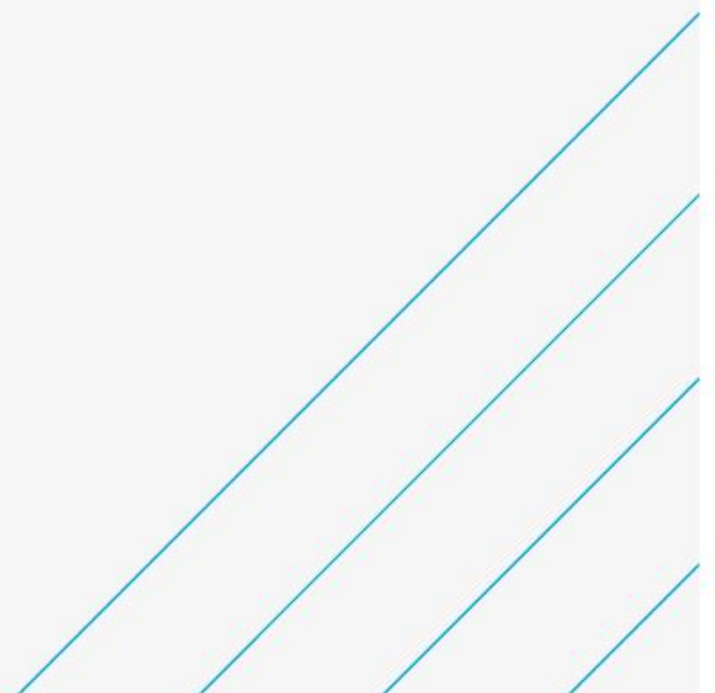


Attachment B

Environmental Resources Alternatives Analysis

July 31, 2023



Notice

This document and its contents have been prepared and are intended solely as information for and use in relation to the M-14 at Barton Drive Interchange project.

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1. Overview

1.1. Introduction

The Michigan Department of Transportation (MDOT) has proposed roadway changes for eastbound M-14 at Barton Drive in Washtenaw County. These roadway changes are aimed at addressing safety issues and concerns. Four alternative designs were developed for this project and include: Alternative 1 - No-Action (i.e., No-Build), Alternative 2 - Closure of Eastbound Ramps, Alternative 3 - Modify the Existing Ramp Geometry, and Alternative 4 - Dual Roundabout Interchange. Chapter 3 of the Planning and Environmental Linkages (PEL) document provides a detailed description of each of these alternatives, with design drawings provided for reference. The No-Action alternative does not satisfy the purpose and need of the proposed project, but is retained as a benchmark to compare the level of environmental effects for each alternative.

Prior to the development of the alternative designs, Atkins scientists conducted a field assessment to determine environmental resources including wetlands, streams and surface waters, and woodland forests within the project study area (see **Appendix B, Environmental Resources Report**). This project area was later expanded based upon alternative designs, with a desktop analysis employed to determine resources within the extended study area.

Atkins scientist performed a desktop analysis to determine potentially threatened and endangered species habitat within the project area utilizing state and federal resources. The MDOT also conducted threatened and endangered species field surveys to determine the presence and/or absence of protected species within the project study area. The **Threatened and Endangered Species Report (Appendix C)** summarizes the results of the desktop analysis and field surveys.

This report details the potential impacts to environmental resources for each of the alternatives based upon field and desktop assessments. The report also includes applicable federal, state, and/or local regulations pertaining to these resources, potential mitigation measures, and critical schedule considerations. Environmental resources impact figures for this report are available in **Appendix A**.

1.2. Wetlands, Streams, Surface Waters, and Floodplains

Atkins performed a field wetland assessment for the project study area utilizing the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual (1987), and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (2010). Streams within the study area were identified based on methods outlined in the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Stream Quantification Tool Data Collection and Analysis Manual (2020) with supporting materials adapted from the North Carolina Division of Water Quality Methodology for Identification of Intermittent and Perennial Streams and Their Origins (2010) (see **Appendix B, Environmental Resources Report**). The study area was later extended for each alternative based upon engineering designs. A desktop wetland and stream delineation was performed for the extended study areas utilizing Light Detection and Ranging (LiDAR) data (OCM Partners, 2022), Topographic maps, Michigan Statewide Authoritative Imagery (MiSAIL) (Michigan Department of Technology, Management and Budget [DTMB], 2017), and field observations of adjacent areas.

