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BERGMANN HAS JOINED COLLIERS ENGINEERING & DESIGN

Proposed Port Huron Station Update

Blue Water Transit Authority

Pre-NEPA Study

Final

July 20, 2023

APPENDICES

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APPENDICES

Appendix A:

Project Draft Purpose and Need Statement

Port Huron Amtrak Station Pre-Feasibility Study: Purpose and Need Statement

The Amtrak Station in Port Huron, MI serves as the east terminus of the Blue Water Line with passenger service to and from Chicago using track owned by the Canadian National Railroad (CN RR). Current service consists of two trains per day (arriving 11:38 pm and departing 6:20 am), with an annual ridership in 2022 of 10,177. Major stops along this line include Kalamazoo, Battle Creek, East Lansing, and Flint. The station was originally constructed as a prototype but has now reached the end of its reasonable service life as illustrated by deficiencies that have been identified at this station, including:

- Insufficient parking facilities, including capacity, lighting and access to the station;
- Insufficient size, lighting and amenities of the waiting room;
- Poor access to the station and limited features challenging persons with disabilities;
- Level boarding that can accommodate persons with disabilities;
- Accessibility to the station by buses, bicycles, pedestrians and rideshare vehicles and
- Potential conflicts with freight operations which may negatively affect service reliability.

The purpose for the action is to address these deficiencies through cost-effective improvements/expansion to the existing station or construction of a new station on the existing or a new site. A new station would need to be cost effective while addressing the deficiencies, be reliable, constructible and provide ready access to both the CN RR main rail line and rail yard, as well as a siding to facilitate passenger loading/unloading and servicing without blocking CN RR's busy freight main line to and from Canada. In addition, a new site would need to provide ready access to the CSXT RR yard and the connected spur line south, as well as the spur line to the north. Finally, the new station must not impede international border security or interrupt customs operations associated with the tunnel into Canada.

The action would support existing and future ridership by greatly improving the user experience while contributing to the Michigan Mobility 2045 vision of providing an interconnected multimodal system that is people-focused, equitable, reliable, convenient for all users and enriching Michigan's economic and societal vitality. It would help to facilitate the Southeast Michigan Council of Governments (SEMCOG) objective of supporting the regional economy

through the reliable movement of goods, efficient trade connections, expanded labor mobility, supporting tourism and local placemaking by encouraging expansion of a multi-modal transportation system that ensures accessibility to all.

Appendix B:

Option Comparison Matrix

Option Comparison Matrix

	No-Build Option No-Build (Retain Existing Station)	**Option 1A** Existing Site w/ CSXT Property	**Option 1B** Exist Site w/ Overflow Parking East of 16th St.	**Option 10A** Dove St. Site Utilizing CSXT Track	**Option 10B** Dove St. Site New Track	**Option 10C** Dove St. Direct West Connection	**Option 11** East of 16th St.
Safety/Accessibility/Multi-Modal							
ADA	Level boarding (roposed Amtrak Project)	Level boarding (Proposed Amtrak Project)	Level boarding (Proposed Amtrak Project)	Can design for ADA.	Can design for ADA.	Can design for ADA.	Can design for ADA.
Lighting	Lit but not acceptable based on public input.	New lighting to parking area and boarding area as well as inside the station. No specific ambient light pollution concerns identified.	New lighting to parking area and boarding area as well as inside the station. No specific ambient light pollution concerns identified.	New lighting to parking area and boarding area as well as inside the station. No specific ambient light pollution concerns identified.	New lighting to parking area and boarding area as well as inside the station. No specific ambient light pollution concerns identified.	New lighting to parking area and boarding area as well as inside the station. No specific ambient light pollution concerns identified.	New lighting to parking area and boarding area as well as inside the station. No specific ambient light pollution concerns identified.
Non-Motorized Access	No sidewalks present. They could be added.	No sidewalks present. They could be added.	No sidewalks present. They could be added.	No nearby existing sidewalks. No designated non-motorized access proposed.	No nearby existing sidewalks. No designated non-motorized access proposed.	No nearby existing sidewalks. No designated non-motorized access proposed.	No nearby existing sidewalks. No designated non-motorized access proposed.
Travel Time from BWB or Interstate	Existing condition.	Similar to existing condition.	Similar to existing condition.	1 Mile south and 1/2 mile west of existing station.	1 Mile south and 1/2 mile west of existing station.	1 Mile south and 1/2 mile west of existing station.	Similar to existing condition.
Bus/Transit Access	Could install bus stop at 16th Street but no sw exists from 16th Street to the existing station	Bus turnaround with curb side service at the station	Bus stop with pull-out along 16th Street	Bus turnaround with curb side service at the station	Bus turnaround with curb side service at the station	Bus turnaround with curb side service at the station	Bus turnaround with curb side service at the station
Rail Operations							
CN Mainline	Maintains access for CN's operations. A second rountrip during the day may require further discussion/consideration for CN's operations	Maintains access for CN's operations. A second rountrip during the day may require further discussion/consideration for CN's operations	Maintains access for CN's operations. A second rountrip during the day may require further discussion/consideration for CN's operations	Maintains access for CN's operations. A second rountrip during the day may require further discussion/consideration for CN's operations	Maintains access for CN's operations. A second rountrip during the day may require further discussion/consideration for CN's operations	Maintains access for CN's operations. A second rountrip during the day may require further discussion/consideration for CN's operations. Further study needed of Amtrak siding tie in near track connection between line to Chicago and line to Toledo.	Maintains access for CN's operations. A second rountrip during the day may require further discussion/consideration for CN's operations
CN Spur to North	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.
CN Railyard	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.
CSXT Line	No impacts.	No impacts.	No impacts.	Requires PTC upgrades and potential upgrades to track.	Requires new track adjacent to existing track (coordination during construction only)	Requires PTC upgrades and potential upgrades to track. Requires new track constructed.	No impacts.
CSXT Railyard	No impacts.	No impacts.	No impacts.	Requires further study and coordination with CSXT. Will impact line east of the CSXT RR tracks up to and including the 24th St. bridge.	Requires further study and coordination with CSXT. Will impact line east of the CSXT RR tracks up to and including the 24th St. bridge.	Requires modifications to the west end of the railyard.	No impacts.
Passenger Rail Reliability/Timeliness/Operations							
Train Schedule Reliability	No impacts to current schedule or reliability.	No impacts to current schedule or reliability.	Requires a "back up" move which will add a minimal amount of time to the current schedule.	Requires a "back up" move which will add a minimal amount of time to the current schedule.	Requires a "back up" move which will add a minimal amount of time to the current schedule.	Negligible differences from existing conditions.	Negligible differences from existing conditions. Will require a new at-grade RR crossing over 16th St.
Boarding Platform Length	Maintains planned Amtrak level boarding length (435-feet). Additional 265-feet provided for maintenance.	Maintains planned Amtrak level boarding length (435-feet). Additional 265-feet provided for maintenance.	Provides for 1200-feet boarding platform including maintenance.	Provides for 1200-feet boarding platform including maintenance.	Provides for 1200-feet boarding platform including maintenance.	Provides for 1200-feet boarding platform including maintenance.	Provides for 1200-feet boarding platform including maintenance.
Accommodate Future Roundtrip Service	Puts more pressure on currently undersized parking lot due to increased ridership.	No restrictions to added service is foreseen	No restrictions to added service is foreseen	No restrictions to added service is foreseen	No restrictions to added service is foreseen	No restrictions to added service is foreseen	No restrictions to added service is foreseen
Cost Effectiveness							
Concept Level Capital Costs	$0	$7.72M	$8.49M	$10.60M	$17.85M	$12.83M	$9.01M
R/W Costs	$0	CSXT will not provide estimate but may require purchase of entire remaining line.	Would need to purchase R/W from CN RR east of 16th St.	Need to purchase private property.	Need to purchase private property.	Need to purchase private property.	Would need to purchase R/W from CN RR east of 16th St.
Track Imp Costs	$0	$0	$0	New siding and connection to CSXT track, 24th St. bridge rehab, and new connection from CSXT track to CN siding.	New siding and track, new 24th St bridge, and new connection from CSXT track to CN siding.	New siding, new track south of CSXT railyard, and connection to CN main just west of Michigan Rd.	New siding and new at-grade crossing at 16th St.
Future Expansion Capability	No opportunity for future expansion.	Can expand building to the west for in the future. Will impact some planned parking spaces.	Can expand building to the west for in the future. Will impact some planned parking spaces.	Potential for future expansion.	Potential for future expansion.	Potential for future expansion.	Potential for future expansion.
Constructability							
Maintain Service	No impacts.	Requires temporary accomodations. Will be difficult to provide comfortable experience during construction.	Requires temporary accomodations. Will be difficult to provide comfortable experience during construction.	No impacts.	No impacts.	No impacts.	No impacts.
Maintain Parking	No impacts.	Will require off-site parking and shuttles which will be difficult due to early morning/late night service.	New lot on east side can be constructed and then used for parking during construction on the west side of 16th Street.	No impacts.	No impacts.	No impacts.	No impacts.
Border Security							
US Customs Inspections	Maintains access to south CN RR main which avoids US Customs inspections that occur on the north main.	Maintains access to south CN RR main which avoids US Customs inspections that occur on the north main.	Maintains access to south CN RR main which avoids US Customs inspections that occur on the north main.	Maintains access to south CN RR main which avoids US Customs inspections that occur on the north main.	Maintains access to south CN RR main which avoids US Customs inspections that occur on the north main.	Maintains access to south CN RR main which avoids US Customs inspections that occur on the north main.	Considerations for fencing, cameras, lighting to ensure passengers do not access tunnel entrance area. Maintain dedicated CPD access to tunnel from 16th St. and 10th St.
US Border Patrol	No impacts. Maintains existing conditions.	No impacts. Maintains existing conditions.	No impacts. Maintains existing conditions.	Moves site further from tunnel (improvement).	Moves site further from tunnel (improvement).	Moves site further from tunnel (improvement).	Moves site closer to the tunnel (requires mitigation and measures to keep people from the tunnel entrance).

Appendix C:

Preliminary Project Building/Site Concepts

PORT HURON
AMTRAK STATION STUDY

PORT HURON, MI 48060

INITIAL SITE INVESTIGATION &

RECOMMENDATIONS

31 MAY 2023

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SHEET INDEX

NOTES:

A.1

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OBSERVATIONS

Site Overview

NOTES:

The site is bounded by 16th Street to the east, industrial properties to the south, and the GTW line to the north.

The site current has 2 structures; the existing station built in 1979 and maintenance garage on the west end of the site. The site also contains approximately 65 parking spaces for passengers and staff.

In its current state, the site design appears fractured with parking that shifts vs maintaining simple clear flows for cars. The current layout does not maximize its potential leaving potential areas for additional parking vacant and green space.

The current platform on the site maintains a single level and does not allow for easy boarding. Amtrak proposed updates to the boarding platform would allow passenger level boarding with the introduction of ramps and stairways. The Amtrak proposal also removes the southern track shown back to approximately the maintenance garage.

A.2a

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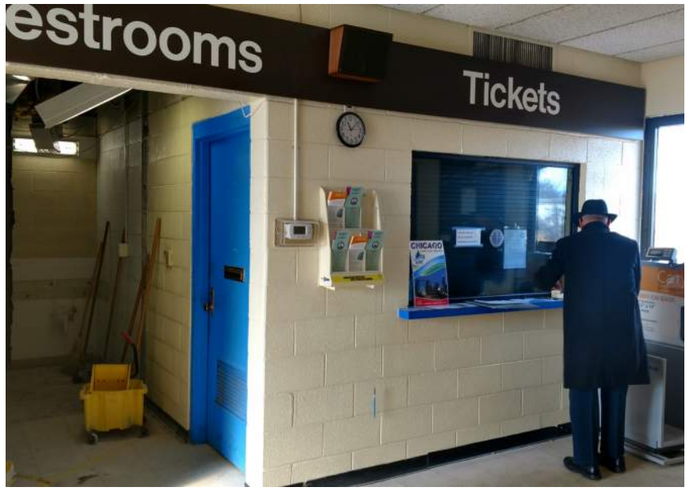


OBSERVATIONS

Station Overview

NOTES:

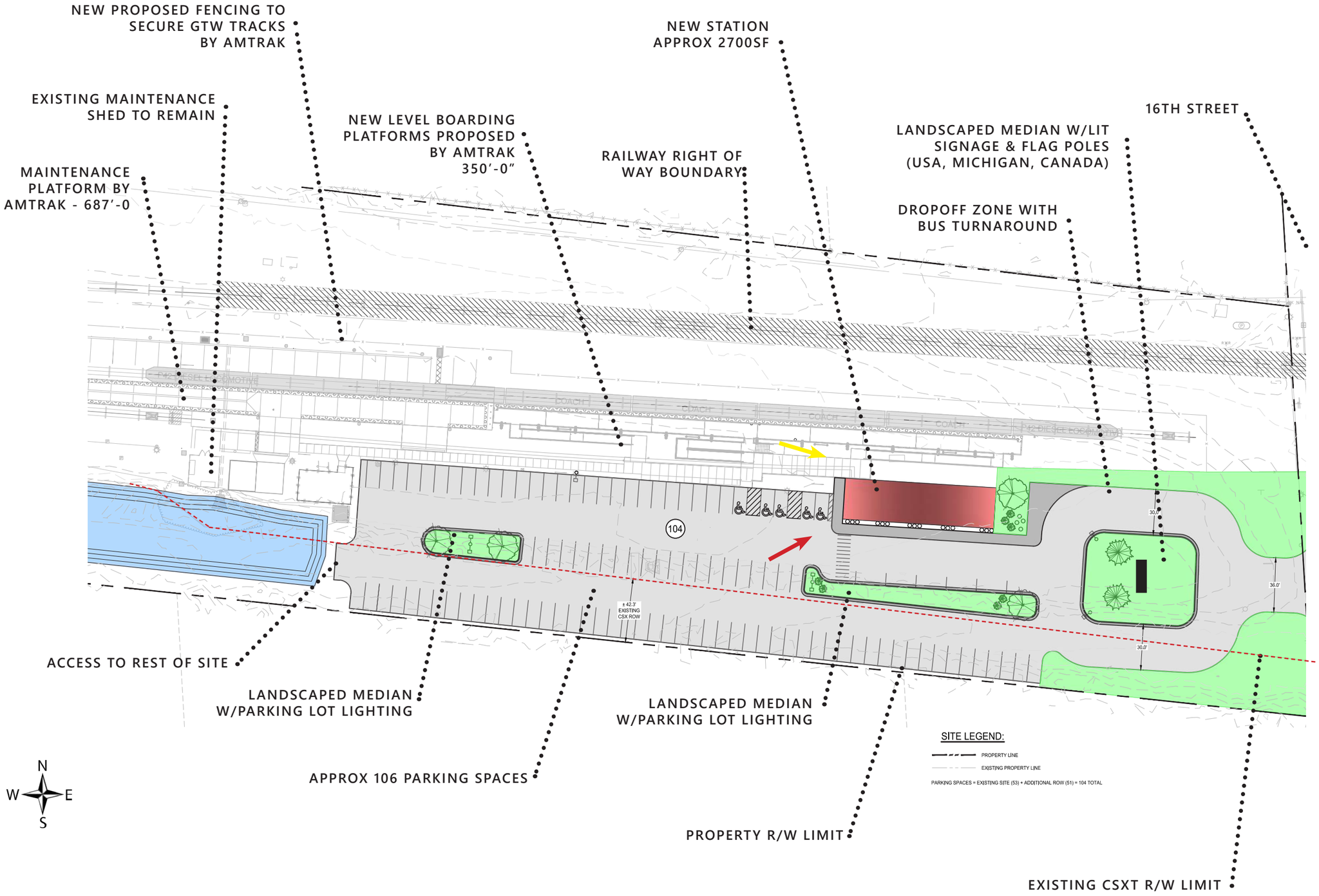
The current station built in 1979 is visually composed of three forms that are accentuated by their roof lines. The structure is one contiguous building with waiting and ticketing areas, restrooms, and back of house service.

The existing structure appears to be constructed with steel and concrete masonry. The interior finishes are dated and worn with little to no view of the exterior. The interior lighting is also older and in need of upgrading.

The station does provide direct access to the loading platforms but requires ADA lifts for handicapped riders which would slow the boarding process.

The overall station design does not present a welcoming statement to visitors or a generally comfortable transitory space as passengers wait for trains. The station itself sits far back from the road and is hard to identify at night from the road due to lack of light and focal point.

CONCEPT 1A



DENOTES PERSPECTIVE VIEW LOCATION FOR BUILDING CONCEPTS 1, 2, &4

DENOTES PERSPECTIVE VIEW LOCATION FOR BUILDING CONCEPT 3

PROPOSED UPDATES

Site Plan

NOTES:

The proposed site layout for the Port Huron Amtrak station, utilizes the current CSX R/W to the South, to provide a generous 360-degree bus loop for rider drop-off as well as an area near the entrance for temporary stopping and companion drop-off. The proposed site will include well-lit, landscaped islands and wide, easily-maneuvered aisles to allow smooth ingress/egress of the site.

The Amtrak Station Program and Planning Guidelines recommends calculation of daily riders by dividing annual ridership by 270. This factor is based upon the assumption that certain days are more traveled than others. Amtrak has indicated that 2019 (pre-Covid) ridership at Port Huron as 16,494. Using the Guidelines formula, daily riders (origins and destinations) would be 16,494/270, or 61. However, the present parking capacity at Amtrak's Port Huron station, 60 spaces, has been criticized as insufficient. Therefore this methodology does not apply to Port Huron, perhaps because many Canadians drive their cars across the border in order to use the Port Huron Station. It is recommended that an increase of 2/3 the recommended number of spaces, would be sufficient to support today's ridership, 102. 106 spaces are currently shown in the proposed site layout.

Another common criticism of the existing Amtrak Port Huron station is that there is insufficient outdoor lighting. Given that service is during nighttime and early morning hours, lighting is significant to providing a sense of passenger safety. The proposed station will increase the number of both free-standing light poles and wall mounted lights to ensure safety and better serve Amtrak customers.

A.3a

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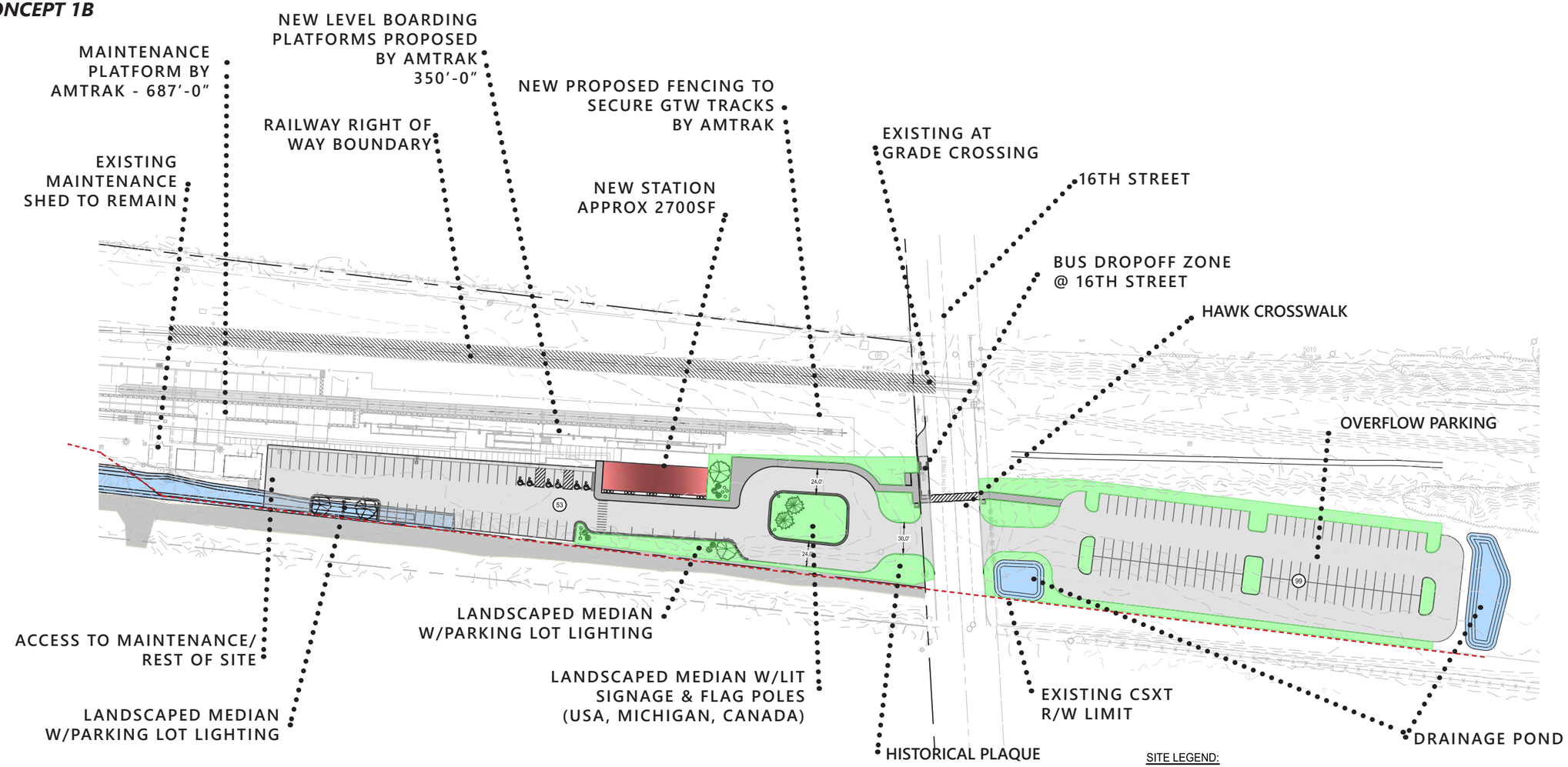
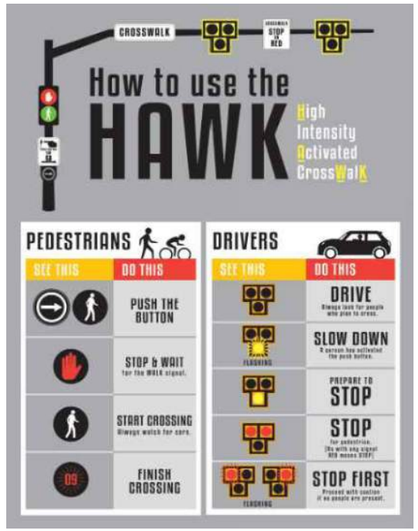
CONCEPT 1B





PROPOSED UPDATES

Site Plan

NOTES:

This option maintains existing site boundarys outside of the R/W and utilizies the property across the street for additional parking. In total providing 154 parkings spaces.

A crosswalk with HAWK singaling would be installed to upgrade the safety of the crossing on 16th Street.

This option also moves the bus drop off to the roadway just north of the crosswalk due to the turning restrictions of the narrower site. Its recommended to install a bus shelter along the street at this location.

A.3b

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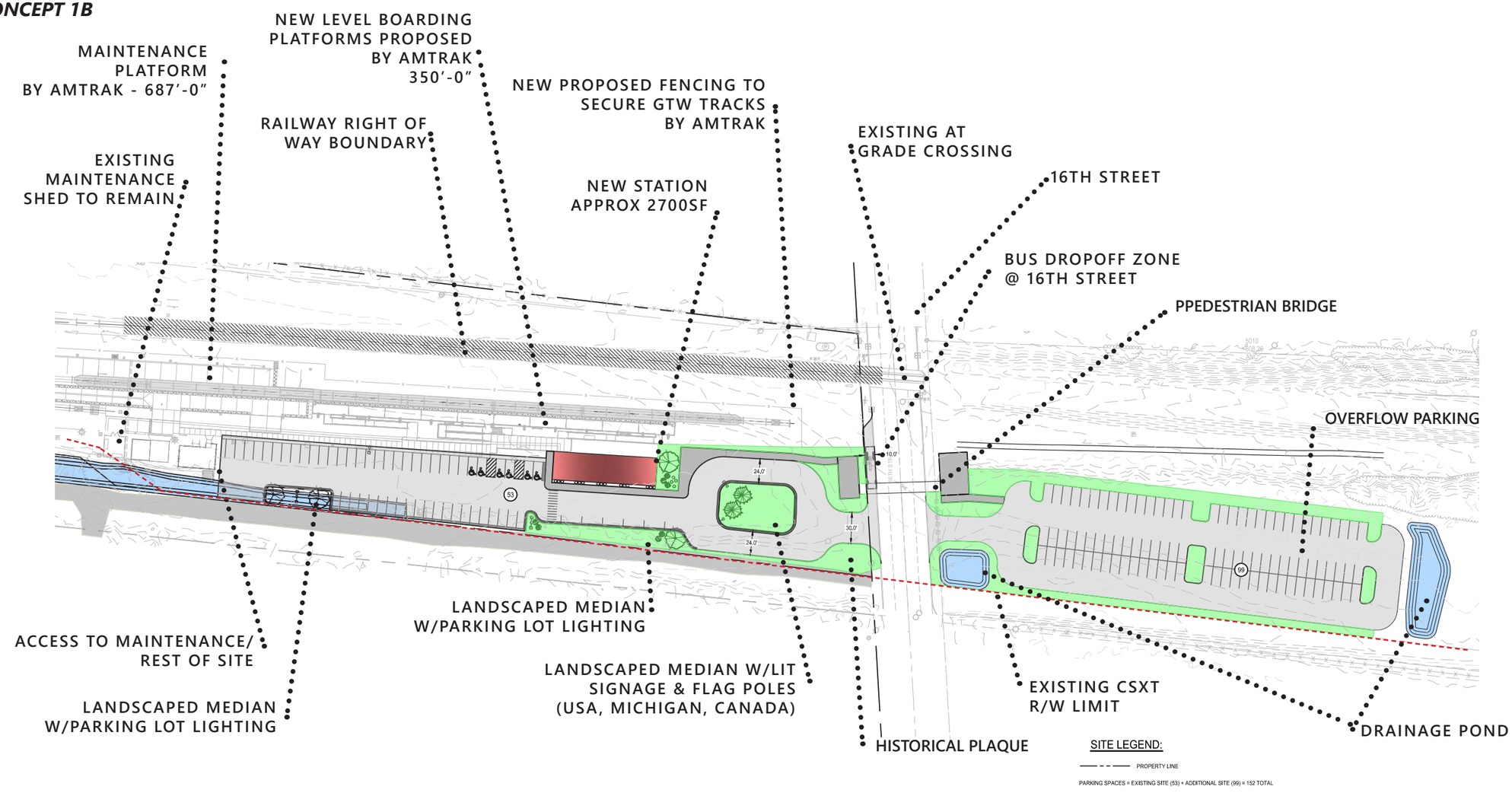
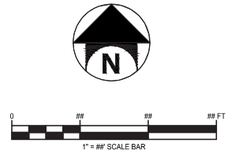
CONCEPT 1B





PROPOSED UPDATES

Site Plan

NOTES:

Similar to page A.3b this layout maintains existing site boundarys outside of the R/W and utilizies the property across the street for additional parking. In total providing 154 parkings spaces.

A crosswalk with a ramped pedestrian bridge is used for crossing 16th street. Based on observed usage of ramped pedestrian bridges on streets such as this it creates a cumbersome crossing which most people will avoid, crossing the street on their own at the parking lot drives.

