4.12 Water Resources

This section examines the potential effects of the No-Action alternative, the Proposed Action, and new construction alternatives on groundwater, floodplains and streams, surface water quality, and wetlands. Specifically, the analysis included areas that would potentially be affected by the Proposed Action within and adjacent to the EJ&E rail line and proposed rail connections, siding extensions, and double tracks. Results were then compared with the No-Action Alternative.

The following is a summary of the findings presented in this section:

- SEA examined the potential effect of the Proposed Action and associated construction activities on groundwater, floodplains and streams, surface water quality, and wetlands.
- Although train accidents resulting in the release of hazardous materials are extremely rare, increases in freight rail traffic along the EJ&E rail line would have a corresponding increase in the risk of hazardous material spills, which could affect groundwater or surface water supply sources. There are several lakes and preserves located within 1,000 feet of the EJ&E rail line and in the direction of presumed near-surface groundwater flow. In addition, there are several areas along the EJ&E rail line where the susceptibility of shallow groundwater to be affected by surface hazardous material spills is excessive, high, or moderate; domestic wells located in these areas would have a higher likelihood of being affected by a hazardous material spill than in other areas. [Section 4.12.3.1] Groundwater could be affected during construction of the proposed connections and double track where there is a need for construction dewatering, which can temporarily affect near-surface groundwater flow patterns and potentially modify the hydrology of wetlands or other surface water features near the dewatered area. There would also be an increased risk of hazardous material spills during construction, which could adversely affect groundwater or surface water supply sources. [Section 4.12.4.1]
- Changes in rail operation would not alter existing culverts and would not affect floodplains or streams. The proposed construction of rail connections and double track could affect water surface elevations in floodplains and streams unless appropriate measures are taken during design to avoid or minimize potential affects. SEA has proposed mitigation in Chapter 6 which will minimize potential effects to floodplains.
- Operation and maintenance activities due to the Proposed Action such as mowing and spraying have the potential to affect surface water quality. CN's proposed right-of-way maintenance and vegetation control program would not involve changes to current practices. [Section 4.12.3.3] Construction of rail connections and double track would have the potential to temporarily degrade downstream water quality due to erosion/siltation and spills of hazardous materials. Construction could increase turbidity and lower dissolved oxygen levels unless erosion and sediment controls are implemented during construction. (Special practices or alternatives should be observed during construction of the Joliet Connection to protect the Des Plaines River, and during construction of the Munger Connection to protect Brewster Creek.) Construction of some double track segments may also require special practices and SEA has proposed mitigation in Chapter 6. [Section 4.12.4.3]
- Although the change in rail operations would not affect wetlands [Section 4.12.3.4], the construction of the proposed rail connections and double track would result in the direct loss of existing wetlands. Unless existing drainage patterns are maintained, degradation of additional wetlands by the loss of hydrology could result when proposed connections are constructed. The largest wetland impacts would occur at the Munger Connection and

alternative configurations and the Proposed Matteson Connection. The double track segments would also affect between 1.41 and 2.87 acres of wetlands, for a total of 8.64 acres. SEA has proposed mitigation in Chapter 6 to address wetland impacts. [Section 4.12.4.4]

4.12.1 Methodology

4.12.1.1 Groundwater

Near-surface groundwater flow directions in the vicinity of the EJ&E rail line were estimated by interpreting U.S. Geological Survey (USGS) digital topographic data of the elevations of nearby surface water features. The groundwater flow direction was estimated at approximate distances of 1.5 to 2 miles from and in the vicinity of Wellhead Protection Areas (WHPAs), documented locations of fens (rare, calcium-rich groundwater fed wetland), county forest preserves, and other high-value natural areas.

What is a Wellhead Protection Area (WHPA)?
WHPA is the area surrounding a public water supply well within which water and contaminants are likely to reach the well. The purpose of WHPA is to prevent the contamination of groundwater used for drinking water.

Designation of WHPAs is required by the Illinois Groundwater Protection Act of 1987 (415 ILCS 55). Setback zones are defined around community and non-community public water supply wells by the local communities and/or the Illinois Environmental Protection Agency (IEPA). As noted in Section 3.12.1 in Chapter 3, land use restrictions associated with WHPAs do not apply to non-fixed sources of contamination. WHPAs in which the EJ&E rail line lies within the maximum setback distances are shown on Figure 3.12-7 in Chapter 3.

4.12.1.2 Floodplains and Streams

The potential effect of double-track segments on floodplains and streams was determined based on the assumption that existing culverts would not be replaced or modified, but would be extended as needed where rail embankments are expanded to accommodate the double tracks. The Applicants have stated that existing bridges would not be expanded in order to accommodate the double tracks. The Applicants have not identified any deficient bridges and culvert structures that would need to be replaced to handle increased rail traffic. Areas of rail embankment expansions were determined based on an evaluation of aerial photographs. Floodplain effects in the connections were determined where new construction could reduce or modify existing drainage patterns along with potential impacts of assumed inlet control for expanded culverts.

Extending existing hydraulic structures, rather than completely replacing bridges or culverts, to accommodate expanded rail embankments for double tracks may increase water surface elevations in floodplains. In single-track areas being converted to double track, potential floodplain effects were determined based on the assumption that existing culverts would be extended. Trackwork will be placed on existing bridges without extension, based on information from the Applicants. The following assumptions also were applied:

- The rail embankments would not be raised as part of the lateral expansion.
- The condition of existing structures is good and replacement due to structural deficiencies would not be necessary.

SEA used design methodology from Federal Highway Administration (FHWA) Hydraulic Design Series Number 5, *Hydraulic Design of Highway Culverts*, to analyze potential headwater increases at each extended hydraulic structure (FHWA 2005). Hydraulic structure dimensions and materials information were taken from CN and EJ&E track charts (Applicants 2008c and 2008a). Culvert

slopes and elevations were estimated from U.S. Geological Survey (USGS) 7.5-inch quadrangle map contours or 2-foot County contour maps where available. SEA delineated drainage areas for each structure using USGS topographic maps (Figures 3.12-8 to 3.12-16, Chapter 3). The USGS recommended minimum drainage area for applying the Illinois regression method is 0.02 square miles. One hundred-year peak flow rates were computed using the rational method for drainage areas less than 0.02 square miles and the USGS Illinois regression method for larger drainage areas. Federal Emergency Management Agency (FEMA) Flood Insurance Studies were used for analysis when available to determine 100-year peak flow rates, structure heights, and tailwater conditions. Detailed procedure information for the hydrologic and hydraulic analyses can be found in Appendix N.

Figures 3.12-8 to 3.12-16 in Chapter 3 show locations of the analyzed hydraulic structures, and Table 4.12-5 and Table 4.12-6, later in this section, contain summaries of anticipated upstream water surface effects for each bridge and culvert extension at proposed double-track segments. For categorization purposes, upstream (headwater) water surface elevation effects are noted as minor (less than 0.10 ft), moderate (0.10 to 1.00 ft), and major (more than 1.00 ft).

Illinois regulations allow for headwater elevation increases (headwater effects) of up to 0.10 ft in the 100-year floodplain for modifications to hydraulic structures within floodplains. Hydraulic structures identified as having minor headwater effects likely will be within the limits set by local floodplain managers. Hydraulic structures identified as having moderate headwater effects may require modification of structure inlets or complete replacement of structures to increase capacity. Otherwise, these structures may be approved by local floodplain managers, but submittal for a Letter of Map Revision (LOMR) to FEMA may be necessary if the structure is in a mapped floodplain. Hydraulic structures identified as having major headwater effects likely would require complete replacement to meet floodplain regulations, and submittal for a LOMR to FEMA would be necessary.

The connections in Indiana would not be located within FEMA-designated floodplains and would involve the installation of new structures, not the modification of existing structures. The new structures would need to be sited and sized following community floodplain management processes, and SEA has proposed mitigation in Chapter 6. (Table 4.12-4 in Section 4.12.3.2 describes the recommended structures for these areas.)

4.12.1.3 Surface Water Quality

Potential effects identified in this section include short-term effects due to sediment/erosion from the construction phase of the new connections and double track, and the potential for long-term streambed degradation downstream of culvert extensions based on a review of soil surveys and culvert velocities. Section 4.2.4, Hazardous Materials Transportation, discusses potential for effect on surface water and wetlands due to hazardous materials spills caused by changes in operations on rail segments.

4.12.1.4 Wetlands

SEA analyzed the potential for loss of wetlands within the assumed construction limits of the proposed connections and double track. It also considered potential indirect effects due to reduced or modified drainage patterns at the connection sites.

Wetland effects are regulated by a combination of Federal, state and local regulatory authorities in the United States. At the Federal level, under Section 404 of the Clean Water Act (CWA), the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE) seek "no net loss of wetlands" as a rule (33 CFR 1344). Activities that would discharge dredge or fill material into waters of the United States require a permit from USACE. Such activities may be allowed only if no practicable alternative exists that is less damaging to the aquatic environment, and such

activities must ensure that the nation's waters would not be significantly degraded (EPA 2004). USACE and EPA require an applicant to prove that steps have been taken to avoid and minimize wetland effects to the greatest possible extent, and, where wetland effects are permitted, to provide compensation for unavoidable effects.

As a result of the U.S. Supreme Court rulings in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*, No. 99-1178, and further clarification in the *Rapanos* v. *United States* and *Carabell* v. *United States Army Corps of Engineers* decisions of 2006, wetlands with no direct surface water link to navigable waters are not generally considered within the jurisdiction of USACE under Section 404 of the CWA (U.S. Supreme Court 2001, 2006a, and 2006b). The USEPA and USACE have provided recent guidance according to the SWANCC and Rapanos decisions defining their extent of jurisdiction over wetlands as: 1) "Wetlands adjacent to traditional navigable waters", 2) "Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months)" and 3) "Wetlands that directly abut such tributaries." Additionally, USEPA and USACE will determine jurisdiction on a site basis to determine whether wetlands have a significant connection with traditional waters when applied to the following situations: 1) "Non-navigable tributaries that are not relatively permanent", 2) "Wetlands adjacent to non-navigable tributaries that are not relatively permanent" and 3) "Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary." (EPA and USACE 2007)

What are Sections 401 and 404 of the Clean Water Act?
These sections regulate placing soils into (filling) or taking soils from waters of the U.S. which can include wetlands, streams, rivers, and lakes. Section 401 provides for state administered permitting for filling and dredging activities consistent with state law, while Section 404 is administered by the U.S. Army Corps of Engineers.

4.12.1.5 State Regulations

Since the SWANCC ruling, the State of Illinois and many counties in the Chicago metropolitan region have developed rules to regulate wetlands outside USACE jurisdiction. In Illinois, wetland permitting is required for isolated wetlands under the Illinois Interagency Wetland Policy Act of 1989 for state-funded projects only, and does not appear to apply to this project (20 ILCS 830).

Indiana regulates isolated wetland effects as State Regulated Wetlands under Article 17 of the Indiana Code, Wetland Activity Permits. Under this code, the state seeks "to promote a net gain in high-quality wetlands" and "assure that compensatory mitigation will offset the loss of isolated wetlands allowed by the permitting program" (327 IAC 17). The Indiana Department of Environmental Management (IDEM) administers the program. Permits may be denied for failure to provide adequate information for review, failure to avoid effects, failure to minimize effects, or failure to provide mitigation. Excavated ponds are not considered jurisdictional under Article 17. See Chapter 6 for wetland mitigation requirements.

4.12.1.6 County Wetland Permitting and Regulation

Lake County, Illinois, regulates effects on isolated waters under the Lake County, Indiana, Watershed Development Ordinance and requires a Wetland Development Permit for proposed projects that affect wetlands or their buffers. Effects are considered activities that hydrologically disturb or otherwise adversely affect U.S. or county jurisdictional waters by flooding, filling, excavating, or draining by implementation of a development activity. The county requires buffers for all Federal and county jurisdictional waters. Buffers are areas of predominantly vegetated land adjacent to drainage ways, wetlands, lakes, ponds, or other surface waters. Buffer width requirements are based on quality and size of the wetland.

