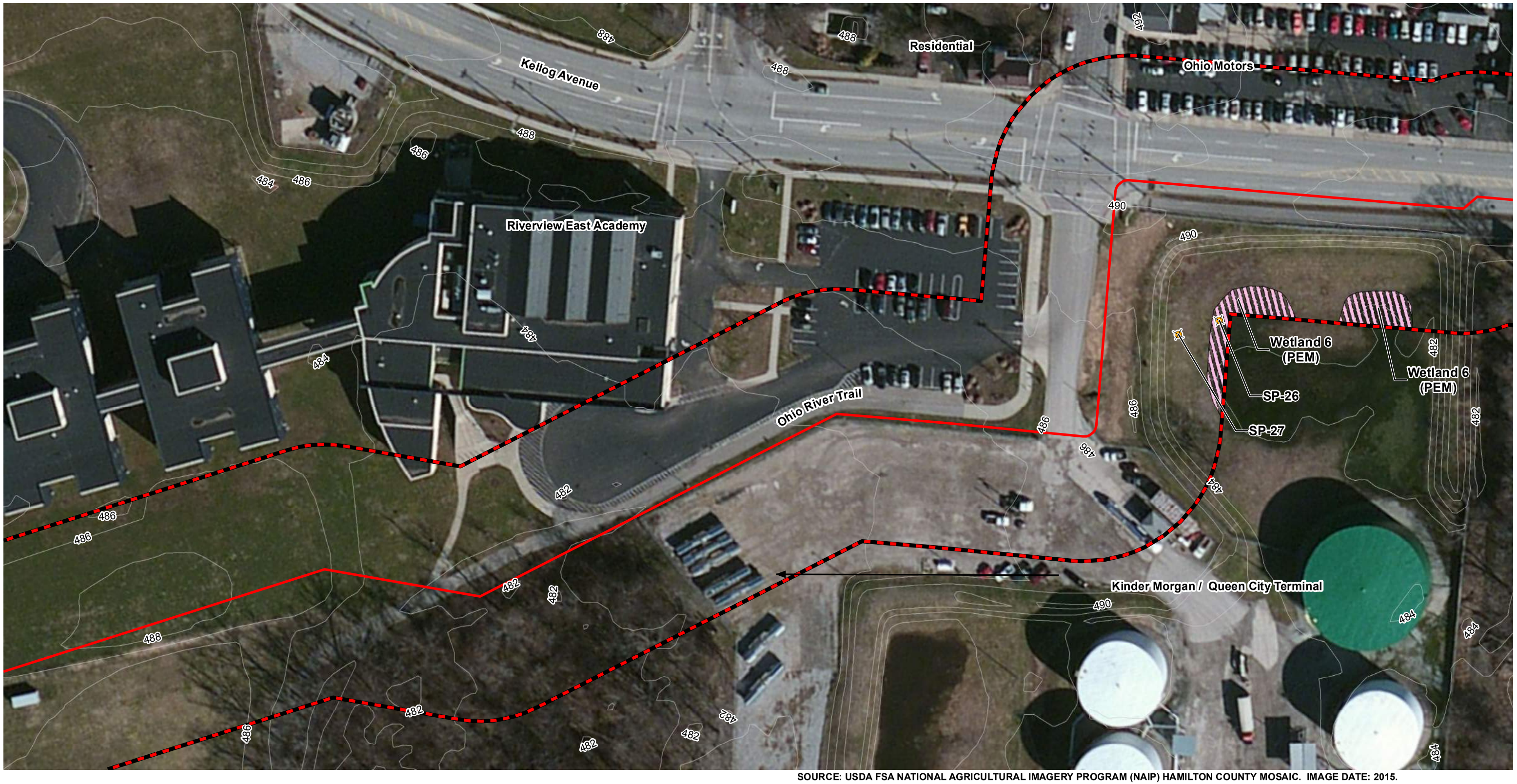

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NO STREAMS OR WATERBODIES WERE IDENTIFIED WITHIN THE STUDY CORRIDOR.