Like page A.3b this also moves the bus drop off to the roadway just north of the crosswalk due to the turning restrictions of the narrower site. Its recommended to install a bus shelter along the street at this location.

A.3c

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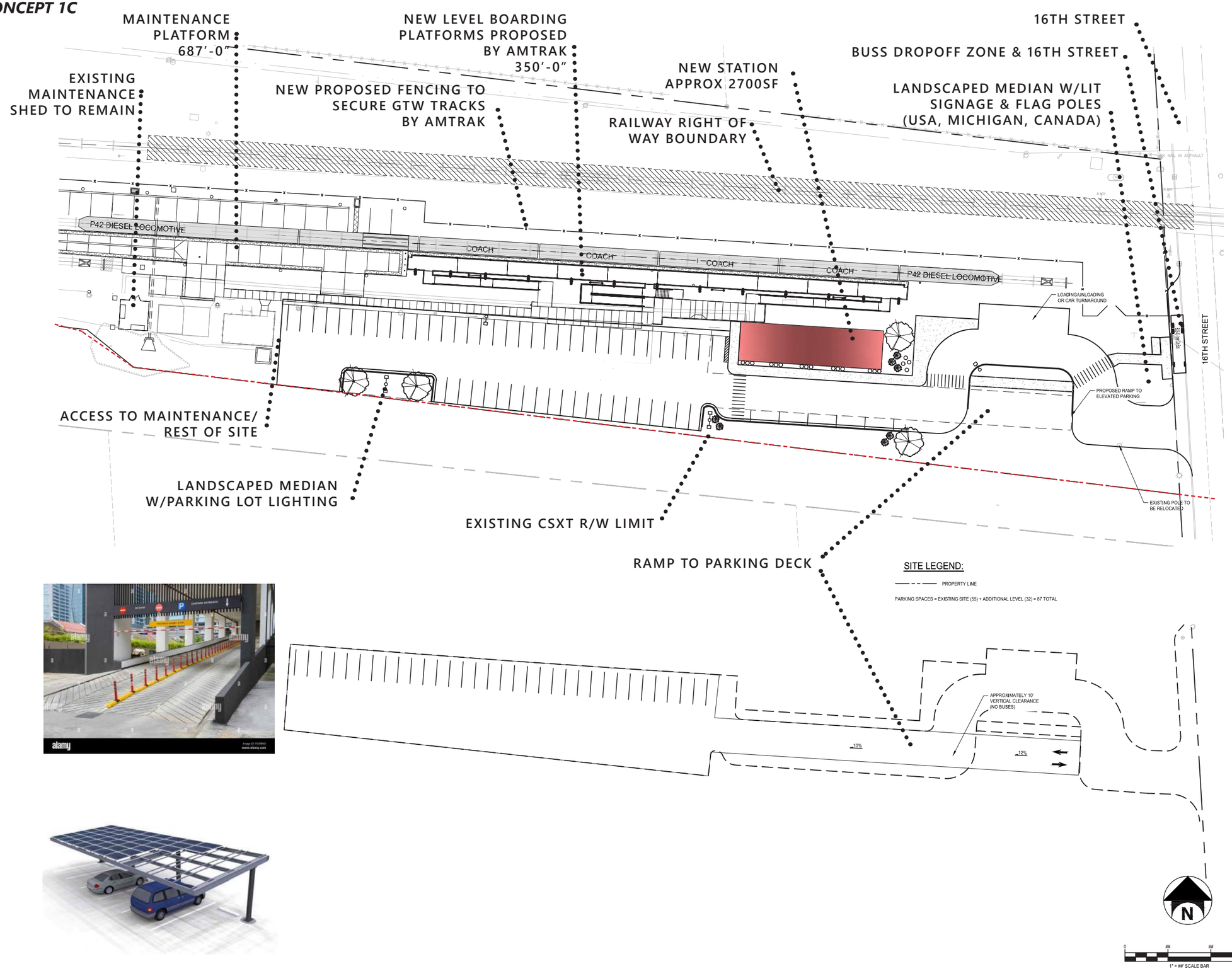
CONCEPT 1C



PROPOSED UPDATES

Site Plan

NOTES:

This option maintains existing site boundarys outside of the R/W and utilizies a two level parking deck (ground and 1st floor) on the existing site for additional parking. Due to the narrowness of the site the deck is restricted adding only an additional 32 spots for a total of 87.

Like option on A.3b and A.3c, this option also moves the bus drop off to the roadway just north of the crosswalk due to the turning restrictions of the narrower site. Its recommended to install a bus shelter along the street at this location.

A.3d

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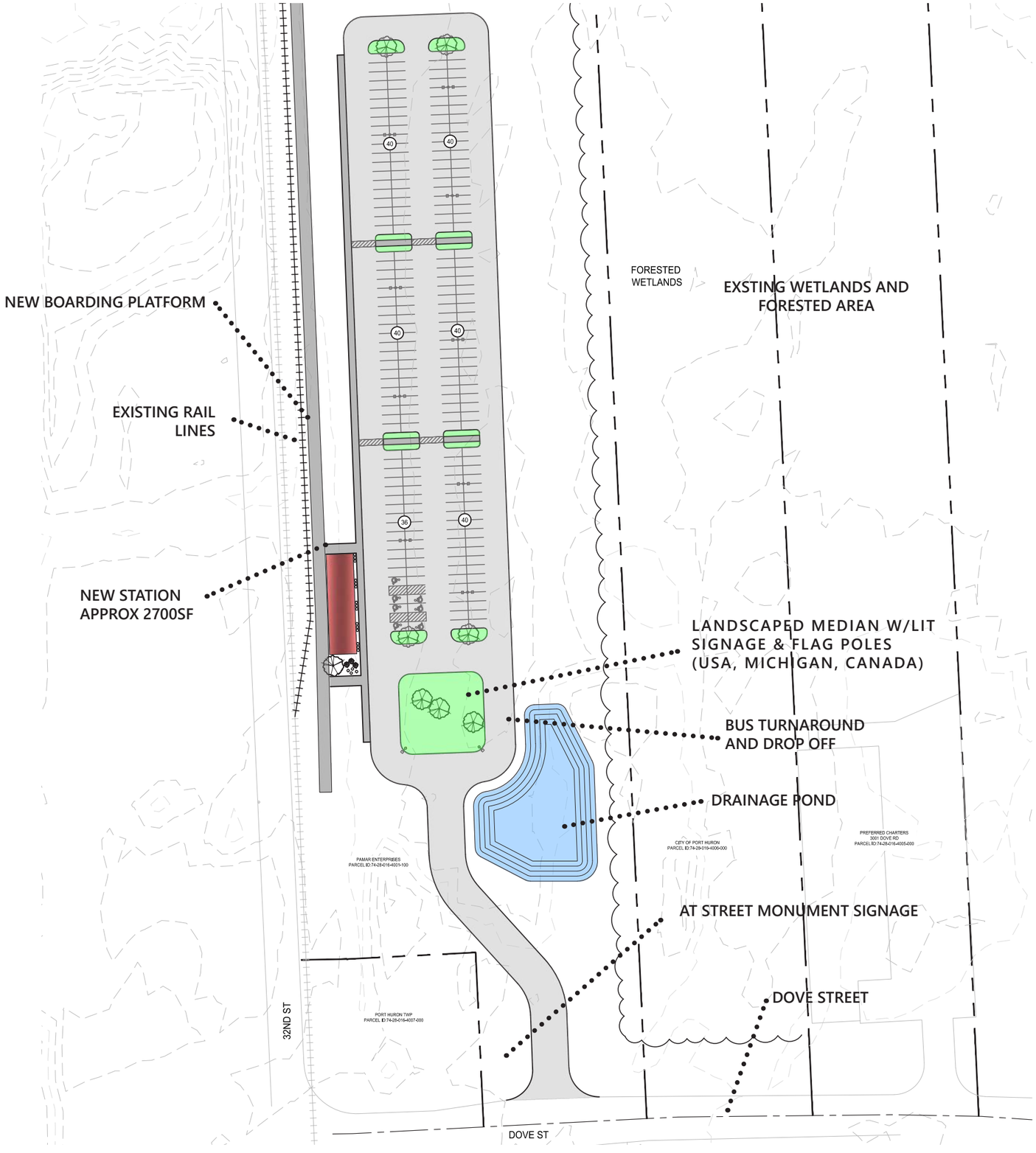
CONCEPT 10



SITE LEGEND:

PROPERTY LINE

PARKING SPACES = 236 TOTAL

N

0 50 100 150 FT

1" = 50' SCALE BAR

PROPOSED UPDATES

Site Plan

NOTES:

This option utilizes a large site off of Dove Street, centering the building and parking lot along an existing spur that runs adjacent to the site.

The layout of the site works to maintain as much existing wetland and forested area as possible while still providing a large amount of parking and easy rail access.

A.3e

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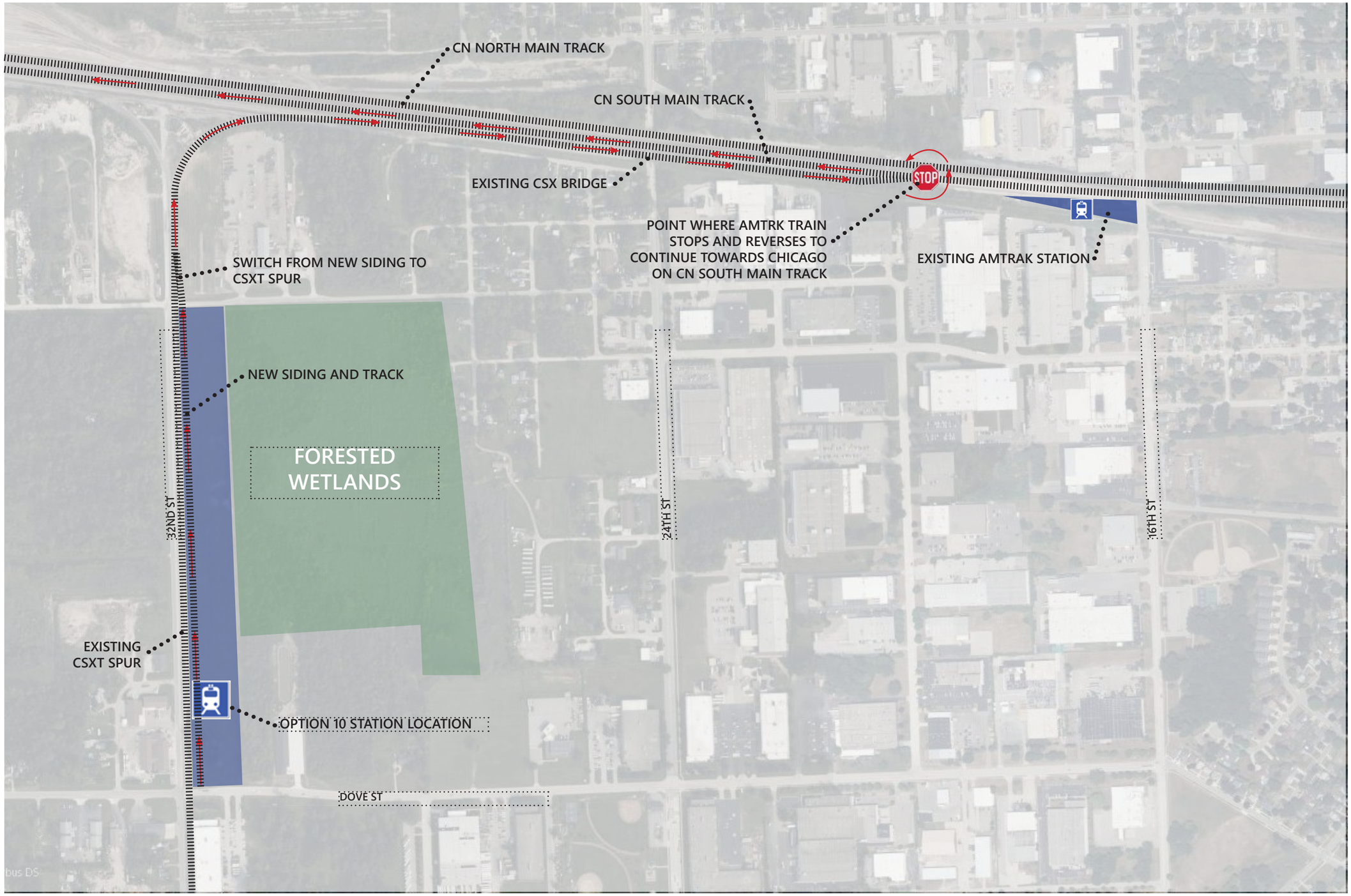

PROPOSED UPDATES

Site Plan (10A)

NOTES:

Track route options for concept 10.

A.3e

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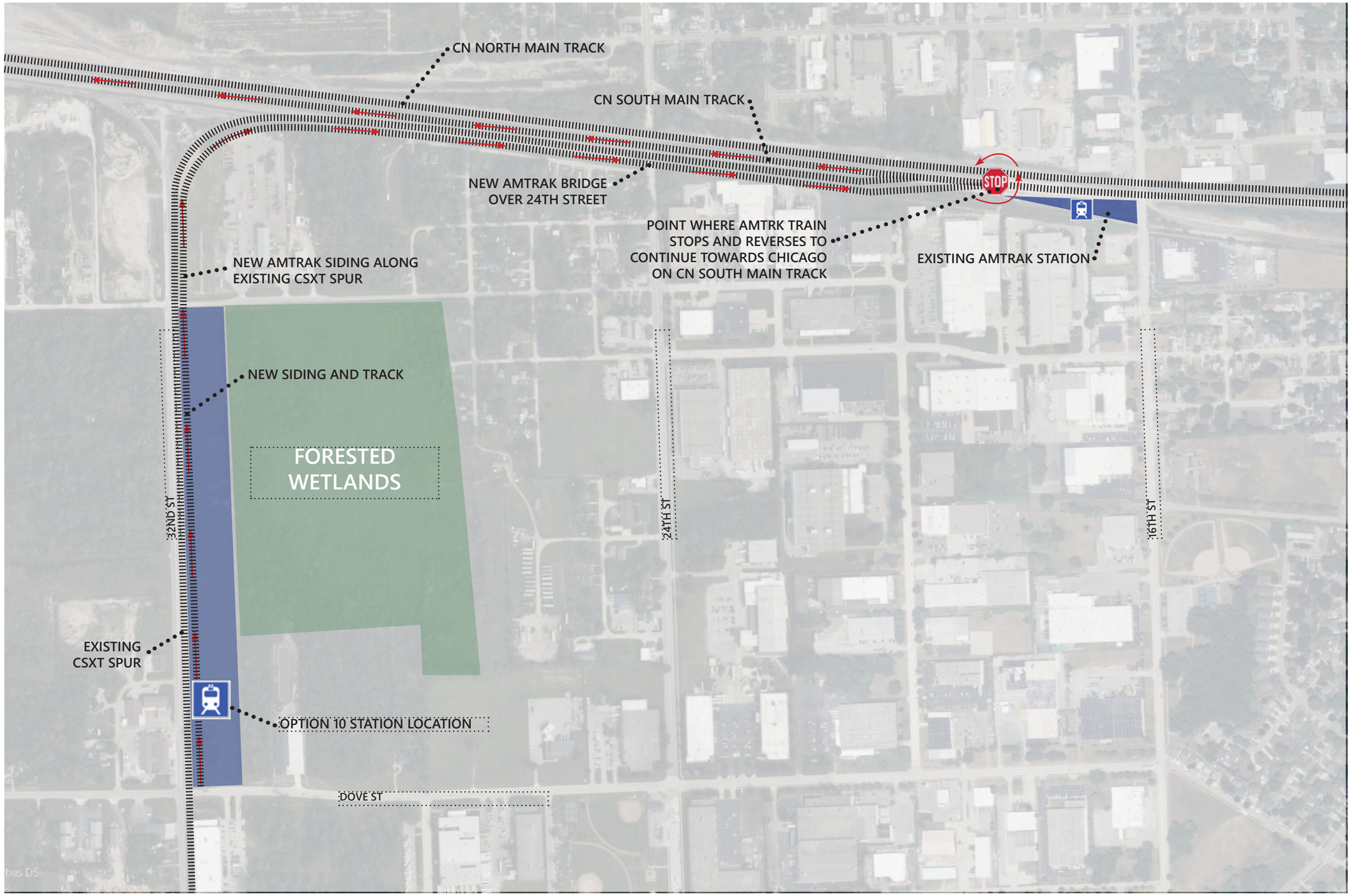

PROPOSED UPDATES

Site Plan (10B)

NOTES:

Track route options for concept 10.

A.3e

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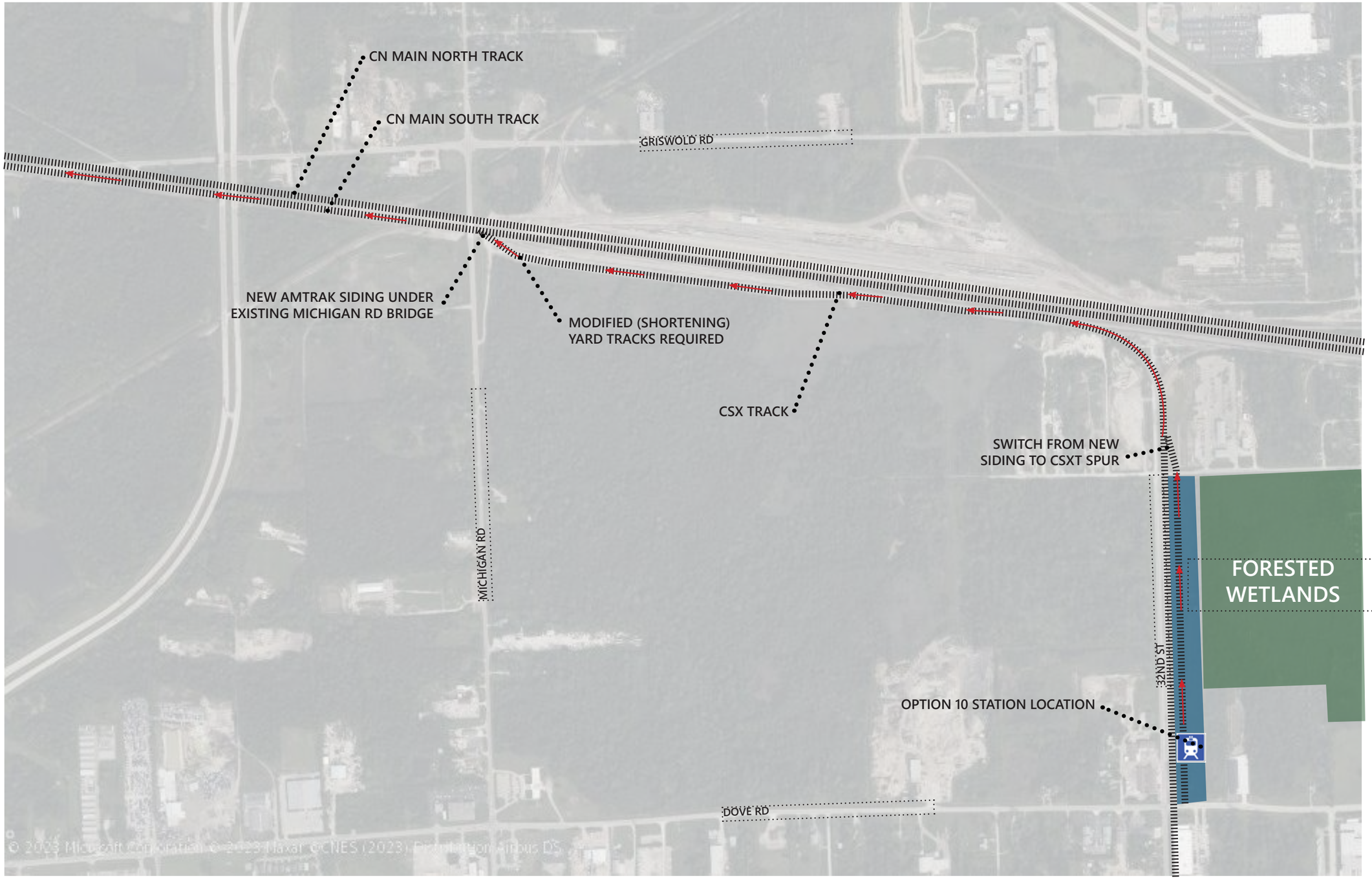
PROPOSED UPDATES

Site Plan (10C)

NOTES:

Track route options for concept 10.



A.3e

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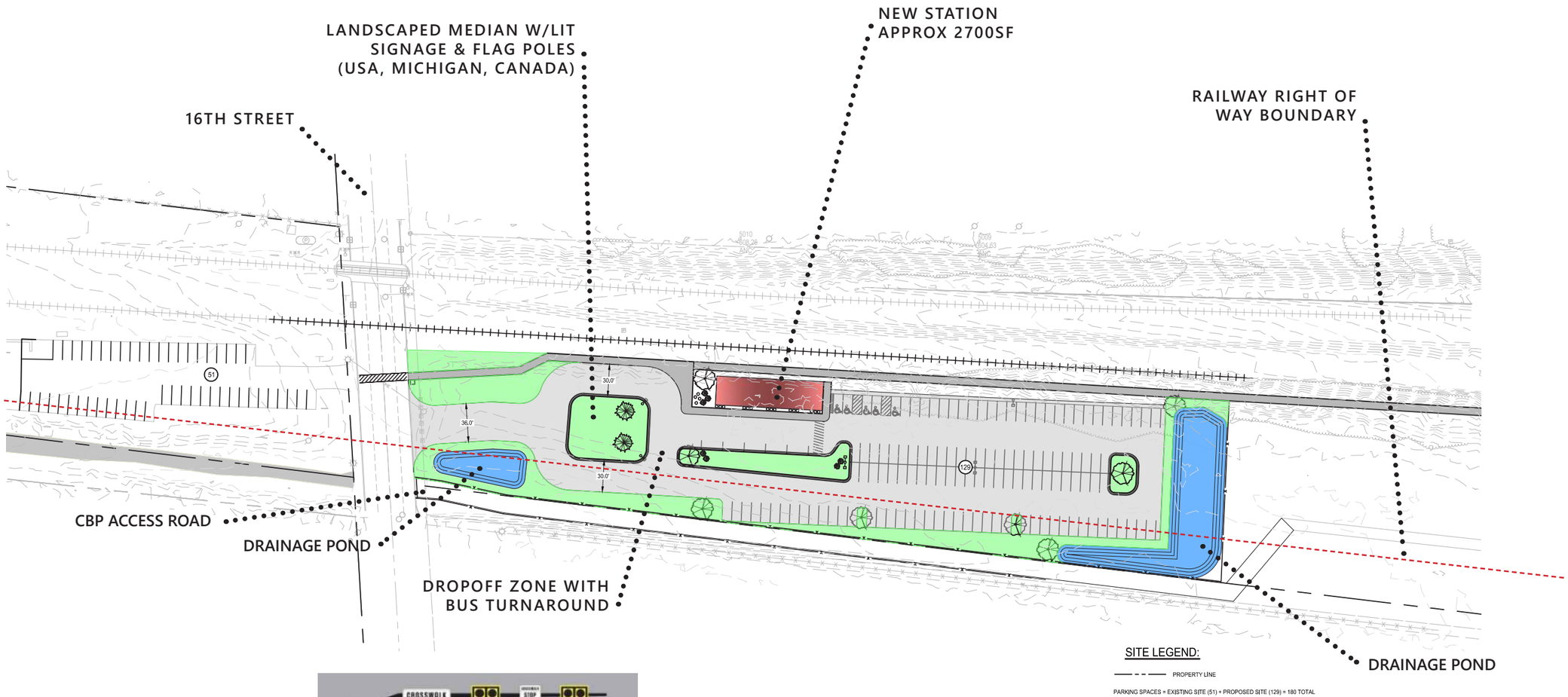
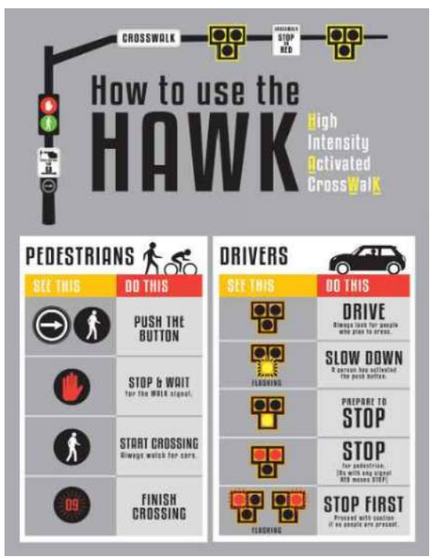
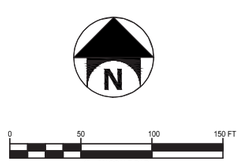
CONCEPT 11







PROPOSED UPDATES

Site Plan

NOTES:

This option utilizes the east side of 16th street. Shifting all passenger operations while maintaining existing maintenance facilities on the western side of 16th Street.

This option also maintains existing parking on the existing site west of 16th street for overflow parking (51) while adding 129 new spots for a total of 180 total parking spots.

Like option 1A, this option features a drop off and bus turnaround on the site proper while utilizing a HAWK system for the crosswalk to overflow parking.