Cook County, Illinois regulates floodplain and floodplain storage areas, but does not specifically regulate isolated wetlands. DuPage County, Illinois regulates isolated wetlands as Special Management Areas under the DuPage Countywide Stormwater and Flood Plain Ordinance of 1992, and USACE wetlands under General Permit Number 25. The DuPage County Stormwater Management Committee administers the program, which seeks to preserve and enhance existing wetlands and restore degraded areas. This ordinance requires permits for activities affecting wetlands greater than 0.10 acres. Functions and values assessments are required to determine whether wetlands are deemed critical or regulatory. Critical wetlands are to be mitigated at a replacement rate of 3 new wetland acres or credit for each acre lost. Regulatory wetlands require a mitigation replacement rate of 1.5:1, with improvements duplicating or improving the hydrologic, biologic, and economic features of the original wetland. General Permit Number 25 authorizes DuPage County to assume responsibility for wetlands that fall under CWA Section 404 jurisdiction.

Will County, Illinois regulates effects on isolated wetlands under the Stream and Wetland Protection Ordinance. Under this ordinance, plans of the activities showing wetland boundaries and proposed impacts must be submitted for review to the County Administrator. The administrator may grant a permit if 1) the activities remain consistent with the intent of the law to provide protection of natural features and sensitive features, including wetlands, 2) the applicant can provide reasonable assurance that negative effects are minimized, 3) the activities cannot be moved out of Special Flood Hazard Areas, and 4) exceptional hardship would result as a result of denial of the permit. The Administrator may "approve the permit application subject to such reasonable conditions as may be necessary to secure substantially the objectives of this ordinance, and issue the permit subject to these conditions" (Will County 1998).

Lake County, Indiana, wetlands are regulated by the IDEM as discussed above.

4.12.2 No-Action Alternative

Under the No-Action Alternative, the Applicants would not acquire the EJ&E rail line and rail movements would occur in the same manner as the movements now occur (see Section 2.3). Under the No-Action Alternative the following would apply:

- Groundwater could be affected where there is a risk of hazardous substance spills during normal operation of the existing rail line (existing risk condition).
- Existing rail hydraulic structures would not be altered. There would be no change in flood water surface elevations or floodplain effects.
- Existing surface water drainage patterns would not be altered.
- There would be no changes in existing surface water quality conditions due to operations and maintenance.
- There would be no construction-related effects on wetlands.

4.12.3 Proposed Action

4.12.3.1 Proposed Changes in Rail Line Operations

Under the Proposed Action, the Applicants would shift freight rail traffic from the CN subdivisions to the EJ&E rail line. The following subsections discuss the potential effects on water resources due to changes in rail line operations.

Groundwater

Groundwater could be affected by the Proposed Action where there is risk of hazardous substance spills during operation of the rail line. Spills of hazardous substances could affect surface water or groundwater supply sources or natural resources. The spilled materials potentially could migrate vertically through the subsurface materials to the water table, then laterally in the direction of groundwater flow. Natural resource areas or water supplies could be affected.

Table 4.12-1, below, identifies lakes, fens and natural areas that lie within 1,000 feet of the EJ&E rail line where the estimated direction of near-surface groundwater flows from the EJ&E rail line toward the resource.

Table 4.12-1. Potentially Affected Lakes and Preserves

Rail Segment[a]	Lakes and Preserves Within 1,000 Feet of Rail and in Direction of Presumed Near Subsurface Groundwater Flow
EJ&E-14	Bresen Lake Cuba Marsh Forest Preserve (northwestern portion) Diamond Lake Shoe Factory Road Prairie Nature Preserve Shoe Factory Road Woods Spring Creek Valley Forest Preserve
EJ&E-13	James "Pate" Philip State Park Pratt's Wayne Woods Forest Preserve
EJ&E-12	Pratt's Wayne Woods Forest Preserve West Chicago Prairie County Forest Preserve
EJ&E-11	Blackwell Preserve Lake Law
EJ&E-10	Vermont Cemetery Prairie Nature Preserve
EJ&E-09	Lake Renwick Lake Renwick Heron Rookery Nature Preserve
EJ&E-08	None
EJ&E-07	Sugar Creek County Forest Preserve
EJ&E-06	Sauk Trail Forest Preserve
EJ&E-05	Hoosier Prairie State Nature Preserve
EJ&E-04	None
EJ&E-03	None
EJ&E-02	None
EJ&E-01	None

Notes:
[a] Rail segments ordered counter-clockwise along EJ&E rail line

As noted in Section 3.12, the potential hazard to a groundwater supply from rail spills is related to the proximity of a spill to the water supply, the thickness and permeability of the subsurface materials between land surface and the water table, and the groundwater gradient between the spill area and the intake for the supply well or wells. Public water supplies were evaluated for their potential to be affected by a spill. Evaluation factors included proximity to the EJ&E railroad, direction of groundwater flow, source of groundwater supply (aquifer), thickness and relative permeability of the geologic materials, and the susceptibility of near-surface groundwater to contamination from the surface. The results identified one non-community public supply well in Plainfield, which is in the vicinity of EJ&E rail line segment No. 9, with potential to be affected by a surface spill.

Table 4.12-2, below, lists areas along the EJ&E rail line where the susceptibility of shallow groundwater to be affected by surface spills is rated excessive, high, or moderate (Keefer 1995c).

Domestic wells located near these areas would have a higher likelihood of being affected by a spill than would wells located in other areas. EJ&E rail line segment Nos. 1 through 4 do not cross any areas rated excessive, high, or moderate.

Table 4.12-2. Areas of Higher Potential Effect on Domestic Wells from Spills

EJ&E Rail Line Segment No.	Area of Higher Potential Effect (mileposts)	Community(ies)
14D	44.0 to 37.6	Barrington Hills, South Barrington, Hoffman Estates, Elgin, and Bartlett
13A	37.6 to 36.7	Elgin and Bartlett
13B	36.7 to 35.2	Elgin and Bartlett
12	35.2 to 28.9	Bartlett, Wayne, and West Chicago
11	28.9 to 21.2	West Chicago, Warrenville, Aurora, and Naperville
10A	21.2 to 18.5	Aurora
10C, 10D, 10E	16.0 to 10.9	Unincorporated Will County and Plainfield
9B	• 9.8 to 7.0 • 5.0 to 1.7	• Plainfield • Crest Hill and Fairmont
8A, 8B	1.7 (West) to 0.8 (East)	Joliet
7A, 7B	0.8 to 3.0	Joliet, Preston Heights, and unincorporated Will County
7D	15.0 to 17.0	Frankfort
6	24.0 to 25.0	Chicago Heights
5A	25.2 to 28.0	Chicago Heights, Ford Heights, and Sauk Village

As discussed in Section 4.2.4, train accidents resulting in the release of hazardous materials are extremely rare events. SEA determined that attempting to predict the specific location of a release, the type of release, and the fate and transport of the release is too speculative.

Floodplains and Streams

Because the Proposed Changes in Rail Line Operations would not alter existing culverts, these would not affect floodplains or streams.

Surface Water Quality

Operation and maintenance activities due to the Proposed Action, including ditch cleaning, mowing, and spraying have the potential to affect surface water quality. Possible negative effects of improper maintenance include erosion/siltation and the overuse or spill of herbicides. The risks for these potential effects would be similar for the Proposed Action and the No-Action Alternative. Potential effects on surface water quality due to hazardous materials spills resulting from operational changes are described in Section 4.4, Hazardous Materials.

Wetlands

Because no construction or change in drainage patterns would occur, the Proposed Changes in Rail Line Operations would not affect wetlands.

Conclusion

SEA acknowledges that under the Proposed Action the risk of hazardous material spills into sensitive areas would increase; however, spill events are rare and in the event of a spill, impacts would be limited by prompt containment and cleanup. Potential impacts from ROW maintenance under the Proposed Action (mowing and weed control) would not substantially differ from the No-Action

Alternative, but SEA is recommending mitigation (discussed in Chapter 6,) to reduce potential impacts to water bodies. SEA is also recommending mitigation in Chapter 6 to reduce the potential risk of a hazardous material spill that could impact water resources.

4.12.3.2 Proposed New Construction

The potential effects from construction of the new connections and double track is discussed in the following sections. New connections are proposed at Munger, Joliet, Matteson, Griffith, Ivanhoe, and in Kirk Yard that may require the installation of new hydraulic structures to convey stream flows.

Groundwater

Groundwater could be temporarily affected where there is a potential need for construction dewatering, such as pumping of excavations or subgrades. Construction dewatering can temporarily affect near-surface groundwater flow patterns and potentially modify the hydrology of wetlands or other surface water features near the dewatered area. Permitting processes for wetlands or hydraulic structures will address these effects.

Risk of hazardous substance spills during construction of the connections and double track represents another potential effect on groundwater. Spills of hazardous substances could affect surface water or groundwater supply sources or natural resources. The spilled materials potentially could migrate vertically through the subsurface materials to the water table, then laterally in the direction of groundwater flow. Natural resource areas or water supplies could be affected.

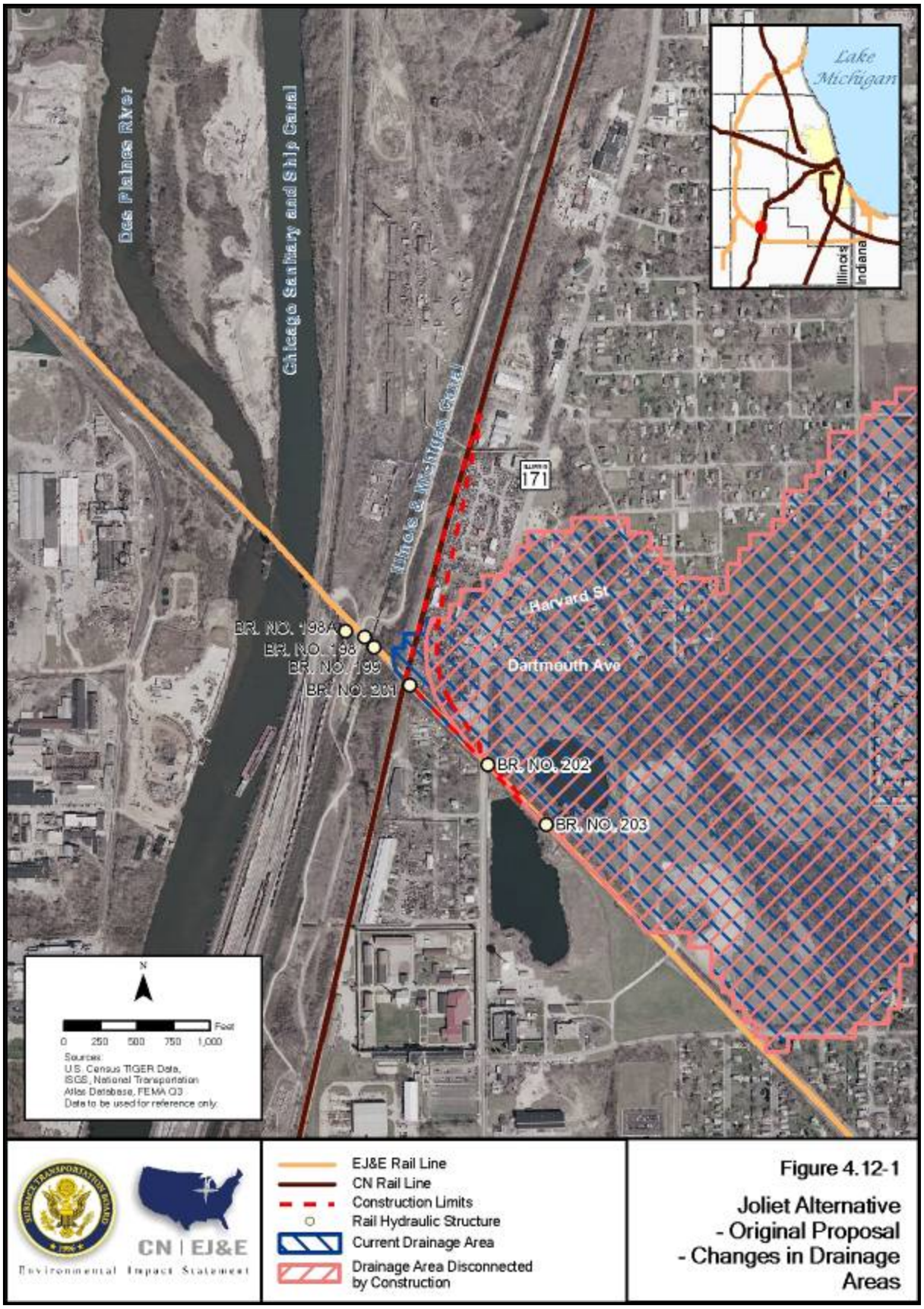
Floodplains and Streams

Construction could affect water surface elevations in floodplains and streams unless the Applicants conduct detailed hydraulic analyses of culvert and bridge extensions and design appropriate measures to avoid or minimize potential effects. Measures could include installing improved culvert inlets and plastic slip lining of corrugated metal culverts; installing second culvert barrels, or replacing entire structures. Streambed protection such as riprap or stilling basins would be needed at culvert outlets as a part of the design. The analyses and designs would be submitted to the appropriate regulatory agency for review during the permitting process.

