Environmental Assessment

Norfolk Southern Railway Section Improvements

From Dearborn to Kalamazoo, Michigan

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Prepared by the:

MICHIGAN DEPARTMENT OF TRANSPORTATION

PREFACE

The National Environmental Policy Act (NEPA) of 1969 requires that the social, economic, and natural environmental impacts of any proposed action of the federal government be analyzed for decision-making and public information purposes. There are three classes of action. Class I Actions, which are those that may significantly affect the environment, require the preparation of an Environmental Impact Statement (EIS). Class II Actions (categorical exclusions) are those that do not individually or cumulatively have a significant effect on the environment and do not require the preparation of an EIS or an Environmental Assessment (EA). Class III Actions are those for which the significance of impacts is not clearly established. Class III Actions require the preparation of an EA to determine the significance of impacts and the appropriate environmental document to be prepared (40 C.F.R. § 1508.4) either an EIS or a Finding of No Significant Impact (FONSI).

This document is an Environmental Assessment for the proposed improvements and acquisition of the Norfolk Southern (NS) Railway Section from Dearborn to Kalamazoo in southern Michigan. This 135-mile section begins in Dearborn at global mile post (GMP) 7.5 and ends in Kalamazoo at GMP 143.7. The NS Railway Section is also part of a larger rail corridor that begins in Detroit/Pontiac, Michigan and ends in Chicago, Illinois. This EA describes the type of improvements being proposed for the Norfolk Southern Railway, potential impacts to the environment, and measures to minimize harm to the NS Railway Section in southern Michigan. This EA will serve as the basis for FRA's determination of whether there are significant impacts. A determination of no significant impacts would result in a "Finding of No Significant Impact" (FONSI). The determination that the preferred alternative will have significant impacts that cannot be sufficiently mitigated, would result in the preparation of an EIS.

This document was prepared by the Michigan Department of Transportation (MDOT) in cooperation with the Federal Railroad Administration (FRA), and other members of the High Speed Rail project study team. Information contained in this document was also furnished by other federal and state agencies, local units of government, public interest groups, and individual citizens.

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1.0 PROJECT OVERVIEW

1.1 Introduction

The 135-mile Norfolk Southern (NS) Railway Section from Dearborn to Kalamazoo in southern Michigan begins in Dearborn at global mile post (GMP) 7.5 and ends in Kalamazoo at GMP 143.7.

The NS-owned Dearborn to Kalamazoo section of railroad is part of the approximately 304-mile corridor between Chicago and Detroit. The Chicago to Detroit corridor is a federally-designated high speed rail (HSR) corridor and is also one of several major branches in the hub and spoke passenger rail system centered on Chicago, IL. **Figure 1** depicts Michigan's passenger rail network. Current services on this section of the Chicago to Detroit corridor include Amtrak's Wolverine service, which runs to and from Chicago, Detroit and Pontiac, MI with 3 round trips per day. Michigan's state-supported Amtrak Blue Water service, which runs from Chicago to Port Huron, MI with one round trip per day, enters and exits the corridor in Battle Creek. Additionally, the state-supported Pere Marquette Amtrak service runs one daily round trip to and from Chicago to Grand Rapids, MI, but this service does not run along the NS-owned section of the corridor. The corridor travels through three (3) states (Illinois, Indiana, and Michigan) and includes corridor ownership of 4 railroads: NS, Amtrak, Conrail Shared Assets Operations (CSAO), and Grand Trunk Western Railroad, Inc. (CN).

This Environmental Assessment (EA) has been prepared to meet FRA's requirement for a "project specific" NEPA document for the proposed acquisition of the 135-mile Norfolk Southern (NS) Railway Section from Dearborn to Kalamazoo, Michigan, and the track rehabilitation and signal improvements required to allow for increases in passenger speeds up to 110 mph.

Figure 1. Michigan's Intercity Passenger Rail System.

1.2 Project History

Amtrak, with assistance from NS, performed a High Speed Rail (HSR) improvement study to determine the infrastructure upgrades needed to provide 110 mph train service on the NS-owned rail section between Kalamazoo and Dearborn in the event that federal funding was available to transfer the section into public ownership as a dedicated passenger rail line. On April 1, 2010, the Federal Railroad Administration (FRA) issued a Notice of Funding Availability for the High-Speed Intercity Passenger Rail (HSIPR) Program in the Federal Register. In response, Michigan Department of Transportation (MDOT) was selected by FRA for Phase 1 of the Kalamazoo Service Development Program (The Program), which consists of the acquisition of the existing 135-mile Norfolk Southern (NS) Railway Section from Dearborn to Kalamazoo, Michigan. In 2011, MDOT was selected for funding under FRA's HSIPR Program for Phase 2 and Phase 3 of The Program, which consist of track rehabilitation and signal improvements, respectively, to allow for increases in passenger speeds up to 110 mph. The Program will ultimately allow trains to travel at 110 mph for 235 miles, or 77 percent of the full corridor from Chicago to Detroit, with an average train speed of 21 mph greater than the current train speed, resulting in a 30 minute reduction in trip time.

As previously indicated, the Dearborn to Kalamazoo Michigan rail corridor, owned by NS, is a federally-designated HSR corridor that shares freight service with passenger rail service. Because of a decline in freight business along this section, NS can no longer justify maintaining track standards to 79 mph between Kalamazoo and Dearborn. NS has stated that their existing freight business requires track standards to be only 25 mph. As a result, NS has started implementing a plan to downgrade this section of track over the next few years by issuing a series of time table speed reductions. The initial time table speed reduction was issued on July 1, 2010, reducing passenger speeds from 79 mph to 60 mph on 41.2 miles of track in this section with a few smaller sections reduced to 25 mph in July 2011. NS plans to issue additional time table speed reductions and will gradually expand 60 mph passenger speeds to the entire section by the end of 2012.

In response to NS's plan to significantly downgrade the line over the next few years, Amtrak performed a HSR improvement study, with assistance from NS, to determine the infrastructure upgrades needed to provide 110 mph train service on the NS-owned rail section between Kalamazoo and Dearborn in the event that federal funding was available to transfer the section into public ownership as a dedicated passenger rail line. The study was completed in June 2010 and the results were used in preparing MDOT's application for funds and in preparing this EA. The Amtrak study serves as the technical foundation for Phases 2 and 3 of the Program, as described below.

1.3 Project Location and Description

The 135-mile NS Railway section is located in southern Michigan, beginning in Dearborn at GMP 7.5 and ending in Kalamazoo at GMP 143.7 as depicted in **Figure 2**. Between GMP 120.54 and GMP 121.89, passenger rail services run along a small section of CN-owned ROW and this section is not included in this EA. The NS-owned section traverses through five counties in southern Michigan:Kalamazoo, Calhoun, Jackson, Washtenaw, and Wayne, and serves the cities of Kalamazoo, Battle Creek, Albion, Jackson, Ann Arbor and Dearborn. NS is one of the major freight carriers in Michigan. Freight service on the NS-owned section includes 8 round trips a day.

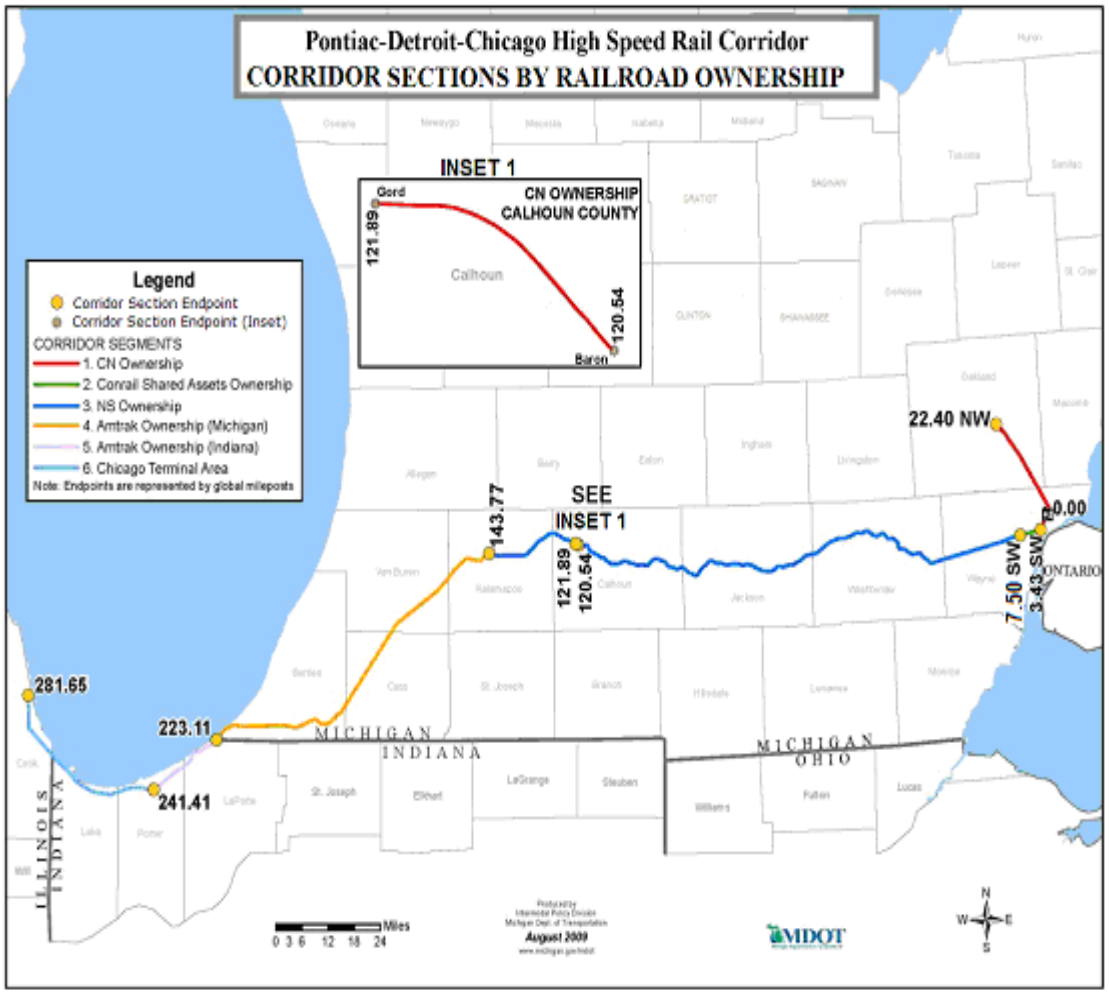


Figure 2. Project Location and Corridor Description

The proposed project consists of a series of infrastructure investments to the NS line between GMP 7.5 to GMP 143.7, including upgrading the existing signals, adding positive train control (PTC), grade crossing improvements, and replacing track, ties, and

ballast to bring the line into a state of good repair and allow 110-mph passenger operations. The location of proposed rehabilitation improvements are depicted in **Appendix A**. In addition, the proposed improvements would involve acquiring this segment of the NS line for public ownership to establish long-term stability for corridor maintenance and operations. The acquisition is subject to National Surface Transportation Board (STB) approval. The project is proposed for implementation in three phases, which will overlap or occur concurrently as described below.

Phase 1: Right of Way Acquisition and Final Design
In Phase 1, MDOT will refresh existing appraisals for the entire rail line from Dearborn to Kalamazoo between GMP 7.5 to GMP 143.7, negotiate and complete an acquisition of this section between Dearborn to Kalamazoo from the NS Corporation , and complete final design for Phases 2 and 3.

Phase 2: Track Rehabilitation Investments
During Phase 2, MDOT will replace approximately 200,000 ties and then resurface the track with clean new ballast. MDOT will also renew 40% of switch ties to include all mainline and control siding turnouts, including approximately 86 turnouts and 3,300 ties. MDOT will also rebuild highway crossings or, where required, replace track structure at crossings. Finally, MDOT will conduct a second surfacing on curves to achieve targets for super-elevation and a third pass for curves where the transition spirals needs to be changed.

Phase 3: Train Control/Signal Investments
During Phase 3, MDOT will install fiber optic communication along the entire track ROW to provide the foundation for the subsequent train control and signal work activities. The renewal of the signal system includes the instillation of Positive Train Control (PTC) and active warning devices and crossings and the extension of crossing starts.

There are several other planned rail projects for this section of the corridor. While these projects have been, or will be studied under separate NEPA documents, they are included in this EA document so the cumulative impacts of these projects can be assessed. These projects are described below.

Dearborn, Ann Arbor and Battle Creek Stations: MDOT was selected by FRA to receive funding under the HSIPR Program to renovate or replace three passenger rail stations along this section, improving not only the speed and reliability of the service along this corridor, but the access through which passengers and the communities connect to the passenger rail network. **Appendix B** depicts the location of these stations on aerial mapping. The Dearborn station project will combine two existing rail stops into an upgraded intermodal facility, which would improve connectivity between trains and regional bus, shuttle, taxi and limousine services to areas in and around Dearborn, and will be within walking distance of Dearborn's West Downtown District and the Henry Ford Museum. The existing Battle Creek station will be renovated to modernize and create a more user friendly facility for the rail, bus and taxi services operating from the

station. Additionally, MDOT received HSIPR funding to complete preliminary engineering and NEPA documentation for a new station in Ann Arbor, MI. The existing Ann Arbor station is the busiest Amtrak station in Michigan, but is located on single-track territory without passing sidings which forces intercity trains to stop and block the mainline while serving the station. The design will incorporate a passing track to allow passenger trains to meet and for more than one train to serve the station at a time, and will also incorporate automobile, pedestrian, transit, and intercity bus connectivity at this new station.

West Detroit Connection: The West Detroit Junction Connection Track Project is located in the City of Detroit, Michigan. This project will construct new signals, replacement a bridge over Junction Avenue, and construct 5 new cross-overs in the West Detroit area. By improving the access at this junction, the project will improve passenger rail travel times by up to 10 minutes between Dearborn Station and Detroit's New Center Station, reduce pollution, and improve safety by eliminating conflicts with the 6 railroads that use this line (CSAO, CN, CSX, Canadian Pacific (CP), NS and Amtrak.

1.4 Purpose and Need

The purpose of proposed project is to:

- Improve the safety of the public transit service by renewing the existing signal system and adding positive train control;
- Provide greater mobility by increasing train speeds to 110 mph, reducing travel time by up to 18 minutes, and improving reliability;
- Complete an ownership arrangement between MDOT and Norfolk Southern that will bring long term stability to the corridor and bring this section to a state of good repair;
- Improve access for the communities in Michigan that will support existing industries, foster growth of new small businesses and encourage large businesses to distribute their operations more widely throughout Michigan; and
- Provide an enhanced alternative to auto and air travel that will promote environmental benefits which include: reduced air pollutant emissions, improved land use options, and fewer adverse impacts to surrounding habitat and water resources.

Beginning July 1, 2010, NS issued their first time table speed reduction for 41.2 miles of the corridor (from Ypsilanti to Battle Creek), reducing passenger speeds from 79 mph to 60 mph. In addition, NS downgraded smaller selected areas to 25 mph in July 2011. NS has estimated that by the end of 2012, they will have issued a series of time table speed reductions that will require the entire corridor to reduce passenger speeds to 60 mph. NS has also indicated that the corridor will further degrade after 2012, impeding all efforts to maintain the existing level of service and schedule reliability. Thus, an ownership arrangement between MDOT and NS is needed to control the NS trackage between Dearborn and Kalamazoo in order to preserve the current level of rail services in this corridor. An ownership arrangement could include dispatching rights, which will provide greater control of train movements in this area.

An ownership arrangement will also help ensure that past and present infrastructure improvements, including service benefits in the Chicago Hub (Chicago-Detroit/Pontiac) High Speed Rail Corridor will not be lost or completely offset by NS's economic outlook on their section of the corridor.

Improved service reliability along with reduced travel times on the NS Railway Section and the entire rail corridor would foster growth of new businesses and encourage existing businesses to distribute their goods throughout Michigan and the Midwest.

One of the factors that would assist with reducing travel times is PTC used by Amtrak in the corridor, also known as the Incremental Train Control System (ITCS). In March 2010, FRA provided Amtrak with conditional approval to increase speeds in this section to 110 mph. Amtrak is expected to meet these conditions and increase passenger speeds to 110 mph in the summer of 2011. This technology is also being extended under an American Recovery and Reinvestment Act (ARRA) grant to Amtrak, from New Buffalo,

Michigan to Porter, Indiana. Amtrak is expected to complete this installation by the end of 2012. If the proposed work for the NS Railway Section is approved, approximately 77% of the 304 miles Chicago-Detroit/Pontiac corridor will be ready for passenger speeds up to 110 mph.

Improvements such as renewing the signal system and adding PTC will not only improve safety but will allow trains to run more efficiently by eliminating communications and signal delays and improve access for the commuter. Improved mobility will assist economic development, including the region's universities and colleges in their roles as centers of higher learning, research, business development and medical services.

The need for the project is based on the following elements:

- Travel delays for passenger and freight users of the system between MP 7.5 to MP 143.7 in Michigan;
- Automotive congestion along the I-94 corridor that runs parallel to the NS Railway Section between Dearborn and Kalamazoo, and resulting travel delays and increased transportation costs for users of other transportation modes such as automobiles;
- Poor service reliability resulting from degraded infrastructure along the NS Railway Section; and
- Substandard and unsafe conditions for those using the passenger rail service and users of other transportation modes resulting from existing congestion, degraded infrastructure and signals, lack of positive train control (PTC), and air toxins resulting from bus and auto emissions.

2.0 DESCRIPTION OF THE ALTERNATIVES

2.1 Introduction

The proposed acquisition and infrastructure improvements for the NS Railway Section from Dearborn to Kalamazoo is a coordinated and comprehensive project that would benefit passenger and freight users along this railway section by reducing travel times and increasing service reliability. Two alternatives were considered: 1) No Build Alternative for the NS Railway Section; and 2) Proposed Improvement Alternative for the NS Railway Section which includes infrastructure improvements and the acquisition of the NS Railway Section.

The Proposed Improvement Alternative is the only build alternative under consideration because the proposed project is conducting necessary maintenance activities for the existing facility, which involves minimal public impact, has no additional right of way acquisition needs, and does not involve significant social, economic or environmental impacts. In order to conduct the maintenance activities and ensure a state of good repair continues on the line, an ownership arrangement between MDOT and NS is needed to control the NS trackage between Dearborn and Kalamazoo to preserve the current level of rail services in this corridor, as indicated above in **Section 1.4**. A state of good repair for the track is defined for the purposes of this document to "*be in good condition for the desired track class that is sustained through regular maintenance*".

2.2 No Build Alternative for Existing NS Railway Section

The No-Build Alternative involves taking no action to acquire or improve the NS Railway Section in southern Michigan. The existing NS Railway Section would remain operational with a current average speed of 55 mph with 3 daily round trips for passengers. However, NS has indicated to Amtrak and MDOT they no longer have a business need to maintain their line to support freight traffic speeds above 25 mph and they plan to allow this trackage to degrade by issuing a series of time table speed reductions as described previously to decrease allowable speeds over the next few years with no improvements made to the line, which would further impede any efforts to improve passenger service along the NS line.

The No Build Alternative would not improve the level and quality of passenger rail service in southern Michigan, and would hinder opportunities for economic growth or strengthening of the state's manufacturing, service, and tourism industries. The No Build Alternative would not only contribute to the degradation of the passenger rail service within the Project area but also along the entire rail corridor between Chicago, Illinois and Detroit/Pontiac, Michigan including rail projects that recently received funding from the HSIPR Program (**Section 1.2**). Service benefits from past and recently selected projects along the Chicago-Detroit/Pontiac Rail Corridor would be offset by the degradation in the NS Railway Section because no upgrades or improvement of the railway line other than routine maintenance would occur. The average speed on the line would decrease by 7 mph due to degradation, resulting in a 56-minute travel time

increase for passengers traveling between Pontiac, Michigan and Chicago, Illinois. Train delays of up to 25 minutes for passenger and freight trains outside of the NS Railway Section would continue and probably worsen over time, making train service less reliable and affecting on-time performance over the whole Chicago Hub Chicago-Detroit/Pontiac High Speed Rail Corridor, as documented in Amtrak's report entitled *The Amtrak Study for the NS Railway Section from Dearborn to Kalamazoo* (Amtrak, 2010).

The No-Build Alternative does not meet the Project's purpose and need of improving the safety of the existing public transit service; providing greater mobility by increasing train speeds; bringing long-term stability and a state of good repair to the corridor by completing an ownership arrangement between MDOT and NS; improving access for existing industrial communities and fostering business growth; or promoting environmental benefits.

2.3 Proposed Improvement Alternative

The Proposed Improvement Alternative would rehabilitate the existing track by improving track conditions and signals between Dearborn and Kalamazoo. Improvements to be performed under the Proposed Improvement Alternative are located in **Appendix A** and include:

- Replacing ties (approximately 206,000) and surface lines;
- Track resurfacing;
- Renewing signals;
- Rail Replacement – approximately 100,000 linear feet;
- Switch tie replacement (approximately 3,600);
- Installation of the Positive Train Control (PTC);
- Installation of warning devices;
- Upgrade signals and train controls;
- Repair of grade crossings;
- Maintenance of existing ballast; and
- Placement of new ballast.

Although not a physical improvement or maintenance activity, the acquisition of NS trackage by MDOT is also an integral part of this proposed project. The Proposed Improvement Alternative would specifically include the MDOT acquisition of the existing NS Railway Section (135 miles) subject to National Surface Transportation Board (STB) approval.

The Proposed Improvement Alternative has been identified as the Preferred Alternative because it meets the purpose and need of the project by enhancing the NS Railway Section and improving the level and quality of passenger rail service in southern Michigan. The Proposed Improvement Alternative will maintain and improve the Michigan rail corridor for existing intercity passenger rail. The Proposed Improvement Alternative would also meet the project purpose and need by allowing for increased speeds up to 110 mph and replacing existing Amtrak intercity passenger train equipment

with new equipment that would improve current services on this railway section and the Chicago-Detroit/Pontiac rail corridor. The Proposed Improvement Alternative would meet project purpose and need by improving the NS Railway Section and the corridor to a state of good repair, preventing degradation of the ridership mobility in this rail section by retaining the infrastructure already in place.

The annual ridership for the Wolverine Service in FY 2010 (Chicago-Detroit/Pontiac) was 479,782 passengers, while the ridership for the Blue Water Service (Chicago-Port Huron) was 157,709 passengers. The Wolverine Service operates three round trips per day; while the Blue Water service offers one round trip per day. With the proposed improvements, it is anticipated passenger service would increase to over 0.5 million passengers for the Wolverine Service, and over 138,000 passenger for the Blue Water Service. Although ridership would increase as a result of these improvements, daily round trip train service on the Wolverine and the Blue Water would remain the same, maintaining the current train capacity.

Current train speeds in Michigan reflect the series of time table speed reductions issued by NS in July 2010 and 2011, and are shown in **Table 1.** Amtrak's study for the NS Railway Section from Dearborn to Kalamazoo[1] indicated that their trains between Kalamazoo and Dearborn averaged 19 minutes of service delay per train in the time period from July 1, 2009 to June 30, 2010. The proposed improvements would reduce the average delay time by up to 12 minutes per train. In addition reductions in travel times due to these improvements would be 18 minutes once speeds are approved for 110 mph on this railway section. After ITCS is extended on the NS Railway Section from Dearborn to Kalamazoo, trains speeds up to 110 mph would be possible from Dearborn, Michigan to Porter, Indiana, and a distance of over 235 miles.

Table 1. Existing Train Speeds on the Michigan Rail Portion

	CN RR (25.0 miles)	**CSAO RR (5.0 miles)**	**NS RR (137 miles)**	**Amtrak RR Michigan (79 miles)**	**Average Speeds Michigan (246 miles)**
Allowable (Range)	25-60 mph	15-70 mph	25-79 mph	45-95 mph	15-95 mph
Allowable (Average)	50 mph	55 mph	51.1 mph	70 mph	62 mph
Actual (Range)	15-60 mph	10-56 mph	25-79 mph	35-95 mph	10-95 mph
Actual (Average)	30 mph	25 mph	39.1 mph	60 mph	51 mph

The Proposed Improvement Alternative includes acquisition, track infrastructure improvements, and train control and signal improvements. Each of these improvements and the phase in which the work would be completed is described below:

[1] *The Amtrak Study for the NS Railway Section from Dearborn to Kalamazoo* (Amtrak, 2010).

Acquisition (Ownership Arrangement) – Phase 1

MDOT would acquire the Norfolk Southern Railway Section between Dearborn and Kalamazoo, Michigan from Norfolk Southern Corporation. The first phase for this project includes acquisition and final design work that is need for phases 2 and 3.

Funding for the acquisition and final design work of Phase 1 needed to implement Phases 2 and 3 is approximately $187.5 million -$150 million in federal funding and $37.5 million in match. The acquisition is expected to be completed by late 2011. The proposed acquisition of this railway section would allow MDOT to proceed with infrastructure improvements that will bring this section of the corridor to a state of good repair, and increase speeds up to 110 mph once the three year construction program is complete.

Proposed Track Infrastructure Improvements – Phase 2

The proposed track rehabilitation improvements include replacing 206,000 ties including ties at switches and crossings. The track would be surfaced with an average raise of 1.5 to 2 inches on clean new ballast. There are 48 public crossings. Sixty ribbons of continuous welded rail (CWR) are estimated for replacement in curved areas for smooth transition into the new rail used in the highway crossings. There would also be 74 crossing panels replaced in 65 private crossings. Track geometry alternation to achieve targets for superelevation and cant deficiency will require a second surfacing pass on the curves. A third pass has been included in those curves where transition spirals need to be changed. This would restore the track to a state of good repair allowing for passenger speed increases once all of the improvements have been made in train control and signals.

Funding for the construction of Phase 2 is approximately $60 million in federal funding. It is estimated that Phase 2 and Phase 3 of the infrastructure work could be combined and completed over three construction seasons. These improvements would expand on Amtrak's work between Porter, Indiana and Kalamazoo, Michigan extending to the east (Kalamazoo to Dearborn) which would provide for passenger speeds up to 110 mph for 235 miles (77%) of the 304 mile Chicago-Detroit/Pontiac High Speed Rail Corridor by the end of 2014.

All of the proposed infrastructure improvements would occur within the existing railroad right of way which is 50-feet from the center of the track on each side. Eleven Aerial maps which show the location, Global Mile Points (GMP), and track infrastructure improvements can be found in **Appendix A**.

Proposed Train Control/Signal Improvements – Phase 3

The proposed train control/signal improvements include replacing the current NS signal system which is obsolete, with a Positive Train Control (PTC) system as an extension of the work that has been done by Amtrak on their ownership in this corridor between Porter, Indiana and Kalamazoo, Michigan. In addition, where train speeds are to be

raised above 79 mph, active warning devices (gates and lights) would be installed at all crossings, both public and private.

Upgrading the signals and train controls would be required for the entire length of the NS Railway Section, and installation of the ITCSwould be required. The installation of the fiber optic cable would link servers of the PTC along the existing rail right-of-way. These servers would analyze track occupancy and highway crossing conditions and communicate the conditions to the trains via data radios. Renewing the signals along the entire NS Railway Section would be required. Warning devices would be added to all of the crossings (public and private) along the NS Railway Section allowing speeds to be increased to 110 mph.

Funding for the construction of Phase 3 is approximately $136.5 million in federal funding. The total amount combined for Phase 2 and Phase 3 is $136.5 million, completed over three (3) construction seasons beginning in 2012 and concluding in 2014.

3.0 AFFECTED ENVIRONMENT, POTENTIAL IMPACTS, AND MITIGATION MEASURES

The purpose of this EA is to provide a project-level analysis in order to clear the project for construction; and to identify potential impacts and measures to minimize, mitigate or compensate for each resource that is impacted by the proposed project.

The Michigan DOT and FRA must comply with all NEPA requirements when considering the impacts of their proposed action on the human, physical or biological environment. All potential impacts need to be identified and steps to minimize, mitigate or compensate for these impacts on each resource must be identified in the NEPA document. The NEPA process is intended to help public officials make decisions that are based on an understanding of environmental consequences and take actions that protect, restore, and enhance the environment[2].

The proposed infrastructure acquisition and infrastructure improvements for the NS Railway Section from Dearborn to Kalamazoo were analyzed and it was determined that these actions along the existing railway section would not require fee right of way or grading permits. Michigan DOT conducted a review (visual inspections, literature searches, data base queries, coordination with state and federal resource agencies, etc.) and analysis of potential impacts. The result of this analysis and measures to minimize impacts for each resource is discussed in the following sections.

3.1 Air Quality

Under the authority of the CAA and the 1990 CAAA Amendments, a set of primary and secondary ambient air quality standards for six criteria pollutants (SO_x, particulate matter [$PM_{2.5}$ and PM_{10}], ozone, NO_x, CO, and Pb) were established to protect public health and welfare. In areas where the criteria pollutant levels do not exceed the annual average standards and do not exceed the short-term (1-, 3-, 8-, and 24- hour) standards, the area is considered in attainment of the National Ambient Air Quality Standards (NAAQS). Areas that do not meet the annual average standards and exceed the short-term (1-, 3-, 8-, and 24- hour) standards are in nonattainment. States with areas in nonattainment must submit state implementation plans (SIPs) to the U.S. EPA that details implementation, maintenance, and enforcement of the NAAQS, include emission limitations and control measures.

Federal agencies responsible for an action occurring in a nonattainment are required to determine if the action conforms to the applicable SIP. The U.S. EPA has developed two sets of conformity regulations:

- Transportation Conformity - Transportation projects developed or approved under the Federal Aid Highway Program or Federal Transit Act [40 Code of Federal Regulation (CFR) Part 93, Subpart A]; and

[2] 40 CFR 1500, Part 1.

- General Conformity - Other projects [40 CFR Part 93, Subpart B].

The Proposed Improvement Alternative does not fall under Transportation Conformity because the project is not receiving any funding assistance and approval through the Federal Aid Highway program or the Federal mass transit program. Therefore the proposed alternative must comply with the requirements under General Conformity.