A.3f

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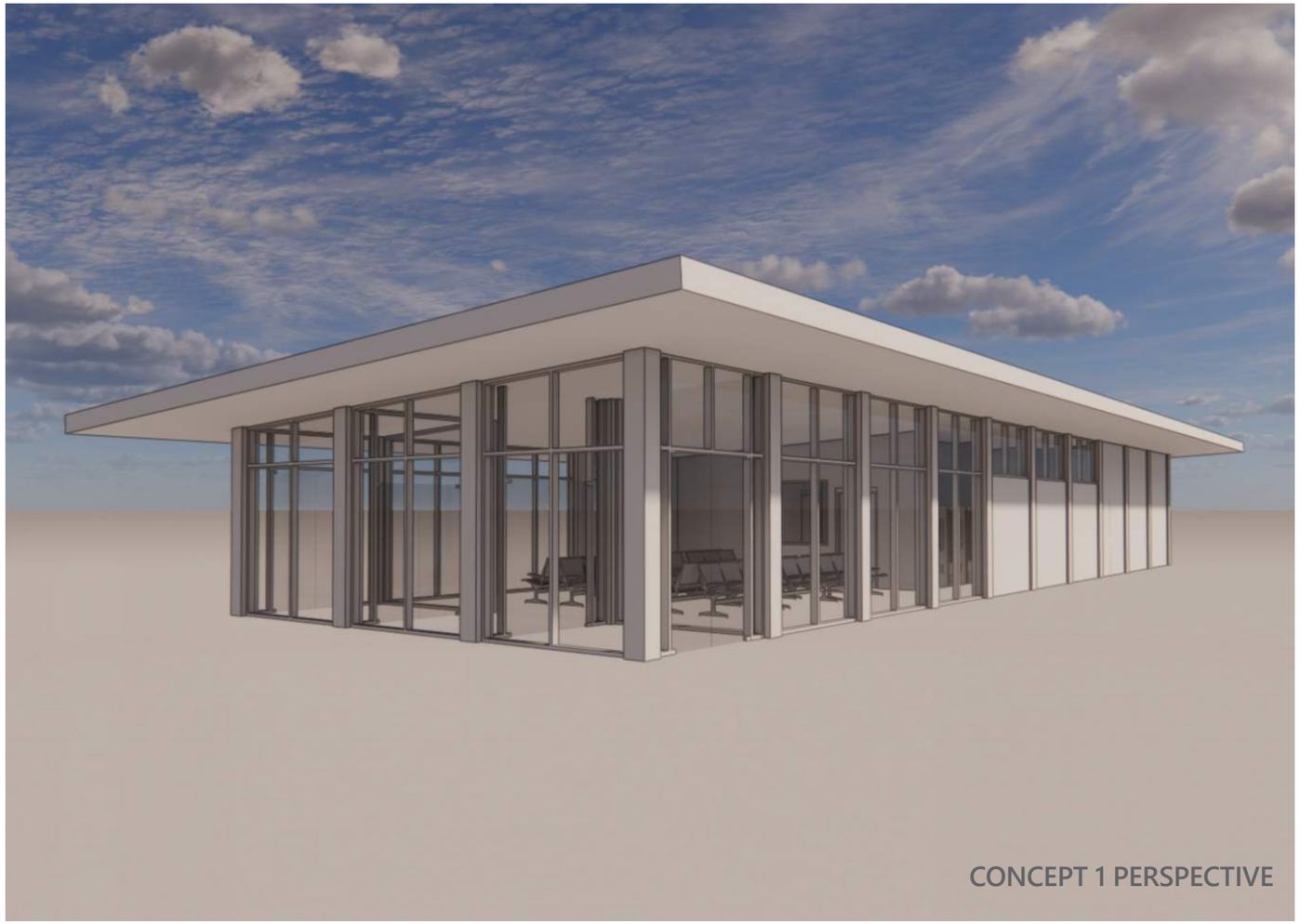

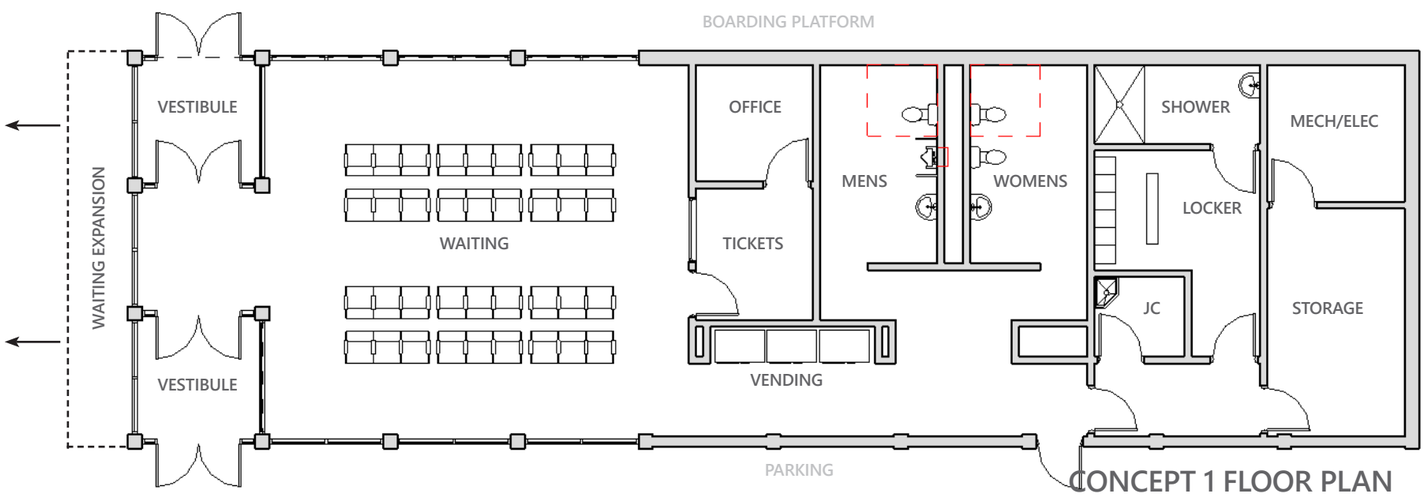

PROPOSED UPDATES
BUILDING CONCEPT 1

NOTES:

In examining the existing site it was noted surrounding buildings are mostly of the industrial/warehousing typology. The design idea behind this concept was to mimic the simple design ideals found in those types of facilities but elevate it through other simple architectural moves to make it distinct and unique.

The overall concept is simple structure with a statement roof structure. The roof angles up towards the south and is lower along the tracks and loading platform. The large overhang accentuates the structure and creates a simple but powerful focal point while also providing shelter outdoors from weather, both along the platform as well as at the main structure entrance.

The plan itself is a simple rectangle, the west facing section of the building has direct views to the tracks and loading platform. Directly off the lobby is a ticket booth with adjacent office space. Along the hallway on the south face of the building there is vending machines and access to restrooms. On the far east end of the building is the back of house areas for storage, mechanical, and a break/ locker room with shower for Amtrak employees.

A.4a

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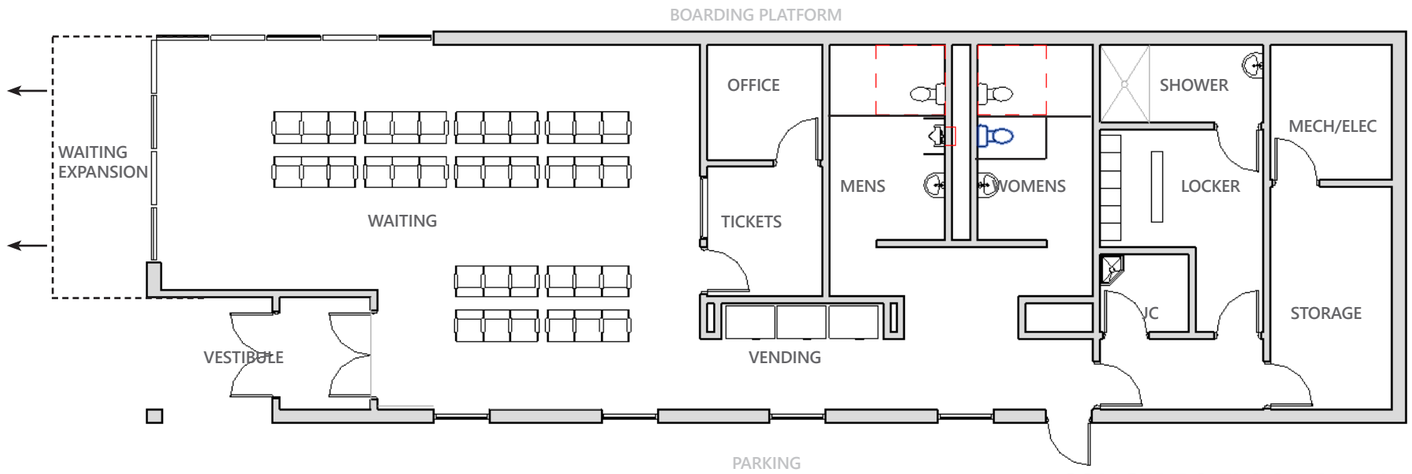
CONCEPT 2 PERSPECTIVE

INSPIRATION IMAGE

INSPIRATION IMAGE



CONCEPT 2 FLOOR PLAN

INSPIRATION IMAGE

PROPOSED UPDATES
BUILDING CONCEPT 2

NOTES:

Like concept 1 this idea is to mimic the simple shapes found in the surrounding manufacturing/ warehouse buildings while giving the station its own unique identity.

This concept utilizes a gable roof structure that is cut in at different locations with large expanses of windows. This cut into continues at the entry where the vestibule is recessed back from the front facade giving patrons a sheltered entrance. The simple forms of this concept are best utilized with heavily textural and natural materials as shown in the inspiration images such as stone, concrete, and wood.

This concept in plan is similar to concept one. This concept utilizes only one entry/exit vestibule vs the dual vestibule of the first concept.

A.4b

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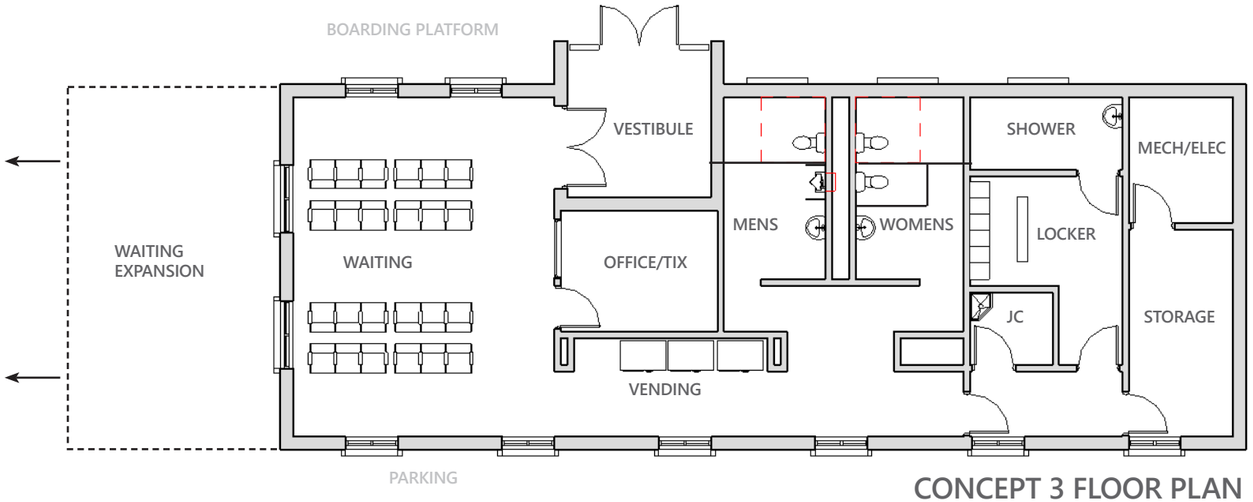
CONCEPT 3 PERSPECTIVE

INSPIRATION IMAGE

INSPIRATION IMAGE



CONCEPT 3 FLOOR PLAN

INSPIRATION IMAGE

PROPOSED UPDATES
BUILDING CONCEPT 3

NOTES:

Concept 3 hearkens back to the golden age of train travel. Pulling from historic stations that were once in Port Huron as well as historic stations from around the Midwest. These historical stations offer a strong sense of place and charm. Concept 3 references from the style of these stations and brings the design into the 21st century.

The station is anchored by a tower on along the north face of the building which acts as a beacon and way point for the site. The station also has a strong roof line and overhang, hearkening back to the more historic structures.

This layout shrinks the size of the station footprint to about 2100sf. In plan, similar to concept one and two the waiting room is on the west end with direct views to incoming trains and the loading platform. The east end is again occupied by back of house, employee services.

A.4c

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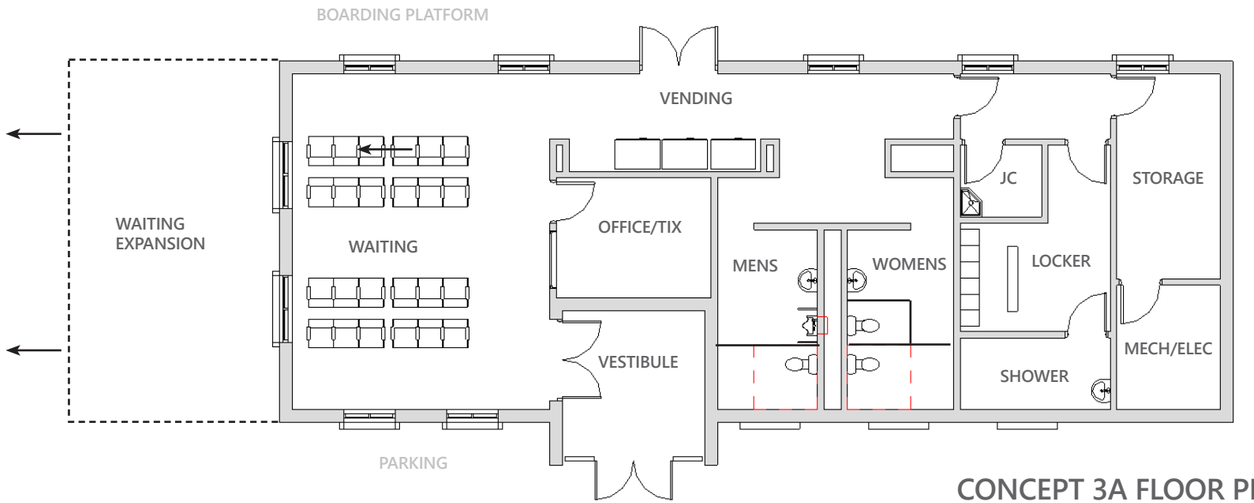
CONCEPT 3A PERSPECTIVE

INSPIRATION IMAGE

INSPIRATION IMAGE



CONCEPT 3A FLOOR PLAN

INSPIRATION IMAGE

PROPOSED UPDATES
BUILDING CONCEPT 4

NOTES:

Concept 3 hearkens back to the golden age of train travel. Pulling from historic stations that were once in Port Huron as well as historic stations from around the Midwest. These historical stations offer a strong sense of place and charm. Concept 3 references from the style of these stations and brings the design into the 21st century.

The station is anchored by a tower on along the north face of the building which acts as a beacon and way point for the site. The station also has a strong roof line and overhang, hearkening back to the more historic structures.

This layout shrinks the size of the station footprint to about 2100sf. In plan, similar to concept one and two the waiting room is on the west end with direct views to incoming trains and the loading platform. The east end is again occupied by back of house, employee services.

This layout allows for easy future expansion to the waiting area given the regular window bay spacing, allowing the waiting area to double, triple, or quadruple in size depending on the final site constraints.

A.4d

31 MAY 2023

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SUSTAINABILITY

TWO PRONGED APPROACH

THERE ARE MANY SUSTAINABLE RATING SYSTEMS IN TODAYS MARKET, FROM LEED, WELL, GREEN GLOBES, ETC. ALL WORK TO HELP ARCHITECTS, ENGINEERS, AND OWNERS UNDERSTAND SUSTAINABILITY INITIATIVES AND GOALS WHILE PROVIDING A GREAT STARTING POINT IN SUSTAINABILITY EFFORTS.

WHILE EACH HAVE THEIR OWN SPECIFIC NICHE FROM OCCUPANT COMFORT, TO HEALTHY HUMAN BODY FOCUS, MAINLY THEY ONLY PROVIDE A CHECKLIST OF ITEMS TO CROSS OFF AND DON'T ENCOMPASS THE WHOLE PICTURE. LOOKING INTO THE FUTURE WE NEED TO DESIGN BUILDINGS AND SYSTEMS THAT ENCOMPASS ELEMENTS OF EACH WHILE FOCUSING ON REDUCING THE OVERALL CARBON FOOTPRINT EACH BUILDING CREATES.

BUILDINGS CONTRIBUTE 40% OF ALL CARBON EMISSIONS. THROUGH THOUGHTFUL DESIGN APPROACHES ARCHITECTS, ENGINEERS, AND OWNERS, CAN CREATE BUILDINGS THAT ARE NET ZERO, PRODUCING NO NEW CARBON EMISSIONS WHILE STILL PROVIDING HIGH FUNCTIONING AND COMFORTABLE SPACES AND PLACES.

IN THE END THE MAIN GOAL IS TO FIND BALANCE BETWEEN SUSTAINABILE INITIATIVES, BUDGETING, AND OWNER MAINTENANCE PROGRAMS.

DESIGN

- CLIMATE
- BUILDING ORIENTATION
- HIGH PERFORMANCE BUILDING ENVELOPE
- RENEWABLE MATERIALS
- DAYLIGHTING
- PASSIVE VENTILATION
- ITERATIVE MODELING

SYSTEMS

- USE OCCUPANCY STUDIES
- HIGH PERFORMANCE EQUIPMENT
- LOW FLOW FIXTURES
- PASSIVE SYSTEMS (SOLAR, GEO THERMAL, ETC)
- HIGH EFFICIENCY LIGHTING
- INTEGRATED BUILDING CONTROLS
- COMMISSIONING

SUSTAINABLE GOALS

(NET ZERO CARBON EMISSIONS)

NOTES:

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Appendix D:

Port Huron Amtrak Station Pre-Feasibility Study - UPDATE

Port Huron Amtrak Station Pre-Feasibility Study - UPDATE

FACILITY NEEDS & POTENTIAL SITES ASSESSMENTS

Pre-NEPA/Pre-Engineering Study

June 12, 2023

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TABLE OF CONTENTS

1.0 Introduction

This update includes additional information and amendment to the pre-feasibility study report dated July 2, 2018. This update includes further assessment of the options noted as being feasible in the 2018 pre-feasibility study as well as introduction of a new option considered. Furthermore, the potential for additional passenger service between Port Huron and Detroit is considered in each of the options.

The Port Huron, Michigan, Amtrak passenger station ridership decreased during the Covid-19 pandemic but has been returning steadily in recent years. Current service consists still consists of two trains per day (arriving 11:38pm and departing 6:20am) and serves as the east terminus of the Blue Water Line connecting to Chicago. Since the pre-feasibility study was published, some discussion has surfaced on the potential for Port Huron-Detroit passenger service, however, nothing has formally been introduced. Amtrak, nor MDOT have current plans for establishing this service at this time, however, the options considered include discussion on how Port Huron-Detroit passenger service might be impacted.

Amtrak's website includes a 2021 Corridor Vision report which outlines proposed improvements throughout the country. Page 48 of the report indicates the Blue Water line (Chicago-Port Huron service) visions expanded service from 1 to 2 round trips per day. The vision states its purpose is to increase mobility options for Michigan, including for the state capital.

Ridership projections would certainly increase if additional service to Port Huron is provided, however, no funding or certainty is attached to the expanded Porth Huron – Chicago service nor the Port Huron – Detroit service. Consequently, this study maintains the predicted ridership originally indicated in the 2018 pre-feasibility study.

Amtrak has indicated they have planned improvements to the existing station. Construction timeline is unknown at this point but work would include a new level boarding platform, a new maintenance platform, and a maintenance building located west of the current station.

2.0 Public and Stakeholder Engagement

No additional general public outreach is planned for updated study, however, formal public meetings and engagement would be included as part of the NEPA process. Additional stakeholder engagement has been conducted with the following summary associated with each entity that was consulted.

MDOT (Office of Rail) – MDOT was invited to and attended several meetings with stakeholders identified below. MDOT has re-affirmed that there is no plan for international service through Port Huron and they have no formal plan for Port Huron – Detroit passenger service at this time.

CN Railroad – Owner of the line and platform as well as the rail yard located west of the current Amtrak Train Station. Potential for Port Huron – Detroit service was discussed and initial concerns included potential capacity problems associated with not having enough sidings between Mt. Clemens and Detroit. They also noted that any station option located north of the tracks would not have a direct connection to Detroit. Regarding Port Huron – Chicago passenger service, CN indicated several concerns related to their operations in the area associated with station located north of their mainline. Primarily these concerns center around inspections and train lengths coming from Canada and the real potential for the mainline to be blocked for long periods of time and the timing of these delays would be unpredictable. Expanded passenger service to daytime hours would only increase the likelihood of conflicts with trains from Canada and customs inspections.

CSXT Railroad – Owner of a rail yard south of the CN mainline (just east of the Michigan Road grade separation, owner of the rail spur from the east end of their rail yard south to the Marysville, and owner of the property located just south of the existing station. CSXT provide val maps for property and preliminarily discussed the procedure for securing the property south of the existing station. CSXT would consider offers for their property located south of the existing station (no tracks in place), however, they will not discuss further until an offer is made. They would also

have concerns about selling a portion of their property which might sever future development. CSXT stated they would not formally engage or provide information to this project until an agreement is in place to cover the costs of their involvement. We discussed whether there is potential for a station to be located near Dove Street and their rail spur. CSXT heavily opposed station location options that would need to navigate through their railyard due to all of their operations and lack of Positive Train Control (PTC).

Amtrak – Operating the passenger service along the CN Railroad line, owns and maintains the current Amtrak Train Station, land, and the parking lot. Amtrak maintains a desire for improved maintenance facilities at this location. They also reiterated needs for crew quarters consisting of debriefing room and a room with a shower. No sleeping quarters are necessary. Amtrak stressed that the 2021 Corridor Vision was primarily a tool for educating congress on the prospects of expanded service and that they (Amtrak) would not lead the way for expanded service but would look to the state and congress to make those decisions.

FTA and FRA – Likely to be the lead agency through the NEPA process. One will lead (likely determined based on funding) but both will be coordinated with throughout NEPA. FTA/FRA confirmed that there are not a minimum number of options to be brought into the NEPA process. They also indicated a need to have a strong idea of a build timeframe since there is an expiration date on the NEPA phase once it is concluded. FTA/FRA confirmed that the Purpose and Need and the site selection can include consideration for capital costs. They also indicated the NEPA process will include investigation into social justice and controversy among all of the other required section to be studied.

Southeast Michigan Council of Governments (SEMCOG) – MPO for this area and supporter of improved mobility throughout southeast Michigan. SEMCOG would provide data they have that might assist with Port Huron – Detroit passenger service but acknowledged that the state does not have this service identified on the long range plan, however, SEMCOG has had several discussions with a local representative who is interested in exploring this service.

The **City of Port Huron** and **Port Huron Township** were not formally engaged but have been notified of the developments of this study by the Bluewater Transit Authority.

3.0 Amtrak's Station Program and Planning Guidelines

Amtrak's Station Program and Planning Guidelines, were updated in January 2022. No appreciable changes relative to the 2018 pre-feasibility study (which was based on the 2013 planning guidelines) were noted.

4.0 Station Siting Criteria

The station siting criteria developed in the 2018 prefeasibility study remains unchanged:

- Support community land use plans (traffic patterns, environmental factors, economic benefits, long range plans);
- Sufficient space (parking, bus turn-around, kiss-n-ride, future expansion and development, Amtrak maintenance or servicing facility);
- Railroad agreement (tangent track, separation from crossovers and turnouts, train servicing facilities);
- Proximity to trip origins and destinations (convenience to passengers);
- Noise impacts;
- Trip time (operations, convenience for track owner/operator);
- Traffic impacts (at-grade crossings, site access / circulation, peak time operations if future service shifts to daytime);
- Convenient transportation connectivity (road network, convenience for park-n-ride, drop offs, bus transit);
- Cater to nighttime service (hotel, restaurants, public transportation options, etc.);
- Cost
- Ability to service future cross border passenger service.

5.0 Facilities Needed

The following facilities as being needed at any Port Huron Amtrak station site remain unchanged:

- Access track to the main rail line (owned by Canadian National Railroad);
- Adequate parking;
- Adequate outdoor lighting;
- Station building with waiting room;
- Level boarding platform (currently planned by Amtrak);
- Side track for temporary train storage and servicing; and
- Road access and connectivity of parking to the station (taxi, bus, kiss-n-ride, and bicycle).

6.0 Amount of Space Required for Port Huron Station

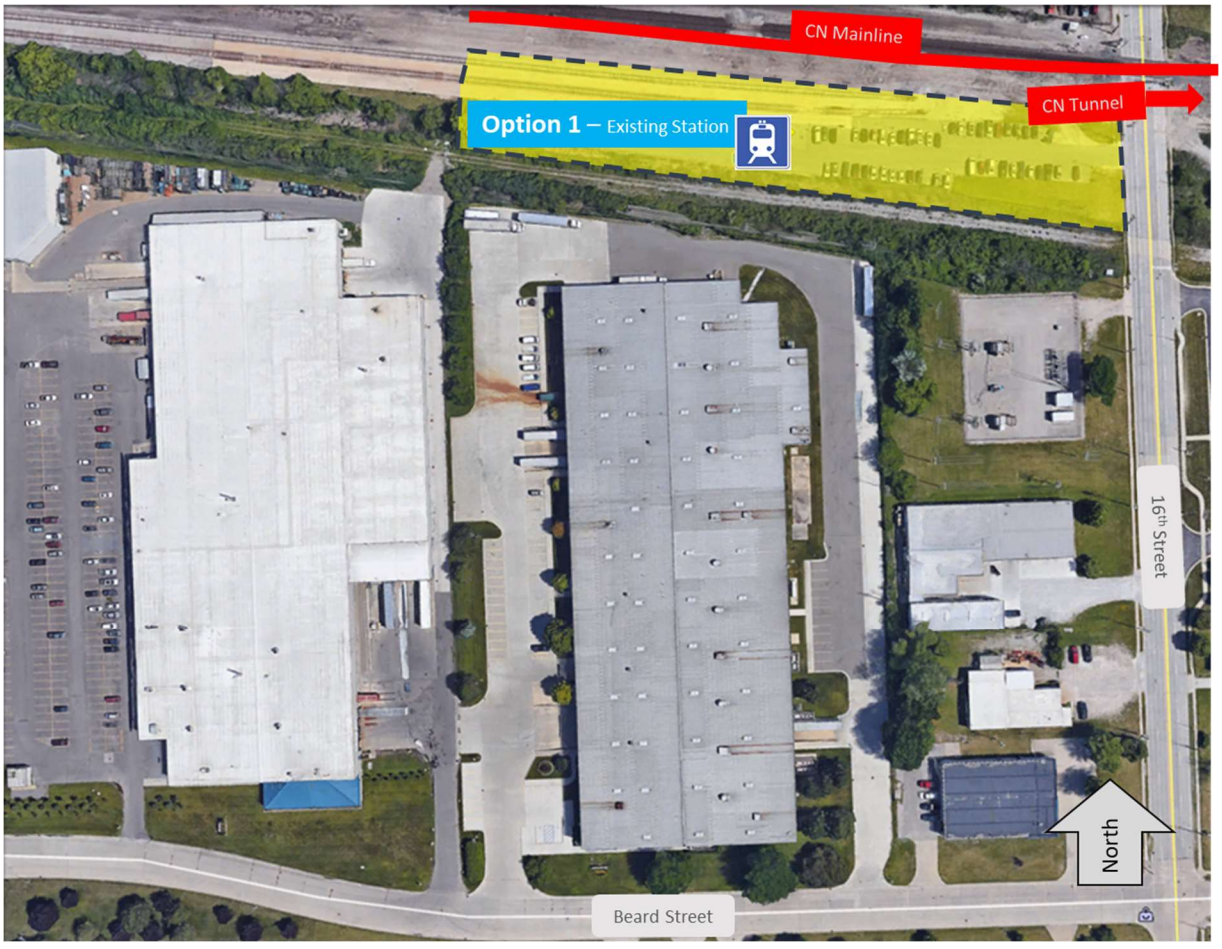
No updates for this section.