0 75 150 Feet

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DUKE ENERGY
LINE D000B PIPELINE REPLACEMENT PROJECT
CINCINNATI, HAMILTON COUNTY, OHIO

RUNNING BUFFALO CLOVER SURVEY MAP

DRAWN BY:	DMG	CHECKED BY:	JAV	APPROVED BY:	JAV*	FIGURE NO:
DATE:	SEPTEMBER 23, 2016	DWG SCALE:	1 " = 75 '	PROJECT NO:	153-230	7

Signature on File *

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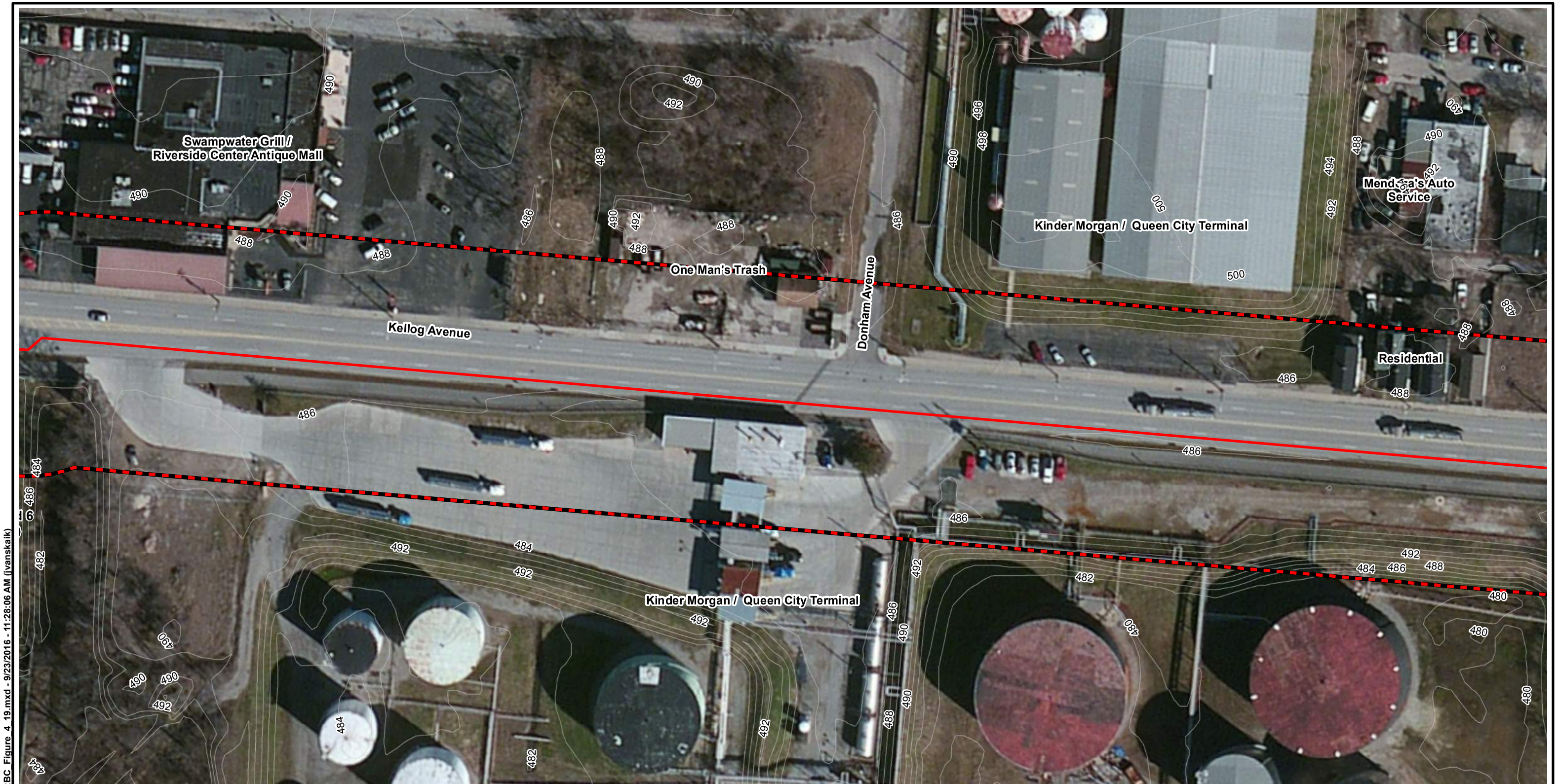

SOURCE: USDA FSA NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP) HAMILTON COUNTY MOSAIC. IMAGE DATE: 2015.
SOURCE: CAGIS 2-FOOT INTERVAL ELEVATION CONTOURS.