General Conformity

The General Conformity Rule, established under Section 176(c)(4) under the Clean Air Act provides states a tool to help them improve air quality in areas that do not meet the National Ambient Air Quality Standards (NAAQS). Under the General Conformity Rule, federal actions that occur in a nonattainment or maintenance area must conform to the air quality plans established in the applicable State Implementation Plan (SIP).

The Conformity Rule ensures:

- Federal activities do not cause or contribute to new violation of NAAQS;
- Actions do not cause additional or worsen existing violations of or contribute to new violations the NAAQS; and
- Attainment of the NAAQSs is not delayed.

Existing Air Quality of the Project Area

The proposed project runs through the five counties of Kalamazoo, Calhoun, Jackson, Washtenaw, and Wayne in Michigan. Jackson County is in attainment for all criteria pollutants. Washtenaw and Wayne Counties are in nonattainment for fine particulate ($PM_{2.5}$). All other counties are in attainment/maintenance for 8-hour ozone, as depicted in **Table 2**.

Table 2. Attainment Status Within the Proposed Improvement Alternative.

Pollutant	Counties				
	Calhoun	Jackson	Kalamazoo	Washtenaw	Wayne
SOx	A	A	A	A	A
NOx	A	A	A	A	A
$PM_{2.5}$	A	A	A	NA[1]	NA[1]
PM_{10}	A	A	A	A	A
Pb	A	A	A	A	A
Ozone	A/M	A	A/M	A/M	A/M
A-Attainment A/M- Attainment/Maintenance NA-Nonattainment					

[1] In nonattainment area for the annual (1997) and 24-hour (2006) standards for $PM_{2.5}$.

No Build Alternative for Existing NS Railway Section

The No Build Alternative would not have an immediate effect on air quality. However, if no action is taken to make the necessary updates to this railway section, air quality conditions may worsen over time from bus and auto emissions resulting from congestion on roadways that runs parallel to the NS Railway Section between Dearborn and Kalamazoo.

Proposed Improvement Alternative

The Proposed Improvement Alternative would rehabilitate the existing track by improving track conditions and signals between Dearborn and Kalamazoo. **Section 2.3** lists the improvements that are to be completed under the Proposed Improvement Alternative. No capacity will be added to the existing rail corridor, and the existing volume would be maintained after the Proposed Improvement Alternative is constructed. The estimated emissions resulting from construction of the Proposed Improvement Alternative are listed in **Table 3** below. The equipment and horsepower used for each activity, and in most cases, operational time was provided by the MDOT. In those cases where information regarding operational time was not provided, assumptions were made as documented in **Appendix C**. Appendix C also includes the methodologies used to calculate emissions for each activity, as well as the detailed emission analysis for each activity by county.

Table 3. Estimated Air Quality Emissions By County.

County	Emissions (tons)					
	CO	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**VOC**
Kalamazoo	9.98	4.22	0.42	0.41	0.10	0.75
Calhoun	24.7	10.4	1.03	1.01	0.25	1.85
Jackson	29.7	9.08	0.81	0.78	0.23	34.0
Washtenaw	10.38	7.41	0.82	0.79	0.16	1.25
Wayne	11.1	4.48	0.44	0.43	0.11	0.80
Total	**85.8**	**35.6**	**3.51**	**3.41**	**0.85**	**38.7**

The proposed improvements are estimated to take place over a two to three year period. However, since a proposed schedule of activities per county is not currently available, it was assumed for the worst case scenario that the construction and maintenance activities in any one county will occur during the same year. **Table 4** provides a comparison of estimated emissions to the *de minimis* thresholds in accordance with 40 CRF 93.153. The comparison shows that the Proposed Improvement Alternative would not require a formal conformity determination for activities in any county because projected emission levels would be below the applicable *de minimis* thresholds. It is expected, therefore, that any impacts on air quality for the entire Proposed Action would not be significant.

Table 4. Comparison of De minimis[3] Threshold Emissions to Estimated Emissions for the Proposed Improvement Alternative.

Pollutant	Emissions (Tons per Year)	*de minimis* Threshold (Tons per Year)
Kalamazoo County		
NO_x	4.22	100
VOC	0.75	100
$PM_{2.5}$	0.41	100
Calhoun County		
NO_x	10.4	100
VOC	1.85	100
$PM_{2.5}$	1.01	100
Washtenaw County		
NO_x	7.41	100
VOC	1.25	100
$PM_{2.5}$	0.79	100
Wayne County		
NO_x	4.48	100
VOC	0.80	100
$PM_{2.5}$	0.43	100

Indirect and Cumulative Impacts

The Proposed Improvement Alternative would have no significant impact on current or future air quality standards. It does not have the potential to exceed the NAAQS, or lead to the establishment of a new nonattainment area, or delay achievement of standard attainment. The proposed improvements to the NS Railway section would, over time, improve the air quality in this railway section by travelers diverting from air, bus and auto to rail travel.

Several measures may be undertaken to reduce potential emissions including engine reduction activity reduction of emissions per unit of operating time, and maintenance and upkeep of construction equipment. Construction dust associated with exposed soils will be controlled, if necessary, with the application of water and other approved dust palliatives. MDOT will also encourage measures that reduce engine activity or reduce emissions per unit of operating time. Construction equipment will be kept clean and in

[3] 40 CRF 93.153. See http://www.epa.gov/air/genconform/deminimis.html.

good operating condition. MDOT's Standard Construction Specification Sections 107.15(A) and 107.19 apply to control fugitive dust during construction and cleaning of haul roads. All MDOT vehicles and equipment must follow MDOT Guidance #10179 Vehicle and Equipment Engine Idling.

3.2 Noise and Vibration

Noise and vibration from trains are a concern for communities. The Federal Railroad Administration (FRA) and Federal Transit Administration (FTA) guidance manual, *High-Speed Ground Transportation Noise and Vibration Impact Assessment*[4]) was used to address potential noise and vibration impacts assessments for this project.

This 135-mile section extends from Dearborn to Kalamazoo, Michigan. The NS Railway section maintains an average speed of 55 mph; with the Proposed Improvement Alternative, the average speed would increase to 60 mph. **Table 1** shows the allowable and actual speeds for the entire Rail Corridor from Chicago to Pontiac. The improvements to the NS railroad infrastructure are intended to initially maintain rail speeds up to 79 miles per hour or to return sections of the corridor back to 79 mph from Dearborn to Kalamazoo, and allow for increased speeds up to 110 mph from Dearborn to Porter, Indiana.

The existing train traffic includes three passenger and five freight round trips per day. An additional passenger daily round trip on this rail line begins at Battle Creek to Chicago (*Amtrak Blue Water Service*). The proposed Improvement Alternative does not include any new service and or increase in the number of daily round trips and no increase in service is foreseen at this time. The trains would travel on existing rail lines through areas already accustomed to rail traffic, both freight and passenger, and the accompanying noise and vibrations. The proposed Improvement Alternative would upgrade the existing rails from jointed to continuous welded rail (CWR) which would eliminate the clacking noise typically associated with trains.

There are no FRA designated Quiet Zones along the proposed project corridor. No additional crossings are included in the project. Signalization and updated signage would be used to alert people of the high speed trains.

The FRA High *Speed Rail Initial Noise Evaluation v1.3* model was used to determine the general projected noise impacts along the proposed project corridor. A buffer of 60 and 100 feet, and the screening buffer for each Land Use Category (LUC) identified in Table 3-2 of the *High-Speed Ground Transportation Noise and Vibration Impact Assessment*was used as distance inputs. The results illustrated in **Table 5** show that the LUC 1 had a moderate impact with noise at the 60- and 100-foot buffers at the initial speed increase of 79 mph. The other LUCs showed no impacts at 79 mph. The

[4] Federal Railroad Administration and Federal Transit Administration. *High-Speed Ground Transportation Noise and Vibration Impact Assessment*, October 2005.

calculations show a moderate impact at 60- and 100-foot for all the LUCs for the 110 mph increase.

Table 5. Noise Impact Levels based on Land Use Categories.

Land Use Category	Distance	55 MPH	79 MPH	Projected Noise Impact Exposure	110 MPH	Projected Noise Impact Exposure
1 Outdoor Quiet (Leq[h])	60	63	62	Moderate	64	Moderate
	100	59	58	Moderate	61	Moderate
	300	52	51	None	53	None
2 Residences (Ldn)	60	56	56	None	58	Moderate
	100	53	52	None	55	Moderate
	200	48	48	None	50	None
3 Institutional (Leq[h])	60	62	62	None	64	Moderate
	100	59	58	None	61	Moderate
	500	48	48	None	50	None

Source: Based on Table 3-1, Pages 3-4, *High-Speed Ground Transportation Noise and Vibration Impact Assessment*, US DOT and Federal Railroad Administration, October 2005.

Ground-borne Vibration and Ground-borne Noise

Higher speeds result in higher vibration levels. Doubling speed usually results in vibration levels 4 to 6 decibels higher. Chapter 8 of the guidance provides a vibration screening procedure to determine if any sensitive receivers are likely to receive ground-borne vibration impacts. The guidance categorizes land uses based on sensitivity to vibration: Category 1 -Highly Sensitive; Category 2 – Residential; and, Category 3, Institutional. The guidance also provides a vibration screening procedure to determine if any sensitive receivers are likely to receive ground-borne vibration impacts. The guidance suggested using a screening distance of 100 feet for rails that have passbys of 70 trains or less with speeds 100 - 200 mph[5] adjacent to residential land uses. A land use proximity analysis using Geographic Information System (GIS) and the most current aerials (2009) of the project corridor area was used to identify Category 2 and 3 land uses. A review for Category 1 land uses would occur during the final design phase as recommended in the guidance.

The guidance identifies ground-borne vibration and noise levels as 80 VdB and 43 dB(A) respectfully for Category 2, and 83 VdB and 48 dB(A) respectfully for Category 3. A preliminary assessment using the process described in the guidance for the generalized

[5]Table 8-1, Page 8-2, *High Speed Ground Transportation Noise and Vibration Impact Assessment*, Department of Transportation, Federal Railroad Administration, Office of Railroad Development, October 2005.

prediction of ground-borne vibration calculates to 72 VdB. The ground-borne noise was calculated as 22 dB (A). Both levels are below both Category 2 and 3 criteria.

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would not create additional noise or vibration impacts. However, greater degradation of the rail bed may increase the likelihood of increased rail joint noise.

The Proposed Improvement Alternative would provide a moderate increase in noise levels from the existing to the anticipated 110 mph high-speed rail. There are no foreseen ground-borne vibration or noise impacts expected from the Proposed Improvement Alternative. In addition, the Proposed Improvement Alternative will benefit from the purchase of new lighter and quieter cars and engines that can aid in the reduction of vibration impacts.

Construction of the Proposed Improvement Alternative would result in a temporary increase in the ambient noise level in the vicinity of the project. MDOT would implement mitigation measures for these temporary impacts, which would include construction contract specifications that require that the contractor adhere to all Federal, state, and local noise abatement and control requirements. MDOT would limit construction activities to daytime hours so as to confine the timespan of noise and vibration impacts. Noise would be controlled by measures such as, but not limited to ensuring construction equipment is in good repair and fitted with manufacturer recommended mufflers.

3.3 Water Quality

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would not cause a change in the water quality or impact lakes, streams, and rivers in Michigan.

The Proposed Improvement Alternative would not have an adverse effect on either water quality or on fish species and their habitat, as described below.

The existing NS Railway Section crosses or is directly adjacent to waters of the State, including lakes, streams, county drains, and four major rivers, at approximately 86 locations. All waters of the State are protected from water pollution by the Federal Water Pollution Control Act (as amended by the Clean Water Act of 1972) and by Michigan's Natural Resources and Environmental Protection Act[6]. Any discharge of stormwater from State transportation facilities must comply with Michigan Department of Environmental Quality's (MDEQ) National Pollutant Discharge Elimination System (NPDES) Permit issued to MDOT. This permit includes post-construction requirements

[6]Michigan's Natural Resources and Environmental Protection Act (NREPA), Public Act 451 of 1994, as amended, Parts 31 and 91.

on new development, as well as stormwater controls during construction, for projects that disturb greater than one acre. MDOT is required to develop, implement, and enforce stormwater management programs designed to reduce the discharge of pollutants from the MDOT drainage system to the Maximum Extent Practicable (MEP).

MDOT is an Authorized Public Agency with respect to the State's Part 91, Soil Erosion and Sedimentation Control program. As such, MDOT is authorized to proceed with construction provided they include measures to control soil erosion on all construction projects with earth disturbing activities.

Seven of the 86 crossing locations are waterbodies that are considered especially sensitive to water quality alterations. Three of the streams, Rice Creek, Augusta Creek and Canal Race, are classified as trout streams. Four crossing locations, the Rouge River, Geddes Pond/Huron River, the Huron River, and the Grand River are not meeting state water quality standards and have approved Total Maximum Daily Loads (TMDLs) for pollutants including *Escherichia coli (E. coli)*, biota, and dissolved oxygen. A detailed list of these sensitive waterbodies and their locations is listed in **Appendix D.** If the TMDL defines the appropriate water quality requirements for the pollutant, the "MEP" standard requires stormwater controls that will meet the responsibilities established by the TMDL.

The existing NS Railway line crosses several municipal wellhead protection areas (WHPA) in Chelsea, Jackson, Albion, and Kalamazoo. Existing railroad land use would have been taken into account during the development of these WHPA, and there will not be significant new impacts to the WHPA. The proposed action does not create a significant amount of impervious area or require a new WHPA to be built. Construction impacts would be limited to potential occurrences of sediment runoff which will not affect groundwater. Post construction impacts will be diminished in quality and any minor detection of hydrocarbons or metals would attenuate in the soil before reaching groundwater. There would be no significant impacts to WHPA.

There is no Essential Fish Habitat in the State of Michigan, as defined by the National Marine Fisheries Service. However, the majority of waterbodies support various communities of fish species. Any work within the channel of streams or rivers is regulated by the Michigan Department of Natural Resources (MDNR) and would require a permit under Part 301 of P.A. 451 (1994, as amended). In cooperation with the resource agencies, MDOT would employ avoidance, minimization and mitigation strategies to protect aquatic species and their associated habitats during design and construction. Measures may include, but are not limited to, seasonal work restrictions and preservation of fish passage.

The Proposed Improvement Alternative would not cause an increase in stormwater runoff, generate wastewater, or alter surface or subsurface drainage to any waterbody . Any short term impacts resulting from construction activities would be minimized and mitigated by use of Soil Erosion and Sedimentation Control measures set forth in the required NPDES permits. In the long term, these improvements would not cause an

increase in stormwater runoff, generate wastewater, or alter surface or subsurface drainage to any waterbody.

MDOT is required to develop, implement, and enforce stormwater management programs designed to reduce the discharge of pollutants from the MDOT drainage system to the Maximum Extent Practicable (MEP) and employ Best management Practices (BMPs) such as silt fences, check dams and appropriately sized sediment basins. Following construction, permanent BMPs would be implemented to reduce impacts to water quality. These BMPs may include permanent seeding, establishment of no-mow zones near or adjacent to water courses, detention basins with restricted outlets, and the use of native vegetation.

3.4 Energy Conservation and Use

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No-Build Alternative would not impact energy conservation or use.

The Proposed Improvement Alternative would minimize the short- and long-term environmental impacts of development and other activities through resource conservation, recycling, waste minimization, and the use of energy-efficient and ecologically responsible materials, systems and techniques.

The Proposed Improvement Alternative would also encourage mode-shift to transit from non-motorized transportation by improving the ridership through increasing train speeds and reducing travel delays, which would potentially reduce energy consumption.

3.5 Prime and Unique Farmlands

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would not have an impact on prime and unique farmland.

The Proposed Improvement Alternative would not have an impact on prime and unique farmland, as described below.

A review of the entire NS Railway Section from Dearborn to Kalamazoo indicates that there are Michigan farmland and Open Space Public Act 116 (PA 116) parcels adjacent to rural areas. Since no fee Right of Way (ROW) would be acquired in these rural areas, a PA116 review is not required.

The proposed enhancements to the existing NS Railway Section would not require fee right of way (ROW), grading permits and easements for planned improvements to the NS Railway Section. Therefore, a Farmland Conversion Impact Rating form (AD-1006) would not be required under the Farmland Protection Policy Act (FPPA).

3.6 Wetlands

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would have no impact on wetlands.

The Proposed Improvement Alternative would have no impact to wetlands, as described below.

Based on the National Wetlands Inventory (NWI) mapping, wetlands are located along the NS Railway Section. Mapping which shows the proposed project improvements in relation to the NWI-mapped wetlands is provided in **Figures 3.1, 3.3, 3.5, 3.7, 3.9** and **3.13** at the end of **Chapter 3**. Although the original railbed construction included a number of culverts to allow streams to flow beneath the railroad embankment, wetlands would have been permanently destroyed except where they existed beneath bridges. The proposed improvements do not include any alterations of existing bridges. Furthermore, all work is restricted to the existing railroad embankment. Therefore, no wetlands would be impacted by the proposed project.

During final design, MDOT will review the Project to ensure that the proposed improvements do not extend beyond the existing railroad embankment. If staging areas, temporary access roads, or other temporary features are identified during final design, MDOT will determine whether wetlands are impacted, and ensure that practicable measures are evaluated to avoid and minimize such impacts. If temporary impacts are identified, but they cannot reasonably be avoided, these impacts will be mitigated. By special provisions of the construction contract, the contractor will be required to evaluate the potential for wetland impacts resulting from his chosen construction sequence, access points, maintenance of traffic, and methods of construction. If impacts are identified, the contractor will be required to prepare a Michigan Department of Environmental Quality (DEQ) permit application for submission to, and review by, MDOT.

3.7 Ecologically Sensitive Areas and Threatened or Endangered Species

3.7.1 *Ecologically Sensitive Areas*

There are documented ecologically sensitive natural areas adjacent to the NS Railway Section. The following plant communities contain a variety of native species adjacent to this section some of which are state protected: 1) Oak Barrens – Central Midwest Type, 2) Prairie Fen - Midwest Type, 3) Dry Mesic Prairie - High Prairie - Midwest Type, 4) Wet Prairie - Midwest Type, 5) Wet-mesic Prairie – Tallgrass, Central Midwest Type and 6) Mesic Sand Prairie – Moist Sand Prairie, Midwest Type, and 7) Southern Floodplain Forest.

Potential impacts to species and/or the loss of habitat would be determined after a three-season survey has been conducted in 2011. If it is determined that there would be impacts to ecologically sensitive natural areas that are adjacent to the NS Railway

Section, the impact could be mitigated by restoration or management of existing special communities adjacent to the NS Railway Section. Habitat restoration activities would be used to mitigate for impacts to the habitats as well as listed plant species.

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would not impact ecologically sensitive areas adjacent to the NS Railway Section.

The Proposed Improvement Alternative may impact ecologically sensitive areas. A three-season survey would be needed to determine the impacts. If the proposed project would impact ecologically sensitive areas, mitigation measures would be required. Mitigation measures may include restoration activities or management of the existing special communities adjacent to the NS Railway Section.

3.7.2 *Threatened or Endangered Species*

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would not impact threatened and endangered species and their habitats within this NS Railway Section.

Federally Listed Species (United States Fish and Wildlife Service):

Threatened and endangered species are legally protected by the Federal Endangered Species Act of 1973, as amended. Coordination with the U.S. Fish and Wildlife Services (USFWS) has been initiated and they have identified areas of concern for the NS Railway Section which includes one federally endangered animal species, Indiana Bat; and, one federal candidate animal species, Eastern Massasauga Rattlesnake.

Animals
The Proposed Improvement Alternative as described in this EA, would not impact protected animals if avoidance strategies are implemented in the areas where species exist adjacent to the NS Railway Section.

Indiana Bat (*Myotis sodalis)*. The Indiana Bat is a medium-sized member of the genus *Myotis*, being about two inches in body length and a forearm length of about 1.6 inches. The bat is a summer resident in Michigan from about mid-April to mid-September occupying a range that spans the southern portion of the Lower Peninsula. The species leaves Michigan to hibernate in caves, principally in Indiana, Missouri, and Kentucky. Roosting sites are of considerable interest in regard to protection of the species in Michigan. Primary roosting sites are typically snags in canopy gaps and forest edges that receive direct sunlight throughout the day; while alternative roosts usually receive little or no direct sunlight. Acceptability of a tree as a roosting site, as it relates to conditions with dead or dying trees with exfoliating bark an important factor. Typically the bats show an affinity for very large trees, generally 10.8 to 25.7 inches in diameter for the

placement of maternity roosts and smaller trees for alternate roosts. The height of trees vary, but tend to be tall, with average heights ranging from 62.7 ft to 100 ft tall, with the actually roosting sites ranging from 4.6 ft to 59 ft above ground level. Males have been found using trees as a small as three inches in diameter, but they tend to be larger.

No impacts to the federally endangered Indiana Bat are anticipated because no trees that have the potential to serve as either roosting or maternity site would be cut within the existing ROW, or at existing station locations based upon site inspections conducted in 2009.

Eastern Massasauga Rattlesnake (*Sisturus catenatus catenatus*). The massasauga is a, thick-bodied, medium-sized (18.5 to 39.5 inches in length) snake that is found throughout Michigan, including the counties of Calhoun, Jackson, Kalamazoo, and Washtenaw. It is the only venomous snake found in Michigan. The active period for this snake is from early April to late October, with emergence from hibernation taking place as ground temperature approaches the ambient air temperature. Hibernation typically takes place at the margins of, or in, wetlands where ground water is near the soil surface and there is access to small mammal and crayfish burrows. After spring emergence this species basks up to several weeks on elevated sites such as sedge and grass hummocks, muskrat and beaver lodges, and on dikes or other embankments. After this period of time many may move to drier, upland areas to forage. Gravid females would seek mammal burrows or fallen logs to give birth to from five to 20 young.

The federal candidate species, Eastern Massasauga Rattlesnake, would not be affected since the proposed work would take place within the ROW areas that do not offer suitable hibernation, basking, or foraging habitats. To mitigate potential impacts during construction of the project, MDOT will add the following statement to the plan set and would be discussed with construction staff prior to initiating work on the project.

"Records for the Eastern Massasauga Rattlesnake exist within or near the project area. This venomous snake is a State Special Concern and Federal Candidate species that warrants special consideration. In the event that this species is discovered during construction, immediately move personnel away from the snake and call Richard Wolinski, MDOT Ecologist, at (517) 335-2633 for assistance."

Plant Species

A review of the project by the USFWS indicates that there are no known federally listed plants species within the project corridor.

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative described in this EA would not impact any federally protected plants.

The Proposed Improvement Alternative described in this EA would not impact any federally protected plants because no federally listed plant species are known to occur within the project corridor.

State Listed Species (Michigan Department of Natural Resources and Environment): Threatened and endangered species are legally protected by the State of Michigan's Natural Resources and Environmental Protection Act, Act 451 of the Public Acts of 1994, Part 365. To determine potential impacts for this project, MDOT performed a Phase I Endangered Species office review. During this review the Michigan Natural Features Inventory (MNFI) Database, Web mapping application, Protected Areas Program, aerial and wetland maps, and Element Stewardship Abstracts were reviewed for each species.

Animals

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would have no impact on state listed animal species.

This corridor also contains two major river systems and associated floodplain. Since there is no work within the river itself, the following species would not be impacted by the Proposed Improvement Alternative but are known to occur in the area. In the Kalamazoo River there is a record for Purple Wartyback, *Cyclonaias tuberculata* (T). For the Huron River there are numerous records and locations for Purple Wartyback (T), Elktoe, *Alasmiponta marginata* (SC), Snuff Box, *Epiblasma triquetra* (E), and Southern Redbelly Dace, *Clinostomus elonsatus* (E).

There are turtles of conservation concern associated with the project railway section including: Eastern Box Turtle, Terrapene carolina carolina (SC), Spotted Turtle, Clemmys guttata (T) and Blandings Turtle, Emydoidea blandingii (SC). These species would not be impacted directly by the project because the proposed improvements do not include any alterations of existing bridges, and all work is restricted to the existing railroad embankment. The Proposed Improvement Alternative would not impact wildlife beyond the existing conditions, as there are no impacts to streams, rivers, or wetland. Suitable upland habitat for terrestrial vertebrate species beyond the existing ROW would not be affected as potential impacts to streams and wetlands would be temporary. Suitable upland habitat for vertebrate species beyond the existing ROW would not be affected.

The Eastern Box Turtle and Blanding's Turtle are more terrestrial in their habit during the warmer months of the year. These two species may avoid using resources directly adjacent to the tracks when work activity is taking place and represents a temporary affect to the species Since work on a specific section of track proceeds at about 1.25 miles/day, with specific tasks separated by four to five day intervals, any affect upon an individual animal is considered to be discountable. MDOT would further minimizeimpacts to these species by applying the following "Turtle Statement" to all construction plans. This would alert construction staff to move the turtles to a safe area if

found during construction. The statement would be added to the plan set and would be discussed with construction staff prior to initiating work on the project.

"Records for protected turtles exist within or near this project area. These turtle species warrant special consideration as they are rare in Michigan. In the event that turtles are observed within the construction zone, move the turtle(s) into adjacent vegetative cover, away from physical work activities. If possible, please take a photo and immediately contact MDOT 's Ecologist, to confirm identification."

Plant Species

This corridor contains 22 listed plant species at multiple locations that are listed as endangered (E), threatened (T), or special concern (SC) in the State of Michigan. The table below provides the common name, scientific name, listing status and best field survey time for each species.

Species	Scientific Name	Status	Survey Season
Tall Green Milkweed	*Asclepias hirtella*	T	Mid June-Mid Aug
Rosinweed	*Silphium integrifolium*	T	July-Sept
Queen of the Prairie	*Filipendula rubra*	T	Mid July-Aug
Small Log Fern	*Dryopteris celsa*	T	June-Oct
Yellow Fumewort	*Corydalis flavula*	T	Mid Mar-Mid May
Prairie Indian Plantian	*Cacalia plantaginea*	SC	Mid June-Mid Oct
Leibergs Panic Grass	*Dichanthelium leibergii*	T	June-July
Prairie False Indigo	*Baptisia lactea*	SC	July-Aug
Prairie Birdfoot Violet	*Viola pedatifida*	T	May-June
White Lady Slipper	*Cypripedium candidum*	T	Mid May-Mid June
Compass Plant	*Silphium laciniatum*	T	July-Sept
Virginia Snakeroot	*Aristolchia serpentaria L.*	T	June-Aug
Red Mulberry	*Morus rubra L.*	T	May-Sept
Purple Milkweed	*Asclepias purpurascens*	T	Mid June-Aug
Hairy Fruited Sedge	*Carex trichocarpa*	SC	Mid May-June
White Gentian	*Gentiana flavida*	E	Mid Aug-Sept
Hairy Angelica	*Angelica venonsa*	SC	July-Mid Sept
Blue Eye Grass	*Sisyrinchium strictum*	SC	July
Wahoo	*Euonymus atropurpurea*	SC	Mid June-Sept
Broad Leaved Puccoon	*Lithospermum latifolium*	T	Mid May-July
Water Willow	*Justicia americana*	T	Aug-Sept
Green Violet	*Hybanthus concolor*	SC	Mid May-July

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would have no impact on state listed plant species.

A more detailed review at each site location indicates several species would not be impacted by the Proposed Improvement Alternative. The last six species on the list above would not be impacted due to their distant proximity to the rail line (more than 1500 feet). Many of these same species at their locations also have a natural vegetative buffer that would protect them from potential impacts. These species include: *Angelica venonsa, Sisyrinchium strictum*, *Euonymus atropurpurea, Lithospermum latifolium*, *Justicia Americana*, and *Hybanthus concolor*. No further field survey work or coordination with the MDNR is required to clear these species for environmental impacts.

It is understood that plants can grow within the existing ballast and track facilities, especially where the ballast has not been maintained. MDOT will complete three-season field plant surveys at various locations in and around proposed rail ballast and track improvements to better understand the potential impacts to the state endangered (E), threatened (T), or special concern (SC) species and their habitats listed by the MDNR. These field surveys would provide the location of the plants, the general site ecology, population structure, and number of plants impacted and the loss of suitable habitat. This information can then be analyzed against the proposed scope of work to determine and quantify environmental impacts to the potential plant species.
The Proposed Improvement Alternative may impact state listed endangered, threatened or special concern plant species and/or the loss of habitat. The impacts would be documented and addressed, and the effects would be reconsidered in a re-evaluation of the Environmental Assessment, if necessary. The results of any potential impacts would be fully mitigated as determined in conjunction with MDNR. Mitigation measures would include restoration or management of existing special communities adjacent to the railway section.

During the design process, MDOT would show areas requiring protection on plans with instructions for the installation of protective fencing. This fencing would prohibit all work within these areas to avoid impacts to the species. If work restrictions cannot be used effectively during the design process to eliminate impacts to a species then, minimization strategies would be employed. These strategies would reduce impacts to the species and their habitats. Often this requires small design changes or different construction techniques that minimize the overall impact to the species.

If listed species would be impacted then a State of Michigan Endangered Species Permit is required from the MDNR. This permit would require the applicant to identify the purpose and need for the proposed project as well as avoidance and minimization strategies that have been utilized to lessen impacts. If individuals of protected species cannot be avoided then, impacts would be documented within the permit application. These applications often take one month to prepare and two months to clear with the MDNR. Work cannot proceed in these areas until a permit has been issued. Coordination with the MDNR was initiated in October 2010 and would continue throughout the design and construction.

If appropriate, MDOT would use habitat restoration activities to mitigate for impacts to the habitats as well as losses of individuals of listed plant species. Conditions included in the MDNR permit may require plants to be transplanted by MDOT (when feasible) to a neew location to protect them. If required, MDOT would complete follow-up monitoring for three years after construction. The monitoring would document the post construction changes to the remaining plants, populations, and sites. It would also be used to document the effectiveness of the transplanting efforts, habitat restoration or management activities performed as mitigation for the Project.
See **Appendix E** for MDNR and US Fish and Wildlife Service letters.

Wildlife
Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would have no impact on Wildlife.

