

substantive hydrology changes in those areas are anticipated. This determination is based on the following: 1) there currently is a drainage ditch along Ramp 8b, 2) the project will only modify a small portion of the ditch along Ramp 8b, and 3) following construction the wetland should still receive overland flow from the northeast. **The total impact area at Wetland F is 0.145 acre.**

Wetland H: Wetland H is a 0.036 acre emergent/scrub-shrub, non-isolated wetland located along the north side of 49th Street near stream Site 1e (see Exhibit 8). **The proposed project is not expected to impact Wetland H.**

Wetland M: Wetland M is a 0.389-acre emergent, non-isolated wetland located in the existing I-90 interchange infield (see Exhibit 2b). The LOR-57-19.42 project will directly impact 0.242 acre of this wetland due to the placement of earthen fill for construction of proposed Ramp D, excavation of new drainage ditches on both sides of the ramp, and light tower construction (see Exhibit 9). A small amount (approximately 0.007 acre) of temporary fill material is likely to be placed in Wetland M during ditch work and light tower construction. The specific type/location of this temporary fill and the construction methods involved are determined by the contractor and are not known at this time. Construction of the LOR-57-19.42 project is also expected to result in a 0.154-acre indirect impact due to disruption of existing hydrology patterns resulting from the excavation of two new drainage ditches through the wetland (accelerated drainage/lower water table) and the removal of the existing Ramp E embankment. This 0.154-acre indirect impact area includes the 0.007-acre temporary impact area. **Consequently, the proposed project is expected to impact the entire 0.389-acre area of Wetland M.**

Summary of Minimal Degradation Alternative (Selected Alternative) Impacts

| Feature | Impact Description | Total Length Impacted* | Total Area Impacted* | Fill Volume |
|-----------------------|--|------------------------|----------------------|---|
| Stream 1 (Site 1a) | Channel Relocation/Earthen Fill; Minor Excavation; Temporary Equipment Access/Channel Disturbances; Temporary Dewatering/Flow Diversions | 564 feet | 0.126 acre** | 127 cubic yards (Permanent) 3 cubic yards (Temporary) (3 cubic yards - Excavation) |
| Stream 1 (Site 1b/1c) | Culvert Extension/Earthen Fill; Temporary Equipment Access/Channel Disturbances; Temporary Dewatering/Flow Diversions (Site 1b); Temporary Equipment Access/Minor Channel Disturbances (Site 1c) | 48 feet | 0.012 acre | 5 cubic yards (Permanent) 3 cubic yards (Temporary) |
| Stream 2a | Temporary Equipment Access/Channel Disturbances; Silt Removal | 45 feet | 0.008 acre | 0 cubic yards (no permanent or temporary fill proposed) |
| TOTAL STREAMS | | 657 feet | 0.146 acre | 138 cubic yards (3 cubic yards of excavation) |
| Wetland F | Earthen Fill/Excavation; Temporary Fill | NA | 0.145 acre | 65 cubic yards (Direct Permanent Fill) 8 cubic yards (Direct Temporary Fill) (161 cubic yards - Excavation) |
| Wetland M | Earthen Fill/Excavation; Light Tower Construction; Temporary Fill; Indirect Drainage Impacts | NA | 0.389 acre | 260 cubic yards (Direct Permanent Fill) 20 cubic yards (Direct Temporary Fill) (118 cubic yards - Excavation) |
| TOTAL WETLANDS | | NA | 0.534 acre | 353 cubic yards (279 cubic yards of excavation) |

* Includes permanent and temporary impacts (see Tables C1 and C2)

** Includes 0.001 acre of excavation

2. Preferred Alternative

The Preferred Alternative has the same overall design and stream/wetland impact scenario as the Minimal Degradation Alternative, with one exception. Under the Preferred Alternative design plan, Stream 1 at Site 1a would be placed in a concrete or steel pipe culvert (see Appendix D). This would result in a 700-foot permanent impact beginning at Ramp 8a (Sta. 54+00) and ending at Site 1b (the extended 72" concrete culvert under Ramp 8a/SR 57 at approximately Sta. 61+00). Earthen fill would be placed along the edge of Stream 1 OHWM channel immediately adjacent to the culvert. A small amount (approximately 10 feet) of temporary fill material (steel, rock, or granular material) would likely be placed in the OHWM channel for dewatering or flow diversions during construction (specific type/location unknown). The total linear channel impact at Site 1a would be 710 feet for the Preferred Alternative.

Summary of Preferred Alternative Impacts

| Feature | Impact Description | Total Length Impacted* | Total Area Impacted* | Fill Volume |
|-----------------------|--|------------------------|----------------------|---|
| Stream 1 (Site 1a) | Culvert Placement; Earthen Fill; Temporary Dewatering/Flow Diversions | 710 feet | 0.242 acre** | 160 cubic yards (Permanent) 3 cubic yards (Temporary) (38 cubic yards - Excavation) |
| Stream 1 (Site 1b/1c) | Culvert Extension/Earthen Fill; Temporary Equipment Access/Channel Disturbances; Temporary Dewatering/Flow Diversions (Site 1b); Temporary Equipment Access/Minor Channel Disturbances (Site 1c) | 48 feet | 0.012 acre | 5 cubic yards (Permanent) 3 cubic yards (Temporary) |
| Stream 2a | Temporary Equipment Access/Channel Disturbances; Silt Removal | 45 feet | 0.008 acre | 0 cubic yards (no permanent or temporary fill proposed) |
| TOTAL STREAMS | | 803 feet | 0.262 acre | 171 cubic yards (38 cubic yards of excavation) |
| Wetland F | Earthen Fill/Excavation; Temporary Fill | NA | 0.145 acre | 65 cubic yards (Direct Permanent Fill) 8 cubic yards (Direct Temporary Fill) (161 cubic yards - Excavation) |
| Wetland M | Earthen Fill/Excavation; Light Tower Construction; Temporary Fill; Indirect Drainage Impacts | NA | 0.389 acre | 260 cubic yards (Direct Permanent Fill) 20 cubic yards (Direct Temporary Fill) (118 cubic yards - Excavation) |
| TOTAL WETLANDS | | NA | 0.534 acre | 353 cubic yards (279 cubic yards of excavation) |

* Includes permanent and temporary impacts

** Includes 0.080 acre of excavation

3. Non-Degradation Alternative

The Non-Degradation Alternative (No Build Alternative) would result in no near-term direct impacts to Stream 1, Stream 2a, and Wetlands F, H, and M. However, implementation of the Non-Degradation Alternative and continued operation and maintenance of the existing SR 57 roadway, I-80/I-90 interchange ramps, and local road network (and the potential need for critical spot improvements to address future transportation problems/safety issues), could over time have some direct or indirect impact on streams and wetlands in the immediate project area. Additionally, as traffic and safety problems continue to degrade in the project area, higher crash rates are expected, which would result in greater potential for accidental spills of hazardous/toxic materials which could eventually reach and adversely affect water quality and aquatic biota in the project area. Also, slower and inefficient traffic flow through the project area will result in

The Preferred Alternative includes no plan for on-site stream relocation or implementation of natural stream channel design techniques, which could result in an overall lowering of water quality and a more substantial long-term loss of natural stream channel/aquatic habitat. Consequently, the only environmental benefits gained as a result of the Preferred Alternative include a lower potential for an accidental spill/hazardous materials release into a stream or wetland in the project area and mitigation of stream and wetland impacts at an off-site location at a 1.5:1 ratio, which will result in a net increase in stream and wetland habitat created and/or preserved. Stream and wetland mitigation is further described in Block 10k.

3. Non-Degradation Alternative

The Non-Degradation (No Build) Alternative will not directly impact any water resources and will not result in the direct loss or gain of any environmental benefits, though implementation of the Non-Degradation Alternative will result in a greater chance for an accidental spill/hazardous materials release into a stream or wetland in the project area (due to long-term congestion/high crash rates), and may result in an overall net increase of pollutants entering project area streams and wetlands due to runoff from existing highway facilities plagued by heavy congestion and inefficient traffic flow.