- Proposed Replacement Pipeline
- 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

NORTH

NOTES: FULL EXTENT OF STUDY CORRIDOR IS WITHIN 100-YEAR FLOODPLAIN.
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0 75 150 Feet

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DUKE ENERGY
LINE D000B PIPELINE REPLACEMENT PROJECT
CINCINNATI, HAMILTON COUNTY, OHIO

RUNNING BUFFALO CLOVER SURVEY MAP

DRAWN BY:	DMG	CHECKED BY:	JAV	APPROVED BY:	JAV*	FIGURE NO:
DATE:	SEPTEMBER 23, 2016	DWG SCALE:	1 " = 75 '	PROJECT NO:	153-230	8

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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
- 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

NORTH

NOTES: FULL EXTENT OF STUDY CORRIDOR IS WITHIN 100-YEAR FLOODPLAIN.
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0 75 150 Feet

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CINCINNATI, HAMILTON COUNTY, OHIO

RUNNING BUFFALO CLOVER SURVEY MAP

DRAWN BY:	DMG	CHECKED BY:	JAV	APPROVED BY:	JAV*	FIGURE NO:
DATE:	SEPTEMBER 23, 2016	DWG SCALE:	1 " = 75 '	PROJECT NO:	153-230	9

Signature on File *

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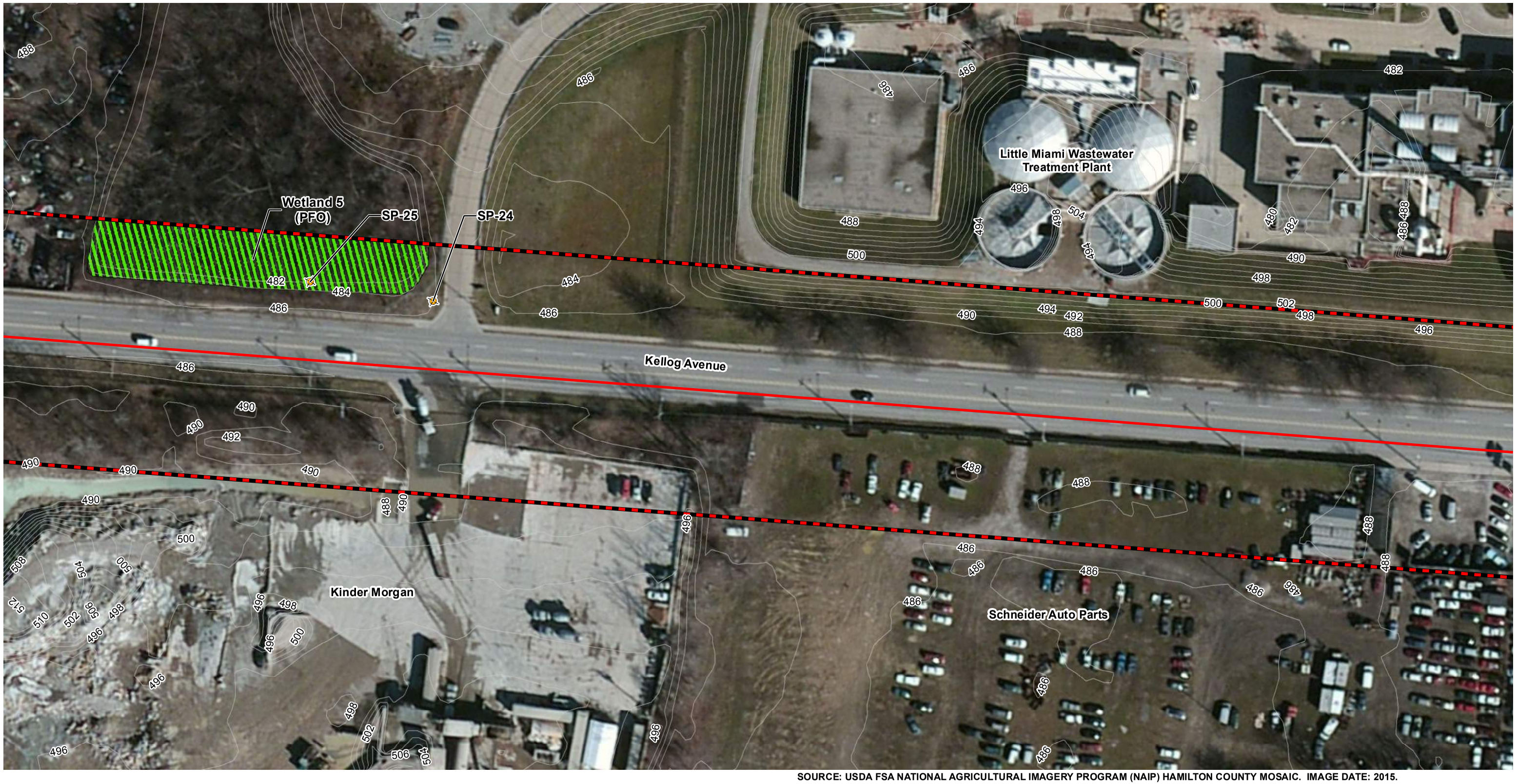