The Proposed Improvement Alternative would not impact wildlife beyond the existing conditions, as there are no impacts to streams, rivers, or wetland. Suitable upland habitat for terrestrial vertebrate species beyond the existing ROW would not be affected as potential impacts to streams and wetlands would be temporary. Suitable upland habitat for vertebrate species beyond the existing ROW would not be affected.

3.8 Floodplains

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would have no impact on floodplain areas.

The Proposed Improvement Alternative would have no impact on floodplain areas, as described below.

All of the major rivers and their tributaries that cross this rail section have 100-year floodplain areas associated with them (see **Figure 3.1** through **3.14** at the end of **Chapter 3**). The Federal Emergency Management Agency (FEMA) has established Flood Insurance Rate Maps along many of the rivers. The federal protection of floodplains is afforded by Executive Order 11988 "Floodplain Management," and by implementation of FEMA regulations under 44 CFR 9.00.

The elevation of the existing railroad embankment is above the 100-year flood elevation. Although 1.5 to 2 inches of new ballast would be added to prepare the railbed for the proposed track improvements, this addition of ballast would not occur within the 100-year floodplain. The existing footprint of the roadbed within the NS Railway Section would not be expanded. There would be no alteration of any existing structures and no direct or indirect impacts to floodplains.

The proposed work would not result in an impact to natural and beneficial floodplain values, specifically, flood attenuation and storage, water quality, groundwater recharge,

biological productivity of fish and wildlife, and agricultural and forestry resources. The project would not directly or indirectly support new development in floodplains because existing local ordinances are sufficient to prevent new development from proceeding in floodplains, and there is no shortage of available development sites outside the floodplain limits. The proposed improvements would not occur within the limits of the 100-year flood, would not change the opening beneath any structures or culverts, and would not result in flooding of a community's sole evacuation route. Therefore, the project would not increase the risk of flooding and would not result in impacts to human safety, health, and welfare.

During final design, MDOT would review the project to ensure that the proposed improvements do not extend beyond the existing railroad embankment. If staging areas, temporary access roads, or other temporary features are identified during final design, MDOT will determine whether floodplains are impacted, and ensure that practicable measures are evaluated to avoid and minimize such impacts. If temporary impacts are identified, but they cannot reasonably be avoided, these impacts will be identified and appropriate steps taken to reduce any increase in the risk of flooding during construction. By special provisions of the construction contract, the contractor will be required to evaluate the potential for floodplain impacts when considering his construction sequence, access points, maintenance of traffic, and methods of construction. If temporary impacts are identified, the contractor will coordinate with MDOT to determine whether there are practicable alternatives that do not result in floodplain impacts, and will not proceed without authorization from MDOT. See **Figures 3.1, 3.3, 3.5, 3.7, 3.9** and **3.13** at the end of **Chapter 3** for the location of all floodplains in the project corridor.

3.9 Coastal Zone

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would not impact coastal resources.

The Proposed Improvement Alternative would not impact coastal resources, as described below.

The NS Railway Section is outside of the Michigan Coastal Zone Management Boundary. Therefore, no federal consistency review with the DNRE- Land and Water Management Division (LWMD) - Shoreland Management Unit is required.

There are no coastal barrier resources, critical dunes or high risk erosion areas immediately adjacent to the NS rail line section.

3.10 Navigable Waterways

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the

degrading rail line. The No Build Alternative would not impact navigable waterways in Michigan.

The Proposed Improvement Alternative would not impact navigable waterways in Michigan, as described below.

The NS Railway Section traverses three major Michigan rivers and their tributaries: the River Rouge, the Huron River, and the Kalamazoo River. Currently, Section 404 of the Clean Water Act is delegated to the State of Michigan. According to the U.S. Army Corps of Engineers (USACE) Detroit District List of Navigable Waters of the U.S. updated in 2010, the upper limit of navigability, and the jurisdictional cut-off for USACE on the River Rouge is the Michigan Central Railroad/Penn Central Railroad bridge near Schafer Road in Melvindale, upriver from the Turning Basin. This jurisdictional cut-off is downstream of the easternmost limit of the NS Railway Section. The jurisdictional cut-off for the Huron River is the US-24 bridge at Flat Rock, which is also downstream of the NS Railway Section in this watershed.

Jurisdictional authority for the Kalamazoo River extends from Lake Michigan approximately 31.5 miles upriver to the Allegan Dam, which is many miles downstream of the westernmost limit of the NS Railway Section. Since all of the watercourses affected by the NS Railway Section are located upstream, or outside of the jurisdictional boundaries of the USACE, they do not fall under the definition of navigable waters under the Rivers and Harbors Act of 1899. Therefore, coordination with the USACE will not be required.

3.11 Transportation

Rail infrastructure improvements would reduce congestion caused by passenger and freight trains sharing rail lines along the NS Railway Section. Travel times for both passenger and freight would be reduced and on-time arrival rates would improve due to increased train speeds and fewer delays. Improvements to the existing signal system would safeguard and improve efficient flow of passengers and freight, and reduce delays by 12 minutes for passenger rail. Freight traffic that travels through this area would also benefit from these proposed improvements. By separating passenger and freight movements through this area, delays would be minimized if not eliminated, making passenger and freight rail travel more reliable and predictable. Reductions in travel time and increased reliability could result in a moderate reduction in shipping costs and attract new rail freight shipments to the corridor as well as new businesses that rely on rail for freight shipment. The beneficial effects on freight shipment could extend throughout Michigan and into the Midwest.

The resulting increase in rail ridership is anticipated to reduce traffic congestion and travel demand in the adjacent I-94 highway corridor from Dearborn to Kalamazoo. The proposed rail improvements would not be expected to delay vehicular traffic at rail crossings or increase traffic congestion, since train speeds would eventually increase, reducing the delay time at rail crossings.

The safety of pedestrians and bicyclists would not be impacted by higher speed trains, as the railroad crossings would be marked with signals and four-quadrant gates. Furthermore, pedestrians and motorists would not experience any permanent change in travel patterns because all of the proposed crossing locations already exist.

During construction, there would be some impact on both rail traffic and vehicular traffic. Current freight service on this section of the corridor is very low (8 trains per day). Intercity passenger rail includes six trains per day. Working with the local communities and stakeholders, MDOT would direct track crews to be flexible and to complete work during non-peak times to minimize the impact to existing services. Passenger and freight rail traffic would be slowed through each construction site, temporarily increasing travel time, but the number of trains would not be reduced.

Vehicular traffic will need to be detoured. MDOT would work closely with each community to ensure impacts are minimized when the work is being done. The duration of grade crossing upgrades will be minimized with accelerated work force crews, and scheduled at non-peak time for rail, motorized vehicles, pedestrian, and bicycles. This type of grade crossing work can be completed in a relatively short time period, usually in 3 to 4 days. MDOT would obtain permits for detours needed on the grade crossing upgrades. Signage would be provided to direct vehicles along the detour route, and to advise of the expected duration of the detour.

3.12 Land Use

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would have no impact on land use.

The Proposed Improvement Alternative would not directly change the land use patterns along the NS Railway Section. The acquisition of the NS track by MDOT will change the ownership of the track operations, however the land use would not change as a result, and the track would continue to operate in its current capacity as a rail transportation corridor.

The existing Norfolk Southern Railway Section between Dearborn and Kalamazoo in southern Michigan is approximately 135 miles in length and runs adjacent to multiple land use types. A review of city, township, and county master plans and zoning maps, and aerials of the project area based on 2009 data were used to determine the land use types. These land use types include: agricultural, commercial, industrial, residential, and recreational (See **Figures 3.2, 3.4, 3.6, 3.8, 3.10, 3.12** and **3.14** at the end of **Chapter 3** for mapping of land use types). Most of the existing track runs through rural/agricultural areas with the stations being located in urban areas. The proposed improvements include the placement of new ballast and trackage to repair, rehabilitate, and maintain the existing facilities in the existing right-of-way. The proposed improvements to the NS Railway Section would not directly change land use in the project corridor, nor would it change the land use patterns in the region or affect future development patterns beyond what is already existing or planned.

The improvements in reliability and travel time could indirectly affect land use by providing a stimulus to new development, particularly in the vicinity of stations that are located within a reasonable commuting time of employment centers, and on sites where it would be feasible to construct a railroad spur. See **Section 3.13** for a discussion of the anticipated economic benefits of the project, and **Section 3.20** for a discussion of potential indirect and cumulative effects resulting from project construction.

3.13 Socioeconomic Conditions

The No Build Alternative would hinder employment opportunities (both temporary and permanent), travel options (passenger rail and auto), and new business opportunities, as discussed below.

The Proposed Improvement Alternative would have a positive effect on the communities along the corridor by generating construction jobs, allowing for new employment opportunities, reducing congestion on highways, reducing air and noise pollution by removing conflict points between passenger and freight, and improving train speeds. These proposed improvements would also compliment the other proposed improvements in southern Michigan, Indiana and Illinois by reducing delays, and increasing train speeds.

3.13.1 *Community Facilities*

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would have no impact on community facilities.

A number of community facilities and services are found along the NS Railway Section, however construction of the Proposed Improvement Alternative would not adversely affect any community facilities in the project corridor.

3.13.2 *Demographics*

The NS Railway Section traverses through many large metropolitan areas as well as rural areas in southern Michigan. The U.S. Census Data Estimated 2009 Total Population for each county within the NS Railway Section varies from over 1.9 million people in Wayne County to 135,616 people in Calhoun County. The population for each county is shown below in **Table 6**.

Table 6. Estimated 2009 Total Populations.

Unit of Government	Total Population (Estimated 2009)
Kalamazoo County	248,407
Calhoun County	135,616
Jackson County	159,828
Washtenaw County	347,563
Wayne County	1,925,848
State of Michigan	9,969,727

Source: 2008 Census Data, U.S. Census Bureau.

Under the No Build Alterantive, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No-Build Alternative would not impact population or housing.

Construction of the Proposed Improvement Alternative would not displace any businesses or residences and would not adversely affect the demographics of the study area. Population trends would continue with or without the Proposed Improvement Alternative.

3.13.3 *Economic Resources*

Currently, Michigan has one of the highest unemployment rates in the Country. Michigan's statewide average is almost 11 percent, while the national average is approximately 9 percent[7].

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No-Build Alternative would have no impact on economic resources.

The proposed improvements to the NS Railway Section would generate 265 construction jobs and 1770 permanent jobs after the first year of the improvements being completed. The number of jobs generated after five years would be 2,650 permanent jobs that would be generated as a result of these improvements on the NS Railway Section[8]. New employment opportunities would be generated at the new stations or with businesses in the area that may wish to expand their operations or open new businesses to accommodate people who seek services within close proximity to the stations and along the NS Railway Section. Construction jobs and permanent employment opportunities would help the state and local economy as well improve the commodity flow at national and international levels. The rail infrastructure improvements being proposed for the NS

[7] US Census Bureau, January 2011.
[8] Midwest Regional Railroad System Service Development Plan, Project Notebook, Chapter 11.

Railway Section would reduce travel times for both passenger and freight users and on-time arrival rates would improve due to increased trains speeds and fewer delays.

3.13.4 *Community Cohesion*

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate of the degrading rail line. The No-Build Alternative would not change existing community cohesion patterns. The No-Build would not result in increased opportunities for community cohesion through increased connectivity.

The Proposed Improvement Alternative would have temporary impacts on communities that are adjacent to the NS Railway during construction of the proposed improvements. There would be temporary delays at crossings, temporary change in traffic patterns, and additional construction noise and dust during the construction.

MDOT would implement the following mitigation measures to address temporary impacts: minimizing disruption of traffic in the construction area by coordinating with local agencies and the community; placing signs in all of the construction areas notifying motorists and pedestrians; require construction equipment to have mufflers in good working order and portable compressors must meet federal noise-level standards for equipment; and require that contractors during construction will be responsible for adequate dust-control measures.

As stated previously in **Section 3.11**, grade crossing upgrades will require working very closely with each community to ensure impacts are minimized when the work is being done. Working with the local communities and stakeholders, the duration of grade crossing upgrades will be minimized with accelerated work force crews, and scheduled at non-peak time for rail, motorized vehicles, pedestrian, and bicycles.

3.13.5 *Safety and Security*

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would not improve safety along the NS Railway Section. There would be no additional crossing gates or signals.

The Proposed Improvement Alternative would improve safety along the NS Railway Section by adding additional crossing gates and signals.

The installation of signalization and grade crossing improvements along the NS Railway Section would benefit passenger and freight users by increased reliability, reduced travel times, and the installation of four-quadrant crossing gates which would block all highway lanes during train crossings.

Existing security cameras and lighting at each of the train stations and crossings would continue to be in operation. No additional security measures would be implemented as part of this project.

3.13.6 *Possible Barriers to the Elderly and Handicapped*

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No-Build Alternative would not alter conditions associated with the existing passenger and freight rail services, and thus would not provide any additional improvements for or barriers to access and use by the elderly and the handicapped.

No barriers to use by the elderly or the handicapped have been identified in the Proposed Improvement Alternative. The proposed improvements would be done in accordance with the 1990 Americans with Disabilities Act (ADA) and implementing regulations and guidance.

3.14 Environmental Justice

The purpose of Executive Order 12898 on Federal Actions to Address Environmental Justice in Minority and Low-income populations is to identify, address, and avoid disproportionately high and adverse human health or environmental effects on minority and low-income populations.

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would have an impact on minorities and low-income populations as well as non-minority population groups by not improving accessibility to other modes of transportation, i.e. passenger rail, opportunities to generate temporary and permanent jobs would be lost, noise and air pollution would increase rather than decrease because train delays would increase over time because of stop orders issued by NS to reduce train speeds which would cause further delays.

The proposed acquisition and infrastructure improvements for the proposed NS Railway Section would not cause a disproportionately high and adverse affect on minority and low-income population groups. The Proposed Improvement Alternative would have a positive effect on minorities and low-income populations by improving accessibility, mobility and generating construction jobs as well as permanent jobs for these communities. Noise and air pollution would be reduced; passenger and freight train conflict points would be significantly reduced, if not totally eliminated in southern Michigan.

An analysis of the U.S. Census Data for 2008 and Estimated 2009 Total Population for each of the five counties and the State of Michigan along with field reviews determined that minority populations and low-income populations reside in the urban and rural areas of the five counties (See **Table 7**).

Table 7. Census Information.

Unit of Government	Total Population (Estimated 2009 Estimate)	Percentage of Minority Populations (2008)	Percentage of persons below the poverty level (2008)
Kalamazoo County	248,407	17.8%	15.9%
Calhoun County	135,616	18.4%	16.2%
Jackson County	159,828	13.2%	13.2%
Washtenaw County	347,563	26.1%	13.7%
Wayne County	1,925,848	49.7%	20.5%
State of Michigan	9,969,727	22.5%	14.4%

Source: 2008 Census Data, U.S. Census Bureau.

Many of the communities such as Dearborn, Jackson, Battle Creek and Kalamazoo have been identified as Economically Distressed Areas (EDA) in Michigan. Approximately 91 percent of Michigan's populations live in areas considered economically distressed according to the federal definition, making Michigan one of the states most impacted by the recent recession. It is anticipated that proposed improvements would improve accessibility, mobility and generate construction jobs as well as permanent jobs for these communities.

There would be no displacements of minority and low-income residents or minority owned businesses. The proposed improvements would have a positive effect on minority and low-income population groups. The proposed improvements would generate construction jobs and other permanent jobs. The infrastructure improvements would improve the environment in southern Michigan in the following areas that are also discussed in **Section 3**: Air Quality (**3.1**), Noise and Vibration (**3.2**) and Safety and Security (**3.13.5**).

The Proposed Improvement Alternative would have temporary impacts on minority and low-income populations that are adjacent to the NS Railway Section. There would be temporary delays at crossings, temporary change in traffic patterns, and additional construction noise and dust during the construction of the proposed improvements.

MDOT would implement the following mitigation measures to address temporary impacts: minimizing disruption of traffic in the construction area by coordinating with local agencies and the community, placing signs in all of the construction areas notifying motorists and pedestrians; ensure that all lane closures, traffic shifts, short term detours, and changes in travel patterns are clearly marked; require construction equipment to have mufflers in good working order and portable compressors must meet federal noise-level standards for equipment; require that contractors during construction would be responsible for adequate dust-control measures so as not to cause detriment to the safety, health, welfare, or comfort of any person or cause damage to any property, residence or business.

3.15 Cultural Resources

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would have no effect on Historic Resources.

The Proposed Improvement Alternative would have no adverse effect on Historic Resources.

3.15.1 *Historic Resources*

Section 106 of the National Historic Preservation Act of 1966 (36 CFR Part 800), as amended, requires that federal actions be reviewed for their impact to potentially significant historic resources. A significant historic resource is one that is either listed or determined eligible for listing on the National Register of Historic Places (NRHP).

There are multiple above-ground cultural and historic resources in the immediate vicinity of the rail corridor. The Area of Potential Effect (APE) consists of the rail corridor itself, existing crossings, and 500 feet in any direction of NRHP-eligible or listed stations. A list of 40 known and identified eligible, already listed, or potentially eligible above-ground historic resources can be found in **Appendix F**. These 40 sites, many of which are located outside but adjacent to the APE, were identified using the "Sites Online" database maintained by the State Historic Preservation Office (SHPO), other on-line tools, and professional knowledge.

MDOT submitted a letter with accompanying maps to the SHPO in 2009 requesting concurrence with a no adverse effect determination for the proposed Railroad Corridor improvements from Pontiac to the Indiana State line, which also included the NS Railway Section (see MDOT letter dated September 3, 2009 in **Appendix G**). The scope of work for the current NS Railway section is the same scope of work sent to the SHPO in 2009 as part of the Pontiac to Indiana State line project. The SHPO has determined that the proposed improvements to the corridor, including the NS Railway Section, would have no adverse effect on historic properties if the conditions noted below are followed (See SHPO letter dated September 22, 2009 in **Appendix G**).

The no adverse effect determination under 36 CFR 800.5(b) concurred upon by the SHPO was possible due to the limited scope of work and conditions outlined in the letter sent to the SHPO by MDOT on September 3, 2009 in **Appendix G**. The conditions are listed below:

- The railroad work will have no effect if the work is in the existing right of way. This railroad corridor has existed historically, been an active rail line since its original construction and historically had double track.
- No existing public crossing will be closed.

- No permanent easement or fee right-of-way is acquired from historic above-ground resources. Proximity will be assumed as within 500 feet from the resource.
- All decorative fence installation is approved by an MDOT Historian. The decorative fence is proposed for a limited number of locations. While the woven wire and/or chain link fence is unobtrusive, the decorative fence is meant to stand out and may not be appropriate in some situations.
- No rehabilitation work on railroad bridges will occur aside from normal maintenance.
- No masonry culverts are replaced.
- All track work off existing ballast, or work involving crossing closures, crossing installation or improvements, pedestrian crossing installation or improvements, ADA compliance, and/or platform installation or improvements, within 500' in any direction of eligible or NRHP-listed depots, freighthouses, express buildings, coaling stations, interlocking towers, etc. must be approved by an MDOT Historian.

3.15.2 *Archaeological Resources*

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would have no impact on archaeological sites.

The Proposed Improvement Alternative would have no impact on archaeological sites, as described below.

For the review of possible impacts to archaeological/cultural resources, MDOT determined that the Area of Potential Effects (APE) is confined to the existing NS Railway right of way, which has existed historically, been an active rail line since its original construction, and historically had a double track. MDOT also reviewed the state archaeological site files to analyze the possible impacts to previously recorded archaeological/cultural sites in or adjacent to the NS Railway right of way in the Dearborn to Kalamazoo section. The site file search identified 17 archaeological sites that possibly overlap the existing NS Railway Section between Dearborn and Kalamazoo. Ten of these sites have either been determined not eligible for listing on the National Register or are 1) sites referenced by Hinsdale (1931) or other historical references that lack accurate locational information, 2) reported collections that lack accurate locational data that have never been field verified, or 3) sites that have been destroyed or otherwise disturbed. The seven remaining sites include four lithic scatters, two findspots, and one site that may be the result of glacial action on a bedrock outcrop. However, based on the proposed project's impacts, which would not extend outside the existing right of way, it is MDOT's opinion that the project would have no adverse effect on these seventeen sites or any other archaeological/cultural sites possibly located along the rail corridor. MDOT consulted with the Office of the State Archaeologist (OSA)/State Historic Preservation Office and reviewed the APE and this analysis of possible impacts. MDOT and the OSA

agreed that the project in its entirety would have no effect on archaeological sites (**See Appendix G**).

3.15.3 *Section 4(f) Properties*

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would have no impact on Recreational or Historic Section 4(f) Properties.

The Proposed Improvement Alternative would have no impact on Recreational or Historic Section 4(f) Properties, as described below.

Section 4(f) of the U.S. Department of Transportation (USDOT) Act of 1966 (as amended) prohibits the use of publicly-owned land from any park, recreation area or wildlife/waterfowl refuge or land from a historic site of national, state, or local significance for transportation projects unless (1) there is no prudent and feasible alternative to the use; and (2) the proposed project includes all possible planning to minimize harm.

Recreation Areas
A review of aerials and topography maps indicate that there are 27 public recreational properties (**Appendix H)** that include parks, athletic fields, nature areas, and a golf course located adjacent to or in the vicinity of the NS Railway Section from Dearborn to Kalamazoo. However, no temporary or permanent right of way or easements would be required from any public recreational property, and access would be maintained to the public recreational properties, including trails, during construction.

Temporary impacts such as construction noise and dust may occur, however these construction activities would be limited as construction activities would be for short periods of time (2-3 days). Mitigation measures to address these temporary impacts include: requiring construction equipment to have mufflers in good working order and portable compressors must meet federal noise-level standards for equipment; require that contractors to be responsible for adequate dust-control measures so as not to cause detriment to the safety, health, welfare, or comfort of any person, or cause damage to the public recreational properties. Additionally, the contractors would not park any vehicles or store any materials on the public recreational properties.

Historic Properties
There are numerous historic properties, both above-ground and archaeological, along the NS Railway Section as noted in **Section 3.15.1**. Use of a Section 4(f) property occurs when there is a permanent incorporation of that property into a transportation project. This permanent incorporation can be through fee-simple acquisition or permanent easement. Temporary occupancies that are adverse in terms of the statute's preservation purpose are also considered uses. 23 CFR 774.13(d) contains criteria that must be examined to determine if the temporary occupancy would be considered a Section 4(f)

use. A “no historic properties affected” or “no adverse effect” determination is made in accordance with Section 106 of the National Historic Preservation Act, with concurrence in writing from the State or Tribal Historic Preservation Officer (SHPO/THPO) and the Advisory Council on Historic Preservation (ACHP) (if participating in the Section 106 consultation).

Based on the proposed project’s impacts, which would not extend outside the existing right of way, it is MDOT's opinion that the project would have no adverse effect on any historic sites located along the rail corridor. MDOT consulted with the Office of the State Archaeologist (OSA) and State Historic Preservation Office (SHPO), who reviewed the APE and the analysis of possible impacts resulting from project construction. MDOT and the OSA and the SHPO agreed that the project in its entirety would have no effect on above ground and below ground historic sites (**See Appendix G**).

3.16 Hazardous Materials

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would have no impact on hazardous materials.

The Proposed Improvement Alternative would have no impact on Hazardous Materials, as described below.

Hazardous materials are substance (products, ingredients, etc) that, by their nature, are hazardous to health and the environment if misused or mishandled. Hazardous materials are not expected to be encountered during project construction, and bulk transport of hazardous materials is not expected to occur as a result of this project. However, the project may result in the movement of limited quantities of hazardous materials, such as transport of material needed by an individual for medical reasons. All hazardous materials would be transported in accordance with federal Hazardous Materials Regulations found in Title 49 of the Code of Federal Regulations. Additionally, the U.S. Department of Transportation (DOT) enacts and enforces all hazardous material shipping laws. Compliance with DOT requirements would be overseen by the owners of the trains or trucking companies.

3.17 Hazardous Waste

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would have no impact on hazardous waste.

The Proposed Improvement Alternative would not likely encounter hazardous waste. However, if hazardous waste is encountered, MDOT/contractor would coordinate with the Michigan DEQ regarding the appropriate treatment and disposal options, consistent with Part 111 of Public Act 451 of 1994, and amendments. In addition, proper

precautions would be taken during construction to ensure that construction workers are not exposed to hazardous materials.

As defined in Part 111 (Hazardous Waste Management) of the Michigan Natural Resources and the Environmental Protection Act, 1994 PA 451, hazardous waste is: "waste or a combination of waste and other discarded material, including solid, liquid, semisolid, or contained gaseous material that, because of its quantity; quality; concentration; or physical, chemical, or infectious characteristics, may cause or significantly contribute to an increase in mortality or an increase in serious irreversible illness or serious incapacitating but reversible illness, or may pose a substantial present or potential hazard to human health or the environment if improperly treated, stored, transported, disposed of, or otherwise managed".

A preliminary assessment of the rail corridor in Michigan which included the NS Railway Section indicates limited quantities of contaminated media (soil, debris) may be encountered/generated during construction. The exact location of contaminated media would not be known until encountered/generated by construction activities. Based on past sampling of this type of media, levels of contamination are not expected to have hazardous characteristics as defined by the Environmental Protection Agency (EPA), and therefore would not be classified as hazardous waste. All contaminated media generated during construction would be disposed of in accordance with state and federal laws at a licensed disposal facility.

The proposed improvements in the rail section would not result in impacts to either shallow aquifers or deeper drinking water sources. A review of the DNR database revealed no areas of ground water contamination or leaking under storage tanks (LUST sites).

A Phase I site assessment is not required because the proposed excavation would not go deeper than 15 feet below the existing surface elevation; there would no significant amount of below ground utility work; and there would be no new land purchases outside of the existing railroad right of way (See **Figures 3.2, 3.4, 3.6, 3.8, 3.10, 3.12** and **3.14** at the end of **Chapter 3** for mapping of Hazardous Waste Site Locations).

3.18 Construction Impacts

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would not impact vehicular or rail traffic during construction.

The Proposed Improvement Alternative would impact vehicular traffic during construction by detouring vehicular traffic to the next crossing during construction. However these impacts would be short-term and coordination with the locals will need to occur in order to notify motorists and non-motorists of the detour routes. This detour would also have temporary impacts on residents or business owners that live adjacent or

near the construction area. The impacts to motorists, non-motorists, residents, and business owners include: longer travel times, changes in traffic patterns, increase in ambient noise levels; and fugitive dust during the construction of the proposed improvements to the NS Railway Section.

Track improvements and grade crossing upgrades will require working very closely with each community to ensure impacts are minimized when the work is being done. It is expected that there will not be any detours required for track improvements. Proper permits will be obtained for detours that will be needed for the grade crossing upgrades. These impacts will be minimized with accelerated work force crews, scheduled at low peak traffic count intervals for both rail, motorized vehicles, pedestrian, and bicycles.

During the construction of the proposed improvements to the NS Railway Section, MDOT would need to close each of the railroad crossings and divert vehicular traffic to the nearest crossing that would remain open during construction. Work on each of the crossings will take 3 to 4 days. Track infrastructure improvements and train control and signal improvements would be done over three construction seasons.

Mitigation measures to address the temporary impacts to the residents, traveling public and businesses in and around the construction and detour routes include minimizing disruption of traffic in the construction area by coordinating with local agencies and the community, and placing signs in all of the construction areas notifying motorists and pedestrians. Access for passenger and freight traffic would be maintained at all times. The contractor would be responsible for clearing the track each time a passenger or freight train needed to access the area under construction. However, trains speeds would be reduced through the construction areas. MDOT would continue to coordinate with local officials, residents, and business owners regarding construction schedules, signage and detours for vehicle traffic.

The proposed construction would result in a temporary increase in the ambient noise level at certain locations within the NS Railway Section. MDOT will ensure that the construction contract specifications require that the selected construction contractor will adhere to all federal, state, and local noise abatement and control requirements. Noise will be controlled by measures such as, but not limited to, ensuring construction equipment is in good repair and fitted with manufacturer recommended mufflers.

MDOT will also encourage measures that reduce engine activity or reduce emissions per unit of operating time. Construction equipment will be kept clean and in good operating condition. MDOT's Standard Construction Specification Sections 107.15(A) and 107.19 apply to control fugitive dust during construction and cleaning of haul roads. All MDOT vehicles and equipment must follow MDOT Guidance #10179 Vehicle and Equipment Engine Idling. Additionally, sediment and erosion control measures will be used to minimize any water quality impacts during construction.

The concurrent construction period for each of the separate proposed improvements throughout the railway section would last 1 ½ to 3 years; therefore, air quality construction mitigation is not required, but measures may be taken to include strategies that reduce engine activity or reduce emissions per unit of operating time. Construction

equipment should be kept clean, tuned-up, and in good operating condition. MDOT's Standard Construction Specification Sections 107.5 (A) and 107.19 would apply to control fugitive dust during construction and cleaning of haul roads. All MDOT vehicles and equipment must follow MDOT Guidance #10179 (02/15/2009) Vehicle and Equipment Engine Idling.

MDOT will enforce the *Michigan Standard Specifications for Construction*[9], which specify implementation of the following control measures on construction projects:

1. The contractor shall locate all active underground utilities prior to starting work, and shall conduct his operations in such a manner as to ensure that those utilities not requiring relocation will not be disturbed. Relocated utilities may be temporarily interrupted for short time periods.

2. Accelerated erosion and sedimentation caused by construction would be controlled before it enters a water body or leaves the highway right-of-way by the placement of temporary or permanent soil erosion and sedimentation control measures as discussed in **Section 3.3**. The design plans would describe the erosion and sedimentation controls and their locations.

3. All regulations of the MDEQ governing disposal of solid waste must be complied with. When surplus or unsuitable material is to be disposed of outside the right-of-way, the contractor shall obtain and file with MDOT written permission from the owner of the property on which the material is to be placed. If federal funds are used for corridor improvements, Executive Order 11990 states that no surplus or unsuitable material is to be permanently disposed of in any public or private wetland area, regardless of size. In addition, no material is to be temporarily disposed of in any wetland, watercourse or floodplain without prior approval (and permit) by the appropriate resource agencies.