It should be noted that wetlands within the study area have not been verified by the USACE, and a separate jurisdictional determination package has not been prepared as part of this study.

The Federal Emergency Management Agency's (FEMA) National Flood Hazard Layer (NFHL) Viewer (2021) was used to determine the extent of the floodplain within the project study area.

1.3. Woodland Forests

The City of Ann Arbor's Unified Development Code (2022) was used to define woodland forests based upon requirements for minimum size and gross basal area. The Unified Development Code (2022) also classifies woodlands into three distinct categories: native forest fragments, urban woodlands, and pioneer woodlands.

Woodland forests within the project study area were previously delineated and classified during the field site visit (see **Appendix B, Environmental Resources Report**). Woodland forests located within the extended project area were determined based upon an Atkins created canopy heights dataset, Michigan Statewide Authoritative Imagery (MiSAIL) (DTMB, 2017), and details about adjoining forest stands.

1.4. Threatened and Endangered Species

Atkins conducted a desktop analysis to identify threatened and endangered species that may be impacted by the proposed project. The desktop analysis used threatened and endangered species databases, including the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) Report (2022a), MDOT Dynamic Environmental GIS Resource (DEGR) tool (2022), and Michigan State University Michigan Natural Features Inventory County Element Data (n.d.(a)). Critical habitat geospatial data from the USFWS Threatened & Endangered Species Active Critical Habitat Report dataset (2022c) were acquired for each species, when applicable, to determine whether any overlap or proximity exists to the study area boundary. A summary of the desktop analysis is available in **Appendix C**.

MDOT also completed a desktop review for all state and federally listed species using a two-mile buffer around the proposed project study area. Within this buffer, records for rare species from the Michigan Natural Features Inventory database were reviewed as well as regulatory GIS layers from the USFWS. Records included historical observations for the federally endangered northern long-eared bat (NLEB) (*Myotis septentrionalis*) and Indiana bat (*Myotis sodalis*), the federally threatened eastern massasauga rattlesnake (*Sistrurus catenatus*), the state endangered peregrine falcon (*Falco peregrinus*), several listed freshwater mussels, and the state threatened Duke's skipper (*Euphyes dukesi*). The MDOT conducted seasonal threatened and endangered species field surveys in 2022 for species that had known potential habitat or presence in the study area based on the desktop studies and database records. This included surveys for the state threatened Duke's skipper and the state threatened oval ladies'-tresses (*Spiranthes ovalis*). The seasonal survey reports can be found in **Appendix C**.

2. Wetlands, Streams, Surface Waters, and Floodplains

2.1. Alternative Impacts

2.1.1. Alternative 1 - No-Action

The No-Action alternative would not impact any wetland, stream, other surface water feature, or the floodplain.

2.1.2. Alternative 2 - Closure of Eastbound Ramps

The Closure of Eastbound Ramps alternative would not impact any wetland, stream, other surface water feature, or the floodplain.

2.1.3. Alternative 3 - Modify the Existing Ramp Geometry

The Modify the Existing Ramp Geometry alternative is anticipated to impact approximately 0.39 acres of wetlands classified as palustrine emergent (PEM) (0.21 acres), mixed PEM and palustrine shrub-scrub (PSS) (0.13 acres), and palustrine forest (PFO) (0.05 acres). This alternative is also estimated to impact 1,695 linear feet of streams classified as intermittent or perennial. Streams within the project study area are located within the middle portion of the Huron River watershed. The Michigan EGLE Watershed Screening Tool (2023c) has this portion of the watershed listed as a phosphorus total maximum daily load (TMDL) watershed based upon impairments in Ford and Belleville Lakes due to total phosphorus. In addition, streams within the project area are anticipated to flow into the Huron River. This section of the river (Assessment Unit ID: MI040900050309-02) is listed on the

Section 303(d) list as impaired for fish and shellfish consumption (U.S. Environmental Protection Agency [EPA], 2023). The Modify the Existing Ramp Geometry alternative is not anticipated to have any floodplain impacts. All wetland, stream, and floodplain impacts may vary based upon the final surveys and design. **Figure 1 (Appendix A)** shows the wetland and stream impacts for the Modify the Existing Ramp Geometry alternative, as well as the floodplain location. Please refer to **Appendix B** for additional details about wetland types, descriptions, and figures.