Connections

Embankment construction within the proposed connection areas has the potential to affect water bodies, isolated wetlands, and isolated depressions identified as floodplains by disconnecting upstream drainage areas, which would result in altered hydrologic conditions. This would cause local flooding of low lying areas upstream, or prevent flow to downstream wetland and streams. SEA used aerial photography and USGS topographic maps to analyze connection areas to determine the drainage area size that would be disconnected from water bodies due to embankment construction and evaluate if reconnection of the drainage areas was possible. Figure 4.12-1 through Figure 4.12-9, on the following pages, show the existing and proposed drainage areas for each of the affected waterbodies.

To maintain existing hydrologic conditions, additional hydraulic structures must be built in proposed embankments. SEA examined track charts, 2005 aerial photography, and USGS topographic maps to evaluate the hydrologic conditions and estimate the number of structures at each connection. See Appendix N for drainage area calculations and estimated hydraulic structures required to maintain existing hydrologic conditions. If proper design measures are employed by the Applicants, such as culverts in order to maintain existing drainage patterns, then no impacts are anticipated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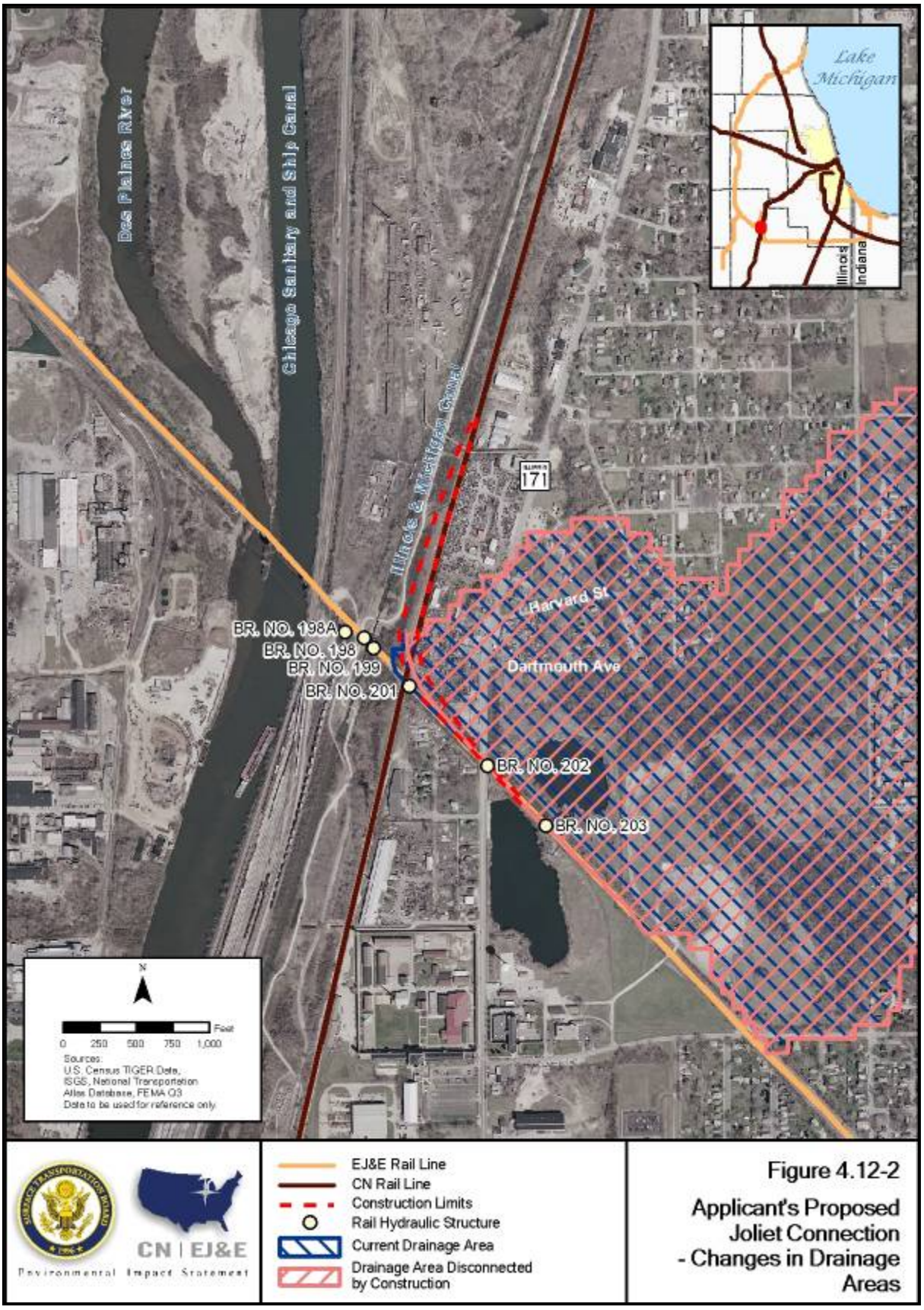
Chicago Sanitary and Ship Canal
Illinois & Michigan Canal
Lake Michigan
Illinois
Indiana
171
Harvard St
Dartmouth Ave
BR. NO. 198A
BR. NO. 198
BR. NO. 199
BR. NO. 201
BR. NO. 202
BR. NO. 203
N
Feet
0 250 500 750 1,000
Sources:
U.S. Census TIGER Data,
ISGS, National Transportation
Atlas Database, FEMA Q3
Data to be used for reference only.
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Construction Limits
Rail Hydraulic Structure
Current Drainage Area
Drainage Area Disconnected by Construction
Figure 4.12-1
Joliet Alternative
- Original Proposal
- Changes in Drainage Areas


Des Plaines River
Chicago Sanitary and Ship Canal
Illinois & Michigan Canal
Lake Michigan
Illinois
Indiana
171
Harvard St
Dartmouth Ave
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BR. NO. 201
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BR. NO. 203
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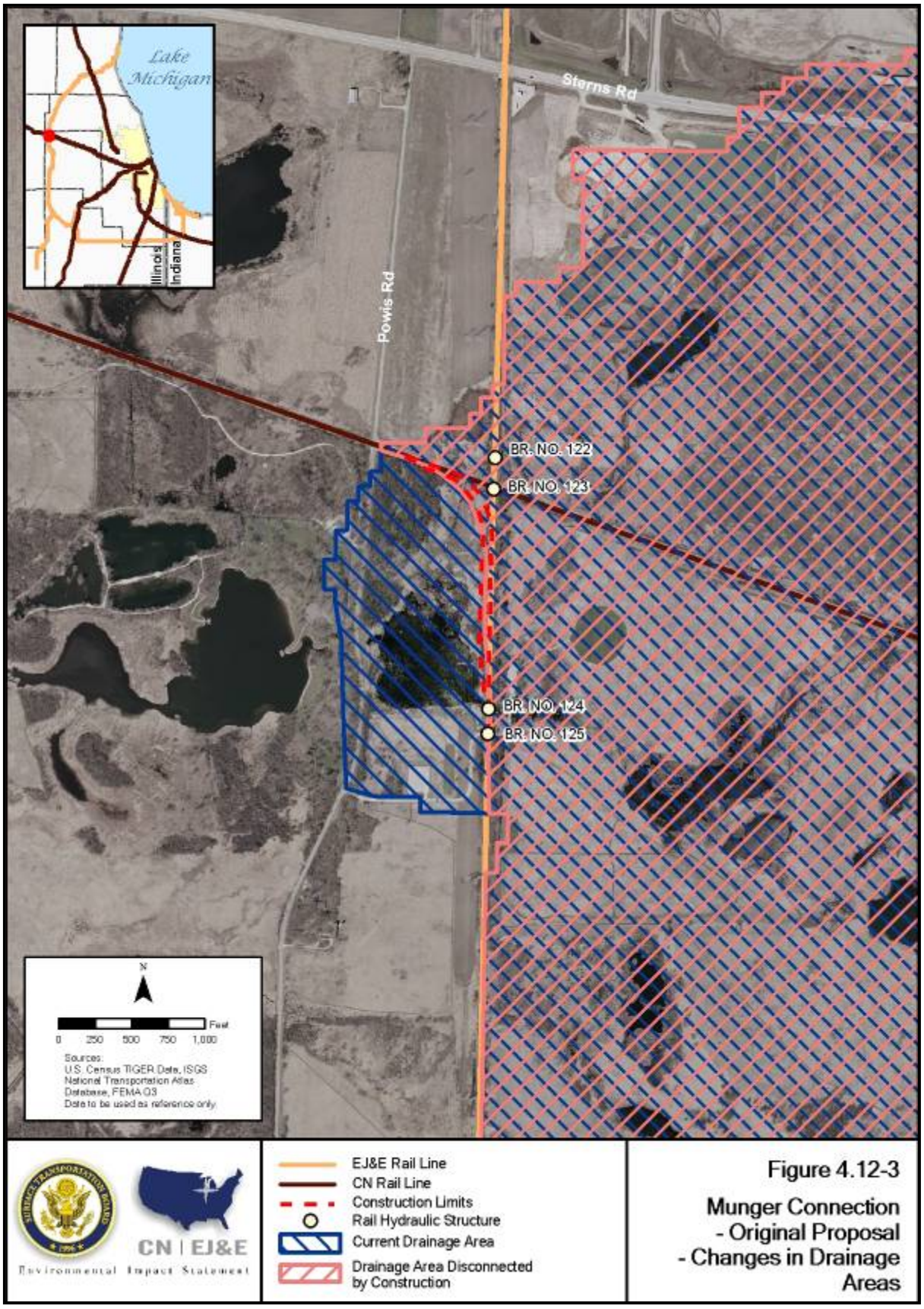
Feet
0 250 500 750 1,000
Sources:
U.S. Census TIGER Data,
ISGS, National Transportation
Atlas Database, FEMA Q3
Data to be used for reference only
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Construction Limits
Rail Hydraulic Structure
Current Drainage Area
Drainage Area Disconnected by Construction
Figure 4.12-2
Applicant's Proposed Joliet Connection - Changes in Drainage Areas