SOURCE: USDA FSA NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP) HAMILTON COUNTY MOSAIC. IMAGE DATE: 2015.
SOURCE: CAGIS 2-FOOT INTERVAL ELEVATION CONTOURS.

- Proposed Replacement Pipeline
- 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

NORTH

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

0 75 150 Feet

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CINCINNATI, HAMILTON COUNTY, OHIO

RUNNING BUFFALO CLOVER SURVEY MAP

DRAWN BY:	DMG	CHECKED BY:	JAV	APPROVED BY:	JAV*	FIGURE NO:	10
DATE:	SEPTEMBER 23, 2016	DWG SCALE:	1 " = 75 '	PROJECT NO:	153-230		

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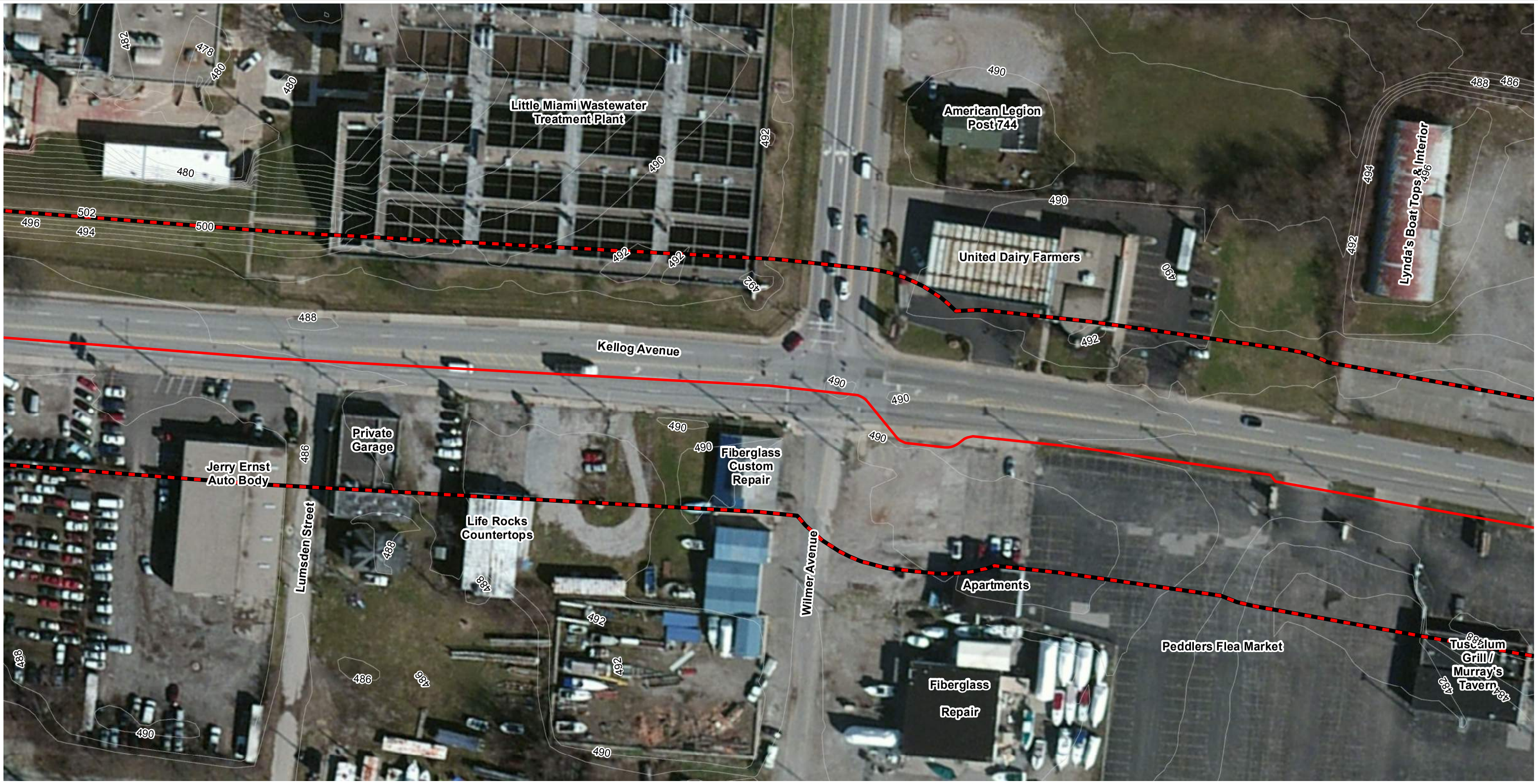

