MICHIGAN RCAP

Environmental Assessment

Tuscarora Township District 2 Sewer Extension: Cheboygan County, Michigan

4/13/21

Prepared by: Michigan Rural Community Assistance Partnership. This report has been made possible as a result of funding as part of the RCAP/Technitrain Program, an RCAP network project. GLCAP is an equal opportunity employer and provider.

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1.0 Purpose and Need of Project

1.1 Project Description

The unincorporated Village of Indian River (Tuscarora Township) in Cheboygan County is proposing to expand its wastewater collection system to the west of the existing service area (District 1) to the Burt Lake Shoreline. The project also will expand the Townships existing wastewater treatment facility. The project involves the construction of approximately 18,500 feet of new gravity sewer main, 50 new manholes, 23 new duplex pump stations, 10 new lift stations, and upgrades to existing pump stations to improve flow within the service area. The new main will be constructed within an open trench typically excavated to a depth of 8 feet and approximately 6 feet in width. Directional boring rather than open trenching will be employed near shorelines and river crossings. The typical excavation and construction area for the new lift stations will be approximately 23-x-23-feet, reaching depths between 12-15 feet below surface. The project is to be constructed within existing road and street rights-of-way and easements. The area of potential effects (APE) for Direct Effects is defined as 65 feet wide centered on existing Indian River streets over the 18,500-foot project length totaling approximately 11.28 hectares (27.87 acres). This area was selected to encompass all known areas of ground disturbance along the main service lines and the proposed locations of the duplex pump and lift stations. The area of indirect effects for this project is defined as 195 feet wide centered on existing Indian River streets over the 18,500-foot project length totaling 33.83 hectares (83.60 acres). The area of direct effects was selected in recognition that most of the project will be placed below ground with visual and sound effects limited to the period of construction and to the immediate vicinity of the proposed lift and pump stations.

The project design concept for the wastewater treatment facility is to expand the existing WWTF utilizing the same modular treatment system. The current plant has a 96,000 gpd AeroMod extended aeration system that will be duplicated to double the plant capacity. In conjunction with expanded treatment capacity, the rapid infiltration beds that discharge the treated effluent to groundwater will be doubled as well.

The treatment plant is a pre-packaged modular system, which was originally designed to be expandable. The current project will another 420 EDUs, or approximately 88,200 gpd. Since the existing WWTF is already experiencing peak flows at 80% of plat capacity, a doubling of the 96,000 gpd modular system is the minimum upgrade that would be adequate. The new design peak flow would be 165,000 gpd and the plant capacity would be 192,000, leaving some room for additional connections or increased use of the system. There will also be some modification to the headworks and the building associated with the expansion project to improve the trash and grit removal efficiency at the higher flows associated with the expansion.

1.2 Purpose and Need of Project

The proposed service area (District 2) is comprised of the primarily residential properties that are west of the existing service area (District 1) to the Burt Lake Shoreline. The District 2 service area includes the Columbus Beach Club at the northerly boundary, down to Sturgeon Island and the Sturgeon River at the southerly boundary. The homes within District 2 currently rely upon private wells and individual drain fields. Due to a combination environmental concerns including poor soil infiltration, high groundwater, surface water proximity, and well isolation distances on relatively small lots, the majority of existing onsite wastewater disposal systems are believed to be non-conforming to current environmental health standards (Sanitary Code), which can contribute to the degradation of the surrounding water quality. The lack of sewer infrastructure has also become a limiting factor to population and economic growth. Furthermore, there is concern about the constant discharge of excess flow from the artesian wells, which adds to the hydraulic loading within the area.

There are a few environmental resources present at the project location that place constraints on septic design, the first being Burt Lake and the setbacks associated with providing onsite sewage disposal. The lake also influences local groundwater table elevation for properties in the proposed service area. The high groundwater and poor soil filtration are the primary environmental factors limiting onsite sewage disposal for many of the properties within the service area. The high groundwater level and proximity to the lake is also a situation of great concern for many of the properties that have existing onsite septic systems. Though these systems may not be in a failure mode where sewage is present at the surface, it is likely that many of the older septic systems do not adequately provide the aerobic conditions to allow for proper treatment by soil absorption systems. Failing septic fields leading to groundwater contamination are considered a primary threat to drinking water availability in the Township, where water quality rather than quantity is a limiting factor.

Other environmental resources present at the project location include the Indian River, the Sturgeon River, and their associated floodplains. The Sturgeon River flows from Otsego County north into Burt Lake. Indian River connects Burt Lake to Mullet Lake and is an integral part of the Inland Water Route from Crooked Lake to Lake Huron.

The hydric soils, wetlands, and steep slopes throughout this watershed also impose limitations on the implementation of on-site septic (see Figure 3 Septic Limitations).

As previously mentioned, there are environmental conditions in the project service area that make these properties unsuitable for onsite sewage disposal. The primary limitation is a high seasonal groundwater table and poor soil quality that prevent construction of drain fields with adequate isolation for aerobic treatment of septic tank effluent in the soil.

2.0 Alternatives to the Proposed Action

Table 1. List of Alternatives for the Supply and Treatment Systems.

Alternative	Beneficial Environmental Impacts	Potential Adverse Environmental Impacts
1. Gravity Service, WWTF Expansion	Septic tanks along the Indian and Sturgeon rivers and Burt lake will be removed eliminating risk of septic overflow/failure.	None.
2. Gravity and Forcemain Hybrid, WWTF expansion	Septic tanks along the Indian and Sturgeon rivers and Burt lake will be removed eliminating risk of septic overflow/failure.	None.
3. Low Pressure Sewer	Septic tanks along the Indian and Sturgeon rivers and Burt lake will be removed eliminating risk of septic overflow/failure.	Pump stations must be constructed at each home.
4. Do Nothing	None.	Septic tanks will continue to degrade and potentially contaminate the Indian and Sturgeon Rivers and Burt Lake.

2.1 Alternative 1 – Gravity Service, WWTF Expansion (Recommended Alternative)

Provide typical 8-inch gravity sewer main & 6-inch service leads everywhere that is feasible. Where terrain or groundwater conditions limit the feasibility of typical gravity sewer, forcemain piping will be installed. All residences on the forcemain route will be provided with a 6-inch gravity sewer lead to their property. The gravity sewer leads will then connect to Township owned duplex pumping stations installed in the right-of-way, which in turn will pump to the forcemain portions of the collection system. The rationale behind this design criteria is that all customers are treated similarly in upfront costs. Instead of requiring the Sturgeon Island and Columbus Beach Club property owners to purchase and install their own private pumping equipment, the cost of any pumping stations will be spread out over all the users.

2.2 Alternative 2 – Gravity and Forcemain Hybrid, WWTF expansion

This alternative encompasses the same traditional gravity sewer collection system for the residential area between the rivers as Alternative 1, but for the forcemain piping instead of the Township owning the grinder pump stations, these would be individually owned. This project is still over 80% gravity sewer connections, with the lower terrain around the Burt Lake shoreline being served with individual pumps and low-pressure sewer connections. It is understood that this alternative creates a much greater differential in upfront cost between the gravity sewer connections and the low-pressure sewer connections due to the purchase and installation their own grinder pump package.

2.3 Alternative 3 – Low Pressure Sewer

All residences will be provided with a 1.5-inch pressure sewer lead to their property. Run the forcemain piping within the road rights-of-ways maintaining minimum depth to prevent freezing. Directionally drill as much of the forcemain as possible to minimize surface disturbance costs. The owners within the pressure sewer area will have to provide their own pumping equipment and connection. The rationale behind this design criteria is to provide each customer with a low-pressure sewer connection at the lowest possible cost to the project. This alternative creates a larger upfront individual connection cost, primarily associated with their purchase of a private grinder pump stations meeting the Township's design criteria.

2.4 Alternative 4 – Do Nothing

This alternative would leave the existing residential septic systems in place. Without creating a centralized collection system, wastewater treatment and handling would remain the responsibility of the homeowner. With the local high water table and aging septic systems; the risk of contaminating the Sturgeon River, Indian River, and Burt Lake would remain. This alternative will not be considered further.

3.0 Affected Environment/Environmental Consequences

3.1 Land Use/Important Farmland/Formally Classified Lands

3.1.1 Affected Environment

The proposed project is to be built on previously disturbed lands including easements, road rights-of-ways, mowed ditches, and municipally owned lands including an existing wastewater treatment facility. All sewer collection lines are to be constructed in the road rights-of-way and directionally bored where necessary. Previous ground disturbing activity has included the construction of roads, ditches, and excavation for utilities. Expansions are proposed at the existing Wastewater Treatment Plant. Previous ground disturbance at this site has included tree removal, the excavation and construction of lagoons, the construction of a headworks building, and frequent mowing. A detailed Soil Resource Report was collected from the USDA NRCS website and can be found in Sections 7.8.1 & 7.8.2 of this document. This report showed that there were no designations of “Prime Farmland”. There are some sites that have a hydric soil rating; however these locations are at river crossings and will be directionally bored.

3.1.2 Environmental Consequences

The proposed project will be within existing easements, road rights-of-ways, mowed ditches, and municipally owned lands including an existing wastewater treatment facility. The project will not take place in any areas designated as “Prime Farmland”, nor on any sites with hydric soil ratings. No environmental consequences are anticipated as a direct result of this project.

3.1.3 Mitigation

No mitigation is necessary as no direct impact is anticipated regarding prime and important soils nor prime farmland with the proposed project.

3.2 Floodplains

3.2.1 Affected Environment

The project area has been mapped for the FEMA National Flood Insurance Program. According to the FIRM maps, components of the project including collection lines and duplex pump stations will be constructed on the 100- or 500-year floodplain. The FEMA FIRM maps can be seen in Section 7.5. The duplex pump stations will not affect the floodplain as they are buried structures and are not buildings or insurable structures. The electrical components will be above the floodplain. The duplex pump stations do not encourage development in the floodplain because they serve only one or two existing houses and cannot serve others. This project will have no effect on floodplains, furthermore, excavations will be below ground, and the ground returned to its original condition including restored topsoil, grass, and paving, etc.

3.2.2 Environmental Consequences

No long-term environmental consequences associated with the floodplains are anticipated in association with the proposed project.

3.2.3 Mitigation

No mitigation is necessary as no direct impact is anticipated regarding floodplains with the proposed project.

3.3 Wetlands

3.3.1 Affected Environment

The project area was mapped using the USFWS National Wetlands Inventory (NWI) data to determine if there were wetlands within the project area. According to the NWI data, some areas of this project will intersect wetlands. Based on the NWI map, the forcemain along Prospect Road lies within freshwater forested/Shrub wetlands. However, the forcemain will be built entirely within the existing road rights-of-way and will have no effect to any wetlands. There are three points where forcemains will cross under the Indian River and the Sturgeon River. Each of these locations will be directionally bored under the rivers and will therefore have no effect to wetlands. Overall, this project will have no effect to any wetlands. Furthermore, excavations will be below ground, and the ground returned to its original condition including restored topsoil, grass, and paving, etc. The National Final Wetlands Inventory map is shown in Section 7.7.

3.3.2 Environmental Consequences

No long-term environmental consequences associated with wetlands are anticipated with the proposed project.

3.3.3 Mitigation

No mitigation will be required, as no significant adverse impacts exist. Any excavations will be below ground, and the ground returned to its original condition.

3.4 Water Resources

3.4.1 Affected Environment

The environment affected by the proposed project is within existing easements, road rights of ways, mowed ditches, and municipally owned lands including an existing wastewater treatment facility.

3.4.2 Environmental Consequences

This project should not have any negative impact on surface or ground water quality in the area because of the proposed actions. The proposed project should have a water quality benefit to Tuscarora

Township/Indian River by removing the need for private septic systems at each residence. By removing the septic systems, the risk of failure and septic overflow is drastically reduced improving the health of the public, the surrounding rivers, Burt Lake, and the Inland Waterway. These proposed improvements will provide the opportunity for the elimination of associated public health risks and environmental risks.

3.4.3 Mitigation

No mitigation measures are necessary regarding water quality as no negative impacts are anticipated to result from the proposed project.

3.5 Coastal Resources

3.5.1 Affected Environment

Tuscarora Township and the proposed project are not located within the Coastal Zone Management (CZM) Area. Therefore, no affect to coastal resources is anticipated with this project.

3.5.2 Environmental Consequences

No environmental consequences or impacts are anticipated with this project regarding coastal resources.

3.5.3 Mitigation

No mitigation will be required, as there are no environmental impacts anticipated regarding coastal resources.

3.6 Biological Resources

3.6.1 Affected Environment

No environmental consequences are anticipated to occur with the proposed sewer collection system and wastewater treatment facility expansion. The proposed project will be constructed within easements, road rights-of-ways, municipally owned lands including an existing wastewater treatment facility that is frequently mowed. Within Cheboygan County there are known endangered and threatened species including: Northern Long-eared Bat, Piping Plover, Red Knot, Eastern Massasauga Rattlesnake, Hungerford's Crawling Water Beetle, Dwarf Lake Iris, Eastern Prairie Fringed Orchid, Houghton's Goldenrod, Michigan Monkey Flower, and Pitcher's Thistle. The U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) website was consulted to provide further information about the habitat in this area. According to USFWS IPaC site, there is no known candidate, threatened or endangered species and no known critical habitat or hibernacula within the project area. Please see the attached Species List and General Project Design Guidelines in Section 6 regarding habitat and threatened and endangered species surveys that have been conducted in this area. Below briefly describes each species' habitats and lists the likelihood of affect:

During the summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities or in crevices of both live trees and snags (dead trees). Northern long-eared bats spend winter hibernating in caves and mines, called hibernacula. Because no significant tree removal is anticipated, there will be no effect on the NLEB.

This project will not be taking place in any coastal environments, therefore there is no suitable habitat for the Piping Plover, Red Knot, Pitchers Thistle, Houghton's Goldenrod, and Dwarf Lake Iris.

The Michigan Monkey Flower and The Hungerford's Crawling Water Beatle are found in wetlands and/or streams. No portion of the proposed project will be taking place in habitat for these species. All

river crossings will be directionally bored and will not affect streams or wetlands.

Eastern Massasauga Rattlesnake is typically associated with open wetlands and lowland coniferous forests, such as cedar swamps. The project will not be taking place in any wetlands. According to the MNFI report, the project site is located outside of the Tier 1 and Tier 2 habitats for the Eastern Massasauga Rattlesnake.

The Eastern Prairie Fringed Orchid grows in a wide range of habitats from mesic prairie to wetlands such as sedge meadows, marsh edges, even bogs. The mowed ditches, easements, road rights-of-ways, and mowed WWTF property are not suitable habitat for the Eastern Prairie Fringed Orchid.

3.6.2 Environmental Consequences

The components of the proposed project involve the construction of new infrastructure on existing wastewater treatment sites and in easements and road rights-of-ways. The road rights-of-ways, mowed ditches, and the mowed WWTF are not biological habitat. Tree removals are not anticipated with this project. No environmental consequences are anticipated with regards to threatened or endangered species with this project.

3.6.3 Mitigation

No mitigation is required as there are no anticipated effects to endangered species with this project.

3.7 Historic and Cultural Resources

3.7.1 Affected Environment

The land area impacted by the project is easements, road rights-of-ways, mowed ditches, and municipally owned lands. There are no historic sites listed in the National Register or sites identified within the Area of Potential Effect (APE).

3.7.2 Environmental Consequences

The National Historic Preservation Act of 1966 requires a Section 106 review to determine any impacts upon historic properties and cultural resources. The State Historic Preservation Officer (SHPO) requires an archaeological consultant to review the project and conduct any necessary field work to ensure that no cultural or historic sites are affected by the project. The details of this project were reviewed by the archaeological consultant: The University of Illinois Public Service Archaeology & Architecture Program. The archaeologist conducted a preliminary assessment of the project and conducted field research. They determined the project would have no effect on historic or cultural resources. The archaeological report was included within the Section 106 Application. The State Historic Preservation Officer concurs with the determination of the USDA/RD that no historic properties are affected within the area of potential effects of this undertaking. The National Historic Preservation Act also requires that federal agencies consult with any Indian tribe and/or Tribal Historic Preservation Officer (THPO). The SHPO letter and determination was sent to the appropriate tribes and/or Tribal Historic Preservation officers for their review and comments. The 106 Application, archaeological report, State Historic Preservation Officer response, and Tribal Historic Preservation Officer responses can be seen in Section 6.

3.7.3 Mitigation

No mitigation required as there are no anticipated effects to cultural and historic resources.

3.8 Aesthetics

3.8.1 Affected Environment

The proposed project will be constructed within easements, road rights-of-way, and municipally owned lands with existing water infrastructure. There are no visually sensitive areas or landscape features within the area of the proposed project. All areas have been previously developed for either municipal or commercial use.

3.8.2 Environmental Consequences

The construction may have a temporary impact on the aesthetics of the area; however, any excavations will be below ground, and the ground returned to its original condition including: restored topsoil, grass, paving, etc.

3.8.3 Mitigation

No mitigation is required with respect to aesthetics.

3.9 Air Quality

3.9.1 Affected Environment

Air quality in Tuscarora Township/Indian River is generally good. The proposed project is not anticipated to increase in any emissions after construction. Cheboygan County is outside of the Nonattainment areas for both ozone and sulfur dioxide (See Section 7.8).

3.9.2 Environmental Consequences

During construction, there will be short term air quality impacts from fugitive dust as is common with any construction project; however, these impacts will be mitigated using best management practices during construction, such as dampening of the soil to limit dust and use of diesel-powered equipment that will be fueled with low sulfur diesel fuel. Additionally, contractors will be encouraged to limit idling time during operation of heavy equipment to reduce air quality impacts from exhaust.

The National Ambient Air Quality Standards (NAAQS) are health-based pollution standards set by EPA. Areas of the state that are above the NAAQS concentration level are called nonattainment areas. For large increases in emissions requiring permitting, companies in nonattainment areas must meet additional requirements, including the requirement to get offsets. Cheboygan County is NOT located within a nonattainment area for ozone or sulfur dioxide and will not be producing long term air quality impacts, therefore, this project will not require offsets or any other mitigation measures.

3.9.3 Mitigation

No mitigation measures are necessary regarding impacts to air quality as there will be no long-lasting impacts to the air quality in the area resulting from this project.

3.10 Socio-Economic Impact Assessment/Environmental Justice Issues

3.10.1 Affected Environment

According to the American Community Survey 2019, there were 1,883 people living in Indian River, the Census Designated Place within Tuscarora Township that the project lies within. There were 995

households, and 557 families residing in Indian River. The racial makeup was 97.3% White, 0.0% African American, 1.3% Native American, 0.0% Asian, and 1.4% from other races, and Hispanic or Latino of any race made up 1.4% of the population.

There were 995 households out of which 11.0% had children under the age of 18 living with them, 43.3% were married couples living together, 11.9% had a female householder with no husband present, and 44.8% were non-families. Of all households, 35.8% were made up of individuals and 55.5% had someone who was 60 years of age or older. The average household size was 1.89. Indian River has a population range that consists of 8.6% under the age of 18, and 33.7% who were 65 years of age or older. The median age was 56.5 years.

According to the American Community Survey 2019, the median income for a household in Indian River was $42,989, and the median family income was $63,472. The per capita income for Indian River was $32,233. Individuals and families below the poverty line made up 17.3% and 16.9%, of the population, respectively. Out of the total people living in poverty, 13.3% are under the age of 18 and 9.9% are 65 or older.

The wastewater collection and treatment system improvements for Indian River (Tuscarora Township) will serve all of the residents with District 2. The customers are to be charged fairly and equitably according to their usage of the system. The planned improvements in association with this project will benefit all residents within Indian River equally. The cost of the project will be distributed across all users, through user rates. No segment of the population will be treated differently than any other, and discrimination within the Township is prohibited.

3.10.2 Environmental Consequences

No environmental consequences are anticipated regarding socio- economic/ environmental justice issues relating to this project. All residents and users of the system will be treated equally, and all will share equally in the benefits and cost of the improvements proposed.

3.10.3 Mitigation

No mitigation measures are necessary as no socio-economic/environmental justice impacts are anticipated in relation to this project.

3.11 Miscellaneous Issues

3.11.1 Noise

3.11.1.1 Affected Environment

Indian River/Tuscarora Township is a rural community with a mix of residential and commercial in the vicinity of the proposed project. Major sources of noise in the area are traffic related and from local commercial activities.

3.11.1.2 Environmental Consequences

No new sound generating equipment is anticipated in the proposed project. However, during construction, noise levels will increase due to the construction activities and heavy equipment use. The use of best management practices should limit the unnecessary noise from construction by limiting idling time of heavy equipment, and unnecessary noise from construction workers during construction. Construction will

be limited to normal daylight hours as well, which will limit the disruption of the normal quiet nature of the community.

3.11.1.3 Mitigation

No mitigation measures are necessary in association with noise control related to this project as no long-term impacts are anticipated.

3.11.2 Transportation

3.11.2.1 Affected Environment

S. Straits Highway is the main north/south route through the Village of Indian River. The areas of construction for this project have the potential to disrupt the normal flow of traffic along S. Straits Highway and all the residential streets west to Burt Lake. Local transportation may be temporarily affected on these streets by construction, employee, and equipment traffic.

3.11.2.2 Environmental Consequences

The project will have a temporary effect on local transportation due to construction in the road rights- of-ways and construction equipment using these roads to gain access to the construction sites, which is expected to disrupt normal traffic flow. This project is not anticipated to have any lasting impacts on transportation patterns. If street closures or detours are necessary, these will be coordinated with the Michigan Department of Transportation, the local street department and/or the County Road Commission. These should be highly publicized and well-marked during construction.

3.11.2.3 Mitigation

No mitigation measures are necessary in relation to the proposed project with regard to transportation, as no long term impacts are anticipated.

3.11.3 *Solid Waste Disposal*

3.11.3.1 Affected Environment

Solid waste disposal will not be impacted by this project. During construction, construction crews should be responsible for cleanup of debris on a daily basis, as well as at the end of the construction during the cleanup and restoration phases. There are no new permanent sources of solid waste materials associated with this project.

3.11.3.2 Environmental Consequences

No environmental consequences are anticipated as a result of this project. Solid waste generated by the project will be managed in an appropriate manner as required in the construction agreements. The general contractor will be responsible for adequate and appropriate disposal of all wastes generated during construction. No long term impact on solid waste are anticipated, other than those that will be subject to permitting processes currently in place locally or statewide.

3.11.3.3 Mitigation

No mitigation measures are necessary as no impacts are anticipated to result from the proposed project.

3.12 Health and Human Safety

3.12.1 Electromagnetic fields and interference

3.12.1.1 Affected Environment

This project will not include any equipment that produces any significant electromagnetic fields.

3.12.1.2 Environmental Consequences

No environmental consequences are anticipated in regard to electronic fields.

3.12.1.3 Mitigation

No mitigation measures are necessary as no impacts are anticipated to result from the proposed project.

3.12.2 Environmental Management

3.12.2.1 Affected Environment

EGLE STD (Storage Tank Division) enforces state and federal laws regarding pollution from storage tank leaks or releases and maintains a listing of all known releases of hazardous materials from any registered underground or above ground storage tanks. There are no known releases in the proposed construction area.

3.12.2.2 Environmental Consequences

A search of the EGLE/STD website showed no open or closed underground storage tank locations in or near the proposed construction site. See section 7.9 for a map of known active and closed storage tanks in the vicinity of the project.

Part 213 of the Natural Resources Environmental Protection Act (NREPA) prohibits any exacerbation of any polluted areas (e.g. through excavation and/or dewatering activities). The consultants and contractors will take all necessary precautions when working in potentially contaminated areas.

If, during construction, the contractor encounters any contaminated soil which appears to be the result of an unreported release of hazardous material, the contractor will immediately cease construction and notify the municipal entity, who in turn will notify the EGLE STD of a suspected release. According to law, a discovery of a suspected release of hazardous materials must be reported to EGLE STD within 24 hours. This begins a series of mitigation efforts and/or enforcement actions. These measures are designed to protect the public from any environmental consequences from hazardous spills.

3.12.2.3 Mitigation

No mitigation measures are necessary as no impacts are anticipated to result from the proposed project.

3.13 Corridor Analysis

3.13.1 Affected Environment

The proposed project will be constructed within easements, road rights of ways, and municipally owned lands. There are no visually sensitive areas or landscape features within the area of the proposed project.

3.13.2 Mitigation

No mitigation required for the proposed project.

4.0 Cumulative Effects

No negative long term environmental impacts are anticipated with regard to the District 2 Sewer Extension Project. The project will improve the water quality for the Sturgeon River, Indian River, Burt Lake, and the Inland Waterway by eliminating the need for individual septic systems. When this project is completed, all waste in the Village will be treated far from these bodies of water which will ensure the health of these ecosystems and the residents who utilize them.