2.1.4. Alternative 4 - Dual Roundabout Interchange

The Dual Roundabout Interchange alternative is anticipated to impact approximately 0.75 acres of wetlands classified as PEM (0.68 acres), mixed PEM and PSS (0.04 acres), and mixed PSS and PFO (0.03 acres). This alternative is also estimated to impact 2,357 linear feet of streams classified as intermittent or perennial. As stated in Section 2.1.3, the middle portion of the Huron River watershed is listed as a phosphorus TMDL watershed, and the Huron River (southern end of the project study area) is listed as impaired for fish and shellfish consumption. Potential temporary floodplain impacts would be limited to a proposed storm sewer outlet upgrade (including placement of riprap) which outlets to the Huron River. All wetland, stream, and floodplain impacts may vary based upon the final surveys and design. **Figure 2 (Appendix A)** shows the wetland and stream impacts for the Dual Roundabout Interchange alternative, as well as the floodplain location. Please refer to **Appendix B** for additional details about wetland types, descriptions, and figures.

2.2. Regulations

Construction activities in waters of the U.S. (WOUS) including wetlands are regulated under Michigan state law (Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended; Part 301, Inland Lakes and Streams, of the Natural Resources and Environmental Protection Act, 1994, PA 451, as amended) and federal law (Section 404 of the Clean Water Act [CWA]¹). A joint state and federal permit process has been instituted between EGLE and the USACE for proposed projects that are located in areas which have both state and federal jurisdiction (EGLE, 2022c). The Joint Permit Application process includes a three-tiered system based upon proposed impacts and includes the following categories: General Permit, Minor Project, and Individual Permit. The scope of this project does not qualify under one of the General Permit categories. The Modify the Existing Ramp Geometry and Dual Roundabout Interchange alternatives will likely require an Individual Permit based on the proposed project scope and anticipated impacts. It should be noted that these alternatives do not meet the Minor Project (linear transportation projects) requirements given that the project area is not contained solely within the existing right-of-way (ROW) (EGLE, 2021) (see **Figures 1 and 2, Appendix A**).

The 1983 Memorandum of Agreement² between the EPA Region 5 and the Michigan Department of Natural Resources waives federal review for a majority of applications in areas under Michigan's 404 jurisdiction (EGLE, 2023b). However, projects which impact critical environmental areas or involve major discharges are exceptions and must receive concurrent review by federal partners. These projects are called "Red Files" and include projects which propose the enclosure of more than 300 feet of a stream in one or more segments and the relocation or channelization of more than 1,000 feet of a stream in one or more segments (EGLE, 2023b). It is anticipated at this stage of design that the Modify the Existing Ramp Geometry and Dual Roundabout Interchange alternatives may exceed these stream impact limits and thus require EPA involvement.

Construction activities in the 100-year floodplain are regulated under the Water Resources Protection, of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended (EGLE, 2023a). The alteration or occupation of the 100-year floodplain requires a permit from the Michigan Floodplain Regulatory Authority (EGLE, 2023a). The Dual Roundabout Interchange alternative may require a permit for an impact to a section of the floodplain adjacent to the Huron River for a proposed storm sewer outlet/upgrade.

¹ 33 C.F.R. § 323.2(c)

² 40 C.F.R. § 233.70

2.3. Potential Mitigation Measures

Michigan state law and federal law have both established compensatory mitigation requirements as a condition of a wetland permit. The CWA Section 404 regulations have established three mechanisms for attaining compensatory wetland mitigation: mitigation banks, in-lieu fee programs, and permittee-responsible mitigation (EPA, 2022a). The use of mitigation banks is considered the most reliable form of compensatory mitigation and is thus the preferred option established by these regulations when credits are available (EPA, 2022b). Administrative rules issued under Part 303 also allow for the use of credits to satisfy requirements associated with wetland permits (EGLE, 2022b).