4. Disruption of traffic in the construction area will be minimized to the greatest extent possible. Although control of all construction-related inconveniences is not possible, motorist and pedestrian safety will be ensured by placing signs in all construction areas. All lane closures, traffic shifts, short term detours, and changed travel patterns will be clearly marked. Access will be maintained to adjacent properties during construction to the extent possible.

5. Construction noise would be minimized by measures such as requiring construction equipment to have mufflers in good working order, that portable compressors meet federal noise-level standards for that equipment, and that all portable equipment be placed away from or shielded from sensitive noise receptors if at all possible. All local noise ordinances would be adhered to unless otherwise granted exception by the responsible municipality.

6. During the construction, the contractor would be responsible for adequate dust-control measures so as not to cause detriment to the safety, health, welfare, or comfort of any person, or cause damage to any property, residence or business.

7. All bituminous and Portland cement concrete proportioning plants and crushers

[9] *Michigan Standard Specifications for Construction*, Michigan Department of Transportation, 2003.

must meet the requirements for the rules of Part 55 of Act 451, Natural Resource and Environmental Protection. Any portable bituminous or concrete plant or crusher must meet the minimum 250 foot setback requirement from any residential, commercial, or public assembly property. The contractor may be required to apply for a permit-to-install or a general permit from the MDEQ. The permit process including any public comment period, if required, may take up to six months.

In addition, design plans would be reviewed by MDOT prior to contract letting in order to incorporate any additional social, economic, or environmental protection items. The active construction site would be reviewed to ensure that the above measures are carried out, and to determine if additional protection is required. More control measures may be developed if additional concerns are identified. If the review of design plans indicates that temporary impacts are sufficient to warrant additional controls to minimize impacts, specific measures would be included on the design plans and permit applications, and coordinated with appropriate state, federal and local agencies.

3.19 Permits

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would not require permits.

A new MDEQ NPDES permit is issued to MDOT every five years. Because this project would disturb more than one acre, it would be required to comply with the conditions of the current NPDES permit related to management of stormwater runoff from the construction site as well as management of stormwater from the completed project.

Because this project would disturb more than one acre, a Notice of Coverage must be filed with DEQ, including a copy of the Soil Erosion and Sedimentation Control (SESC) permit, a location map, a copy of the SESC plan for the project, the name and certification of the responsible stormwater operator, and the filing fee. The contractor will have a documented program and adequate procedures to comply with applicable soil erosion and sedimentation control regulations and shall control erosion and prevent sediment related to the project from entering waters of the State of Michigan or leaving the right of way. MDOT must ensure that the site is inspected by a certified construction stormwater operator once per week, and within 24 hours after every precipitation event that results in a discharge from the site, to ensure that any needed corrective actions are carried out.

3.20 Indirect and Cumulative Effects

Under the No Build Alternative, no additional maintenance activities or construction would occur and the passenger and freight rail services would continue to operate on the degrading rail line. The No Build Alternative would have an indirect effect and cumulative impact on the existing NS Railway Section and the entire rail corridor in southern Michigan, Indiana, and Illinois. The No Build Alternative would not improve

the level and quality of passenger rail service in Michigan. Travel times for passengers traveling between Detroit/Pontiac and Chicago would be expected to increase up to 56 minutes. Train delays of up to 25 minutes for passenger and freight trains would continue and probably worsen over time making train service less reliable and effecting on-time performance over the whole Chicago Hub Chicago-Detroit/Pontiac High Speed Rail Corridor including the NS Railway Section.

The No Build Alternative would not only contribute to the degradation of the NS Railway Section but also to the entire rail corridor between Chicago, Illinois and Detroit/Pontiac, Michigan including those projects outlined in **Section 1.3**. Benefits from these projects along the corridor outlined below would be offset by the degradation in the NS Railway Section.

The Proposed Improvement Alternative consists of a series of infrastructure investments to the NS line between MP 7.5 to 143.7 including upgrading the existing signal system, adding PTC, grade crossing improvements, and replacing track, ties and ballast to bring the line into a state of good repair and allow 110-mph passenger operations. The Proposed Improvement Alternative will involve maintenance to the existing rail facility by improving and/or rehabilitating the ballast and the track, and train control/signal improvements in the existing right-of-way. The Proposed Improvement Alternative will not include any other upgrades or improvements to the rail facility that would increase the capacity of the rail system. Direct impacts to natural, cultural, or socio-economic resources are discussed in Section 3.0 of this document. Temporary impacts to resources resulting from project construction are addressed in **Section 3.18**.

Proposed improvements to the existing NS Railway Section and related improvement projects to the entire Chicago-Detroit/Pontiac High Speed Rail Corridor would collectively provide benefits to the communities along the NS Railway Section and the entire Chicago-Detroit/Pontiac Corridor. These benefits include: improved level and quality of passenger rail service (mobility) for everyone including the elderly and people with disabilities, and reduction of congestion and travel times. See **Section 3.13** for a discussion of the anticipated economic benefits of the project.

The proposed improvements to the facility for continued use of the track does not, by itself, increase capacity. However, the proposed improvements to the NS Railway Section may, over time, see an increase in ridership, new businesses and employment opportunities and economic growth associated with the improved mobility of the facility. The improvements in reliability and travel time could indirectly affect land use by providing a stimulus to new development, particularly in the vicinity of stations that are located within a reasonable commuting time of employment centers, and on sites where it would be feasible to construct a railroad spur. Indirect and cumulative impacts resulting from the economic benefits of growth may further result in impacts to natural, cultural or socio-economic resources. These impacts can be mitigated for effectively by early coordination, planning and integration of all potential infrastructure improvements resulting from growth induced by the project into the overall regional, state and local project planning programs by MPOs and other organizations.

Figure 3.1. Wetlands, Hydrography, Floodway, Floodplains GMP 7.5-20

Figure 3.1. NS Railway Section: Wetlands, Hydrography, Floodway, Floodplains.

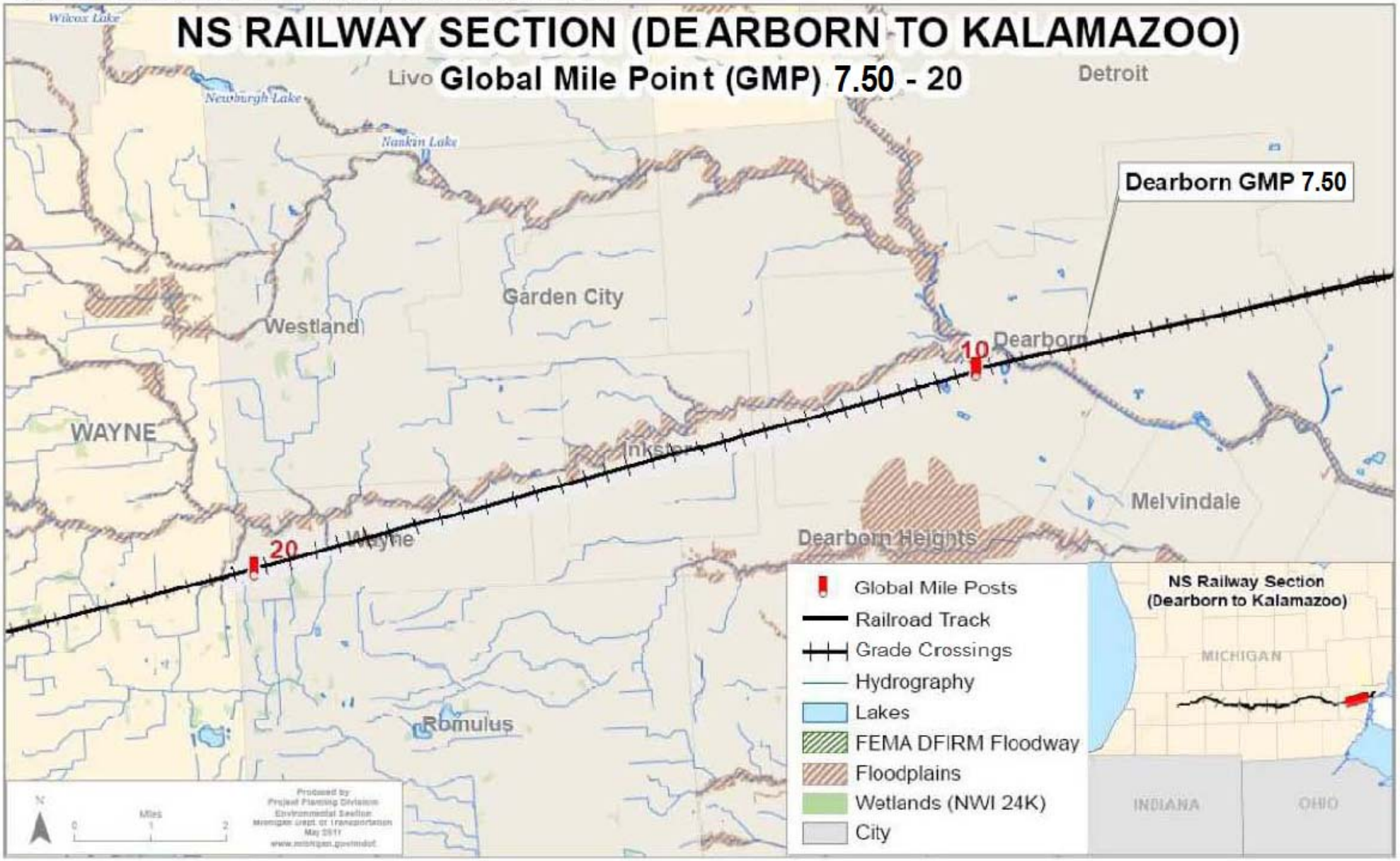


Figure 3.2. Land Use and Contaminated Sites GMP 7.5-20

Figure 3.2. NS Railway Section: Land Use, Contaminated Sites.

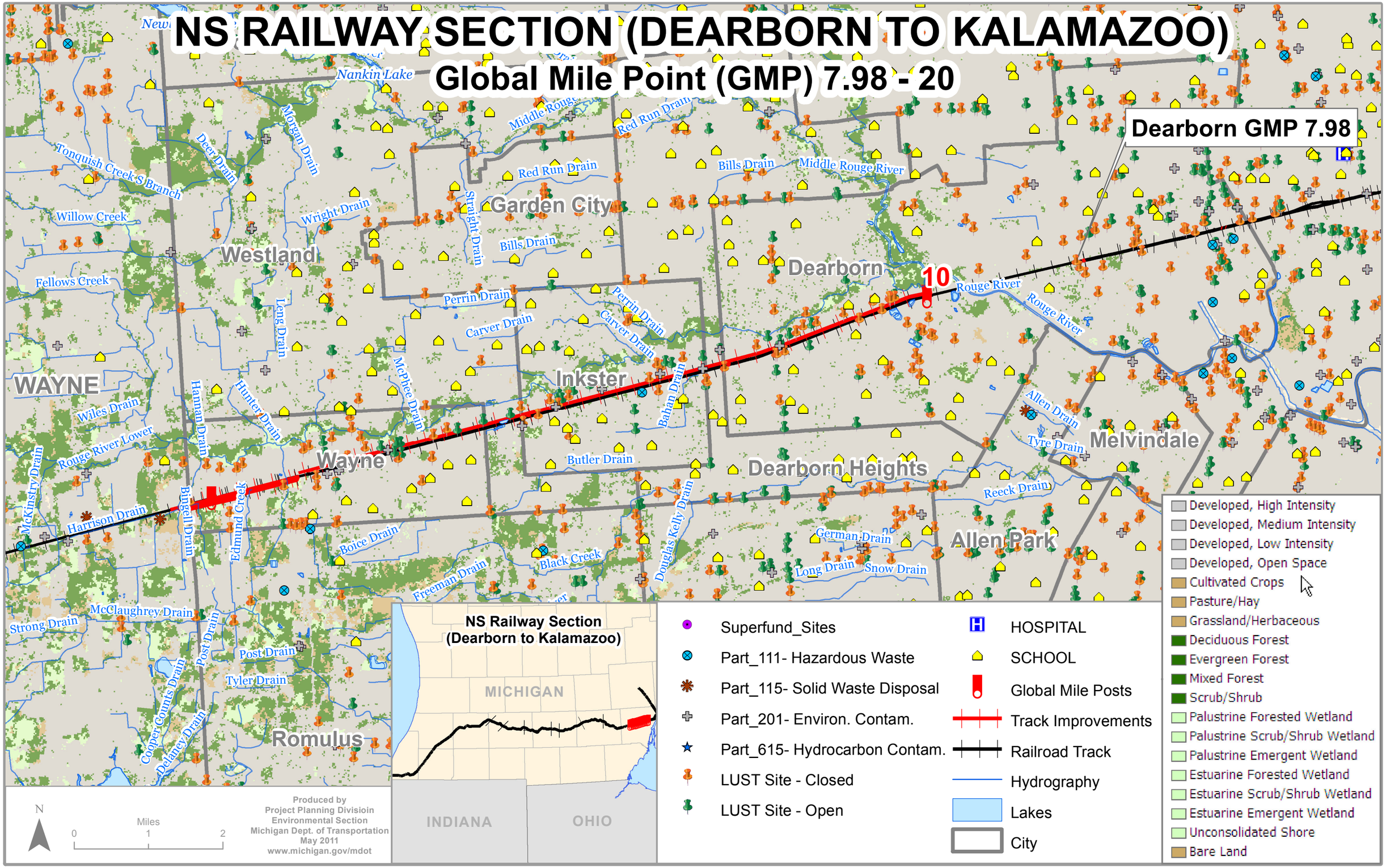


Figure 3.3. Wetlands, Hydrography, Floodway, Floodplains GMP 20-40

Figure 3.3. NS Railway Section: Wetlands, Hydrography, Floodway, Floodplains.

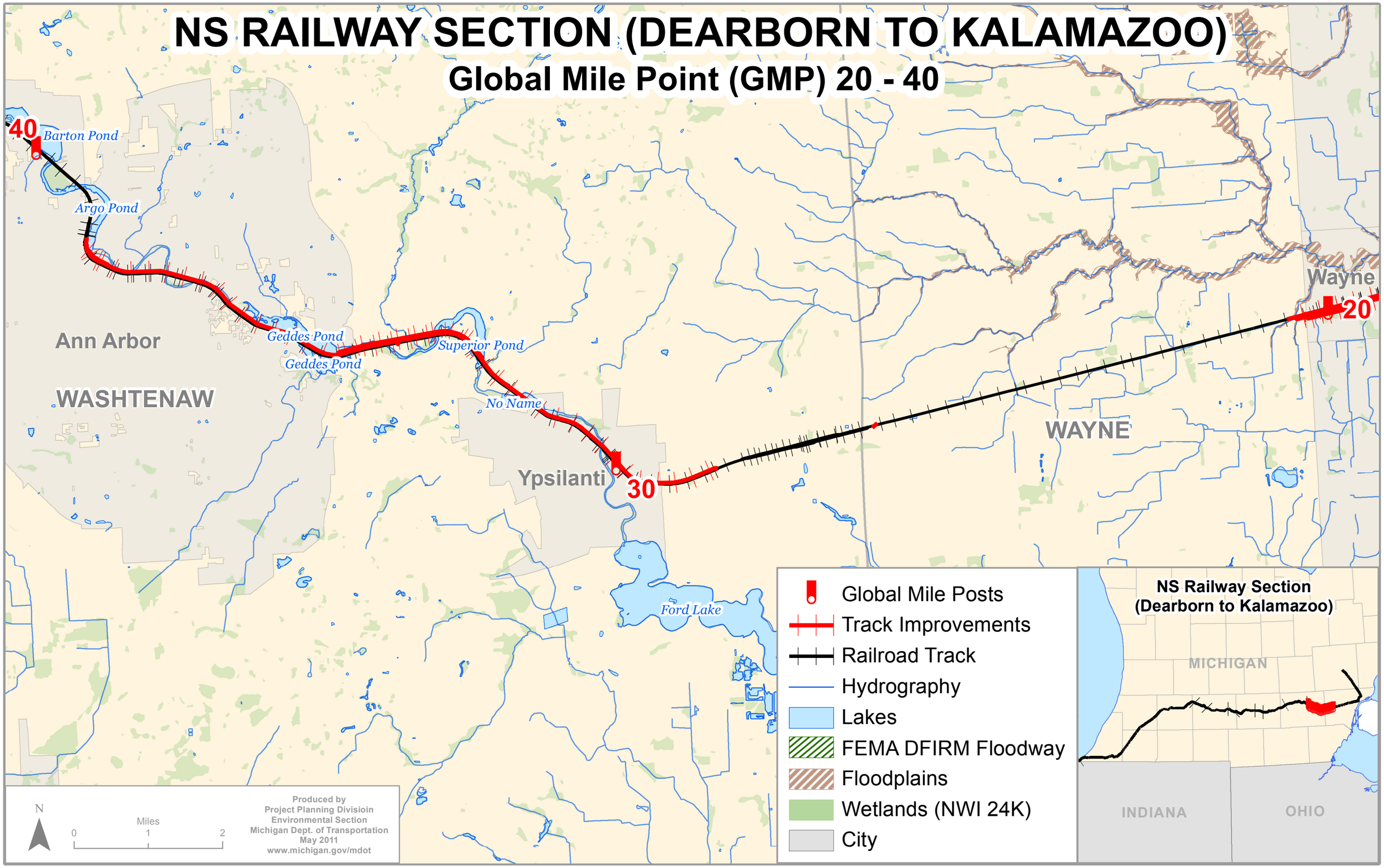


Figure 3.4. Land Use and Contaminated Sites GMP 20-40

Figure 3.4. NS Railway Section: Land Use, Contaminated Sites.

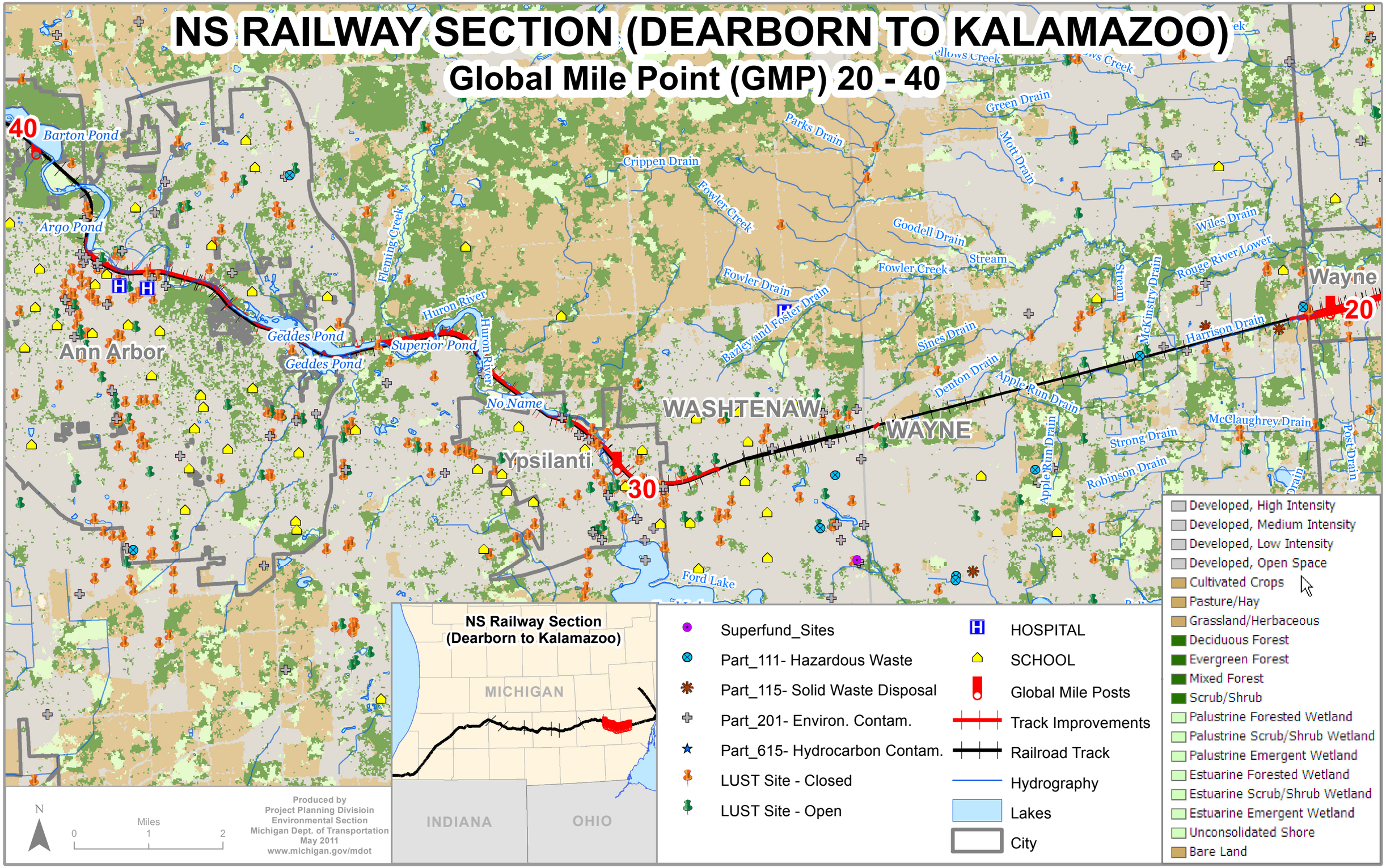


Figure 3.5. Wetlands, Hydrography, Floodway, Floodplains GMP 40-60

Figure 3.5. NS Railway Section: Wetlands, Hydrography, Floodway, Floodplains.

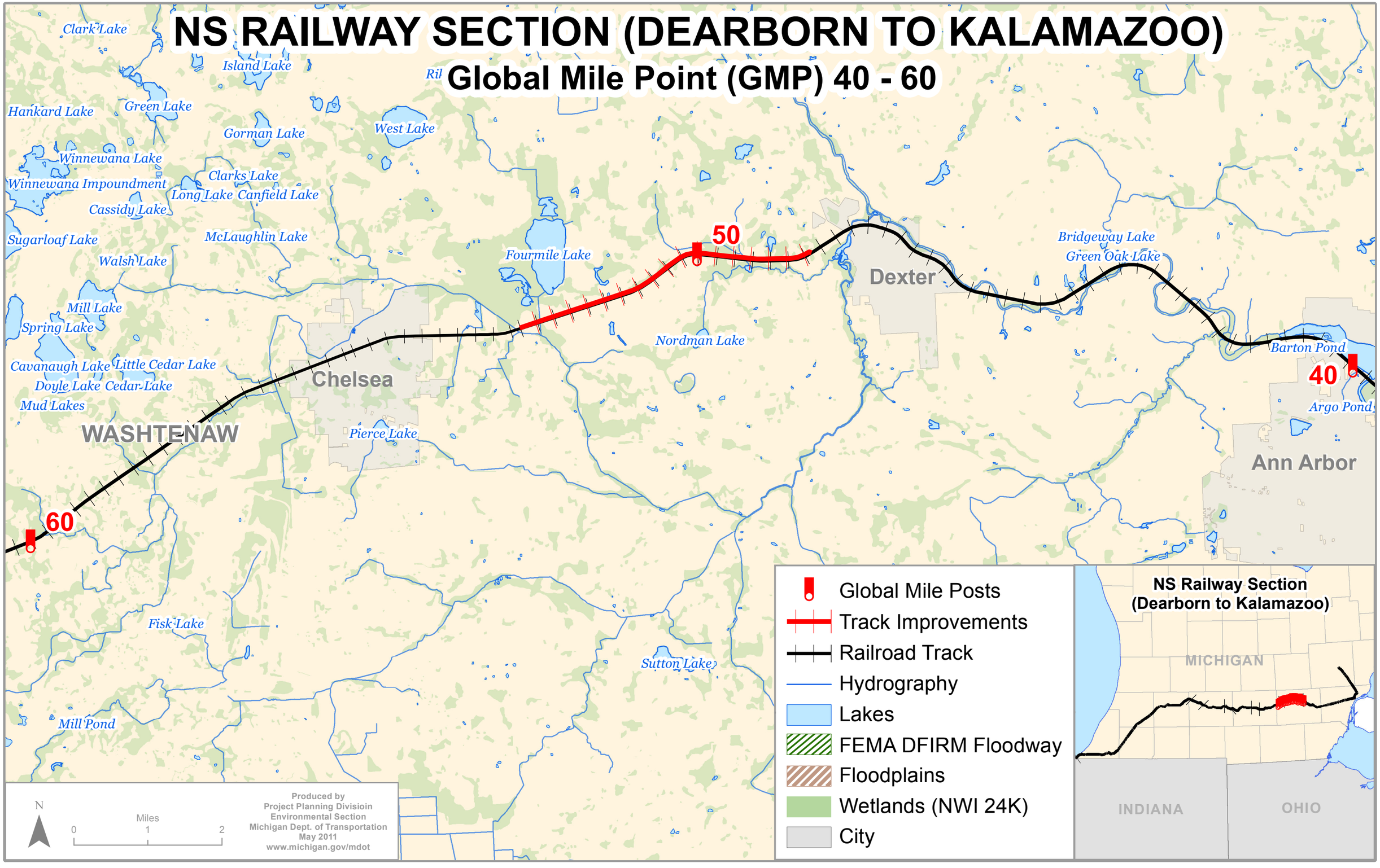


Figure 3.6. Land Use and Contaminated Sites GMP 40-60

Figure 3.6. NS Railway Section: Land Use, Contaminated Sites.

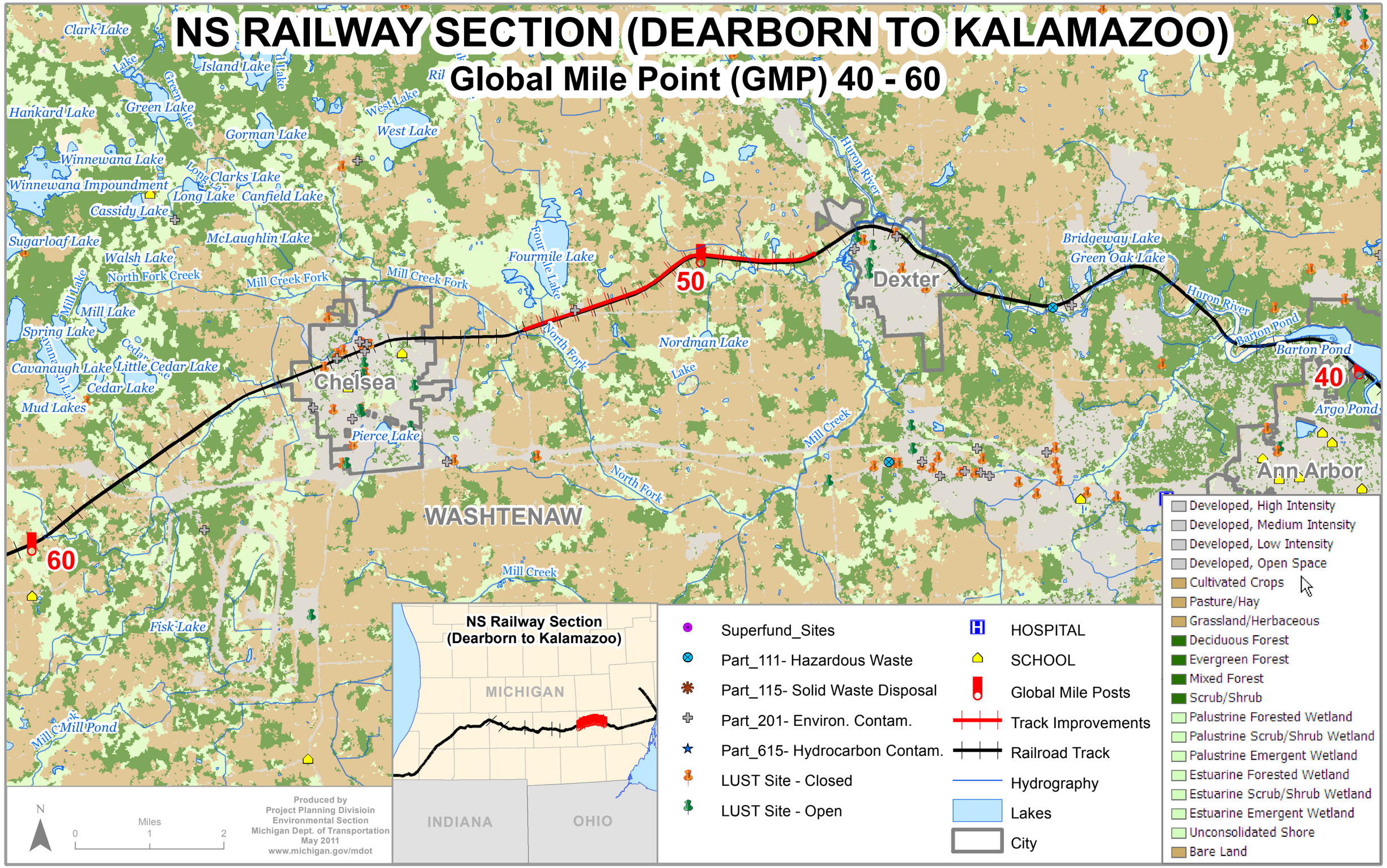


Figure 3.7. Wetlands, Hydrography, Floodway, Floodplains GMP 60-80

Figure 3.7. NS Railway Section: Wetlands, Hydrography, Floodway, Floodplains.