5.0 Summary of Mitigation

No mitigation measures are necessary in relation to this project as no long term negative impacts are anticipated to result from the proposed actions.

6.0 Coordination, Consultation, and Correspondence

6.1 Fish and Wildlife Service Review and Section 7 Endangered Species Act Consultation

6.2 U.S. Fish and Wildlife Service General Project Guidelines

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Michigan Ecological Services Field Office
2651 Coolidge Road Suite 101
East Lansing, MI 48823-6360
Phone: (517) 351-2555 Fax: (517) 351-1443
http://www.fws.gov/midwest/endangered/section7/s7process/step1.html

In Reply Refer To: February 02, 2021
Consultation Code: 03E16000-2021-SLI-0599
Event Code: 03E16000-2021-E-02239
Project Name: Tuscarora Township District 2 Sewer Expansion

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The attached species list identifies any federally threatened, endangered, proposed and candidate species that may occur within the boundary of your proposed project or may be affected by your proposed project. The list also includes designated critical habitat if present within your proposed project area or affected by your project. This list is provided to you as the initial step of the consultation process required under section 7(c) of the Endangered Species Act, also referred to as Section 7 Consultation.

Section 7 of the Endangered Species Act of 1973 requires that actions authorized, funded, or carried out by Federal agencies not jeopardize federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-federal representative) must consult with the Fish and Wildlife Service if they determine their project may affect listed species or critical habitat.

There are several important steps in evaluating the effects of a project on listed species. Please use the species list provided and visit the U.S. Fish and Wildlife Service's Region 3 Section 7 Technical Assistance website at http://www.fws.gov/midwest/endangered/section7/s7process/index.html. This website contains step-by-step instructions to help you determine if your project may affect listed species and lead you through the section 7 consultation process.

Under 50 CFR 402.12(e) (the regulations that implement section 7 of the Endangered Species Act), the accuracy of this species list should be verified after 90 days. You may verify the list by visiting the ECOS-IPaC website (http://ecos.fws.gov/ipac/) at regular intervals during project planning and implementation and completing the same process you used to receive the attached list.

For all **wind energy projects** and **projects that include installing towers that use guy wires or are over 200 feet in height**, please contact this field office directly for assistance, even if no federally listed plants, animals or critical habitat are present within your proposed project area or may be affected by your proposed project.

Please see the "Migratory Birds" section below for important information regarding incorporating migratory birds into your project planning. Our Migratory Bird Program has developed recommendations, best practices, and other tools to help project proponents voluntarily reduce impacts to birds and their habitats. The Bald and Golden Eagle Protection Act prohibitions include the take and disturbance of eagles. If your project is near an eagle nest or winter roost area, see our Eagle Permits website at https://www.fws.gov/midwest/eagle/permits/index.html to help you avoid impacting eagles or determine if a permit may be necessary.

Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/administrative-orders/executive-orders.php.

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

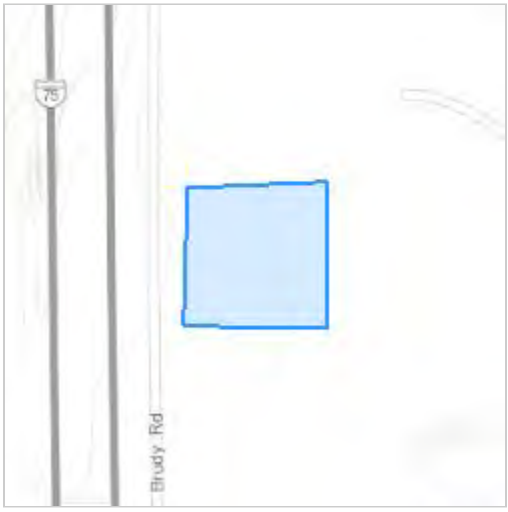
Michigan Ecological Services Field Office
2651 Coolidge Road Suite 101
East Lansing, MI 48823-6360
(517) 351-2555

Project Summary

Consultation Code: 03E16000-2021-SLI-0599
Event Code: 03E16000-2021-E-02239
Project Name: Tuscarora Township District 2 Sewer Expansion
Project Type: WASTEWATER FACILITY
Project Description: Tuscarora Township is applying to USDA RD for funding their District 2 Sewer Expansion Project. The project will involve installing gravity sewer lines, forcemain, and pump stations within the predominantly residential District 2 in Tuscarora Township's unincorporated community of Indian River. Work on the collection system will be taking place in the existing road rights-of-ways and easements. The Township also plans to expand their existing waste water treatment plant to handle the increased sewage.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@45.394406849999996,-84.60455669106148,14z



Counties: Cheboygan County, Michigan

Endangered Species Act Species

There is a total of 10 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 2 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9045
General project design guidelines:
https://ecos.fws.gov/docs/tess/ipac_project_design_guidelines/doc5664.pdf

Birds

NAME	STATUS
Piping Plover *Charadrius melodus*	Endangered

Population: [Great Lakes watershed DPS] - Great Lakes, watershed in States of IL, IN, MI, MN, NY, OH, PA, and WI and Canada (Ont.)
There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/6039

Red Knot *Calidris canutus rufa*	Threatened

No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:

- Only actions that occur along coastal areas during the Red Knot migratory window of MAY 1 - SEPTEMBER 30.

Species profile: https://ecos.fws.gov/ecp/species/1864

Reptiles

NAME	STATUS
Eastern Massasauga (=rattlesnake) *Sistrurus catenatus*	Threatened

No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:
- For all Projects: Project is within EMR Range

Species profile: https://ecos.fws.gov/ecp/species/2202
General project design guidelines:
https://ecos.fws.gov/docs/tess/ipac_project_design_guidelines/doc5280.pdf

Insects

NAME	STATUS
Hungerford's Crawling Water Beetle *Brychius hungerfordi*	Endangered

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/6123

Flowering Plants

NAME	STATUS
Dwarf Lake Iris *Iris lacustris*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/598

Eastern Prairie Fringed Orchid *Platanthera leucophaea*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/601

Houghton's Goldenrod *Solidago houghtonii*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/5219

Michigan Monkey-flower *Mimulus michiganensis*	Endangered

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/5295

Pitcher's Thistle *Cirsium pitcheri*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/8153

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

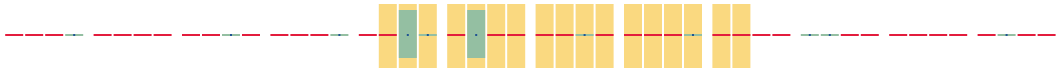
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

▪ probability of presence ▪ breeding season | survey effort – no data

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Red-headed Woodpecker BCC Rangewide (CON)



Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

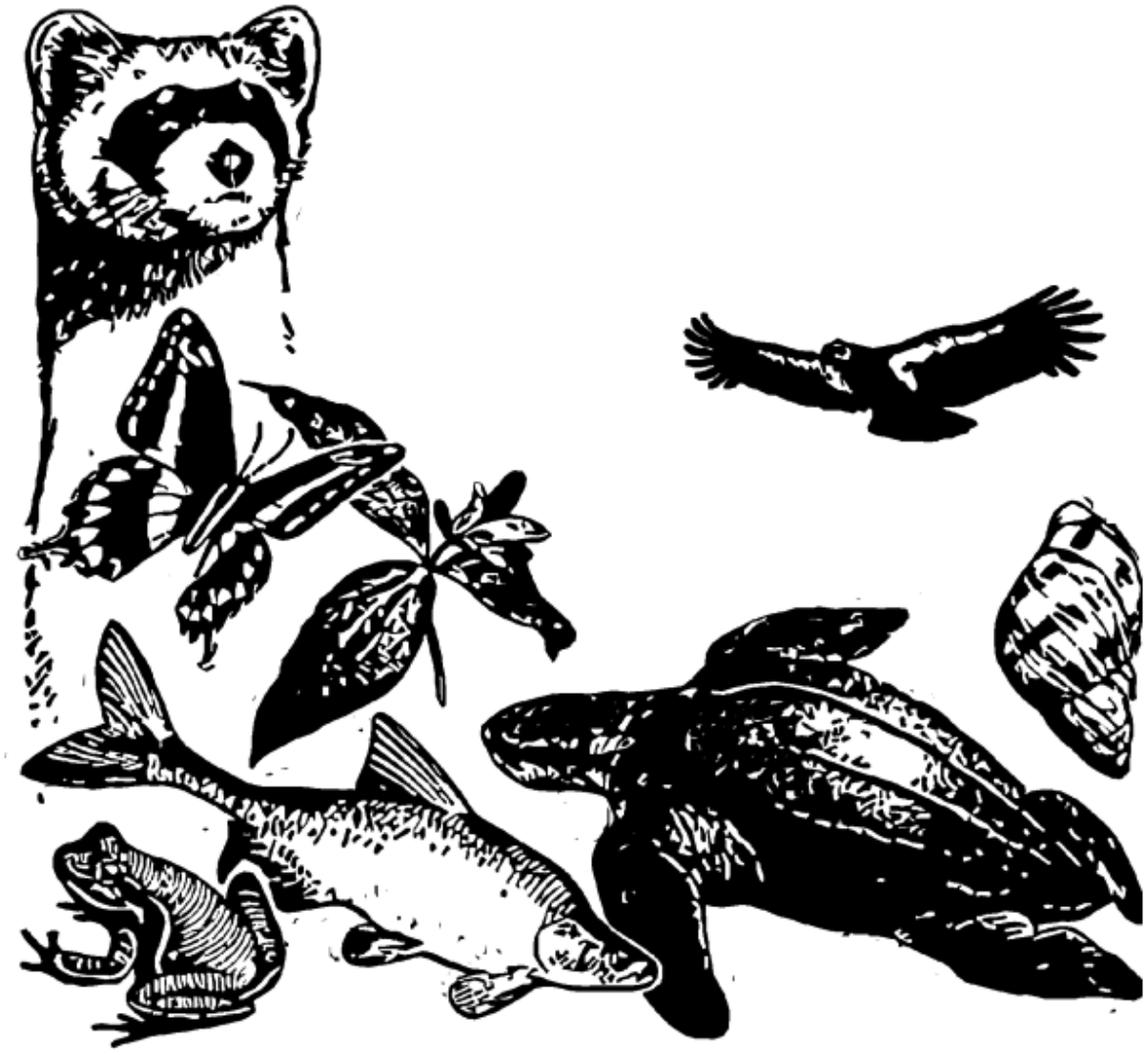
Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

THERE ARE NO WETLANDS WITHIN YOUR PROJECT AREA.

U.S. Fish & Wildlife Service

General Project Design Guidelines (2 Species)

Generated February 02, 2021 06:55 AM MST, IPaC v5.55.4



IPaC - Information for Planning and Consultation (https://ecos.fws.gov/ipac/): A project planning tool to help streamline the U.S. Fish and Wildlife Service environmental review process.

Table of Contents

Species Document Availability

Species with general design guidelines

Eastern Massasauga (=rattlesnake) *Sistrurus catenatus*

Northern Long-eared Bat *Myotis septentrionalis*

Species without general design guidelines available

Dwarf Lake Iris *Iris lacustris*

Eastern Prairie Fringed Orchid *Platanthera leucophaea*

Houghton's Goldenrod *Solidago houghtonii*

Hungerford's Crawling Water Beetle *Brychius hungerfordi*

Michigan Monkey-flower *Mimulus michiganensis*

Piping Plover *Charadrius melodus*

Pitcher's Thistle *Cirsium pitcheri*

Red Knot *Calidris canutus rufa*

General Project Design Guidelines - Piping Plover and 9 more species

Published by Michigan Ecological Services Field Office for the following species included in your project

- Piping Plover *Charadrius melodus*
- Pitcher's Thistle *Cirsium pitcheri*
- Michigan Monkey-flower *Mimulus michiganensis*
- Houghton's Goldenrod *Solidago houghtonii*
- Red Knot *Calidris canutus rufa*
- Dwarf Lake Iris *Iris lacustris*
- Eastern Massasauga (=rattlesnake) *Sistrurus catenatus*
- Eastern Prairie Fringed Orchid *Platanthera leucophaea*
- Hungerford's Crawling Water Beetle *Brychius hungerfordi*
- Northern Long-eared Bat *Myotis septentrionalis*

Environmental Screening for Eastern Massasauga Rattlesnake in Michigan

March 14, 2017

Background

The Eastern Massasauga Rattlesnake (EMR) is listed as a threatened species under the U.S. Endangered Species Act (Act). The Act protects the EMR and their habitat by prohibiting "take" and may require agencies to coordinate with the U.S. Fish and Wildlife Service (Service) before authorizing or funding an activity affecting the species. To streamline coordination, the Service's Michigan Ecological Services Field Office has developed a set of Best Management Practices (BMPs) for specific activities potentially impacting EMR in Michigan. These BMPs are voluntary and just one of the ways that compliance with the Act may be achieved.

Projects may…

- have no effect to EMR and no need for additional ESA compliance considerations.
- have potential for adverse effects, but use BMPs to avoid adverse effects (i.e., "not likely to adversely affect" EMR) or minimize the adverse effects.
- use surveys to confirm probable absence of EMR (contact the Service for survey guidance).
- use "Informal Consultation" with Service (for actions requiring a Federal permit or funding).
- use "Formal Consultation" with Service (for actions requiring a Federal permit or funding).
- develop a Habitat Conservation Plan and seek an ESA permit, if adverse effects cannot be avoided.

For activities not listed in the BMPs, please contact the Service for project-specific recommendations. In some cases implementation of BMPs may not be sufficient to avoid all adverse impacts to EMR and additional consultation with the Service may be required. The Service can assist planners in determining whether adverse effects are likely as a result of proposed projects, and whether implementation of BMPs is sufficient to remove the risk of adverse effects.

Additional information on compliance with the Act can be found:

For Federal actions/section 7 consultation:
https://www.fws.gov/midwest/Endangered/section7/s7process/index.html

For non-Federal actions:
https://www.fws.gov/midwest/endangered/permits/index.html

For questions or comments you may contact the Service below:

U.S. Fish and Wildlife Service
Michigan Ecological Services Field Office
2651 Coolidge Road, Suite 101
East Lansing, MI 48823
Phone: (517)351-2555
Email: eastlansing@fws.gov

Definitions

Active Season: The active season begins in the spring when snakes emerge from hibernation, generally when maximum air temperatures are above 50°F, and ends in the fall when EMR have returned to their hibernacula and temperatures are consistently below 45°F. In Michigan, the active season is generally April through October. The active season dates will vary by location and weather. **Contact the Service for project-specific dates based on location when work in EMR habitat is planned near the start or end of the active season**.

Affecting hydrology: We consider "affecting hydrology" to include projects that are likely to appreciably change the elevations of surface water upstream or downstream, or in the local ground water (as estimated pre-project vs. post-project). The concern is for changes to local hydrology (e.g., creating new ditches, creating a new impoundment) that might harm EMR hibernating at or near ground water, or actions that significantly alter available suitable habitat either through flooding or drying of EMR wetlands.

Hibernacula: Areas suitable for EMR to overwinter. For most EMR populations, the locations of hibernacula are not known, but these areas are critical to protect. Unfortunately, we lack information on how to reliably identify these areas. EMR usually hibernate below the frost line in crayfish or small mammal burrows, tree root networks or rock cervices in or along the edge of wetlands or in adjacent upland areas with presumably high water tables (areas where the soil is saturated but not inundated). Following egress from hibernacula in the spring, EMR typically remain aboveground in the vicinity for a week or two, and return to these areas in the fall for several weeks prior to entering hibernation. Surveys in the spring (shorting following egress) or fall (prior to ingress) when snakes are congregating in the vicinity may help identify these important areas. Maintaining stable hydrology of these areas is important during the inactive season.

IPaC: "Information for Planning and Conservation" is a project planning tool available on-line to the public that streamlines the Service's environmental review process.

EMR Habitat: "Eastern Massasaugas have been found in a variety of wetland habitats. Populations in southern Michigan are typically associated with open wetlands, particularly prairie fens, while those in northern Michigan are known from open wetlands and lowland coniferous forests, such as cedar swamps. Some populations of Eastern Massasaugas also utilize open uplands and/or forest openings for foraging, basking, gestation and parturition (i.e., giving birth to young). Massasauga habitats generally appear to be characterized by the following: (1) open, sunny areas intermixed with shaded areas, presumably for thermoregulation; (2) presence of the water table near the surface for hibernation; and (3) variable elevations between adjoining lowland and upland habitats." From Michigan Natural Features Inventory (Website: mnfi.anr.msu.edu)

Tier 1 Habitat: Areas known to be occupied by EMR or highly likely to be occupied by EMR.

Tier 2 Habitat: Areas with high potential habitat and may be occupied by EMR.

Within the known range: EMR can occur throughout the Lower Peninsula and on Bois Blanc Island in Mackinac County. Areas within the known range but outside of Tier 1 and Tier 2 are considered less likely to be occupied. EMR is highly secretive and cryptic in nature, and can persist in low densities, which makes them difficult to detect. Further, there are extensive areas of the state that have never been surveyed. It is likely that there are additional and yet-unknown occurrences throughout the Lower Peninsula of Michigan. Mapped habitats are subject to change based on new information identifying current Tier 1 and 2 areas as unsuitable, or based on discovery of new EMR occurrences.

EMR Environmental Screening Step-wise Process

Step 1. Determine if EMR may be present in the action area

- ✓ Determine whether the project is in potential EMR habitat using https://ecos.fws.gov/ipac
  - o You can search for your project location and define the action area by drawing a polygon or uploading a shapefile.
  - o IPaC will give you a list of species that may be present in the area you identified. If you click on the thumbnail for EMR, it will tell you if your project is within Tier 1 or Tier 2 habitat, or within the known range of EMR. If EMR is not listed, you do not need to consider this species. Effects to other listed species should also be considered; contact the Service if you need assistance.
  - o If EMR is listed, it does not necessarily mean that the entire action area is potential habitat, only that some potential habitat is within the action area entered. For large-scale (e.g., county-wide or multi-county projects) consider coordinating the Michigan Ecological Services Field Office for direct assistance.

If your project is within the known range of EMR, including Tier 1 or Tier 2 habitat, continue to step 2:

Step 2. Determine if the project has the potential to affect EMR

Projects have no effect on EMR when…

- ✓ There is no suitable EMR habitat in the project area and no potential impact off-site (e.g., water discharge into adjacent EMR habitat). If project site conditions are determined to be wholly unsuitable for EMR (e.g., project is in regularly mowed turf grass, row crop, graveled lot, existing building, or industrial site), it is not suitable EMR habitat.
- ✓ The project occurs within suitable habitat, but the action will have absolutely no effect on the habitat or EMR.
- ✓ In suitable EMR habitat, but the site is entirely unoccupied by the species. This is typically confirmed through surveys (contact the Service for more information). In some cases it may be easier to assume EMR are present and use BMPs than to conduct surveys for the species.

For projects where there is a potential for effects to EMR, continue to the section of the document as follows:

For projects with a combination of Tier 1 and Tier 2 habitat, follow the instructions for Tier 1.

Tier 1 Habitat

Tier 1: Project will not affect EMR if all of the following apply:

1. Project will not result in any changes to suitable EMR habitat quality, quantity, availability or distribution, including changes to local hydrology
2. If EMR are present in the project area, they are not likely to have any response as a result of exposure to the action or any environmental changes as a result of the action
3. Project includes all General Best Management Practices:
   a. Use wildlife-safe materials for erosion control and site restoration (see Erosion Control Resources side panel). In Tier 1 habitat, immediately eliminate use of erosion control products containing plastic mesh netting or other similar material that could entangle EMR.
   b. To increase human safety and awareness of EMR, those implementing the project should first watch MDNR's "60-Second Snakes: The Eastern Massasauga Rattlesnake" video (available at https://youtu.be/-PFnXe_e02w), or review the EMR factsheet (available at https://www.fws.gov/midwest/endangered/reptiles/eama/pdf/EMRfactsheetSept2016.pdf or by calling 517-351-2555.
   c. Require reporting of any EMR observations, or observation of any other listed threatened or endangered species, during project implementation to the Service within 24 hours.

Tier 1: Project Not Affecting EMR Coordination Recommendation: No pre-project coordination with Service needed. Document the steps above for your records.

Tier 1: All Other Projects: For any other projects in Tier 1 habitat that may affect EMR or its habitat, contact the Service for assistance in evaluating potential impacts. Best Management Practices (starting on page 8) are included for many actions to help with project planning, but may not be sufficient to avoid all adverse impacts. The Service can determine whether additional measures are necessary after a project-specific review.

Erosion Control Resources

There are a variety of products that can be used for soil erosion and control requirements. These products may incorporate plastic mesh netting to help maintain form and function. This plastic netting has been demonstrated to entangle a wide variety of wildlife from birds to small mammals. In Michigan, soil erosion control netting has resulted in the documented mortality of a number of imperiled amphibian and reptile species including the EMR and the Eastern Fox Snake (State Threatened).

Several products for soil erosion and control exist that do not contain plastic netting including net-less erosion control blankets (for example, made of excelsior), loose mulch, hydraulic mulch, soil binders, unreinforced silt fences, and straw bales. Others are made from natural fibers (such as jute) and loosely woven together in a manner that allows wildlife to wiggle free. For more information regarding wildlife-safe erosion control measures contact the USFWS Michigan Ecological Services Field Office.

Tier 2 Habitat

Tier 2: Project is not likely to adversely affect EMR if all of the following apply:

1. Project does not impact more than 1 acre of wetland habitat and includes all applicable activity-specific BMPs (starting on page 8), and
2. Project will not appreciably affect hydrology
3. Project includes all General Best Management Practices:
    a. Use wildlife-safe materials for erosion control and site restoration (See Erosion Control Resources side panel, page 4). In Tier 2 habitat, eliminate the use of erosion control products containing plastic mesh netting or other similar material that could ensnare EMR as soon as is feasible but no later than January 1, 2018.
    b. To increase human safety and awareness of EMR, those implementing the project should first watch MDNR's "60-Second Snakes: The Eastern Massasauga Rattlesnake" video (available at https://youtu.be/-PFnXe_e02w), or review the EMR factsheet (available at https://www.fws.gov/midwest/endangered/reptiles/eama/pdf/EMRfactsheetSept2016.pdf or by calling 517-351-2555.
    c. Require reporting of any EMR observations, or observation of any other listed threatened or endangered species, during project implementation to the Service within 24 hours.

Tier 2: Project Not Likely to Adversely Affect EMR Coordination Recommendation: Informal consultation with Service for actions requiring a Federal permit or funding. For non-Federal projects, document the steps above for your records, but no pre-project coordination with the Service needed.

Tier 2: All Other Projects: Coordinate with the Service for a project-level review to determine potential impacts and whether additional conservation measures are needed to avoid adverse effects.

Within the known range of EMR

For projects within the known range of EMR, but outside of Tier 1 and Tier 2 habitat:

To help ensure your project is unlikely to affect EMR:

1. Project applies the General Best Management Practices:
    a. Use wildlife-safe materials for erosion control and site restoration (See Erosion Control Resources side panel, page 4). By January 1, 2019, eliminate the use of erosion control products containing plastic mesh netting or other similar material that could ensnare EMR (within the known range but outside of Tier1 or Tier 2 habitat).
    b. To increase human safety and awareness of EMR, those implementing the project should first watch MDNR's "60-Second Snakes: The Eastern Massasauga Rattlesnake" video (available at https://youtu.be/-PFnXe_e02w), or review the EMR factsheet (available at https://www.fws.gov/midwest/endangered/reptiles/eama/pdf/EMRfactsheetSept2016.pdf or by calling 517-351-2555.
    c. Require reporting of any EMR observations, or observation of any other listed threatened or endangered species, during project implementation to the Service within 24 hours.
2. Project will not have significant impacts to dispersal, connectivity, or hydrology of existing EMR potential habitat, i.e., filling less than 1 acre of wetland habitat or converting less than 20 acres of uplands of potential EMR habitat (uplands associated with high quality wetland habitat) to other land uses.

Within the Known Range, but Outside Tier 1 or 2 Coordination Recommendation:
Document the steps above for your records and no pre-project coordination with the Service needed. If you cannot implement the General Best Management Practices contact the Service for assistance in evaluating potential impacts.