Block 10k.

Describe mitigation techniques proposed (except for the Non-Degradation Alternative):

- Describe proposed Wetland Mitigation (see OAC 3745-1-54 and Primer)
- Describe proposed Stream, Lake, Pond Mitigation (see Primer)

1. Minimal Degradation Alternative (Selected Alternative)

a. Summary of Impacts and Proposed Mitigation

As summarized in Tables C1 and C2 and Exhibits 3-9, the Minimal Degradation Alternative (Selected Alternative) for the LOR-57-19.42 project is expected to impact 657 feet of stream channel and 0.534 acre of wetland. Impacted streams include Stream 1 and Stream 2a in the Black River drainage. Wetlands impacted include Wetlands F and M in the Black River drainage. Physical and biological characteristics for the impacted streams and wetlands are included in Tables A and B. Photographs of impacted features are presented in Appendix C. A summary of impacts by stream/wetland is presented below:

- | | |
|--|------------|
| • Stream 1 (Provisional Modified WWH) | 612 feet |
| • Stream 2a (Provisional Modified Class II PHWH) | 45 feet |
| • Wetland F (Category 1) | 0.145 acre |
| • Wetland M (Category 1) | 0.389 acre |

The proposed mitigation strategy for the LOR-57-19.42 Minimal Degradation Alternative (Selected Alternative) is as follows: 1) mitigate impacts to Stream 1 (Sites 1a and 1b) off-site at the SUM-8 Pond Brook stream/wetland mitigation site (at a 1.5:1 ratio), 2) mitigate the 0.534 acre of non-forested Category 1 wetland impact at the SUM-8 Pond Brook stream/wetland mitigation site at a 1.5:1 ratio per OAC 3745-1-54. *ODOT is not proposing compensatory mitigation for the 20 feet of impact at Stream 1 (Site 1c) and the 45 feet of impact at Stream 2a. No temporary or permanent fill will be placed in Stream 1 or Stream 2a at these locations, and impacts will be limited to temporary equipment access and minor channel disturbance impacts. No loss of stream channel or lowering of water quality will occur as a result of this work.* The following table

summarizes the mitigation plan proposed by ODOT for impacts to streams and wetlands by the Minimal Degradation Alternative (Selected Alternative) (see also Table H).

Minimal Degradation Alternative (Selected Alternative) - Proposed Stream/Wetland Mitigation

| Resource | Total Impact (feet or acre) | On-Site or Off Site | Ratio | Proposed Mitigation Site | Mitigation Applied |
|-----------------------------------|-----------------------------|---------------------|-------|------------------------------------|----------------------------|
| Stream 1 - Site 1a (Modified WWH) | 564 feet | Off-Site | 1.5:1 | SUM-8 Pond Brook (WWH) | 846 feet |
| Stream 1 - Site 1b (Modified WWH) | 28 feet | Off-Site | 1.5:1 | SUM-8 Pond Brook (WWH) | 42 feet |
| Stream 1 - Site 1c (Modified WWH) | 20 feet | NA | NA | No mitigation proposed | NA |
| Stream 2a (Modified Class 2) | 45 feet | NA | NA | No mitigation proposed | NA |
| TOTAL (STREAMS) | 657 feet | | | | 888 feet Off-Site |
| Wetland F (Category 1) | 0.145 acre | Off-Site | 1.5:1 | SUM-8 Pond Brook (Cat 2 or higher) | 0.218 acre |
| Wetland M (Category 1) | 0.389 acre | Off-Site | 1.5:1 | SUM-8 Pond Brook (Cat 2 or higher) | 0.584 acre |
| TOTAL (WETLANDS) | 0.534 acre | | | | 0.802 acre Off-Site |

b. Proposed Stream/Wetland Mitigation Site Information

Off-Site Stream/Wetland Mitigation Location (SUM-8 Pond Brook) - The Pond Brook wetland mitigation and stream restoration site is located north of Ohio 82, south of Glenwood Road, and east of Liberty Road in Reminderville (Summit County) Ohio. Pond Brook flows through the site. Pond Brook flows into Tinkers Creek, which in turn terminates in the Cuyahoga River (HUC 04110002). The mitigation site is part of Liberty Park, a large expanse of natural land that is owned by MetroParks, serving Summit County and the City of Twinsburg. The service area for this mitigation site includes the Black River watershed (with USACE and OEPA approval; see Appendix E). A total of 158.5 acres is protected at the Pond Brook site by a permanent conservation easement held by MetroParks and the City of Twinsburg (see Appendix E). The site contains 14.46 acres of restored wetlands, 34.90 acres of enhanced wetlands, and 9,496 linear feet of restored/preserved stream channel. There are currently 2,071 feet of Warmwater Habitat stream mitigation credits available for use at Pond Brook. Mitigation of LOR-57-19.42 stream impacts at this site would reduce the balance of stream mitigation credits to 1,183 feet. The current wetland balance at Pond Brook has not been determined (starting balance and on-going balances will be determined after the 5th year of monitoring). Mitigation of LOR-57-19.42 wetland impacts would reduce the balance of wetland mitigation credits at Pond Brook by 0.802 acres.

c. Additional Mitigation Plans/Environmental Commitments

ODOT will ensure that the project contractor follows Best Management Practices for temporary sediment and erosion control during construction. Short-term water quality impacts due to runoff from disturbed areas during construction will be minimized through the use of sediment and erosion controls in accordance with the ODOT *Construction and Materials Specifications (2010)*, including Section 107.19 (environmental protection), Section 601 (slope and channel protection), Section 659 (seeding and mulching), and Supplemental Specification 832, which conform to Ohio EPA's National Pollutant Elimination Discharge System (NPDES) requirements for construction stormwater management. Notes and estimated quantities are included in the final design plans to handle erosion and sediment control. Longer duration water quality impacts associated with roadway runoff will be minimized through the implementation of post-construction BMPs in accordance with the ODOT *Location and Design Manual*. An NPDES permit will be obtained prior to construction.

ODOT will re-seed and re-plant (with native species) disturbed areas along the project corridor and adjacent to streams and jurisdictional ditch impacted by the project. Procedures outlined in *FHWA's 1999 Guidance on Invasive Species* will be implemented as necessary to minimize the potential for the spread of invasive plants during construction activities.

Ecological field surveys did not identify any suitable Indiana bat roost trees in the study area, and USFWS has determined the project will have **no effect** on Indiana bat. ODNR requests that any suitable Indiana bat roost trees in the project area be conserved, and if suitable trees must be removed, then the tree removal should only take place between September 30 and April 1. If removal takes place outside of those dates, then a net survey must be completed (see Attachment B).

2. Preferred Alternative

As summarized in Block 10b, the Preferred Alternative has the same overall design and stream/wetland impact scenario as the Minimal Degradation Alternative, with one exception. Under the Preferred Alternative design plan, Stream 1 at Site 1a would be placed in a culvert (see Appendix D). This would result in a 710-foot impact beginning at Ramp 8a (Sta. 54+00) and ending at Site 1b (the extended 72" concrete culvert under Ramp 8a/SR 57 - at approximately Sta. 61+00). Earthen fill would be placed along the edge of Stream 1 Ordinary High Water (OHWM) channel immediately adjacent to the culvert. A small amount of temporary fill material would likely be placed in the OHWM channel for dewatering or flow diversions during culvert construction (specific type/location unknown). A summary of Preferred Alternative impacts by stream/wetland is presented below:

- | | |
|--|------------|
| • Stream 1 (Provisional Modified WWH) | 758 feet |
| • Stream 2a (Provisional Modified Class II PHWH) | 45 feet |
| • Wetland F (Category 1) | 0.145 acre |
| • Wetland M (Category 1) | 0.389 acre |

The mitigation strategy for the LOR-57-19.42 Preferred Alternative would be as follows: 1) mitigate 738 feet of impact at Stream 1 (Sites 1a and 1b) off-site at the SUM-8 Pond Brook stream/wetland mitigation site (at a 1.5:1 ratio), and 2) mitigate the 0.534 acre of non-forested Category 1 wetland impact at the SUM-8 Pond Brook stream/wetland mitigation site at a 1.5:1 ratio per OAC 3745-1-54. *ODOT is not proposing*

compensatory mitigation for the 20 feet of impact at Stream 1 (Site 1c) and the 45 feet of impact at Stream 2a. No temporary or permanent fill will be placed in Stream 1 or Stream 2a at these locations, and impacts will be limited to temporary equipment access and minor channel disturbance impacts. No loss of stream channel or lowering of water quality will occur as a result of this work. The following table summarizes the mitigation plan for impacts to streams and wetlands by the Preferred Alternative.