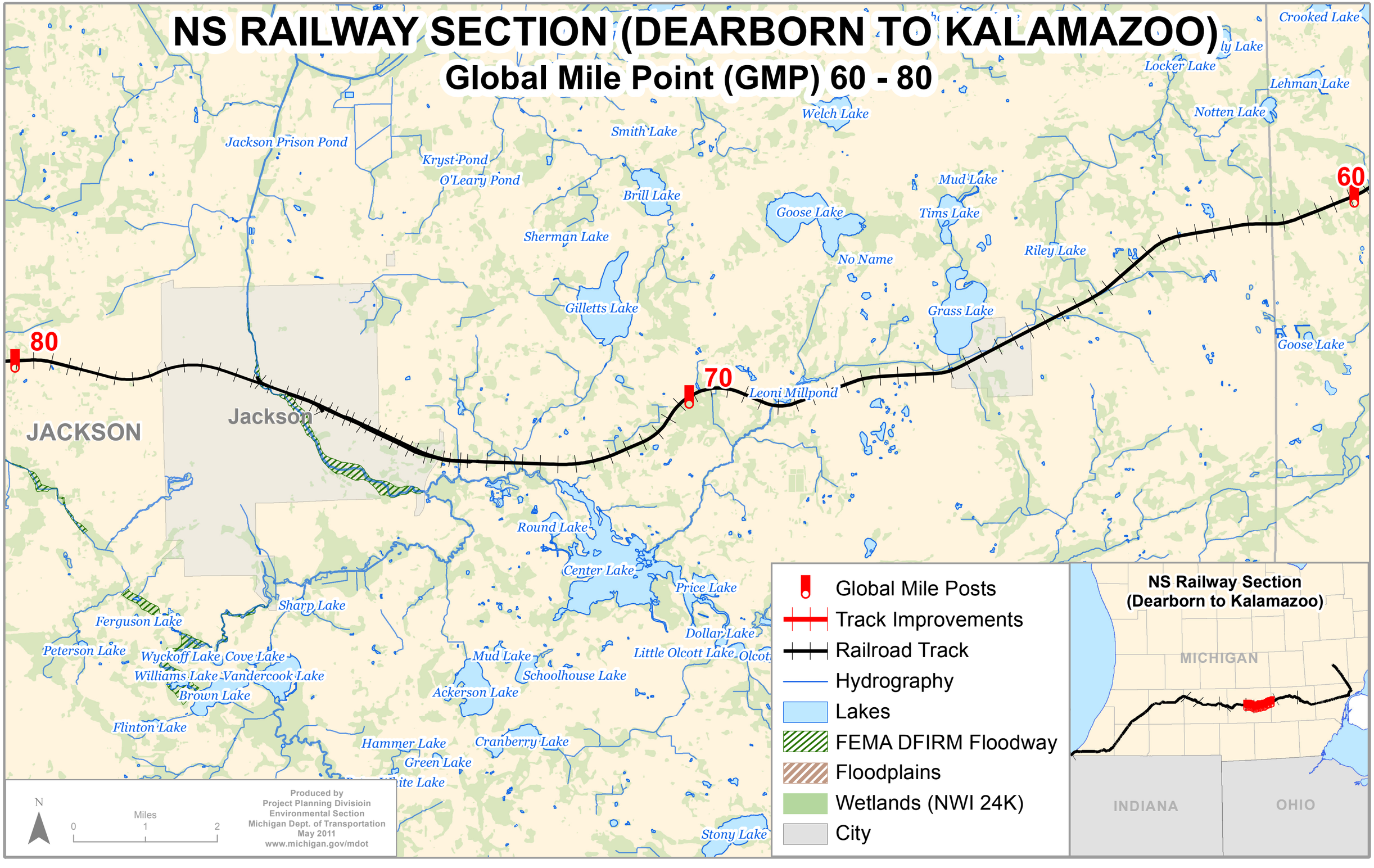


Figure 3.8. Land Use and Contaminated Sites GMP 60-80

Figure 3.8 NS Railway Section: Land Use, Contaminated Sites.

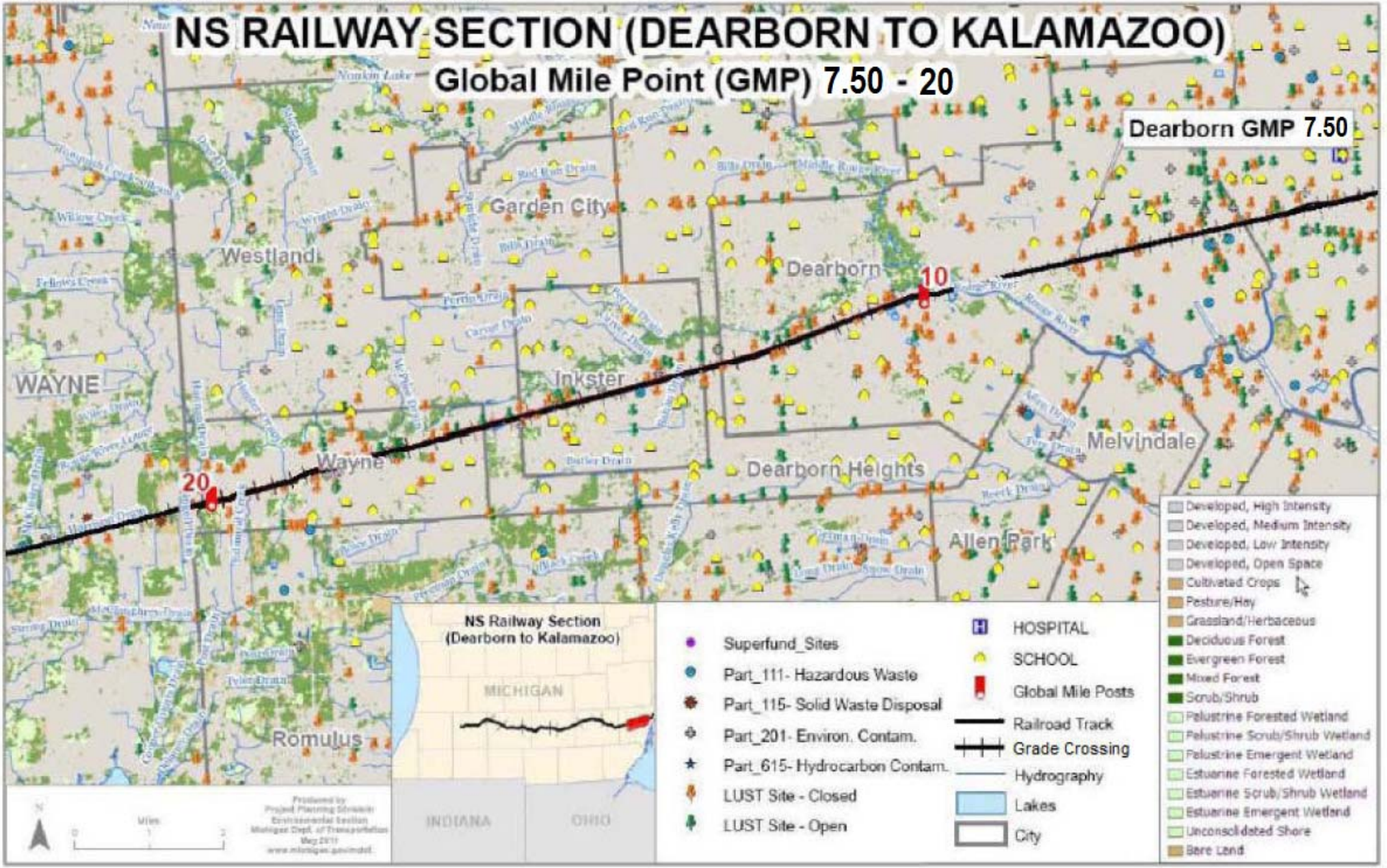


Figure 3.9. Wetlands, Hydrography, Floodway, Floodplains GMP 80-100

Figure 3.9. NS Railway Section: Wetlands, Hydrography, Floodway, Floodplains.

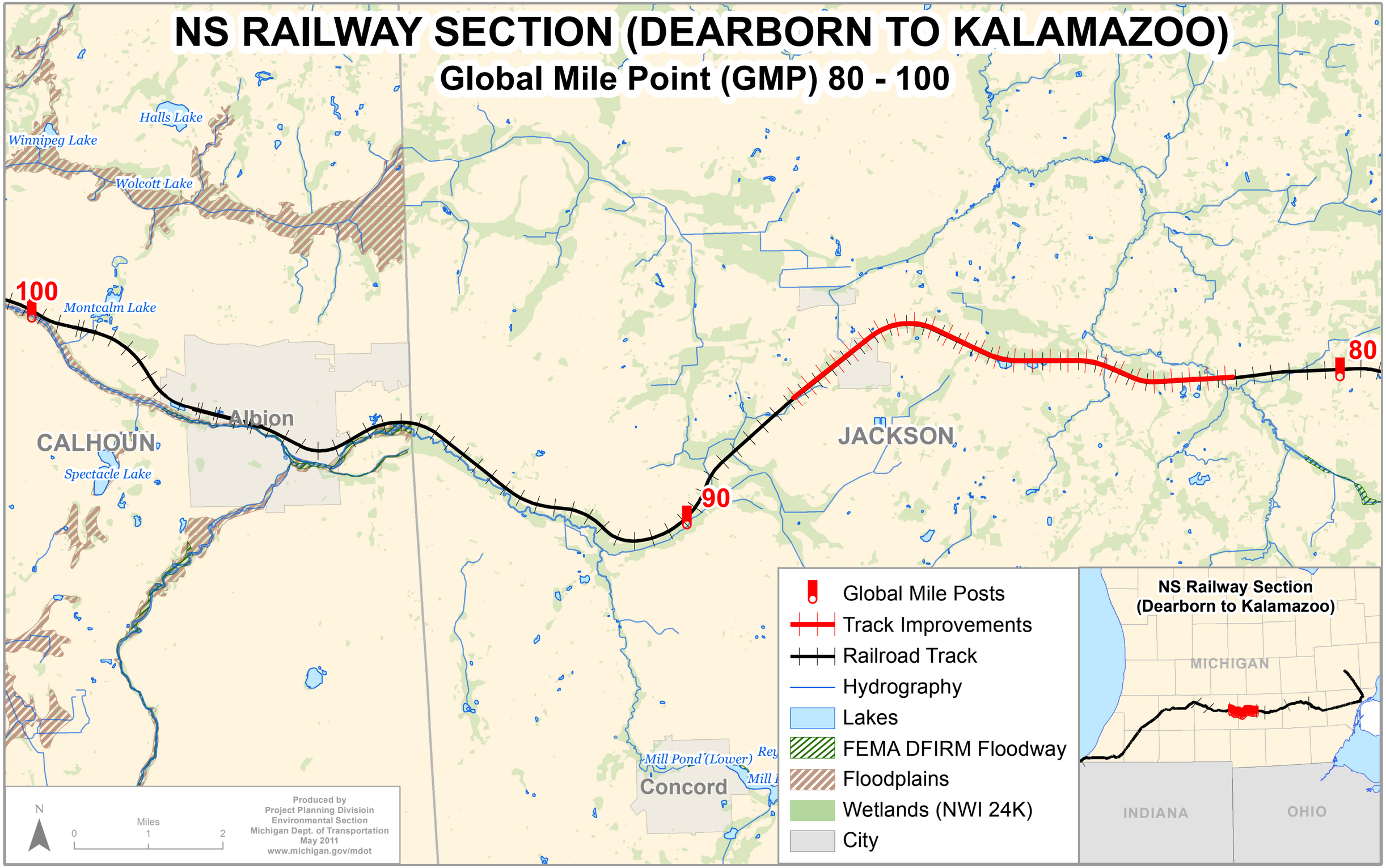


Figure 3.10. Land Use and Contaminated Sites GMP 80-100

Figure 3.10. NS Railway Section: Land Use, Contaminated Sites.

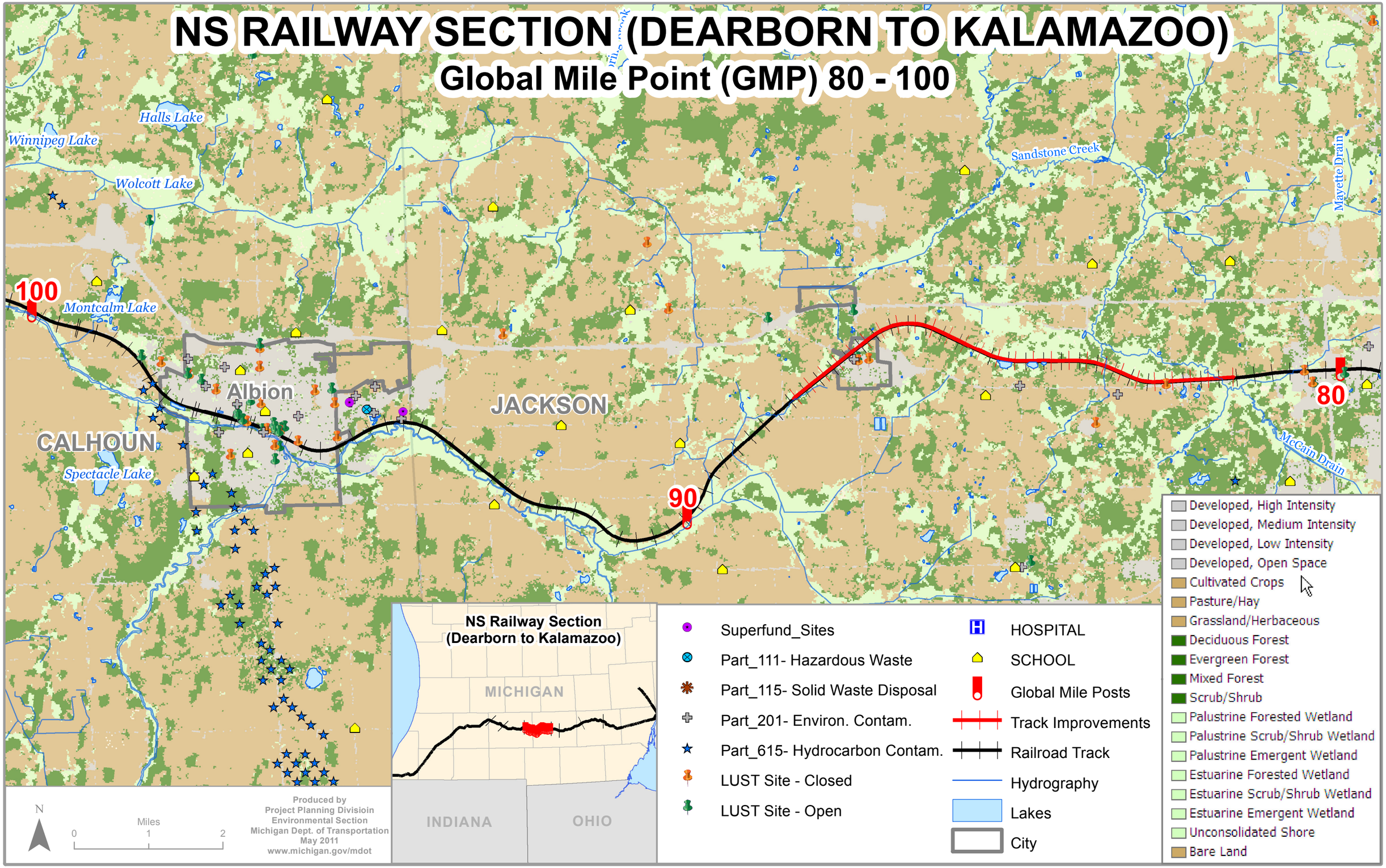


Figure 3.11. Wetlands, Hydrography, Floodway, Floodplains GMP 100-120

Figure 3.11. NS Railway Section: Wetlands, Hydrography, Floodway, Floodplains.

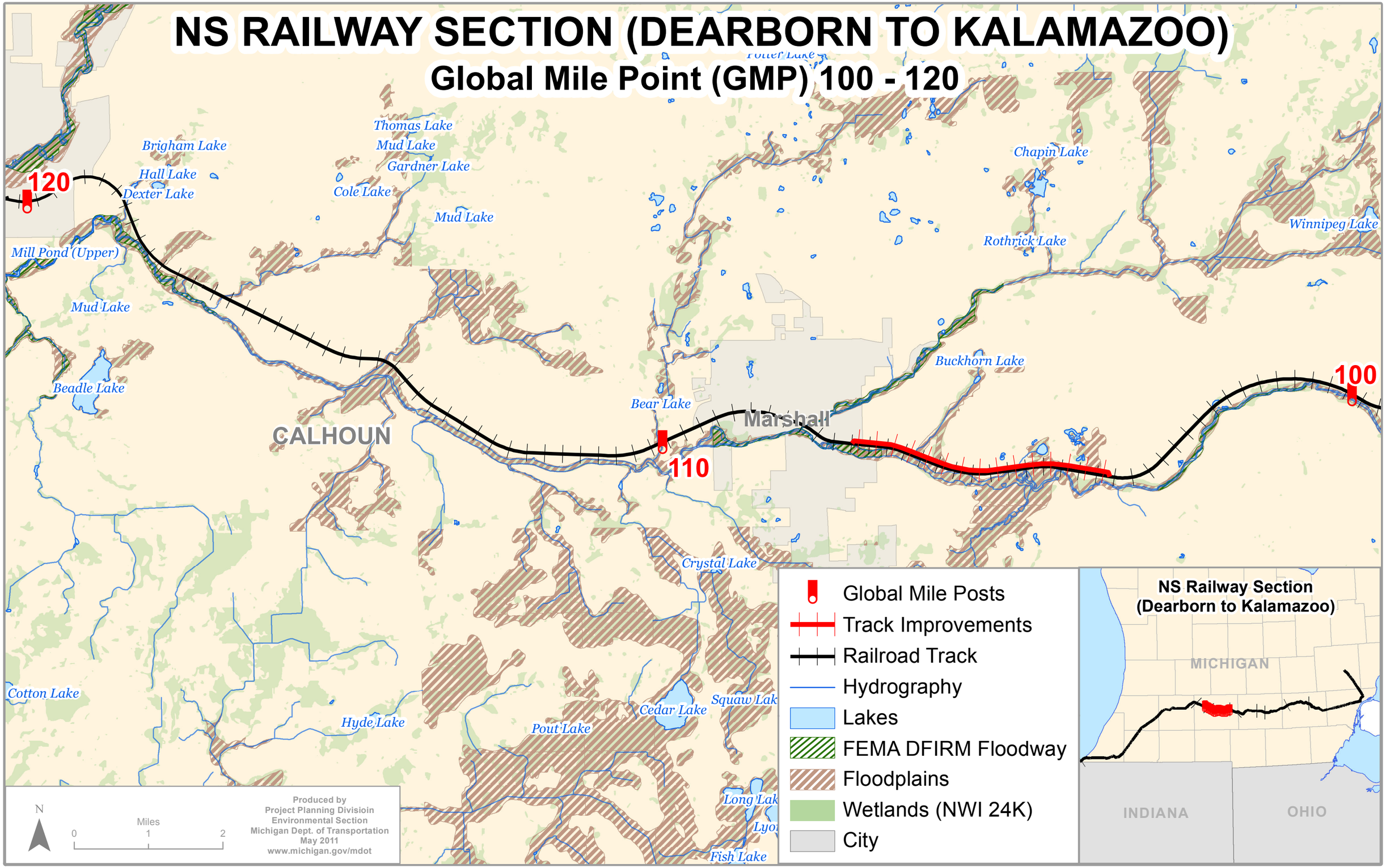


Figure 3.12. Land Use and Contaminated Sites GMP 100-120

Figure 3.12. NS Railway Section: Land Use, Contaminated Sites.

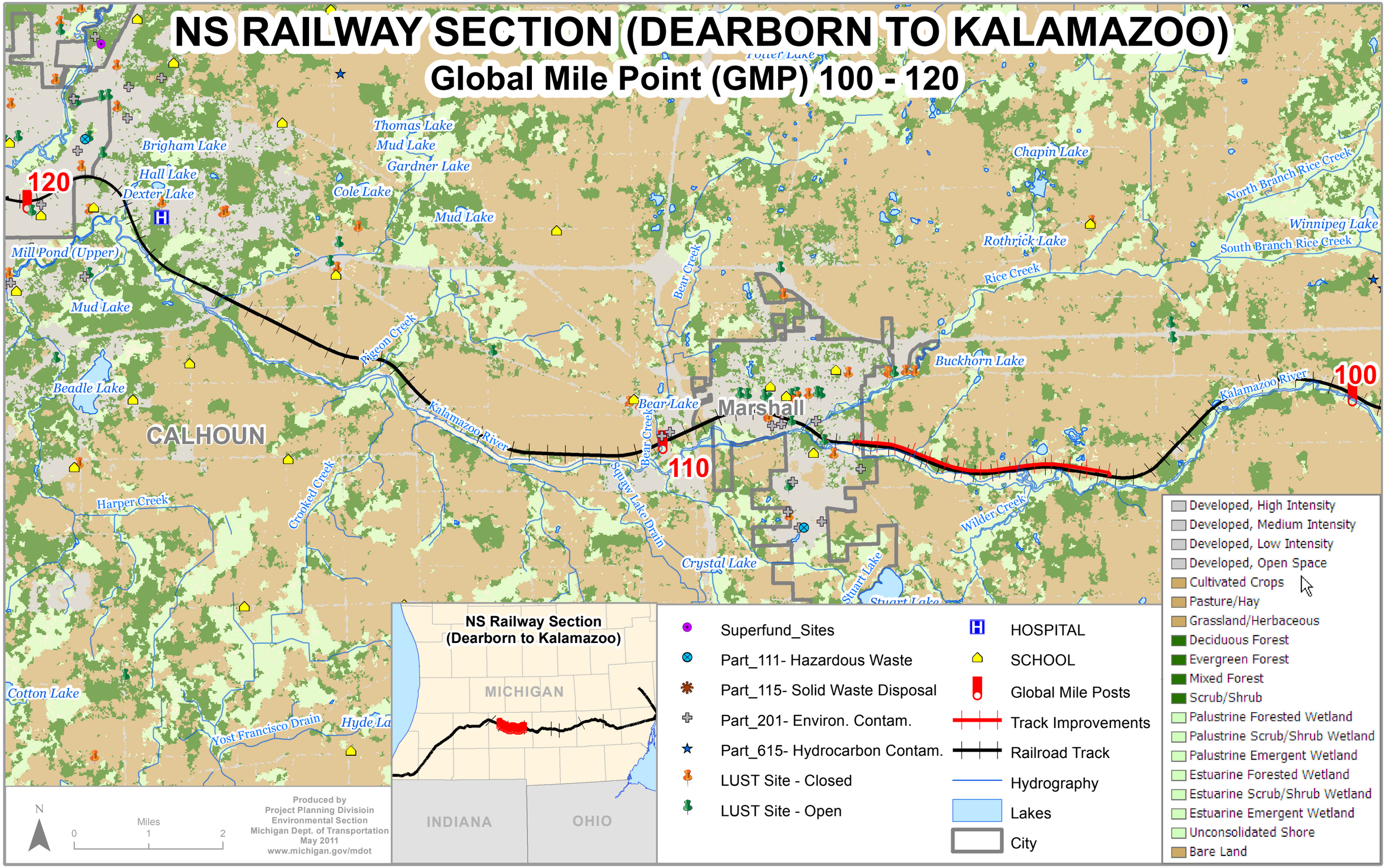


Figure 3.13. Wetlands, Hydrography, Floodway, Floodplains GMP 120-143.7

Figure 3.13. NS Railway Section: Wetlands, Hydrography, Floodway, Floodplains.

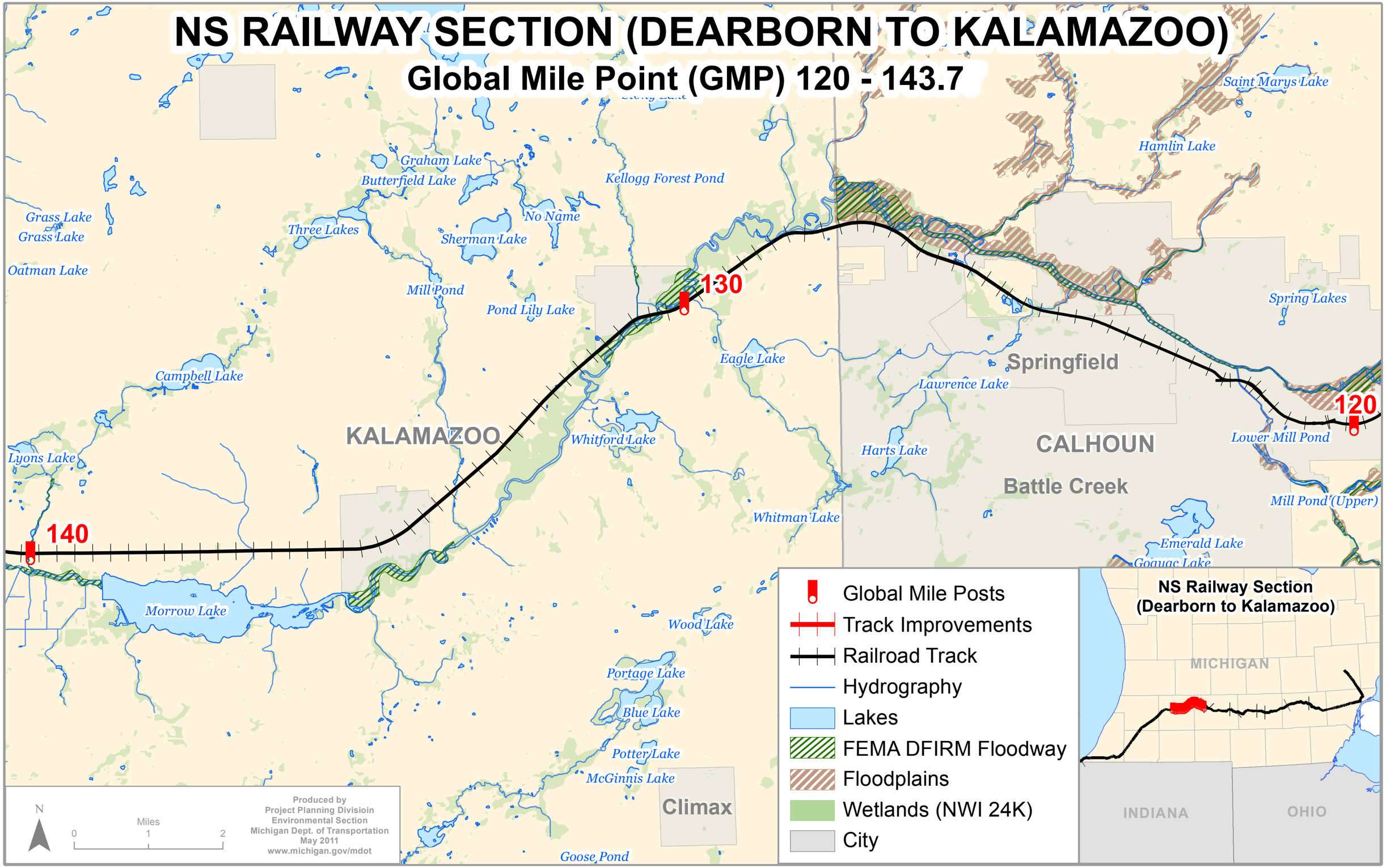
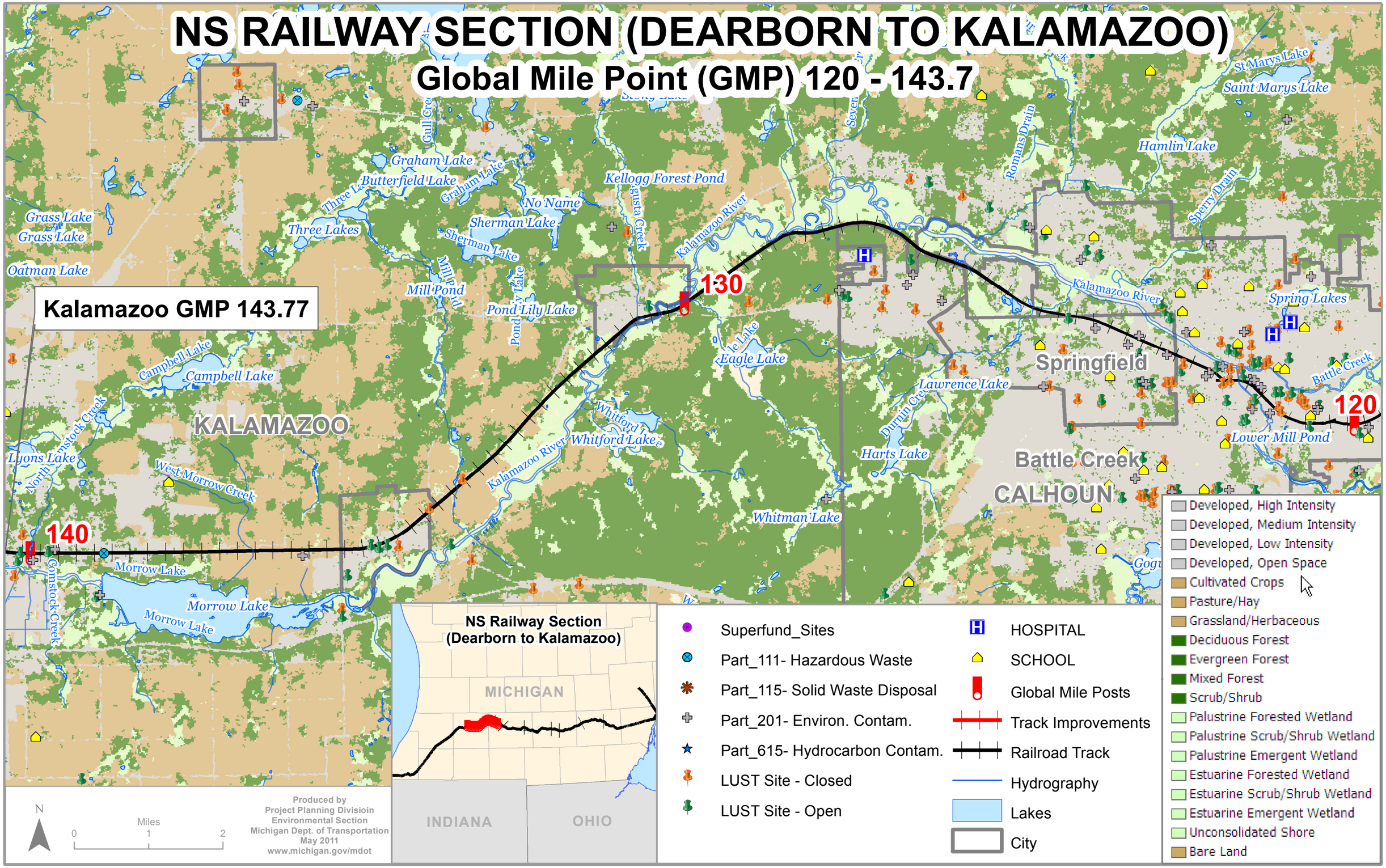


Figure 3.14. Land Use and Contaminated Sites GMP 120-143.7

Figure 3.14. NS Railway Section: Land Use, Contaminated Sites.