Lake Michigan
Illinois
Indiana
Sterns Rd
Powis Rd
BR. NO. 122
BR. NO. 123
BR. NO. 124
BR. NO. 125
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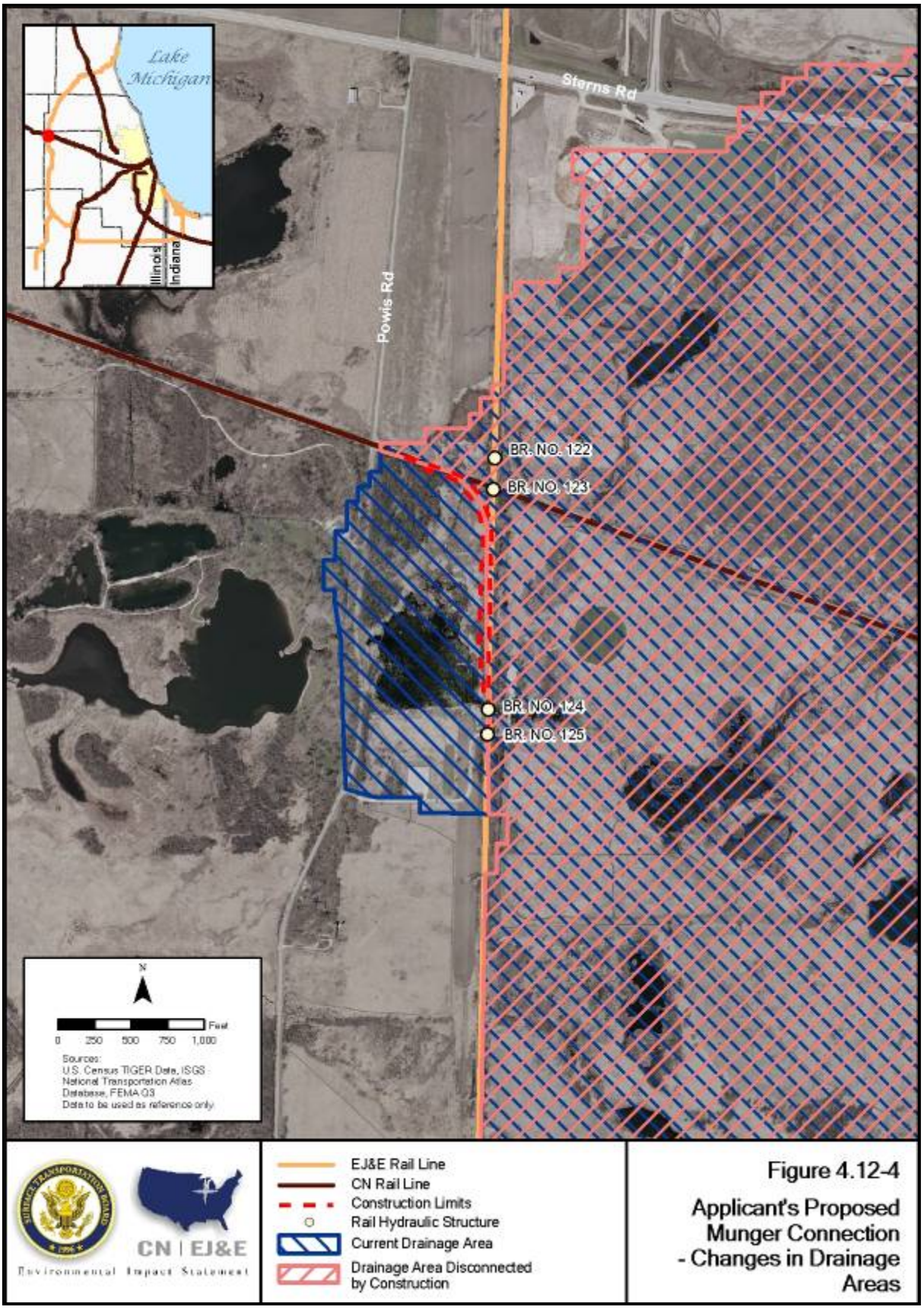
Feet
0 250 500 750 1,000
Sources:
U.S. Census TIGER Data, ISGS National Transportation Atlas Database, FEMA 03
Data to be used as reference only
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Construction Limits
Rail Hydraulic Structure
Current Drainage Area
Drainage Area Disconnected by Construction
Figure 4.12-3
Munger Connection
- Original Proposal
- Changes in Drainage Areas


Lake Michigan
Illinois
Indiana
Sterns Rd
Powis Rd
BR. NO. 122
BR. NO. 123
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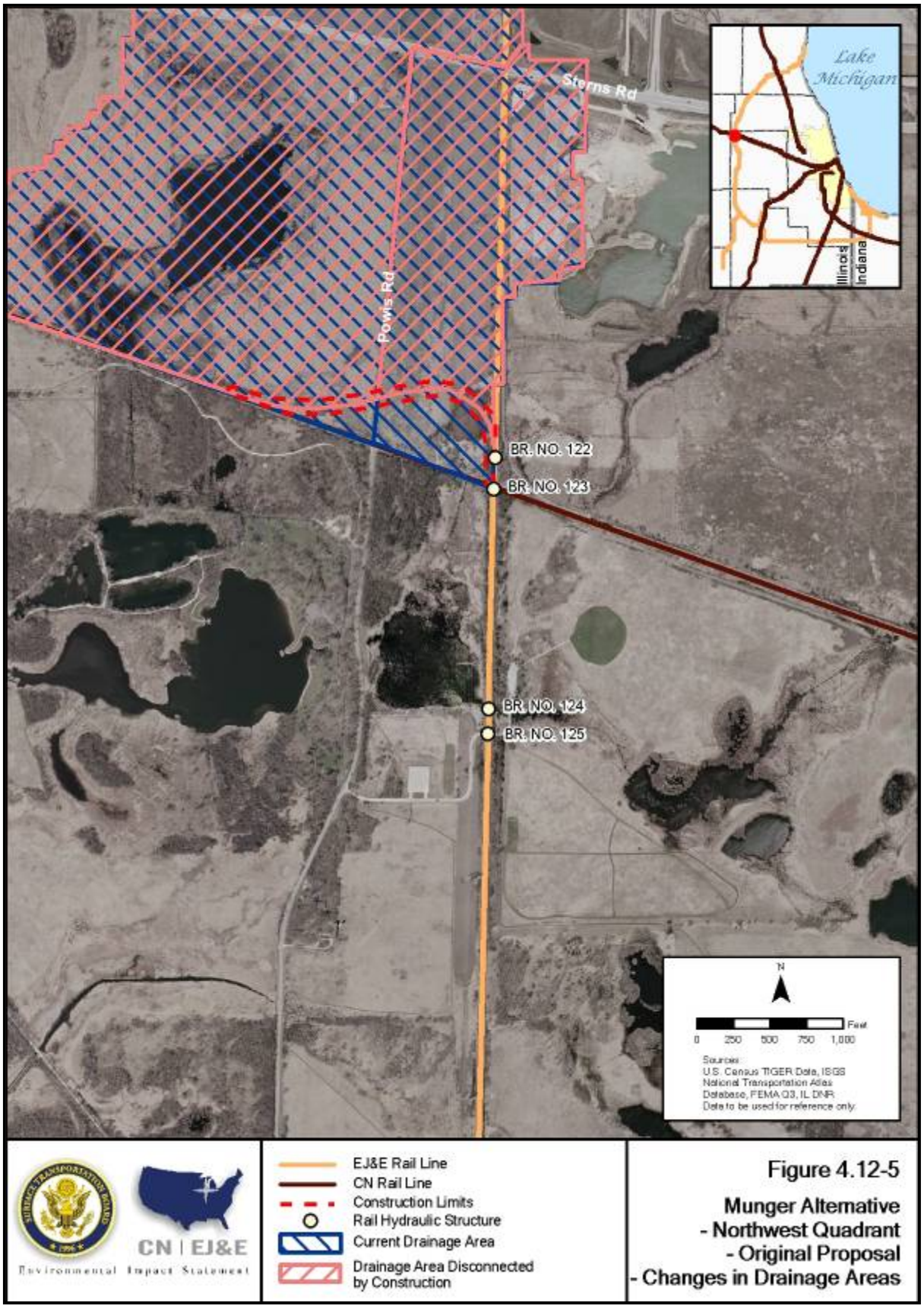
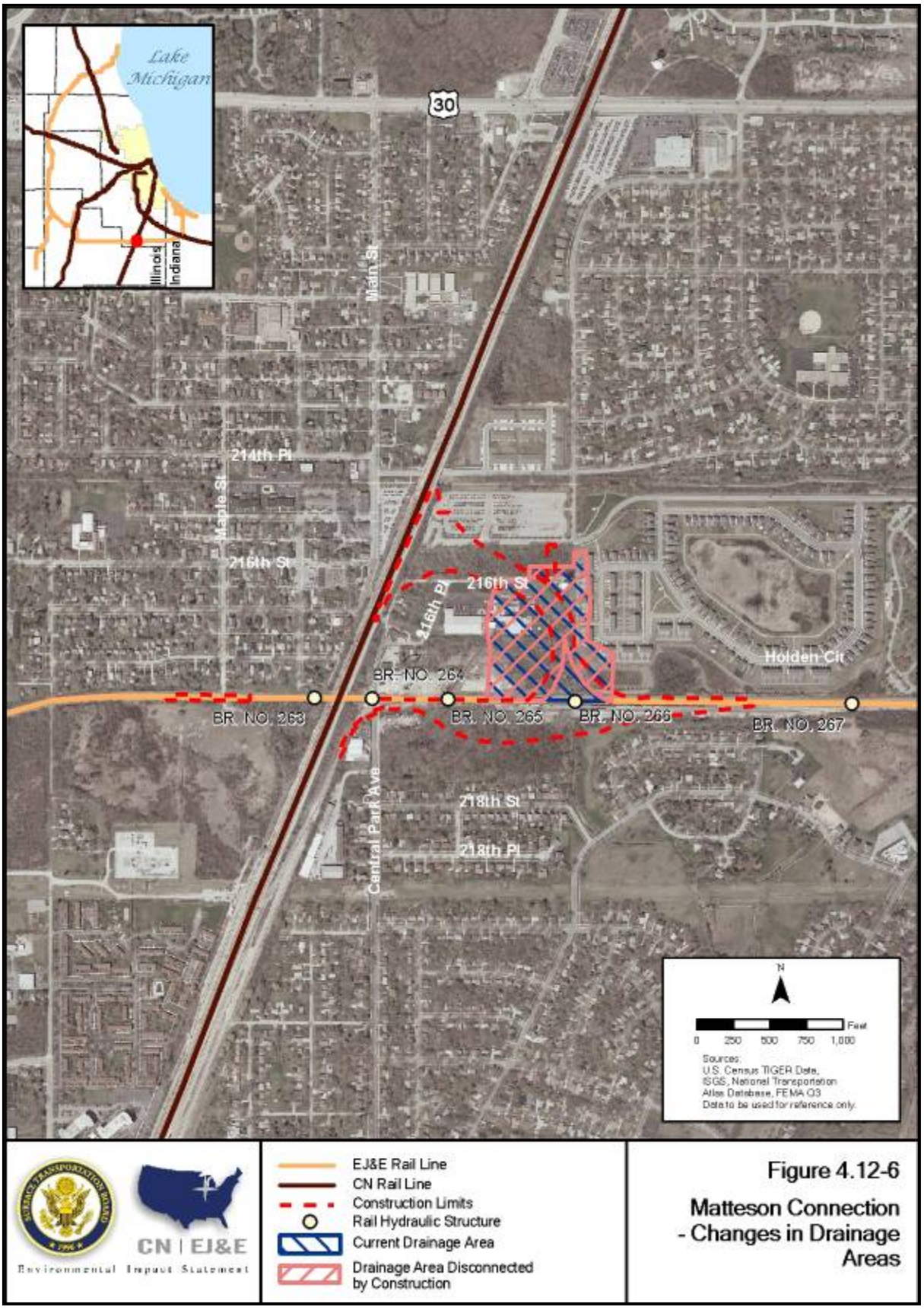
Sources:
U.S. Census TIGER Data, ISGS
National Transportation Atlas
Database, FEMA Q3
Data to be used as reference only
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Construction Limits
Rail Hydraulic Structure
Current Drainage Area
Drainage Area Disconnected by Construction
Figure 4.12-4
Applicant's Proposed Munger Connection - Changes in Drainage Areas


Storms Rd
Powis Rd
Lake Michigan
Illinois
Indiana
BR. NO. 122
BR. NO. 123
BR. NO. 124
BR. NO. 125
N
Feet
0 250 500 750 1,000
Sources:
U.S. Census TIGER Data, ISGS
National Transportation Atlas
Database, FEMA 03, IL DNR
Data to be used for reference only.
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Construction Limits
Rail Hydraulic Structure
Current Drainage Area
Drainage Area Disconnected by Construction
Figure 4.12-5
Munger Alternative
- Northwest Quadrant
- Original Proposal
- Changes in Drainage Areas