- Proposed Replacement Pipeline
- Variable Width Study Corridor
- Potential Running Buffalo Clover Habitat
- Voucher Specimen Location with Photograph Number

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

NORTH

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

0 75 150 Feet

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

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CINCINNATI, HAMILTON COUNTY, OHIO

RUNNING BUFFALO CLOVER SURVEY MAP

DRAWN BY:	DMG	CHECKED BY:	JAV	APPROVED BY:	JAV*	FIGURE NO:
DATE:	SEPTEMBER 23, 2016	DWG SCALE:	1 " = 75 '	PROJECT NO:	153-230	11

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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

NORTH

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

0 75 150 Feet

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

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RUNNING BUFFALO CLOVER SURVEY MAP

DRAWN BY:	DMG	CHECKED BY:	JAV	APPROVED BY:	JAV*	FIGURE NO:
DATE:	SEPTEMBER 23, 2016	DWG SCALE:	1 " = 75 '	PROJECT NO:	153-230	12

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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

NORTH

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

0 75 150 Feet

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

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RUNNING BUFFALO CLOVER SURVEY MAP

DRAWN BY:	DMG	CHECKED BY:	JAV	APPROVED BY:	JAV*	FIGURE NO:
DATE:	SEPTEMBER 23, 2016	DWG SCALE:	1 " = 75 '	PROJECT NO:	153-230	13

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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
- 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

NORTH

NOTES: FULL EXTENT OF STUDY CORRIDOR IS WITHIN 100-YEAR FLOODPLAIN.
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0 75 150 Feet

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RUNNING BUFFALO CLOVER SURVEY MAP