Activity-Specific Best Management Practices

For Tier 1, BMPs are included; however, even with implementation of the BMPs, project-specific review may be needed to determine whether they are sufficient to avoid all adverse impacts

- In Tier 1 habitat, contact the Service regarding the potential applicability of surveys to determine EMR absence in suitable habitat. In Tier 2, surveys can be conducted to confirm the presence of suitable habitat and/or the presence/probable absence of EMR. If onsite habitat is determined to be wholly unsuitable via desktop analysis (e.g., entirely mowed lawn, row crop, graveled lot, and industrial site), then it can be classified as unoccupied and the BMPs will not be necessary.
- Minimize work in Tier 1 and Tier 2 EMR habitat. When feasible, do not route new construction projects, such as pipelines, facilities, or access roads, through potential EMR habitat. Implement the use of wildlife-friendly corridors (e.g., oversized culverts) into new road design to maintain or enhance habitat connectivity.
- Projects should be designed to minimize the potential for disturbance to EMR during project activities.

Maintenance Activities (includes nominal modifications to existing roads and infrastructure)

1. Ground Disturbing Activities
    a. All
        i. No known EMR hibernacula are destroyed or disturbed at any time of year. Because these areas are often not known:
            1. For Tier 1: contact the Service to determine whether adverse impacts are likely as a result of ground disturbing work in Tier 1 habitat.
            2. For Tier 2: when operating in potential hibernation areas (e.g., EMR wetlands and adjacent areas with crayfish burrows, rodent holes, small mammal burrows, etc.), work is conducted well within the active season (June – August) to avoid when snakes are likely to be present. During this time, they are most likely to be able to move out of the way of disturbance and have greater chances to find alternative hibernation sites. Destroying potential hibernacula may still impact snakes indirectly. Potential hibernation areas should be avoided to the extent possible.
    b. Grading
        i. When working during EMR active season, use exclusionary fencing to separate EMR habitat from the work site to prevent EMR from accessing the disturbance area. For example, in linear projects exclusionary fencing should run parallel to the disturbance, creating a barrier to snake movement. Each end of the exclusionary fencing should be angled away from the area of disturbance to direct snakes traveling along fencing away from the site. The

exclusionary fencing will typically be traditional silt fence that is set up outside of all areas of disturbance and other types of fencing (i.e., snow fence used to delineate the work zone). Do not use fencing materials that can entangle or injure snakes.

ii. Any areas using exclusionary fencing should first be "cleared" by a qualified individual[1] before beginning construction activities. Fencing should be installed a minimum of 1 day before construction activities occur and walked weekly to ensure the integrity of the fence. If snakes are seen within the work zone, activity should stop until the snake can be safely moved, and the fence examined for breeches.

iii. Revegetate all disturbed Tier 1 and Tier 2 habitat with appropriate plant species (i.e., native species or other suitable non-invasive species present on site prior to disturbance). Monitor all restoration plantings for proper establishment and implement supplemental plantings as necessary to ensure restorations are of equal to or better habitat quality than previous conditions.

iv. In Tier 1 and Tier 2, avoid spread of invasive species into EMR habitat by following best practices. This includes inspecting and cleaning equipment and vehicles between work sites as needed to avoid the spread of invasive plant materials.

c. Trenching

i. In Tier 1 and Tier 2, avoid trenching in EMR wetlands when possible. In Tier 1, if open trenching is required install exclusionary fencing (follow measures 1(b)(i)-(iv)) and ensure the area is clear prior to trenching.

d. Fill

i. In Tier 1 and Tier 2, ensure all imported fill material is free from contaminants or invasive species could affect the species or habitat through acquisition of materials at an appropriate quarry or other such measures.

ii. In Tier 1 and Tier 2, use exclusionary fencing around the area to be filled and have the site "cleared" prior to placing fill by a qualified individual (as in 1(b)(i)-(ii).

e. Ditching

i. For Tier 1 and Tier 2, conduct work well within the active season (June-August) when snakes are not likely to be near hibernation sites and can escape disturbance, or contact Service for project specific recommendations.

ii. For Tier 1, use exclusionary fencing around the area to be cleared/graded and have the site cleared by a qualified individual prior to construction activities.

iii. For Tier 1, contact the Service for work greater than 200' for project specific recommendations.

[1] A qualified individual is someone who has received training on the identification and life history of EMR.

2. Site Access with vehicles (both Tiers)
    a. Limit operating vehicles/equipment, clearing trees, etc., in EMR habitat to the inactive season when the ground is frozen. During this time, under these conditions, EMR are most likely underground and will not be impacted by these activities. When possible, use low-impact equipment such as light weight track mounted vehicles with low ground pressure. In Tier 1, if the ground isn't completely frozen (due to weather conditions during the inactive season or if working near seeps and springs that are less likely to freeze), or if working near potential hibernacula, manual access (on foot) may be required.
    b. Strictly control and minimize vehicle activity in known/presumed occupied EMR habitat to the extent possible. During EMR active season, speed limits at facilities and access roads (i.e., 2-track and gravel) in occupied habitat should be <15 MPH.
    c. In Tier 1 and Tier 2 habitat areas, drivers should be aware of the potential danger to the driver of swerving to intentionally drive over snakes as well as legal and conservation implications.

3. Heavy Equipment (both Tiers)
    a. Spill Prevention for oils/fluids
        i. Site staging areas for equipment, fuel, materials, and personnel at least 100 feet from the waterway, if available, to reduce the potential for sediment and hazardous spills entering the waterway. If sufficient space is not available, a shorter distance can be used with additional control measures (e.g., redundant spill containment structures, on-site staging of spill containment/clean-up equipment and materials). If a reportable spill has impacted occupied habitat:
            1. Follow spill response plan;
            2. Call MDEQ and the National Response Center (800-424-8802), and the Service's Michigan Ecological Services Field Office (517-351-2555) to report the release.
    b. Do not use large equipment or perform earth-moving activities, water withdrawal and discharge for hydrostatic testing, or other activities that substantially affect the ground or water levels in potential EMR hibernacula areas. Avoidance measures may include, but are not limited to, re-routing of pipeline and appurtenance facilities, boring or drilling, and timing/weather-related restrictions. Measures will be determined on a site-specific basis, based on local habitat conditions, contact Service for more information.

4. Hydrology impacts (both Tiers)
        i. Water levels in known/presumed occupied habitats should not be artificially manipulated during the inactive season.

ii. Where applicable, water levels should be allowed to flow naturally and not be artificially stabilized. This allows for the restoration of early successional habitats.

Habitat Management and Restoration

5. Vegetation Management
    a. Mowing
        i. In Tier 1, mow during the inactive season.
        ii. For Tier 2, mowing is unrestricted during the inactive season. During the active season, follow daytime mowing restrictions and mow during times of day when snakes are less likely to be active (Figure 1). Increase mower deck height to >8 inches to reduce likelihood of injury to snakes. Higher deck height will reduce the risk of death or injury to snakes in the area.
        iii. In areas with turf grass or areas where trying to discourage EMR (e.g., in areas around buildings), mow regularly and keep grass relatively short (less than 4-6 inches) to reduce its suitability for EMR. If starting with longer grass (greater than 6 inches), mow during the inactive season initially, and then maintenance mowing can occur during the active season (as long as it is regularly maintained and kept shorter than 4-6 inches, so that EMR is unlikely to use those areas). Unmaintained/longer grass may be used by snakes and make them vulnerable to mortality during the next mowing event.

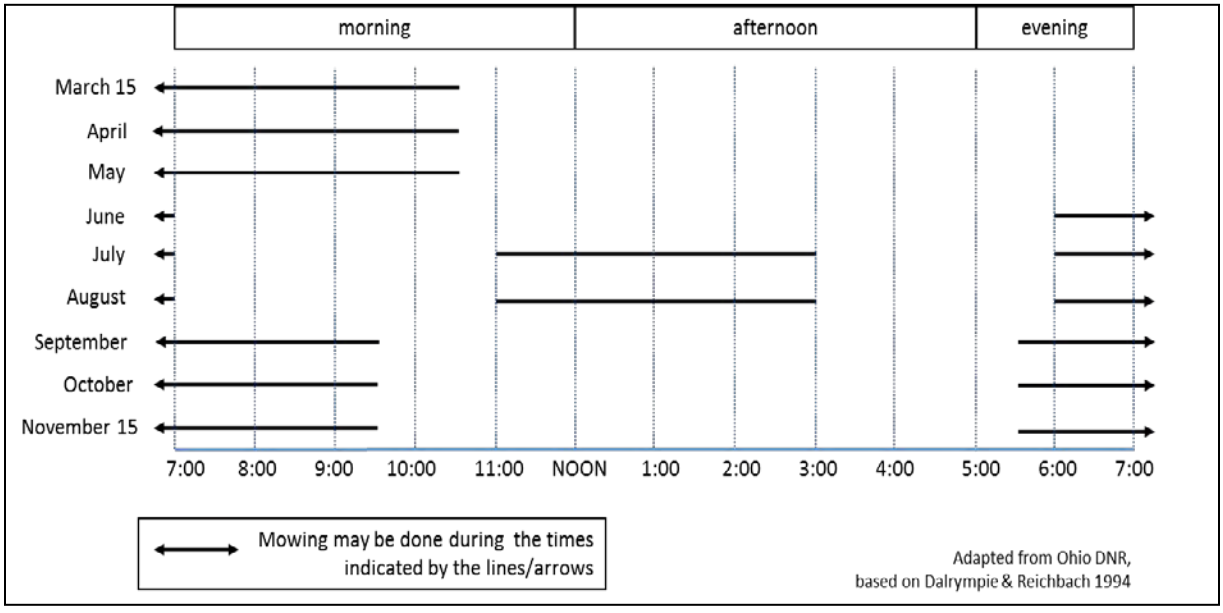


Figure 1. EMR Active season mowing schedule (NiSource Biological Opinion, page 273, USFWS 2015)

b. Cultivation (e.g., disking)
    i. In Tier 1 habitat, disking should be limited to the inactive season, and areas within 50 m of known or potential hibernacula should be avoided. In Tier 2, disking can occur in the active season if area is mowed during the inactive season and maintained shorter than 4-5 inches.
c. Brush/Tree Removal
    i. In Tier 1, conduct brush or tree removal in known/presumed EMR habitat during the inactive season, when the ground is frozen (such that soils can be left undisturbed).
    ii. Use low impact harvest methods in Tier 1 and Tier 2 wetlands to cut and remove individual trees. This includes using low-impact equipment such as light weight track mounted vehicles with low ground pressure. In Tier 1, if the ground isn't completely frozen (due to weather conditions during the inactive season or if working near seeps and springs that are less likely to freeze), or if working near potential hibernacula, use hand tools and access site on foot.
    iii. In Tier 1 and Tier 2, do not burn brush piles during the active season. Dispose of brush offsite or leave in place.
d. Herbicides
    i. Follow all appropriate label instructions regarding which herbicide formulation to use in potential EMR habitat. Avoid spray drift beyond the target species/area (observing label instructions regarding optimal wind speed and direction, boom height, droplet size calibration, precipitation forecast, etc.).
    ii. Avoid broadcast applications of herbicides in Tier 1. Spot spraying or wicking can be used to control invasive plants in occupied habitat. If using broadcast spray in Tier 2, limit the area of exposure to less than half of the available EMR habitat to allow for untreated areas to provide potential areas of refugia from exposure. Contact the Service if you need help in determining this.
e. Prescribed burning (Tier 1 and Tier 2)
    i. Conduct prescribed burns during the inactive season before snakes emerge from hibernation. Walk the burn unit following the burn and report any dead or injured EMR to the Service within 24 hours. Burn only a portion (e.g., one-third) of available EMR habitat in any year to leave suitable cover for EMR and its prey.
    ii. Establish fire breaks using existing fuel breaks (roads, rivers, trails, etc.) to the greatest extent possible. Cultivation (disking or roto-tilling) of burn breaks will be minimized to the extent that human health and safety are not jeopardized. Cultivation and mowing to establish fire breaks will occur during the inactive season.

6. Erosion control
    a. Use wildlife-safe erosion control blankets (without plastic mesh netting in the layers of material) as required in the general BMPs. Remove all silt fence used for erosion control once soils are stable to reduce barriers to EMR movement.
7. Revegetation
    a. Revegetate all disturbed Tier 1 and Tier 2 habitat with appropriate plant species (i.e., native species or other suitable non-invasive species present on site prior to disturbance). Monitor all restoration plantings for proper establishment and implement supplemental plantings as necessary to ensure restorations are of equal to or better habitat quality than previous conditions.
8. Invasive species
    a. In Tier 1 and Tier 2, avoid spread of invasive species into EMR habitat by following best practices. This includes inspecting and cleaning equipment and vehicles between work sites as needed to avoid the spread of invasive plant materials.
9. Wetland restoration
    a. Restoring natural hydrology in areas that have been drained by tiling and ditching may greatly benefit EMR habitat. Conduct tile breaking or excavation well within the active season to avoid potential hibernacula. Have a qualified individual walk in front of the equipment to clear the area. Work with the Service for Tier 1 habitat to ensure no indirect adverse effects are expected as a result of restoration efforts.
10. Water-level manipulation
    a. Water levels should not be artificially manipulated during the inactive season to avoid impacts to hibernating snakes. Contact the Service in Tier 1 habitat when water levels will be manipulated during the inactive season or will result in significant alterations to EMR habitat during the active season.

General Project Design Guidelines - Piping Plover and 9 more species

Published by Michigan Ecological Services Field Office for the following species included in your project

- Piping Plover *Charadrius melodus*
- Pitcher's Thistle *Cirsium pitcheri*
- Michigan Monkey-flower *Mimulus michiganensis*
- Houghton's Goldenrod *Solidago houghtonii*
- Red Knot *Calidris canutus rufa*
- Dwarf Lake Iris *Iris lacustris*
- Eastern Massasauga (=rattlesnake) *Sistrurus catenatus*
- Eastern Prairie Fringed Orchid *Platanthera leucophaea*
- Hungerford's Crawling Water Beetle *Brychius hungerfordi*
- Northern Long-eared Bat *Myotis septentrionalis*

Northern Long-eared Bat Project Review in Michigan

Table of Contents

I. BACKGROUND INFORMATION

The northern long-eared bat (NLEB) is one of the species of bats most impacted by the disease white-nose syndrome (WNS). Due to declines caused by WNS and continued spread of the disease, the NLEB was listed as threatened under the Endangered Species Act (ESA) on April 2, 2015. The U.S. Fish and Wildlife Service (Service) also developed a final 4(d) rule, which was published in the *Federal Register* on January 14, 2016. The 4(d) rule specifically defines "take" prohibitions for the species.

For more information on NLEB, its listing and the 4(d) rule, visit:
https://www.fws.gov/Midwest/endangered/mammals/nleb/

NLEB in Michigan

The NLEB is documented in many Michigan counties and is believed to range throughout the entire state. Therefore, unless presence/absence surveys conducted in accordance with Service guidelines (https://www.fws.gov/MIDWEST/Endangered/mammals/inba/inbasummersurveyguidance.html, and also available via IPaC) indicate the probable absence of the species, NLEB are considered potentially present wherever suitable habitat exists within the state.

Suitable Habitat for NLEB:

During the winter, NLEB hibernate in mines, caves, or similar structures. Many NLEB hibernacula have been documented in Michigan; however, our knowledge of these overwintering areas throughout the state is likely incomplete.

Suitable summer habitat for NLEB consists of a wide variety of forested habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats, such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roost trees (i.e., live trees and/or snags ≥3 inches DBH that have exfoliating bark, cracks, crevices, and/or cavities), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure.

Individual trees may be considered suitable habitat when they exhibit characteristics of suitable roost trees and are within 1000 feet of other forested/wooded habitat. NLEB have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat boxes; therefore, these structures should also be considered potential summer habitat.

For more information on NLEB, its listing and the 4(d) rule, visit:
https://www.fws.gov/Midwest/endangered/mammals/nleb/

II. VOLUNTARY CONSERVATION MEASURES

NLEB benefit from the promotion of mature forest habitat, particularly hardwood/mixedwood stands containing standing snags, dying trees, and waterbodies such as streams, ponds, and forested wetlands. As NLEB are known to avoid traversing large open areas outside of migration, the protection and creation of wooded corridors (such as tree lines) can be extremely beneficial in connecting fragmented patches of suitable roosting/foraging habitat.

In general, projects that involve the trimming, burning, girdling, or clearing of suitable roost trees are encouraged to schedule these activities outside of the summer roosting period, which is generally April through September in Michigan. When winter tree removal is not feasible, avoiding the months of June and July (period when young bats are unable to fly) likely offers some protection for roosting NLEB that may be present.

Implementing conservation measures for NLEB helps to protect other native bat species, several which are experiencing recent population declines as a result of WNS and/or other factors. As significant predators of nocturnal insects, including many crop and forest pests, bats are important to Michigan's agriculture and forests. For example, Whitaker (1995)[1] estimated that a single colony of 150 big brown bats (*Eptesicus fuscus*) would eat nearly 1.3 million pest insects each year. Boyles et al. (2011)[2] noted that the "loss of bats in North America could lead to agricultural losses estimated at more than $3.7 billion/year," and using their data for Michigan alone, we totaled the estimated value at over $500 million per year (assuming standard crop pest survival). Taking proactive steps to help protect bats may be valuable to agricultural and timber producer yields and pest management costs.

Continue to the following sections for ESA guidance for Federal and non-Federal projects in Michigan.

III. ESA GUIDANCE: PRIVATE LANDOWNERS/NON-FEDERAL PROJECTS

NLEB use a wide variety of forested habitats but are not found in all wooded areas in Michigan. The species' local distribution and abundance is influenced by both the distance to hibernacula and the quality of available habitat. Although it can be difficult to predict where the species may occur, once NLEB colonize a forest habitat for raising their young (pups), they will often return to the same areas annually.

As a result of this fidelity to specific locations, the Service's approach to implementation of the ESA is based in part on "known" locations where important habitat for NLEB has been documented; namely, hibernacula and maternity roost trees.

[1] Whitaker, J.O. 1995. Food of the Big Brown Bat *Eptesicus fuscus* from Maternity Colonies in Indiana and Illinois. American Midland Naturalist 134(2):346-360.

[2] Boyles, J.G., P.M. Cryan, G.F. McCracken, and T.H. Kunz. 2011. Economic Importance of Bats in Agriculture. Science 332:41-42.

Please note that projects that require State permits or authorizations that implement Federal laws, or are supported by Federal funds (e.g., Clean Water Act, transportation projects), may have additional requirements under or similar to Section 7 of the ESA, as described in section: IV. ESA GUIDANCE: FEDERAL PROJECTS.

Additionally, please contact the Michigan Ecological Services Field Office (contact information at the end of this document) for project-specific recommendations for wind development projects. Utility-scale wind turbines may attract and cause mortality of NLEB and warrant additional considerations.

In Michigan, what is required if there are no known NLEB hibernacula or roost trees near my project?

The Service does not require private landowners to conduct surveys for ESA-listed bats on their lands, nor do we require our guidelines for NLEB to be followed on lands where no roosts or hibernacula are known to occur. However, our records of these locations in Michigan are limited, and we expect NLEB roosts to be present in many locations in addition to those listed in this document.

NLEB 4(d) Rule Take Prohibitions

The definition of "take" pursuant to the ESA includes to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect (see 50 CFR 17.3 for details). Our implementing regulations further define the term "harm" to include any act which actually kills or injures fish or wildlife, and emphasize that such acts may include significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife.

The final 4(d) rule for the NLEB (50 CFR 17.40(o)) was published on January 14, 2016. Under the final rule, prohibitions in Michigan include:

- Actions that result in the incidental take of NLEB in known hibernacula.
- Actions that result in the incidental take of NLEB by altering a known hibernaculum's entrance or interior environment if it impairs an essential behavioral pattern, including sheltering NLEB.
- Tree-removal activities that result in the incidental take of NLEB when the activity: (1) occurs within 0.25 mile of a known hibernaculum; or (2) cuts or destroys known occupied maternity roost trees, or any other trees within a 150-foot radius of the maternity roost tree, during the pup season (June 1 through July 31).

Please note that not all tree-removal activities within the buffer of a hibernaculum or maternity roost tree will result in take. The timing and extent of tree removal may be an important consideration in those circumstances; please contact the Michigan Ecological Services Field Office to discuss your project plans in more detail. If your activity may result in incidental take that is prohibited based on the above, we will work with you to determine whether a permit pursuant to the ESA may be applicable.

Michigan Known Hibernacula and Roost Tree Locations for NLEB

We have compiled location information for NLEB hibernacula and known roosts trees in Michigan. This information can be used to help project planners in determining the applicability of provisions of the NLEB final 4(d) rule under the ESA. Please use the tables below to see if we have information that may be applicable to your project.

If you are planning a project that may impact suitable habitat in the Michigan townships below, please contact our office with more specific information on the location of your project, and we will confirm for you whether there are any known hibernacula within ¼ mile of your project or any known roost trees within 150 feet of your project.

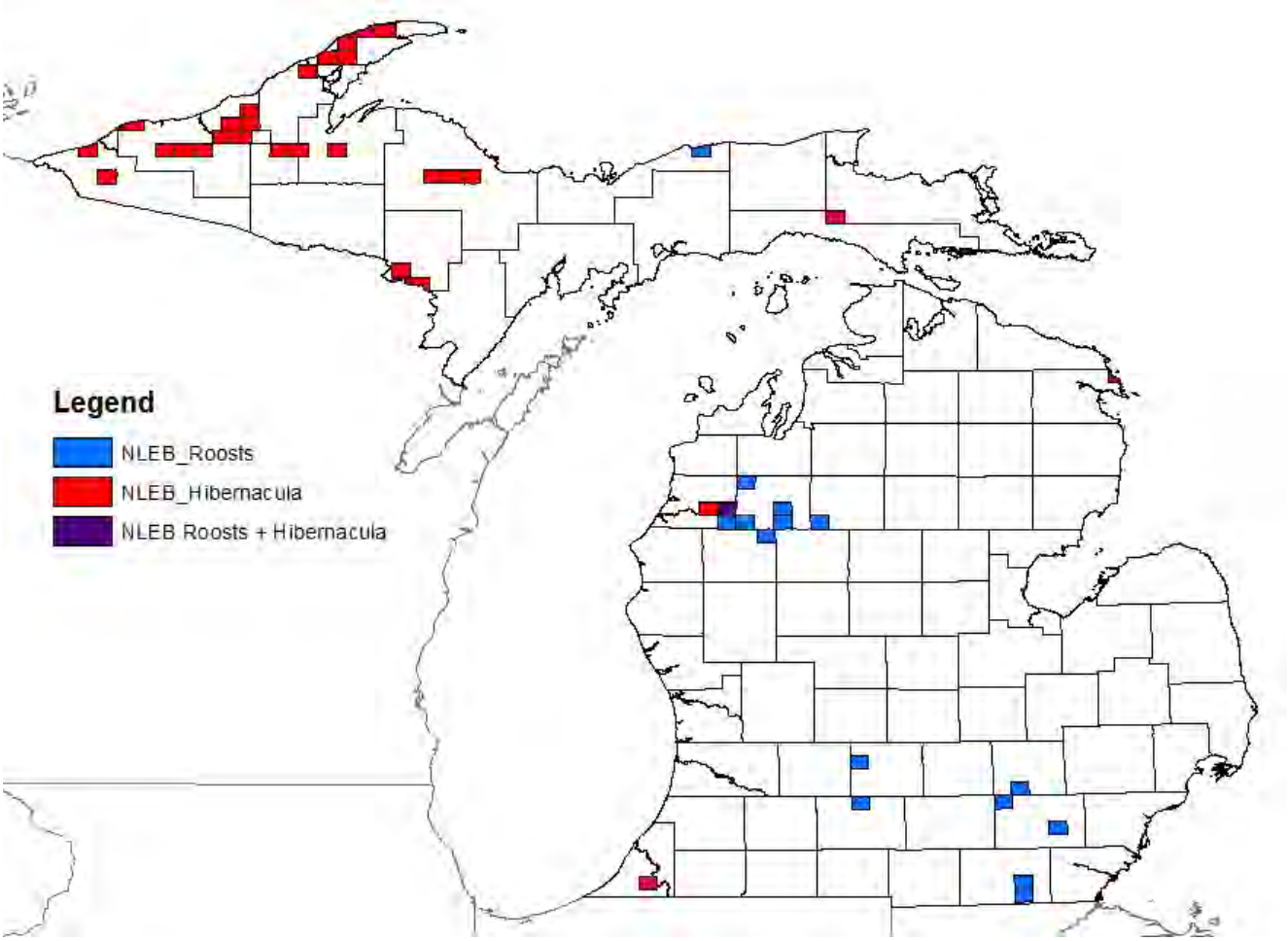
Where are the known NLEB hibernacula in Michigan?