Preferred Alternative - Proposed Stream/Wetland Mitigation

| Resource | Total Impact (feet or acre) | On-Site or Off Site | Ratio | Proposed Mitigation Site | Mitigation Applied |
|--|-----------------------------|---------------------|-------|------------------------------------|----------------------------|
| Stream 1 - Sites 1a, 1b (Modified WWH) | 738 feet | Off-Site | 1.5:1 | SUM-8 Pond Brook (WWH) | 1,107 feet |
| Stream 1 - Site 1c (Modified WWH) | 20 feet | NA | NA | No mitigation proposed | NA |
| Stream 2a (Modified Class 2) | 45 feet | NA | NA | No mitigation proposed | NA |
| TOTAL | 803 feet | | | | 1,107 feet Off-Site |
| Wetland F (Category 1) | 0.145 acre | Off-Site | 1.5:1 | SUM-8 Pond Brook (Cat 2 or higher) | 0.218 acre |
| Wetland M (Category 1) | 0.389 acre | Off-Site | 1.5:1 | SUM-8 Pond Brook (Cat 2 or higher) | 0.584 acre |
| TOTAL | 0.534 acre | | | | 0.802 acre Off-Site |

3. Conclusion Regarding the Minimal Degradation Alternative and the Preferred Alternative

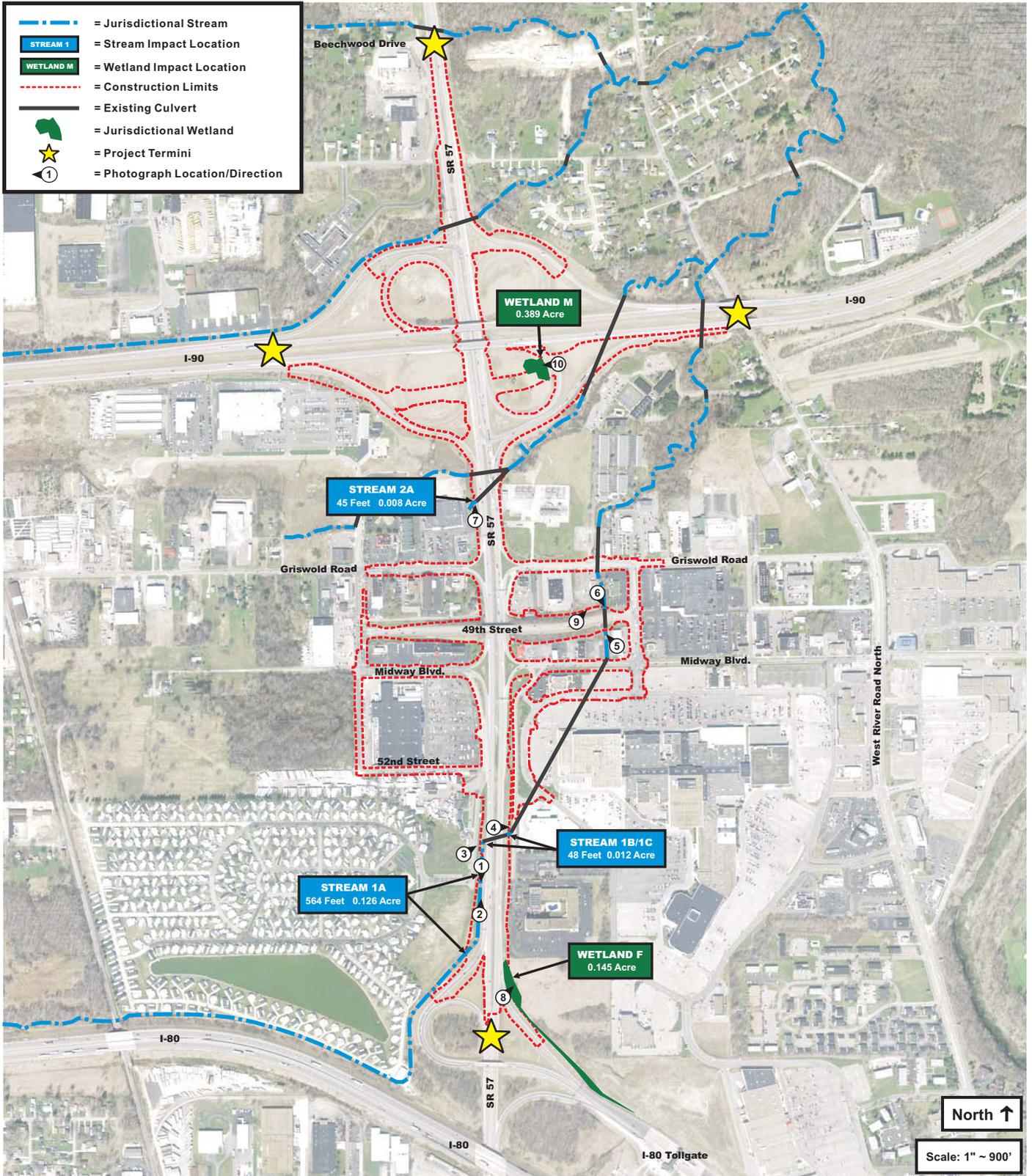
The Minimal Degradation Alternative (Selected Alternative) has the same alignment and overall design concept as the Preferred Alternative and has the same impacts to streams, wetlands, terrestrial habitats, threatened and endangered species as the Preferred Alternative, with one exception: the Minimal Degradation Alternative (Selected Alternative) includes the construction of a 490-foot relocated channel (utilizing natural stream design techniques) and a retaining wall at Stream 1 (Site 1a) instead of a culvert to reduce impacts to Stream 1 and avoid a lowering of water quality at this site. The Minimal Degradation Alternative is the Selected Alternative for the LOR-57-19.42 project based on the following factors: 1) less overall stream impact length (146 feet less), 2) construction of a parallel (on-site) 490-foot stream channel using natural stream design techniques to partially offset proposed impacts at Stream 1 - Site 1a and avoid a lowering of water quality, 3) less off-site stream mitigation required (219 feet less), and 4) lower construction cost (approximately \$131,000 lower).

4. Conclusion Regarding the Non-Degradation Alternative

The Non-Degradation Alternative is the No-Build alternative. This alternative involves continued use of the existing SR 57, I-80, I-90 facilities and local road network, with only routine maintenance and critical spot improvements to address potential future transportation/safety issues. This alternative would result in no direct impacts to streams, wetlands, terrestrial habitats, threatened and endangered species, or any other environmental resources, and would have no direct water quality degradation (at this time). However, implementation of the Non-Degradation Alternative would not address any of the key Purpose and Need elements described in the LOR-57-19.42 Categorical Exclusion document (congestion/level-of-service and safety needs), and would not provide any of the benefits discussed in Blocks 10h and 10i. Consequently, over time, the Non-Degradation Alternative could result in direct or indirect impact on streams and wetlands in the immediate project area as traffic and safety problems are exacerbated along the SR 57 corridor and the

need for future spot improvements and continual maintenance increases. Additionally, continued congestion and high crash rates will result in a greater potential for accidental spills of hazardous/toxic materials which could eventually reach and adversely affect area streams, wetlands, and terrestrial habitats. Also, slower and inefficient traffic flow in the project area may result in greater amounts of oil, grease, and particulates from vehicular traffic reaching and adversely impacting local streams and local air quality. For these reasons, the Non-Degradation Alternative is not considered to be a safe or practicable alternative for the LOR-57-19.42 project.