4.0 PUBLIC INVOLVEMENT AND AGENCY COORDINATION

4.1 Public Involvement

The proposed improvements to the NS Railway Section in Michigan are part of the Chicago to Detroit/Pontiac Corridor and part of the Midwest Regional Rail Initiative (MWRRI), for which information has been made available to the public through MDOT's public web site for several years. Most recently, the concepts of high speed rail and the MWRRI have been presented to the citizens of Michigan through the development of Michigan's State Long Range Transportation Plan. The results of public involvement for the State Long Range Transportation Plan revealed solid interest on the part of the public for increased choices in the modes of available transportation choices, and improvement in connectivity among the different modes. Long range planning at the Metropolitan Planning Organization (MPO) level has also included public involvement and dissemination of information to the public about the MWRRI and local sections of the larger Chicago-Detroit/Pontiac Corridor such as the link between Dearborn to Kalamazoo.

MDOT also developed a State Rail Plan that will be finalized in late Summer 2011. During the development of this plan, several public meetings were held throughout the state in the Fall 2010 and in Spring 2011 to seek public input on the proposed rail plan.

A Service NEPA EA was prepared in October 2009 for the entire rail corridor, which included the NS Railway Section. This document was made available for public reviewing on MDOT's public website and copies of the document were placed at various locations in Southern Michigan. MDOT received numerous comments supporting the improvements to NS Railway Section as well as other sections of the Chicago to Detroit/Pontiac Corridor.

4.2 Agency Coordination

MDOT has coordinated with several resource agencies that include: the State Historic Preservation Office (SHPO), the Office of State Archaeologist, U.S. Fish and Wildlife Service, and the Department of Natural Resources regarding the proposed improvement to the NS Railway Section in Michigan. Correspondence from Michigan's Department of Natural Resources and the U.S. Fish and Wildlife Service are included in **Appendix E**. Correspondence from Michigan's State Historic Preservation Office and the Office of State Archaeologist are included in **Appendix G**.

APPENDIX A

A List of Proposed Improvements And Aerial Maps

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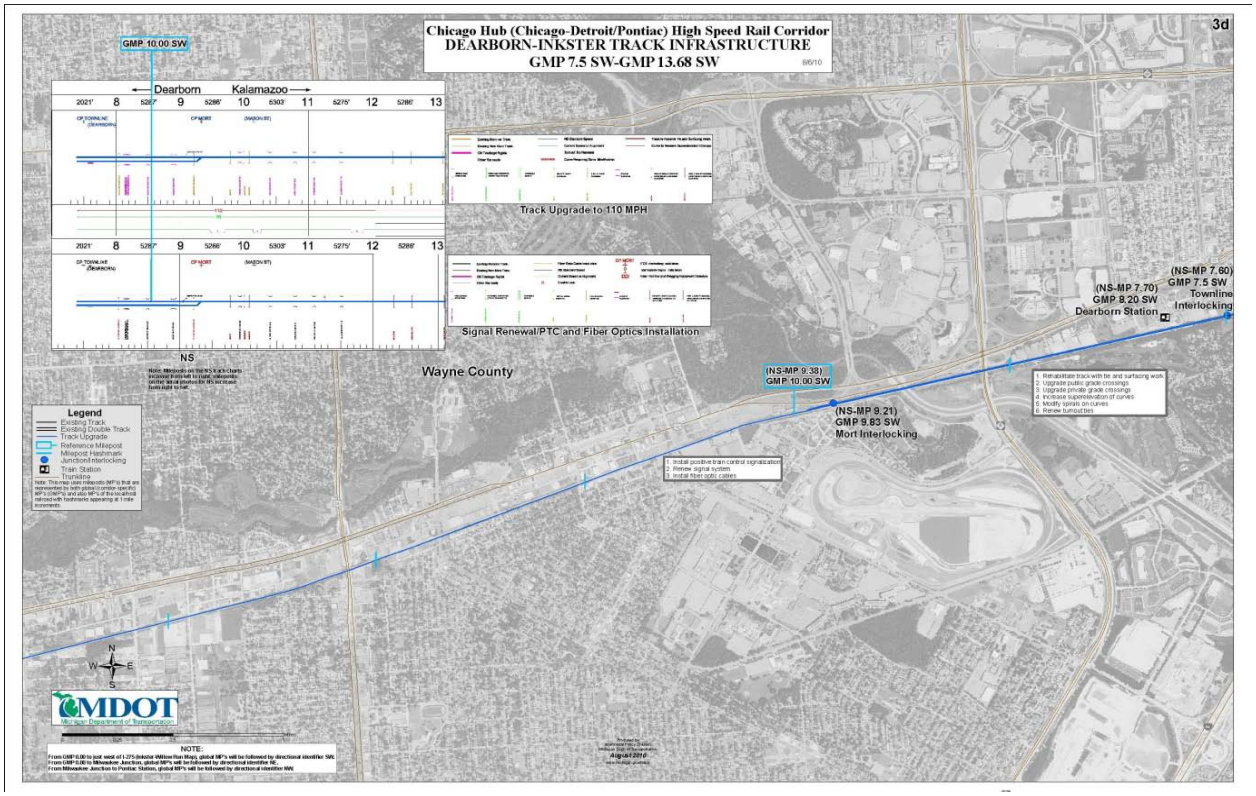
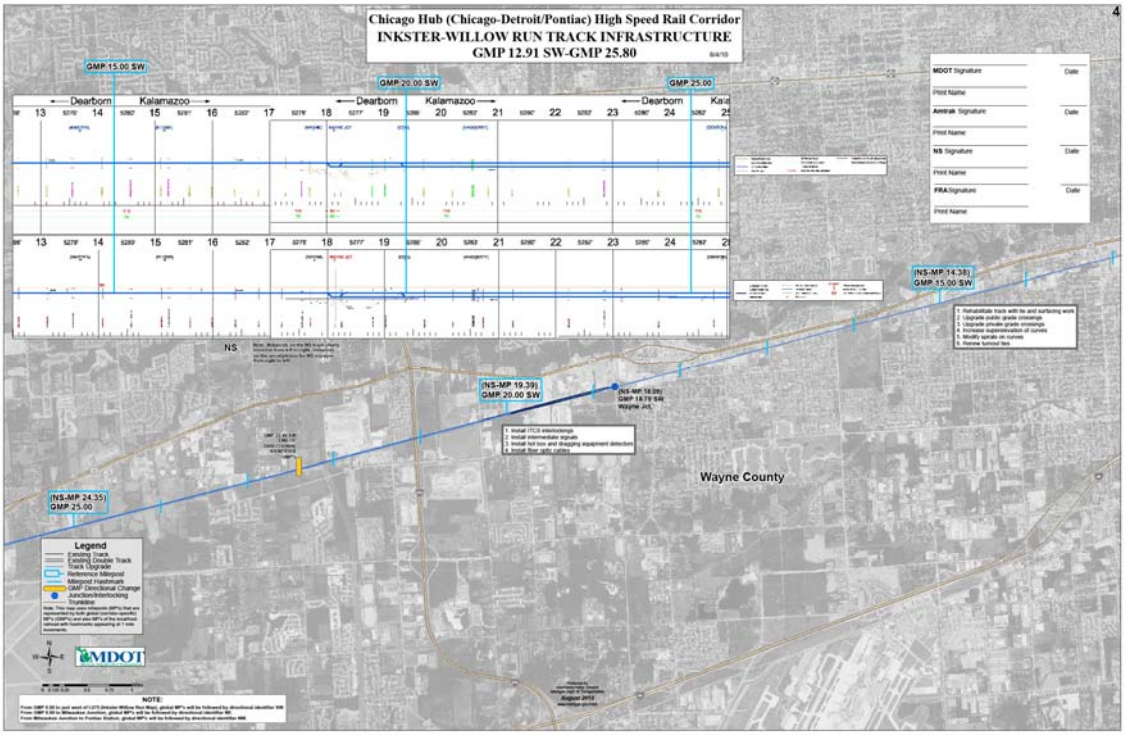
Dearborn to Inkster Track Infrastructure Improvements (GMP 7.5 - GMP 13.68)

- Tie and surface line
- Switch tie renewal
- Rebuild highway grade crossings
- Increase superelevation of 3 curves
- Patch rail installation
- Installation of the Positive Train Control
- Renew signal
- Installation of fiber optics
- Extend crossing starts (warning devices)



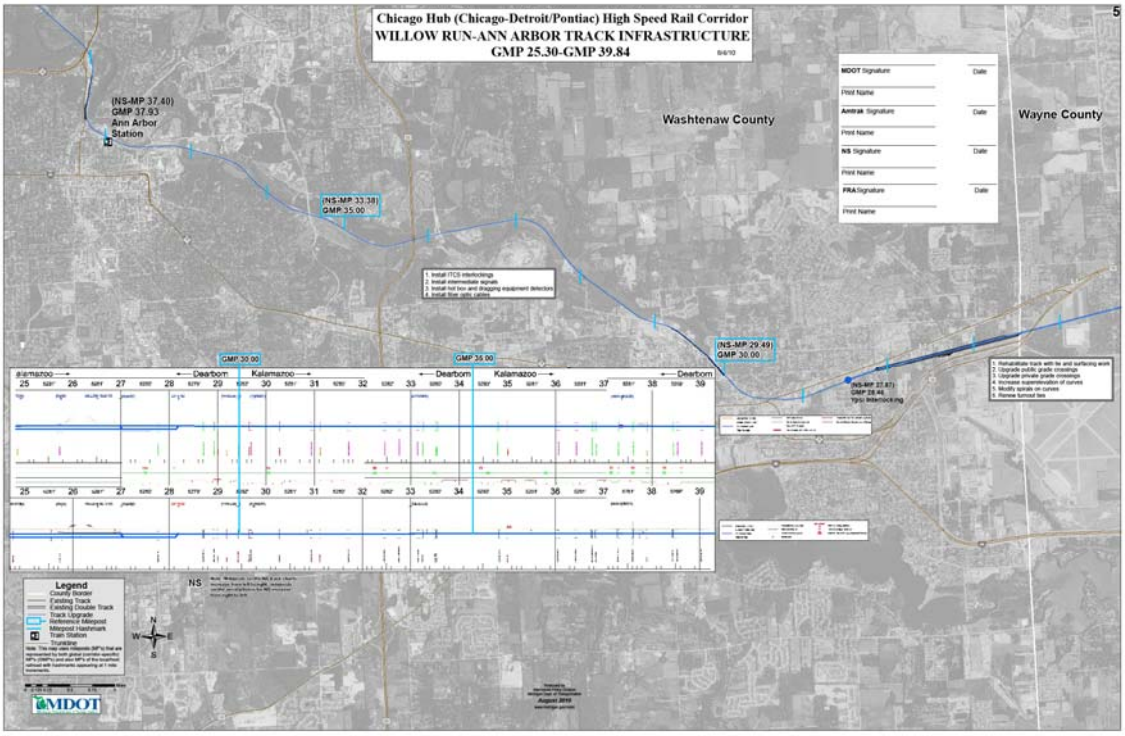
Inkster to Willow Run Track Infrastructure Improvements (GMP 12.91 – GMP 25.80)

- Tie and surface line
- Switch tie renewal
- Installation of the Positive Train Control
- Renew signal
- Installation of fiber optics
- Extend crossing starts (warning devices)



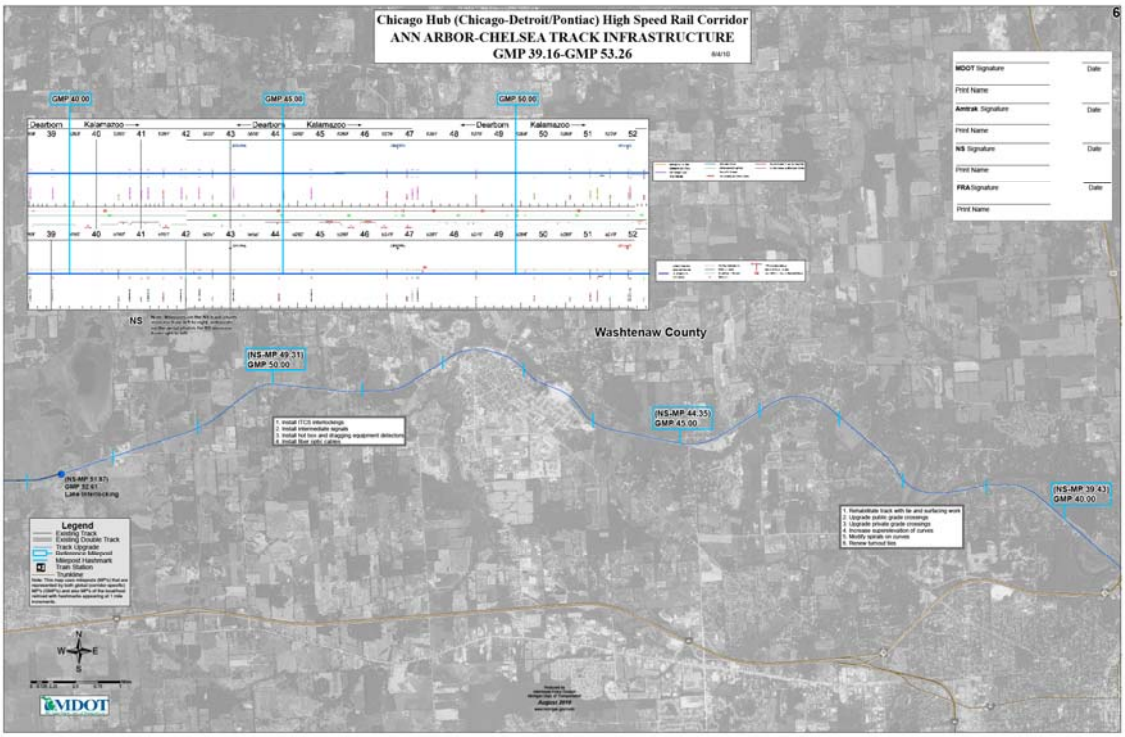
Willow Run - Ann Arbor Track Infrastructure Improvements (GMP 25.30– GMP 39.84)

- Tie and surface line
- Switch tie renewal
- Rebuild highway grade crossings
- Increase superelevation of 19 curves including curve modification for 1 curves
- Patch rail installation
- Installation of the Positive Train Control
- Renew signal
- Installation of fiber optics
- Extend crossing starts (warning devices)
- Upgrade 3 public crossing



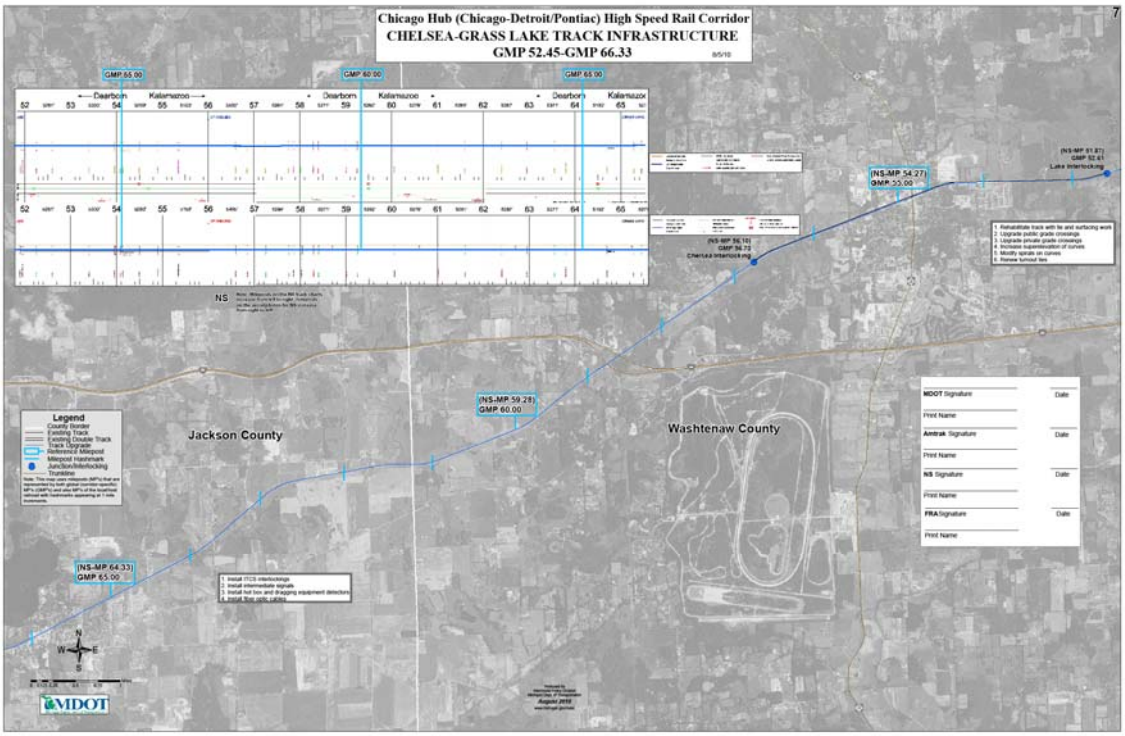
Ann Arbor to Chelsea Track Infrastructure Improvements (GMP 39.16 – GMP 53.26

- Tie and surface line
- Switch tie renewal
- Rebuild highway grade crossings
- Increase superelevation of 16 curves including curve modifications for 8 curves
- Patch rail installation
- Installation of the Positive Train Control
- Renew signal
- Installation of fiber optics
- Extend crossing starts (warning devices)
- Upgrade 6 public crossings
- Upgrade 2 private crossings



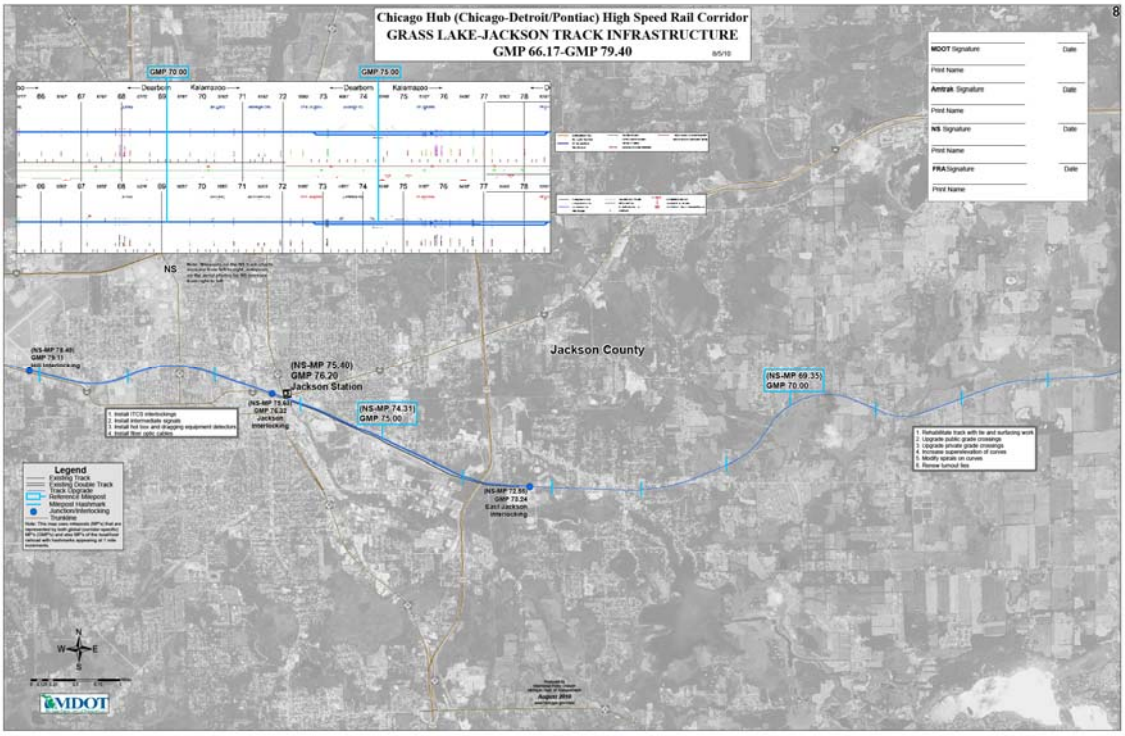
Chelsea-Grass Lake Track Infrastructure Improvements (GMP 52.45 – GMP 66.33)

- Tie and surface line
- Switch tie renewal
- Rebuild highway grade crossings
- Increase superelevation of 10 curves including curve modifications for 5 curves
- Patch rail installation
- Installation of the Positive Train Control
- Renew signal
- Installation of fiber optics
- Extend crossing starts (warning devices)
- Upgrade 3 public crossings
- Upgrade 4 private crossings



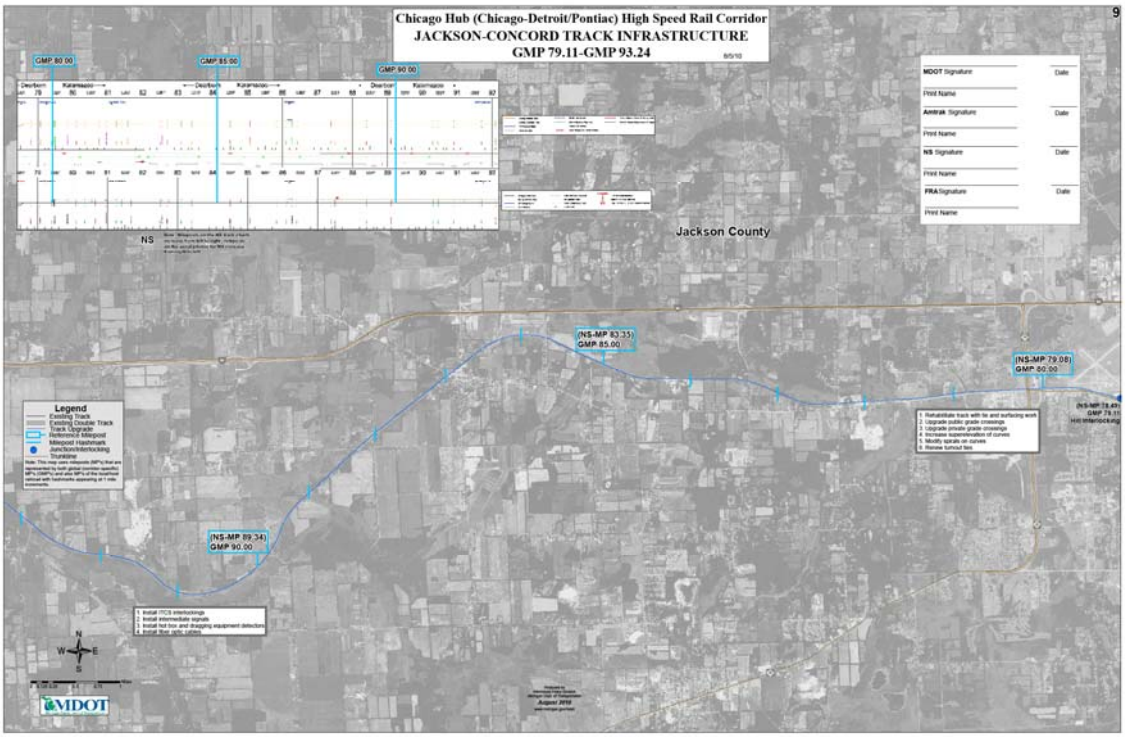
Grass Lake to Jackson Track Infrastructure Improvements (GMP 66.17 – GMP 79.40)

- Tie and surface line
- Switch tie renewal
- Rebuild highway grade crossings
- Increase superelevation of 13 curves including curve modifications for 6 curves
- Patch rail installation
- Installation of the Positive Train Control
- Renew signal
- Installation of fiber optics
- Extend crossing starts (warning devices)
- Upgrade96 public crossings
- Upgrade 3 private crossings



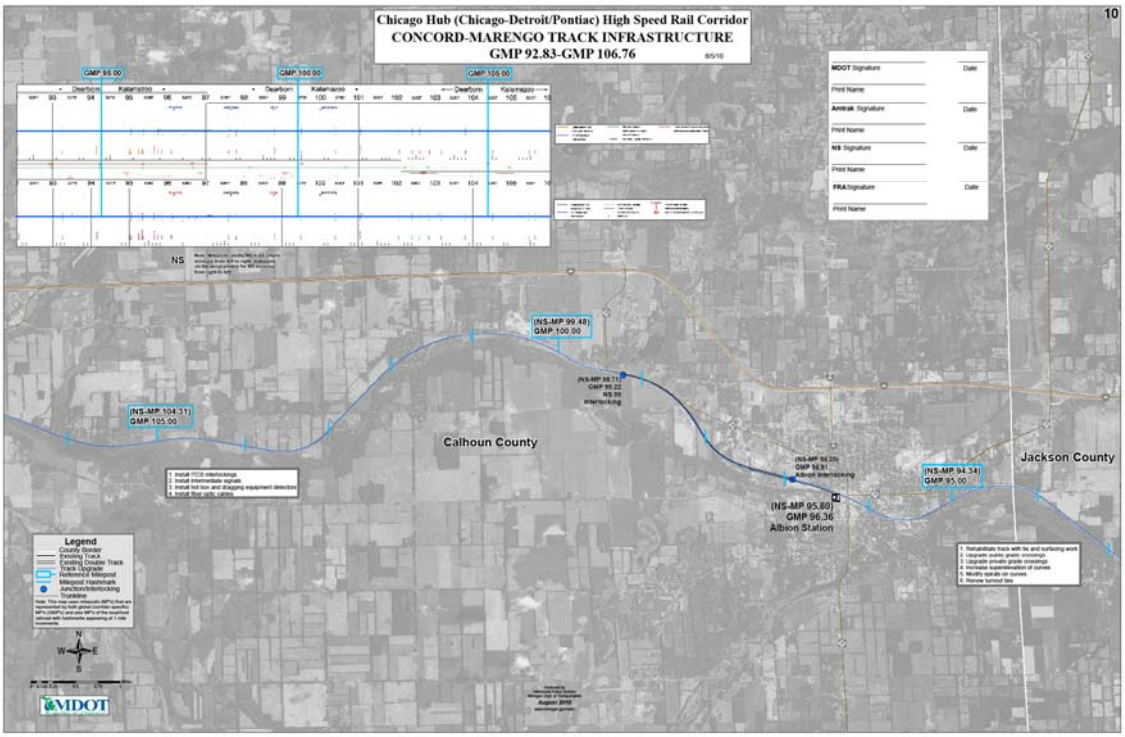
Jackson to Concord Track Infrastructure Improvements (GMP 79.11 – GMP 93.24)

- Tie and surface line
- Switch tie renewal
- Rebuild highway grade crossings
- Increase superelevation of 12 curves including curve modifications for 4 curves
- Patch rail installation
- Installation of the Positive Train Control
- Renew signal
- Installation of fiber optics
- Extend crossing starts (warning devices)
- Upgrade 7 public crossings
- Upgrade 5 private crossings



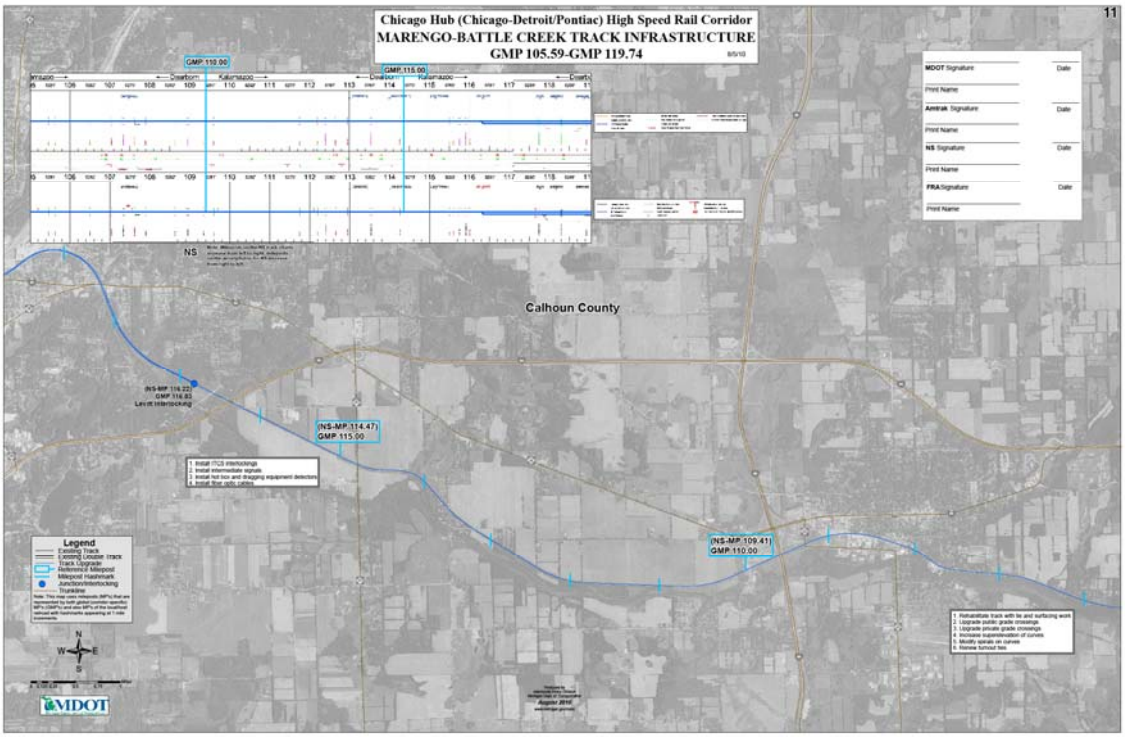
Concord to Marengo Track Infrastructure Improvements (GMP 92.83 – GMP 106.76)