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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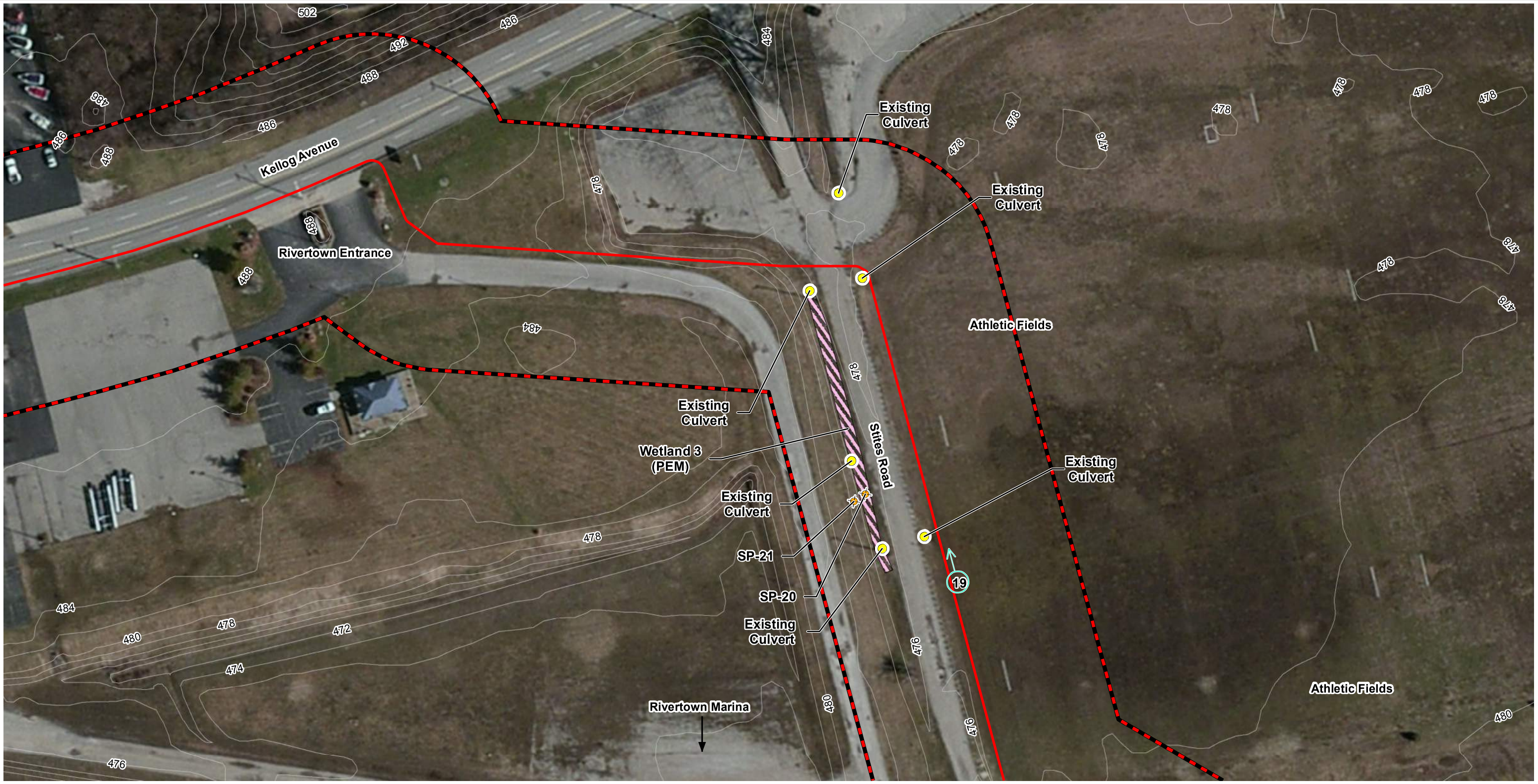

SOURCE: USDA FSA NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP) HAMILTON COUNTY MOSAIC. IMAGE DATE: 2015.
SOURCE: CAGIS 2-FOOT INTERVAL ELEVATION CONTOURS.

- 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

NORTH

NOTES: FULL EXTENT OF STUDY CORRIDOR IS WITHIN 100-YEAR FLOODPLAIN.
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0 75 150 Feet

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RUNNING BUFFALO CLOVER SURVEY MAP