Known NLEB in Michigan			
County	**Townships Containing Hibernacula and/or Buffer Areas**	**Number of Hibernacula**	**Landownership Within Buffer(s)**
Alpena	Alpena (T32NR9E)	1	Public
Baraga	L'Anse (T49NR33W)	1	Private
Berrien	Buchanan (T7SR18W)	1	Private
Dickinson	Breitung (T40NR30W, T39NR30W), Norway (T39NR29W)	8	Private (8)
Gogebic	Ironwood (T49NR46W); Bessemer/Wakefield (T47NR45W)	2	Private (1), public (1)
Houghton	Adams/Quincy/Franklin/Stanton (T55NR34W); Calumet (T56NR33W); Laird (T49NR35W, T49NR36W); Schoolcraft (T56NR32W)	3	Private (1), public (2)
Keweenaw	Allouez (T57NR32W, T58NR32W); Eagle Harbor/Grant (T58NR30W); Eagle Harbor/Houghton (T58NR31W)	10	Private (9), private + public (1)
Mackinac	Hendricks (T44NR7W)	4	Public (4)
Manistee	Dickson (T22NR14W, T22NR13W)	1	Private + public
Marquette	Ely (T47NR28W); Tilden (T47NR27W); Richmond (T47NR26W)	3	Private (3)
Ontonagon	Bohemia (T52NR37W); Carp Lake (T51NR44W, T51NR43W); Greenland (T51NR37W, T51NR38W, T50NR38W); Matchwood (T49NR41W, T49NR42W); Rockland (T50NR39W, T49NR40W)	42	Private (20), public (8), private + public (16)

Where are the known NLEB roost trees in Michigan?

Known NLEB Roost Tree Locations in Michigan			
County	**Townships Containing Roosts and/or Buffer Areas**	**Number of known roosts**	**Landownership Within Buffer(s)**
Alger	Burt (T49NR14W)	5 (all female)	Public (5)
Calhoun	Convis (T1SR6W)	1	Public (1)
Eaton	Vermontville (T3NR6W)	1 (female)	Private (1)
Lake	Dover (T20NR11W)	4 (all female)	Public (4)
Lenawee	Ogden (T8SR4E), Palmyra (T7SR4E)	81	Private (81)
Livingston	Putnam (T1NR4E)	2 (1 female)	Private (1), public (1)
Manistee	Dickson (T22NR13W), Norman (T21NR13W)	4 (all female)	Private (2), public (2)
Missaukee	Richland (T21NR8W)	4 (all female)	Private (4)
Washtenaw	Lyndon (T1SR3E), Pittsfield (T3SR6E)	3 (2 female)	Private (2), public (1)
Wexford	Cherry Grove (T21NR10W), Selma (T22NR10W), South Branch (T21NR12W), Wexford (T24NR12W)	20 (16 female)	Private (17), public (3)

Map of Known NLEB Occurrence, Roosts, and Hibernacula in MI



***Map last updated 7/22/2016. Map will be updated as additional information becomes available.**

IV. ESA GUIDANCE: FEDERAL PROJECTS

1. Standard Section 7 Consultation:

Under the ESA, requirements for Federal projects (i.e., projects funded, authorized, permitted, or implemented by a Federal agency) are different than requirements for wholly private or otherwise non-Federal projects. The ESA mandates all Federal departments and agencies to conserve listed species and to utilize their authorities in furtherance of the purposes of the ESA. Section 7 of the ESA, called "Interagency Cooperation," is the mechanism by which Federal agencies ensure the actions they conduct, including those they fund or authorize, do not jeopardize the existence of any listed species. Federal agencies must request a list of species and designated critical habitat that may be present in the project area from the Service (i.e., via IPaC, on our website at https://www.fws.gov/midwest/Endangered/section7/sppranges/MIs7listrequest.html, or by contacting our office). Then they must determine whether their actions may affect those species or critical habitat. If a listed species or critical habitat may be affected, consultation with the Service is required. For general guidance on Section 7(a)(2) obligations for Federal projects, and step-by-step instructions on the process, please visit: https://www.fws.gov/midwest/Endangered/section7/s7process/index.html

Please note that Section 7 obligations or similar requirements may also apply to State permits or authorizations that implement Federal laws or projects that are supported by Federal funds (e.g., Clean Water Act, transportation projects).

2. NLEB Streamlined Consultation (optional for Federal projects that may affect but will not involve prohibited take of NLEB):

Federal actions that involve incidental take not prohibited under the final 4(d) rule for the NLEB may still result in effects to individual NLEB. As discussed above, section 7 of the ESA requires consultation with the Service if a Federal agency's action may affect a listed species. This requirement does not change when a 4(d) rule is implemented. However, for the NLEB 4(d) rule, the Service has provided a framework to streamline section 7 consultations when Federal actions may affect the NLEB but will not cause prohibited take. Federal agencies have the option to rely upon the finding of the programmatic biological opinion for the final 4(d) rule to fulfill their project-specific section 7 responsibilities by using the framework.

For more information on the NLEB Streamlined Consultation process and to download a Streamlined Consultation Form, visit:
https://www.fws.gov/Midwest/endangered/mammals/nleb/s7.html

Please note that use of the streamlined framework is optional, and an agency may choose to follow standard section 7 procedures instead. Even when take of NLEB is exempt, we encourage Federal agencies to implement voluntary conservation measures (i.e., winter tree removal) and avoid adverse effects to the species whenever possible.

If your project may result in prohibited take of NLEB (see "NLEB 4(d) Rule Take Prohibitions" above), standard section 7 procedures apply and this framework cannot be used.

3. Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat (optional for Federal transportation projects that may affect NLEB):

The U.S. Fish and Wildlife Service and Federal Highway Administration (FHWA) have standardized their approach to assessing impacts to Indiana bats and NLEB from highway construction and expansion projects; then avoiding, minimizing and mitigating those impacts. This landscape-level conservation strategy encompasses the ranges of both bat species and provides transparency and predictability to FHWA and state Departments of Transportation (DOTs) through proactive planning. Information provided by this consultation and conservation strategy allows transportation agencies to strategically avoid projects in high impact or high risk areas for the Indiana bat and NLEB. For projects that cannot avoid impacts, project proponents receive information on ways to minimize impacts and preclude the need to revise projects later in their development. For large-scale projects or projects with greater impacts, priority conservation areas may be used to offset and minimize the impacts of the take. This approach is intended to increase the consistency of both project design and review, reduce consultation process timeframes and delays, and contribute meaningfully to the conservation of both species.

Please note that use of the Range-wide Programmatic Consultation for Indiana Bat and NLEB is optional for Federal transportation projects, and transportation agencies may choose to follow standard section 7 procedures instead. For more information on the Range-wide Programmatic Consultation for Indiana Bat and NLEB, including User Guide and Project Submittal Form documents, visit:
https://www.fws.gov/Midwest/endangered/section7/fhwa/index.html

V. MICHIGAN ECOLOGICAL SERVICES FIELD OFFICE CONTACT INFORMATION

Please contact the Michigan Ecological Services Field Office for more information on any projects occurring in Michigan.

U.S. Fish and Wildlife Service
Michigan Ecological Services Field Office
2651 Coolidge Road, Suite 101
East Lansing, MI 48823
Phone: 517-351-2555
Fax: 517-351-1443
TTY: 1-800-877-8339 (Federal Relay)
e-mail: EastLansing@fws.gov

6.3 State Historic Preservation Office

6.3.1 Application for Section 106 Review

APPLICATION FOR SHPO SECTION 106 CONSULTATION

Submit one application for each project for which comment is requested. Consult the *Instructions for the Application for SHPO Section 106 Consultation Form* when completing this application.

Mail form, all attachments, and check list to: Michigan State Historic Preservation Office, 300 North Washington Square, Lansing, MI 48913

I. GENERAL INFORMATION

☒ New submittal
☐ More information relating to SHPO ER# SHPO Project #
☐ Submitted under a Programmatic Agreement (PA)
PA Name/Date: PA name/date, if applicable

a. **Project Name:** Tuscarora Township, District 2 Sewer Expansion
b. **Project Municipality**: Tuscarora Township
c. **Project Address** (*if applicable*): Project street address
d. **County:** Cheboygan

II. FEDERAL AGENCY INVOLVEMENT AND RESPONSE CONTACT INFORMATION

a. **Federal Agency:** USDA Rural Development
Contact Name: Andrew H. Granskog
Contact Address: 3001 Coolidge Rd, Suite 200**City:** East Lansing **State:** Michigan **Zip:** 48823
Email: andy.granskog@usda.gov
Specify the federal agency involvement in the project: Project funder.

b. **If HUD is the Federal Agency: 24 CFR Part 50 ☐ or Part 58 ☐**
Responsible Entity (RE): Name of the entity that is acting as the Responsible Entity
Contact Name: RE Contact name
Contact Address: RE mailing address **City:** RE city **State:** RE State **Zip:** RE zip code
RE Email: RE contact's email **Phone:** RE contact's phone #

c. **State Agency Contact (*if applicable*):** Name of state agency
Contact Name: Name of state agency contact
Contact Address: State agency contact's mailing address **City:** State contact's city **Zip:** State contact's zip code
Email: State contact's email **Phone:** State contact's phone #

d. **Applicant (if different than federal agency):** Tuscarora Township
Contact Name: Mike Ridley
Contact Address: 3546 S. Straits Highway **City:** Indian River **State:** Michigan **Zip:** 49749
Email: supervisor@tuscaroratwp.com **Phone:** 231-238-7088

e. **Consulting Firm (if applicable):** Performance Engineers, Inc.
Contact Name: Aaron Nordman
Contact Address: 406 Petoskey Avenue **City:** Charlevoix **State:** Michigan **Zip**: 49720
Email: anordman@performanceeng.com Phone: 231-547-2121

f. **Consulting Firm (if applicable):** Rural Community Assistance Program
Contact Name: Jacob Mitchell
Contact Address: 911 Augusta Street **City:** Sault Ste. Marie **State:** MI **Zip**: 49783
Email: jsmitchell@glcap.org Phone: 1-(906)-322-4734

III. PROJECT INFORMATION

a. **Project Location and Area of Potential Effect (APE)**

i. **Maps.** Please indicate all maps that will be submitted as attachments to this form.
☒Street map, clearly displaying the direct and indirect APE boundaries
☒Site map
☒USGS topographic map Name(s) of topo map(s) Indian River Quadrangle
☒Aerial map
☒Map of photographs
☐Other: Identify type(s) of map(s)

ii. **Site Photographs**

iii. **Describe the APE:**
The APE for the main are the trenches where utilities will be laid in existing roads, easements and public rights-of-way identified on the attached maps. Any auditory effects will be temporary due to construction, as no permanent new sources of noise will be created.

iv. **Describe the steps taken to define the boundaries of the APE:**
The APE was defined based on the proposed ground disturbances described in the Preliminary Engineering Report.

b. **Project Work Description**
Describe all work to be undertaken as part of the project:
This project will install approximately 18,500 feet of new gravity main and over 50 manholes as identified on the attached map. There will also be an additional 23 duplex pump stations, 10 lift stations, and upgrades to existing lift stations to accommodate the additional flow. Typical footprints for lift stations is 20 ft x 20 ft and a depth of 12 ft to 15 ft. Typical trench depth for main is 8 ft x 6 ft, with main directionally bored around shorelines and river crossings. The project will also increase capacity of the existing WWTP, but not the footprint. All improvements are within the existing facility.

IV. IDENTIFICATION OF HISTORIC PROPERTIES

a. **Scope of Effort Applied**

i. **List sources consulted for information on historic properties in the project area** (including but not limited to SHPO office and/or other locations of inventory data).

See attached report for details of background research sources and methods

ii. Provide documentation of previously identified sites as attachments.

iii. **Provide a map** showing the relationship between the previously identified properties and sites, your project footprint and project APE.

iv. Have you reviewed existing site information at the SHPO: ☒Yes ☐ No

v. Have you reviewed information from non-SHPO sources: ☒Yes ☐ No

b. **Identification Results**

i. **Above-ground Properties**

A. Attach the appropriate Michigan SHPO Architectural Identification Form for each resource or site 50 years of age or older in the APE. Refer to the *Instructions for the Application for SHPO Section 106 Consultation Form* for guidance on this.

B. **Provide the name and qualifications of the person who made recommendations of eligibility for the above-ground identification forms.**
Name Name **Agency/Consulting Firm:** Name of agency or consulting firm

Is the individual a 36CFR Part 61 Qualified Historian or Architectural Historian ☐ Yes ☐ No

Are their credentials currently on file with the SHPO? ☐ Yes ☐ No

If NO attach this individual's qualifications form and resume.

ii. **Archaeology** (complete this section if the project involves temporary or permanent ground disturbance) Submit the following information using attachments, as necessary.

A. **Attach Archaeological Sensitivity Map.**

B. **Summary of previously reported archaeological sites and surveys:**
Sites 20CN13, CN14, CN21 and CN23 are mapped as occurring with the project area; however, these sites lack well-defined limits and their extent and boundaries have not been field verified. 20CN15 and 20CN34 are located nearby but outside the project area. Prior surveys conducted by Lovis (1976, 1978) include portions of the project area.

C. **Town/Range/Section or Private Claim numbers:** T4S / R3W / 3,4

D. **Width(s), length(s), and depth(s) of proposed ground disturbance(s):** The ground disturbance will generally include a trench 3-6 feet in width, 5-8 feet in depth, and totaling about 36,600 feet.

E. **Will work potentially impact previously undisturbed soils?** ☒ Yes ☐ No
***If YES,* summarize new ground disturbance:**
Project may impact undisturbed sediments within and beneath existing road and street rights-of-way

F. **Summarize past and present land use:**
Residential, commercial and recreational development since late 19th century

G. **Potential to adversely affect significant archaeological resources**:
☐ Low ☒ Moderate ☐ High
For moderate and high potential, is fieldwork recommended? ☒ Yes ☐ No
Briefly justify the recommendation:
Field survey recommended due to presence of several previously reported archaeological sites within the project area and favorable location with respect to shorelines of Burt Lake, Indian and Sturgeon Rivers.

H. **Has fieldwork already been conducted?** ☒ Yes ☐ No
If YES:
☐ Previously surveyed; refer to A. and B. above.
☒ Newly surveyed; attach report copies and provide full report reference here:
Archaeological Reconnaissance Survey of a Tuscarora Township Wastewater Service Area Expansion in Cheboygan County, Michigan. Gregory R. Walz, Public Service Archaeology & Architecture Program, University of Illinois at Urbana-Champaign, 18 Nov 2020.

I. **Provide the name and qualifications of the person who provided the information for the Archaeology section:**
Name: Gregory R. Walz **Agency/Firm:** Public Service Archaeology & Architecture Program
Is the person a 36CFR Part 61 Qualified Archaeologist? ☒ Yes ☐ No
Are their credentials currently on file with the SHPO? ☒ Yes ☐ No
If NO, attach this individual's qualifications form and resume.

Archaeological site locations are legally protected.
This application may not be made public without first redacting sensitive archaeological information.

V. IDENTIFICATION OF CONSULTING PARTIES

a. **Provide a list of *all* consulting parties,** including Native American tribes, local governments, applicants for federal assistance/permits/licenses, parties with a demonstrated interest in the undertaking, and public comment:

b. **Provide a summary of consultation with consultation parties:**
Summary of consultation with parties other than the SHPO

c. **Provide summaries of public comment and the method by which that comment was sought:**
Public comment summary

VI. DETERMINATION OF EFFECT

Guidance for applying the Criteria of Adverse Effect can be found in *the Instructions for the Application for SHPO Section 106 Consultation Form*.

a. **Basis for determination of effect**:
Provide an explanation for your determination; if historic properties are present, explain why the criteria of adverse effect were or were not applicable.

b. **Determination of effect**

☐ **No historic properties will be affected**

☐ **Historic properties will be affected** and the project will (check one):

☐ have **No Adverse Effect** on historic properties within the APE.

☐ have an **Adverse Effect** on one or more historic properties in the APE and the federal agency, or federally authorized representative, will consult with the SHPO and other parties to resolve the adverse effect under 800.6.

Federally Authorized Signature:_____ Date:_____

Type or Print Name: ___

Title: _____

ATTACHMENT CHECKLIST

Identify any materials submitted as attachments to the form:

☐ Additional federal, state, local government, applicant, consultant contacts

☒ Maps of project location

Number of maps attached: 5

☒ Site Photographs

☒Map of photographs

☒ Plans and specifications

☐ Other information pertinent to the work description: Identify the type of materials attached

☒ Documentation of previously identified historic properties

☐ Architectural Properties Identification Forms

☒ Map showing the relationship between the previously identified properties, your project footprint, and project APE

☐ Above-ground qualified person's qualification form and resume

☐ Archaeological sensitivity map

☒ Survey report

☐ Archaeologist qualifications and resume

☐ Other: Identify other attached materials

SERVICE AREA SUMMARY

THE PROPOSED SERVICE AREA IS COMPRISED OF THE PRIMARILY RESIDENTIAL PROPERTIES THAT ARE WEST OF THE EXISTING COMMERCIAL SEWER DISTRICT (DISTRICT 1) TO THE BURT LAKE SHORELINE. THE SERVICE AREA INCLUDES THE COLUMBUS BEACH CLUB AT THE NORTHERLY BOUNDARY DOWN TO STURGEON ISLAND AND THE STURGEON RIVER AT THE SOUTHERLY BOUNDARY. THIS AREA ENCOMPASSES APPROXIMATELY 200 ACRES AND 420 REUs.

ADDITIONAL SERVICE AREA DETAILS INCLUDE THE FOLLOWING:

1) OF THE 420 REUs, 329 ARE PROPOSED TYPICAL GRAVITY SERVICE CONNECTIONS.
2) THERE ARE 23 PLANNED DUPLEX PUMPING STATIONS, WHICH ALLOW FOR GRAVITY CONNECTIONS TO HOMES THAT MAY HAVE PLUMBING BELOW THE GRAVITY MAIN. IN THIS CASE, INDIVIDUALS MAY NEED TO PROVIDE THEIR OWN GRINDER/EJECTOR PUMPS.
3) THERE WILL BE APPROXIMATELY 18,500 FEET OF NEW GRAVITY SEWER AND OVER 50 MANHOLES.
4) THERE WILL BE OVER 15,000 FEET OF NEW FORCE MAIN WITH ANCILLARY EQUIPMENT.
3) THE INCREASED SERVICE AREA WILL REQUIRE AN EXPANSION OF THE EXISTING WWTP, APPROXIMATELY DOUBLING THE CURRENT TREATMENT CAPACITY.
4) THE EXISTING LIFT STATIONS WILL BE UPGRADED TO ACCOMMODATE ADDITIONAL FLOW.

LEGEND

- PROPOSED GRAVITY SEWER MANHOLE
- PROPOSED FORCE MAIN SEWER CLEANOUT
- PROPOSED FORCE MAIN SEWER AIR RELEASE
- PROPOSED LIFT STATION
- PROPOSED DUPLEX STATION
- EXISTING GRAVITY SEWER MANHOLE
- EXISTING DUPLEX LIFT STATION

Performance Engineers, Inc.
Civil / Structural Engineering
406 Petoskey Avenue
Charlevoix, Michigan 49720
Phone: (231) 547-2121
Fax: (231) 547-6084
www.performanceeng.com

CONSULTANTS

TUSCARORA TOWNSHIP
DISTRICT 2 SERVICE AREA EXPANSION

OWNER
TUSCARORA TOWNSHIP
INDIAN RIVER, MICHIGAN

MARK	DATE	DESCRIPTION
0	04-02-2019	PRELIMINARY REVIEW
1	10-30-2019	PERSEPHIZ AREA
2	11-27-19	ELIMINATE INDIVIDUAL PUMPS

PROJECT NO: 19-5213
CAD DWG FILE: 5213_BASE
DRAWN BY: PEI
DESIGNED BY: BWM
CHECKED BY: AEN

SEAL

SHEET TITLE
SERVICE AREA MAP

C1

SHEET 1 OF 1

K:\PROJECTS\5213\DRAWINGS\5213_BASE_AEN.DWG, SERVICE AREA - PLOTTED 11/27/2019 4:29 PM BY: AARON NORDMAN

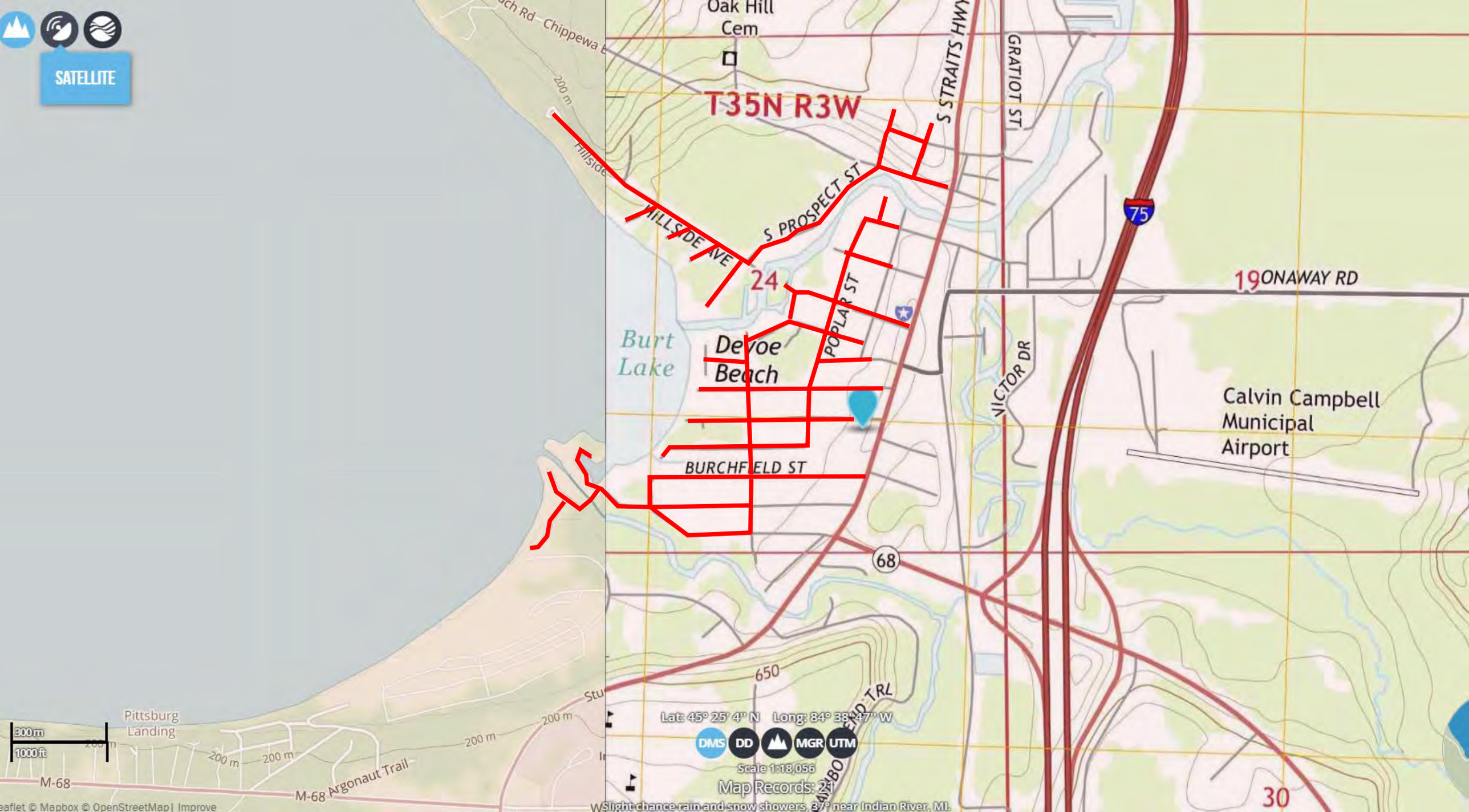

SATELLITE
Oak Hill Cem
T35N R3W
S STRAITS HWY
GRATIOT ST
HILLSIDE AVE
S PROSPECT ST
POPLAR ST
24
19
ONAWAY RD
75
Burt Lake
Devoe Beach
VICTOR DR
Calvin Campbell Municipal Airport
BURCHFIELD ST
68
650
Pittsburg Landing
M-68
M-68 Argonaut Trail
300 m
1000 ft
200 m
Lat: 45° 25' 4" N Long: 84° 38' 47" W
DMS DD MGR UTM
Scale 1:18,056
Map Records: 21
30
Slight chance rain and snow showers, 87° near Indian River, MI.

Photo Index Map for the Tuscarora Township Sewer Expansion Project.
NOT TO SCALE

Photo Index Map for the Tuscarora Township Sewer Expansion Project.
NOT TO SCALE

Photo 1: Facing west at the intersection of Barbara Avenue and Witt Blvd.

Photo 2: Facing northwest along Barbara Avenue.

Photo 3: facing east along Barbara Avenue.

Photo 4: facing east at the intersection of Dorothy Avenue, Barbara Avenue, and Doris Pl.