-  = Jurisdictional Stream
-  = Stream Impact Location
-  = Wetland Impact Location
-  = Construction Limits
-  = Existing Culvert
-  = Jurisdictional Wetland
-  = Project Termini
-  = Photograph Location/Direction



North ↑

Scale: 1" ~ 900'



Exhibit 2b Summary of Impacted Jurisdictional Features and Photograph Index

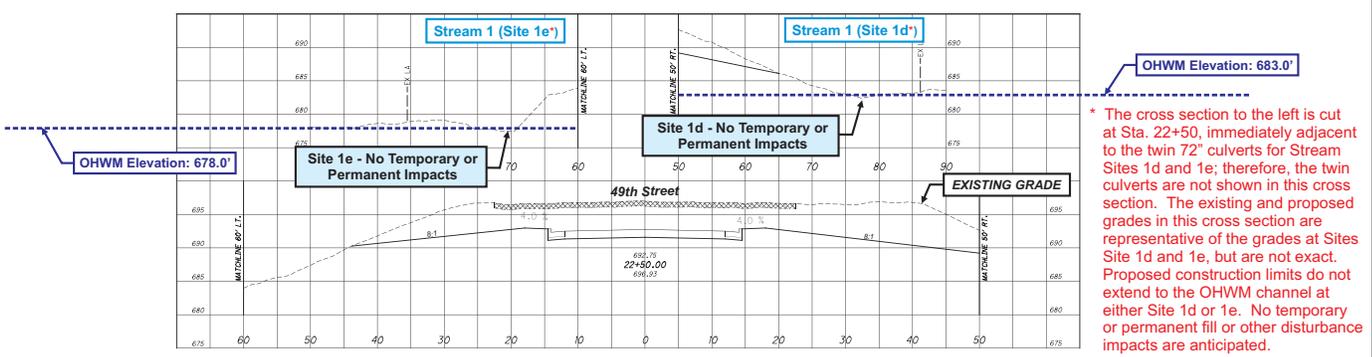
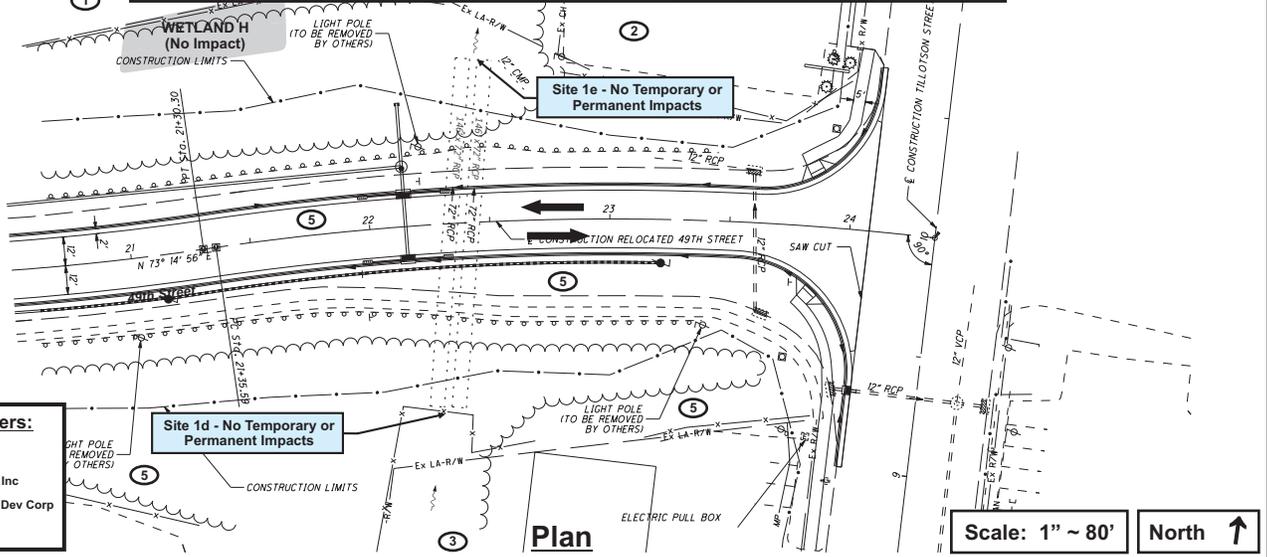
LOR-57-19.42; PID 82645
SR 57 Widening and Improvements
Lorain County, Ohio

U.S. Army Corps of Engineers
Individual 404 Permit and
Ohio EPA 401 Water Quality
Certification Application

August 2013

Exhibit 2b of 9

| Existing Culvert Replaced | Proposed Temporary Equipment Access/Channel Disturbance* | | | Proposed Temporary Fill | | | Total Impact | | | Total New Impact | |
|---------------------------|--|-------------|-----------|-------------------------|-------------|-----------|--------------|-------------|-----------|------------------|-------------|
| | Length (LF) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



* The cross section to the left is cut at Sta. 22+50, immediately adjacent to the twin 72" culverts for Stream Sites 1d and 1e; therefore, the twin culverts are not shown in this cross section. The existing and proposed grades in this cross section are representative of the grades at Sites Site 1d and 1e, but are not exact. Proposed construction limits do not extend to the OHWM channel at either Site 1d or 1e. No temporary or permanent fill or other disturbance impacts are anticipated.

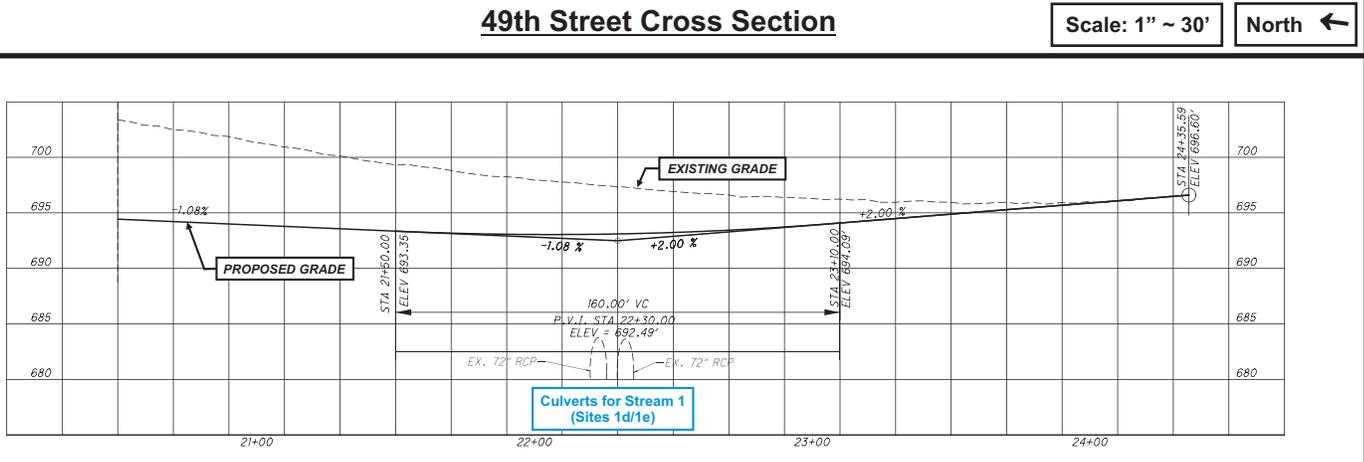


Exhibit 5 Proposed Activity - Stream 1 (Sites 1d/1e)

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SR 57 Widening and Improvements
Lorain County, Ohio