Lake Michigan
Illinois
Indiana
30
Main St
214th Pl
Maple St
216th St
216th Pl
BR. NO. 263
BR. NO. 264
BR. NO. 265
BR. NO. 266
BR. NO. 267
Holden Cit
218th St
218th Pl
Central Park Ave
N
Feet
0 250 500 750 1,000
Sources:
U.S. Census TIGER Data,
ISGS, National Transportation
Atlas Database, FEMA Q3
Data to be used for reference only.
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Construction Limits
Rail Hydraulic Structure
Current Drainage Area
Drainage Area Disconnected by Construction
Figure 4.12-6
Matteson Connection - Changes in Drainage Areas

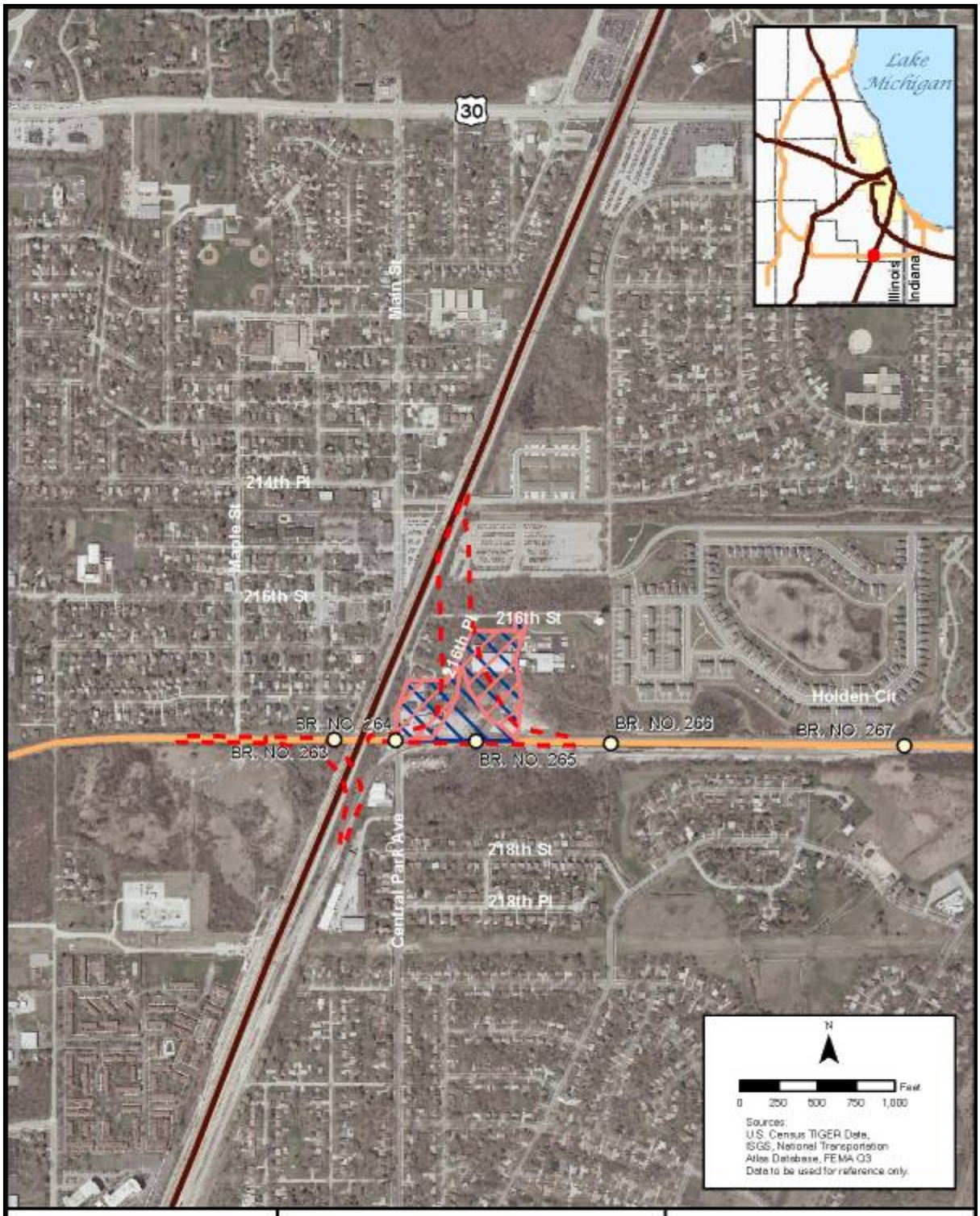


Figure 4.12-7

Matteson Alternative - Northeast and Southwest Quadrants - Changes in Drainage Areas


Lake Michigan
Illinois
Indiana
E Miller Ave
N Broad St
N Indiana Ave
E Columbia St
W Main St
S Broad St
S Colfax St
N
Feet
0 250 500 750 1,000
Sources:
U.S. Census TIGER Data,
IGIC, National Transportation
Atlas Database, FEMA Q3, USGS
Data to be used for reference only
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Construction Limits
Rail Hydraulic Structure
Current Drainage Area
Drainage Area Disconnected by Construction
Figure 4.12-8
Griffith Connection - Changes in Drainage Areas

Figure 4.12-9

Ivanhoe Connection - Changes in Drainage Areas

Double Track

Leithton Double Track. For the Leithton connection area, SEA identified four structures requiring extension. Extending the structure lengths by 30 percent would result in moderate headwater increases (0.10 to 1.00 ft) for all four structures. No structures are in FEMA floodplains. Modification of culvert inlets or complete replacement may be necessary to meet local floodplain requirements.

Diamond Lake Road to Gilmer Road Double Track. SEA identified ten structures requiring extension for this segment of double track. Extending the structure lengths by 30 percent would result in minor headwater increases (less than 0.10 ft) for three structures; moderate headwater increases (0.10 to 1.00 ft) for six structures, one of which is on Indian Creek, a FEMA floodplain; and major headwater increases (more than 1.00 ft) for one structure.

East Siding to Walker Double Track. SEA identified four structures requiring extension within the East Siding to West Wolfs Road segment (MP 21.1 to MP 16.2). Extending the structure lengths by 30 percent would result in moderate headwater increases (0.10 to 1.00 ft) for all four structures. One of these structures is on Waubonsie Creek, a FEMA floodplain.

Within the Normantown to Walker segment (MP 12.5 to 10.9) SEA identified four additional structures requiring extension. Extending the structure lengths by 30 percent would result in moderate headwater increases (0.10 to 1.00 ft) for three structures, one of which is on Wolf Creek, a FEMA floodplain. Major headwater increases (more than 1.00 ft) would result for the structure on West Norman Drain, a FEMA floodplain.

East Joliet to Frankfort Double Track. SEA identified 22 structures requiring extension, 19 of which were analyzed. The other three structures had insufficient structure information to complete the analysis. Extending the structure lengths by 30 percent for these 19 structures would result in minor headwater increase (less than 0.10 ft) for two structures on Jackson Branch Creek, a FEMA floodplain; moderate headwater increases (0.10 ft to 1.00 ft) for ten structures, including one on a tributary of Sugar Run, one on Sugar Run, and four on Jackson Branch Creek; and major headwater increases (more than 1.00 ft) for seven structures, including one on Jackson Branch Creek.

Table 3.12-5 in Section 3.12-3 lists locations along double track areas where the rail embankment forms the boundary of a mapped FEMA flood zone. The potential exists for floodway encroachments at East Siding to Walker double track, and at East Valley to Frankfort double track, unless the Applicants employ design measures to avoid or minimize encroaching the floodways. Design measures would follow county, state, and Federal requirements, such as no net loss in floodway capacity.

Table 4.12-3, below, summarizes the floodplain and headwater information for the proposed double track segments. Headwaters would increase by more than 1.0 foot at several structures due to double track construction. Chapter 6 presents information on possible mitigation approaches.

Table 4.12-3. Water Surface Elevation Increases from Proposed Double Track							
Site	Rail Station	Bridge No.	Water body Conveyed	Within FEMA Floodplain	Anticipated Headwater Increase (ft)		
					<0.10	0.10 to 1.00	>1.00[a]
Leithton Double Track	684+07	42 3/4	Unnamed wetland			X	
	684+91	42 7/8	Unnamed wetland			X	
	688+87.8	43	Unnamed wetland			X	
	688+87.8[b]	43A	Unnamed wetland			X	
Diamond Lake Road to Gilmer Road Double Track	742+83	45	Unnamed ditch/wetland			X	
	754+55.3	46	Unnamed ditch		X		
	764+97.6	47	Unnamed ditch		X		
	781+65	48	Unnamed wetland			X	
	798+73	49	Indian Creek	X		X	
	816+90	50	Unnamed ditch			X	
	827+53	51	Unnamed ditch			X	
	838+30	52	Unnamed ditch				X
	844+99.9	53	Unnamed ditch			X	
	2833+93	162	Waubonsie Creek	X		X	
East Siding to Walker Double Track (MP 21.1 to MP 16.2)	2940+86	164	Unnamed wetland			X	
	2952+89.8	164 1/2	Unnamed wetland			X	
	2981+35	165	Unnamed ditch			X	
	3102+00	169	Wolf Creek	X		X	
East Siding to Walker Double Track (MP 12.5 to MP 10.9)	3116+41	170	Unnamed ditch			X	
	3137+95	170 1/2	Unnamed ditch			X	
	3163+95.8	171	West Norman Drain	X			X
	3974+56	214	Unnamed ditch				X
East Joliet to Frankfort Double Track	3977+80	215	Unnamed ditch		X		
	3998+89	216	Unnamed ditch				X
	4027+76	217	Unnamed tributary to Sugar Run	X		X	
	4044+37	218	Unnamed ditch			X	
	4203+00	219A	Unnamed ditch		No Change		
	4057+94	219	Manhattan Road Ditch	X	No Change		
	4113+62	220	Sugar Run	X			X
	4113+62	220	Sugar Run	X		X	
	4209+35	221	Unnamed ditch				X
	4209+35	222	Unnamed ditch			X	
	4280+74	224	Jackson Branch Creek	X		X	
	4288+89	225	Jackson Branch Creek	X		X	
	4290+24	225 1/2	Jackson Branch Creek	X			X
	4302+66	227	Jackson Branch Creek	X		X	

Table 4.12-3. Water Surface Elevation Increases from Proposed Double Track							
Site	Rail Station	Bridge No.	Water body Conveyed	Within FEMA Floodplain	Anticipated Headwater Increase (ft)		
					<0.10	0.10 to 1.00	>1.00[a]
	4305+96	228	Jackson Branch Creek	X	No Change		
	4340+80	229	Unnamed ditch				X
	4340+80	229	Unnamed ditch			X	
	4374+71	230	Jackson Branch Creek	X		X	
	4440+46	231	Unnamed ditch				X
	4440+60	232	Unnamed ditch			X	

Notes:
[a] Chapter 6 presents information on mitigation approaches.
[b] Structure location is approximate.

SEA computed water velocities through hydraulic structures listed in Table 4.12-4, below. The analysis assumes that extended hydraulic structures would maintain the same diameter, be flowing full, and convey the same 100-year flow as in the existing conditions. Because of this assumption, hydraulic structure extension does not affect the computed velocities for the double track segments. However, the computed velocities are included because the stream channels still may need to be protected from high stream velocities present at hydraulic structures.

SEA divided the 100-year velocities into three categories: minor (less than 5.0 feet per second [fps]), moderate (5.0 to 10.0 fps), and major (more than 10.0 fps). According to Illinois Urban Manual Practice Standard 910 (NRCS and IEPA Illinois Urban Manual, 2002), "The outlets of channels, conduits and other structures are points of high erosion potential, because they frequently carry flows at velocities that exceed the allowable limit for the area downstream. To prevent scour and undermining, an outlet stabilization structure is needed to absorb the impact of the flow and reduce the velocity to non-erosive levels. A riprap-lined apron is the most commonly used practice for this purpose because of its relatively low cost and ease of installation. The riprap apron should be extended downstream until stable conditions are reached even though this may exceed the length calculated for design velocity control" (U.S. Department of Agriculture, Natural Resources Conservation Service [USDA NRCS] 2002). Illinois Urban Manual Practice Standard 910 specifies minimum Illinois Department of Transportation (IDOT) rock size and apron lengths based on outlet velocity at the structure.