- Tie and surface line
- Switch tie renewal
- Rebuild highway grade crossings
- Increase superelevation of 13 curves including curve modifications for 5 curves
- Patch rail installation
- Installation of the Positive Train Control
- Renew signal
- Installation of fiber optics
- Extend crossing starts (warning devices)
- Upgrade 8 public crossings
- Upgrade 8 private crossings



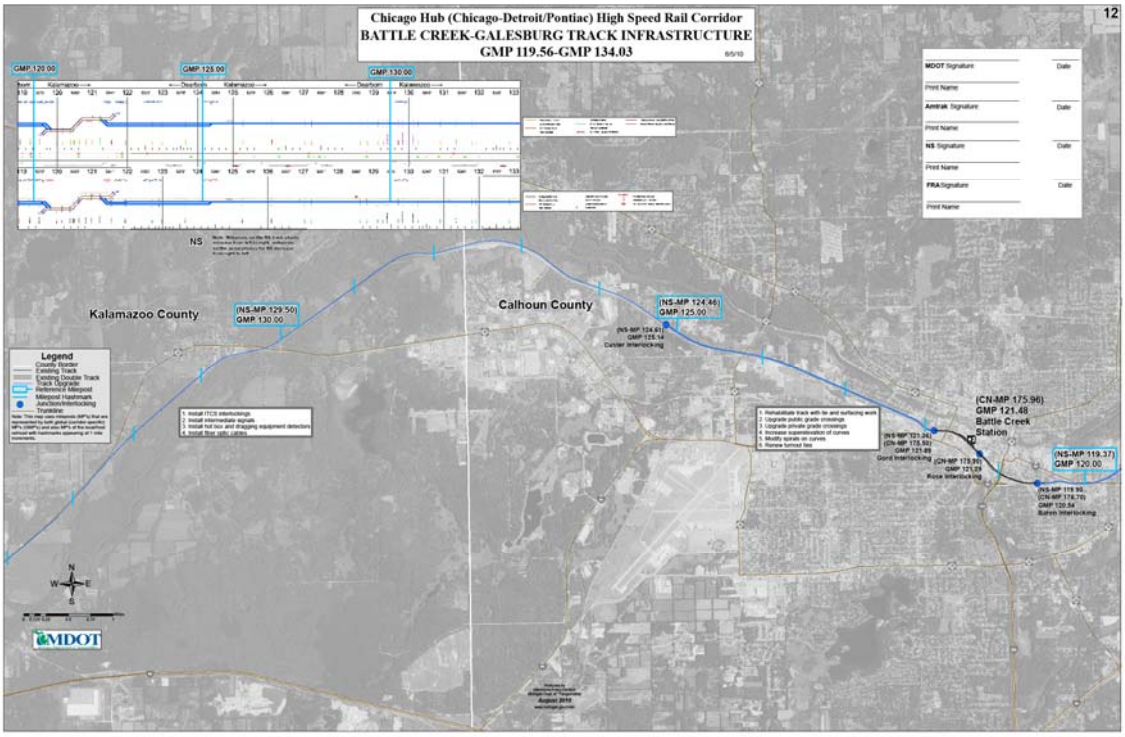
Marengo to Battle Creek Track Infrastructure Improvements (GMP 105.59 – GMP 119.74)

- Tie and surface line
- Switch tie renewal
- Rebuild highway grade crossings
- Increase superelevation of 13 curves including curve modifications for 6 curves
- Patch rail installation
- Installation of the Positive Train Control
- Renew signal
- Installation of fiber optics
- Extend crossing starts (warning devices)
- Upgrade 6 public crossings
- Upgrade 2 Private crossings



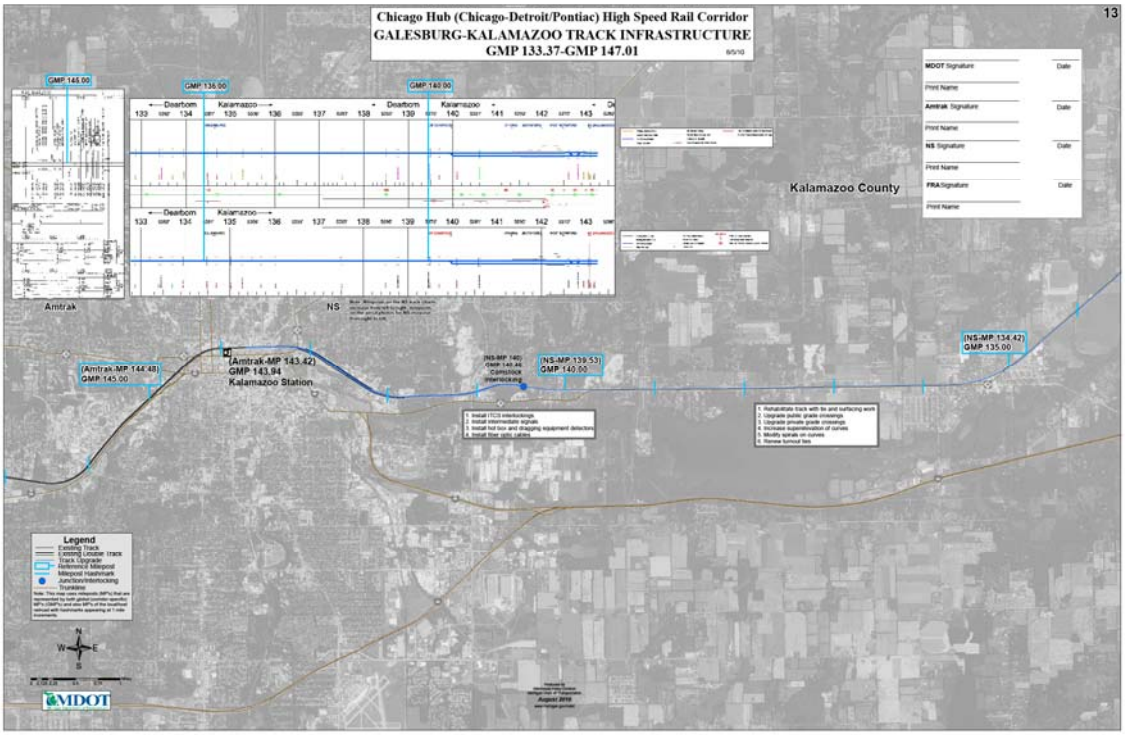
Battle Creek to Galesburg Track Infrastructure Improvements (GMP 119.56 – GMP 134.03)

- Tie and surface line
- Switch tie renewal
- Rebuild highway grade crossings
- Increase superelevation of 14 curves including curve modifications for 4 curves
- Patch rail installation
- Installation of the Positive Train Control
- Renew signal
- Installation of fiber optics
- Extend crossing starts (warning devices)
- Upgrade 2 public crossings
- Upgrade 3 private crossings



Galesburg to Kalamazoo Track Infrastructure Improvements (GMP 133.37 – GMP 143.7)

- Tie and surface line
- Switch tie renewal
- Rebuild highway grade crossings
- Increase superelevation of 9 curves including curve modifications for 3 curves
- Patch rail installation
- Installation of the Positive Train Control
- Renew signal
- Installation of fiber optics
- Extend crossing starts (warning devices)
- Upgrade 4 public crossings
- Upgrade 1 private crossing



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APPENDIX B

Aerial Location Maps of the 3 Rail Stations

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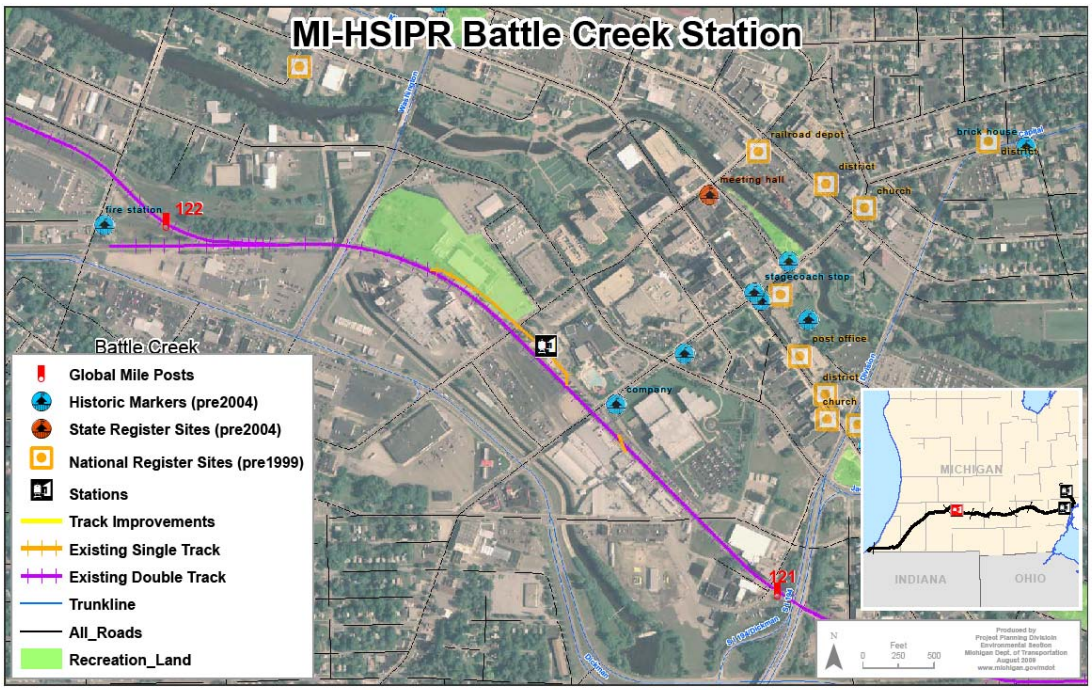
MI-HSIPR Dearborn Station
brick house
military housing
Dearborn
10
museum
Global Mile Posts
Historic Markers (pre2004)
State Register Sites (pre2004)
National Register Sites (pre1999)
Stations
Track Improvements
Existing Single Track
Existing Double Track
Trunkline
All_Roads
Recreation Land
MICHIGAN
INDIANA
OHIO


MI-HSIPR Battle Creek Station
tire station
122
Battle Creek
railroad depot
meeting hall
district
church
brick house
stagecoach stop
post office
company
121
Global Mile Posts
Historic Markers (pre2004)
State Register Sites (pre2004)
National Register Sites (pre1999)
Stations
Track Improvements
Existing Single Track
Existing Double Track
Trunkline
All_Roads
Recreation_Land
MICHIGAN
INDIANA
OHIO

Proposed Fuller Station in Ann Arbor, Michigan – Conceptual Plan

APPENDIX C

Air Quality Conformity Analysis

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Appendix C.

This Appendix includes additional information on the methodology used to calculate criteria pollutant emissions for the railroad maintenance and improvement activities planned for the 135 miles of railway from Dearborn (GMP 7.5) to Kalamazoo (GMP 143.7) in Michigan. This proposed improvements will result in maximum speed increases in this section of railway to 79 miles per hour (mph) initially, while positioning this section for speed increases to 110 mph after all of the improvements to the existing track and signals have been completed.

The proposed improvements extend through five counties in Michigan; Kalamazoo, Calhoun, Jackson, Washtenaw, and Wayne. Table C.1 provides the estimated length of the NS railway that runs through each county. Since Kalamazoo, Calhoun, Washtenaw, and Wayne counties are in attainment/maintenance for ozone and Washtenaw and Wayne counties are in nonattainment for $PM_{2.5,}$ it was important to evaluate the emissions per county to determine if General Conformity *de minimis* thresholds, as per 40 CRF 93.153 were exceeded.

Table C.1. Estimated Railway Length per County.

County	County Length (Miles)
Kalamazoo	16
Calhoun	40
Jackson	27
Washtenaw	35
Wayne	17

Emissions were estimated for the following activities that will occur as part of the railway maintenance and improvement activities for the Proposed Improvement Alternative.

- Tie Replacement
- Track Resurfacing
- Rail Replacement
- Switch Tie Replacement
- Signal and Train Control Renewal
- Warning Device Installation
- Grade Crossing Repair
- Positive Train Control (PTC) Installation
- Installation of Fiber Optic Cable

The methodologies used to estimate emissions and resulting emissions are discussed in additional detail in this Appendix.

C.1 Tie Replacement Emissions Analysis

Emissions from total tie replacement were calculated using the number of railway maintenance equipment, horsepower of the equipment, and operating time multiplied by an emission factor. Emission factors were obtained from EPA's NONROAD model[1]. Information pertaining to the number of

[1] For specialty equipment used for track replacement/resurfacing and tie replacement, emission factors for railway maintenance/railroad equipment were obtained from EPA's NONROAD model.

equipment and horsepower was provided by Michigan Department of Transportation (MDOT), as indicated below in **Table C.2**.

Table C.2. Anticipated Equipment Needed for Tie Replacement.

Equipment Description	No. of Units	Horsepower	Fuel Type	Fuel Usage (gallons/day)
Spike Puller	1	80	Diesel	30
Tie Handler	2	80	Diesel	40
Spiker	1	80	Diesel	40
Scarfier	1	80	Diesel	40
Ballast Regulator	1	120	Diesel	60
Tie Extractors	2	160	Diesel	40
Tamper	1	275	Diesel	120
Hirail pickup	2	290	Diesel	10

The number of days the operation would occur in each county was estimated based on an assumption that one mile of ties can be replaced in one day[2]. **Table C.3** shows the total number of days required for tie replacement in each county.

Table C.3. Days Required to Replace Ties.

County	Estimated Track Length (Miles)	Days of Operation
Kalamazoo	16	16
Calhoun	40	40
Jackson	27	27
Washtenaw	35	35
Wayne	17	17

Emissions were calculated using Equation 1 below and the emission factors in **Table C.4**.

Table C.4. Tie Replacement Emissions Factors.

Equipment	Emission Factors (g/hp-hr)					
	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	VOC
Spike Puller	7.80	6.35	1.23	1.19	0.15	1.46
Tie Handler	7.80	6.35	1.23	1.19	0.15	1.46
Spiker	7.80	6.35	1.23	1.19	0.15	1.46
Scarfier	7.80	6.35	1.23	1.19	0.15	1.46
Ballast Regulator	4.38	6.34	0.78	0.75	0.13	1.06
Tie Extractors	4.38	6.34	0.78	0.75	0.13	1.06
Tamper	3.87	6.04	0.68	0.66	0.13	0.97

[2] Email from Eric Almquist to Vincent Bonifera Jr, Andrea Finn and Gretchen Campbell RE: Papers on August 18, 2011.

Hirail pickup	3.87	6.04	0.68	0.66	0.13	0.97

Equation 1: Tie Replacement Emissions = N x HP x (Hr x D) x EF x 0.0000011023

Where,
N=number of equipment used
HP=horsepower
Hr=hours per day
D=days
EF=emission factor (g/hp-hr)
0.0000011023=conversion from grams to tons

Table C.5 shows the calculated emissions for the Proposed Improvement Alternative using the provided inputs.

Table C.5. Estimated Tie Replacement Emissions for the Proposed Improvement Alternative.

County	Emission (tons)					
	CO	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**VOC**
Kalamazoo	1.33	1.66	0.22	0.22	0.04	0.30
Calhoun	3.31	4.16	0.56	0.54	0.09	0.74
Jackson	2.24	2.81	0.38	0.37	0.06	5.85
Washtenaw	2.90	3.64	0.49	0.48	0.08	0.65
Wayne	1.41	1.77	0.24	0.23	0.04	0.32
Total	**11.18**	**14.05**	**1.89**	**1.84**	**0.31**	**7.86**

C.2 Track Resurfacing Emission Analysis

The methodology used to estimate emissions for track resurfacing was similar to the methodology used to estimate total tie replacement emissions. The operating time for the equipment was calculated using the rail length per county shown in **Table C.1** assuming two miles of track per day could be resurfaced[3]. Total time to resurface the entire track length is 67 days (i.e., 135 miles at 2 miles per day).

Table C.6 shows the total number of days required to resurface the track in each county and **Table C.7** shows the equipment anticipated to be used for this operation.

Table C.6. Days Required to Resurface the Track by County.

County	Estimated Track Length (Miles)	Days Of Operation
Kalamazoo	16	8
Calhoun	40	20
Jackson	27	13.5

[3] Email from Eric Almquist to Vincent Bonifera Jr, Andrea Finn, and Gretchen Campbell, RE: Papers, August 18, 2011.

Washtenaw	35	17.5
Wayne	17	8.5

Table C.7. Anticipated Equipment Needed for Track Resurfacing.

Equipment Description	# of Units	Horsepower	Fuel Type	Fuel Usage (gallons/day)
Ballast Regulator	1	120	Diesel	60
Tamper	1	275	Diesel	120

Emissions were calculated using **Equation 1** (above) and the emissions factors in **Table C.8** from EPA's NONROAD model.

Table C.8. Track Resurfacing Emissions Factors.

Equipment Description	Emission Factors (g/hp-hr)					
	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	VOC
Ballast Regulator	4.38	6.34	0.78	0.75	0.13	1.06
Tamper	3.87	6.04	0.68	0.66	0.13	0.97

Table C.9 shows the calculated emissions associated with track resurfacing for the Proposed Improvement.

Table C.9. Estimated Track Resurfacing Emissions for the Proposed Improvement Alternative.

County	Emissions (tons)					
	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	VOC
Kalamazoo	0.13	0.19	0.02	0.02	0.004	0.03
Calhoun	0.32	0.48	0.06	0.05	0.01	0.08
Jackson	0.21	0.32	0.04	0.04	0.01	0.62
Washtenaw	0.28	0.42	0.05	0.05	0.01	0.07
Wayne	0.13	0.20	0.02	0.02	0.004	0.03
Total	**1.06**	**1.62**	**0.19**	**0.18**	**0.04**	**0.83**

C.3. Rail Replacement Emission Analysis

Emissions from rail replacement were calculated in a similar fashion as those from tie replacement and track resurfacing using equation 1 above for the equipment shown in Table X.10. The main difference in methodology is how operating time was estimated. MDOT estimates 3,200 linear feet of rail can be replaced in one day[4] and 100,000 linear feet total will be replaced throughout the NS rail line as part of the Proposed Action. The length of rail to be replaced in each county was determined by prorating the 100,000 linear feet by the percentage of track run length in each county (see **Equation 2**).

Equation 2: Percent County Length = ((L x 5,280)/TL) x 100

Where,

[4] Email from Eric Almquist to Vincent Bonifera Jr, Andrea Finn, and Gretchen Campbell, RE: Papers, August 18, 2011.

L=length of track run in each county
5,280=conversion of miles to linear ft
TL=total linear feet of the entire NS line (e.g., 135 miles)
100=conversion to percent
The number of days required to complete the rail replacement per county is calculated by first multiplying the 100,000 linear feet of rail scheduled for replacement by the percent county length estimated using **Equation 2** and then dividing by 3,200 (see **Equation 3**).

Equation 3: Days to Complete Rail Replacement By County = (PCL/100*100,000)/3,200

Where,
PCL=percent county length
100,000=linear feet of rail being replaced
3200=linear feet of track that can be replaced per day

Table C.10. Anticipated Equipment Needed for Rail Replacement.

Equipment Description	No. of Units	Horsepower	Fuel Type	Fuel Usage (gallons/day)
Cribber	1	40	Diesel	30
Adzer	1	40	Diesel	20
Spiker	1	80	Diesel	40
Spike Puller	1	80	Diesel	40
Speed Swing	2	125	Diesel	40
Hirail pickup	1	290	Diesel	10

The results from estimating the time needed for track replacement by county are shown in **Table C.11** below.

Table C.11. Days Required for Rail Replacement by County.

County	Estimated Track Length (Miles)	Estimated Track Length (LF)	Length Per County (%)	Replaced Track Per County (LF)	Days Per County
Kalamazoo	16	84480	11.85%	11,852	3.7
Calhoun	40	211200	29.63%	29,630	9.3
Jackson	27	142560	20.00%	20,000	6.3
Washtenaw	35	184800	25.93%	25,926	8.1
Wayne	17	89760	12.59%	12,593	3.9

Emissions for the Rail Replacement were the calculated using **Equation 1** and the emission factors shown in **Table C.12** obtained from EPA's NONROAD model. The estimated emissions associated with Rail Replacement for the Proposed Improvement Alternative are shown in **Table C.13**.

Table C.12. Rail Replacement Emissions Factors.

Equipment Description	Emission Factors (g/hp-hr)					
	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	VOC
Cribber	4.82	5.44	0.81	0.79	0.15	1.09
Adzer	4.82	5.44	0.81	0.79	0.15	1.09
Spiker	7.80	6.35	1.23	1.19	0.15	1.46
Spike Puller	7.80	6.35	1.23	1.19	0.15	1.46
Speed Swing	4.38	6.34	0.78	0.75	0.13	1.06
Hirail pickup	3.87	6.04	0.68	0.66	0.13	0.97

Table C.13. Estimated Rail Replacement Emissions for the Proposed Improvement Alternative.

County	Emissions (tons)					
	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	VOC
Kalamazoo	0.14	0.18	0.02	0.02	0.004	0.03
Calhoun	0.36	0.44	0.06	0.06	0.01	0.08
Jackson	0.24	0.30	0.04	0.04	0.01	0.63
Washtenaw	0.31	0.38	0.05	0.05	0.01	0.07
Wayne	0.15	0.19	0.03	0.02	0.004	0.03
Total	**1.19**	**1.49**	**0.20**	**0.20**	**0.03**	**0.84**

C.4. Switch Tie Replacement Emission Analysis

The methodology for estimating switch tie replacement emissions is similar to the methodology used for estimating emissions from rail replacement with the only difference being the method used to calculate the time required to complete the switch tie replacement. MDOT stated switch ties could be replaced at a rate of 40 ties per shift[5]. Based on this rate, the switch tie replacement would require 65 days. In the Proposed Action, 3,600 ties would be replaced throughout the NS line undergoing maintenance/upgrade. At a rate of 40 ties per shift, 90 shifts would be required to replace 3,600 switch ties. The number of ties to be replaced in each county and how long the replacement will take within each county are unknown and were estimated using the two equations below. The results are shown in **Table C.14**.

Equation 4: Shifts per County Length = (L/135) x 90

Where,
L=length of each county (miles)
135=total length of the entire NS track run (miles)
90=total numbers of shifts required to complete the installation of 3,600 switch ties

[5] Email from Eric Almquist to Vincent Bonifera Jr, Andrea Finn, and Gretchen Campbell, RE: Papers, August 18, 2011.

The number of days the operation would occur in each county was determined by dividing the number of shifts per county by the total number of days to complete the switch tie replacement.

Equation 5: Days to Complete Switch Tie Replacement By County= S/(90/65)

Where,
S=the number of shifts per county
65=days required to complete the entire switch tie replacement
90=total numbers of shifts required to complete the installation of 3,600 switch ties

Table C.14. Total Number of Days Required to Replace Switch Ties.

County	Estimated Track Length (Miles)	Length Per County (%)	Shifts per County	Days of Operation
Kalamazoo	16	11.85%	10.67	8
Calhoun	40	29.63%	26.67	19
Jackson	27	20.00%	18.00	13
Washtenaw	35	25.93%	23.33	17
Wayne	17	12.59%	11.33	8
Total	**135**	**100%**	**90**	**65**

The equipment anticipated to be used for switch tie replacement is shown in **Table C.15**. The emissions factors for this equipment were obtained from EPA's NONROAD model (see **Table C.16**). Using the emission factors from EPA's NONROAD model and the operating time estimated in **Table C.14**, emissions associated with switch tie replacement for the Proposed Improvement Alternative were calculated using **Equation 1**. The estimated emissions for the Proposed Improvement Alternative are shown in T**able C.17**.

Table C.15. Anticipated Equipment Needed for Switch Tie Replacement.

Equipment Description	No. of Units	Horsepower	Fuel Type	Fuel Usage (gallons/day)
Tie handler	1	80	Diesel	40
Spiker	1	80	Diesel	40
Spike Puller	1	80	Diesel	40
Tie extractors	2	160	Diesel	40
Tamper	1	275	Diesel	120
Hirail pickup	1	290	Diesel	10

Table C.16. Rail Replacement Emissions Factors.

Equipment Description	Emission Factors (g/hp-hr)					
	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	VOC
Tie handler	7.80	6.35	1.23	1.19	0.15	1.46
Spiker	7.80	6.35	1.23	1.19	0.15	1.46
Spike Puller	7.80	6.35	1.23	1.19	0.15	1.46
Tie extractors	4.38	6.34	0.78	0.75	0.13	1.06
Tamper	3.87	6.04	0.68	0.66	0.13	0.97
Hirail pickup	3.87	6.04	0.68	0.66	0.13	0.97

Table C.17. Estimated Switch Tie Replacement Emissions for the Proposed Improvement Alternative.

County	Emissions (tons)					
	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	VOC
Kalamazoo	0.43	0.55	0.07	0.07	0.01	0.10
Calhoun	1.03	1.31	0.17	0.17	0.03	0.23
Jackson	0.70	0.90	0.12	0.12	0.02	1.86
Washtenaw	0.92	1.17	0.16	0.15	0.03	0.21
Wayne	0.43	0.55	0.07	0.07	0.01	0.10
Total	**3.52**	**4.49**	**0.60**	**0.58**	**0.10**	**2.49**

C.5. Renewing Signal and Train Control Emission Analysis

Emissions from renewing signals and train controls were calculated using the methodology shown in **Equation 1** and diesel engine emission standards[6]. SO_2 emissions were estimated assuming the vehicles burn ultra low sulfur diesel fuel with a sulfur content of 15 ppm and all sulfur is converted to SO_2 - See **Equation 5**.

Equation 5: SO_2 Emission Factor= (((15)*3.79)/453,592)*FR

Where,
15= sulfur content of diesel is 15 ppm or mg/L
3.79=Conversion of liters to gallons
453,592=Conversion of mg to lbs
FR=Fuel consumption rate of 1 gal/hr for bucket truck[7]

The units for the SO_2 emission factor are in lb/hr instead of g/hp-hr, therefore **Equation 1** was modified to calculate SO_2 emissions from Renewing Signal and Train Control:

Equation 6: Renewing Signal and Train Control Emissions (SO_2 only) = N x Hr x EF x 0.0005

[6] Tables 1 and 4 of http://www.dieselnet.com/standards/us/hd.php#y2004.
[7] Fuel consumption rate for bucket truck from http://www.next100.com/2011/03/pges-electrifying-solution.php

Where,
N=number of equipment used
Hr=hours
EF=emission factor (lb/hr)
0.0005=conversion from pounds to tons

In addition, the operating time for the signal and train control replacement was calculated using the number of public and private crossings per county not currently being updated by NS, and the number of hours estimated for each repair. It was assumed that the work at each crossing would take approximately four (4) hours to complete. **Table C.18** shows the number of crossings in each county and the total number of hours estimated to complete the signal and train control renewals. The only anticipated equipment needed for this work is a Bucket Truck. For purposes of calculation, 1 unit was assumed with 250 horsepower using Diesel fuel type.

Table C.18. Total Hours for Renewing Signals and Train Controls.

County	Total Crossings	Hours per Signal Replacement	Total Hours Required for Signal Replacement
Kalamazoo	19	4	76
Calhoun	47	4	188
Jackson	63	4	252
Washtenaw	14	4	56
Wayne	25	4	100

Using the emission factors in **Table C.19** and the operating time shown in **Table C.18**, emissions were calculated for renewing signal and train control using **Equation 1** for criteria pollutants except SO_2 and **Equation 6** for SO_2. The estimated emissions associated with renewing signals and train controls for the Proposed Improvement Alternative are shown in **Table C.20**.

Table C.19. Renewing Signal and Train Control Emissions Factors.

Equipment Description	Emission Factors					
	CO (g/hp-hr)	NOx (g/hp-hr)	PM_{10} (g/hp-hr)	$PM_{2.5}$ (g/hp-hr)	SO_2 (lb/hr)	VOC (g/hp-hr)
Bucket truck	15.50	2.00	0.10	0.10	1.25E-04	0.50

Table C.20. Estimated Signal and Train Control Renewal Emissions for the Proposed Improvement Alternative.

County	Emissions (tons)					
	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	VOC
Kalamazoo	0.32	4.19E-02	2.09E-03	2.09E-03	4.75E-06	1.05E-02
Calhoun	0.80	0.10	5.18E-03	5.18E-03	1.18E-05	0.03
Jackson	1.08	0.14	6.94E-03	6.94E-03	1.58E-05	0.03
Washtenaw	0.24	0.03	1.54E-03	1.54E-03	7.72E-09	0.01
Wayne	0.43	0.06	2.76E-03	2.76E-03	1.38E-08	1.38E-02
Total	**2.87**	**0.37**	**0.02**	**0.02**	**3.23E-05**	**0.09**

C.6. Warning Device Installation Emission Analysis

The methodology used for estimating emissions from the installation of warning devices was the same as the methodology used for calculating the emissions for renewing signals and train controls. The only minor difference was the addition of two pieces of equipment (e.g., backhoe and boring machine) – see **Table C.21**. The emission factors for those two pieces of equipment were obtained from EPA's NONROAD model and are shown in **Table C.22**. Using the emission factors in **Table C.22** and the operational time estimated in **Table C.18**, emissions were calculated using **Equation 1** for criteria pollutants except SO_2 and **Equation 6** for SO_2. The results are shown in **Table C.23**.

Table C.21. Anticipated Equipment Needed to Install Warning Devices.

Equipment Description	No. of Units	Horsepower	Fuel Type
Bucket truck	1	250	Diesel
Backhoe	1	75	Gasoline
Boring Machine	1	25	Gasoline

Table C.22. Warning Device Installation Emission Factors.

Equipment Description	Emission Factors (g/hp-hr)*					
	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	VOC
Bucket truck	15.50	2.00	0.10	0.10	1.25E-04 (lb/hr)	0.50
Backhoe	41.54	2.58	0.07	0.06	0.15	1.08
Boring Machine	358.61	3.60	0.12	0.11	0.22	7.12

*Units for the emission factors are g/hp-hr unless otherwise indicated.

Table C.23 shows the estimated emissions associated with warning device installation for the Proposed Improvement Alternative using the provided inputs.

Table C.23. Estimated Warning Devices Installation Emissions for the Proposed Improvement Alternative.