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Individual 404 Permit and
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Exhibit 5 of 9

| Proposed Earthen Fill | | | Proposed Excavation | | | Proposed Temporary Fill | | | Total Direct Impact | | | Indirect Impact Area | Total Impact Area |
|-----------------------|-----------|-------------|---------------------|-----------|-------------|-------------------------|-----------|-------------|---------------------|-----------|-------------|----------------------|-------------------|
| Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Area (AC) | Area (AC) |
| NA | 0 | 0 | NA | 0 | 0 | NA | 0 | 0 | NA | 0 | 0 | 0 | 0 |

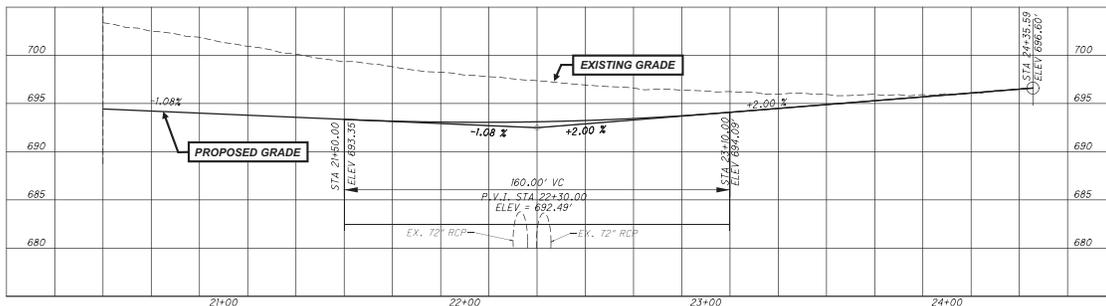
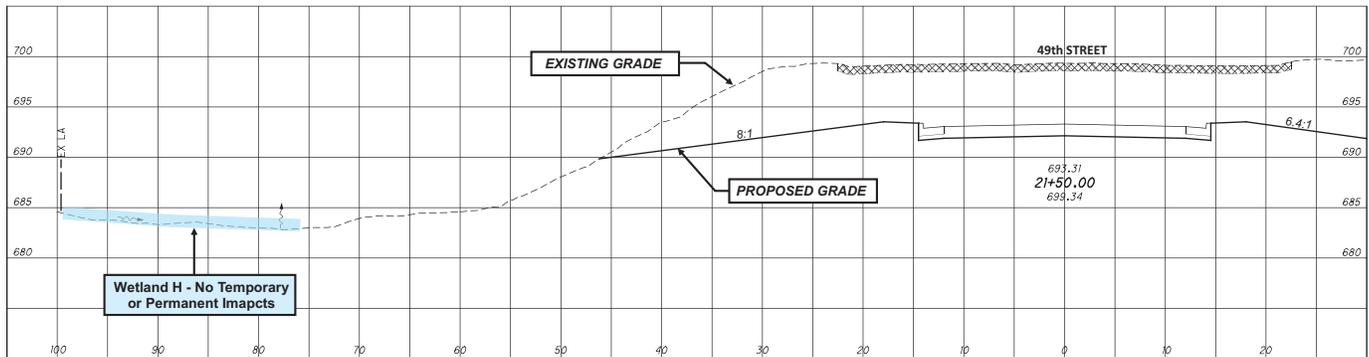
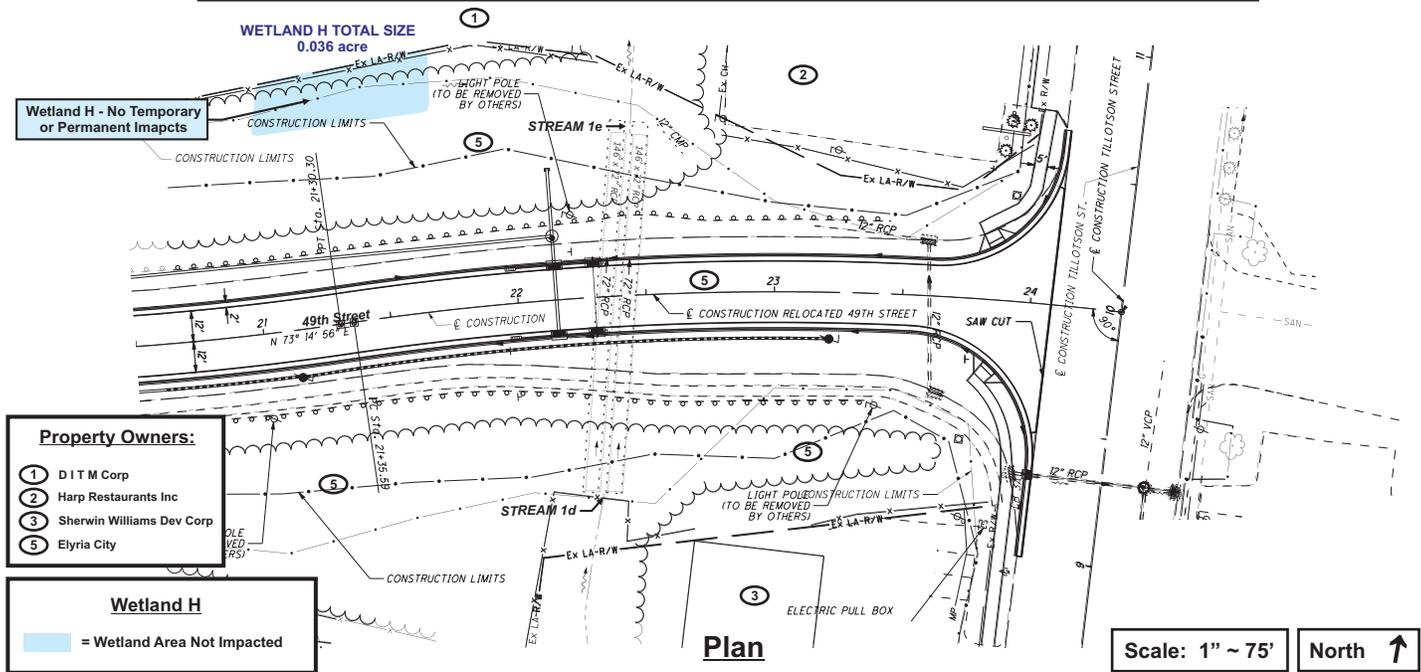


Exhibit 8 Proposed Activity - Wetland H

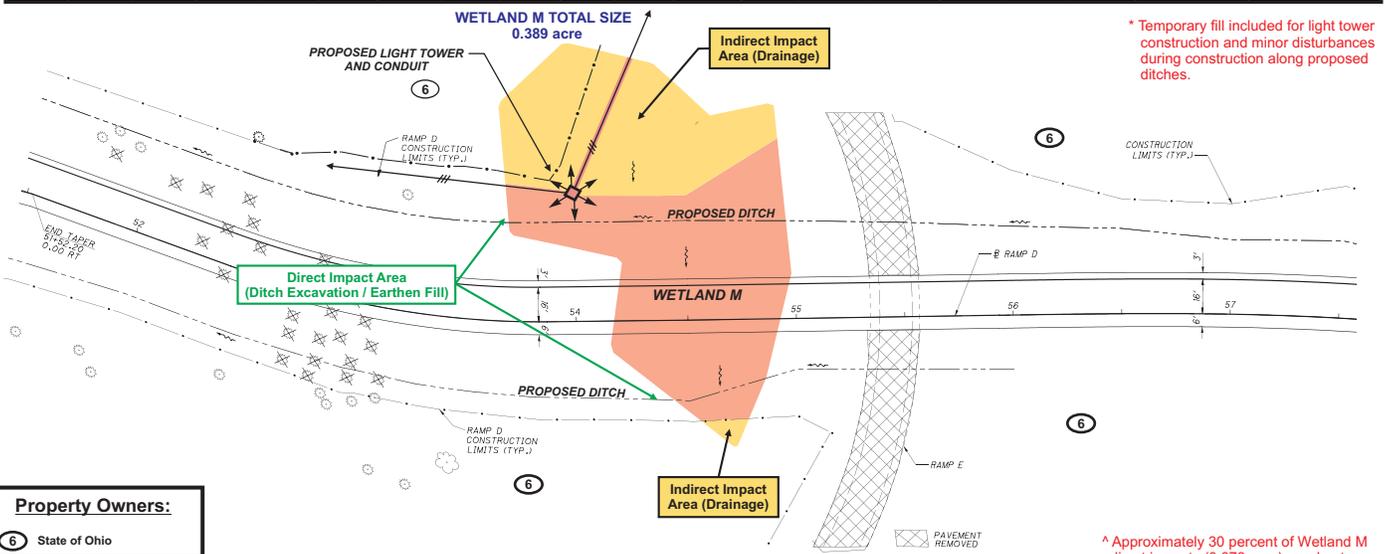
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Lorain County, Ohio