7.0 Viable Sites and Siting Criteria Evaluation

7.1 SITES UNDER CONSIDERATION

The following sites were considered as part of this prefeasibility study of the new Port Huron Amtrak Station location. These sites include locations identified by the public, stakeholders and the study team:

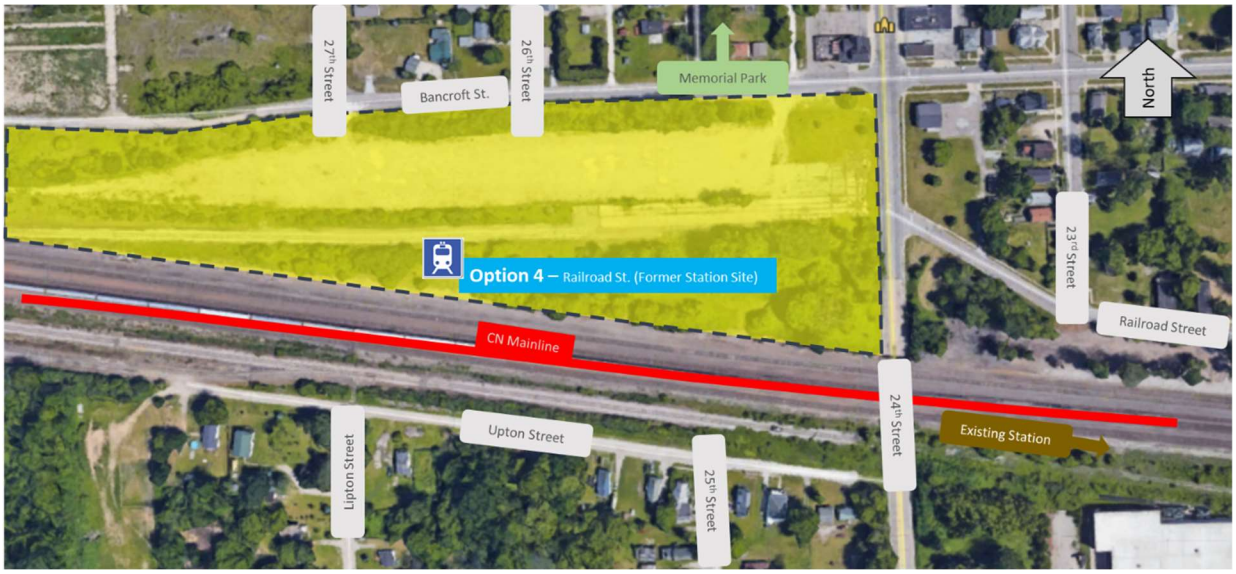
Option 1 - 2223 16th Street (Existing Station) – This was further refined to 3 Sub-Options (1A, 1B, & 1C)



Option 2 – 3563 Griswold Rd. (CN rail yard site)

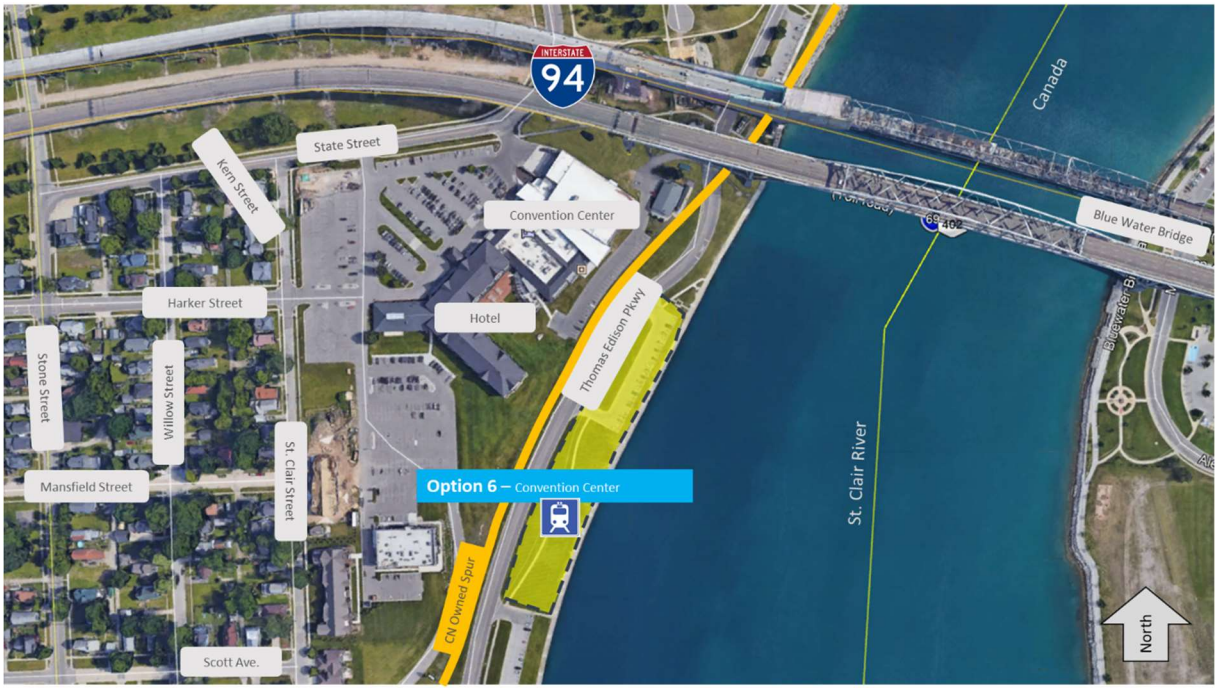
Option 3 – 3750 Griswold Rd. (Port Huron Township - owned land)

Option 4 – 2300 Railroad Street (former station site)

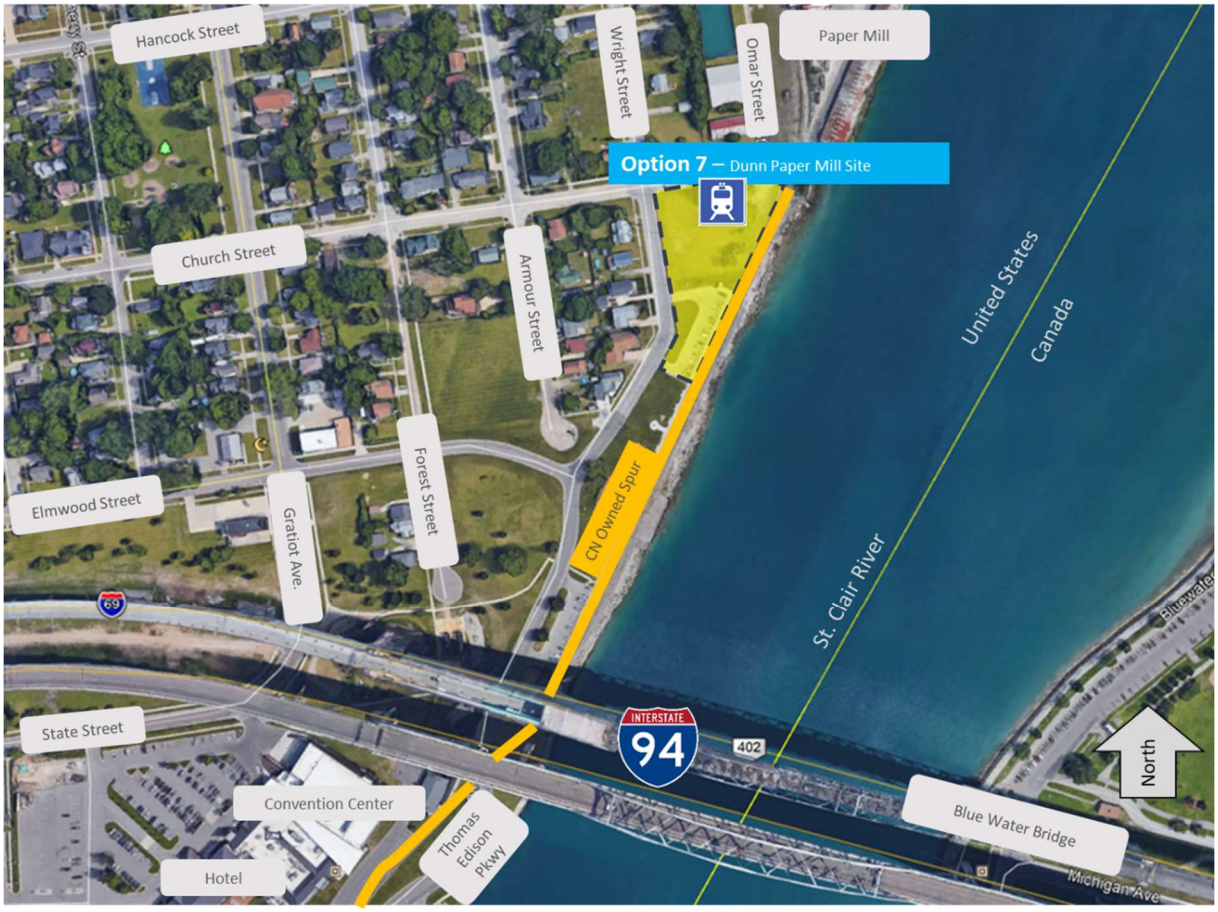


Option 5 – 225 17th Street (industrial site)

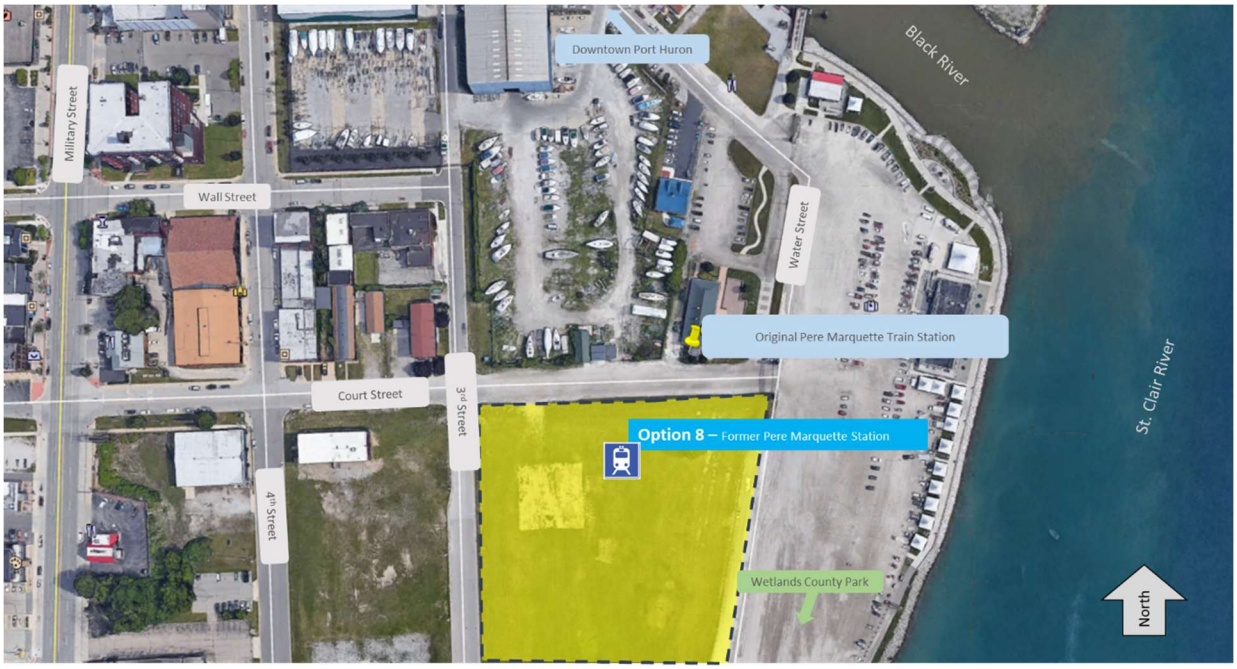
Option 6 – 500 Thomas Edison Parkway (Convention Center)



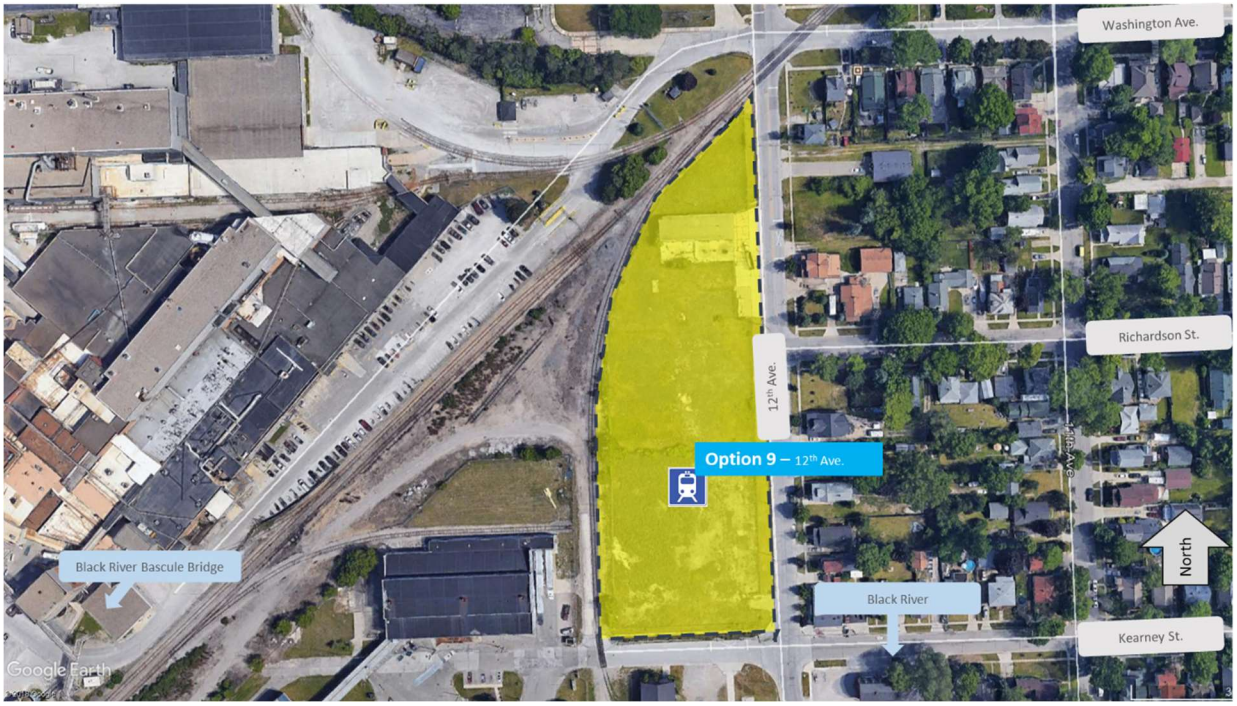
Option 7 – 100 Riverview St. (Dunn Paper Mill)



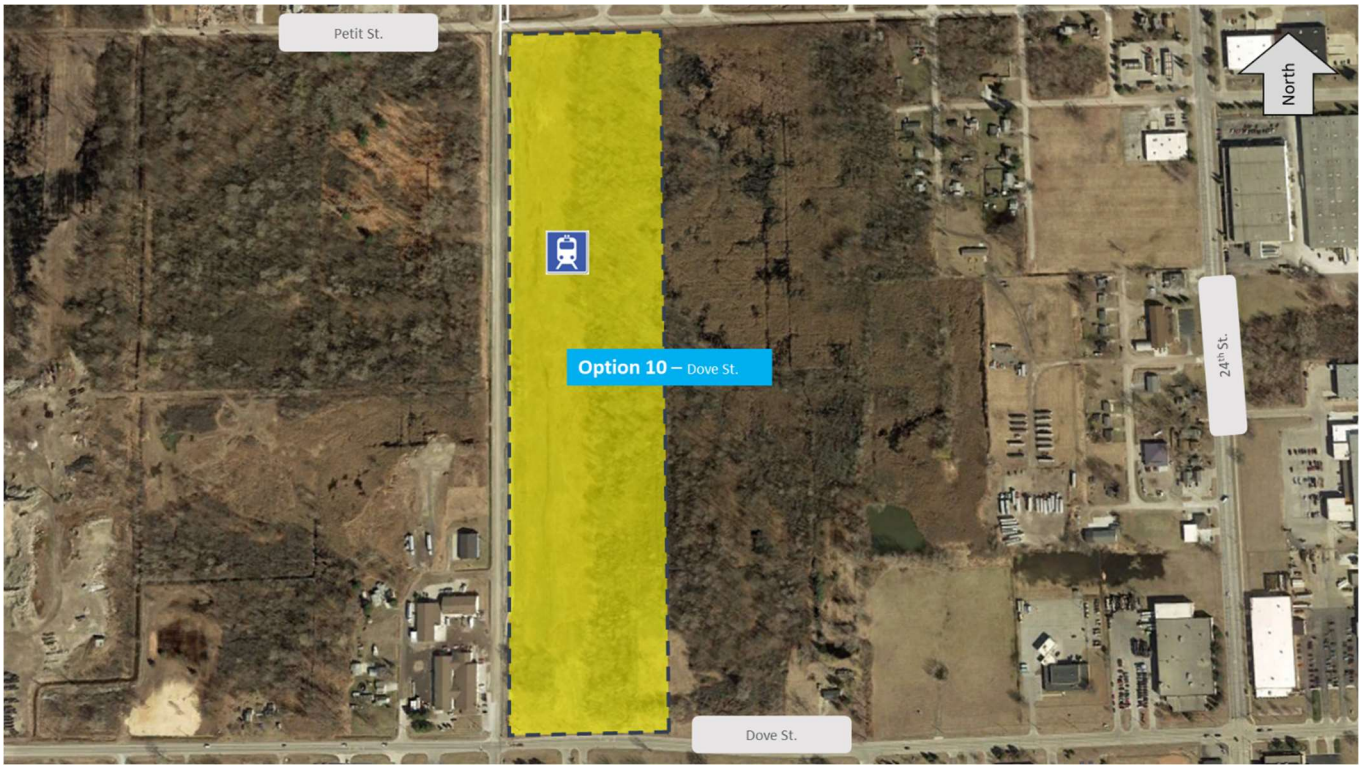
Option 8 – 200 Court St. (Vantage Point - former Pere Marquette Station)



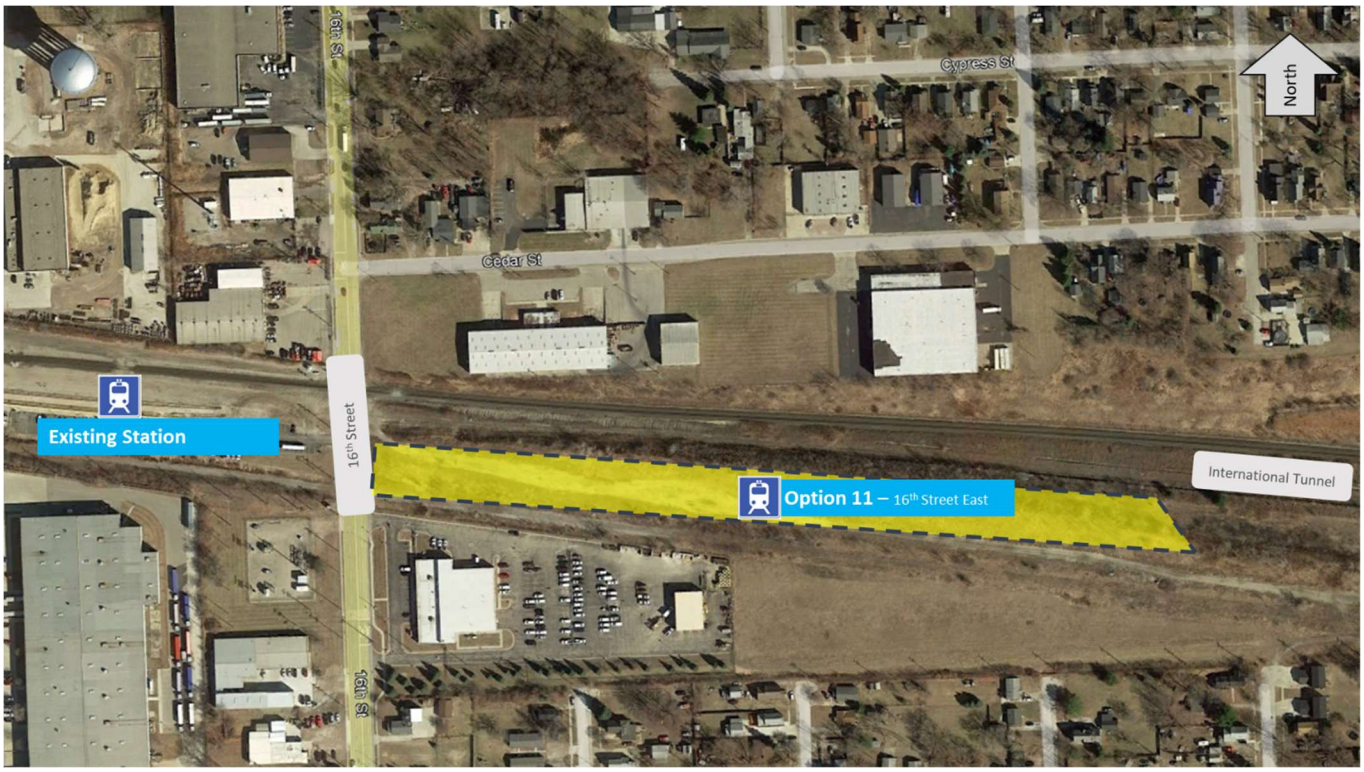
Option 9 – 1300-1384 12th Avenue (12th Ave.)



Option 10 – Dove Street – Added after the 2018 prefeasibility study.



Option 11 – East Side of 16th Street – Added after the 2018 prefeasibility study.



7.2 SUPPORT OF COMMUNITY LAND USE PLANS

No updates to this siting criteria for previous options studied (Options 1-9).

Option 10 (Dove St. site) is within the zone labeled as Light Industrial and Research on the City of Port Huron's future land use map. However, this location is close to the CSXT spur and is accessible by Dove Street. There is recent development on this parcel of land (closer to Dove Street) and potential for additional development.

Option 11 is similar to Option 1 in location and with the community's land use plans.

Option										
1	2	3	4	5	6	7	8	9	10	11

7.3 STATION AREA REQUIREMENT

No updates to this siting criteria for previous options studied (Options 1-9).

Option 10 (Dove St. site) is an undeveloped parcel with approximately 90 acres. Much of this parcel is forested wetland and not suitable for development, however, the area along Dove St. and along the east edge of the CSXT rail spur seem appropriate for development. A full-length boarding platform could be provided parallel to the CSXT rail spur and a new siding constructed as well for boarding and maintenance.

Option 11 (East Side of 16th Street) will provide for area to construct a new station with a full length level boarding platform. It will provide more parking than Option 1A, however, Option 11 would likely require parking on the west side of 16th St. and a way for patrons to safely cross the road (similar to Option 1B).

Option										
1	2	3	4	5	6	7	8	9	10	11

7.4 RAILROAD AGREEMENT

Option 1 (current station site) remains viable with respect to railroad operations. Sub options have been developed (1A, 1B, and 1C) with more discussion and refinement.

Option 2 (CN Railyard site) has been downgraded for feasibility from the 2018 study based on its location north of the CN mainline. Discussions with CN RR as part of this update have revealed numerous freight operations concerns and associated customs checks that may result in passenger service delays and unpredictable interruptions to service.

Option 3 (Port Huron Township land site) and Options 5 thru 7 and 9 (industrial site, convention center site, and Dunn Papermill site, 12th Ave. site) are located along the CN rail spur to the north and are similarly downgraded based on CN operations and customs check potential for delayed/interrupted passenger service.

Option 8 (Vantage Point - former Pere Marquette station site) remains unchanged.

Option 10 (Dove Street site) would require new track constructed south of the existing CSXT RR yard in order to avoid conflicts with their rail yard. Preliminary layouts of track south of the CSXT rail yard were developed which includes a reverse curve to pass under the existing Michigan Road grade separation, however, this would require reduction in yard track at the west end of CSXT's yard. Impacts to the yard are feasible (variant 10C). Variant 10A

and 10B would utilize the a "backup move" to the east by heading north from the new station and then east along the CSXT tracks over 24th Street where the train would stop and reverse direction and gain access to the CN RR south main. Another alternative would be to provide a new at-grade separation bridge with the new passenger track siding, however, the switch to mainline would be complicated by the CN mainline to the south at this location and this variant was not studied further.

Option 11 (East Side of 16th St.) would operate similar to Option 1 but would require acquisition of CN RR R/W. This option would would also require a new at-grade RR crossing over 16th Street which, by State of Michigan law, would require another at-grade crossing be eliminated as mitigation. This is difficult and may prohibit development of Option 11 further if a mitigation location cannot be identified.

Option										
1	2	3	4	5	6	7	8	9	10	11

7.5 PROXIMITY TO TRIP ORIGINS AND DESTINATIONS

An informal survey of license plate origins was conducted and found that 40% of vehicles over a week period had Canadian plates.

No changes to existing options were noted in this update.

Option 10 (Dove Street site) would have a marginally longer drive from the freeway than the existing site, however, it is a simple route and located off of Dove St.

Option 11 (East Side of 16th St.) would be similar to Option 1 in drive time to the station.

Option										
1	2	3	4	5	6	7	8	9	10	11

7.6 NOISE IMPACTS

Options 1-9 remain unchanged.

Option 10 (Dove St. site) may require further study given the proximity of the new site, however, it is not evident that there are a large number of receptors in the area.

Option 11 (East Side of 16th St.) would have similar impacts as Option 1.

Option										
1	2	3	4	5	6	7	8	9	10	11

7.7 TRIP TIME

Sites located north of the CN mainline (Options 2-7) have been downgraded due to the potential for delays associated with the CN operations and customs checks.

Option 10 (Dove Street site) would have reliable times with no significant delay is service if a new grade separation is provided at Michigan Road can be completed and would work with the switch to the CN mainline to the south. The latter is uncertain. In addition, operations with the CSXT spur line would need to be considered in a station at this site.

Option 11 (East Side of 16th St.) would have similar times to Option 1, however, a little more time is required for crossing 16th Street.

Option										
1	2	3	4	5	6	7	8	9	10	11

7.8 TRAFFIC IMPACTS

No changes to Options 1-9.

Option 10 (Dove Street site) would require additional traffic study for vehicles navigating from the freeway to the site. Major impacts are not anticipated.

Option 11 (East Side of 16th St.) would have similar impacts as Option 1.

Option										
1	2	3	4	5	6	7	8	9	10	11

7.9 CONVENIENT TRANSPORTATION CONNECTIVITY

No changes to Options 1-9.

Option 10 (Dove Street site) would have similar connectivity to options 1-4.

Option 11 (East Side of 16th St.) would be similar to Option 1.

Option										
1	2	3	4	5	6	7	8	9	10	11

7.10 CATER TO NIGHTTIME SERVICES

No updates to Option 1-9.

Option 10 (Dove Street site) has additional land nearby that could be developed to cater to nighttime service. Hotels, restaurants, etc.

Option 11 (East Side of 16th St.) would be similar to Option 1.

Option										
1	2	3	4	5	6	7	8	9	10	11

7.11 COST

Costs for each options are discussed in Section 9.0 of this study. A summary of options is not provided for this site criteria as funding has yet to be determined.

7.12 ABILITY TO ACCOMODATE FUTURE CROSS-BORDER PASSENGER SERVICE

No changes to Options 1-9.

Option 10 (Dove Street site) would be located south of the CN mainline without an existing connection.

Option 11 (East Side of 16th St.) would require trains to enter the USA, proceed across 16th St. along the CN RR mainline then make a switch to the existing Amtrak siding and reverse back over 16th St. and get to the station. A direct connection out of the tunnel is not feasible due to the grades in the area.

Option										
1	2	3	4	5	6	7	8	9	10	11

7.13 REDUCTION OF SITE OPTIONS

Based on further discussions with the stakeholders, Options 2 and 3 have been removed from further consideration. Site options that are north of the CN mainline will be subject to long and unpredictable delays due to railroad operations and customs checks. The trains coming into the USA from Canada are a mile long and must be broken up at the rail yard which occupies the mainline track during portions of the day. In addition, when customs checks are performed, delays can be longer. This potential conflict is not as significant with the current nighttime passenger service, however, future expansion of service would be jeopardized.