For minor outlet velocities (less than 5 fps), apron length can range from 10 to 96 feet, and minimum IDOT rock size can range from No. 3 to No. 7 depending on structure cross-sectional dimension. For moderate outlet velocities (5 to 10 fps), apron length can range from 12 to 54 feet, and minimum IDOT rock size can range from No. 3 to No. 7. For structures with velocities greater than 10 fps, Illinois Urban Manual Practice Standard 910 states, "Riprap stilling basins or plunge pools reduce flow velocity rapidly. They should be considered in lieu of aprons where overfalls exit at the ends of pipes or where high flows would require excessive apron length. Consider other energy dissipaters such as concrete impact basins or paved outlet structures when conduits are flowing more than 10 fps. These will require a special design and [the Illinois Urban Manual] cannot be used" (USDA NRCS 2002).

The results of the analysis for double track areas are shown in Table 4.12-4, below:

- For the Leithton double track, SEA identified four structures requiring extension. Velocities were minor (less than 5 fps) at one structure and moderate (5 to 10 fps) at three structures.
- For the Diamond Lake Road to Gilmer Road double track area, SEA identified ten structures requiring extension. Velocities were minor (less than 5 fps) at two structures, moderate (5 to 10 fps) at four structures and major (more than 10 fps) at four structures.
- For the East Siding to West Wolfs Road segment of the East Siding to Walker double track (MP 21.1 to MP 16.2), SEA identified four structures requiring extension. Velocities were minor (less than 5 fps) at two structures and major (more than 10 fps) at two structures.
- For the Normantown to Walker segment of East Siding to Walker double track area (MP 12.5 to MP 10.9), SEA identified four structures requiring extension. Velocities were moderate (5 to 10 fps) at one structure and major (more than 10 fps) at three structures.
- For the East Joliet to Frankfort double track area, SEA identified 22 structures requiring extension. Seventeen structures were analyzed. Structure information was insufficient for analysis of the remaining five structures. Velocities for the 17 structures analyzed were minor (less than 5 fps) at five structures, moderate (5 to 10 fps) at three structures, and major (more than 10 fps) at nine structures.

Table 4.12-4. Hydraulic Structure Flow Velocities In the Proposed Double Track Segments

Construction Site	Rail Station[a]	Bridge No.	Computed Velocity At Structure (fps)		
			Minor (<5.0)	Moderate (5.0-10.0)	Major (>10.0)
Leithton Double Track	684+07	42 3/4		X	
	684+91	42 7/8		X	
	688+87.8	43	X		
	688+87.8 [a]	43A		X	
Diamond Lake Road to Gilmer Road Double Track	742+83	45	X		
	754+55.3	46			X
	764+97.6	47		X	
	764+97.6	47	X		
	781+65	48			X
	798+73	49			X
	816+90	50		X	
	827+53	51		X	
	838+30	52			X
	844+99.9	53		X	
East Siding to Walker Double Track (MP 21.1 to MP 16.2)	2833+93	162			X
	2940+86	164	X		
	2952+89.8	164 1/2	X		
	2981+35	165			X
East Siding to Walker Double Track (MP 12.5 to MP 10.9)	3102+00	169		X	
	3116+41	170			X
	3137+95	170 1/2			X

Table 4.12-4. Hydraulic Structure Flow Velocities In the Proposed Double Track Segments					
Construction Site	**Rail Station[a]**	**Bridge No.**	**Computed Velocity At Structure (fps)**		
			Minor (<5.0)	**Moderate (5.0-10.0)**	**Major (>10.0)**
	3163+95.8	171			X
East Joliet to Frankfort Double Track	3974+56	214			X
	3977+80	215		n/a[b]	
	3998+89	216		X	
	4027+76	217		X	
	4044+37	218	X		
	4203+00	219A		n/a[b]	
	4057+94	219		n/a[b]	
	4113+62	220			X
	4113+62	220			X
	4209+35	221			X
	4209+35	222	X		
	4280+74	224			X
	4288+89	225	X		
	4290+24	225 1/2			X
	4302+66	227	X		
	4305+96	228		n/a[b]	
	4340+80	229			X
	4340+80	229			X
	4374+71	230		X	
	4440+46	231			X
	4440+60	232	X		

Notes:
[a] Structure location is approximate.
[b] No anticipated change in structure or hydraulics.

Susceptibility to erosion can vary by soil type. Soil types at hydraulic structures requiring extension were identified using USDA NRCS soil surveys. Material present at the existing embankments used for construction may not be native and could differ from soils identified in the soil surveys. Table 4.12-5, below, lists the soil type identified at each hydraulic structure as well as its susceptibility to overland or general water erosion. All soil types identified at hydraulic structures requiring extension have a "low" or "slight" susceptibility to water erosion, according to the soil surveys.

Table 4.12-5. Hydraulic Structure Soil Types and Erosion Susceptibility				
Site	**Rail Station[a]**	**Bridge No.**	**Soil Type**	**Susceptibility to Erosion**
Leithton Double Track	684+07	42 3/4	Harpster silty clay loam	Low
	684+91	42 7/8	Harpster silty clay loam	Low
	688+87.8	43	Harpster silty clay loam	Low
	688+87.8 [a]	43A	Harpster silty clay loam	Low
Diamond Lake Road to Gilmer Road Double	742+83	45	Ashkum silty clay loam	Low
	754+55.3	46	Ashkum silty clay loam	Low

Table 4.12-5. Hydraulic Structure Soil Types and Erosion Susceptibility

Site	Rail Station[a]	Bridge No.	Soil Type	Susceptibility to Erosion
Track	764+97.6	47	Ashkum silty clay loam	Low
	764+97.6	47	Ashkum silty clay loam	Low
	781+65	48	Ashkum silty clay loam	Low
	798+73	49	Sawmill silty clay loam	Low
	816+90	50	Elliott silt loam	Low
	827+53	51	Ashkum silty clay loam	Low
	838+30	52	Ashkum silty clay loam	Low
	844+99.9	53	Ashkum silty clay loam	Low
East Siding to Walker Double Track (MP 21.1 to 16.2)	2833+93	162	Sawmill silty clay loam	Low
	2940+86	164	Drummer silty clay loam	Slight
	2952+89.8	164 1/2	Elpaso silty clay loam	Slight
	2981+35	165	Elpaso silty clay loam	Slight
East Siding to Walker Double Track (MP 12.5 to MP 10.9)	3102+00	169	Elpaso silty clay loam	Slight
	3116+41	170	Elpaso silty clay loam	Slight
	3137+95	170 1/2	Chenoa silty clay loam	Slight
	3163+95.8	171	Elpaso silty clay loam	Slight
East Joliet to Frankfort Double Track	3974+56	214	Ashkum silty clay loam	Slight
	3977+80	215	Blount silt loam	Slight
	3998+89	216	Beecher silt loam	Slight
	4027+76	217	Ashkum silty clay loam	Slight
	4044+37	218	Elliott silt loam	Slight
	4203+00	219A	Elliott silt loam	Slight
	4057+94	219	Ashkum silty clay loam	Slight
	4113+62	220	Elpaso silty clay loam	Slight
	4113+62	220	Elpaso silty clay loam	Slight
	4209+35	221	Ashkum silty clay loam	Slight
	4209+35	222	Ashkum silty clay loam	Slight
	4280+74	224	Ashkum silty clay loam	Slight
	4288+89	225	Ashkum silty clay loam	Slight
	4290+24	225 1/2	Ashkum silty clay loam	Slight
	4302+66	227	Ashkum silty clay loam	Slight
	4305+96	228	Ashkum silty clay loam	Slight
	4340+80	229	Ashkum silty clay loam	Slight
	4340+80	229	Ashkum silty clay loam	Slight
	4374+71	230	Ashkum silty clay loam	Slight
	4440+46	231	Ashkum silty clay loam	Slight
	4440+60	232	Ashkum silty clay loam	Slight

Sources: USDA NRCS, 2005, Soil Survey of Lake County, Illinois, available online at http://soildatamart.nrcs.usda.gov/Manuscripts/IL097/0/Lake_IL.pdf.
USDA NRCS, 1999, Soil Survey of Du Page County, Illinois, available online at http://soildatamart.nrcs.usda.gov/Manuscripts/IL043/0/Du_Page_IL.pdf.
USDA NRCS, 2004, Soil Survey of Will County, Illinois, available online at http://soildatamart.nrcs.usda.gov/Manuscripts/IL197/0/will_IL.pdf.

Notes:
[a] Structure location is approximate.

Table 3.12-5 in Section 3.12.3 lists locations along proposed double track areas where the existing rail embankment forms the boundary of a mapped FEMA flood zone. It is possible that during flood events, high-flow velocities could occur along these embankments, causing erosion. Erosion countermeasures in the form of bank armoring at the embankment toe may be required. Locations where countermeasures are required must be identified using field inspection of the embankments to determine evidence of scour from past flood events, or by use of analytical methods that will require site surveys of the embankment and stream channel.

Illinois Urban Manual Practice Standard 940 provides guidance for design of structural measures for the stabilization or protection of stream banks and embankments. In general, designed structural measures are applicable where flow velocities exceed 5 fps or where vegetative stream bank or embankment protection is inappropriate. Riprap is the most commonly used structural material for stabilizing stream banks or embankments. Other countermeasures such as gabions, reinforced concrete, grid pavers, and revetments also may be used (USDA NRCS 2002).

Illinois Urban Manual Practice Standard 995 provides guidance for stabilization of eroding stream banks or embankments with selected vegetation. In general, vegetative stabilization generally is applicable where bankfull flow velocity does not exceed 5 fps and soils are erosion-resistant (USDA NRCS 2002).

SEA determined the locations of ditches along embankments requiring expansion using 2005 aerial photographs. These ditches are listed in Table 4.12-6, as follows. These ditches may need to be relocated to maintain existing hydrologic and hydraulic conditions.

Table 4.12-6. Locations of Existing Ditches Adjacent to Proposed Double Track Areas

Construction Site	Milepost		Length [ft]	Position Of Existing Ditch
	Start	Stop		
Leithton Double Track	SEA did not identify any ditches adjacent to this construction site.			
Diamond Lake Road to Gilmer Road Double Track	59.18	59.01	900	North of track
	58.94	58.81	700	North of track
	58.76	58.62	750	North of track
	58.55	58.34	1,100	North of track
	58.34	57.22	5,900	North of track
	59.39	57.10	12,100	South of track
	56.96	56.91	250	South of track
East Siding to Walker Double Track	19.99	19.28	3,750	East of track
	18.81	18.55	1,350	East of track
	17.60	17.26	1,800	East of track
	17.30	17.15	800	East of track
	20.52	20.04	2,550	East of track
	17.92	17.55	1,950	East of track
	19.99	19.76	1,200	West of track
	19.52	19.34	950	West of track
	19.27	19.14	700	West of track
	18.94	18.57	1,950	West of track
	18.51	18.37	750	West of track

Table 4.12-6. Locations of Existing Ditches Adjacent to Proposed Double Track Areas

Construction Site	Milepost		Length [ft]	Position Of Existing Ditch
	Start	Stop		
	18.09	17.84	1,300	West of track
	17.71	17.60	600	West of track
	17.31	17.20	600	West of track
	20.52	20.07	2,400	West of track
	17.60	17.51	500	West of track
East Joliet to Frankfort Double Track	10.75	11.20	2,400	North of track
	10.75	11.20	2,400	South of track

Surface Water Quality

Effects on surface water quality from construction of rail connections and double track could occur during construction or post-construction due to operation and maintenance. Surface water quality effects during construction have the potential to temporarily degrade downstream water quality due to erosion/siltation and spills of petroleum products. Construction could increase turbidity and lower dissolved oxygen levels unless erosion and sediment control best-management practices (BMPs) are implemented during construction. A National Pollutant Discharge Elimination System (NPDES) general permit for construction-related stormwater discharges, authorized under the IEPA NPDES Permit No. ILR10 and the IDEM Rule 5 Permit, requires that BMPs be applied. BMPs used for this project would include silt fence and other perimeter controls to prevent sediment from entering waterbodies, and temporary and/or permanent seeding and mulch to prevent erosion. Pollution prevention and measures to control and clean spills also are required by the NPDES permit.