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August 2013

Exhibit 8 of 9

| Proposed Concrete Fill | | | Proposed Earthen Fill | | | Proposed Steel Fill | | | Proposed Excavation | | | Proposed Temporary Fill | | | Total Direct Impact | | | Indirect Impact Area | Total Impact Area |
|------------------------|-----------|-------------|-----------------------|-----------|-------------|---------------------|-----------|-------------|---------------------|--------------------|------------------|-------------------------|--------------------|-------------|---------------------|-----------|---|----------------------|-------------------|
| Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Area (AC) | Area (AC) |
| NA | 0.001 | 1 | NA | 0.160 | 258 | NA | 0.001 | 1 | NA | 0.073 ^A | 118 ^A | NA | 0.007 [*] | 20 | NA | 0.242 | 280 Fill ^A 118 Exc ^A | 0.154 | 0.389 |

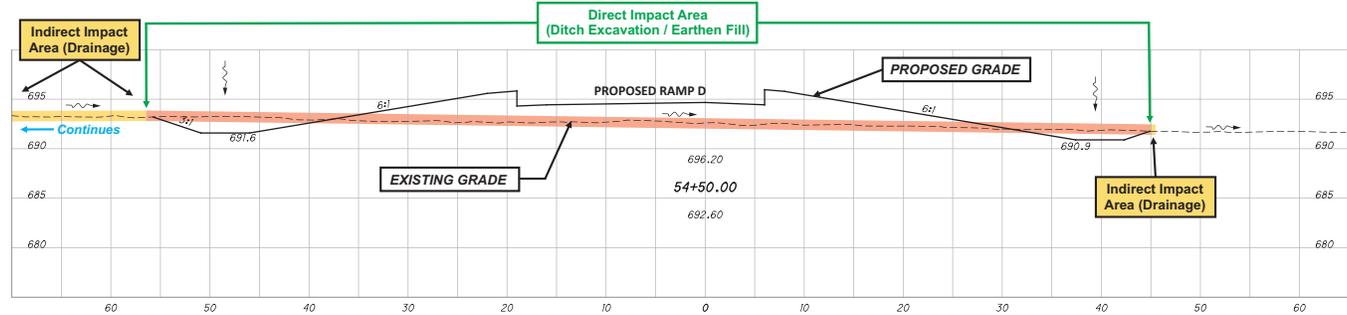


* Temporary fill included for light tower construction and minor disturbances during construction along proposed ditches.

^A Approximately 30 percent of Wetland M direct impacts (0.073 acre) are due to excavation/grading activities (approximately 118 cubic yards of material to be excavated from Wetland M).

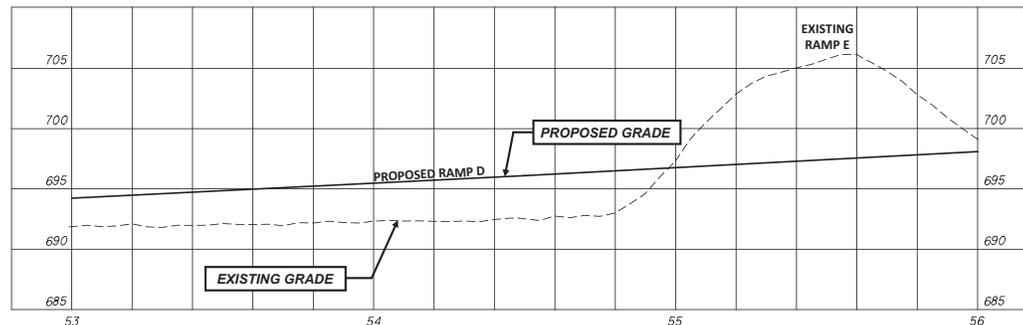
Plan

Scale: 1" ~ 90' North ↑



I-90 Ramp D Cross Section

Scale: 1" ~ 20' North ←



I-90 Ramp D Profile

Scale: 1" ~ 60' North ↑



**Exhibit 9
Proposed Activity - Wetland M**

LOR-57-19.42; PID 82645
SR 57 Widening and Improvements
Lorain County, Ohio

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TABLE A. Streams Affected by the Minimal Degradation Alternative (Selected Alternative)

| Feature (Site #) | USGS Coordinates Location | Description and Length Impacted | Drainage Basin | Total Length | Receiving Stream | Distance to Receiving Stream | Drainage Area/ Drainage Area at Impact Site | QHEI or HHEI Score/ OEPA Provisional Aquatic Life Use Designation | Riparian Corridor and Adjacent Habitats |
|-----------------------|---|---|----------------|--------------|------------------|------------------------------|--|--|--|
| Stream 1 (Site 1a) | 41.39487° 82.11691° West of SR 57 Sta. 106+50 to Sta.111+50 | USGS intermittent; USACE relatively permanent water-perennial; channel possessing a defined bed and bank and ordinary high water mark; stream captured within roadside ditch, and runs parallel to SR 57/Ramp 8a. 564 linear feet of impact (total) | Black River | 4.3 mi | Black River | 1.6 miles | 2.89 mi ² /1.19 mi. ² | QHEI = 53.5 Provisional Modified Warmwater Habitat (MWH) | Narrow, disturbed, young riparian corridor in/adjacent to SR 57 right-of-way. Adjacent habitats land uses consist of highway right-of-way and residential/commercial development |
| Stream 1 (Site 1b/1c) | 41.39524° 82.11683° SR 57 Sta. 113+00 to Sta. 114+50 | USGS intermittent; USACE relatively permanent water-perennial; channel possessing a defined bed and bank and ordinary high water mark; Site 1b is located at the inlet of an existing culvert under SR 57; Site 1c is located at the outlet of the SR 57 culvert and the inlet of an adjacent local road culvert. 48 linear feet impact (total) | Black River | 4.3 mi | Black River | 1.6 miles | 2.89 mi ² /1.21 mi. ² | QHEI = 53.5 Provisional Modified Warmwater Habitat (MWH) | Narrow, disturbed, young riparian corridor in/adjacent to SR 57 right-of-way. Adjacent habitats land uses consist of highway right-of-way and residential/commercial development |
| Stream 2a | 41.40184° 82.11707° West of SR 57 Sta. 136+50 | Non-USGS intermittent; USACE relatively permanent water-seasonal intermittent; channel possessing a defined bed and bank and ordinary high water mark. Stream 2a located between two culverts along west side of SR 57 45 linear feet impact (total) | Black River | 0.08 mi | Stream #2 | 0.07 mi | 0.02 mi ² /0.02 mi. ² | Provisional Modified Category II PHWH based on cursory field observations and adjacent Stream 2 conditions (HHEI 59) | Narrow, disturbed, young riparian corridor in/adjacent to SR 57 right-of-way. Adjacent habitats land uses consist of highway right-of-way and residential/commercial development |