Photo 5: facing north at the intersection of Dorothy Avenue, Barbara Avenue, and Doris Pl.

Photo 6: facing west at the intersection of Dorothy Avenue, Barbara Avenue, and Doris Pl.

Photo 7: Facing southeast at the intersection of Barbara Avenue and Wenonah Avenue.

Photo 8: Facing southwest at the intersection of Barbara Avenue and Wenonah Avenue.

Photo 9: Facing northwest at the intersection of Barbara Avenue and Wenonah Avenue.

Photo 10: Facing northeast along Wenonah Avenue.

Photo 11: Facing northwest along Wenonah Avenue.

Photo 12: Facing northwest at intersection of Wenonah Avenue and Grace Street.

Photo 13: Facing southwest at the intersection of Grace Street and Wenonah Avenue.

Photo 14: Facing south along Wenonah Avenue.

Photo 15: Facing east along West Barbara Avenue.

Photo 16: Facing east at the intersection of Doris Pl and Burchfield Road.

Photo 17: Facing east at the intersection of Burchfield Road and Witt Boulevard.

Photo 18: Facing south at the intersection of Burchfield Road and Witt Boulevard.

Photo 19: Facing north at the intersection of Burchfield Road and Witt Boulevard.

Photo 20: Facing east at the intersection of Witt Boulevard and East Dorothy Avenue.

Photo 21: Facing east at the intersection of Witt Boulevard and Holden Road.

Photo 22: Facing west at the intersection of Witt Boulevard and Holden Road.

Photo 23: Facing east at the intersection of Witt Boulevard and South Avenue.

Photo 24: Facing west at the intersection of Witt Boulevard and South Avenue.

Photo 25: Facing east at the intersection of Witt Boulevard and Mack Avenue.

Photo 26: Facing south at the intersection of Witt Boulevard and Mack Avenue.

Photo 27: Facing west at the intersection of Witt Boulevard and Mack Avenue.

Photo 28: Facing north at the intersection of Witt Boulevard and Oaks Glenn Street.

Photo 29: Facing west at the intersection of Witt Boulevard and Oaks Glenn Street.

Photo 30: Facing northeast at the intersection of Witt Boulevard and Pike Street.

Photo 31: Facing north at the intersection of Constance Street and Pike Street.

Photo 32: Facing east at the intersection of Constance Street and Pike Street.

Photo 33: Facing north at the intersection of Pike Street and Poplar Street.

Photo 34: Facing east at the intersection of Pike Street and Poplar Street.

Photo 35: Facing south at the intersection of Pike Street and Poplar Street.

Photo 36: Facing east at the intersection of Oakley Avenue and Poplar Street.

Photo 37: Facing east at the intersection of Mack Avenue and Poplar Street.

Photo 38: facing west at the intersection of Arthur Street and Constance Street.

Photo 39: facing east at the intersection of Arthur Street and Constance Street.

Photo 40: facing east at the intersection of Arthur Street, Poplar Street, and Floyd Street.

Photo 41: facing north at the intersection of Arthur Street, Poplar Street, and Floyd Street.

Photo 42: facing east at the intersection of Poplar Street, and Lake Street.

Photo 43: facing south at the intersection of Poplar Street, and River Street.

Photo 44: facing east at the intersection of Poplar Street, and River Street.

Photo 45: Facing north at the intersection of Juno Street and River Street.

Photo 46: Facing north along River Street 40 feet east of South Straights Highway.

Photo 47: Facing south along Prospect Road 20 feet east of South Straights Highway.

Photo 48: Facing west at the intersection of Prospect Road and South Straights Highway.

Photo 49: Facing north at the intersection of Prospect Road and Gatewood Avenue.

Photo 50: Facing north at the intersection of Prospect Road and Spruce Street.

Photo 51: Facing south at the Intersection of Prospect Road and Spruce Street.

Photo 52: Facing north at the intersection of Spruce Street and Hemlock Street.

Photo 53: Facing east at the intersection of Spruce Street and Hemlock Street.

Photo 54: Facing north at the intersection of Hemlock Street and Gatewood Avenue.

Photo 55: Facing south at the intersection of Hemlock Street and Gatewood Avenue.

Photo 56: Facing southwest on Prospect Road.

Photo 57: Facing southwest on Prospect Road.

Photo 58: Facing southwest on Prospect Road.

Photo 59: Facing northeast at the intersection of Prospect Road, Pier Avenue, and Hillside Avenue.

Photo 60: Facing northwest at the intersection of Prospect Road, Pier Avenue, and Hillside Avenue.

Photo 61: Facing southwest at the intersection of Prospect Road, Pier Avenue, and Hillside Avenue.

Photo 62: Facing southwest at the intersection of Hillside Avenue and Loren Avenue.

Photo 63: Facing southwest at the intersection of Hillside Avenue and Harrison Avenue.

Photo 64: Facing southwest at the intersection of Hillside Avenue and Cleveland Avenue.

Photo 65: Facing northwest on Hillside Avenue.

Photo 66: Facing northwest on Hillside Avenue.

Photo 67: Facing northwest on Hillside Avenue.

Photo 68: Facing northwest on Hillside Avenue.

Photo 69: Facing northwest on Hillside Avenue.

Photo 70: Facing east along South Straights Highway by Indian River Park.

Photo 71: Facing east at Wastewater Treatment Plant.

Photo 72: Facing southeast at Wastewater Treatment Plant.

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

Public Service Archaeology
& Architecture Program
Department of Anthropology
1707 South Orchard Street
Urbana, Illinois 61801

phone (217) 333-1636
fax (217) 244-3490

03 July 2020

Mr. Aaron Nordman
Performance Engineers, Inc.
406 Petoskey Avenue
Charlevoix, Michigan 49720

Dear Mr. Nordman:

Attached is a Michigan Background Findings Report and invoice the proposed Tucarora Township District 2 Wastewater Service Area Expansion Project in Cheboygan County, Michigan. Our desktop investigations documented four known archaeological sites and no recorded historic properties in the project area. Following new guidance from the Michigan State Historic Preservation Office we are recommending a Phase I cultural resource survey be conducted since there is a potential to adversely impact cultural resources. They are indicating this report should be appended to your Michigan Application for Section 106 Review.

Thank you for selecting the Public Service Archaeology & Architecture Program to fulfill your cultural resource compliance needs. We look forward to assisting you again in the future. If you have any questions about the project, please contact me at (847) 287-9045.

Thank you for your interest in the cultural heritage of Michigan.

Sincerely,

Kevin McGowan

a: Michigan Background Findings Report and Invoice

MICHIGAN ARCHAEOLOGICAL SURVEY
SHORT REPORT

ARCHAEOLOGICAL RECONNAISSANCE SURVEY OF A TUSCARORA TOWNSHIP WASTEWATER SERVICE AREA EXPANSION IN CHEBOYGAN COUNTY, MICHIGAN

Prepared for and funded by:

Mr. Aaron Nordman, PE
Performance Engineers, Inc.
406 Petoskey Avenue
Charlevoix, Michigan 49720

by:

Mr. Gregory Walz

Project No. 20-303

18 November 2020

PUBLIC SERVICE
ARCHAEOLOGY&
ARCHITECTURE
PROGRAM

Department of Anthropology
1707 South Orchard Street
University of Illinois
at Urbana-Champaign,
Urbana, Illinois 61801

MICHIGAN ARCHAEOLOGICAL SURVEY SHORT REPORT

Locational Information and Survey Conditions

County: Cheboygan **Quadrangle**: Cheboygan

Sec: 24 **T.:** 35 North **R.:** 03 West **Township Name:** Tuscarora

Legal Location: Section 24, Township 35 North, Range 03 West

Project Type/Title: New Construction/ Tuscarora Township District 2 Wastewater Expansion

Funding and/or Permitting Federal/State Agencies: USDA-Rural Development

Project Description: Tuscarora Township plans to construct 5,639 meters of new sewer main, construct 23 new pump stations, 10 lift stations and 50 manholes, and upgrade 3 existing pump stations within portions of unincorporated Indian River and Tuscarora Township. All project-related construction activities are to occur within existing road rights-of-way and easements.

Topography: Nearly level lacustrine deposits bordering Burt Lake and Indian River, moderately sloping terrace above lake level, nearly level made land at engineered mouth of Sturgeon River.

Soils: See Continuation Page.

Drainage: Sturgeon River to Burt Lake; Burt Lake to Indian River to Mullett Lake to Black River to Cheboygan River to Lake Huron.

Land Use/Ground Cover (Include % Visibility): Project is within existing road and street rights-of-way and includes grass-covered areas, areas of modern fill and buried utilities. Surface visibility generally below 25 percent throughout.

Survey Limitations: None.

Archaeological and Historical Information

Historic Plats/Atlases/Sources: See Continuation Page and References Cited.

Previously Reported Sites: There are four sites (20CN13, 20CN14, 20CN21 and 20CN23) mapped as occurring within the project area.

Previous Surveys: One prior survey (Lovis 1976) includes a portion of the current project area.

Investigation Techniques: Shovel tests were excavated at staked locations of proposed duplex pump facilities and lift stations within existing surface street rights-of-way, visual reconnaissance within rights-of-way.

Sites Located: 20CN13, 20CN14, 20CN21 and 20CN23 – Records Only.

Cultural Material: None.

Curated at: n/a.

Collection Techniques: n/a.

Areas Surveyed (Hectares/Acres): 0.59 Hectares/1.45 Acres

Results of Investigation and Recommendations: ***(Check One)***

xxx Phase I Archaeological Reconnaissance Has Located No Archaeological Material; Project Clearance Is Recommended.

____ Phase I Archaeological Reconnaissance Has Located Archaeological Materials; Site(s) Does (Do) Not Meet Requirements for National Register Eligibility; Project Clearance Is Recommended.

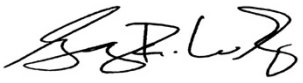
____ Phase I Archaeological Reconnaissance Has Located Archaeological Materials; Site(s) May Meet Requirements For National Register Eligibility; Phase II Testing Is Recommended.

Archaeological Contractor Information

Archaeological Contractor: Public Service Archaeology & Architecture Program, University of Illinois at Urbana-Champaign, 1707 South Orchard Street, Urbana, Illinois 61801.

Surveyor(s): Gregory R. Walz **Survey Date(s):** 27-28 October 2020

Report Completed By: Gregory R. Walz **Date:** 18 November 2020

Submitted By (Signature and Title):  **Project Archaeologist**

Attachment Check List

_xxxx 1) Relevant Portion of USGS 7.5' Topographic Quadrangle Map(s) Showing Project Location And Any Recorded Sites;

_xxxx 2) Project Map(s) Depicting Survey Limits And, When Applicable, Approximate Site Limits, And Concentrations of Cultural Materials

_n/a_ 3) Site Form(s): One Copy of Each Form;

_xxxx 4) Additional Information Sheets As Necessary.

Address Of Owner/Agent/Agency To Whom SHPO Comment Should Be Mailed

Performance Engineers, Inc.
406 Petoskey Avenue
Charlevoix, Michigan 49720

Contact Person: Mr. Aaron Nordman, PE **Phone Number:** 231.547.2121

Continuation Page

The Public Service Archaeology & Architecture Program of the University of Illinois at Urbana-Champaign was contacted by Performance Engineers, Inc. of Charlevoix, Michigan to conduct a Phase I reconnaissance survey for portions of the proposed construction project in Cheboygan County, Michigan (Figure 1). The project is entitled the Tuscarora Township District #2 Wastewater Service Area Expansion to be located within unincorporated Indian River, Tuscarora Township in Cheboygan County (Figure 2). The project involves the construction of approximately 5,639 meters of new gravity sewer main, 50 new manholes, 23 new duplex pump stations, 10 new lift stations, and upgrades to existing pump stations to improve flow within the service area. The new main will be constructed within an open trench typically excavated to a depth of 2.4-meters and approximately 1.8-meters in width. Directional boring rather than open trenching will be employed near shorelines and river crossings. The typical excavation and construction area for the new lift stations will be approximately 7.0-x-7.0-meters, reaching depths between 3.6-4.6 meters below surface. The project is to be constructed within existing road and street rights-of-way and easements. The area of potential effects (APE) for Direct Effects is defined as 20 meters wide centered on existing Indian River streets over the 5,639-meter project length totaling approximately 11.28 hectares (27.87 acres). This area was selected to encompass all known areas of ground disturbance along the main service lines and the proposed locations of the duplex pump and lift stations. The area of indirect effects for this project is defined as 60 meters wide centered on existing Indian River streets over the 5,639-meter project length totaling 33.83 hectares (83.60 acres). The area of direct effects was selected in recognition that most of the project will be placed below ground with visual and sound effects limited to the period of construction and to the immediate vicinity of the proposed lift and pump stations. This investigation was conducted in support of a Michigan Application for Section 106 Review with the United States Department of Agriculture, Rural Development Authority as the lead Federal Agency. This project incorporates a previously prepared background investigation, a field reconnaissance survey of the identified duplex pump and lift station locations identified for this project, and the preparation of this report.

The background research for this project included a review of the National Historic Landmarks (National Park Service 2020a), the National Register of Historic Places (National Park Service 2020b), and the Michigan above-ground resources (Michigan State Historic Preservation Office 2020a). Archaeological site file and previous survey information were also examined to determine the extent and efficacy of prior surveys and known site information (Michigan State Historic Preservation Office 2020b). Additionally, the project area was examined in consideration of available historic maps, soils data, physiographic settings, and regional cultural contexts.

The Lower Peninsula of Michigan falls within the Great Lakes Section of the Central Lowland Province, a physiographic region characterized by the remnants of the most recent Wisconsin-aged glacial advances and retreats underlain by Paleozoic carbonate bedrock (Fenneman 1938: 486). The landforms within the project area are primarily composed of lacustrine deposits of sand and gravel with areas of organic soils and the underlying till-floored lake plain (Dorr and Eschman 1970; Michigan Department of Natural Resources 1999; Natural Resources Conservation Service 2004). Prior to the recession of glacial Lake Chicago and the more recent Lake Nipissing high stages in the Lake Michigan/Lake Huron Basin, the project area was inundated by a large embayment. Following the onset of modern lake levels, the former embayment was left as a series of large inland lakes and connecting rivers known as the Inland Waterway. This waterway, comprised of the Cheboygan, Indian and Crooked Rivers and Mullet, Burt, Crooked and Round Lakes extends 61-kilometers across Cheboygan and Emmet counties, between Little Traverse Bay on Lake Michigan and Duncan Bay on Lake Huron (Hough 1958; Larsen 1999; Wikipedia 2020; Wiles 2016).

From a regional ecosystems perspective, the project is located within the Onaway Sub-Subsection, of the Presque Isle Subsection, of the Northern Lacustrine-Influenced Lower Michigan Section of Regional Landscapes Ecosystems (Albert 1995). The Onaway Sub-Subsection includes areas of sandy lake plain including several large lakes (Burt, Crooked, Mullet) and rolling to moderately sloping ground moraine with some localized drumlin fields. Analysis of the United States General Land Office survey notes and plat maps indicates that the project is located within an area having a number of distinct forest habitats and ecotones including jack pine-red pine forest, beech-sugar maple-hemlock forest, white pine-red pine forest, hemlock-white pine forest, cedar swamp, mixed conifer swamp, mixed hardwood swamp, and aspen-birch forest dependent upon soil type, drainage characteristics and elevation (Albert and Comer 2008).

The project area is located within the Tawas-Carbondale-Greenwood soil association characterized by soils primarily classified as wet sandy and organic soils formed on areas of nearly level topography (Michigan State University Agricultural Experiment Station 1981). Owing to the juxtaposition of a variety of glaciofluvial and lacustrine-influenced landforms, a variety of soils are mapped as occurring within and adjacent to the project area including Grousehaven variant muck; Grayling sand, 0 to 8 percent slopes; Rubicon sand, 0 to 6 percent slopes; Rubicon sand, 6 to 18 percent slopes; Rubicon sand, 30 to 60 percent slopes; Cheboygan loamy sand, 12 to 30 percent slopes; Au Gres sand, 0 to 3 percent slopes; Roscommon muck; Udipsamments, nearly level to steep; and Croswell sand, 0 to 6 percent slopes (Natural Resources Conservation Service 2020a). Grouped by drainage characteristics, these soils run from excessively drained-Rubicon and Grayling series soils; well-drained to moderately well-drained-Cheboygan and Croswell series soils; somewhat poorly drained-Riggsville and Au Gres series soils; and finally to poorly and very poorly drained Roscommon and Grousehaven muck soils. The Udipsamments, sandy soils with little to no pedogenic development of horizons, would likely fall into a somewhat poorly drained to poorly drained categorization given their mapped location near the Burt Lake shoreline and Sturgeon River and adjacent soil types (Natural Resources Conservation Service 1999, 2020b).

The State of Michigan possesses a rich and varied archaeological record which includes sites and materials dating from the earliest Native American occupations of the state, during the terminal Pleistocene nearly 11,000 years ago, to numerous historic Native American, European and Euro-American sites, important examples of industrial technology, and numerous shipwrecks throughout the Great Lakes. Excellent summaries of the archaeological record of Michigan are available by Fitting (1975), Halsey (1999), Holman, Brashler and Parker (1996), and Mason (1981). An atlas of archaeological sites compiled by Hinsdale (1931) depicts numerous campsites, villages, mounds, earthworks, and trails throughout the State. However, no such sites are depicted in the immediate vicinity of the project location. A review of the archaeological record of the northern Lower Peninsula of Michigan and adjacent portions of the eastern Upper Peninsula indicates evidence for a long human occupation of the area, extending from Paleoindian to recent times. The landforms and their associated biota (aquatic, wetland, and terrestrial) affected the ways in which Native American and early historic Euro-American peoples utilized the area (e.g. Kapp 1999). Previous archaeological research in the northern Lower Peninsula region has identified areas adjacent to permanent water sources, such as creeks, rivers, marshes, kettle lakes, and the shorelines of the Straits of Mackinac, Lake Michigan and Lake Huron, as having a high potential for archaeological sites (e.g. Brose and Hambacher 1999; Howey and Parker 2008; Lovis 1999; Robertson, Lovis, and Halsey 1999; Schott 1999). The Inland Waterway with its interconnected rivers and lakes and varying topography and native habitats offered many distinct aquatic and terrestrial resources and the closely juxtaposed habitats proved favorable for human occupation (e.g. Lovis 1976, 1978, 1990, 2009).

The 1841 United States General Land Office survey plat (not illustrated) of Township 35 North, Range 03 West depicts the project location as undeveloped and without improvements (Bureau of Land Management 2020a). A subsequent 1856 resurvey (Figure 3) indicates that Section 24 had been

subdivided into a number of smaller parcels, though the area remained without improvements. Both the 1841 and 1856 plat depict the Sturgeon River flowing north to join Mullet's River (Indian River) rather than flowing westward to empty into the south end of "Burt's Lake" as is the case currently. The notes on the 1856 plat also indicate the land to be sandy and gravelly and of "…poor 2nd-3rd rate…" quality, with vegetation including pine-oak forest, mixed hardwood-conifer forest, and a band of swamp forest habitat shown along the lower Sturgeon River. Subsequent plat and atlas maps (Figure 3) dating between the late nineteenth and early twentieth century depict the project area as within and extending beyond the unincorporated community of Indian River. The 1957 Wolverine 15' quadrangle map depicts a number of residences along the Burt Lake shoreline and near the mouth of the Sturgeon River outside the more built-up portion of Indian River (B. F. Bowen and Company 1916; Meyers and Meyers 1902; United States Geological Survey 1957). Federal land sale records indicate several individuals including John B. Clark, Solander Hayes John Johnson, David Smith, and Frank Smith purchased land within Section 24, Township 35 North, Range 03 West between 1878 and 1885 (Bureau of Land Management 2020b).

The review of the Federal and State databases for historic properties identified no listed historic properties within the APE for Direct Effects (Michigan State Historic Preservation Office 2020a, 2020b; National Park Service 2020a, 2020b). One prior archaeological survey is recorded for a portion of the project area (Lovis 1976, 1978). The site file review did identify four archaeological sites (20CN13, 20CN14, 20CN21, and 20CN23) having Prehistoric Native American components (Table 1) that occur within the defined direct and indirect areas of effect. Precise site boundary and locational data is lacking for all four of these recorded sites. One additional Native American site, 20CN15, is reported nearby (Figure 4).

The background investigations found a contextual high probability for Native American sites to be located with respect to inland lake and riverine settings and that the project has a moderate to high potential to contain archaeological resources. Given the nature of the project, with the proposed construction areas to be confined within existing road rights-of-way and easements and adjacent to existing lift stations, portions of the APE for direct effects are likely to have been previously impacted and disturbed by existing infrastructure adversely effecting any potential cultural resources present. In consultation with the USDA and project engineers it was determined that the survey would be limited to the proposed construction locations of the 23 new duplex pumps, 3 upgraded duplex pumps, and 10 lift stations creating a survey sample of the new waste water collection system.

Field investigation of the proposed project area was conducted on 27-28 October 2020. A general review of the APE for Direct Effects found much of the project is presently beneath asphalt street surfaces and/or occurs within disturbed portions of the rights-of-way adjacent to the paved areas. Ditches are present along many of the streets in Indian River, especially in the nearly level areas along the Burt Lake and Indian River shorelines and standing or flowing water was present in a number of these ditches. It was also noted that the mapped Udipsamments soils appear to have been augmented with sandy fill materials to raise their elevation and permit the construction of a number of residences and several streets near the mouth of the Sturgeon River. Given the disturbance associated with the dredging of the present river mouth, the existence of steel sheet piling along the river and adjacent portions of the Burt Lake shoreline, and high likelihood of the area being augmented with fill, the mapped area of Udipsamments is interpreted to have no potential to contain intact archaeological deposits and they were not shovel tested. The investigation involved the excavation of a single shovel test in a majority of the staked pump and lift station locations (Figure 5) and photo documentation of existing duplex pump stations to be upgraded. Each shovel test sampled a 15 meter by 15 meter area covering 225 square meters each with 26 sample points resulting in a survey of roughly 5,580 square meters or 5 percent of the total project area. The results of the shovel tests (Tables 2 and 3) document the findings at each sample point.

Table 1. Identified Sites in the Direct Effects APE.

Site #	*Culture*	*Component(s)*	*Function(s)*	*NRHP Evaluation Status*
20CN13	Native American	Late Woodland	Undetermined	More information needed. No NRHP determination.
20CN14	Native American	Middle Woodland	Camp	More information needed. No NRHP determination.
20CN21	Native American	Woodland	Undetermined	More information needed. No NRHP determination.
20CN23	Native American	Woodland	Undetermined	More information needed. No NRHP determination.

Table 2. Lift Station Shovel Test Profiles.

Test No.	Total Depth	Soils	Notes
LS#1	50 cm*	0-35 cm: 10YR 3/1 and 10YR 2/2 mottled loamy sand w/ few rounded pebbles 35-50 cm: 10YR 5/2 and 10YR 5/4 mottled sand, moist to wet	Disturbed
LS#2	50 cm	0-15 cm: 10YR 3/2 sand 15-25 cm: 10YR 3/2 sand and gravel 25-40 cm: 10YR 3/2 sand w/ occasional gravel 40-50 cm: 10YR 4/4 coarse sand w/ rounded pebbles	Disturbed
LS#3	22 cm	0-11 cm: 10YR 4/2 wet silty sand 11-22 cm: gravel	Disturbed, refusal at 22 cm.
LS#4	46 cm	0-15 cm: 10YR 3/2 silty sand 15-23 cm: 10YR 4/2 sand w/ rounded pebbles 23-46 cm: 10RY 5/2 and 10YR 5/3 mottled wet sand	
LS#5	30 cm	0-18 cm: 10YR 3/1 sand w/ large tree root 18-30 cm: 10YR 6/1 wet sand	
LS#6	35 cm	0-12 cm: 10YR 3/1 silty sand 12-35 cm: 10YR 5/2 sand w/ few small cobbles	
LS#7	30 cm	0-13 cm: 10YR 3/2 sand 13-30 cm: 10YR 3/2 sand and mottled 7.5 YR 5/6 clayey sand w/ gravel	Disturbed
LS#8	No test	No test excavated-compact gravel and sand driveway fill	Disturbed
LS#9	55 cm	0-18 cm: 10YR 3/2 loamy sand 18-24 cm: 10YR 4/4 and 10YR 4/3 mottled sand 24-36 cm: 10YR 6/2 moist sand	Located in built-up flower bed
LS#10	45 cm	0-20 cm: 10YR 4/4 coarse sand 20-25 cm: 10YR 2/1 sand 25-45 cm: 10YR 5/1 and 10YR 6/1 banded mucky sands	

* Measurements in centimeters below ground surface.