Option 1c is removed from further consideration due to the initial capital costs of a parking structure as well as the long-term maintenance costs associated with it. This option also does not provide the desire parking spaces.

Option 1a and 1b are still considered for further study.

Option 8 has significant costs premiums compared with the other options. It has been removed from further consideration.

Option 10 and its 3 variants have significant challenges associated with the CSXT impacts, however, if an agreement can be made with CSXT then these options are feasible.

Option 11 has challenges with a new at-grade RR crossing at 16th Street and the need for overflow parking across 16th Street but is a feasible option.

Updated summary of siting criteria is summarized below.

Siting Criteria	Option										
	1	2	3	4	5	6	7	8	9	10	11
Support Community Land Use Plans											
Station Area Requirement											
Railroad Agreement											
Trip Origins & Destinations											
Noise											
Trip Time											
Traffic											
Transportation Connectivity											
Cater to Nighttime Services											
Cost											
Cross-Border Passenger Service											

7.14 FURTHER STUDY

7.14.1 Option 1 - 2223 16th Street (Current Station)

Option 1 was studied in further detail. Sub-options were developed (1A, 1B, and 1C). It is recommended to progress Option 1a and 1b into further study. Option 10a, 10b, and 10c were developed as part of the continuation Pre-NEPA study and considered feasible and should be further studied. Option 11 was developed as part of the continuation Pre-NEPA study and is considered feasible and should be further studied.

8.0 Environmental Justice

No updates to the options.

9.0 Preliminary Estimate of Costs

Anticipated costs of a new station, or of improvements at the existing station, may include parking, station building, outdoor lighting, platforms, track work, drainage, and road access.

The preliminary cost estimates are capital costs for construction, and do not include real estate costs or annual maintenance costs. Furthermore, environmental clean-up may be required at the sites identified, or within the existing rail corridor(s) which cannot be determined until a comprehensive investigation is performed.

In all options, it is assumed for building costs that amenities for Amtrak crews would be provided given that the station is at the end of the service line.

All costs are estimated in dollars projected out to Year 2030.

9.1 PRELIMINARY ESTIMATED COST AT EACH SITE

Estimated costs (high level and preliminary in nature) have been prepared for the purposes of comparing individual options and are shown in the table below. A more refined estimate of costs should be prepared for budgeting and planning purposes once a preferred option has been identified.

Summary of Preliminary Costs for Options – Updated to 2030 Dollars

Option	Estimated Costs
Option 1a – 2223 16th St. (Current Station Utilizing CSX Property & No Ped Bridge)	$7.7M
Option 1b – 2223 16th St. (Current Station Utilizing CN Property to East)	$8.5M
Option 1c – 2223 16th St. (Current Station Utilizing Parking Structure)	$11.3M
Option 2 – 3563 Griswold Rd. (CN Rail yard site)	$13.6M
Option 3 – 3750 Griswold Rd. (Port Huron Township owned land)	$12.7M
Option 4 – 2300 Railroad Street (former station site)	$17.3M
Option 5 – 225 17th St. (industrial site)	$27.6M
Option 6 – 500 Thomas Edison Parkway (Convention Center)	$36.1M
Option 7 – 100 Riverview St. (Dunn Papermill)	$38.6M
Option 8 – 200 Court St. (Vantage Point - former Pere Marquette Station)	$20.6M
Option 9 – 1300-1384 12th Avenue (12th Ave.)	$32.1M
Option 10a – Dove Street (Utilize CSXT Tracks w/ Back Up Move to East)	$10.6M
Option 10b – Dove Street (Utilize New Track w/ Back Up Move to East)	$17.9M
Option 10c – Dove Street (Utilize CSXT Tracks w/ Direct Connect to West)	$12.8M
Option 11 – 16th Street (East Side of 16th Street)	$9.0M

Option 1A - Existing Station Site Using CSX Property
June 12, 2023

Description	Quantity	Unit	Unit Cost	Cost
Utilities for New Station	1	LS	$35,000.00	$35,000.00
Building Pad for New Station	5000	Sft	$2.05	$10,250.00
Misc. Site Improvements at Station	1	LS	$12,500.00	$12,500.00
Directional Signing for Parking	1	LS	$3,200.00	$3,200.00
Parking Lot Pavement (10"&4") 240 Spac	84000	Sft	$4.25	$357,000.00
New Station Building	5000	Sft	$190.00	$950,000.00
Parking Lot Drainage	84000	Sft	$1.25	$105,000.00
Parking Lot Curb and Gutter	2600	Ft	$19.00	$49,400.00
Parking Lot Lighting	14	Ea	$6,300.00	$88,200.00
Site Landscaping	1	LS	$63,000.00	$63,000.00
Platform Canopy (700'x12')	8400	Sft	$69.00	$579,600.00
Platform Lighting & Security	8400	Sft	$10.00	$84,000.00
Platform Public Address and Info Display	1	LS	$25,000.00	$25,000.00
Road Improvements (16th Street)	1	Ea	$100,000.00	$100,000.00
Demolition of Existing Building	1800	Sft	$7.50	$13,500.00
Temporary Maintenance of Existing Service	1	Ea	$500,000.00	$500,000.00
Railroad Permit to Enter and Insurance Fees	1	Ea	$28,000.00	$28,000.00
Railroad Review Fees	1	Ea	$140,000.00	$140,000.00
Railroad Flagging & Inspection	180	Days	$2,800.00	$504,000.00
Direct Cost of Work Subtotal:				**$3,647,650.00**
Construction General Conditions & Requirements			6%	$219,000.00
Contractor Staff, Insurance, Fees			8%	$292,000.00
Project Soft Costs (Permits, Fees, Legal, Etc.)			4%	$146,000.00
Design and Construction Engineering Costs:			30%	$1,095,000.00
Support Costs:				**$1,752,000.00**
Contingency:			15%	$810,000.00
Inflation (7 years at 4%):			28%	$1,512,000.00
Contingency and Inflation Subtotal:				**$2,322,000.00**

Total Cost (in Year 2030 Dollars): $7,721,650.00

Does not include real estate costs.
Does not include maintenance costs.
Does not include environmental costs.
Does not include BWAT costs.

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Option 1b - Existing Station Site Using CN Property
June 12, 2023

Description	Quantity	Unit	Unit Cost	Cost
Utilities for New Station	1	LS	$35,000.00	$35,000.00
Building Pad for New Station	5000	Sft	$2.05	$10,250.00
Misc. Site Improvements at Station	1	LS	$12,500.00	$12,500.00
Directional Signing for Parking	1	LS	$3,200.00	$3,200.00
Parking Lot Pavement (10"&4") 240 Spac	84000	Sft	$4.25	$357,000.00
New Station Building	5000	Sft	$190.00	$950,000.00
Parking Lot Drainage	84000	Sft	$1.25	$105,000.00
Parking Lot Curb and Gutter	2600	Ft	$19.00	$49,400.00
Parking Lot Lighting	14	Ea	$6,300.00	$88,200.00
Site Landscaping	1	LS	$63,000.00	$63,000.00
Platform Canopy (700'x12')	8400	Sft	$69.00	$579,600.00
Platform Lighting & Security	8400	Sft	$10.00	$84,000.00
Platform Public Address and Info Display	1	LS	$25,000.00	$25,000.00
Road Improvements (16th Street)	1	Ea	$100,000.00	$100,000.00
Pedestrian Bridge (across 16th Street)	1200	Sft	$280.00	$336,000.00
Demolition of Existing Building	1800	Sft	$7.50	$13,500.00
Remove Existing Pavement	3800	Syd	$7.50	$28,500.00
Temporary Maintenance of Existing Service	1	Ea	$500,000.00	$500,000.00
Railroad Permit to Enter and Insurance Fees	1	Ea	$28,000.00	$28,000.00
Railroad Review Fees	1	Ea	$140,000.00	$140,000.00
Railroad Flagging & Inspection	180	Days	$2,800.00	$504,000.00
Direct Cost of Work Subtotal:				**$4,012,150.00**
Construction General Conditions & Requirements			6%	$241,000.00
Contractor Staff, Insurance, Fees			8%	$321,000.00
Project Soft Costs (Permits, Fees, Legal, Etc.)			4%	$161,000.00
Design and Construction Engineering Costs:			30%	$1,204,000.00
Support Costs:				**$1,927,000.00**
Contingency:			15%	$891,000.00
Inflation (7 years at 4%):			28%	$1,663,000.00
Contingency and Inflation Subtotal:				**$2,554,000.00**

Total Cost (in Year 2030 Dollars): $8,493,150.00

Does not include real estate costs.
Does not include maintenance costs.
Does not include environmental costs.
Does not include BWAT costs.

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Option 1c - Existing Station Site using Parking Deck
June 12, 2023

Description	Quantity	Unit	Unit Cost	Cost
Utilities for New Station	1	LS	$35,000.00	$35,000.00
Building Pad for New Station	5000	Sft	$2.05	$10,250.00
Misc. Site Improvements at Station	1	LS	$12,500.00	$12,500.00
Directional Signing for Parking	1	LS	$3,200.00	$3,200.00
Parking Lot Pavement (10"&4") 240 Spac	84000	Sft	$4.25	$357,000.00
New Station Building	5000	Sft	$190.00	$950,000.00
Parking Lot Drainage	84000	Sft	$1.25	$105,000.00
Parking Lot Curb and Gutter	2600	Ft	$19.00	$49,400.00
Parking Lot Lighting	14	Ea	$6,300.00	$88,200.00
Site Landscaping	1	LS	$63,000.00	$63,000.00
Platform Canopy (700'x12')	8400	Sft	$69.00	$579,600.00
Platform Lighting & Security	8400	Sft	$10.00	$84,000.00
Platform Public Address and Info Display	1	LS	$25,000.00	$25,000.00
Road Improvements (16th Street)	1	Ea	$100,000.00	$100,000.00
Parking Deck	26000	Sft	$80.00	$2,080,000.00
Remove Existing Pavement	3800	Syd	$7.50	$28,500.00
Temporary Maintenance of Existing Service	1	Ea	$500,000.00	$500,000.00
Railroad Permit to Enter and Insurance Fees	1	Ea	$2,800.00	$2,800.00
Railroad Review Fees	1	Ea	$140,000.00	$140,000.00
Railroad Flagging & Inspection	180	Days	$2,800.00	$504,000.00
Direct Cost of Work Subtotal:				**$5,717,450.00**
Construction General Conditions & Requirements			6%	$344,000.00
Contractor Staff, Insurance, Fees			8%	$458,000.00
Project Soft Costs (Permits, Fees, Legal, Etc.)			4%	$229,000.00
Design and Construction Engineering Costs:			20%	$1,144,000.00
Support Costs:				**$2,175,000.00**
Contingency:			15%	$1,184,000.00
Inflation (7 years at 4%):			28%	$2,210,000.00
Contingency and Inflation Subtotal:				**$3,394,000.00**

Total Cost (in Year 2030 Dollars): $11,286,450.00

Does not include real estate costs.
Does not include maintenance costs.
Does not include environmental costs.
Does not include BWAT costs.

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Option 2 - CN Railyard Site
June 12, 2023

Description	Quantity	Unit	Unit Cost	Cost
Utilities for New Station	1	LS	$50,000.00	$50,000.00
Building Pad for New Station	5000	Sft	$2.05	$10,250.00
Misc. Site Improvements at Station	1	LS	$12,500.00	$12,500.00
Directional Signing for Parking	1	LS	$3,200.00	$3,200.00
Parking Lot Pavement (10"&4") 240 Spaces	84000	Sft	$4.25	$357,000.00
New Station Building	5000	Sft	$190.00	$950,000.00
Parking Lot Drainage	84000	Sft	$1.25	$105,000.00
Parking Lot Curb and Gutter	2600	Ft	$19.00	$49,400.00
Parking Lot Lighting	14	Ea	$6,300.00	$88,200.00
Site Landscaping	1	LS	$63,000.00	$63,000.00
Platform Canopy (700'x12')	8400	Sft	$69.00	$579,600.00
Platform Lighting & Security	8400	Sft	$10.00	$84,000.00
Platform Public Address and Info Display	1	LS	$25,000.00	$25,000.00
Platform Construction (Level Boarding)	8400	Sft	$28.00	$235,200.00
Road Improvements (Griswold Rd.)	1	LS	$100,000.00	$100,000.00
Crossover in Wye (including signal work)	1	LS	$448,000.00	$448,000.00
New Siding & Track	4200	Ft	$308.00	$1,293,600.00
#10 Turnout	4	Ea	$140,000.00	$560,000.00
#8 Turnout	1	Ea	$105,000.00	$105,000.00
Relocate Track, Track Rem, and Turnout Rem	1	LS	$231,000.00	$231,000.00
Railroad Permit to Enter and Insurance Fees	1	Ea	$14,000.00	$14,000.00
Railroad Review Fees	1	Ea	$70,000.00	$70,000.00
Railroad Flagging & Inspection	180	Days	$5,600.00	$1,008,000.00
Direct Cost of Work Subtotal:				**$6,441,950.00**
Construction General Conditions & Requirements			6%	$387,000.00
Contractor Staff, Insurance, Fees			8%	$516,000.00
Project Soft Costs (Permits, Fees, Legal, Etc.)			4%	$258,000.00
Design and Construction Engineering Costs:			30%	$1,933,000.00
Support Costs:				**$3,094,000.00**
Contingency:			15%	$1,431,000.00
Inflation (7 years at 4%):			28%	$2,671,000.00
Contingency and Inflation Subtotal:				**$4,102,000.00**

Total Cost (in Year 2030 Dollars): $13,637,950.00

Does not include real estate costs.
Does not include maintenance costs.
Does not include environmental costs.
Does not include BWAT costs.

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Option 3 - Port Huron Township Owned Land
June 12, 2023

Description	Quantity	Unit	Unit Cost	Cost
Utilities for New Station	1	LS	$50,000.00	$50,000.00
Building Pad for New Station	5000	Sft	$2.05	$10,250.00
Misc. Site Improvements at Station	1	LS	$12,500.00	$12,500.00
Directional Signing for Parking	1	LS	$3,200.00	$3,200.00
Parking Lot Pavement (10"&4") 240 Spaces	84000	Sft	$4.25	$357,000.00
New Station Building	5000	Sft	$190.00	$950,000.00
Parking Lot Drainage	84000	Sft	$1.25	$105,000.00
Parking Lot Curb and Gutter	2600	Ft	$19.00	$49,400.00
Parking Lot Lighting	14	Ea	$6,300.00	$88,200.00
Site Landscaping	1	LS	$63,000.00	$63,000.00
Platform Canopy (700'x12')	8400	Sft	$69.00	$579,600.00
Platform Lighting & Security	8400	Sft	$10.00	$84,000.00
Platform Public Address and Info Display	1	LS	$25,000.00	$25,000.00
Platform Construction (Level Boarding)	8400	Sft	$28.00	$235,200.00
Road Improvements (Griswold Rd.)	1	LS	$70,000.00	$70,000.00
Clearing and Tree Removal	5	Acre	$14,000.00	$70,000.00
New Siding & Track	3200	Ft	$308.00	$985,600.00
Cross over in Wye (including signal work)	1	LS	$448,000.00	$448,000.00
#12 Turnout	2	Ea	$175,000.00	$350,000.00
Track Removal	1	LS	$7,000.00	$7,000.00
At Grade X-ing (Griswold)	1	LS	$350,000.00	$350,000.00
Railroad Permit to Enter and Insurance Fees	1	Ea	$14,000.00	$14,000.00
Railroad Review Fees	1	Ea	$70,000.00	$70,000.00
Railroad Flagging & Inspection	180	Days	$5,600.00	$1,008,000.00
Direct Cost of Work Subtotal:				**$5,984,950.00**
Construction General Conditions & Requirements			6%	$360,000.00
Contractor Staff, Insurance, Fees			8%	$479,000.00
Project Soft Costs (Permits, Fees, Legal, Etc.)			4%	$240,000.00
Design and Construction Engineering Costs:			30%	$1,796,000.00
Support Costs:				**$2,875,000.00**
Contingency:			15%	$1,329,000.00
Inflation (7 years at 4%):			28%	$2,481,000.00
Contingency and Inflation Subtotal:				**$3,810,000.00**

Total Cost (in Year 2030 Dollars): $12,669,950.00

Does not include real estate costs.
Does not include maintenance costs.
Does not include environmental costs.
Does not include BWAT costs.

Option 4 - Railroad Street Site
June 12, 2023

Description	Quantity	Unit	Unit Cost	Cost
Utilities for New Station	1	LS	$50,000.00	$50,000.00
Building Pad for New Station	5000	Sft	$2.05	$10,250.00
Misc. Site Improvements at Station	1	LS	$12,500.00	$12,500.00
Directional Signing for Parking	1	LS	$3,200.00	$3,200.00
Parking Lot Pavement (10"&4") 240 Spaces	84000	Sft	$4.25	$357,000.00
New Station Building	5000	Sft	$190.00	$950,000.00
Parking Lot Drainage	84000	Sft	$1.25	$105,000.00
Parking Lot Curb and Gutter	2600	Ft	$19.00	$49,400.00
Parking Lot Lighting	14	Ea	$6,300.00	$88,200.00
Site Landscaping	1	LS	$63,000.00	$63,000.00
Platform Canopy (700'x12')	8400	Sft	$69.00	$579,600.00
Platform Lighting & Security	8400	Sft	$10.00	$84,000.00
Platform Public Address and Info Display	1	LS	$25,000.00	$25,000.00
Platform Construction (Level Boarding)	8400	Sft	$28.00	$235,200.00
Road Improvements (24th and Bancroft)	1	LS	$70,000.00	$70,000.00
Crossover in Wye (including signal work)	1	LS	$448,000.00	$448,000.00
New Siding and Track	8800	Ft	$308.00	$2,710,400.00
#10 Turnout	4	Ea	$140,000.00	$560,000.00
#8 Turnout	1	Ea	$105,000.00	$105,000.00
Relocate Track, Track Rem, and Turnout Rem	1	LS	$231,000.00	$231,000.00
At Grade X-ing (Griswold)	1	LS	$350,000.00	$350,000.00
Railroad Permit to Enter and Insurance Fees	1	Ea	$14,000.00	$14,000.00
Railroad Review Fees	1	Ea	$70,000.00	$70,000.00
Railroad Flagging & Inspection	180	Days	$5,600.00	$1,008,000.00
Direct Cost of Work Subtotal:				**$8,178,750.00**
Construction General Conditions & Requirements			6%	$491,000.00
Contractor Staff, Insurance, Fees			8%	$655,000.00
Project Soft Costs (Permits, Fees, Legal, Etc.)			4%	$328,000.00
Design and Construction Engineering Costs:			30%	$2,454,000.00
Support Costs:				**$3,928,000.00**
Contingency:			15%	$1,817,000.00
Inflation (7 years at 4%):			28%	$3,390,000.00
Contingency and Inflation Subtotal:				**$5,207,000.00**

Total Cost (in Year 2030 Dollars): $17,313,750.00

Does not include real estate costs.
Does not include maintenance costs.
Does not include environmental costs.
Does not include BWAT costs.

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Option 5 - Industrial Site
June 12, 2023

Description	Quantity	Unit	Unit Cost	Cost
Utilities for New Station	1	LS	$50,000.00	$50,000.00
Building Pad for New Station	5000	Sft	$2.05	$10,250.00
Misc. Site Improvements at Station	1	LS	$12,500.00	$12,500.00
Directional Signing for Parking	1	LS	$3,200.00	$3,200.00
Parking Lot Pavement (10"&4") 240 Spaces	84000	Sft	$4.25	$357,000.00
New Station Building	5000	Sft	$190.00	$950,000.00
Parking Lot Drainage	84000	Sft	$1.25	$105,000.00
Parking Lot Curb and Gutter	2600	Ft	$19.00	$49,400.00
Parking Lot Lighting	14	Ea	$6,300.00	$88,200.00
Site Landscaping	1	LS	$63,000.00	$63,000.00
Platform Canopy (700'x12')	8400	Sft	$69.00	$579,600.00
Platform Lighting & Security	8400	Sft	$10.00	$84,000.00
Platform Public Address and Info Display	1	LS	$25,000.00	$25,000.00
Platform Construction (Level Boarding)	8400	Sft	$28.00	$235,200.00
Road Improvements (Runnels/Water St.)	1	LS	$70,000.00	$70,000.00
New Siding and Track	12000	Ft	$308.00	$3,696,000.00
#12 Turnout	2	Ea	$175,000.00	$350,000.00
Crossover in Wye (including signal work)	1	LS	$448,000.00	$448,000.00
Track Removal	1	LS	$7,000.00	$7,000.00
Track Drainage	2.3	Miles	$700,000.00	$1,610,000.00
At Grade X-ing Improvement (3 locations)	3	Ea	$70,000.00	$210,000.00
Rail Operational Modifications at Wye	1	LS	$2,800,000.00	$2,800,000.00
At Grade X-ing (Griswold)	1	LS	$490,000.00	$490,000.00
Railroad Permit to Enter and Insurance Fees	1	Ea	$10,000.00	$10,000.00
Railroad Review Fees	1	Ea	$50,000.00	$50,000.00
Railroad Flagging & Inspection	180	Days	$4,000.00	$720,000.00
Direct Cost of Work Subtotal:				**$13,073,350.00**
Construction General Conditions & Requirements			6%	$785,000.00
Contractor Staff, Insurance, Fees			8%	$1,046,000.00
Project Soft Costs (Permits, Fees, Legal, Etc.)			4%	$523,000.00
Design and Construction Engineering Costs:			30%	$3,923,000.00
Support Costs:				**$6,277,000.00**
Contingency:			15%	$2,903,000.00
Inflation (7 years at 4%):			28%	$5,419,000.00
Contingency and Inflation Subtotal:				**$8,322,000.00**

Total Cost (in Year 2030 Dollars): $27,672,350.00

Does not include real estate costs.
Does not include maintenance costs.
Does not include environmental costs.
Does not include BWAT costs.

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Option 6 - Convention Center Site
June 12, 2023

Description	Quantity	Unit	Unit Cost	Cost
Utilities for New Station	1	LS	$50,000.00	$50,000.00
Building Pad for New Station	5000	Sft	$2.05	$10,250.00
Misc. Site Improvements at Station	1	LS	$12,500.00	$12,500.00
Directional Signing for Parking	1	LS	$3,200.00	$3,200.00
Parking Lot Pavement (10"&4") 240 Spaces	84000	Sft	$4.25	$357,000.00
New Station Building	5000	Sft	$190.00	$950,000.00
Parking Lot Drainage	84000	Sft	$1.25	$105,000.00
Parking Lot Curb and Gutter	2600	Ft	$19.00	$49,400.00
Parking Lot Lighting	14	Ea	$6,300.00	$88,200.00
Site Landscaping	1	LS	$63,000.00	$63,000.00
Platform Canopy (700'x12')	8400	Sft	$69.00	$579,600.00
Platform Lighting & Security	8400	Sft	$10.00	$84,000.00
Platform Public Address and Info Display	1	LS	$25,000.00	$25,000.00
Platform Construction (Level Boarding)	8400	Sft	$28.00	$235,200.00
Road Improvements (Thomas Edison Parkway	1	LS	$70,000.00	$70,000.00
New Siding & Track	19300	Ft	$308.00	$5,944,400.00
Crossover in Wye (including signal work)	1	LS	$448,000.00	$448,000.00
#12 Turnout	2	Ea	$175,000.00	$350,000.00
Track Removal	1	LS	$7,000.00	$7,000.00
Track Drainage	3.7	Miles	$700,000.00	$2,590,000.00
At Grade X-ing Improvement (11 locations)	11	Ea	$70,000.00	$770,000.00
Bascule Bridge Rehab over Black River	1	LS	$2,800,000.00	$2,800,000.00
At Grade X-ing (Griswold)	1	LS	$490,000.00	$490,000.00
Railroad Permit to Enter and Insurance Fees	1	Ea	$10,000.00	$10,000.00
Railroad Review Fees	1	Ea	$50,000.00	$50,000.00
Railroad Flagging & Inspection	230	Days	$4,000.00	$920,000.00
Direct Cost of Work Subtotal:				**$17,061,750.00**
Construction General Conditions & Requirements			6%	$1,024,000.00
Contractor Staff, Insurance, Fees			8%	$1,365,000.00
Project Soft Costs (Permits, Fees, Legal, Etc.)			4%	$683,000.00
Design and Construction Engineering Costs:			30%	$5,119,000.00
Support Costs:				**$8,191,000.00**
Contingency:			15%	$3,788,000.00
Inflation (7 years at 4%):			28%	$7,071,000.00
Contingency and Inflation Subtotal:				**$10,859,000.00**

Total Cost (in Year 2030 Dollars): $36,111,750.00

Does not include real estate costs.
Does not include maintenance costs.
Does not include environmental costs.
Does not include BWAT costs.

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Option 7 - Dunn Paper Mill Site
June 12, 2023

Description	Quantity	Unit	Unit Cost	Cost
Utilities for New Station	1	LS	$50,000.00	$50,000.00
Building Pad for New Station	5000	Sft	$2.05	$10,250.00
Misc. Site Improvements at Station	1	LS	$12,500.00	$12,500.00
Directional Signing for Parking	1	LS	$3,200.00	$3,200.00
Parking Lot Pavement (10"&4") 240 Spaces	84000	Sft	$4.25	$357,000.00
New Station Building	5000	Sft	$190.00	$950,000.00
Parking Lot Drainage	84000	Sft	$1.25	$105,000.00
Parking Lot Curb and Gutter	2600	Ft	$19.00	$49,400.00
Parking Lot Lighting	14	Ea	$6,300.00	$88,200.00
Site Landscaping	1	LS	$63,000.00	$63,000.00
Platform Canopy (700'x12')	8400	Sft	$69.00	$579,600.00
Platform Lighting & Security	8400	Sft	$10.00	$84,000.00
Platform Public Address and Info Display	1	LS	$25,000.00	$25,000.00
Platform Construction (Level Boarding)	8400	Sft	$28.00	$235,200.00
Road Improvements (Church/Wright/Omar)	1	LS	$100,000.00	$100,000.00
New Siding & Track	21600	Ft	$308.00	$6,652,800.00
Crossover in Wye (including signal work)	1	LS	$448,000.00	$448,000.00
#12 Turnout	2	Ea	$175,000.00	$350,000.00
Track Removal	1	LS	$7,000.00	$7,000.00
Track Drainage	4.3	Miles	$700,000.00	$3,010,000.00
At Grade X-ing Improvement (11 locations)	11	Ea	$70,000.00	$770,000.00
Bascule Bridge Rehab over Black River	1	LS	$2,800,000.00	$2,800,000.00
At Grade X-ing (Griswold)	1	LS	$490,000.00	$490,000.00
Railroad Permit to Enter and Insurance Fees	1	Ea	$10,000.00	$10,000.00
Railroad Review Fees	1	Ea	$50,000.00	$50,000.00
Railroad Flagging & Inspection	230	Days	$4,000.00	$920,000.00
Direct Cost of Work Subtotal:				**$18,220,150.00**
Construction General Conditions & Requirements			6%	$1,094,000.00
Contractor Staff, Insurance, Fees			8%	$1,458,000.00
Project Soft Costs (Permits, Fees, Legal, Etc.)			4%	$729,000.00
Design and Construction Engineering Costs:			30%	$5,467,000.00
Support Costs:				**$8,748,000.00**
Contingency:			15%	$4,046,000.00
Inflation (7 years at 4%):			28%	$7,552,000.00
Contingency and Inflation Subtotal:				**$11,598,000.00**

Total Cost (in Year 2030 Dollars): $38,566,150.00

Does not include real estate costs.
Does not include maintenance costs.
Does not include environmental costs.
Does not include BWAT costs.