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

Signature on File *

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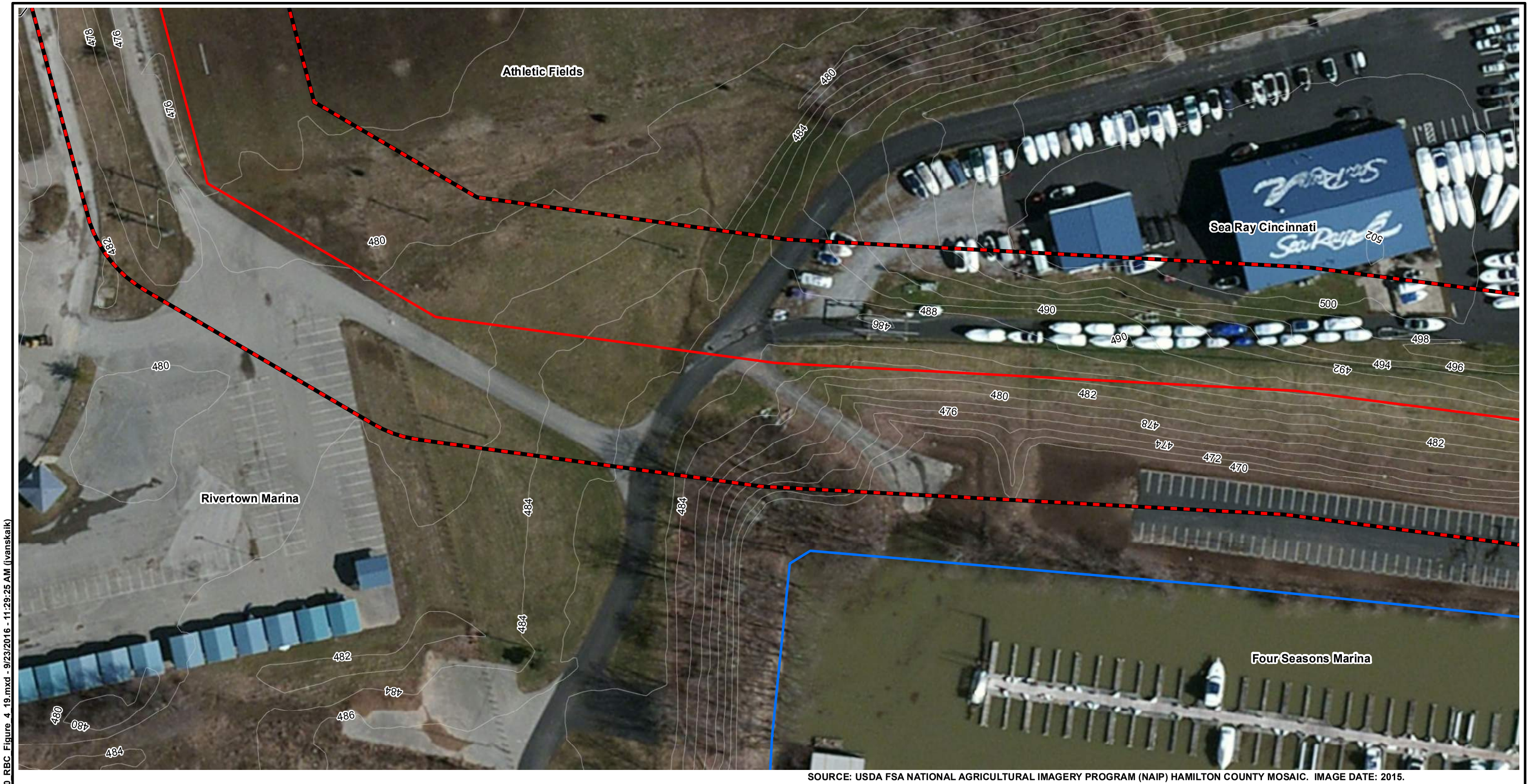

- Proposed Replacement Pipeline
- Variable Width Study Corridor
- Potential Running Buffalo Clover Habitat
- Voucher Specimen Location with Photograph Number

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

NORTH

0 75 150 Feet

NOTES: FULL EXTENT OF STUDY CORRIDOR IS WITHIN 100-YEAR FLOODPLAIN.
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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.

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RUNNING BUFFALO CLOVER SURVEY MAP

DRAWN BY:	DMG	CHECKED BY:	JAV	APPROVED BY:	JAV*	FIGURE NO:	16
DATE:	SEPTEMBER 23, 2016	DWG SCALE:	1 " = 75 '	PROJECT NO:	153-230		

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- 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

NORTH

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

0 75 150 Feet

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

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CINCINNATI, HAMILTON COUNTY, OHIO