Table 3. Duplex Pump Shovel Test Profiles*.

DP#1	44 cm **	0-24 cm: 10YR 4/2 compact gravel w/ sand 24-26 cm: 10YR 2/1 sand 26-34 cm: 10YR 4/2 and 10YR 5/1 mottled sand 34-44 cm: 10YR 4/6 sand w/ small cobbles and rounded pebbles	Angular gravel fill in upper horizon, disturbed to 24 cm.
DP#2	34 cm	0-20 cm: 10YR 2/1 sand w/ few rounded pebbles 20-22 cm: 10YR 6/2 sand 22-34 cm: 7.5YR 4/4 sand w/ small cobbles and rounded pebbles	
DP#3	47 cm	0-32 cm: 10YR 2/1 organic sand w/ small cobbles and gravel 32-47 cm: 10YR 5/4 and 10YR 6/3 mottled sand w/ small cobbles	Angular gravel fill in upper horizon, disturbed to 32 cm
DP#4	34 cm	0-26 cm: 10YR 3/2 organic sand w/ small cobbles 26-34 cm: 10YR 5/4 and 10YR 6/4 mottled sand w/ small cobbles	
DP#5	36 cm	0-18 cm: 10YR 2/2 sand w/ abundant rock and small cobbles 18-24 cm: 7.5YR 4/3 clayey sand 24-36 cm: 10YR 4/4 sand w/ small cobbles and rounded pebbles	Upper horizons disturbed to approx. 24 cm
DP#6	46 cm	0-10 cm: 10YR 3/2 sand with gravel 10-22 cm: 10YR 4/6 sand w/ asphalt chunk 22-31 cm: 10YR 4/1 compact, loamy sand 31-46 cm: 10YR 5/3 clayey sand w/ cobbles	Disturbed, located between roadway and tennis court
DP#7	15 cm	0-15 cm: 10YR 3/2 sand and compacted angular gravel	Angular gravel fill, refusal at 15 cm.
DP#8	40 cm	0-25 cm: 10YR 3/3 sand w/ angular gravel and common roots 25-40 cm: 10YR 4/2 loamy sand w/ dense angular gravel	Angular gravel fill
DP#9	0 cm	Gravel and asphalt at surface	Disturbed, driveway fill
DP#10	25 cm	0-10 cm: 10YR 3/2 sand w/ angular gravel 10-25 cm: 10YR 5/2 clayey sand w/ angular gravel	Disturbed, refusal at 25 cm.
DP#11	50 cm	0-25 cm: 10YR3/2 very compact silty sand 25-35 cm: 10YR 5/4 wet sand 35-45 cm: 10YR 5/1 and 10YR 3/1 wet sand 45-50 cm: 10YR5/1 saturated sand	Water infiltration at 40 cm
DP#12	No test	No test excavated-existing duplex pump and manhole at this location	Pump marked as #2
DP#13	No test	Duplex pump plotted at this location on small island, no stake found, no test excavated	No shovel test but island consists of built-up fill within steel piling walls, compact gravel driveway
DP#14	27 cm	0-12 cm: 10YR 3/2 sand 12-27 cm: 10YR 4/3 angular gravel and sand	Disturbed, fill beneath lawn No stake, test at location plotted on map
DP#15	No test	No test excavated-existing duplex pump and manhole at this location	Pump marked as #5
DP#16	No test	No test excavated-existing duplex pump and manhole at this location	Pump marked as #4

* *Plotted duplex pump locations near mouth of Sturgeon River (n = 10) were not excavated as area is constructed on fill materials classified as Udipsaments on USDA soils map and portions were under water due to high Burt Lake level during October field survey.*

** Measurements in centimeters below ground surface.

Field investigations found one plotted duplex pump station location at the end of Arthur Street is located on a small island in the Indian River, but was not staked at the time of the survey. The island is surrounded by steel sheet piles, with the Arthur Street right-of-way covered in compacted gravel. No test was excavated at this location which is interpreted to have a low probability for intact archaeological deposits. A group of 10 planned duplex pump stations located near the mouth of the Sturgeon River were not tested as their locations are within an area composed of Udipsamments soils which are described as being somewhat poorly drained soils generally of recent deposition that have been disturbed by removal of the surface horizon and/or by the deposition of sandy fill (Natural Resources Conservation Service 1999: 438-439; Tardy 1999: 81). This area (See Figure 5) was inundated by high water levels in Burt Lake. Several of the residences in this neighborhood are clearly constructed atop fill raised above the general surface level (Figures 6, 7, and 8). As noted previously, Udipsamment soil project areas were interpreted to have no potential to contain intact archaeological deposits. Similarly, portions of the proposed project located within or directly adjacent to areas mapped as having Grousehaven variant muck or Roscommon muck soils would be expected to have a very low to low potential for archaeological resources, and areas mapped as Au Gres soil would likely have low to moderate potential. The Grousehaven soils occur near the intersection of Chippewa Beach Road, Spruce Street and Prospect Street north of the Indian River at the base of a steep ridge, and the Roscommon muck soils extend along the south bank of the river to the west of Juno and Poplar Streets toward the Sturgeon River. The shovel tests documented varying degrees of integrity, with both surficial and subsurface infrastructure-related disturbance. The shovel tests excavated at the seven staked duplex pump stations and one lift station within the Columbus Beach Club, while exhibiting some degree of surficial disturbance, are located along a raised beach terrace characterized by mainly well- to excessively-drained Rubicon and Croswell soils. Given the drainage characteristics and elevation above the lake level, this portion of the project area would be expected to have a moderate to high potential to contain archaeological resources. None of the excavated tests located artifacts or evidence for the presence of archaeological deposits or sites. The three existing duplex pump stations slated for upgrades include two located along South Avenue and one located at the intersection of Lake Street and Juno Street (Figure 5). These three locations have been previously impacted and disturbed by the construction of the extant pump facilities and their associated subsurface infrastructure and no subsurface tests were excavated (Figures 9, 10, and 11).

The National Register of Historic Places (NRHP) has four criteria by which historic structures and archaeological sites must be evaluated in order to determine their eligibility for listing therein. Properties may be eligible for the National Register if they: A) are associated with events that have made a significant contribution to the broad pattern of history, B) are associated with the lives of persons significant to our past, C) embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction, and D) have yielded, or are likely to yield, information important in prehistory or history. A 5 percent sample (5,850 square meters) of the project area examined 26 locations throughout the proposed project area. The four previously reported sites were evaluated for eligibility within the context of the limited survey.

Sites 20CN13, 20CN14, 20CN21, and 20CN23 are Native American archaeological sites featuring imprecise site limits with the nature and potential significance of their deposits unknown. A total of nine locations within the reported site limits were examined by this survey. This includes duplex pump locations 13 and 14 within the combined limits of 20CN13 and 20CN14, duplex pump locations 9 and 10 with 20CN21, and duplex pump locations 8, 11, and 13 along with lift stations 3 and 4 within 20CN23. None of these tests located archaeological materials. These samples are too small to properly evaluate the NRHP eligibility of any of these sites. However, based upon the plans to construct the new sewer collection mains, pump stations and lift stations within the existing rights-of-way, these sample points

suggest the portions of each site to be impacted by the proposed project do not contribute to each sites potential eligibility. Overall each of these four sites will require additional evaluation in order to complete a final NRHP evaluation.

The Public Service Archaeology & Architecture Program conducted a Phase I archaeological reconnaissance survey totaling approximately 5,580 square meters of the 11.28 hectare (27.87 acre) proposed Tuscarora Township District #2 Wastewater Service Area Expansion in Tuscarora Township, Cheboygan County, Michigan. The project is located within existing street rights-of-way and easements within portions of unincorporated Indian River and the Columbus Beach Club. The background research indicated the presence of four previously reported, but poorly defined, Native American archaeological sites (20CN13, 20CN14, 20CN21 and 20CN23) occurring within the project area. The 5 percent survey included locations in each of these sites but found no evidence for these sites or for archaeological sites within any locations examined. Based upon the plans to construct the new sewer collection mains, pump stations and lift stations within the existing rights-of-way, much of the APE for Direct Effects lies beneath paved streets and the field observations included evidence for large areas with a limited archaeological potential due to modified or historically wet soils. Based upon the information collected, a recommendation of *No Adverse Effect to Historic Properties* is made for the area of Direct Effects and clearance of the proposed Tuscarora Township waste water improvements project for cultural resources concerns is recommended. As with all surveys, unanticipated finds may still occur in the project area during construction. Should any archaeological remains or evidence for human burials be exposed, construction activities in the area should cease immediately and the Michigan State Historic Preservation Office should be immediately contacted for further direction.

Figure 1. Location of the project area in Michigan.

Figure 2. Location of project area.

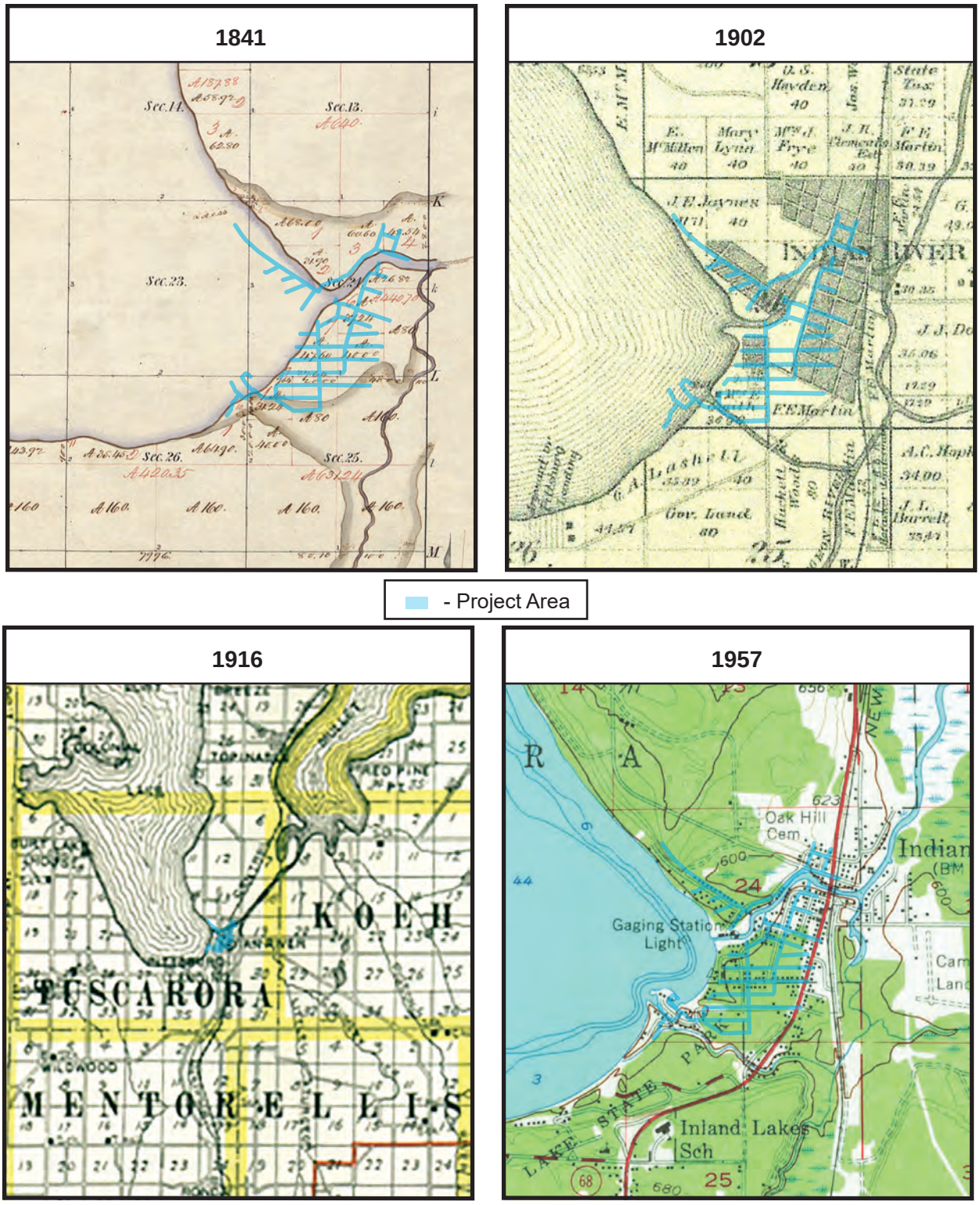


Figure 3. Portions of the 1841 United States General Land Office survey plat, 1902 and 1916 maps of Cheboygan County, Michigan, and the 1957 Wolverine 15' quadrangle.

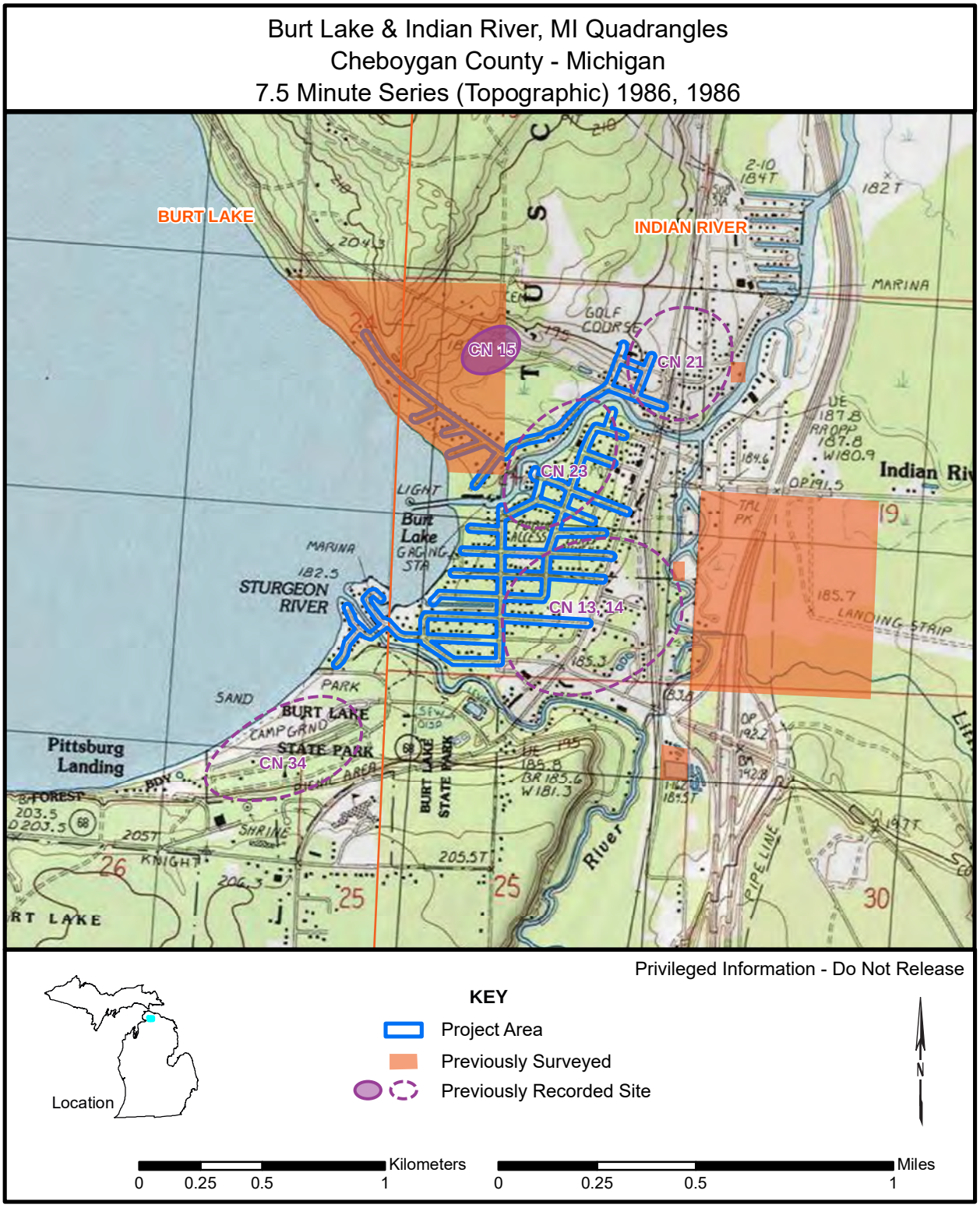


Figure 4. Location of project area with identified sites and adjacent surveys

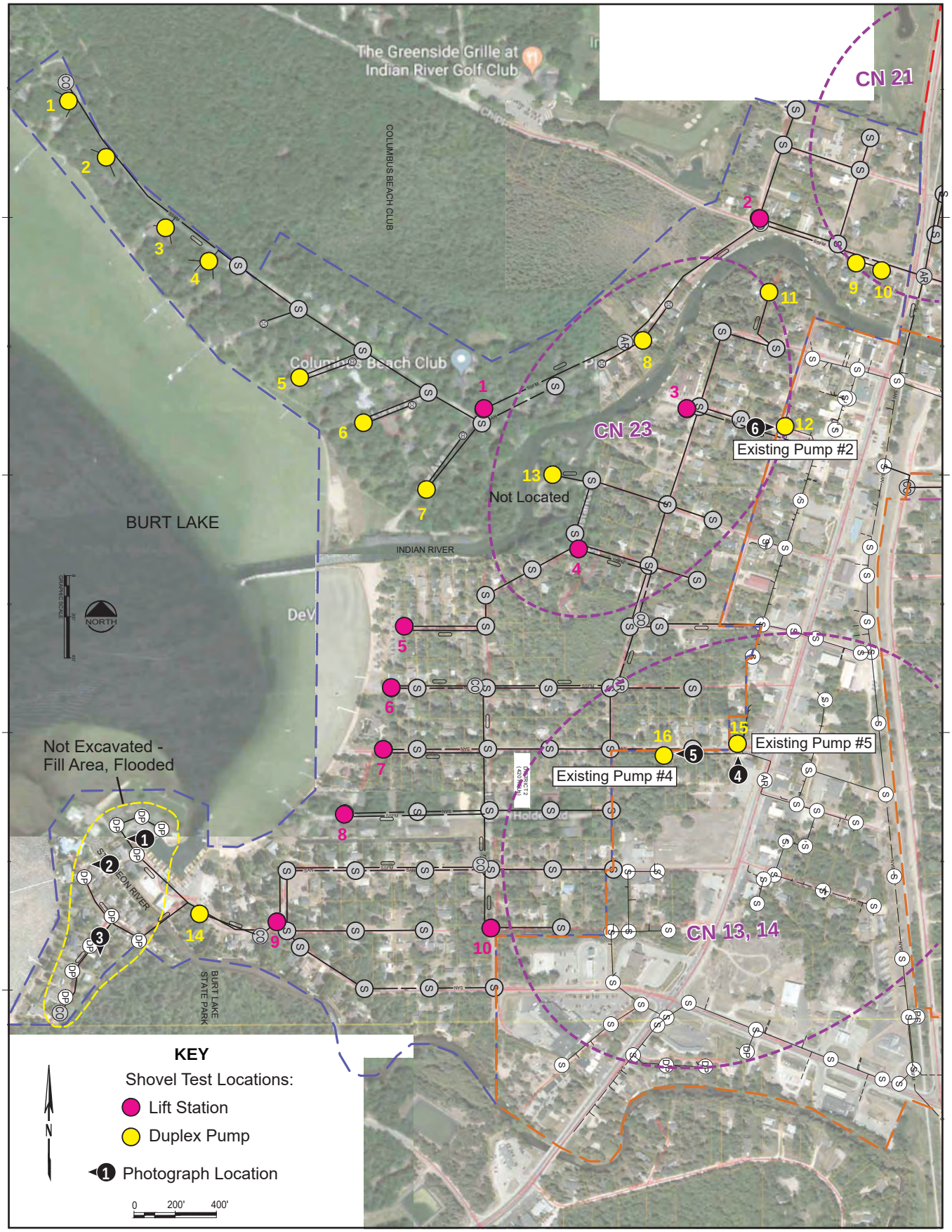


Figure 5. Sketch map of the project area.

Figure 6. Photo 1: Inundated area, Dorothy Avenue, view to west.

Figure 7. Photo 2: Inundated area along Grace Street, view to west.

Figure 8. Photo 3: Inundated area east of Wenonah Avenue, view to south.

Figure 9. Photo 4: Existing duplex pump station #5, South Street, view to north.

Figure 10. Photo 5: Existing duplex pump station #4, South Street, view to west.

Figure 11. Photo 6: Existing duplex pump station #2, Lake Street, view to east.

References Cited

Albert, Dennis A.
1995 *Regional Landscape Ecosystems of Michigan, Minnesota, and Wisconsin: A Working Map and Classification.* General Technical Report NC-178. United States Department of Agriculture, Forest Service, North Central Forest Experiment Station, St. Paul, Minnesota.

Albert, Dennis A., and Patrick J. Comer
2008 *Atlas of Early Michigan's Forests, Grasslands, and Wetlands.* Michigan State University Press, East Lansing.

B.F. Bowen and Company
1916 *Bowen's Automobile and Sportsman's Guide for Michigan.* B.F. Bowen and Company, Indianapolis, Indiana.

Brose, David S., and Michael J. Hambacher
1999 The Middle Woodland in Northern Michigan. In *Retrieving Michigan's Buried Past: The Archaeology of the Great Lakes State*, edited by John R. Halsey, pp.173-192. Cranbrook Institute of Science, Bloomfield Hills, Michigan. Cranbrook Institute of Science, Bloomfield Hills, Michigan.

Bureau of Land Management
2020a Survey Plat of Township 35 North, Range 03 West. General Land Office Records. United States Department of the Interior, Washington D.C. Electronic document: www.glorecords.blm.gov, accessed 24 June 2020.
2020b Patent Details of Township 35 North, Range 03 West. General Land Office Records. United States Department of the Interior, Washington D.C. Electronic document: www.glorecords.blm.gov/detail/survey/ accessed 24 June 2020.

Dorr, John A., and Donald F. Eschman
1970 *Geology of Michigan.* The University of Michigan Press, Ann Arbor.

Fenneman, Nevin M.
1938 *Physiography of Eastern United States.* McGraw-Hill Book Company, New York.

Fitting, James E.
1975 *The Archaeology of Michigan.* Cranbrook Institute of Science, Bloomfield Hills, Michigan.

Halsey, John R., editor
1999 *Retrieving Michigan's Buried Past: The Archaeology of the Great Lakes State.* Cranbrook Institute of Science, Bloomfield Hills, Michigan.

Hinsdale, Wilbert B.
1931 *Archaeological Atlas of Michigan.* Volume 4. Michigan Handbook Series. University of Michigan Press, Ann Arbor.

Holman, Margaret B., Janet G. Brashler, and Kathryn E. Parker, editors
1996 *Investigating the Archaeological Record of the Great Lakes State: Essays in Honor of Elizabeth Baldwin Garland.* New Issues Press, Kalamazoo, Michigan.

Hough, Jack L.
1958 *Geology of the Great Lakes*. University of Illinois Press, Urbana.

Howey, Meghan C. L., and Kathryn E. Parker
2008 Camp, Cache, and Stay Awhile: Preliminary Considerations of the Social and Economic Processes of Cache Pits Along Douglas Lake, Michigan. In *The Tie That Binds: Essays in Honor of Margaret B. Holman. The Michigan Archaeologist* 54:19-43.

Kapp, Ronald O.
1999 Michigan Late Pleistocene, Holocene, and Presettlement Vegetation and Climate. In *Retrieving Michigan's Buried Past: The Archaeology of the Great Lakes State*, edited by John R. Halsey, pp. 31-58. Cranbrook Institute of Science, Bloomfield Hills, Michigan.

Larsen, Curtis E.
1999 A Century of Great Lakes Levels Research: Finished or Just Beginning? In *Retrieving Michigan's Buried Past: The Archaeology of the Great Lakes State*, edited by John R. Halsey, pp. 1-30. Cranbrook Institute of Science, Bloomfield Hills, Michigan.

Lovis, William A.
1976 Quarter Sections and Forests: An Example of Probability Sampling in the Northeastern Woodlands. *American Antiquity* 41:364-372.
1978 A Numerical Taxonomic Analysis of Changing Woodland Site Location Strategies on an Interior Lake Chain. *The Michigan Academician* 11: 39-48.
1990 Screaming Loon: A Post-Nippising Site on the Devil's Elbow. *The Michigan Archaeologist* 36: 232-252.
1999 The Middle Archaic: Learning to Live in the Woodlands. In *Retrieving Michigan's Buried Past: The Archaeology of the Great Lakes State*, edited by John R. Halsey, pp. 83-94. Cranbrook Institute of Science, Bloomfield Hills, Michigan.
2009 Hunter-Gatherer Adaptations and Alternative Perspectives on the Michigan Archaic: Research Problems in Context. In *Archaic Societies: Diversity and Complexity Across the Midcontinent*, edited by T.E. Emerson, D.L. McElrath, and A. C. Fortier, pp. 725-754. State University of New York Press, Albany.