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Option 8 - Vantage Point (Pere Marquette Station Site)
June 12, 2023

Description	Quantity	Unit	Unit Cost	Cost
Utilities for New Station	1	LS	$50,000.00	$50,000.00
Building Pad for New Station	5000	Sft	$2.05	$10,250.00
Misc. Site Improvements at Station	1	LS	$12,500.00	$12,500.00
Directional Signing for Parking	1	LS	$3,200.00	$3,200.00
Parking Lot Pavement (10"&4") 240 Spaces	84000	Sft	$4.25	$357,000.00
New Station Building	5000	Sft	$190.00	$950,000.00
Parking Lot Drainage	84000	Sft	$1.25	$105,000.00
Parking Lot Curb and Gutter	2600	Ft	$19.00	$49,400.00
Parking Lot Lighting	14	Ea	$6,300.00	$88,200.00
Site Landscaping	1	LS	$63,000.00	$63,000.00
Platform Canopy (700'x12')	8400	Sft	$69.00	$579,600.00
Platform Lighting & Security	8400	Sft	$10.00	$84,000.00
Platform Public Address and Info Display	1	LS	$25,000.00	$25,000.00
Platform Construction (Level Boarding)	8400	Sft	$28.00	$235,200.00
Road Improvements (Court Street)	1	LS	$140,000.00	$140,000.00
New Siding & Track	11000	Ft	$308.00	$3,388,000.00
Track Drainage	2	Miles	$700,000.00	$1,400,000.00
Grade Separation @ Military Street	1	LS	$1,400,000.00	$1,400,000.00
Clearing and Tree Removal	5	Acre	$14,000.00	$70,000.00
At Grade X-ing (10th Street & 16th Street)	1	LS	$490,000.00	$490,000.00
Railroad Permit to Enter and Insurance Fees	1	Ea	$2,800.00	$2,800.00
Railroad Review Fees	1	Ea	$50,000.00	$50,000.00
Railroad Flagging & Inspection	40	Days	$4,000.00	$160,000.00
Direct Cost of Work Subtotal:				**$9,713,150.00**
Construction General Conditions & Requirements			6%	$583,000.00
Contractor Staff, Insurance, Fees			8%	$778,000.00
Project Soft Costs (Permits, Fees, Legal, Etc.)			4%	$389,000.00
Design and Construction Engineering Costs:			30%	$2,914,000.00
Support Costs:				**$4,664,000.00**
Contingency:			15%	$2,157,000.00
Inflation (7 years at 4%):			28%	$4,026,000.00
Contingency and Inflation Subtotal:				**$6,183,000.00**

Total Cost (in Year 2030 Dollars): $20,560,150.00

Does not include real estate costs.
Does not include maintenance costs.
Does not include environmental costs.
Does not include BWAT costs.

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Option 9 - 12th Ave.
June 12, 2023

Description	Quantity	Unit	Unit Cost	Cost
Utilities for New Station	1	LS	$50,000.00	$50,000.00
Building Pad for New Station	5000	Sft	$2.05	$10,250.00
Misc. Site Improvements at Station	1	LS	$12,500.00	$12,500.00
Directional Signing for Parking	1	LS	$3,200.00	$3,200.00
Parking Lot Pavement (10"&4") 240 Spaces	84000	Sft	$4.25	$357,000.00
New Station Building	5000	Sft	$190.00	$950,000.00
Parking Lot Drainage	84000	Sft	$1.25	$105,000.00
Parking Lot Curb and Gutter	2600	Ft	$19.00	$49,400.00
Parking Lot Lighting	14	Ea	$6,300.00	$88,200.00
Site Landscaping	1	LS	$63,000.00	$63,000.00
Platform Canopy (700'x12')	8400	Sft	$69.00	$579,600.00
Platform Lighting & Security	8400	Sft	$10.00	$84,000.00
Platform Public Address and Info Display	1	LS	$25,000.00	$25,000.00
Platform Construction (Level Boarding)	8400	Sft	$28.00	$235,200.00
Road Improvements (12th Ave.)	1	LS	$70,000.00	$70,000.00
Bascule Bridge Rehab over Black River	1	LS	$2,800,000.00	$2,800,000.00
New Siding & Track	12000	Ft	$308.00	$3,696,000.00
Crossover in Wye (including Signal Work)	1	LS	$448,000.00	$448,000.00
#12 Turnout	2	Ea	$175,000.00	$350,000.00
Track Removal	1	LS	$7,000.00	$7,000.00
Track Drainage	2.3	Miles	$700,000.00	$1,610,000.00
At Grade X-ing Improvement (1 locations)	1	Ea	$70,000.00	$70,000.00
Rail Operational Modifications at Wye	1	LS	$2,400,000.00	$2,400,000.00
At Grade X-ing (Griswold)	1	LS	$350,000.00	$350,000.00
Railroad Permit to Enter and Insurance Fees	1	Ea	$10,000.00	$10,000.00
Railroad Review Fees	1	Ea	$50,000.00	$50,000.00
Railroad Flagging & Inspection	180	Days	$4,000.00	$720,000.00
			Direct Cost of Work Subtotal:	**$15,193,350.00**
			Construction General Conditions & Requirements 6%	$912,000.00
			Contractor Staff, Insurance, Fees 8%	$1,216,000.00
			Project Soft Costs (Permits, Fees, Legal, Etc.) 4%	$608,000.00
			Design and Construction Engineering Costs: 30%	$4,559,000.00
			Support Costs:	**$7,295,000.00**
			Contingency: 15%	$3,374,000.00
			Inflation (7 years at 4%): 28%	$6,297,000.00
			Contingency and Inflation Subtotal:	**$9,671,000.00**

Total Cost (in Year 2030 Dollars): $32,159,350.00

Does not include real estate costs.
Does not include maintenance costs.
Does not include environmental costs.
Does not include BWAT costs.

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Option 10a - Dove Street
June 12, 2023

Description	Quantity	Unit	Unit Cost	Cost
Utilities for New Station	1	LS	$50,000.00	$50,000.00
Building Pad for New Station	5000	Sft	$2.05	$10,250.00
Misc. Site Improvements at Station	1	LS	$100,000.00	$100,000.00
Directional Signing for Parking	1	LS	$3,200.00	$3,200.00
Parking Lot Pavement (10"&4") 240 Spac	84000	Sft	$4.25	$357,000.00
New Station Building	5000	Sft	$190.00	$950,000.00
Parking Lot Drainage	84000	Sft	$1.25	$105,000.00
Parking Lot Curb and Gutter	2600	Ft	$19.00	$49,400.00
Parking Lot Lighting	14	Ea	$6,300.00	$88,200.00
Site Landscaping	1	LS	$63,000.00	$63,000.00
Platform Canopy (700'x12')	8400	Sft	$69.00	$579,600.00
Platform Lighting & Security	8400	Sft	$10.00	$84,000.00
Platform Public Address and Info Display	1	LS	$25,000.00	$25,000.00
Platform Construction (Level Boarding)	8400	Sft	$28.00	$235,200.00
Road Improvements (Dove Street)	1	Ea	$100,000.00	$100,000.00
Siding Construction - East of CSXT RR Yard	2000	ft	$308.00	$616,000.00
Track Improvements & PTC on CSXT RR	1	LS	$600,000.00	$600,000.00
Bridge Modifications for CSXT RR over 24th S	1	LS	$500,000.00	$500,000.00
Railroad Permit to Enter and Insurance Fees	1	Ea	$28,000.00	$28,000.00
Railroad Review Fees	1	Ea	$100,000.00	$100,000.00
Railroad Flagging & Inspection	180	Days	$2,000.00	$360,000.00
Direct Cost of Work Subtotal:				**$5,003,850.00**
Construction General Conditions & Requirements			6%	$301,000.00
Contractor Staff, Insurance, Fees			8%	$401,000.00
Project Soft Costs (Permits, Fees, Legal, Etc.)			4%	$201,000.00
Design and Construction Engineering Costs:			30%	$1,502,000.00
Support Costs:				**$2,405,000.00**
Contingency:			15%	$1,112,000.00
Inflation (7 years at 4%):			28%	$2,075,000.00
Contingency and Inflation Subtotal:				**$3,187,000.00**

Total Cost (in Year 2030 Dollars): $10,595,850.00

Does not include real estate costs.
Does not include maintenance costs.
Does not include environmental costs.
Does not include BWAT costs.

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Option 10b - Dove Street
June 12, 2023

Description	Quantity	Unit	Unit Cost	Cost
Utilities for New Station	1	LS	$50,000.00	$50,000.00
Building Pad for New Station	5000	Sft	$2.05	$10,250.00
Misc. Site Improvements at Station	1	LS	$100,000.00	$100,000.00
Directional Signing for Parking	1	LS	$3,200.00	$3,200.00
Parking Lot Pavement (10"&4") 240 Spac	84000	Sft	$4.25	$357,000.00
New Station Building	5000	Sft	$190.00	$950,000.00
Parking Lot Drainage	84000	Sft	$1.25	$105,000.00
Parking Lot Curb and Gutter	2600	Ft	$19.00	$49,400.00
Parking Lot Lighting	14	Ea	$6,300.00	$88,200.00
Site Landscaping	1	LS	$63,000.00	$63,000.00
Platform Canopy (700'x12')	8400	Sft	$69.00	$579,600.00
Platform Lighting & Security	8400	Sft	$10.00	$84,000.00
Platform Public Address and Info Display	1	LS	$25,000.00	$25,000.00
Platform Construction (Level Boarding)	2800	Sft	$28.00	$78,400.00
Road Improvements (Dove Street)	1	Ea	$100,000.00	$100,000.00
Siding Construction - East of CSXT RR Yard	2000	ft	$308.00	$616,000.00
Track Construction	5000	ft	$308.00	$1,540,000.00
New RR Bridge over 24th St.	100	Lft	$30,000.00	$3,000,000.00
Railroad Permit to Enter and Insurance Fees	1	Ea	$28,000.00	$28,000.00
Railroad Review Fees	1	Ea	$100,000.00	$100,000.00
Railroad Flagging & Inspection	180	Days	$2,800.00	$504,000.00
Direct Cost of Work Subtotal:				**$8,431,050.00**
Construction General Conditions & Requirements			6%	$506,000.00
Contractor Staff, Insurance, Fees			8%	$675,000.00
Project Soft Costs (Permits, Fees, Legal, Etc.)			4%	$338,000.00
Design and Construction Engineering Costs:			30%	$2,530,000.00
Support Costs:				**$4,049,000.00**
Contingency:			15%	$1,873,000.00
Inflation (7 years at 4%):			28%	$3,495,000.00
Contingency and Inflation Subtotal:				**$5,368,000.00**

Total Cost (in Year 2030 Dollars): $17,848,050.00

Does not include real estate costs.
Does not include maintenance costs.
Does not include environmental costs.
Does not include BWAT costs.

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Option 10c - Dove Street
June 12, 2023

Description	Quantity	Unit	Unit Cost	Cost
Utilities for New Station	1	LS	$50,000.00	$50,000.00
Building Pad for New Station	5000	Sft	$2.05	$10,250.00
Misc. Site Improvements at Station	1	LS	$100,000.00	$100,000.00
Directional Signing for Parking	1	LS	$3,200.00	$3,200.00
Parking Lot Pavement (10"&4") 240 Spac	84000	Sft	$4.25	$357,000.00
New Station Building	5000	Sft	$190.00	$950,000.00
Parking Lot Drainage	84000	Sft	$1.25	$105,000.00
Parking Lot Curb and Gutter	2600	Ft	$19.00	$49,400.00
Parking Lot Lighting	14	Ea	$6,300.00	$88,200.00
Site Landscaping	1	LS	$63,000.00	$63,000.00
Platform Canopy (700'x12')	8400	Sft	$69.00	$579,600.00
Platform Lighting & Security	8400	Sft	$10.00	$84,000.00
Platform Public Address and Info Display	1	LS	$25,000.00	$25,000.00
Platform Construction (Level Boarding)	2800	Sft	$28.00	$78,400.00
Road Improvements (Dove Street)	1	Ea	$100,000.00	$100,000.00
Siding Construction - South of CSX Yard	5100	Ft	$308.00	$1,570,800.00
Siding Construction - East of CSXT RR	2000	Ft	$308.00	$616,000.00
Track Improvements & PTC on CSXT RR	1	LS	$600,000.00	$600,000.00
Railroad Permit to Enter and Insurance Fees	1	Ea	$28,000.00	$28,000.00
Railroad Review Fees	1	Ea	$100,000.00	$100,000.00
Railroad Flagging & Inspection	180	Days	$2,800.00	$504,000.00
Direct Cost of Work Subtotal:				**$6,061,850.00**
Construction General Conditions & Requirements			6%	$364,000.00
Contractor Staff, Insurance, Fees			8%	$485,000.00
Project Soft Costs (Permits, Fees, Legal, Etc.)			4%	$243,000.00
Design and Construction Engineering Costs:			30%	$1,819,000.00
Support Costs:				**$2,911,000.00**
Contingency:			15%	$1,346,000.00
Inflation (7 years at 4%):			28%	$2,513,000.00
Contingency and Inflation Subtotal:				**$3,859,000.00**

Total Cost (in Year 2030 Dollars): $12,831,850.00

Does not include real estate costs.
Does not include maintenance costs.
Does not include environmental costs.
Does not include BWAT costs.

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Option 11 - East of 16th Street
June 12, 2023

Description	Quantity	Unit	Unit Cost	Cost
Utilities for New Station	1	LS	$50,000.00	$50,000.00
Building Pad for New Station	5000	Sft	$2.05	$10,250.00
Misc. Site Improvements at Station	1	LS	$100,000.00	$100,000.00
Directional Signing for Parking	1	LS	$3,200.00	$3,200.00
Parking Lot Pavement (10"&4") 240 Spac	84000	Sft	$4.25	$357,000.00
New Station Building	5000	Sft	$190.00	$950,000.00
Parking Lot Drainage	84000	Sft	$1.25	$105,000.00
Parking Lot Curb and Gutter	2600	Ft	$19.00	$49,400.00
Parking Lot Lighting	14	Ea	$6,300.00	$88,200.00
Site Landscaping	1	LS	$63,000.00	$63,000.00
Platform Canopy (700'x12')	8400	Sft	$69.00	$579,600.00
Platform Lighting & Security	8400	Sft	$10.00	$84,000.00
Platform Public Address and Info Display	1	LS	$25,000.00	$25,000.00
Platform Construction (Level Boarding)	2800	Sft	$28.00	$78,400.00
Road Improvements (16th Street)	1	Ea	$100,000.00	$100,000.00
Siding Construction -South of CN RR	2000	Ft	$308.00	$616,000.00
New At Grade Crossing with 16th Street	1	Ea	$350,000.00	$350,000.00
Demolition of Existing Building	1800	Sft	$7.50	$13,500.00
Railroad Permit to Enter and Insurance Fees	1	Ea	$28,000.00	$28,000.00
Railroad Review Fees	1	Ea	$100,000.00	$100,000.00
Railroad Flagging & Inspection	180	Days	$2,800.00	$504,000.00
Direct Cost of Work Subtotal:				**$4,254,550.00**
Construction General Conditions & Requirements			6%	$256,000.00
Contractor Staff, Insurance, Fees			8%	$341,000.00
Project Soft Costs (Permits, Fees, Legal, Etc.)			4%	$171,000.00
Design and Construction Engineering Costs:			30%	$1,277,000.00
Support Costs:				**$2,045,000.00**
Contingency:			15%	$945,000.00
Inflation (7 years at 4%):			28%	$1,764,000.00
Contingency and Inflation Subtotal:				**$2,709,000.00**

Total Cost (in Year 2030 Dollars): $9,008,550.00

Does not include real estate costs.
Does not include maintenance costs.
Does not include environmental costs.
Does not include BWAT costs.

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Appendix E:

Desktop Environmental Research Technical Memos

Blue Water Area Transportation Commission

Port Huron Amtrak Station Project

Options 1 and 11: Existing Rail Station and Associated Parcels

Figures

Appendices

Land Use

The Study Area currently consists of the existing Port Huron Amtrak Station and C and O Railroad Right-of-Way (ROW) (refer to Figure 2, Aerial Imagery Map). The Existing Land Use in Port Huron 2021 Map indicates the current land use is designated as industrial and commercial and the surrounding properties consist of commercial and residential developments. According to the Port Huron Zoning Districts Map the Study Area is zoned as Light Industrial (M1) and the Future Land Use in Port Huron 2021 Map intends for the Study Area to remain industrial and commercial (refer to Appendix A, Port Huron Zoning and Land Use Maps). The purpose of the Project is to make necessary improvements to the Port Huron Amtrak Station and therefore the land use will remain consistent with the existing use, Port Huron zoning designations and future land use plans.

Agricultural Lands/Hydric Soils

The NRCS Hydric Soil Survey Map for St. Clair County, Michigan was reviewed to determine the soil types present within the Study Area (refer to Figure 3.0, NRCS Hydric Soil Survey Map and Appendix B, NRCS Custom Soil Resource Report for St. Clair County, Michigan). Two (2) soil types were mapped within the Study Area:

- Allendale-Hoytville complex, 0 to 6% slopes (AhB). Rated 45% hydric.
- Wainola-Deford fine sands, 0 to 2% slopes (WdA). Rated 35% hydric.

The Study Area is located on farmland classifications of “Not prime farmland”, and “Farmland of local importance” (refer to Figure 3.1, NRCS Farmland Classification Map). The Study Area consists of the current Port Huron Amtrak Station and existing railroad tracks. The Study Area has been dedicated to use as a train station by Amtrak since 1979 and dedicated to use as a railroad since the mid to late 1800s. The Study Area is not historically or currently used for farming practices.

Mapped Floodplains

The FEMA Flood Hazard Layer for St. Clair County, Michigan was reviewed. The Flood Insurance Rate Maps (FIRMs) (Panel #26147C0355D and Panel #26147C0360D) indicated that the Study Area is entirely located within Zone X – “Areas of Minimal Flood Hazard” (refer to Figure 4, FEMA Flood Hazard Area Map).

National Wetlands Inventory Map

A desktop review of the available USFWS NWI Map indicated the Study Area is located within the St. Clair watershed (HUC 04090001). There are no mapped NWI features located within the Study Area (refer to Figure 5, National Wetland Inventory Map).

There are no navigable waterways within or immediately adjacent to the Study Area. The St. Clair River is approximately 0.65-miles east of the Study Area. The Project is not anticipated to impact the St. Clair River.

Based on desktop review of resources, no temporary or permanent impacts to wetlands, streams, or waterways are anticipated for the Project. A wetland and watercourse delineation should be performed within the Study Area to confirm the absence of wetlands or other aquatic resources.

Coastal

According to the Bureau of Energy Management (BOEM) Marine Cadastre national Viewer, the Study Area is not located within a Coastal Barrier Resource Area (refer to Figure 6.0, BOEM Federal Coastal Zone Boundary Map).

According to Coastal Zone Boundary Maps provided by the Michigan Department of Environment, Great Lakes, and Energy, the Study Area is not located within a Coastal Zone Management Boundary or a Coastal Zone Management Area (refer to Figure 6.1, St. Clair Coastal Zone Boundary Map). Federal consistency is granted under 15 CFR Part 930 Section 307 of the Coastal Zone Management Act (CMZA), which ensures that federal actions with reasonably foreseeable effects on coastal uses and resources must be consistent with the enforceable policies of a state's approved coastal management program.

Sole Source Aquifer

According to EPA's EJScreen the project is not located in the vicinity of a Sole Source Aquifer.

Threatened and Endangered Species Review

The Study Area was reviewed using the USFWS online Information, Planning and Consultation (IPaC) tool to determine if any federally listed species or critical habitat may occur within the Study Area. A USFWS Official Species List (Project Code: 2023-0019785) was obtained which contained eight (8) federally listed species, listed below. There is no USFWS designated critical habitat within the Study Area (refer to Appendix C, USFWS Official Species List).

- Indiana Bat (*Myotis sodalis*) – Endangered
- Northern Long-eared Bat (NLEB) (*Myotis septentrionalis*) – Threatened*
- Tricolored Bat (*Perimyotis subflavus*) – Proposed Endangered
- Piping Plover (*Charadrius melodus*) – Endangered
- Red Knot (*Calidris canutus rufa*) – Threatened
- Eastern Massasauga (=rattlesnake) (*Sistrurus catenatus*) – Threatened
- Monarch Butterfly (*Danaus plexippus*) – Candidate
- Eastern Prairie Fringed Orchid (Platanthera leucophaea) – Threatened

* Effective March 31, 2023, the NLEB is reclassified as Endangered under the Endangered Species Act

Additionally, the USFWS Official Species List indicated three (3) migratory birds; Bald Eagle (*Haliaeetus leucocephalus*), Chimney Swift (*Chaetura pelagica*), and Golden Eagle (*Aquila chrysaetos*). These species are of particular concern because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention because of the Project location.

The following species warrant attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities:

- Bald Eagle (*Haliaeetus leucocephalus*) – Breeding Season: Dec 1st – Aug 31st
- Golden Eagle (*Aquila chrysaetos*) -- Breeding Season: Breeds elsewhere

The remaining migratory bird species identified is listed as a BCC:

- Chimney Swift (*Chaetura pelagica*) – Breeding Season: Mar 15th – Aug 25th

The Probability of Presence Summary located in Appendix A, USFWS Official Species List, identifies the likelihood of these migratory bird species occurring in the Project location throughout each month of the year.

As noted in the USFWS Official Species List, impacts to the Red Knot only need to be considered for projects located along coastal areas during the red knot migratory window of May 1 to September 30. Because the proposed Project in not located in a federal or state managed coastal area, this species was omitted from the preliminary habitat assessment determinations made in Table 1.

Table 1 includes a discussion on the suitable habitat of each of the above listed species and if suitable habitat was found within the Study Area. Table 1 gives assumptions of suitable habitat within the Study Area based off desktop review and publicly available online mapping tools. Bergmann recommends field verification to determine if suitable habitat is present within the Study Area before determining potential Project impacts to above listed species.

Table 1: Species Suitable Habitat Assessment

Common Name	Scientific Name	Suitable Habitat	Federal Listing Status	Critical Habitat Present	Suitable Habitat Present within the Study Area?
Mammals					
Indiana Bat	*Myotis sodalis*	Trees >3" dbh, caves abandoned mines, wooded areas with loose tree bark or dead or dying trees	Endangered	No	No
Northern Long-eared Bat	*Myotis septentrionalis*	Roost in cavities or in crevices of both live trees and snags; Hibernate in caves and mines with constant temperatures, high humidity, and no air currents.	Threatened[1]	Not Designated	No
Tricolored Bat	*Perimyotis subflavus*	Winter roosts: caves, abandoned mines, road-associated culverts Summer roosts: forested areas in both live trees and snags.	Proposed Endangered	Not Designated	No
Birds					
Piping Plover	*Charadrius melodus*	Sand pits, small islands, tidal flats, shoals, sandbars with and without inlets, mud flats, ephemeral pools, and seasonally emergent seagrass beds.	Endangered	No	No
Reptiles					

Eastern Massasauga Rattlesnake	*Sistrurus catenatus*	Wet areas including wet prairies, marshes, fens, sedge meadows, peatlands, and low areas along rivers and lakes. Adjacent upland shrublands, open woodlands, and prairies.	Threatened	Not Designated	No
Insects					
Monarch Butterfly	*Danaus plexippus*	Prairies, meadows, grasslands and along roadsides with milkweed.	Candidate	Not Designated	No
Flowering Plants					
Eastern Prairie Fringed Orchid	*Platanthera leucophaea*	Mesic prairie, sedge meadows, marsh edges, bogs. Requires full sun, grassy habitat, with little to no woody encroachment.	Threatened	Not Designated	No

Notes:

1. Effective March 31, 2023, the NLEB is reclassified as Endangered under the Endangered Species Act.

Section 106

The Michigan State Historic Preservation Office (SHPO) maintains private files of previously reported or identified historic properties (buildings, districts, objects, archaeological sites, and structures). These files are fundamental to completing applications for Projects requiring Section 106 Review and Compliance. Applications must be accompanied by project mapping showing the area of potential effect (APE), project plans, and information on the previous surveys and recorded historic properties within the APE. Additionally, because these applications involve research with private files in the State Archaeological Site File and Architectural Resource Inventory, the Michigan SHPO requires that applications be completed by Federally Qualified Archaeologists. Federal qualifications must be submitted to SHPO with the project application submission using the designated form. Once submitted, SHPO's application review process takes 8-12 weeks. If the project requires an expedited timeline, there are limited in-person appointments available with SHPO staff once a complete application has been submitted electronically.

Section 4(f)/6(f)

There are no publicly owned parks, recreation areas, or wildlife/waterfowl refuges within or adjacent to the Study Area.

There are two (2) City of Port Huron parks, Sixteenth Street Park and Knox Field located approximately 0.30-mile and 0.80-mile south of the Study Area respectively. Another City of Port Huron Park, White Park, is located approximately 0.75-miles northeast of the Study Area.

There are no Section 6(f) resources within the Study Area.

Environmental Justice

The Environmental Protection Agency's (EPA) Environmental Justice Screening and Mapping Tool (Version 2.1) (EJScreen) was used to provide insight on potential environmental justice concerns associated with the project. Refer to Appendix D, EJScreen Report to see a general report of

environmental justice indexes. Additional information on Environmental Justice will need to be researched as the Project progresses and potential Project impacts are evaluated.

The purpose of the Project is to provide increased operations to the current Amtrak Station via reconstruction to make improvements to space, technology, and accessibility. The Project will allow for increased use of the train station and provide a more cost-efficient alternative route to existing transportation infrastructure. The land use of the Study Area will remain consistent upon completion of the Project and the visual appearance of the Study Area is proposed to improve; therefore, the Project is not anticipated to negatively affect adjacent communities. Environmental impacts associated with the construction phase of the Project are not anticipated to adversely affect environmental justice indexes. Because the project will increase and improve transportation options in the community, the Project is anticipated to have a beneficial effect on communities adjacent to the Study Area.