TABLE B. Wetlands Affected by the Minimal Degradation Alternative (Selected Alternative)

| ID | USGS Coordinates | Location | Drainage Basin | Wetland Description | Cowardin Classification | ORAM v5.0 Score | OEPA Category | Total Size (Area Impacted) | Adjacent Habitats | Proximity to Other Surface Waters |
|----|------------------------|--|----------------|--------------------------------------|-------------------------|-----------------|---------------|-----------------------------------|---|---|
| F | 41.39254° 82.11604° | Along east side of I-80 Ramp 8B from Sta. 49+00 to 56+20 | Black River | Palustrine emergent; Non-isolated | PEM1F | 29.5 | 1 | 0.900 acre (0.145 acre) | Roadway right-of-way to the west and south; commercial to the north and east; vacant and scrub-shrub/oldfield to the east | Drains southeast to an unnamed tributary which flows approximately 1.6 miles northeast to the Black River |
| M | 41.40396° 82.11526° | Proposed Ramp D at Sta. 54+50 | Black River | Palustrine Emergent Non-Isolated | PEM1B | 19 | 1 | 0.389 acre (0.389 acre) | Located in I-90 interchange infield (ramp pavement/embankment to north and east, grassy right-of-way to the west and south) | Wetland M drains into Wetland K and Stream 3 which flows into Stream 1, which flows approximately 0.8 mile to the Black River |

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TABLE C1. Stream Impact Breakdown for the Minimal Degradation Alternative (Selected Alternative)

| STREAMS | | | Permanent Fill Below OHWM | | | | | | | | | | | Proposed Temporary Equipment Access/ Channel Disturbance Below OHWM (No Fill) | | | Proposed Temporary Fill Below OHWM (steel, rock, or granular material for dewatering) | | | TOTAL IMPACT (Upstream to Downstream) | | | TOTAL NEW IMPACT (Total - Existing) |
|--|--|---------------------------------------|---------------------------|---------------------------|---|--------------|-------------|-------------------|--------------|-------------|-------------------------------------|--------------|-------------|--|--------------|-------------|--|--------------|-------------|--|--------------|-------------------------------|--|
| Resource | Description of Impacts/ Activities below OHWM | Total Length Within Project Area (FT) | Existing Culvert Length | Existing Culvert Replaced | Proposed Concrete Fill (Includes Culverts, Gutters, Concrete Pads, Retaining Walls, etc.) | | | Proposed RCP Fill | | | Proposed Earthen or Embankment Fill | | | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) ¹ | Area (AC) | Volume (CY) | Length (LF) |
| | | | Length (LF) | Length (LF) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | | | | | | | | | | |
| Stream 1 Site 1a (see Exhibit 3) | Channel Relocation/ Earthen Fill; Minor Excavation; Temporary Equipment Access/Minor Channel Disturbances; Temporary Dewatering/ Flow Diversions | 5850 | 0 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 524 | 0.118 | 127 | 0 | 0.000 | 0 | 40 | 0.008 | 3 | 564 | 0.126 | 130* 3 [^] | 564 |
| Stream 1 Site 1b/1c (see Exhibits 4a/4b) | Culvert Extension; Temporary Equipment Access/Minor Channel Disturbances; Temporary Dewatering/Flow Diversions | 5850 | 1520 | 4 | 12 | 0.003 | 3 | 0 | 0.000 | 0 | 10** | 0.001 | 2 | 20 | 0.004 | 0 | 20 | 0.004 | 3 | 52 | 0.012 | 8 | 48 |
| TOTAL Stream 1 | NA | 5850 | 1520 | 4 | 12 | 0.003 | 3 | 0 | 0.000 | 0 | 534 | 0.119 | 129 | 20 | 0.004 | 0 | 60 | 0.012 | 6 | 616 | 0.138 | 138 | 612 |
| Stream 2a (see Exhibit 6) | Temporary Equipment Access/Minor Channel Disturbances; Silt Removal | 425 | 369 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 45 | 0.008 | 0 | 0 | 0.000 | 0 | 45 | 0.008 | 0 | 45 |
| GRAND TOTALS | | | 1889 | 4 | 12 | 0.003 | 3 | 0 | 0.000 | 0 | 534 | 0.119 | 129 | 65 | 0.012 | 0 | 60 | 0.012 | 6 | 661 | 0.146 | 138* 3[^] | 657 |

* Fill (cubic yards) ^ Excavation (cubic yards)

** Earthen fill length not included in Total Impact length since this fill area runs parallel to concrete fill (parallel impact lengths not counted twice).

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TABLE C2. Wetland Impact Breakdown for the Minimal Degradation Alternative (Selected Alternative)

| Wetlands | | | Permanent Fill Below OHW | | | | | | | | | Proposed Excavation Below OHW | | | Proposed Temporary Fill Below OHW (steel, rock, or granular material for dewatering) | | | TOTAL DIRECT IMPACTS | | | INDIRECT IMPACT AREA | TOTAL IMPACT AREA | | | |
|---------------------------|--|-------------------------------------|---|--------------|-------------|-------------------------------------|--------------|-------------|---------------------|--------------|-------------|-------------------------------|--------------|-------------|--|--------------|-------------|----------------------|--------------|----------------------|----------------------|-------------------|-------------|-----------|-----------|
| Resource | Description of Impacts/Activities below OHW | Total Area Within Project Area (AC) | Proposed Concrete Fill (Includes Culverts, Gutters, Concrete Pads, Retaining Walls, etc.) | | | Proposed Earthen or Embankment Fill | | | Proposed Steel Fill | | | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Area (AC) | Area (AC) |
| | | | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | Length (LF) | Area (AC) | Volume (CY) | | | | | | | | | | | | | | |
| Wetland F (see Exhibit 7) | Earthen Fill/Excavation; Temporary Dewatering/Flow Diversions | 0.900 | NA | 0.000 | 0 | NA | 0.040 | 65 | NA | 0.000 | 0 | NA | 0.100 | 161 | NA | 0.005 | 8 | NA | 0.145 | 73* 161^ | 0.000 | 0.145 | | | |
| Wetland M (see Exhibit 9) | Earthen Fill/Excavation; Temporary Dewatering/Flow Diversions; Indirect Drainage Impacts | 0.389 | NA | 0.001 | 1 | NA | 0.160 | 258 | NA | 0.001 | 1 | NA | 0.073 | 118 | NA | 0.007 | 20 | NA | 0.242 | 280* 118^ | 0.154** | 0.389** | | | |
| GRAND TOTALS | | 1.289 | NA | 0.001 | 1 | NA | 0.200 | 323 | NA | 0.001 | 1 | NA | 0.173 | 279 | NA | 0.012 | 28 | NA | 0.387 | 353* 279^ | 0.154** | 0.534** | | | |

* Fill (cubic yards) ^ Excavation (cubic yards)

** Indirect Impact area includes Temporary Fill area (areas not counted twice); Total Impact Area includes direct impacts plus indirect impacts, minus temporary impacts