Connections. The Des Plaines River, adjacent to the Joliet connection alternatives, is identified in the *Illinois Integrated Water Quality Report and Section 303(d) List – 2006* as impaired for dissolved oxygen, suspended solids, or siltation (IEPA 2006). Construction of the Joliet connection could result in temporary short-term suspended sediments reaching the Des Plaines River. Refer to Chapter 3.12 for streams included on the Section 303(d) list. Construction of the Munger connection also could result in temporary short-term disturbance to Brewster Creek (which is not a listed stream), potentially causing increased suspended sediments and localized sedimentation. Local drainage within the Kirk Yard connection may discharge to the Grand Calumet River, which is identified in the Indiana 303(d) list (IDEM 2006b). Proximity of construction to 303(d) listed streams would require implementation of special BMPs under the IEPA NPDES Permit No. ILR10 for discharges to 303(d) impaired waters. These special BMPs include constructing sediment basins and traps to handle 25-year, 24-hour design storms.

What is a 303(d) list?
This is a list of threatened and impaired waters prepared biennially by a state and submitted to the US EPA under the Clean Water Act. The list specifies streams with known or foreseeable future pollution or other biological impairments. Listing a stream as impaired may have implications in water quality related permitting, including the NPDES and 401/404 programs.

Double Track. Three water bodies in the double track vicinity—Indian Creek, Diamond Lake and Sugar Run—are identified in the Illinois 303(d) list as impaired by dissolved oxygen, suspended solids, or siltation. Indian Creek and Diamond Lake Drain intersect the Diamond Lake Road to Gilmer Road double track. Sugar Run intersects the East Joliet to Frankfort double track (see Figures 3.12-9 and 3.12-13). Proximity of the construction of double track would require implementation of the same special BMPs noted above under the IEPA NPDES Permit No. ILR10 for discharges to 303(d) impaired waters.

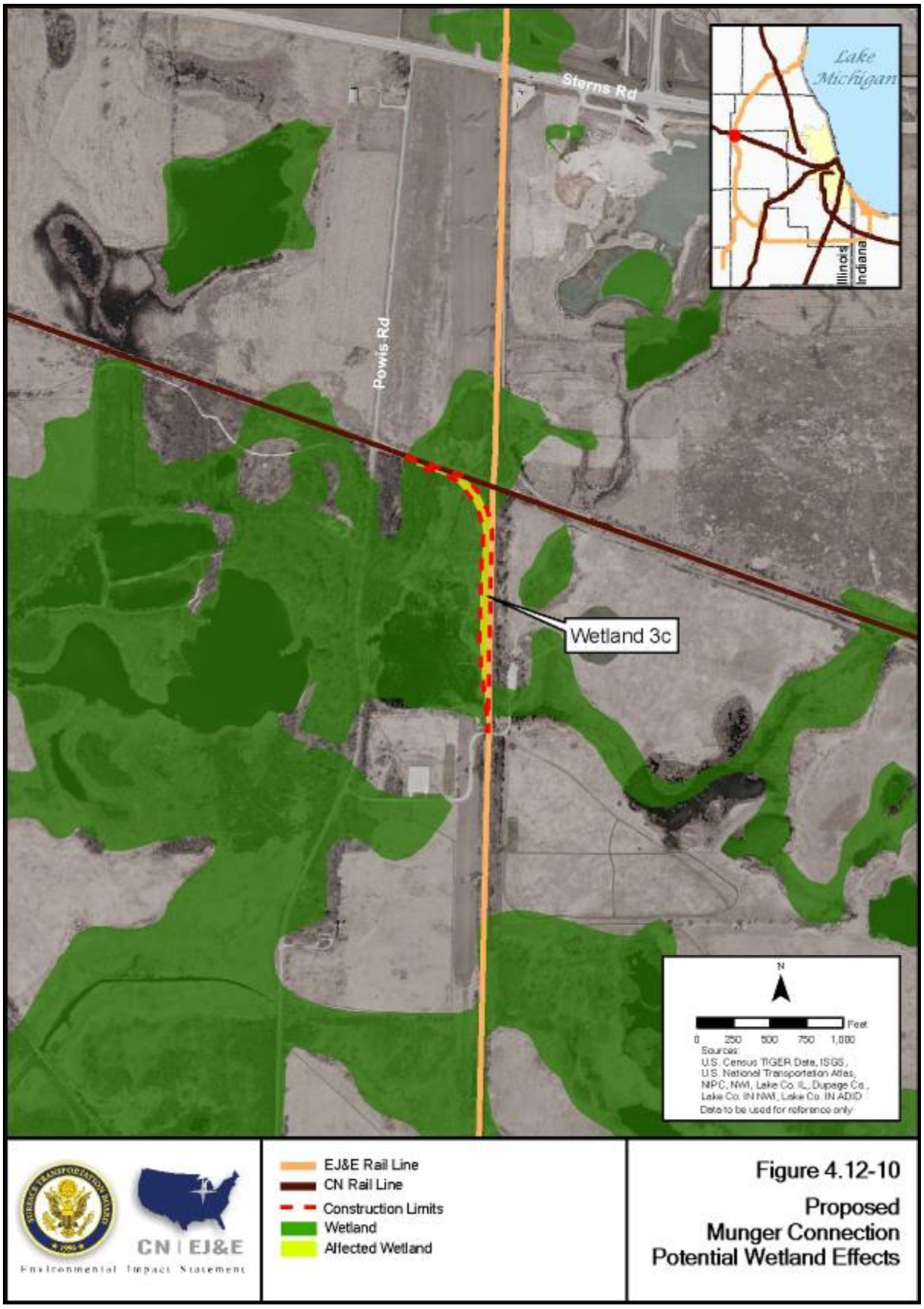
Two additional streams in the double track vicinity—Wolf Creek and Jackson Branch Creek—are on the Illinois 303(d) list. Wolf Creek is impaired by phosphorus, while Jackson Branch Creek is impaired by nitrogen and phosphorus. Wolf Creek intersects the East Siding to Walker double track (see Figure 3.12-11) and Jackson Branch Creek intersects and parallels the East Joliet to Frankfort double track (see Figure 3.12-13).

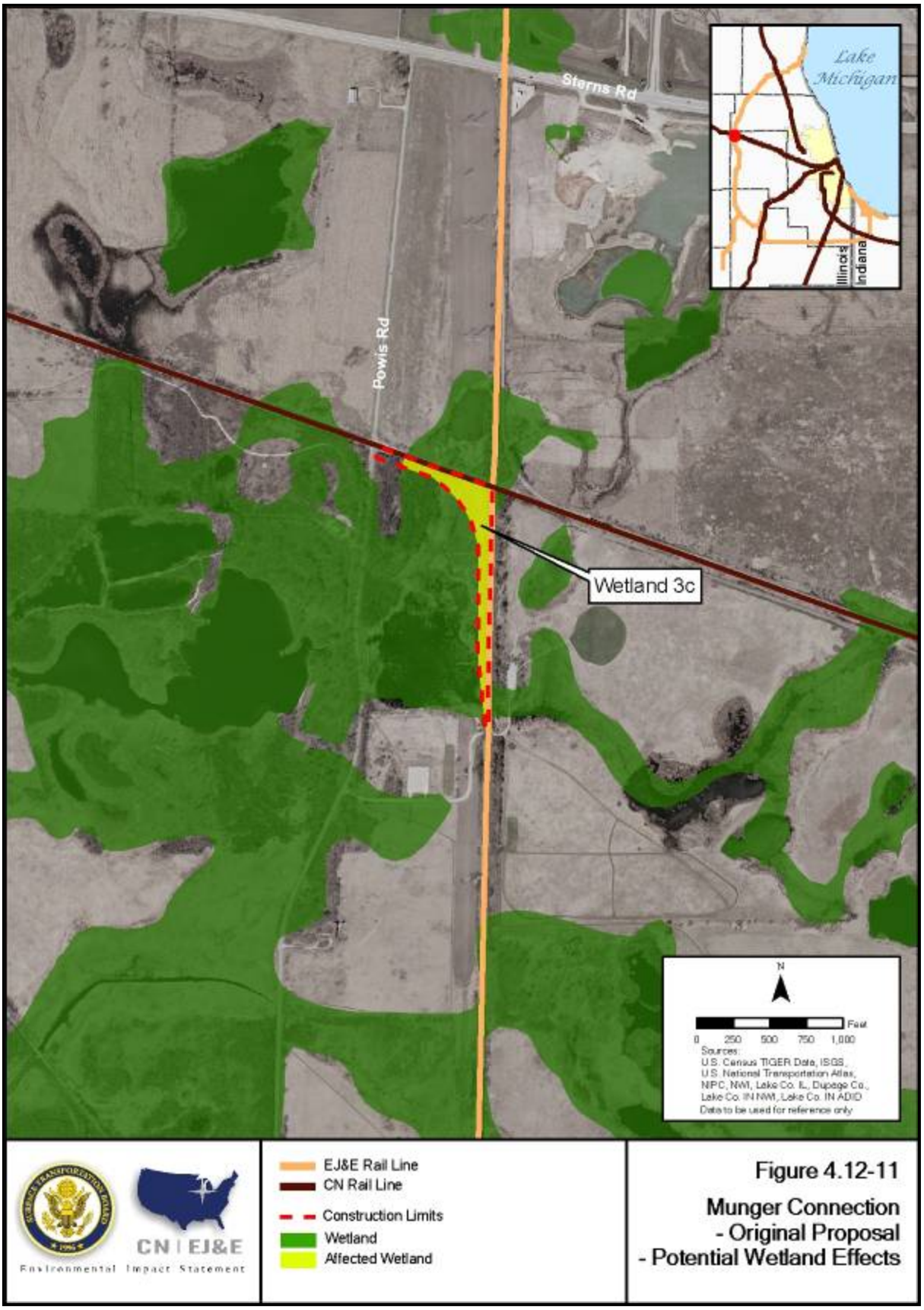
Wetlands

The construction of connections and double track could result in the direct loss of existing wetlands. Degradation of additional wetlands by the loss of hydrology could result when proposed connections are constructed unless existing drainage patterns are maintained. The Applicants will be required to conduct wetland delineations as part of the permitting process in order to determine the exact acreages and functions and values of wetlands likely to be lost to determine final wetland mitigation requirements.

SEA analyzed the proposed construction areas based on information provided by the Applicants. These areas are confined to the six proposed connections, alternative construction areas, and double track locations. The analysis presumes these areas would require new ballast, rail bed and fill sufficient to provide for stable and secure rail operations on the new connections and double track.

Wetlands were identified remotely using available published data sources, and represent the best estimate of wetland resources given the quality of data. SEA identified the locations, types, and sizes of wetlands in the Study Area by combining National Wetlands Inventory (NWI) maps, county wetland inventories where provided or available, land use inventory maps for the Illinois portion of the region, and Advanced Identification (ADID) wetland inventories where available (Lake County, Illinois, and Lake County, Indiana). Mapping techniques for these sources are not consistent, so total wetland effects based on these data are preliminary only. All wetlands that could be affected will require additional identification, delineation, and permitting in compliance with local, county, state, or Federal guidelines prior to construction. Figure 4.12-10 to Figure 4.12-24 on the following pages illustrate the wetlands in the vicinity of the construction sites.