There are several factors that require consideration when utilizing wetland mitigation banking which include: the ecological type (i.e., system [palustrine, estuarine, etc.] and class [emergent, forested, etc.]) of the wetland(s) being lost and used as replacements, replacement ratios, and the wetland bank service area. The use of mitigation banks generally require that mitigating wetlands are of similar ecological type as the impacted wetland whenever feasible and practicable (EGLE, 2022b).

Wetland replacement ratios are also used as a regulatory tool to ensure the full replacement of wetlands. These ratios are generally stated as a ratio of the wetland area replacement to the wetland area lost. Michigan EGLE (2022a) has established the following ratios assuming the replacement wetland is of a similar ecological type as the impacted wetland:

- Restoration or creation of 5.0 acres of wetland mitigation for 1.0 acre of permitted impact on wetland types that are rare or imperiled on a statewide basis.
- Restoration or creation of 2.0 acres of wetland mitigation for 1.0 acre of permitted impact on forested wetland types, coastal wetlands not included under (1), and wetlands that border upon inland lakes.
- Restoration or creation of 1.5 acres of wetland mitigation for 1.0 acre of permitted impact on all other wetland types.

The project area is located within the Huron River Watershed (HUC 8: 04090005). The Michigan Wetland Mitigation Bank Registry (EGLE, 2022b) and the USACE Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS) (2022) were used to locate applicable wetland mitigation banks servicing this watershed area. Niswander Environmental (Capernall Farm LLC) has two mitigation banks serving this watershed (Huron River Wetland Mitigation Bank and Huron River Wetland Mitigation Bank #2) with available credits for PEM and PFO wetlands. Crandell Environmental's Krummrey Wetland Mitigation Bank also services the Huron River Watershed with PFO credits that are available.

The adjacent River Raisin Watershed (HUC 8: 04100002) has applicable credits based upon MDOT correspondence (MDOT personal communication, August 26, 2022). If the project wetland impacts are under 1/3 acre per wetland complex or less than 1 acre for the entire project, then there will be no charge to the project for wetland mitigation (MDOT personal communication, August 26, 2022). Any wetland impacts over these amounts will be purchased at a prorated cost of \$40,000 per acre from the River Raisin Wetland Mitigation Bank (MDOT personal communication, August 26, 2022). The Modify the Existing Ramp Geometry alternative is not anticipated to exceed the project wetland impact thresholds for mitigation. The Dual Roundabout Interchange alternative is anticipated to exceed the 1/3 acre of impact to an individual wetland threshold. The project design for this alternative is anticipated to impact approximately 0.49 acres of one wetland, located on the western edge of the project area near Whitmore Lake Road (**Figure 2, Appendix A**).

Based on the estimated stream impacts from desktop and field reviews, the Modify the Existing Ramp Geometry and Dual Roundabout Interchange alternatives may exceed the thresholds to be considered "Red File" projects as described in Section 2.2. These alternatives would require the involvement of the EPA in the permitting process. Michigan does not have a stream banking program, but stream mitigation is required on a project-by-project basis. Stream mitigation requirements will be dependent on the baseline quality/rating of each stream, as well as the mitigation type (restoration, enhancement, preservation, etc.) being implemented. Stream enclosure and/or relocation will be determined upon the selection of the accepted alternative and as the design

is further developed. Upon the selection of the accepted alternative, a voluntary preliminary review (VPR) with EGLE would need to be initiated. The VPR would determine if stream impacts are unavoidable, and whether there is a subsequent need for mitigation. The VPR process allows EGLE staff to conduct field inspections and provide recommendations that are specific to the proposed project. MDOT would be responsible for determining the potential stream impacts from the proposed project which includes establishing: the existing stream functions, changes in these stream functions after the proposed impacts, and the functional loss that needs to be mitigated for. A conceptual mitigation plan which includes this information would need to be developed and submitted as part of the permit application. There are potential significant costs associated with stream mitigation that will be determined as design advances and formal confirmation of stream resources in the project area have been determined by the reviewing agency.