Mason, Ronald J.
1981 *Great Lakes Archaeology.* Academic Press, New York.

Meyers, P.A., and J.W. Meyers
1902 *Plat Book of Cheboygan County, Michigan.* The Consolidated Publishing Company, Minneapolis, Minnesota.

Michigan Department of Natural Resources
1999 *Quaternary Geology of Michigan.* (Map). Michigan Department of Natural Resources, Land and Minerals Services Division, Lansing, Michigan.

Michigan State Historic Preservation Office
2020a Above-Ground Resources Data, provided 03 June 2020. Michigan State Historic Preservation Office, Lansing, Michigan.
2020b Archaeological Site File Data, provided 15 June 2020. Michigan State Historic Preservation Office, Lansing, Michigan.

Michigan State University Agricultural Experiment Station
1981 *Soil Association Map of Michigan.* Extension Bulletin E-1550. East Lansing.

National Park Service

2020a National Historic Landmarks Program. National Park Service, Washington D.C. Electronic document: http://www.cr.nps.gov/nhl, accessed 24 June 2020.

2020b National Register of Historic Places. National Park Service, Washington D.C. Electronic document: http://www.cr.nps.gov/nrl, accessed 24 June 2020.

Natural Resources Conservation Service

1999 *Soil Taxonomy: A Basic System of Soil Classification for Making and Interpreting Soil Surveys.* Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture, Washington, D.C.

2004 *Landforms of Northern Michigan* (map). Natural Resources Conservation Service, United States Department of Agriculture, Washington, D.C.

2020a *Web Soil Survey.* Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Electronic document. http://websoilsurvey.nrcs.udsda.gov/app/WebSoilSurvey.aspx, accessed 24 June 2020.

2020b *Official Soil Series Descriptions.* Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Electronic document. http://ortho.ftw.nrcs.usda.gov/cgi-bin/osd/osdname.cgi, accessed 24 June 2020.

Robertson, James A., William A. Lovis, and John R. Halsey.

1998 The Late Archaic: Hunter-Gatherers in an Uncertain Environment. In *Retrieving Michigan's Buried Past: The Archaeology of the Great Lakes State*, edited by John R. Halsey, pp.95-124. Cranbrook Institute of Science, Bloomfield Hills, Michigan.

Schott, Michael J.

1999 The Early Archaic: Life After the Glaciers. In *Retrieving Michigan's Buried Past: The Archaeology of the Great Lakes State*, edited by John R. Halsey, pp.71-82. Cranbrook Institute of Science, Bloomfield Hills, Michigan.

Tardy, Stephen W.

1991 *Soil Survey of Cheboygan County, Michigan.* United States Department of Agriculture, Soil Conservation Service, Washington, D.C.

United States Geological Survey

1957 Wolverine, Michigan 15' Quadrangle Map. United States Geological Survey, Washington D.C.

1986a Burt Lake, Michigan 7.5' Quadrangle Map. United States Geological Survey, Washington D.C.

1986b Indian River, Michigan 7.5' Quadrangle Map. United States Geological Survey, Washington, D.C.

Wikipedia

2020 Inland Waterway (Michigan). Electronic document: https://en.wikipedia.org/Inland_Waterway_(Michigan), accessed 24 June 2020.

Wiles, Richard

2016 The Traverse Corridor's Dream Canal. *Inland Seas* 16: 3-19.

6.4 State Historic Preservation Officer Response

6.5 Tribal Coordination

United States Department of Agriculture

February 12, 2021

SUBJECT: SHPO ER21-203 Tuscarora Township Phase 2 Sewer, Cheboygan County, Michigan
Section 106 Historic Review & Tribal Coordination

TO: Kelli Mosteller, Citizen Potawatomi Nation
Rhonda Hayworth, Ottawa Tribe of Oklahoma
Earl Meshiguad, Hannahville Indian Community
Kade Ferris & Darrel Seki, Red Lake Band of Chippewa Indians
Jonnie Sam, Little River Band of Ottawa Indians
Marcella Hadden, Saginaw Chippewa Indian Tribe
Paula Carrick, Bay Mills Indian Community
Daisy McGeshick, Lac Vieux Desert Band of Lake Superior Chippewa Indians
Alden Connor, Keweenaw Bay Indian Community
Colleen Medicine, Sault Ste. Marie Tribe of Chippewa Indians
Cindy Winslow, Grand Traverse Band of Ottawa & Chippewa Indians
Melissa Wiatrolic, Little Traverse Bay Bands of Ottawa Indians
Sharon Detz, Grand River Band of Ottawa Indians
Douglas Taylor, Nottawaseppi Huron Band of Potawatomi
Matthew Bussler, Pokagon Band of Potawatomi Indians
Jill Hoppe, Fond du Lac Band Reservation
Amy Burnette, Leech Lake Band of Chippewa
Edith Leoso, Bad River Band of Lake Superior Chippewa
Rosemary Berens, Bois Forte Band of Chippewa
Harold Frank, Forest County Potawatomi
Norman DesChamps & Maryann Gagnon, Grant Portage Band of the Minnesota Chippewa Tribe
William Quackerbush, Ho-Chunk Nation of Wisconsin
Louis Taylor, Lac Courte Oreilles Band of Lak Superior Chippewa Indians of Wisconsin
Melinda Young, Lac Du Flambeau Band of Lake Superior Chippewa
Lakota Pochedley, Match-e-be-nash-she-wish (Gun Lake) Band of Potawatomi Indians
Dan Shepherd, Little River Band of Ottawa Indians
Liana Onnen, Prairie Band of Potawatomi Nation
Noah White, Prairie Island Indian Community
Paul Barton, Seneca-Cayuga Nation
Larry Balber, Red Cliff Band
Chris McGeshick, Sokaogon Chippewa (Mole Lake) Community of Wisconsin
Wanda McFaggen, St. Croix Chippewa Indians of Wisconsin
Cayla Olson, White Earth Band of the Minnesota Chippewa Tribe
Diane Hunter, Miami Tribe of Oklahoma
Todd Moilanen, Mille Lacs Band of Ojibwe
David Grignon, Menominee Indian Tribe of Wisconsin
George Strack, Miami Nation
Larry Heady, Delaware Tribe of Indians

Under the authority of Section 106 of the National Historic Preservation Act of 1966, as amended, the State Historic Preservation Office (SHPO) has reviewed the above-mentioned project and concluded that:

X No historic properties are affected by the project (36 CFR § 800.4 (d) (1)), or
□ The project will have no adverse effect on historic properties (36 CFR § 800.5)

The project was initially reviewed by a third party archaeologist the meets the minimum federal professional qualifications set forth in 36 CFR Part 61. Further, the SHPO review of this project included a review by the Office of the State Archaeologist (OSA). The OSA review process includes looking at the presence and/or proximity of known archaeological sites near to and within the project area. To do this, they consider a variety of information, including the distribution of archaeological sites in the surrounding region, the amount of previous archaeological surveys in the vicinity and the results of that survey work, topography, surface water, soil types, the presence of old transportation features such as railroad grades and road beds, as well as other factors which may inform on the potential presence or absence of archaeological sites.

As a standard requirement of all USDA Rural Development contracts, in the event that historic or archaeological resources are uncovered during excavation, the project engineer and USDA Rural Development will be immediately notified. Construction shall be temporarily halted pending the notification process and further directions issued by USDA Rural Development after coordination with the SHPO and interested tribes.

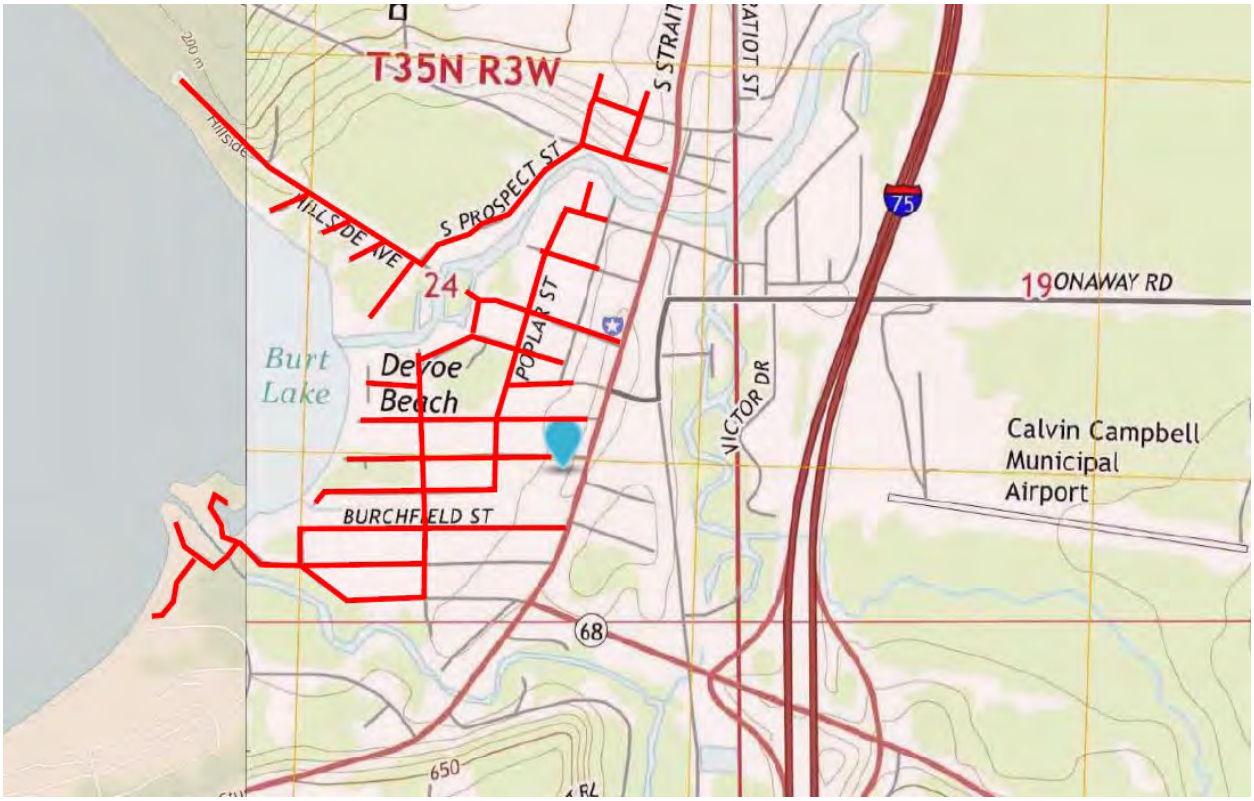
Based on the SHPO review and opinion, USDA Rural Development is issuing a finding as noted above for the above-mentioned project. If you have site specific information that causes your tribe to disagree with this opinion, please contact our office at (517) 324-5209 within sixty days.

Sincerely,

Andrew H. Granskog, PE
State Environmental Coordinator

cc: USDA-RD Area Office; Martha MacFarlane-Faes--SHPO Environmental Review Coordinator

United States Department of Agriculture



3001 Coolidge Road • Suite 200 • East Lansing, MI 48823
Phone: (517) 324-5156 • Fax: (855) 813-7741 • TDD: (800) 649-3777• Web: http://www.rurdev.usda.gov/mi

From:	Douglas Taylor
To:	Granskog, Andy - RD, East Lansing, MI
Subject:	RE: Tuscarora Township Phase 2 Sewer Tribal Coordination
Date:	Friday, February 12, 2021 11:44:38 AM
Attachments:	image001.png

Greetings,

Ref: Tuscarora Township Phase 2 Sewer Tribal Coordination

Thank you for including the Nottawaseppi Huron Band of the Potawatomi in your consultation process. From the description of your proposed project, it does not appear as if any cultural or religious concerns of the Tribe's will be affected. We therefore have no objection to the project. Of course, if the project scope is significantly changed or inadvertent findings are discovered during the course of the project, please contact us for further consultation.

Very Respectfully
Douglas R. Taylor

Douglas R. Taylor | Tribal Historic Preservation Officer (THPO)
Pine Creek Indian Reservation
1301 T Drive S, Fulton, MI 49052
o: 269-704-8347 | c: 269-419-9434 | f: 269-729-5920
Douglas.Taylor@nhbp-nsn.gov | www.nhbpi.com

NOTTAWASEPPI HURON BAND OF THE POTAWATOMI
A FEDERALLY RECOGNIZED TRIBAL GOVERNMENT

From: Granskog, Andy - RD, East Lansing, MI <andy.granskog@usda.gov>
Sent: Friday, February 12, 2021 11:37 AM
To: Payment, Aaron <aaronpayment@saulttribe.net>; Alden Connor <aconnor@kbic-nsn.gov>; Farron Jackson <amy.burnette@llojibwe.org>; Bill Latady (blatady@boisforte-nsn.gov) <blatady@boisforte-nsn.gov>; Bruce R Hamlin <blbtc@burtlakeband.org>; Cayla Olsen

<cayla.olson@whiteearth-nsn.gov>; McGeshick, Chris <chris.mcgeshick@scc-nsn.gov>; cindy.winslow@gtbindians.com; Colleen Medicine <CMedicine1@saulttribe.net>; Colleen.Wells@llojibwe.org; Daisy McGeshick <daisy.mcgeshick@lvd-nsn.gov>; Dan Green <dan.green@nhbp-nsn.gov>; Dan Shepard <dshepard@lrboi.com>; David grignon <dgrignon@mitw.org>; Diane Hunter <dhunter@miamination.com>; Douglas Taylor <Douglas.Taylor@nhbp-nsn.gov>; Earl Meshiguad <Earlmeshigaud@hannahville.org>; Edith Leoso <THPO@badriver-nsn.gov>; Jill Hoppe <jillhoppe@fdlrez.com>; Jonnie Sam <jsam@lrboi-nsn.gov>; Darrell SekiSr. <kade.ferris@redlakenation.org>; JohnRocky Barrett <kelli.mosteller@potawatomi.org>; Lakota Pochedley <Lakota.Pochedley@glt-nsn.gov>; Larry Heady <lheady@delawaretribe.org>; lena.shawano@fcpotawatomi-nsn.org; Leroy Defoe (leroydefoe@fdlrez.ocm) <leroydefoe@fdlrez.ocm>; Onnen, Liana <liana@pbpnation.org>; Linda Basista (lbasista@sault.com) <lbasista@sault.com>; Marcella Hadden <MlHadden@sagchip.org>; Maryann Gagnon <maryanng@grandportage.com>; Matthew Bussler <Matthew.Bussler@pokagonband-nsn.gov>; Melinda Young <ldfthpo@ldftribe.com>; MelissaWiatrolic <Mwiatrolik@Ltbbodawa-nsn.gov>; noah.white@piic.org; Paula Carrick <paulacarrick@bmic.net>; rhonda.oto@gmail.com; Sharon Detz <grbottawa@yahoo.com>; Todd Moilanen <todd.moilanen@millelacsband.com>; Wanda McFaggen <wandam@stcroixtribalcenter.com>; William Quackenbush <BQuackenbush@ho-chunk.com>
Cc: Smith, Blake - RD, Traverse City, MI <blake.smith@usda.gov>; JACOB MITCHELL <JSMitchell@glcap.org>; Martha MacFarlane-Faes <FaesM@michigan.gov>
Subject: Tuscarora Township Phase 2 Sewer Tribal Coordination

Good Morning,

Please see the attached Tribal Coordination for the Tuscarora Twp Phase 2 sewer project in the unincorporated community of Indian River, Michigan. A map of the project layout is included and the SHPO letter is attached as well. Feel free to contact me if you have any further questions.

Thank you.

Andrew H. Granskog, PE | State Engineer
Rural Development
U.S. Department of Agriculture
3001 Coolidge Rd, Suite 200 | East Lansing, MI 48823
Phone: 517.324.5209 www.rd.usda.gov

"Together, America Prospers"

Note: my email is changing to andy.granskog@usda.gov; please update your address book.

Miami Tribe of Oklahoma

3410 P St. NW, Miami, OK 74354 ● P.O. Box 1326, Miami, OK 74355
Ph: (918) 541-1300 ● Fax: (918) 542-7260
www.miamination.com

Via email: andy.granskog@usda.gov

March 12, 2021

Andrew H. Granskog, PE
State Environmental Coordinator
USDA Rural Development
3001 Coolidge Rd, Suite 200
East Lansing, MI 48823

Re: ER21-203 Tuscarora Township Phase 2 Sewer, Cheboygan County, Michigan – Comments of the Miami Tribe of Oklahoma

Dear Mr. Granskog,

Aya, kikwehsitoole – I show you respect. The Miami Tribe of Oklahoma, a federally recognized Indian tribe with a Constitution ratified in 1939 under the Oklahoma Indian Welfare Act of 1936, respectfully submits the following comments regarding ER21-203 Tuscarora Township Phase 2 Sewer in Cheboygan County, Michigan.

The Miami Tribe offers no objection to the above-referenced project at this time, as we are not currently aware of existing documentation directly linking a specific Miami cultural or historic site to the project site. However, given the Miami Tribe's deep and enduring relationship to its historic lands and cultural property within present-day Michigan, if any human remains or Native American cultural items falling under the Native American Graves Protection and Repatriation Act (NAGPRA) or archaeological evidence is discovered during any phase of this project, the Miami Tribe requests immediate consultation with the entity of jurisdiction for the location of discovery. In such a case, please contact me at 918-541-8966 or by email at dhunter@miamination.com to initiate consultation.

The Miami Tribe accepts the invitation to serve as a consulting party to the proposed project. In my capacity as Tribal Historic Preservation Officer I am the point of contact for consultation.

Respectfully,

Diane Hunter

Diane Hunter
Tribal Historic Preservation Officer

7.0 References

7.1 Project Narrative

Introduction

Tuscarora Township is requesting funding assistance through the US Department of Agriculture's Rural Development, Water and Waste Disposal Direct Loans and Grant Program. The purpose of this funding request is to enable the Township to expand the community's wastewater collection system from the downtown commercial district to the surrounding residential area. The current central sewer system was designed and constructed with the intention of expansion into the residential areas and this request would be the first expansion of the original system. In conjunction with a proposed expansion of the service area, an expansion of the wastewater treatment facility (WWTF) would be necessary to treat the additional flow.

Need

The proposed service area (District 2) is comprised of the primarily residential properties that are west of the existing service area (District 1) to the Burt Lake Shoreline. The District 2 service area includes the Columbus Beach Club at the northerly boundary, down to Sturgeon Island and the Sturgeon River at the southerly boundary.

The homes within District 2 currently rely upon private wells and individual drain fields. Due to a combination environmental concerns including poor soil infiltration, high groundwater, surface water proximity, and well isolation distances on relatively small lots, the majority of existing onsite wastewater disposal systems are believed to be non-conforming to current environmental health standards (Sanitary Code), which can contribute to the degradation of the surrounding water quality. The lack of sewer infrastructure has also become a limiting factor to population and economic growth. Furthermore, there is concern about the constant discharge of excess flow from the artesian wells, which adds to the hydraulic loading within the area.

Scope

The proposed project will provide a gravity sewer system to the District 2 users, building off of the existing infrastructure installed for District 1. The proposed service area encompasses approximately 200 acres and 420 EDUs . The District 2 expansion will include approximately 18,500 feet of new 8-inch gravity sewer, over 50 manholes, approximately 15,000 feet of new force main sewer, 10 lift stations, 23, duplex pumping stations, upgrades to increase capacity in the two existing lift stations, and an expansion to approximately double the capacity of the existing WWTF. The existing WWTF is a modular extended aeration plant that discharges to groundwater through rapid infiltration beds. The proposed expansion would increase the capacity of the plant by approximately 100,000 gpd, which then requires additional infiltration beds installed accordingly.

Summary

The estimated project costs are $9.36M, which results in an individual cost of $22,300 per EDU. This is deemed to be unaffordable to the residents, resulting in approximately $80/month in debt repayment costs, before the sewer use rates are applied. Therefore, a key part of the Township's ability to complete the project is the availability grant funding to offset a part of the resultant debt repayment. With a MHI that places the Township's sewer affordability at about $63.80/mo (at 1.5% of MHI), adding $80/mo to the $39.50/month in sewer O&M cost is a significant burden on residents who truly need municipal sewer.

Current Facility Description

The existing WWTF consists of three major components, the first is a headworks building with trash and grit removal, a laboratory, blowers, the treatment process controls, and chemical feed equipment. Next is the 96,000 gpd treatment process unit, which is a proprietary Aero Mod, Inc. SEQUOX, modular treatment system with a dual process train and a decant storage tank with discharge pumping equipment. The treated wastewater is discharged to groundwater through 39,000 square feet of Rapid Infiltration Basins. The existing collection system encompasses primarily the commercial properties along the S. Straights Highway. There are two main pumping stations that transport the wastewater from the service area to the WWTF.

Proposed Facility Description

The three major WWTF components will be improved as follows: the existing headworks building will be modified to add trash and grit removal capacity, additional process controls will be integrated into the system and the chemical feed equipment will be modified for the increased capacity. Next, the treatment process unit will be doubled in capacity by adding another 96,000 gpd in modular Aero Mod, Inc. SEQUOX unit, added decant storage capacity and additional discharge pumping equipment. The resulting treatment capacity will be 192,000 gpd to accommodate the additional service area. Finally, there will be a corresponding increase in the Rapid Infiltration Basins, doubling the footprint to 78,000 square feet total for discharge to groundwater. The proposed improvements would add a new service area that will be primarily residential connections. There would be an additional 420 EDUs added from the Columbus Beach Club neighborhood at the north end to the Sturgeon Island area at the south end and extending the existing collection system westerly to the shore of Burt Lake. The collection system extension would add approximately 18,500 feet of gravity sewer with over 50 manholes, over 15,000 feet of force main piping with ancillary equipment, 10 lift stations, 23 new duplex pumping stations and an upgrade to add capacity to both of the existing main sewer pumping stations.