FIGURES

Blue Water Area Transportation Commission Port Huron Amtrak Station Project

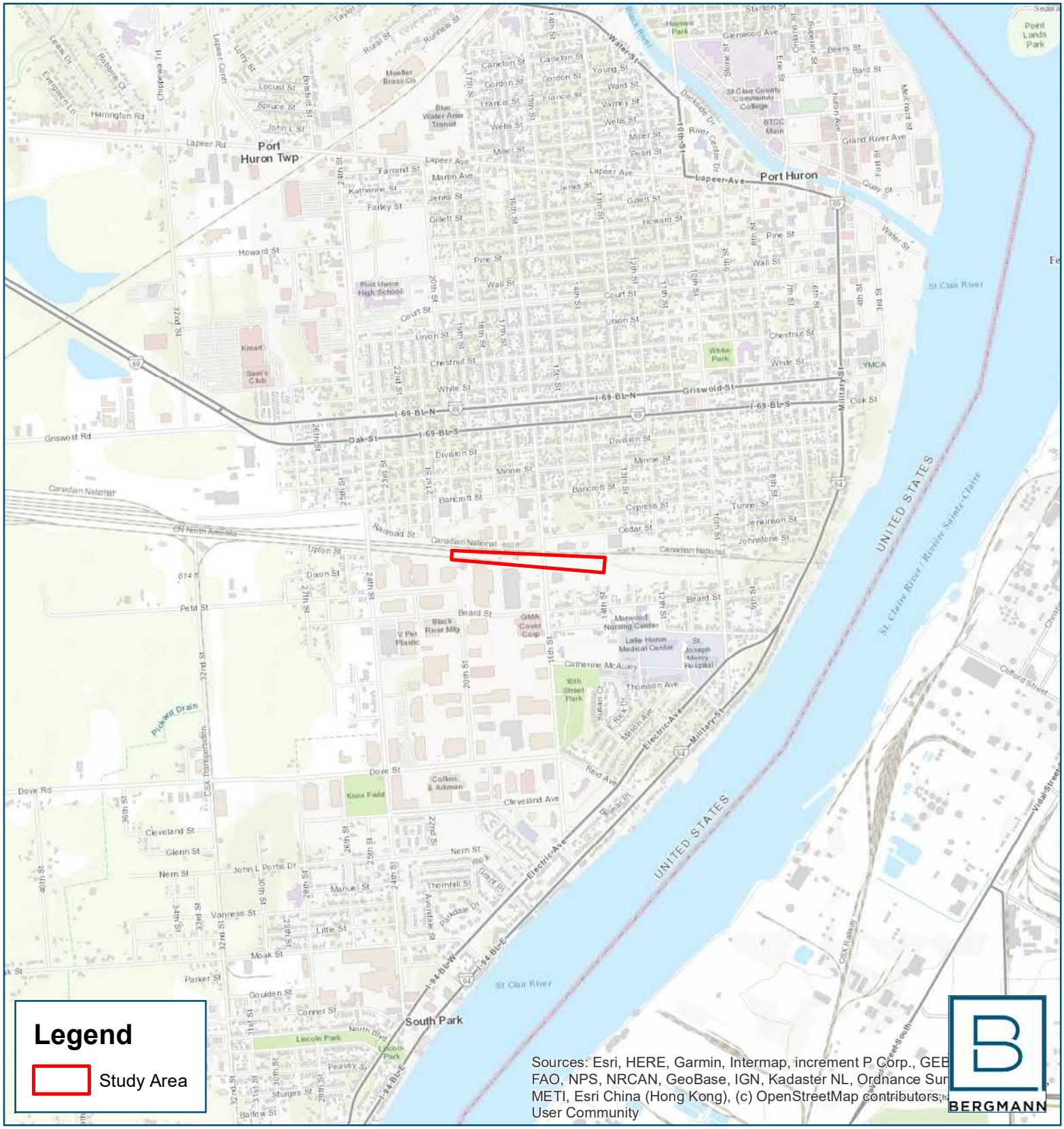
SITE LOCATION MAP

Fig. 1

2,000 Feet

N

City of Port Huron, St Clair County, Michigan



Blue Water Area Transportation Commission
Port Huron Amtrak Station Project

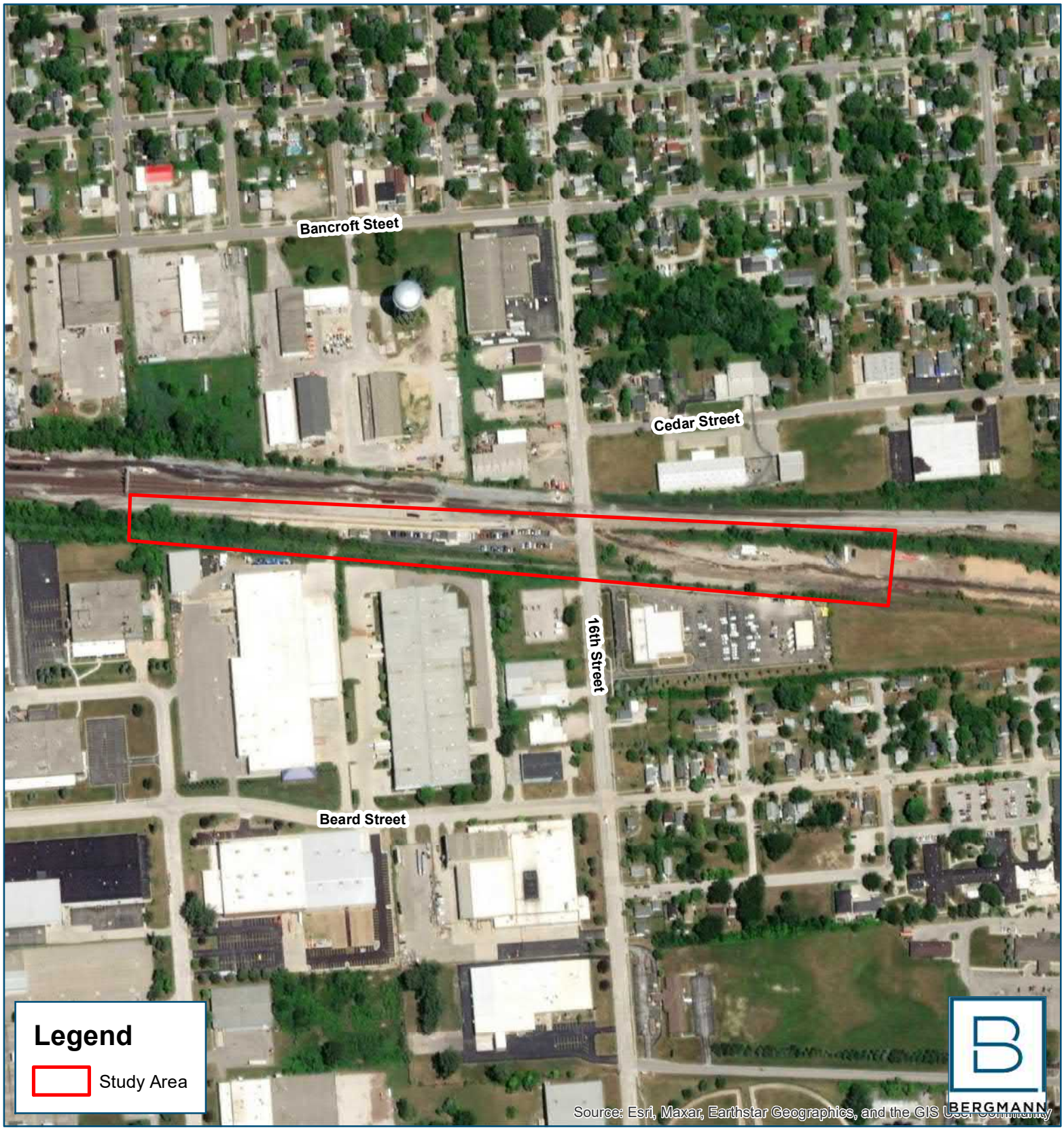
AERIAL IMAGERY MAP

Fig. 2

400 Feet

N

City of Port Huron, St Clair County, Michigan



Blue Water Area Transportation Commission Port Huron Amtrak Station Project

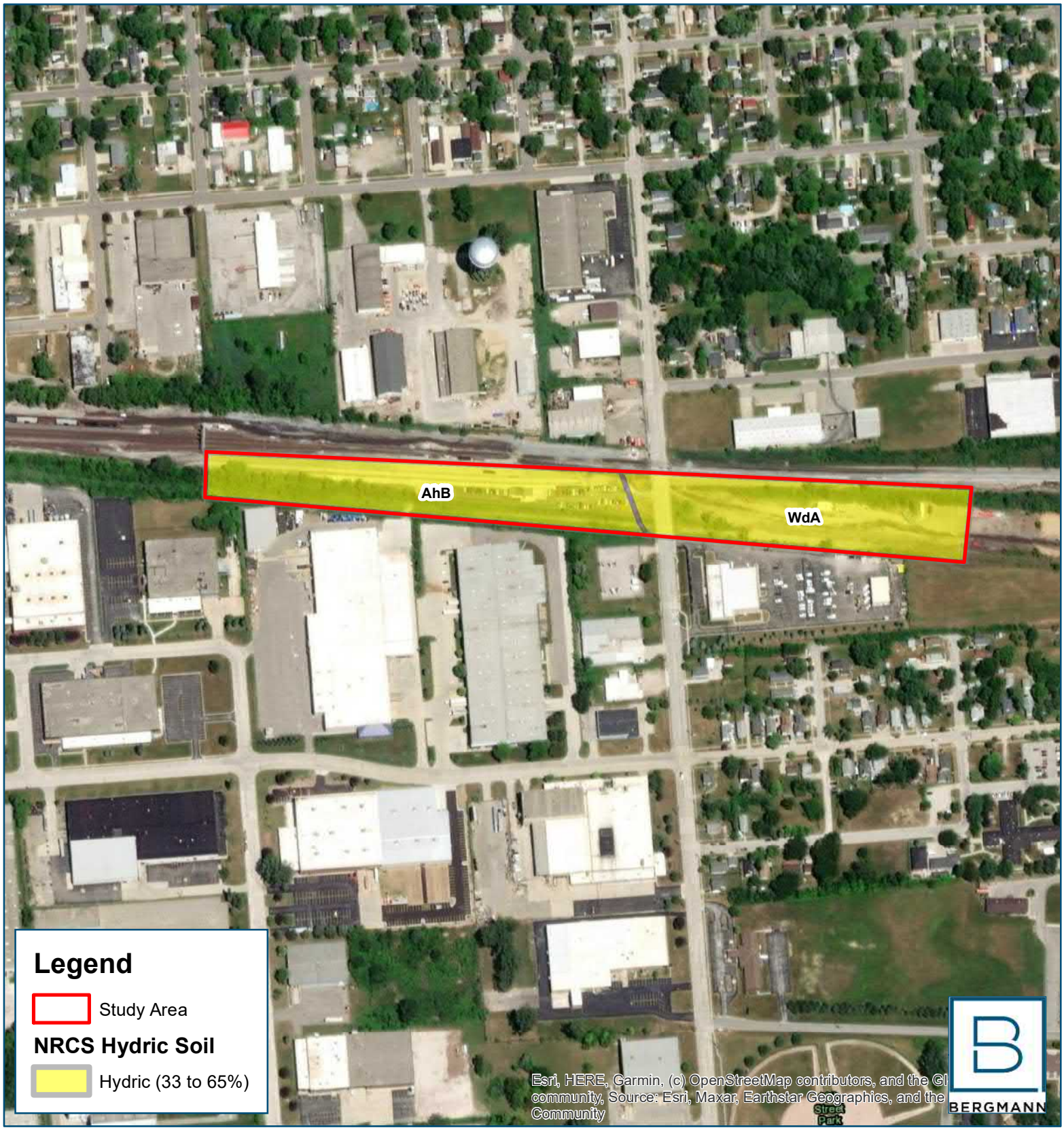
NRCS HYDRIC SOIL SURVEY MAP

Fig. 3.0

400 Feet

N

City of Port Huron, St Clair County, Michigan



Blue Water Area Transportation Commission Port Huron Amtrak Station Project

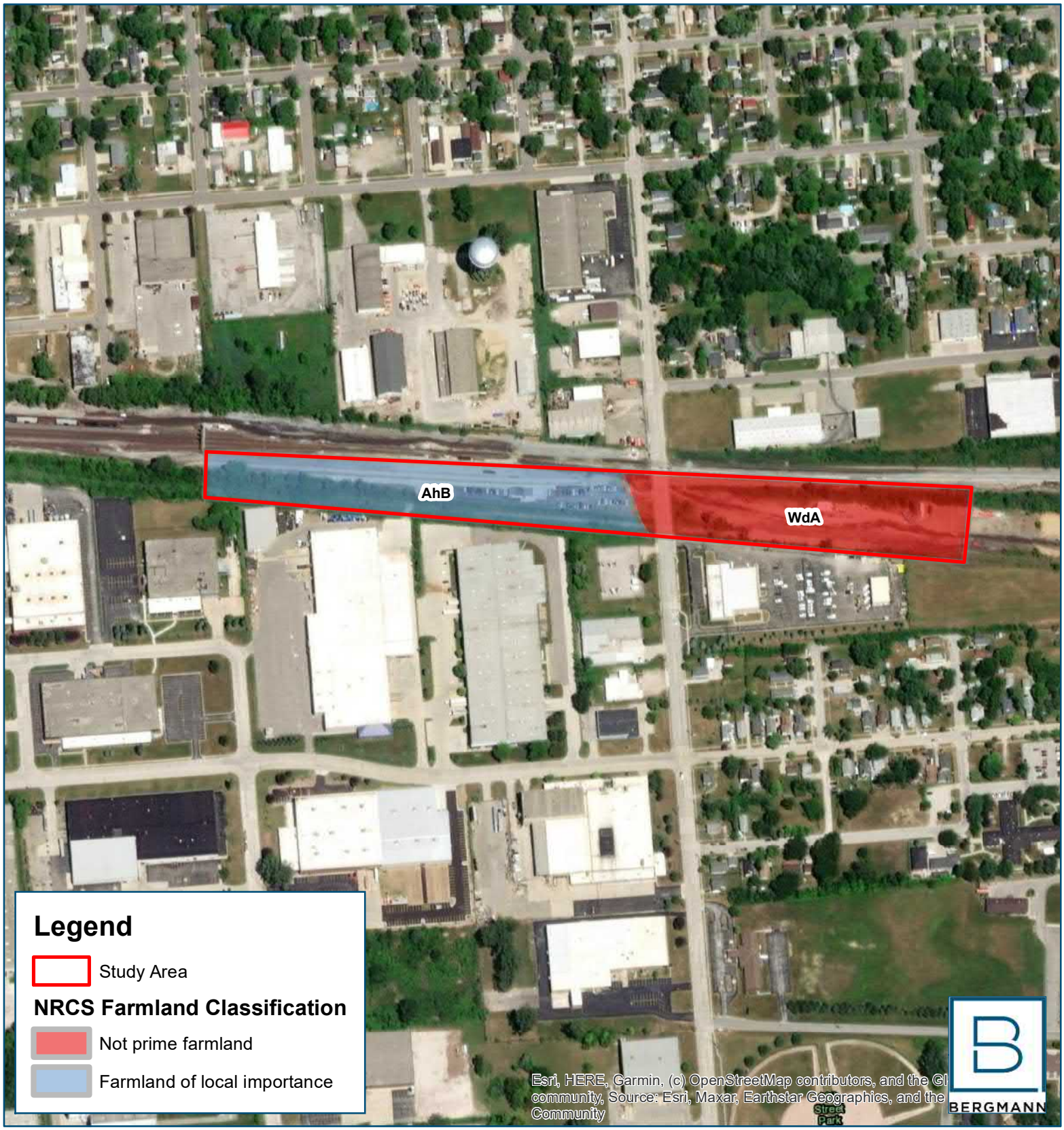
NRCS FARMLAND CLASSIFICATION MAP

Fig. 3.1

400 Feet

N

City of Port Huron, St Clair County, Michigan



Blue Water Area Transportation Commission Port Huron Amtrak Station Project

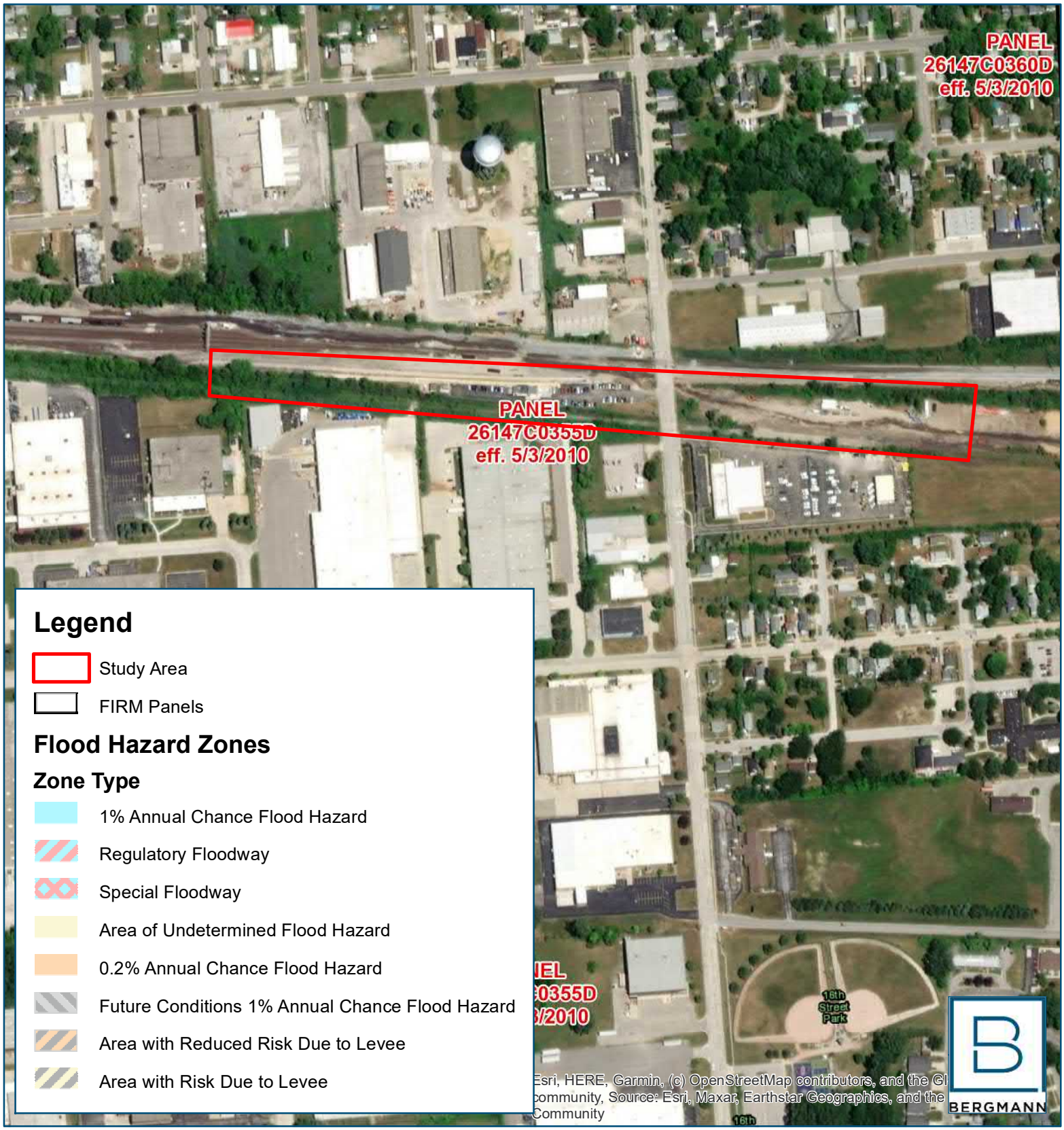
FEMA FLOOD HAZARD AREA MAP

Fig. 4

400 Feet

N

City of Port Huron, St Clair County, Michigan



Legend

- Study Area
- FIRM Panels

Flood Hazard Zones

Zone Type

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Special Floodway
- Area of Undetermined Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee
- Area with Risk Due to Levee

Blue Water Area Transportation Commission Port Huron Amtrak Station Project

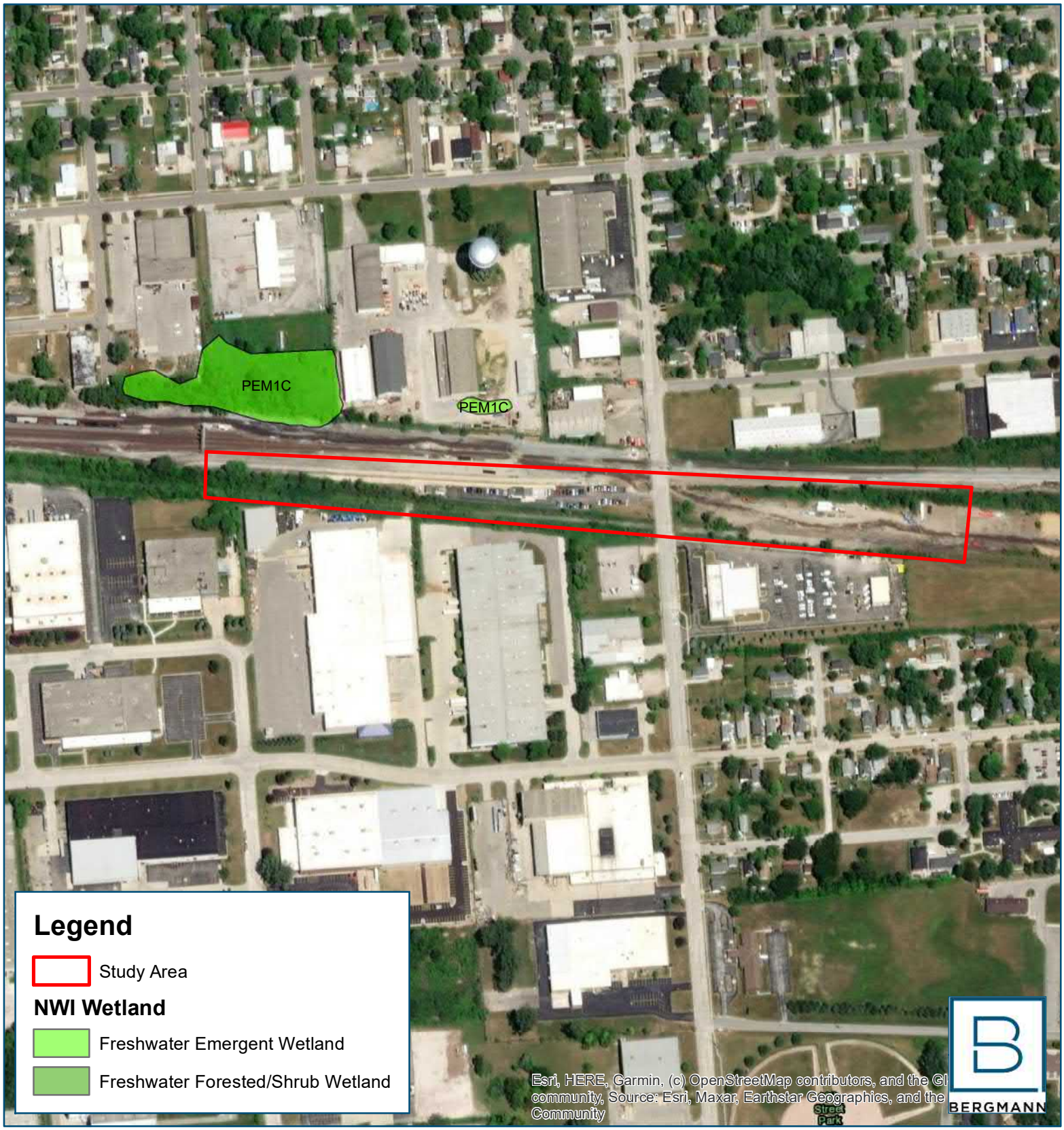
NATIONAL WETLAND INVENTORY MAP

Fig. 5

400 Feet

N

City of Port Huron, St Clair County, Michigan



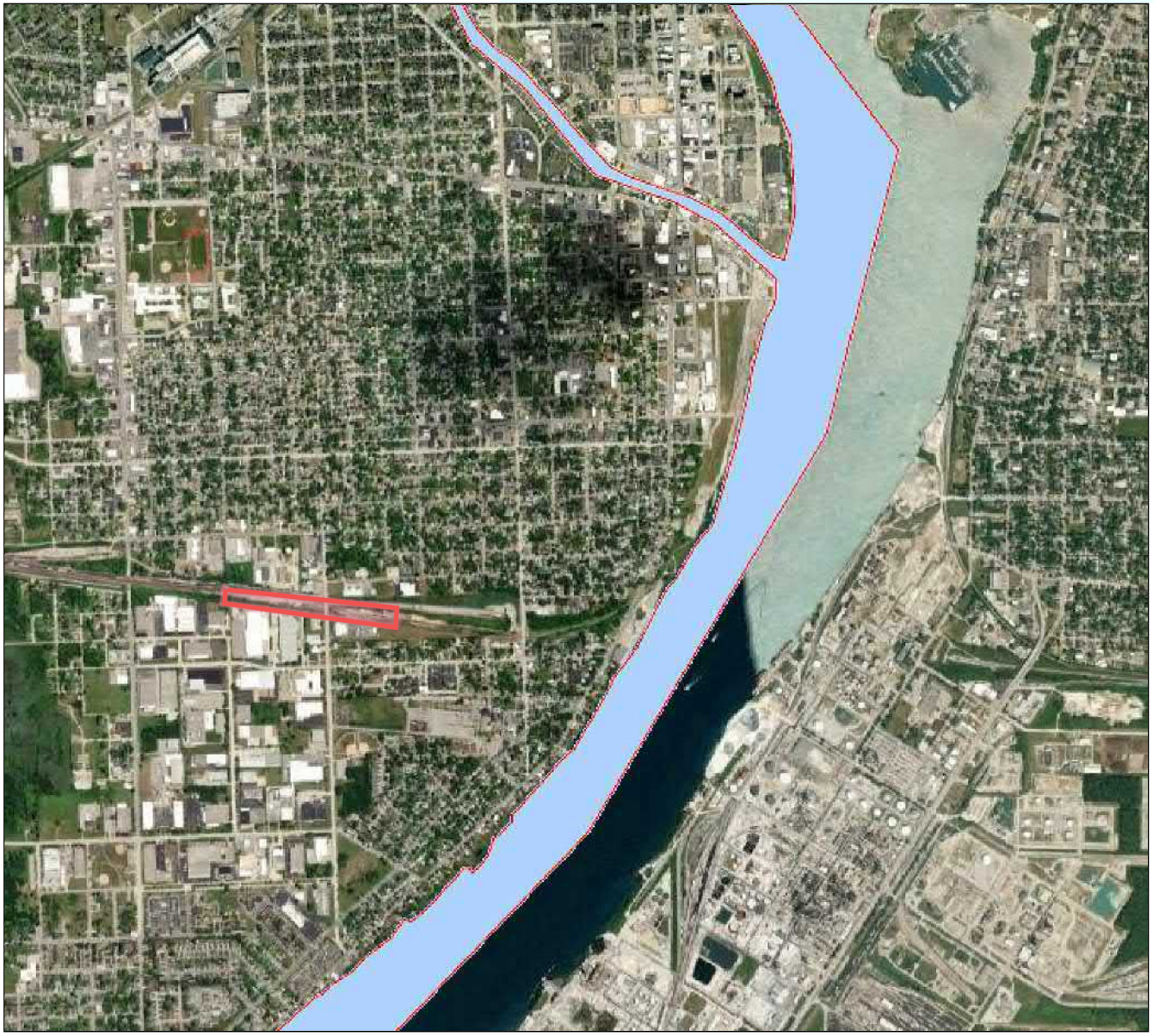
Marine Cadastre National Viewer

Blue Water Area Transportation Commission Port Huron Amtrak Station Project

BOEM FEDERAL COASTAL ZONE BOUNDARY MAP

Fig. 6.0

BOEM
Bureau of Ocean Energy Management



MAP LEGEND

- 24NM Contiguous Zone
- Contiguous Zone
- Submerged Lands Act Boundary
- Coastal Barrier Resource Areas
- Clean Water Act
- Coast Guard Jurisdictions
- Study Area