The Dual Roundabout Interchange alternative is anticipated to have the most wetland and stream impacts at approximately 0.75 acres and 2,357 linear feet, respectively. **Table 2-1** provides a summary of the estimated wetland, stream, and floodplain impacts for each alternative.

Table 2-1 - Wetland, Stream, and Floodplain Impacts for Alternatives

Alternative	Wetland Impacts (Acres)		Stream Impacts (Linear Feet)	Floodplain Impacts
Alternative 1 - No-Action	0		0	No
Alternative 2 - Closure of Eastbound Ramps	0		0	No
Alternative 3 - Modify the Existing Ramp Geometry	PEM	0.21	1,695	No
	PEM/PSS	0.13		
	PFO	0.05		
Alternative 4 - Dual Roundabout Interchange	PEM	0.68	2,357	Yes
	PEM/PSS	0.04		
	PSS/PFO	0.03		

2.4. Critical Schedule Considerations

A formal wetland delineation will be conducted when the alternatives have been narrowed to those being fully considered.

3. Woodland Forests

3.1. Alternative Impacts

3.1.1. Alternative 1 - No-Action

The No-Action alternative would not impact any woodland forests.

3.1.2. Alternative 2 - Closure of Eastbound Ramps

The Closure of Eastbound Ramps alternative would not impact any woodland forests.

3.1.3. Alternative 3 - Modify the Existing Ramp Geometry

The Modify the Existing Ramp Geometry alternative is anticipated to impact approximately 12.12 acres of woodland forests. This includes 10.85 acres that are characterized as pioneer woodlands, 0.63 acres characterized as a mix of urban woodlands and native forest fragment, and 0.64 acres characterized as a mix of urban woodlands and pioneer woodlands. Tree species observed within

these woodland forests include American elm (*Ulmus americana*), black locust³ (*Robinia pseudoacacia*), black willow (*Salix nigra*), boxelder (*Acer negundo*), common buckthorn³ (*Rhamnus cathartica*), eastern cottonwood (*Populus deltoides*), eastern redcedar (*Juniperus virginiana*), Norway spruce (*Picea abies*), and pignut hickory (*Carya glabra*).

The Modify the Existing Ramp Geometry alternative is not anticipated to impact any City of Ann Arbor street or park trees based on the Ann Arbor Natural Features Inventory web-map (n.d.). **Figure 3 (Appendix A)** shows the woodland forest impacts for the Modify the Existing Ramp Geometry alternative.

3.1.4. Alternative 4 - Dual Roundabout Interchange

The Dual Roundabout Interchange alternative is anticipated to impact approximately 15.90 acres of woodland forests including 14.79 acres of pioneer woodlands, 0.51 acres of mixed urban woodlands and native forest fragments, 0.55 acres of mixed urban woodlands and pioneer woodlands, and 0.05 acres of urban woodlands. Tree species observed within these woodland forests include American elm, black locust³, black maple, black willow, boxelder, Bradford/Callery pear³, common buckthorn³, eastern cottonwood, eastern redcedar, eastern white pine (*Pinus strobus*), Norway spruce, pignut hickory, and silver maple (*Acer saccharinum*).

The Dual Roundabout Interchange alternative is not anticipated to impact any City of Ann Arbor street or park trees. **Figure 4 (Appendix A)** shows the woodland forest impacts for the Dual Roundabout Interchange alternative.

3.2. Regulations

The City of Ann Arbor’s Unified Development Code (2022) establishes protection measures and protection priorities, as well as mitigation requirements for any project that proposes the removal of a city-owned street or park tree. Protection priorities are focused on the preservation and minimization of impacts to woodlands classified as native forest fragments. Projects that require the removal of a city-owned street or park tree are required to pay a canopy loss fee. The canopy loss fee is determined by “...subtracting the total caliper inches of replacement street trees from the total DBH (diameter at breast height) inches of trees removed multiplied by the current average tree replacement cost per caliper inch” (City of Ann Arbor Forestry Department, n.d.). The canopy loss fee rate is currently: \$244/inch for shade trees and \$219/inch for ornamental trees (City of Ann Arbor Forestry Department, n.d.). The Unified Development Code (2022) also establishes mitigation measures for the removal of woodland areas and landmark trees which includes:

A replacement tree or a combination of trees of a species native to Michigan shall be provided to equal a minimum of 50% of the original DBH for each Woodland tree eight inches or larger that is removed. Replacement trees shall be non-sterile varieties. The minimum size of deciduous replacement tree shall be one inch caliper. The minimum size of an evergreen replacement tree shall be five feet in height. If more than 20 replacement trees are required, a mixture of three or more species must be used.

3.3. Potential Mitigation Measures

The Modify the Existing Ramp Geometry and Dual Roundabout Interchange alternatives are not anticipated to impact any City of Ann Arbor street or park trees. There are no potential mitigation measures anticipated based upon current alternative designs. **Table 3-1** shows the total woodland impacts, as well as the City of Ann Arbor park and street tree impacts for each alternative.

³ Black locust, Callery/Bradford pear, and common buckthorn are listed in the City of Ann Arbor Invasive Species List as a Class 1 species.

Table 3-1 - Woodland Forest and Street Tree Impacts for Alternatives

Alternative	Total Impacts (Acres)	City of Ann Arbor Park Impacts (Acres)	No. of Street Trees to be Removed
Alternative 1 - No-Action	0	0	0
Alternative 2 - Closure of Eastbound Ramps	0	0	0
Alternative 3 - Modify the Existing Ramp Geometry	12.12	0	0
Alternative 4 - Dual Roundabout Interchange	15.90	0	0

3.4. Critical Schedule Considerations

There are no anticipated critical schedule considerations given that the alternatives are not anticipated to impact any City of Ann Arbor street or park trees. Once a preferred alternative is selected, additional field surveys could be conducted aimed at determining potential landmark trees within the limits of disturbance (LOD) that can be preserved through the use of construction best management practices (BMPs) including fencing to limit damage and compaction within the critical root zone.

4. Threatened and Endangered Species

4.1. Alternative Impacts

4.1.1. Alternative 1 - No-Action

The No-Action alternative would not impact any federally or state-listed threatened and endangered species.

4.1.2. Alternative 2 - Closure of Eastbound Ramps

The Closure of Eastbound Ramps alternative would not impact any federally or state-listed threatened and endangered species.

4.1.3. Alternative 3 - Modify the Existing Ramp Geometry

Based on the USFWS IPaC report, there is no threatened and endangered species critical habitat located within the project area. The state threatened oval ladies'-tresses was observed during the mid-late season and late season surveys but is located outside of the project area for this alternative (**Figure 5, Appendix A**). The project area is located within the range for the NLEB and Indiana bat. Washtenaw County has three known NLEB roost locations and no known hibernacula locations. The NLEB roost sites are located outside of the project study area in Lyndon Township and Pittsfield Charter Township (USFWS, 2017). Michigan has a single known Indiana bat hibernaculum located outside of the project study area in Manistee County (USFWS, 2022b). Potential suitable roost habitat including forested areas exist within the project area for both of these species. Transportation projects in Michigan typically assume the presence of federally listed bats in the project planning process and adopt conservation measures to reduce effects to these species. These conservation measures include removal of vegetation suitable for summer roosting during the winter when NLEB and Indiana bat are hibernating in caves or mines away from forested areas. Therefore, future project impacts are expected to be discountable for these two bat species and surveys not warranted.

A record of occurrence for the eastern massasauga rattlesnake is located at the Dhu Warren Woods Nature Area, approximately 1.1 miles northeast of the study area. The landscape between Dhu Warren and the Barton Road interchange is highly fragmented by urban development; there is also

no eastern massasauga rattlesnake habitat regulated by the USFWS in the study area or within 0.5 miles. Therefore, no effect is expected to this federally listed species for Alternative 3. A 2012 record for nesting for the state endangered peregrine falcon is present 1.7 miles south of the Barton Road interchange at the University of Michigan Bell Tower – Medical Center. Due to the distance between the nesting site and project area, no effect from noise or other disturbance is expected to the peregrine falcon. Several records for state and federally listed freshwater mussels occur in the Huron River just south of Barton Road. No effect is expected to these species due to no work anticipated below the ordinary high-water mark of the Huron River.