7.2 Street Map with Project Locations

7.3 Topographical Map

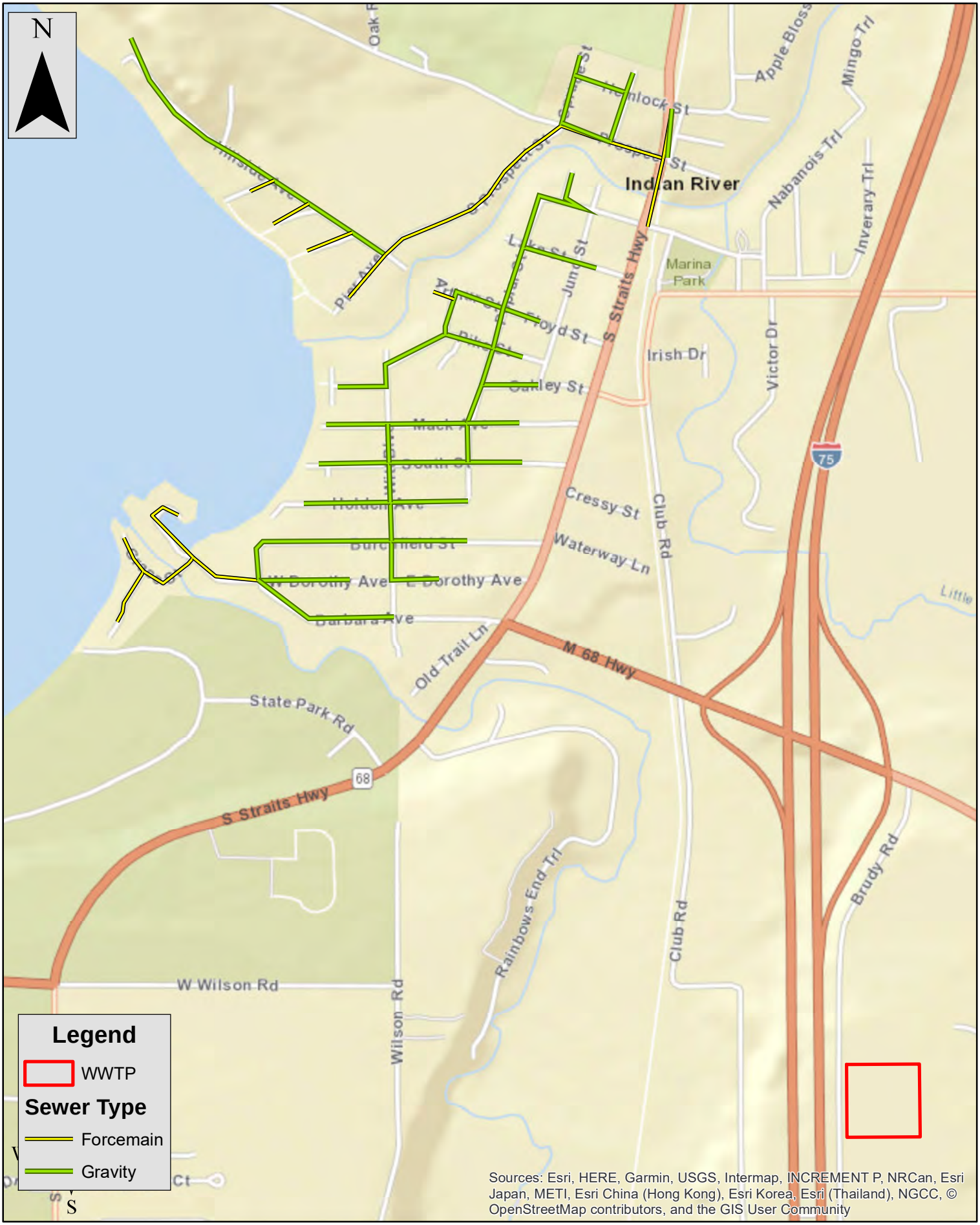
7.4 Aerial Map

7.5 Flood Insurance Rate Map

7.6 Flood Certificate

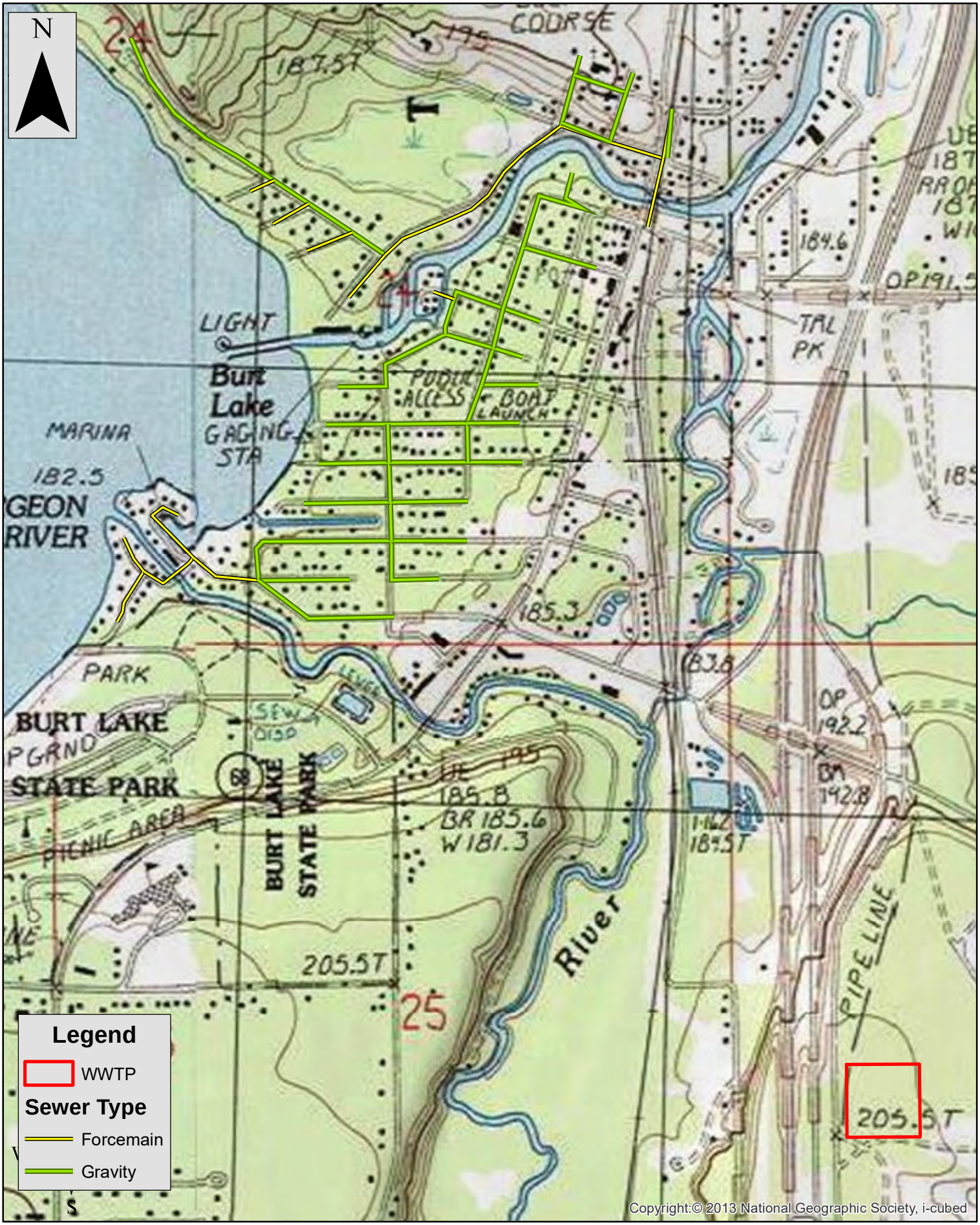
7.7 Wetlands Map

7.8 Air Quality: Nonattainment Area Map



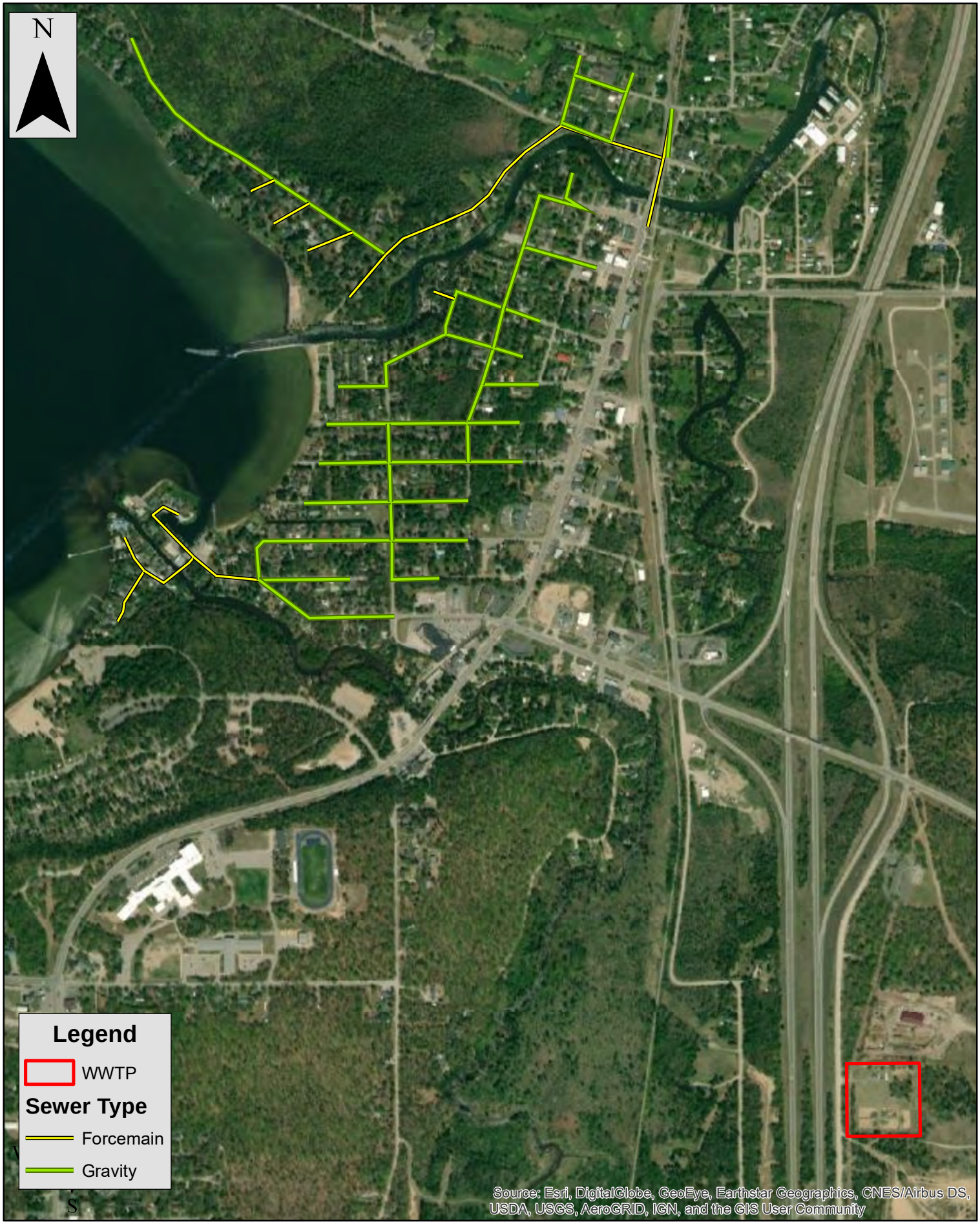
Street Map of the Tuscarora Township District 2 Sewer Expansion Project.
NOT TO SCALE

0 0.125 0.25 0.5 Miles



Topographic Map of the Tuscarora Township District 2 Sewer Expansion Project.
Adapted from the USGS Quadrangle: Wolverine
NOT TO SCALE

0 0.125 0.25 0.5 Miles



Aerial Map of the Tuscarora Township
District 2 Sewer Expansion Project.
NOT TO SCALE

0 0.125 0.25 0.5 Miles

PIN
- Approximate location based on user input and does not represent an authoritative property location

MAP PANELS
- Selected FloodMap Boundary
- Digital Data Available
- No Digital Data Available
- Unmapped

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone D
- Otherwise Protected Area
- Coastal Barrier Resource System Area

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth
- Regulatory Floodway Zone AE, AO, AH, VE, AR

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee. See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

PIN
- Approximate location based on user input and does not represent an authoritative property location

MAP PANELS
- Selected FloodMap Boundary
- Digital Data Available
- No Digital Data Available
- Unmapped

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*
- Otherwise Protected Area
- Coastal Barrier Resource System Area

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth
- Regulatory Floodway *Zone AE, AO, AH, VE, AR*

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance Water Surface Elevation
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- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

DEPARTMENT OF HOMELAND SECURITY
Federal Emergency Management Agency

STANDARD FLOOD HAZARD DETERMINATION FORM (SFHDF)

OMB Control No. 1660-0040
Expires: 10/31/18

SECTION I - LOAN INFORMATION

1. LENDER/SERVICER NAME AND ADDRESS	2. COLLATERAL DESCRIPTION (Building/Mobile Home/Property) (See instructions for more information.)
USDA Rural Development **4300 Goodfellow Blvd** **FC-231 Bldg 105** **St. Louis, MO 63120** **Company: CF** **Requested By: Andrew Granskog**	**4649 BRUDY RD** **INDIAN RIVER, MI 49749**

3. LENDER/SERVICER ID #	4. LOAN IDENTIFIER	5. AMOUNT OF FLOOD INSURANCE REQUIRED
USDA RD		

SECTION II

A. NATIONAL FLOOD INSURANCE PROGRAM (NFIP) COMMUNITY JURISDICTION

1. NFIP Community Name	2. County(ies)	3. State	4. NFIP Community Number
TUSCARORA, TOWNSHIP OF	**CHEBOYGAN**	**MI**	**261369**

B. NATIONAL FLOOD INSURANCE PROGRAM (NFIP) DATA AFFECTING BUILDING/MOBILE HOME

1. NFIP Map Number or Community-Panel Number (Community name, if not the same as "A")	2. NFIP Map Panel Effective/Revised Date	3. Is there a Letter of Map Change (LOMC)?
26031C 0340C	**08/16/12**	[X] NO [ ] YES (if yes, and LOMC date/no. is available, enter date and case no. below).
4. Flood Zone: **X**	5. No NFIP Map	Date: Case No.

C. FEDERAL FLOOD INSURANCE AVAILABILITY (Check all that apply.)

1. [X] Federal Flood Insurance is available (community participates in the NFIP). [X] Regular Program [ ] Emergency Program of NFIP
2. [ ] Federal Flood Insurance is not available (community does not participate in the NFIP).
3. [ ] Building/Mobile Home is in a Coastal Barrier Resources Area (CBRA) or Otherwise Protected Area (OPA). Federal Flood Insurance may not be available.

   CBRA/OPA Designation Date: _____

D. DETERMINATION

IS BUILDING/MOBILE HOME IN SPECIAL FLOOD HAZARD AREA (ZONES CONTAINING THE LETTERS "A" OR "V") ? [ ] **YES** [X] **NO**

If yes, flood insurance is required by the Flood Disaster Protection Act of 1973.
If no, flood insurance is not required by the Flood Disaster Protection Act of 1973. Please note, the risk of flooding in this area is only reduced, not removed.

This determination is based on examining the NFIP map, any Federal Emergency Management Agency revisions to it, and any other information needed to locate the building/mobile home on the NFIP map.

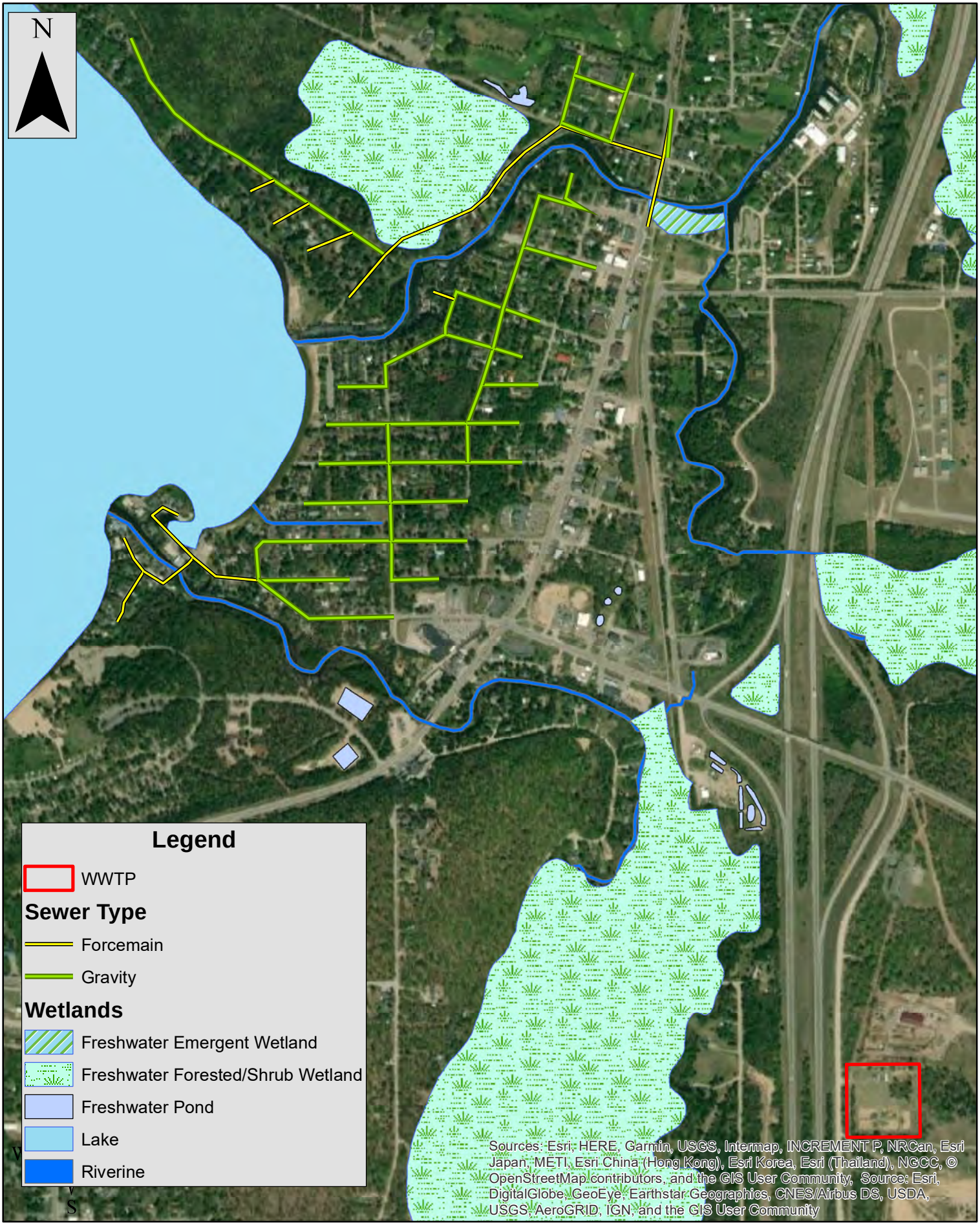
E. COMMENTS (Optional)

THIS FLOOD DETERMINATION IS PROVIDED TO THE LENDER PURSUANT TO THE FLOOD DISASTER PROTECTION ACT. IT SHOULD NOT BE USED FOR ANY OTHER PURPOSE.

F. PREPARER'S INFORMATION

NAME, ADDRESS, TELEPHONE NUMBER (If other than Lender)	DATE OF DETERMINATION
CoreLogic Flood Services **1825A Kramer Lane** **Austin, TX 78758** **1-800-447-1772**	**02/24/21 at 04:55 AM CST** **FloodCert #: 2102C83296** ***** LIFE-OF-LOAN ***** ***** SPECIAL PROPERTY *****

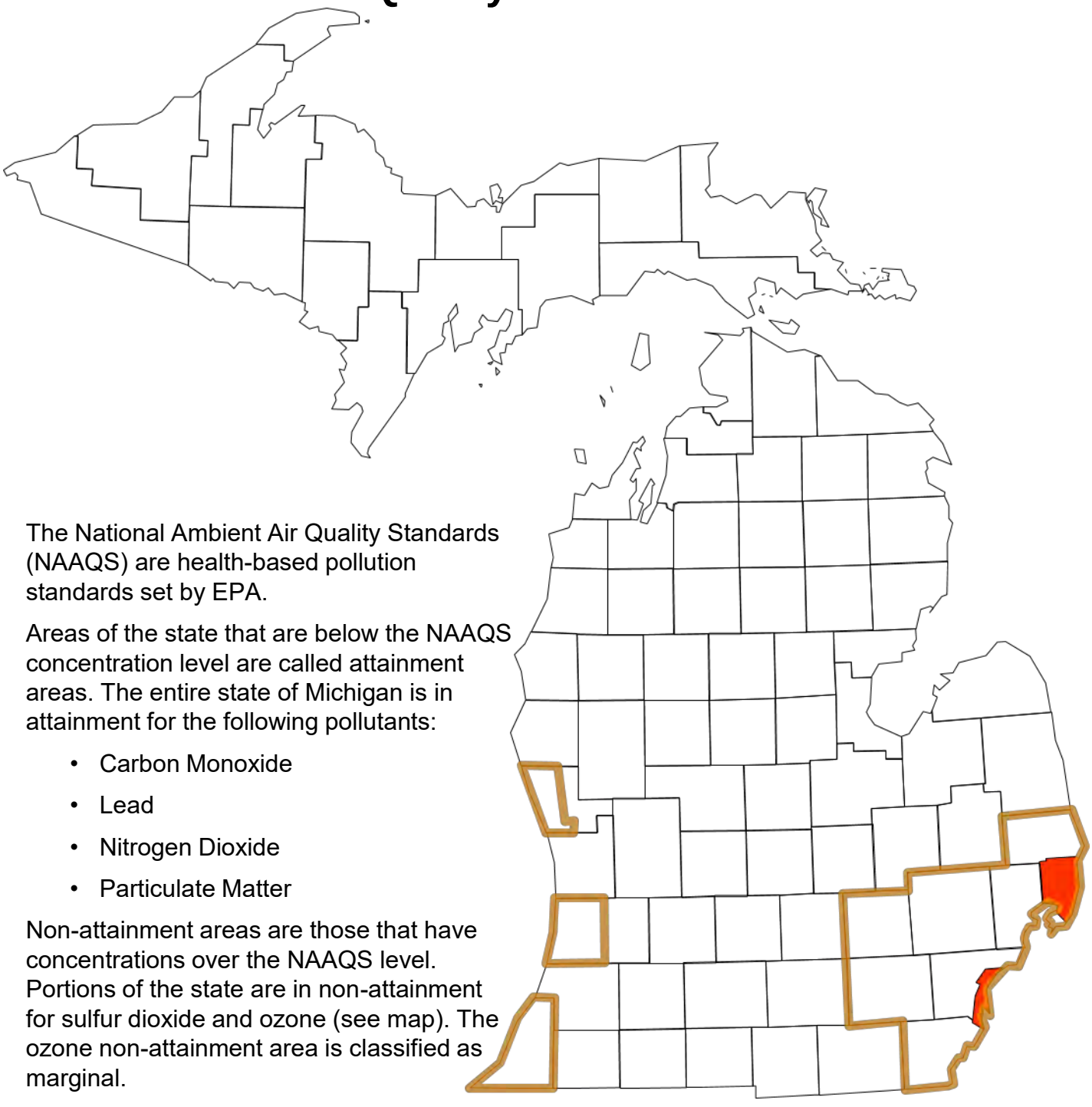
FLOOD CERTIFICATION CoreLogic SEAL



National Wetlands Inventory Map of the Tuscarora TownshipDistrict 2 Sewer Expansion Project.
NOT TO SCALE

0 0.125 0.25 0.5 Miles

Attainment Status for the National Ambient Air Quality Standards



The National Ambient Air Quality Standards (NAAQS) are health-based pollution standards set by EPA.

Areas of the state that are below the NAAQS concentration level are called attainment areas. The entire state of Michigan is in attainment for the following pollutants:

- Carbon Monoxide
- Lead
- Nitrogen Dioxide
- Particulate Matter

Non-attainment areas are those that have concentrations over the NAAQS level. Portions of the state are in non-attainment for sulfur dioxide and ozone (see map). The ozone non-attainment area is classified as marginal.

LEGEND

Sulfur Dioxide Nonattainment Area

Ozone Nonattainment Area

See Page 2 for close-up maps of partial county nonattainment areas

Updated July 23, 2019
Prepared by MDEQ, Air Quality Division, State Implementation Plan Unit

7.8.1 Soils Map

7.8.2 Prime and Other Important Farmlands

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Cheboygan County, Michigan

Tuscarora Township Sewer Improvements Project

February 2, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,370 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cheboygan County, Michigan
Survey Area Data: Version 16, Jun 8, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Mar 31, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
13B	Rubicon sand, 0 to 6 percent slopes	7.9	100.0%
Totals for Area of Interest		**7.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Cheboygan County, Michigan

13B—Rubicon sand, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2tfr7
Elevation: 580 to 940 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 41 to 46 degrees F
Frost-free period: 100 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Rubicon and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rubicon

Setting

Landform: Till-floored lake plains, deltas, drainageways, moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Base slope, interfluve
Down-slope shape: Linear, concave
Across-slope shape: Linear
Parent material: Sandy glaciolacustrine deposits

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 4 inches: sand
E - 4 to 9 inches: sand
Bs - 9 to 18 inches: sand
C - 18 to 80 inches: sand

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.56 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 0.1 mmhos/cm)
Sodium adsorption ratio, maximum: 0.1
Available water capacity: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Ecological site: F094CY031MI - Cool Rich Sandy Drift
Hydric soil rating: No

Minor Components

Au gres

Percent of map unit: 3 percent
Landform: Till-floored lake plains, deltas, drainageways, moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Base slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

East lake

Percent of map unit: 3 percent
Landform: Drainageways, moraines, till-floored lake plains, deltas
Landform position (two-dimensional): Footslope, summit, backslope
Landform position (three-dimensional): Base slope, interfluve
Down-slope shape: Concave, linear
Across-slope shape: Linear
Hydric soil rating: No

Croswell

Percent of map unit: 2 percent
Landform: Till-floored lake plains, deltas, drainageways, moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Base slope, interfluve
Down-slope shape: Linear, concave
Across-slope shape: Linear
Hydric soil rating: No

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

7.9 Storage Tanks and Sites of Environmental Contamination

Tuscarora Township Sewer District 2: Underground Storage Tanks (North)

February 23rd, 2021

- Baseline Environmental Assessment
- Closed Tanks
- Active Tanks
- Sites of Environmental Contamination (Part 201)
- Open
- Closed

Map by: State of Michigan - CSS

Tuscarora Township Sewer District 2: Underground Storage Tanks (South)

February 23rd, 2021

- Baseline Environmental Assessment
- Closed Tanks
- Active Tanks
- Sites of Environmental Contamination (Part 201)
- Open
- Closed

Map by: State of Michigan - CSS

8.0 List of Preparers

Michigan Rural Community Assistance Program (RCAP).