County	Emissions (tons)					
	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	VOC
Kalamazoo	1.34	0.07	2.78E-03	2.72E-03	1.39E-03	3.218E-02
Calhoun	3.31	0.16	6.87E-03	6.74E-03	3.44E-03	0.08
Jackson	4.43	0.22	9.21E-03	9.03E-03	4.61E-03	0.11
Washtenaw	0.98	0.05	2.05E-03	2.01E-03	1.02E-03	0.02
Wayne	0.34	0.02	5.76E-04	5.30E-04	1.22E-03	8.939E-03
Total	**10.4**	**0.52**	**0.02**	**0.02**	**0.01**	**0.25**

C.7. Grade Crossing Repair Emission Analysis

Following the methodology used for other activities in the Proposed Action, emissions for grade crossing repair were estimated using **Equation 1**. MDOT stated that the repair of the grade crossings would

require an average of two days[8], however, it was assumed the equipment would only operate for an average of four hours total. The total operating time per county was estimated by multiplying the assumed average hours (e.g., four) per crossing completion by the number of crossings – see **Table C.18**). Emission factors for the anticipated equipment needed for repairing grade crossing (see **Table C.24**) were derived from EPA's NONROAD model and are shown in **Table C.25**. The estimated emissions from this activity are shown in **Table C.26**.

Table C.24. Anticipated Equipment Needed for Grade Crossing Repair.

Equipment Description	No. of Units	Horsepower	Fuel Type
Dump Truck	1	300	Diesel
Backhoe	1	75	Gasoline
Front end loader	1	75	Gasoline
Asphalt Paver	1	75	Gasoline
Asphalt Roller	1	75	Gasoline
Generator	1	100	Diesel

Table C.25. Grade Crossing Repair Emission Factors.

Equipment Description	Emission Factors (g/hp-hr)					
	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	VOC
Dump Truck	1.13	3.35	0.24	0.24	0.11	0.25
Backhoe	41.54	2.58	0.07	0.06	0.15	1.08
Front end loader	41.54	2.58	0.07	0.06	0.15	1.08
Asphalt Paver	81.52	5.18	0.07	0.06	0.16	2.29
Asphalt Roller	46.65	2.90	0.07	0.06	0.15	1.23
Generator	1.86	5.58	0.37	0.36	0.11	0.50

Table X.26. Estimated Grade Crossing Repair Emissions for the Proposed Improvement Alternative.

County	Emission (tons)					
	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	VOC
Kalamazoo	6.22	1.12	0.06	0.06	0.04	0.22
Calhoun	15.39	2.77	0.15	0.14	0.09	0.55
Jackson	20.63	3.72	0.20	0.19	0.12	24.86
Washtenaw	4.59	0.83	0.04	0.04	0.03	0.16
Wayne	8.12	1.27	0.06	0.06	0.04	0.27
Total	**55.0**	**9.71**	**0.51**	**0.50**	**0.32**	**26.1**

[8] Email from Eric Almquist to Vincent Bonifera Jr, Andrea Finn, and Gretchen Campbell, RE: Papers, August 18, 2011.

C.8. Positive Train Control (PTC) Installation Emission Analysis

Emissions from installing the fiber optic cable associated with the Positive Train Control (PTC) system were estimated using equation 1. MDOT stated that the locomotive used to install the cable would move at a rate of 1.3 miles per hour[9]. The total hours the locomotive would be in each county was estimated by dividing the county length for each county by the rate of travel (see **Table C.27**).

Table C.27. Total Hours to Install PTC per County.

County	County Length (miles)	Hours per County
Kalamazoo	16	12
Calhoun	40	31
Jackson	27	21
Washtenaw	35	27
Wayne	17	13

Emission factors were obtained from Table 22 in EPA's Emission Factors for Locomotives: Tier 1+ emission factors and are shown in Table **C.28**.[10] The estimated emissions are shown in **Table C.29**.

Table C.28. Emission Factors for Calculating PTC Installation.

Equipment Description	Emission Factors (g/hp-hr)					
	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	VOC
Cable plow pulled by locomotive (both diesel) – GP-38-2 Locomotive	1.83	9.90	0.23	0.23	0.12	0.60

Table C.29. Estimated PTC Installation Emissions for the Proposed Improvement Alternative.

County	Emission (tons)					
	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	VOC
Kalamazoo	0.07	0.40	0.01	0.01	0.01	0.02
Calhoun	0.19	1.01	0.02	0.02	0.01	0.06
Jackson	0.13	0.68	0.02	0.02	0.01	0.04
Washtenaw	0.16	0.88	0.02	0.02	0.01	0.05
Wayne	0.08	0.43	0.01	0.01	0.01	0.03
Total	**0.63**	**3.40**	**0.08**	**0.08**	**0.04**	**0.21**

[9] Email from Eric Almquist to Vincent Bonifera Jr, Andrea Finn, and Gretchen Campbell, RE: Papers, August 18, 2011.

[10] EPA's Technical Highlights "Emission Factors for Locomotives", Table 2 Tier 1+ emission factors

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APPENDIX D

Waters of Special Concern

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Waters of Special Concern:

•***Rouge River*** (near Mile Post (MP) 16) - Not meeting State Water Quality Standards for Biota

•***Rouge River*** (~2500 feet SW of MP 9) - Not meeting State Water Quality Standards for Biota and E. Coli

•***Geddes Pond / Huron River*** (~500 feet NE of MP 34 to ~1400 feet SE of MP 37) - Not meeting State Water Quality Standards for E. Coli

•***Huron River*** (~500 feet NW of MP 37 and from 1450 feet to 2450 feet SE of MP 38) - Not meeting State Water Quality Standards for E. Coli

•***Grand River*** (~2700 feet NW of MP 76) - Not meeting State Water Quality Standards for E. Coli or Dissolved Oxygen

•***Rice Creek*** (~180 feet SW of MP 108) – TROUT STREAM

•**Augusta Creek** (~3900 SW of MP 108) – TROUT STREAM

•***Canal Race*** (~1750 feet NE of MP 131) – TROUT STREAM

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APPENDIX E

Michigan Department of Natural Resources & Environment
&
U.S. Fish and Wildlife Service

Letters of Concurrence

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STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENT
LANSING

RICK SNYDER
GOVERNOR

January 25, 2011

Mr. David W. Schuen
Project Planning Division
Michigan Department of Transportation
PO Box 30050
Lansing, MI 48909

RE: **Proposed high-speed railroad project from Dearborn Station to Kalamazoo Station**

Dear Mr. Schuen:

The location of the proposed project was checked against known localities for rare species and unique natural features, which are recorded in a statewide database. This continuously updated database is a comprehensive source of information on Michigan's endangered, threatened and special concern species, exemplary natural communities and other unique natural features. Records in the database indicate that a qualified observer has documented the presence of special natural features at a site. The absence of records may mean that a site has not been surveyed. The only way to obtain a definitive statement on the presence of rare species is to have a competent biologist perform a field survey.

Under Act 451 of 1994, the Natural Resources and Environmental Protection Act, Part 365, Endangered Species Protection, "a person shall not take, possess, transport, ...fish, plants, and wildlife indigenous to the state and determined to be endangered or threatened," unless first receiving an Endangered Species Permit from the Department of Natural Resources & Environment, Wildlife Division. *Responsibility to protect endangered and threatened species is not limited to the list below. Other species may be present that have not been recorded in the database.*

The presence of threatened or endangered species does not preclude activities or development, but may require alterations in the project plan. **Special concern species are not protected under endangered species legislation, but recommendations regarding their protection may be provided.** Protection of special concern species will help prevent them from declining to the point of being listed as threatened or endangered in the future.

The following is a summary of the results for the project in Kalamazoo, Calhoun, Jackson, Washtenaw, Wayne Counties.

The attached lists include unique features that are known to occur on or near the site(s) and may be impacted by the project.

In summary, the project site may include suitable habitat for the above listed species. Potential impacts might include direct destruction of species and disturbance of critical habitat. **Clearance from this office in the form of a "No Effect" statement will be needed before land altering activities on this project begin.** To obtain an evaluation for project clearance, please provide at least one of the following to this office:

1. Description of the project area with regard to the species habitat type(s) described above. A recent photo of the project site and a map that shows habitat type(s) and location(s) of the

proposed project will be necessary. This can be done by the landowner, other responsible party, or knowledgeable source (i.e. botanist, ecologist, biologist, experienced birder, etc.). This level of evaluation will only define the presence or absence of available habitat. If this office determines that there is no significant available habitat, the project may be cleared at this point. If potential habitat does exist, the next level of evaluation must be undertaken (see options 2 or 3 below).

OR

2. A statement from a knowledgeable source stating that suitable habitat is or is not present and why the project will not impact the species or habitat(s) identified above.

OR

3. Results from a complete and adequate survey by a knowledgeable source showing whether or not the above listed species are present in the affected project area. Guidelines for conducting surveys and a list of consultants who may be able to help conduct surveys can be accessed at: http://www.michigan.gov/dnrenreview. For additional information, including consultation with biologists, please contact me at the e-mail or phone number below.

In most situations, the most efficient, thorough, and expeditious evaluation of the project and its impacts results from option 3. Please provide information **in writing** to the mailing address or e-mail provided below.

Wildlife Division – Natural Heritage Program
Michigan Department of Natural Resources & Environment
PO Box 30180
Lansing, MI 48909

Thank you for your advance coordination in addressing the protection of Michigan's natural resource heritage. If you have further questions, please call me at 517-373-1263 or e-mail at SargentL@michigan.gov .

Sincerely,

Lori G. Sargent
Endangered Species Specialist
Wildlife Division

Enclosures
cc: Craig Czarnecki, US Fish & Wildlife Service

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENT
LANSING

JENNIFER M. GRANHOLM
GOVERNOR

REBECCA A. HUMPHRIES
DIRECTOR

August 6, 2010

Ms. Ulrika Zay
Natural Features Coordinator
Ecological Services, Compliance & Mitigation Environmental Section - MDOT
425 West Ottawa Street
Lansing, Michigan 48909

Dear Ms. Zay:

Our agency was not able to complete a full Environmental Review in the one week time window of your request. We receive several thousand Environmental Review requests each year, which are processed in the order that they are received. We caution all applicants that Environmental Reviews can take 30-60 days, but may take longer depending on workload.

From prior work that I have done in this area, I am aware of at least one state threatened plant species (Leiberg's panic grass *Dichanthelium leibergii*) that occurs on the ballast of the railroad and within the existing Right of Way. Other state protected prairie plant species likely grow on the ballast as well. For that reason it is difficult for me to ascertain whether a significant impact will occur without a full Environmental Review.

I can say that no significant impacts would be expected if:

1) A full Environmental Review was conducted before any construction activities occurred, and
2) Prior to any construction activity the areas of concern were surveyed, indirect and direct impacts quantified, and avoidance, minimization, and mitigation measures implemented as needed.

For future reviews of this nature, especially reviews covering a large geographic area with multiple modifications to tracks, ties, signal, and fiber optics, I would strongly advise that reviews be initiated at least 60 days before clearance is needed.

Sincerely,

Christopher L. Hoving
Endangered Species Coordinator
517-373-1263

cc: Dr. Patrick Lederle, DNRE
Ms. Lori Sargent, DNRE

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
East Lansing Field Office (ES)
2651 Coolidge Road, Suite 101
East Lansing, Michigan 48823-6316

IN REPLY REFER TO:

August 6, 2010

Mr. Richard A. Wolinski
Michigan Department of Transportation
Project Planning Division
Environmental Section
P.O. Box 30050
Lansing, Michigan 48909

Re: Request for Endangered Species Act Section 7 Concurrence on the Pontiac-Detroit-Chicago Rail Corridor Project

Dear Mr. Wolinski:

We are responding to your correspondence of August 5, 2010, requesting Endangered Species Act (Act) section 7 consultation on the above referenced project. Your correspondence addresses potential effects of the action on the federally endangered Indiana bat (*Myotis sodalis*) and the Eastern massasauga rattlesnake (*Sistrurus catenatus catenatus*), a federal candidate species. We concur that these are the only listed resources that are likely to occur within the action area, as defined in your August 5, 2010 correspondence.

According to the information provided to our office, the Michigan Department of Transportation (MDOT) proposes to improve the Norfolk Southern Railway segment from Dearborn to Kalamazoo, Michigan. The proposed Improvement Alternative includes track rehabilitation, installation of signals and train control, warning devices, and development of an ownership arrangement to bring the speed capabilities up to 79 mph to meet the existing speed capacity west of Kalamazoo. You have indicated the proposed Improvement Alternative would not require acquisition of additional rights-of-way, construction of a second set of tracks, and/or clearing of trees.

Indiana Bat

Indiana bats are known to occur within the general area of the rail line. You have indicated that the proposed project will not result in any real changes in the physical structure of the existing infrastructure. No additional sections of track are to be constructed and no trees removed. Train speed will increase up to 79 mph, but there is no evidence to suggest Indiana bats may be at risk

of collision with trains at this increase in speed. As a result, you have determined the project may affect but is not likely to adversely affect the Indiana bat.

We concur with your determination. Any potential effects are either insignificant or discountable, as no tree clearing or other habitat impacts are anticipated. In addition, any potential mortality that may occur in association with operation of the rail line is not expected to be above current baseline conditions.

Eastern Massasauga Rattlesnake

As a federal candidate species, consultation under section 7 of the Act is not required for the Eastern massasauga rattlesnake. Nevertheless, we appreciate MDOT's consideration of potential effects to the species, and agree that impacts to the species are not likely. Should a massasauga rattlesnake be discovered in the area during construction activities, we request that you contact our offices.

This precludes the need for further action on the proposed Pontiac-Detroit-Chicago Rail Corridor Project rail project, as defined in your correspondence. We appreciate the opportunity to cooperate with MDOT in conserving endangered species. If you require further assistance or have any questions, please contact Barbara Hosler of this office at 517/351-6326 or <barbara_hosler@fws.gov>.

Sincerely,

John V. Dingledine
Acting Field Supervisor

APPENDIX F

List of known and identified eligible, already listed, or potentially eligible above-ground Historic Resources

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The following is a list of known and identified eligible, already listed or potentially eligible above-ground historic resources. Please note that this list is not all inclusive.

West Detroit Junction (MP 3.43SW) to Town Line Interlocking (MP7.98SW): Historic bridges are present in the project corridor area. These bridges are located within the Detroit Intermodal Freight Terminal (DIFT) project limits and are covered by the DIFT Record of Decision. The bridges, which will not face adverse impacts from the DIFT, are:

(1) The Southern Avenue Twin Warren Truss Bridges (between Miller Road and Wyoming Road). The western-most through-girder bridge is not historic.
(2) X03, Conrail crossing Livernois (south of John Kronk). The two southern-most of the bridges, X02, Norfolk Southern crossing Livernois (north of Toledo Street) are not historic.

Dearborn:
1. In Dearborn the tracks run adjacent to the north boundary of the Henry Ford Museum/Greenfield Village. There is a historic power plant or factory located at the southwest quadrant of the RR tracks and the Elm Street at-grade crossing. Numerous historic buildings, including a historic roundhouse and associated rolling stock are located adjacent to the tracks.

1. RR Bridge over US-24/Telegraph (X03-82052).

2. RR Bridge over West Outer Drive.

3. RR Bridge over Military Street.

4. RR Bridge over Oakwood Boulevard.

5. RR Bridge over M-39/Southfield Freeway.

6. RR Bridge over Greenfield Road.

Inkster:
1. RR Bridge over Middlebelt Road.

2. RR Bridge over Inkster Road.

Ypsilanti:
1. The Freighthouse north of Cross Street west of the railroad tracks is eligible for listing on the National Register.

2. The Depot north of Cross Street east of the railroad tracks is potentially eligible for listing on the National Register.

3. The Depot Town Historic District is located on Cross Street adjacent to the tracks is listed on the National Register.

Ann Arbor:
1. Potentially historic house located in the southwest quad of the railroad crossing at East Delhi road (Scio Township).

2. The Depot (Gandy Dancer restaurant) east of the Broadway Street Bridge on the south side of the railroad tracks is listed on the National Register.

Dexter:
1. Island Lake Road Bridge.

2. Mill Creek Bridge.

3. RR Bridge over Dexter-Pinckney Road.

Chelsea:
1. The Depot at 150 Jackson Street east of M-52 and on the north side of the railroad tracks is listed on the National Register.

2. A factory complex (tourist destination, shops and offices), and historic districts (residential and commercial) are located adjacent to the existing right-of-way. The Jiffy Mix complex, which may be eligible for listing in the National Register of Historic Places, straddles the right-of-way.

Grass Lake:
1. The Depot at 210 East Michigan Avenue on the south side of the railroad tracks is eligible for listing on the National Register.

2. Between Grass Lake Village east limits and North Lake Street the rail line runs directly north of (behind) historic residential and commercial historic districts.

Jackson:
1. The Depot at 501 Michigan Avenue on the north side of the railroad tracks is listed on the National Register. The Express Building is also listed on the National Register.

2. Temple Beth El Cemetery is located south of the tracks adjacent to the West Street Bridge and is listed on the National Register.

3. Historic properties abut the railroad right-of-way on the north side from a line parallel with Ingham Street to Steward Street, and flank the RR from Steward Street to West Street.

4. Factory complex, south side of tracks, east of South Elm Street.

5. Power house associated with the Airmaster Fan complex at Falahee Road, East Jackson Interlock).

6. F P Miller factory at 420 Ingham Street.

Parma:
The Parma Mill-Hardware facility located south of the tracks and north of Mill Street.

Albion:
1. The Depot east of North Eaton Street on the south side of the railroad tracks is eligible for listing on the National Register.

2. The Superior Street Commercial Historic District is adjacent to the railroad corridor; the brick roadway is a contributing element in the significance of the district and crosses the railroad.

Marshall:
Marshall has numerous historic resources but no impacts are anticipated as the proposed siding is located within the existing right-of-way, south of River Street.

Battle Creek:
1. The Grand Trunk Depot is located on the north side of the RR tracks at or near the Baron Interlocking (MP 120.54).

2. The Battle Creek No.4 Fire House is located at 174 South Kendall Street (the northeast quadrant of South Kendall Street).

Augusta:
Coal Dock in the Augusta vicinity.

Kalamazoo:
1. The Depot between Burdick and Rose Streets on the south side of the railroad tracks is listed on the National Register.

2. Stuart Neighborhood Historic District (Henderson Park); roughly bounded by Elm Street, North Street, Ransom, Westnedge, and Michigan is listed on the National Register.

3. RR Bridge over M-43/East Michigan Avenue (X01-39082).

4. Switch Tower, east of Porter Street.

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APPENDIX G

Coordination with the State Historic Preservation Office and the Office of State Archaeologist

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JENNIFER M. GRANHOLM
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF TRANSPORTATION
LANSING

KIRK T. STEUDLE
DIRECTOR

September 3, 2009

Ms. Martha MacFarlane-Faes, Environmental Review Coordinator
Michigan State Historic Preservation Office
Michigan Historical Center
702 W. Kalamazoo
P.O. Box 30740
Lansing, Michigan 48909-8240

Dear Ms. MacFarlane-Faes:

Pontiac-Detroit-Chicago Rail Corridor Project
Service NEPA Environmental Assessment

The purpose of this letter is to request State Historic Preservation Office (SHPO) concurrence with a no adverse effect determination for the proposed High-Speed Railroad project from Pontiac to the Indiana State Line. This is the first formal submittal for this project, so an Environmental Review Number has not yet been assigned.

Project Description

The Michigan Department of Transportation (MDOT) is applying for federal grants to improve the Chicago Hub Corridor between Detroit and Chicago. The improvements are part of the Midwest Regional Rail Initiative (MWRRI) and the State Long Range Transportation Plan (SLRP). Public involvement for the MWRRI and SLRP revealed solid interest on the part of the public for increased mode choices and improvements in connectivity among transportation modes. MDOT is in the process of completing a "Service NEPA Environmental Assessment" for the corridor improvements.

A more detailed scope of work, with purpose and need statements, is enclosed. Several maps of the corridor are also enclosed. The railroad corridor historically existed as a double track throughout. The second track was previously removed for much of the corridor; however, the sub-ballast was left in place. The railroad corridor is approximately 240 miles in length. Most of the track runs through rural areas with the stations located in urban areas.

Above-ground Cultural Resources

MDOT Historians Lloyd Baldwin and Sigrid Bergland have reviewed the corridor using all available on-line resources because, due to the very short time frame, field reviews of the entire corridor were not possible. A set of conditions, which are enclosed, have been developed to ensure the project will have no adverse effect on above-ground historic resources. The locations of many known National Register-listed or eligible properties are provided as part of the conditions. Please note some of the conditions require MDOT Historian approval, and the SHPO will be consulted as necessary during the approval process. This oversight will guarantee that none of the work will have an adverse effect on any cultural resources.

In an earlier grant application, a number of National Register-listed and eligible depots were slated for rehabilitation, and the SHPO was informed of the conditions for all of the depot work (see enclosed copy of the e-mail). This project only includes work on three depots/stations and none are historic resources. The proposed station location for Dearborn is within the boundaries of the Greenfield Village and Henry Ford Museum National Historic Landmark District and near the National Register-eligible Ford Motor Company Engineering Laboratory and Power Plant. The proposed station location for Dearborn has already been submitted to the SHPO and was given a "no adverse effect" determination by a letter dated September 8, 2008 (a copy of the letter is enclosed). For the remaining stations at Troy/Birmingham and Battle Creek, there are no above-ground cultural or historic resources located in the immediate vicinity of the proposal.

Archaeological Resources

MDOT Archaeologist James A. Robertson, Ph.D., and the Historical Archaeologist of the Office of the State Archaeologist (OSA) Dean L. Anderson, Ph.D., reviewed the state archaeological site files and state site file maps at the OSA to assess the potential for the Pontiac-Detroit-Chicago Rail Corridor Project to impact known and unknown archaeological sites. MDOT and the OSA agreed that the project, as currently conceived, will not affect archaeological resources (see attached e-mails). However, MDOT and OSA further agreed that work requiring new right-of way/work outside of the right-of-way, other than those locations specified in the attached e-mails and discussed during our consultation, and/or a new bridge over a stream/river has the potential to adversely affect archaeological resources and would require additional consultation with the OSA.

Summary

The railroad project corridor improvements will have no adverse effect on any above-ground cultural resources due to the set of conditions developed by MDOT. With regard to archaeological resources, no historic properties will be affected.

Please feel free to contact me at (517) 335-4229 if you have any questions or concerns. If you concur with this assessment, please sign the concurrence line below. Thank you.

Sincerely,

Sigrid JJ Bergland, Historian
Environmental Section
Project Planning Division

Enclosures

I concur: _____ Date: _____
Brian Conway, State Historic Preservation Office

STATE OF MICHIGAN
JENNIFER GRANHOLM
GOVERNOR

DEPARTMENT OF HISTORY, ARTS AND LIBRARIES
LANSING

MARK HOFFMAN
ACTING DIRECTOR

September 22, 2009

SIGRID BERGLAND
MICHIGAN DEPARTMENT OF TRANSPORTATION
425 WEST OTTAWA
PO BOX 30050
LANSING MI 48909

RE: ER09-631 Pontiac-Detroit-Chicago Rail Corridor Project, Berrien, Van Buren, Kalamazoo, Calhoun, Jackson, Washtenaw, Wayne and Oakland Counties (FRA)

Dear Ms. Bergland:

Under the authority of Section 106 of the National Historic Preservation Act of 1966, as amended, we have reviewed the above-cited undertaking at the location noted above. Based on the information provided for our review, it is the opinion of the State Historic Preservation Officer (SHPO) that the proposed undertaking will have **no adverse effect** [36 CFR § 800.5(b)] on historic properties within the area of potential effects for the above-cited undertaking provided the "Scope of Work" and the "No Adverse Effect Conditions" specified in the project information are followed.

If you concur, the accompanying form must be signed by an agency official with legal and financial responsibility for the above-cited undertaking [36 CFR § 800.2(a)]. Please return the signed original to us. Please note that the Section 106 review process will not be complete and the Federal Railroad Administration's responsibility to comply with 36 CFR § 800.4, "Identification of historic properties," and 36 CFR § 800.5, "Assessment of adverse effects", will not be fulfilled until we have received this letter with the original signature of the agency official. If the agency official disagrees with this condition, then consultation with this office shall be reopened per 36 CFR § 800.5(a).

The views of the public are essential to informed decision making in the Section 106 process. Federal Agency Officials or their delegated authorities must plan to involve the public in a manner that reflects the nature and complexity of the undertaking, its effects on historic properties and other provisions per 36 CFR § 800.2(d). We remind you that Federal Agency Officials or their delegated authorities are required to consult with the appropriate Indian tribe and/or Tribal Historic Preservation Officer (THPO) when the undertaking may occur on or affect any historic properties on tribal lands. **In all cases**, whether the project occurs on tribal lands or not, Federal Agency Officials or their delegated authorities are also required to make a reasonable and good faith effort to identify any Indian tribes or Native Hawaiian organizations that might attach religious and cultural significance to historic properties in the area of potential effects and invite them to be consulting parties per 36 CFR § 800.2(c-f).

The State Historic Preservation Office is not the office of record for this undertaking. You are therefore asked to maintain a copy of this letter with your environmental review record for this undertaking. If the scope of work changes in any way, or if artifacts or bones are discovered, please notify this office immediately.

If you have any questions, please contact Brian Grennell, Environmental Review Specialist, at (517) 335-2721 or by email at ER@michigan.gov. **Please reference our project number in all communication with this office regarding this undertaking.** Thank you for this opportunity to review and comment, and for your cooperation.

Sincerely,

Brian D. Conway
State Historic Preservation Officer

BDC:DLA:ROC:bgg

Enclosure(s)

Copy: Genell Schuerell, NTHP

STATE OF MICHIGAN

JENNIFER GRANHOLM
GOVERNOR

DEPARTMENT OF HISTORY, ARTS AND LIBRARIES
LANSING

DR. WILLIAM ANDERSON
DIRECTOR

SIGRID BERGLAND
MICHIGAN DEPARTMENT OF TRANSPORTATION
425 WEST OTTAWA
PO BOX 30050
LANSING MI 48909

RE: BR09-631 Pontiac-Detroit-Chicago Rail Corridor Project, Berrien, Van Buren, Kalamazoo, Calhoun, Jackson, Washtenaw, Wayne and Oakland Counties (FRA)

Dear Ms. Bergland:

We have received comments from the State Historic Preservation Office (SHPO) in regards to the above-cited undertaking at the location noted above. We intend to follow the conditions as specified by the SHPO.

I concur: Sigrid Bergland Date: 9/25/09

Printed name and title of agency official: SIGRID BERGLAND
CULTURAL RESOURCE COORDINATOR

From: Anderson, Dean (MSHDA)
To: Robertson. James
Date: 8/3/2010 2:31PM
Subject: RE: High Speed Rail - Dearborn to Kalamazoo

Jim,

Based on our review of the High Speed Rail project information, and our discussion of the prospects for the project to affect archaeological sites, I agree with MDOT's opinion that the project will have no adverse effect upon any archaeological sites within the project corridor.

Dean

Dean L. Anderson, Historical Archaeologist
Office of the State Archaeologist
MSHDA
Michigan Historical Center
Box 30740
702 West Kalamazoo St.
Lansing, MI 48909-8240
andersond15@michigan.gov
(517) 373-1618

-----Original Message-----

From: Robertson, James [mailto:RobertsonJ3@michigan.gov]
Sent: Monday, August 02, 2010 3:30 PM
To: Anderson, Dean (MSHDA)
Subject: High Speed Rail - Dearborn to Kalamazoo

Dear Dr. Anderson:

For the review of impacts to archaeological/cultural resources, MDOT reviewed the descriptions of the Proposed Improvement Alternative and Affected Environment. These sections of the environmental document, which include the fact that the project will not require fee right of way or grading permits, were provided to you for your review as well. MDOT also reviewed the state archaeological site files to analyze the possible impacts to previously recorded archaeological/cultural sites. The site file search identified 17 archaeological sites that possibly overlap the existing rail corridor between Dearborn and Kalamazoo. Ten of these sites have either been determined not eligible for listing on the National Register or are 1) sites referenced by Hinsdale (1931) or other historical references that lack accurate locational information, 2) reported collections that lack accurate locational data that have never been field verified, or 3) sites that have been destroyed or otherwise disturbed. The seven remaining sites include four lithic scatters, two findspots, and one site that may be the result of glacial action on a bedrock outcrop. However, based on the proposed project*s impacts, which will not extend outside the existing right of way, it is MDOT's opinion that the project will have no adverse effect on these seventeen sites or any other archaeological/cultural sites along the rail corridor.

Please reply whether you concur with our analysis of possible impacts or provide me with your comments if you do not concur at this time. Thank you for your assistance on this project.

jar

James A. Robertson, Ph.D.
Staff Archaeologist
Environmental Section
Project Planning Division
Michigan Department of Transportation
425 West Ottawa
P.O. Box 30150
Lansing, MI 48909
Phone: 517-335-2637
Fax: 517-373-9255
E-Mail: RobertsonJ3@Michigan.gov

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APPENDIX H

List of 4(f) Recreational Properties

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4(f) properties adjacent or in the vicinity of Norfolk Southern Rail line between Dearborn and Kalamazoo, Michigan

Wayne County:
Clinton Street Recreation Area
Crowley Park
Geer Park
H. Craig Walz Quadraplex
King Boring Park
Treadwell Street Recreation Area

Washtenaw County:
Alpine Street Park
Ball fields (West of S. Ford Blvd.)
Bandemer Park
Barton Hills Village Park
Delhi Metropolitan Park
Dexter-Chelsea Rd. area property
Forest Park
Frog Island Park
Geddes Pond Area
Huron Hills Golf Course
Huron River Area near Depot Street
Kuebler Langford Nature Area
Mitchell Field
Parker Mill County Park
Quackenbush Dr. green space (Dexter)
Wheeler Park

Jackson County:
Jackson High School athletic fields and property

Calhoun County:
Kimball Pines County Park

Kalamazoo County:
Fort Custer Park
MLK Memorial Park
Peer Park