RUNNING BUFFALO CLOVER SURVEY MAP

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

Signature on File *

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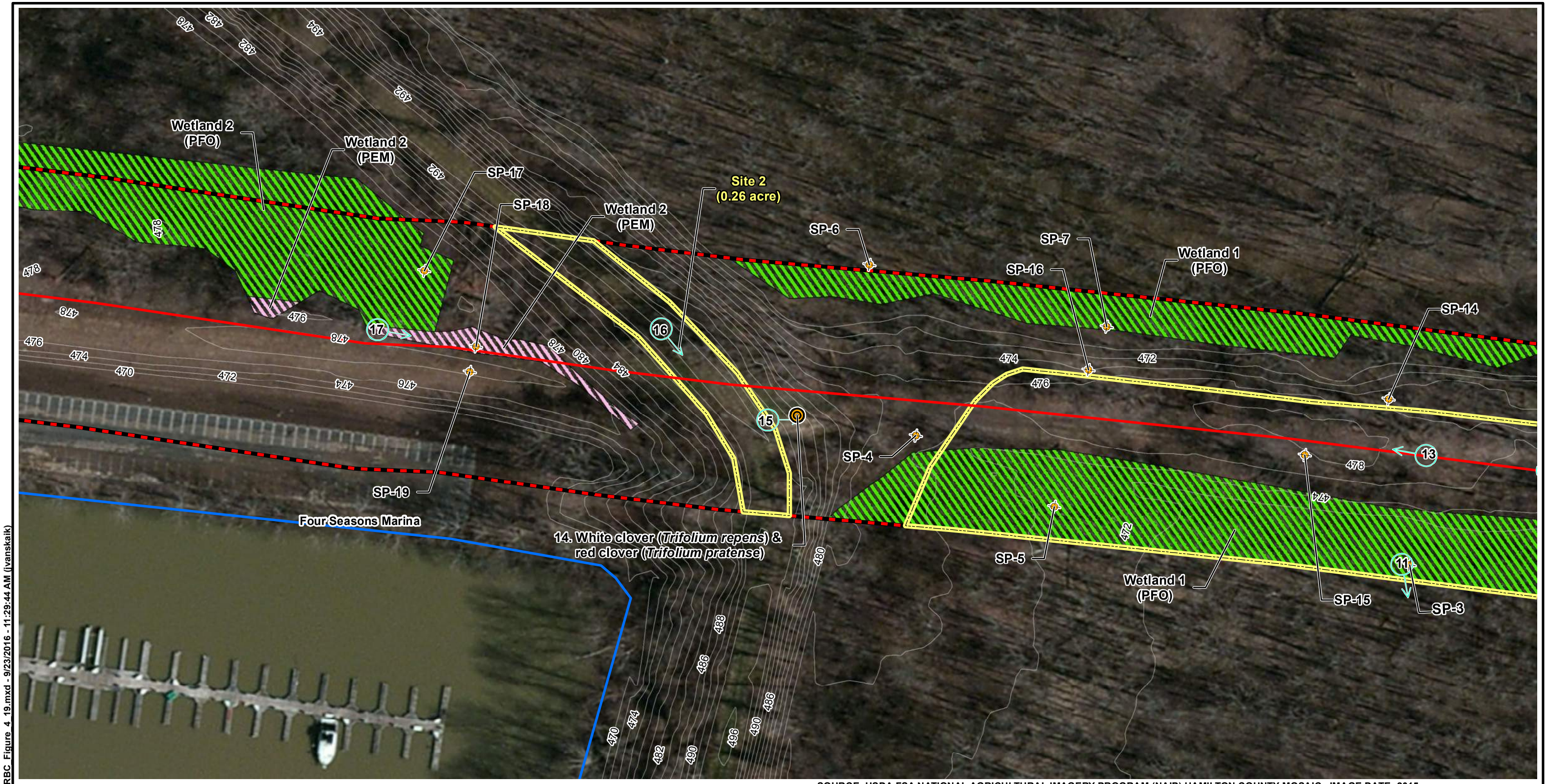

SOURCE: USDA FSA NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP) HAMILTON COUNTY MOSAIC. IMAGE DATE: 2015.
SOURCE: CAGIS 2-FOOT INTERVAL ELEVATION CONTOURS.

- Proposed Replacement Pipeline
- 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

NORTH

NOTES: FULL EXTENT OF STUDY CORRIDOR IS WITHIN 100-YEAR FLOODPLAIN.
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0 75 150 Feet

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DUKE ENERGY
LINE D000B PIPELINE REPLACEMENT PROJECT
CINCINNATI, HAMILTON COUNTY, OHIO

RUNNING BUFFALO CLOVER SURVEY MAP

DRAWN BY:	DMG	CHECKED BY:	JAV	APPROVED BY:	JAV*	FIGURE NO:
DATE:	SEPTEMBER 23, 2016	DWG SCALE:	1 " = 75 '	PROJECT NO:	153-230	18

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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

NORTH

NOTES: FULL EXTENT OF STUDY CORRIDOR IS WITHIN 100-YEAR FLOODPLAIN.
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0 75 150 Feet

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

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CINCINNATI, HAMILTON COUNTY, OHIO

RUNNING BUFFALO CLOVER SURVEY MAP

DRAWN BY:	DMG	CHECKED BY:	JAV	APPROVED BY:	JAV*	FIGURE NO:
DATE:	SEPTEMBER 23, 2016	DWG SCALE:	1 " = 75 '	PROJECT NO:	153-230	19

Signature on File *

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