A 2002 record for the state threatened Duke’s skipper occurs northeast of the project study area. This small butterfly has a relatively common host plant (wide-leafed sedge, *Carex lacustris*) and can be found in wet areas close to roads (including ditches). Due to uncertainty in potential effects to this species from a future project, a field survey for the state threatened Duke’s skipper and its associated host plant was conducted by MDOT ecological staff on July 27th, 2022. No individual Duke’s skipper was observed during the survey and no host plants were found. Based on this field review, no impact is expected to the state listed Duke’s skipper.

4.1.4. Alternative 4 - Dual Roundabout Interchange

As stated in Section 4.1.3, there is no critical habitat located within the project area. The state threatened oval ladies’-tresses was observed during MDOT field surveys and is located within the LOD for this alternative (**Figure 5, Appendix A**). There is no known NLEB or Indiana bat hibernacula or roost sites located within the project area. Potential suitable roost habitat including forested areas exist within the project area for both of these bat species. As mentioned previously, MDOT adopts conservation measures for transportation projects to reduce effects to these bat species. No effect is expected to the eastern massasauga rattlesnake, peregrine falcon, and state and federally listed freshwater mussels from this proposed alternative. In addition, the Duke’s skipper is not anticipated to be impacted from this alternative.

4.2. Regulations

The Federal Endangered Species Act (ESA) of 1973⁴ provides protections for threatened or endangered plant and animal species and their habitats. The USFWS is the lead federal agencies responsible for implementing the ESA for terrestrial and freshwater species. The Michigan Department of Natural Resources (MDNR) is responsible for the protection of state endangered and threatened species under Part 365 PA 451, of the Natural Resources and Environmental Protection Act of 1994 (NREPA).

4.3. Potential Mitigation Measures

Avoidance and minimization measures related to the NLEB and Indiana bat including applying time of year restrictions for tree removal when bats are not likely to be present may be implemented to reduce potential impacts to bat species.

4.4. Critical Schedule Considerations

There are no anticipated critical schedule considerations given that threatened and endangered species surveys have been conducted by the MDOT. As previously stated, time of year restrictions for tree removal may be applicable given the potential suitable roosting habitat for bat species. If a listed species or critical habitat may be affected, consultation with the USFWS would be initiated.

⁴ 16 U.S.C. §1531 et seq. (1973)

5. Summary

The No-Action and Closure of Eastbound Ramps alternatives are not anticipated to impact any environmental resources. The Modify the Existing Ramp Geometry and Dual Roundabout Interchange alternatives are anticipated to impact wetlands, streams, and woodland forest resources. The Dual Roundabout Interchange alternative is anticipated to have the most impact to each of these resources. The Modify the Existing Ramp Geometry and Dual Roundabout Interchange alternatives are also anticipated to impact the floodplain based upon a proposed storm sewer outlet/upgrade at the Huron River. The Dual Roundabout Interchange alternative is anticipated to impact the state threatened oval ladies'-tresses. The Modify the Existing Ramp Geometry alternative is not anticipated to directly impact this species. **Table 5-1** provides a summary of the anticipated impacts for each alternative based upon current design plans.

Table 5-1 - Summary of Environmental Resources Impacts for Alternatives

Alternative	Wetland Impacts (Acres)	Stream Impacts (Linear Feet)	Woodland Forest Total Impacts (Acres)	City of Ann Arbor Woodland Forest Park Impacts (Acres)	No. of Street Trees to be Removed	Floodplain Impacts
Alternative 1 - No-Action	0	0	0	0	0	No
Alternative 2 - Closure of Eastbound Ramps	0	0	0	0	0	No
Alternative 3 - Modify the Existing Ramp Geometry	0.39	1,695	12.12	0	0	No
Alternative 4 - Dual Roundabout Interchange	0.75	2,357	15.90	0	0	Yes

6. References

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