TABLE D. Summary of the Proposed Lowering of Water Quality by Alternative

| Alternative | Length Impacted | Use Designation/Water Quality/Aquatic Habitat | Aquatic Biota | T&E Species | Terrestrial Habitat | Wetlands | Summary |
|--------------------------------|-----------------|--|--|---|---|--|---|
| Minimal Degradation (Selected) | 657 feet | <p>No lowering of Stream 1 (Site 1a) water quality or MWWH expected due to 490-foot on-site stream relocation utilizing natural stream design techniques and retaining wall construction. Impacts at Site 1b (short culvert extension) and Site 1c (temporary equipment access and minor channel disturbances) not expected to lower water quality or adversely affect aquatic habitat. Relocated channel at Stream 1 - Site 1a could potentially attain WWH designation in long-term.</p> <p>Impacts at Stream 2a (temporary equipment access and minor channel disturbances) not expected to lower water quality or adversely affect aquatic habitat; Stream 2a likely to only support a Class I or modified Class II PHWH designation following construction due to substantial length in existing culvert and lack of existing aquatic/riparian habitat.</p> | <p>Aquatic biota located in Stream 1 at Site 1a and Site 1b will be displaced or eliminated, but is expected to become re-established in the relocated channel shortly after construction; impacts to aquatic biota at Site 1c expected to be minor overall due to limited in-stream work at this site.</p> <p>Aquatic biota impacts in Stream 2a expected to be minor due to limited in-stream work and the overall limited quality of this stream.</p> | Per USFWS, No Effect on federally endangered Indiana Bat; No Effect on federally endangered piping plover, Kirtland's warbler, or species of concern bald eagle; no impacts expected on state potentially-threatened round-leaved dogwood and Canada buffalo-berry. | Majority of the project is located in existing right-of-way; small amount of riparian woodland habitat impact expected; overall impacted terrestrial habitats and terrestrial wildlife are expected to be minor | 0.534 acre impacted from two lower-quality Category 1 wetlands (Wetlands F and M). | <p>Minor overall water quality/aquatic habitat impacts to Stream 1 due to proposed channel relocation at Site 1a using natural stream channel design techniques and retaining wall construction. 564-foot impact at Site 1a replaced on-site by 490-foot relocated channel. Impacts at Sites 1b and 1c expected to be minor overall; no substantial long-term water quality, aquatic habitat, or aquatic biota impacts expected, and no overall lowering of water quality or the MWWH use designation is expected. Relocated channel (Stream 1 - Site 1a) could potentially attain WWH designation in long-term.</p> <p>Minor overall impacts to Stream 2a due to limited in-stream work and overall limited quality of this stream; likely to only support a Class I or modified Class II PHWH designation following construction.</p> <p>No impacts to T&E species are anticipated; overall impacted terrestrial habitats and terrestrial wildlife are expected to be minor.</p> <p>0.534 acre of wetland impacted from two lower-quality Category 1 features (Wetlands F and M).</p> |
| Preferred | 803 feet | Similar to the Minimal Degradation Alternative, except for Stream 1 (Site 1a), which includes a concrete culvert instead of stream relocation utilizing natural stream design techniques and retaining wall construction. Impacts at Site 1a include permanent loss of 700 feet of stream channel/aquatic habitat and a lowering of water quality (MWWH use designation in Site 1a area not supported following construction due to lengthy culvert construction). | Similar to the Minimal Degradation Alternative, except for Stream 1 (Site 1a), which includes a concrete culvert instead of stream relocation and retaining wall construction. Aquatic biota in Site 1a will be permanently eliminated or displaced as this entire section of stream will be placed in culvert. | Same as the Minimal Degradation Alternative. | Same as the Minimal Degradation Alternative. | Same as the Minimal Degradation Alternative. | Similar to the Minimal Degradation Alternative, though total impacts (permanent and temporary) to Stream 1 at Site 1a increase from 564 feet to 710 feet due to culvert impact; existing stream channel and aquatic habitat to be permanently lost at this site; aquatic biota in Site 1a will be permanently eliminated or displaced; lowering of water quality in Stream 1 expected (MWWH use designation not supported following construction due to lengthy culvert construction). |
| Non-Degradation | 0 feet | Minimal impact | Minimal impact | Minimal impact | Minimal impact | No Impact | Similar to existing conditions; no lowering of overall water quality. |

TABLE G. Impacts and Avoidance Estimates

| Stream/Wetland ID | Length/Area Impacted | Total Resource | Volume of Fill | % Avoided |
|--|----------------------|----------------|---|-----------|
| Stream 1 (Preferred Alternative) | 758 feet | 14,750 feet | 165 yd ³ (Permanent) 6 yd ³ (Temporary) | 95% |
| Stream 1 (Selected Alternative / Minimal Degradation Alternative)* | 612 feet | 14,750 feet | 132 yd ³ (Permanent) 6 yd ³ (Temporary) | 96% |
| Stream 2a | 45 feet | 425 feet | 0 yd ³ (Permanent) 0 yd ³ (Temporary) | 89% |
| Wetland F | 0.145 acre | 0.900 acre | 65 yd ³ (Permanent) 8 yd ³ (Temporary) | 84% |
| Wetland M | 0.389 acre | 0.389 acre | 260 yd ³ (Permanent) 20 yd ³ (Temporary) | 0% |

* The Minimal Degradation Alternative is the Selected (Build) Alternative for the LOR-57-19.42 project.

TABLE H. Proposed Mitigation for the Minimal Degradation Alternative (Selected Alternative)

| Resource | Total Impact (feet or acre) | On-Site or Off Site | Ratio | Proposed Mitigation Site | Mitigation Applied |
|-----------------------------------|--------------------------------|------------------------|-------|---------------------------------------|--------------------------------|
| Stream 1 - Site 1a (Modified WWH) | 564 feet | Off-Site | 1.5:1 | SUM-8 Pond Brook (WWH) | 846 feet |
| Stream 1 - Site 1b (Modified WWH) | 28 feet | Off-Site | 1.5:1 | SUM-8 Pond Brook (WWH) | 42 feet |
| Stream 1 - Site 1c (Modified WWH) | 20 feet | NA* | NA* | No mitigation proposed* | NA* |
| Stream 2a (Modified Class 2) | 45 feet | NA* | NA* | No mitigation proposed* | NA* |
| TOTAL (STREAMS) | 657 feet | | | | 888 feet Off-Site |
| Wetland F (Category 1) | 0.145 acre | Off-Site | 1.5:1 | SUM-8 Pond Brook (Cat 2 or higher) | 0.218 acre |
| Wetland M (Category 1) | 0.389 acre | Off-Site | 1.5:1 | SUM-8 Pond Brook (Cat 2 or higher) | 0.584 acre |
| TOTAL (WETLANDS) | 0.534 acre | | | | 0.802 acre Off-Site |

* ODOT is not proposing compensatory mitigation for the 20 feet of impact at Stream 1 (Site 1c) and the 45 feet of impact at Stream 2a. No temporary or permanent fill will be placed in Stream 1 or Stream 2a at these locations, and impacts will be limited to temporary equipment access and minor channel disturbance impacts. No loss of stream channel or lowering of water quality will occur as a result of this work.



ODOT POND BROOK POOLED STREAM MITIGATION SITE

BALANCE SHEET-REMAINING LINEAR FT. STREAM MITIGATION

LATEST REVISION - 9/24/13

(*ORIGINAL BALANCE = 7,006 LF plus 2,490 LF preserved (added in row 5) = 9,496 LF

| Project (CRS) PID | USACE ID NO. / OEPA ID NO. | Stream Impact (LF) | Stream Mitigation <u>taken to this</u> <u>site (LF)</u> | Balance (LF) |
|--|---|---------------------------------------|--|-------------------------|
| SUM-8-13.30/15.63 PID 24507/24508 | USACE ID# Brandywine Creek 200500588 OEPA ID# 052377 | 4063 | 6095 | 911 |
| SUM-8-13.30/15.63 PID 24507/24508 Modification 8-20-08 | USACE ID# Brandywine Creek 200500588 OEPA ID# 052377 | -13 (impact reduction) | NA | 924 |
| SUM-8-13.30/15.63 PID 24507/24508 Modification 3-9-09 | USACE ID# Brandywine Creek 200500588 OEPA ID# 052377 | 332 (additional impact) | 498 | 426 |
| SUM-8-13.30/15.63 PID 24507/24508 Modification 4-27-09 | USACE ID# Brandywine Creek 200500588 OEPA ID# 052377 | -2490 (additional preservation) | NA | 2916 |
| POR-43-23.59 PID 78243 | USACE ID# Cuyahoga River 200700949 OEPA ID# 052377 | 228 | 342 | 2574 |
| SUM-82-10.15 PID 87680 | USACE ID# Pond Brook-2010-01018 -CUY OEPA ID# 113753 | 90 | 90 | 2484 |
| SUM- Highland Road RR Grade Separation Project PID 23064 | USACE ID# 2006-02346-CUY OEPA ID# 103701 | 275 | 413 | 2071 |

| Project (CRS) PID | USACE ID NO. / OEPA ID NO. | Stream Impact (LF) | Stream Mitigation <u>taken to this site</u> (LF) | Balance (LF) |
|-----------------------------------|--|-------------------------------|---|-------------------------|
| LOR-57-19.42 PID 82645 | USACE ID# pending OEPA ID # pending | 592 | 888 | 1183 |