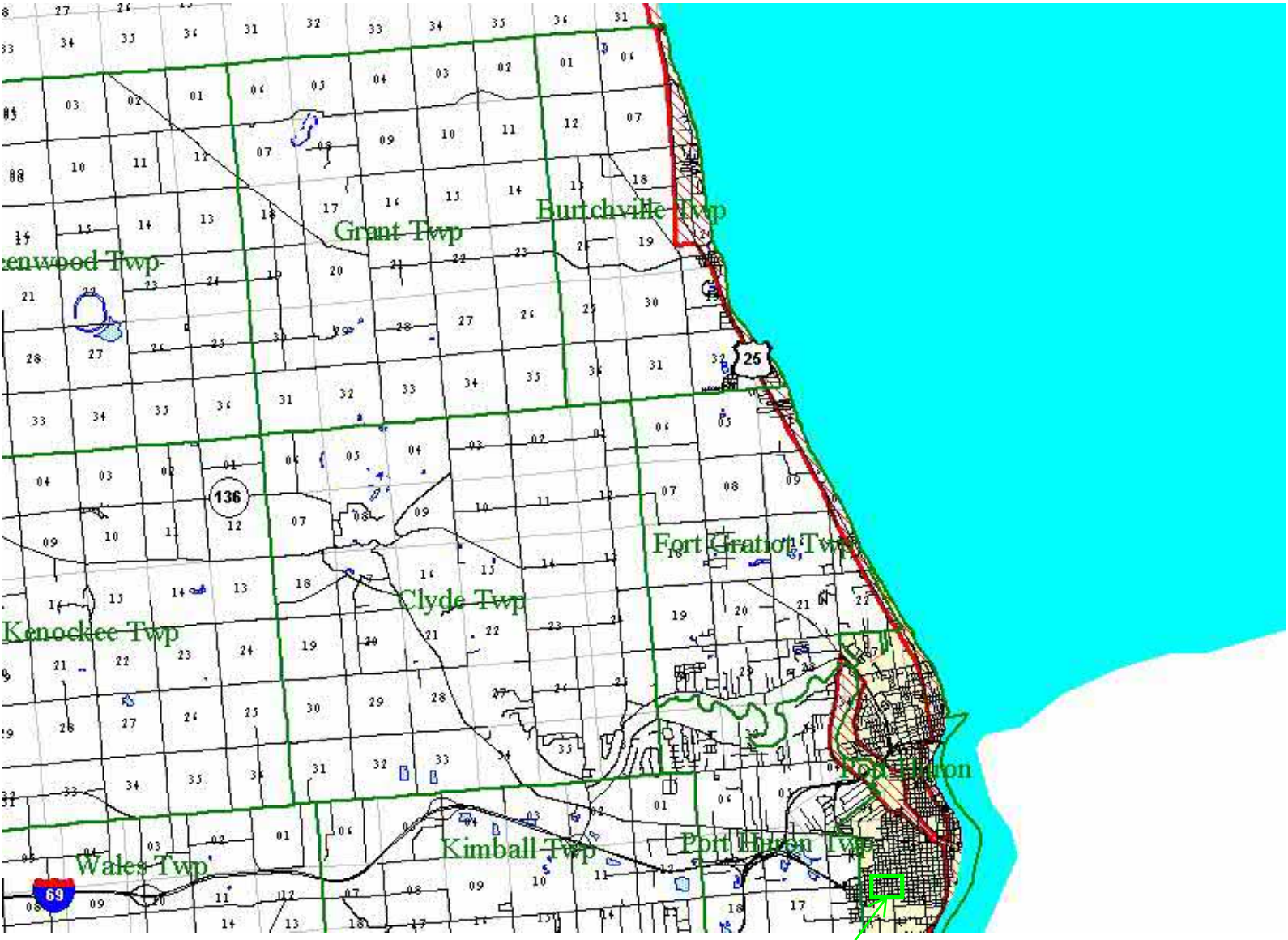
Blue Water Area Transportation Commission
Port Huron Amtrak Station Project

ST CLAIR COUNTY COASTAL ZONE BOUNDARY MAP

Fig. 6.1

St. Clair County
Burtchville Township, T8N R17E
Fort Gratiot Township T7N R17E
Port Huron, T7N R17E and T6N R17E

The heavy red line is the ***Coastal Zone Management Boundary***
The red hatched area is the ***Coastal Zone Management Area***



APPENDIX A

Port Huron Zoning and Land Use Maps

PORT HURON ZONING DISTRICTS

Streets
Water
City Limits
HWY_I_69_BRIDGE

Zoning Districts

- Single Family residential (R)
- Family residential (R1)
- Multi-Family Residential (A1)
- Hi-Rise Multi-Family Residential (A2)
- Neighborhood Business (B)
- General Business District (C1)
- Central Business District (CBD)
- Community College District (CCD)
- Institutional District (I)
- Light Industrial (M1)
- General Industrial (M2)
- Marina District (MD)

Approximate Project Location

0 0.25 0.5 Miles

Scale: 1:13,972

For specific information on each zone and the uses allowed, please refer to the City of Port Huron Zoning Ordinance, Chapter 52, Article III, District Regulations.

Please contact the City of Port Huron Planning Department at 810-984-9735 to ask specific questions regarding a zoning district, or to confirm the exact zoning of a particular parcel, especially if the parcel appears to be on the border of two zones.

The City of Port Huron cannot guarantee the accuracy of the information contained on this map. Each user of this map is responsible for determining its suitability for his or her intended use or purpose. City departments will not necessarily approve applications based solely on GIS data. Applicants for city permits and licenses must inquire of the relevant city department for applicable requirements. The City of Port Huron shall have no liability for the data or lack thereof, or any decisions made or action not taken in reliance upon any of the data, and makes no claims, no representations, and no warranties, express or implied as to the reliability or accuracy of the data, including the implied validity of any uses of such data.

NAD 1983 HARN State Plane Michigan South FIPS 2113 Intl Feet

4/15/2022

EXISTING LAND USE IN PORT HURON 2021

- Single-Family
- Multi-Family
- Commercial
- Commercial w/Residential
- Industrial
- Institutional
- Government
- Hospitals
- Schools
- Parks & Recreation
- Vacant Land

Streets

Approximate Project Location

Land Use Category	Total Acres	%
Single-Family Residential	1,610.39	39.83%
Multiple-Family Residential	301.74	7.68%
Commercial	418.93	10.36%
Commercial with Residential	14.02	0.35%
Industrial	449.31	11.11%
Institutional	241.85	5.98%
Government	137.69	3.41%
Schools	208.32	5.15%
Hospitals	89.62	2.22%
Parks / Recreation	229.22	5.67%
Vacant Land	342.51	8.47%
Total	4043.6	100%
	6.34 Square Miles	

The City is approximately 8 square miles including street and railroad right-of-way.

0 0.13 0.25 0.5 0.75 1 Miles

NAD 1983 HARN State Plane Michigan South FIPS 2113 Intl Feet

04/15/2022

FUTURE LAND USE IN PORT HURON 2021

Future Land Use

- Single-Family
- Multi-Family
- Commercial
- Commercial w/ Residential
- Industrial
- Institutional
- Government
- Schools
- Hospitals
- Parks & Recreation
- Vacant Land
- Water
- Streets

Approximate Project Location

Future Land Use		
Land Use Category	Total Acres	%
Single-Family Residential	1,697.24	44.27%
Multiple-Family Residential	211.90	5.53%
Commercial	561.62	14.65%
Commercial with residential	44.01	1.15%
Industrial	460.57	12.01%
Institutional	236.10	6.16%
Government	104.90	2.74%
Schools	223.28	5.82%
Hospitals	45.00	1.17%
Parks/Recreation	249.65	6.51%
Vacant Land	0.00	0.00%
Total	3,834.27	100.00%
	6	square miles

The City is approximately 8 square miles including street and railroad rights-of-way.

0 0.13 0.25 0.5 0.75 1 Miles

NAD 1983 HARN State Plane Michigan South FIPS 2113 Intl Feet

4/15/2022

APPENDIX B

NRCS Custom Resource Soil Report for St. Clair County, Michigan

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 St. Clair County, Michigan

December 5, 2022

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

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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 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 1:20,000.

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: St. Clair County, Michigan
Survey Area Data: Version 18, Aug 29, 2022

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

Date(s) aerial images were photographed: Jul 5, 2020—Sep 19, 2020

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
AhB	Allendale-Hoytville complex, 0 to 6 percent slopes	5.0	49.9%
WdA	Wainola-Deford fine sands, 0 to 2 percent slopes	5.0	50.1%
Totals for Area of Interest		**10.0**	**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.

St. Clair County, Michigan

AhB—Allendale-Hoytville complex, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: 6901
Elevation: 570 to 700 feet
Mean annual precipitation: 31 to 32 inches
Mean annual air temperature: 47 to 49 degrees F
Frost-free period: 151 to 204 days
Farmland classification: Farmland of local importance

Map Unit Composition

Allendale and similar soils: 50 percent
Hoytville and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Allendale

Setting

Landform: Knolls on till plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Sandy over clayey till

Typical profile

Ap - 0 to 7 inches: loamy fine sand
Bhs - 7 to 11 inches: fine sand
Bs - 11 to 18 inches: fine sand
E - 18 to 24 inches: fine sand
Bt - 24 to 31 inches: fine sand
Btg - 31 to 33 inches: loamy fine sand
2Cg - 33 to 80 inches: clay

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F099XY005MI - Cool Moist Sandy Depression
Hydric soil rating: No

Description of Hoytville

Setting

Landform: Drainageways on till plains, depressions on till plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey till

Typical profile

Ap - 0 to 9 inches: silty clay loam
Bw - 9 to 17 inches: clay
Btg1 - 17 to 21 inches: clay
Btg2 - 21 to 29 inches: clay
Cg1 - 29 to 41 inches: clay
Cg2 - 41 to 80 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 30 percent
Available water supply, 0 to 60 inches: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F099XY013MI - Wet Lake Plain Flats
Hydric soil rating: Yes

Minor Components

Nappanee

Percent of map unit: 5 percent
Landform: Knolls on till plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F099XY007MI - Lake Plain Flats
Hydric soil rating: No

Sims

Percent of map unit: 5 percent
Landform: Drainageways on till plains, depressions on till plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F099XY013MI - Wet Lake Plain Flats

Hydric soil rating: Yes

WdA—Wainola-Deford fine sands, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 6924
Elevation: 570 to 830 feet
Mean annual precipitation: 31 to 33 inches
Mean annual air temperature: 47 to 49 degrees F
Frost-free period: 151 to 204 days
Farmland classification: Not prime farmland

Map Unit Composition

Wainola and similar soils: 57 percent
Deford and similar soils: 27 percent
Minor components: 16 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wainola

Setting

Landform: Knolls on deltas, outwash plains, beaches
Landform position (three-dimensional): Rise
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Parent material: Sandy glaciolacustrine deposits

Typical profile

A - 0 to 9 inches: fine sand
Bs1 - 9 to 16 inches: fine sand
Bs2 - 16 to 25 inches: fine sand
BC - 25 to 37 inches: fine sand
Cg1 - 37 to 49 inches: fine sand
Cg2 - 49 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Ecological site: F099XY005MI - Cool Moist Sandy Depression
Hydric soil rating: No

Description of Deford

Setting

Landform: Drainageways on deltas, depressions on deltas
Landform position (three-dimensional): Talf, rise
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Sandy glaciolacustrine deposits

Typical profile

Ap - 0 to 9 inches: fine sand
Bw1 - 9 to 19 inches: fine sand
Bw2 - 19 to 26 inches: sand
Bw3 - 26 to 33 inches: fine sand
Cg1 - 33 to 49 inches: fine sand
Cg2 - 49 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 25 percent
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Ecological site: F099XY011MI - Warm Wet Sandy Depression
Hydric soil rating: Yes

Minor Components

Rousseau

Percent of map unit: 8 percent
Landform: Ridges on deltas
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F099XY004MI - Warm Dry Sandy Ridge
Hydric soil rating: No

Gilford

Percent of map unit: 8 percent
Landform: Depressions on deltas
Landform position (three-dimensional): Talf

Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F099XY013MI - Wet Lake Plain Flats
Hydric soil rating: Yes

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Farmland Classification

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.


82° 26' 53" W
82° 26' 15" W
42° 57' 46" N
42° 57' 28" N
381900
381990
382080
382170
382260
382350
382440
382530
382620
382710
4757690
4757600
4757510
4757420
4757330
4757240
4757150
16th
Cypress St
Cedar St
AhB
WdA
16th St
20th St
14th St
Beard St
Soil Map may not be valid at this scale.
Map Scale: 1:3,930 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 50 100 200 300
Feet
0 150 300 600 900
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

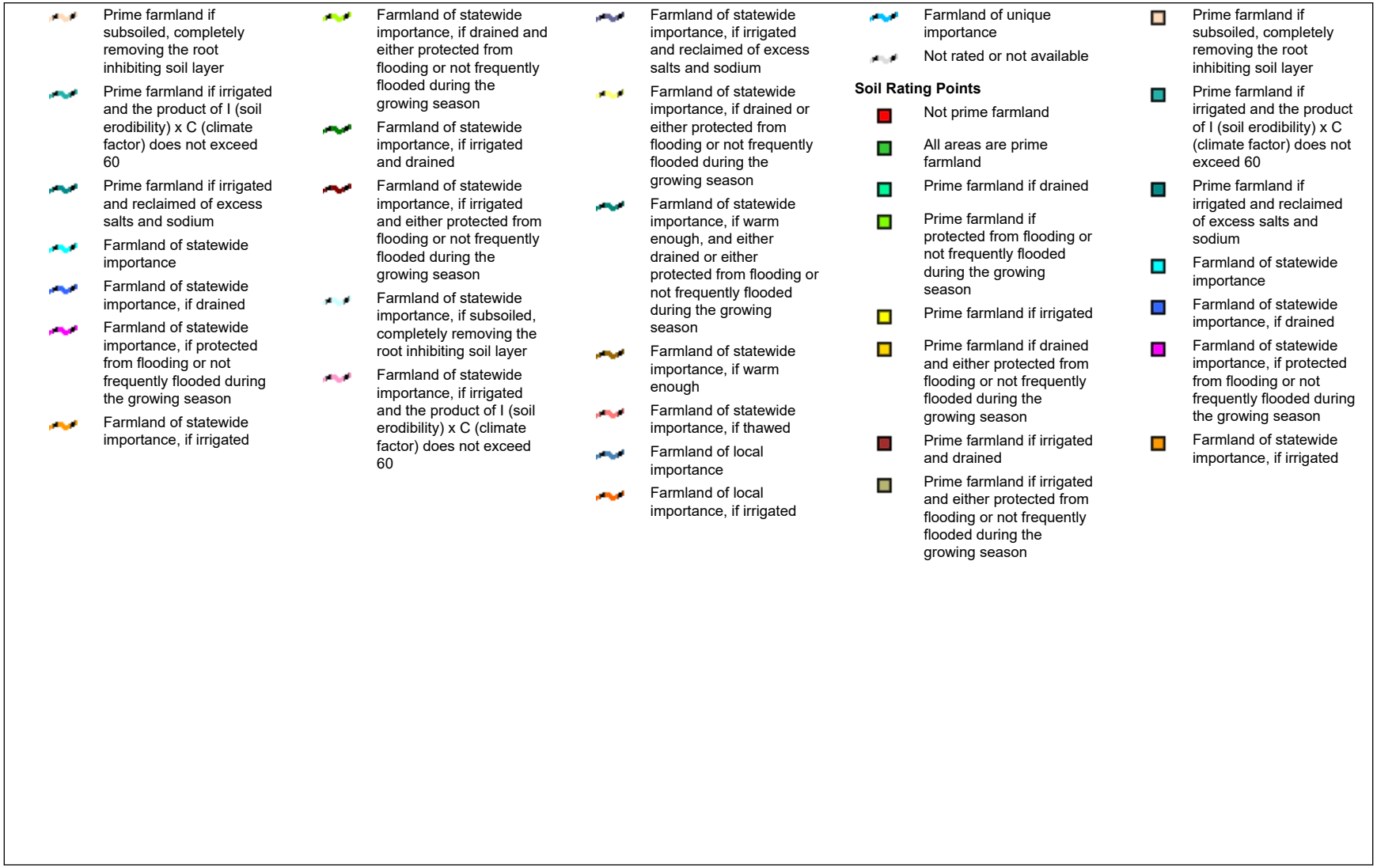
Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated
- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season


Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated
Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated and drained
Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough
Farmland of statewide importance, if thawed
Farmland of local importance
Farmland of local importance, if irrigated
Farmland of unique importance
Not rated or not available
Soil Rating Points
Not prime farmland
All areas are prime farmland
Prime farmland if drained
Prime farmland if protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated and drained
Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated

- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:20,000.

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: St. Clair County, Michigan
Survey Area Data: Version 18, Aug 29, 2022

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

Date(s) aerial images were photographed: Jul 5, 2020—Sep 19, 2020

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.

Table—Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AhB	Allendale-Hoytville complex, 0 to 6 percent slopes	Farmland of local importance	5.0	49.9%
WdA	Wainola-Deford fine sands, 0 to 2 percent slopes	Not prime farmland	5.0	50.1%
Totals for Area of Interest			**10.0**	**100.0%**

Rating Options—Farmland Classification

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Hydric Rating by Map Unit

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and

duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

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

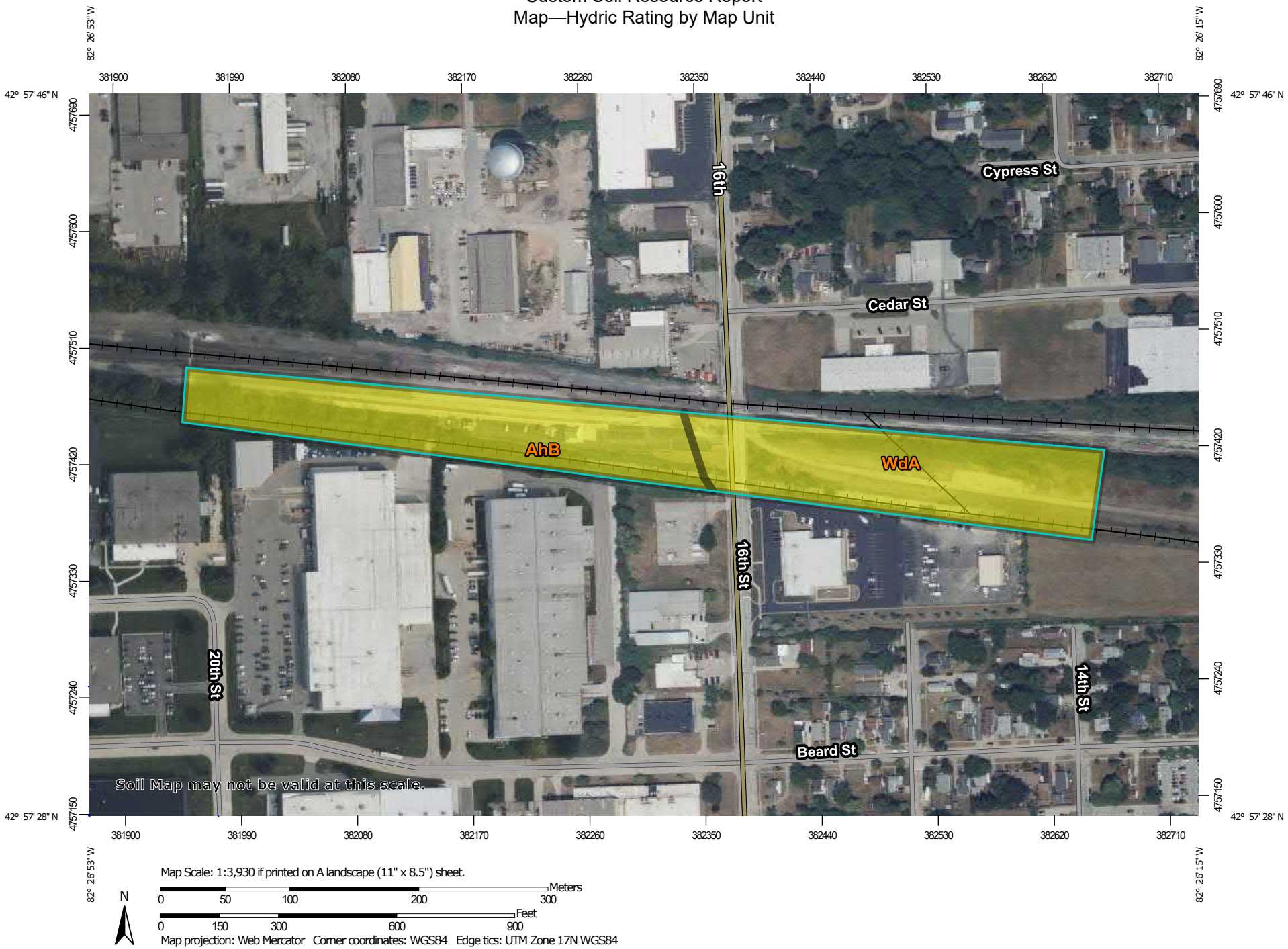
Federal Register. September 18, 2002. Hydric soils of the United States.

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

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

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.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.



Map Scale: 1:3,930 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

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

Soils

Soil Rating Polygons
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

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 1:20,000.

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: St. Clair County, Michigan
Survey Area Data: Version 18, Aug 29, 2022

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

Date(s) aerial images were photographed: Jul 5, 2020—Sep 19, 2020

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.

Table—Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AhB	Allendale-Hoytville complex, 0 to 6 percent slopes	45	5.0	49.9%
WdA	Wainola-Deford fine sands, 0 to 2 percent slopes	35	5.0	50.1%
Totals for Area of Interest			**10.0**	**100.0%**

Rating Options—Hydric Rating by Map Unit

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

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

APPENDIX C

USFWS Official Species List

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

In Reply Refer To: November 29, 2022
Project Code: 2023-0019785
Project Name: BWATC AMTRAK Project Port Huron

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:

Official Species List
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.

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 IPaC website (https://ipac.ecosphere.fws.gov/) at regular intervals during project planning and implementation. To update an Official Species List in IPaC: from the My Projects page, find the project, expand the row, and click Project Home. In the What's Next box on the Project Home page, there is a Request Updated List button to update your species list. Be sure to select an "official" species list for all projects.

Consultation requirements and next steps
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 two approaches to evaluating the effects of a project on listed species.

Approach 1. Use the All-species Michigan determination key in IPaC. This tool can assist you in making determinations for listed species for some projects. In many cases, the determination key

will provide an automated concurrence that completes all or significant parts of the consultation process. Therefore, we strongly recommend screening your project with the **All-Species Michigan Determination Key (Dkey)**. For additional information on using IPaC and available Determination Keys, visit https://www.fws.gov/media/mifo-ipac-instructions (and click on the attachment). Please carefully review your Dkey output letter to determine whether additional steps are needed to complete the consultation process.

Approach 2. Evaluate the effects to listed species on your own without utilizing a determination key. Once you obtain your official species list, you are not required to continue in IPaC, although in most cases using a determination key should expedite your review. If the project is a Federal action, you should review our section 7 step-by-step instructions before making your determinations: https://www.fws.gov/office/midwest-region-headquarters/midwest-section-7-technical-assistance. If you evaluate the details of your project and conclude "no effect," document your findings, and your listed species review is complete; you do not need our concurrence on "no effect" determinations. If you cannot conclude "no effect," you should coordinate/consult with the Michigan Ecological Services Field Office. The preferred method for submitting your project description and effects determination (if concurrence is needed) is electronically to EastLansing@fws.gov. Please include a copy of this official species list with your request.

For all **wind energy projects** and **projects that include installing communications towers that use guy wires**, 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.

Migratory Birds
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 prohibits the take and disturbance of eagles without a permit. If your project is near an eagle nest or winter roost area, see our Eagle Permits website at https://www.fws.gov/program/eagle-management/eagle-permits 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/partner/council-conservation-migratory-birds.

We appreciate your consideration of threatened and endangered species during your project

planning. Please include a copy 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

Project Code: 2023-0019785
Project Name: BWATC AMTRAK Project Port Huron
Project Type: Railroad - Maintenance/Modification
Project Description: upgrades to Port Huron Amtrak
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.96033825,-82.44185073496381,14z

Counties: St. Clair County, Michigan

Endangered Species Act Species

There is a total of 8 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
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949 General project design guidelines: https://ipac.ecosphere.fws.gov/project/AYXUXS5YYRFH7AJANHSVPFGATY/documents/generated/6982.pdf	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045 General project design guidelines: https://ipac.ecosphere.fws.gov/project/AYXUXS5YYRFH7AJANHSVPFGATY/documents/generated/6983.pdf	Threatened
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

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. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/6039

Red Knot *Calidris canutus rufa*	Threatened

There is **proposed** critical habitat 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://ipac.ecosphere.fws.gov/project/AYXUXS5YYRFH7AJANHSVPFGATY/documents/generated/5280.pdf

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

Flowering Plants

NAME	STATUS
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

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
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Dec 1 to Aug 31
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25

NAME	BREEDING SEASON
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds elsewhere

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 (■)

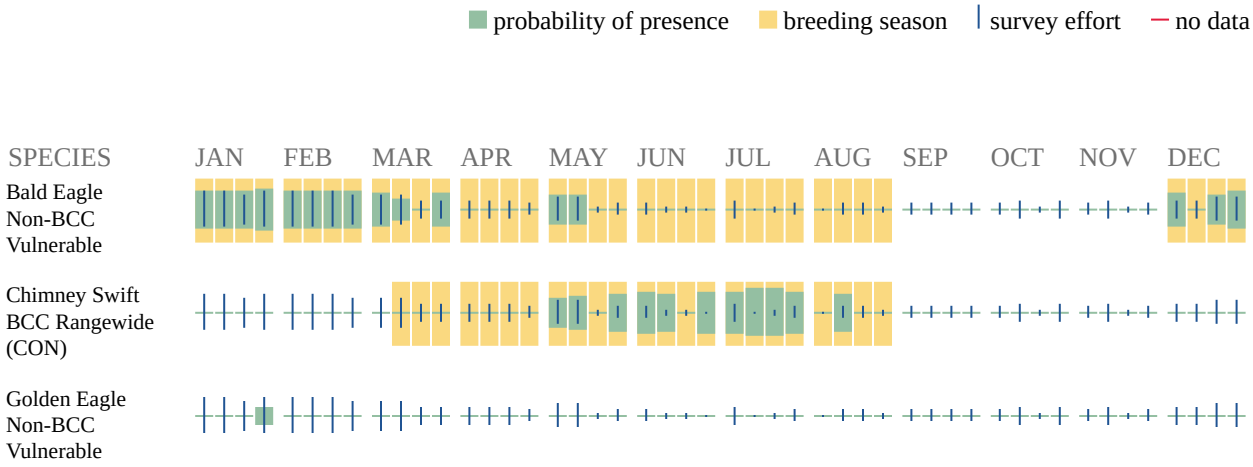
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

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.



Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.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 list of migratory birds that potentially occur 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 Rapid Avian Information Locator (RAIL) 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 or migrating in my 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 query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. 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.

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