Sterns Rd
Powis Rd
Lake Michigan
Illinois
Indiana
Wetland 3c
N
Feet
0 250 500 750 1,000
Sources:
U.S. Census TIGER Data, ISGS,
U.S. National Transportation Atlas,
NIPC, NWI, Lake Co. IL, Dupage Co.,
Lake Co. IN NWI, Lake Co. IN ADID
Data to be used for reference only
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Construction Limits
Wetland
Affected Wetland
Figure 4.12-10
Proposed
Munger Connection
Potential Wetland Effects


Sterns Rd
Powis Rd
Lake Michigan
Illinois
Indiana
Wetland 3c
N
Feet
0 250 500 750 1,000
Sources:
U.S. Census TIGER Date, ISGS,
U.S. National Transportation Atlas,
NIPC, NWI, Lake Co. IL, Dupage Co.,
Lake Co. IN NWI, Lake Co. IN ADID
Data to be used for reference only
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Construction Limits
Wetland
Affected Wetland
Figure 4.12-11
Munger Connection
- Original Proposal
- Potential Wetland Effects

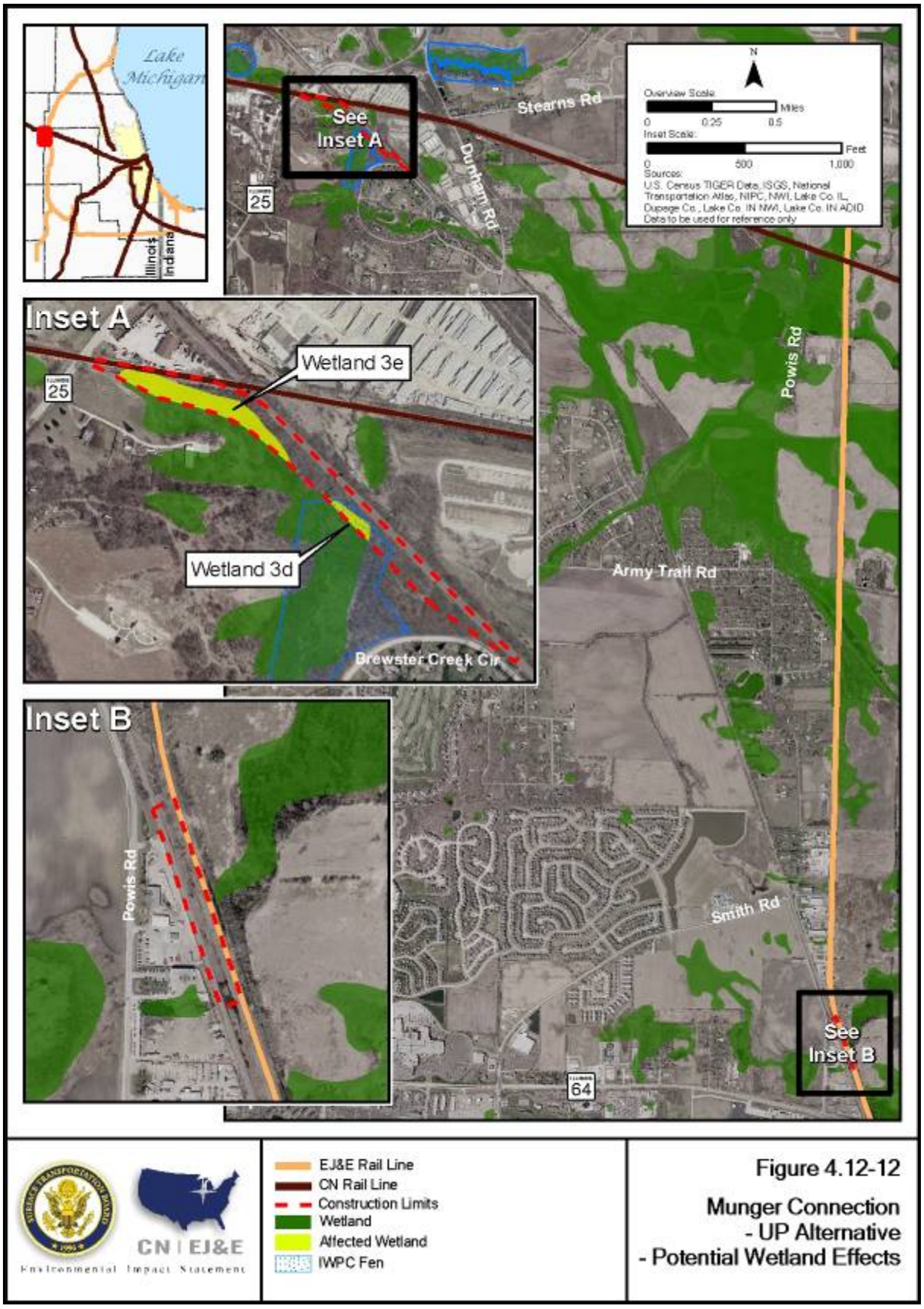
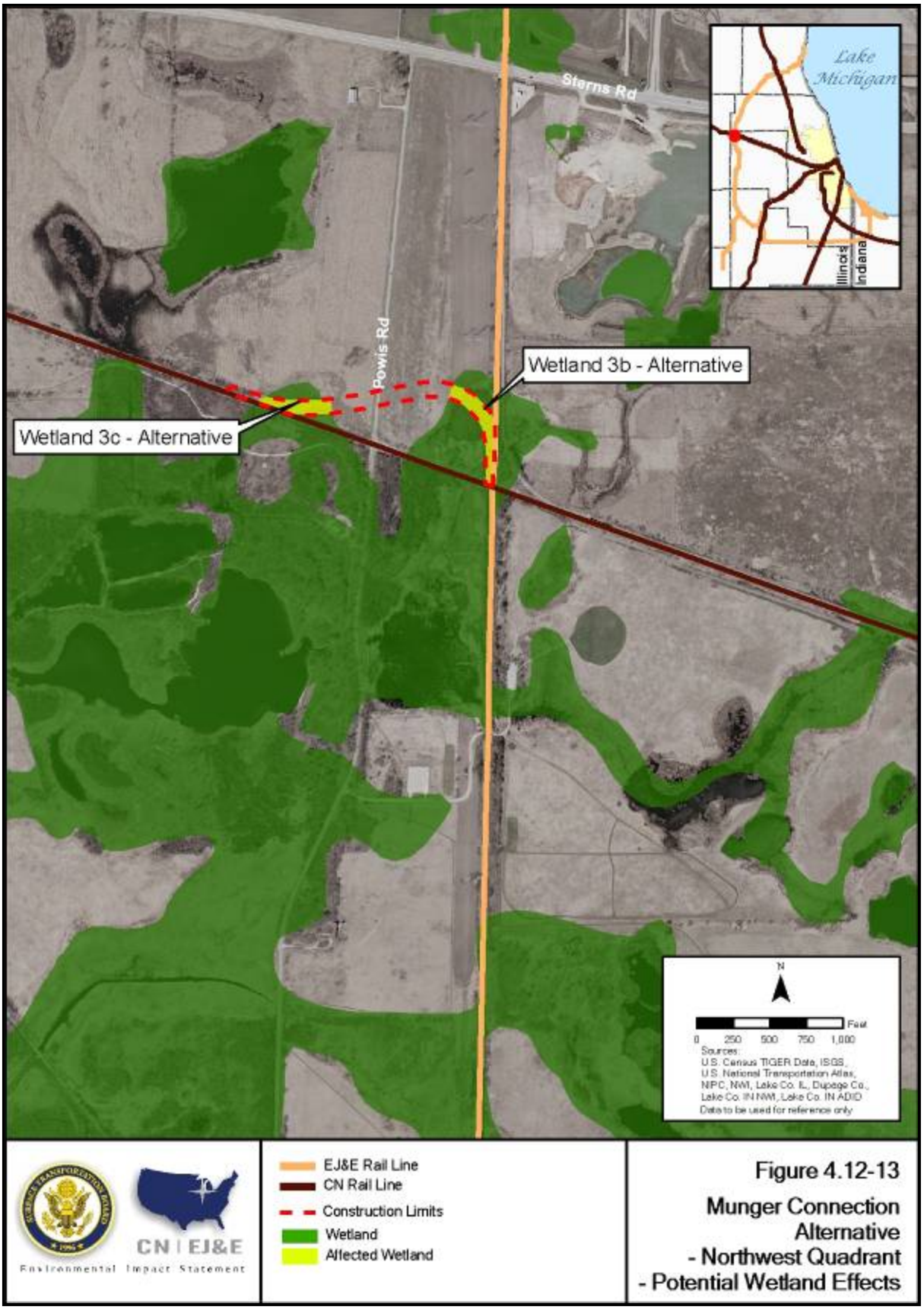
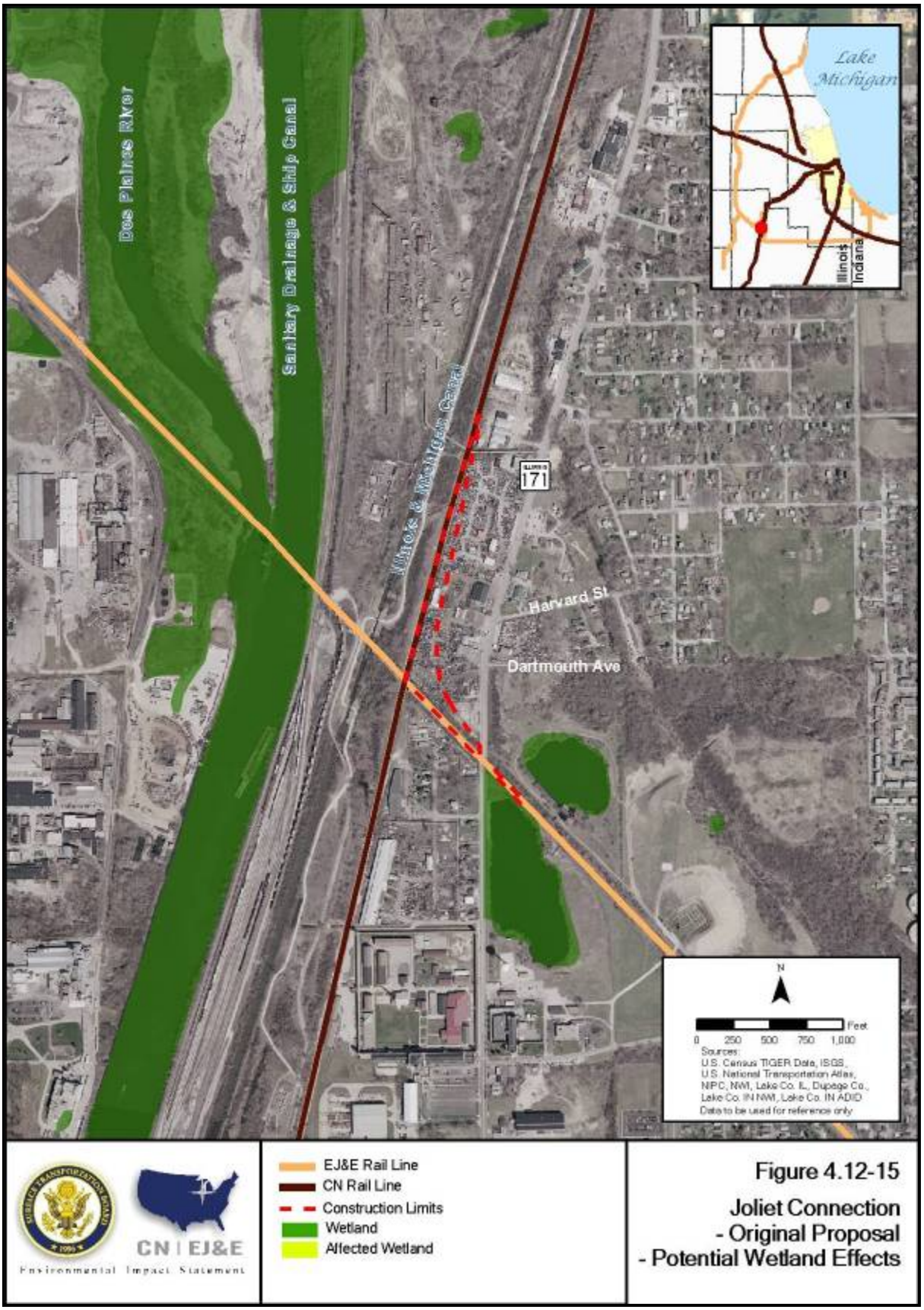


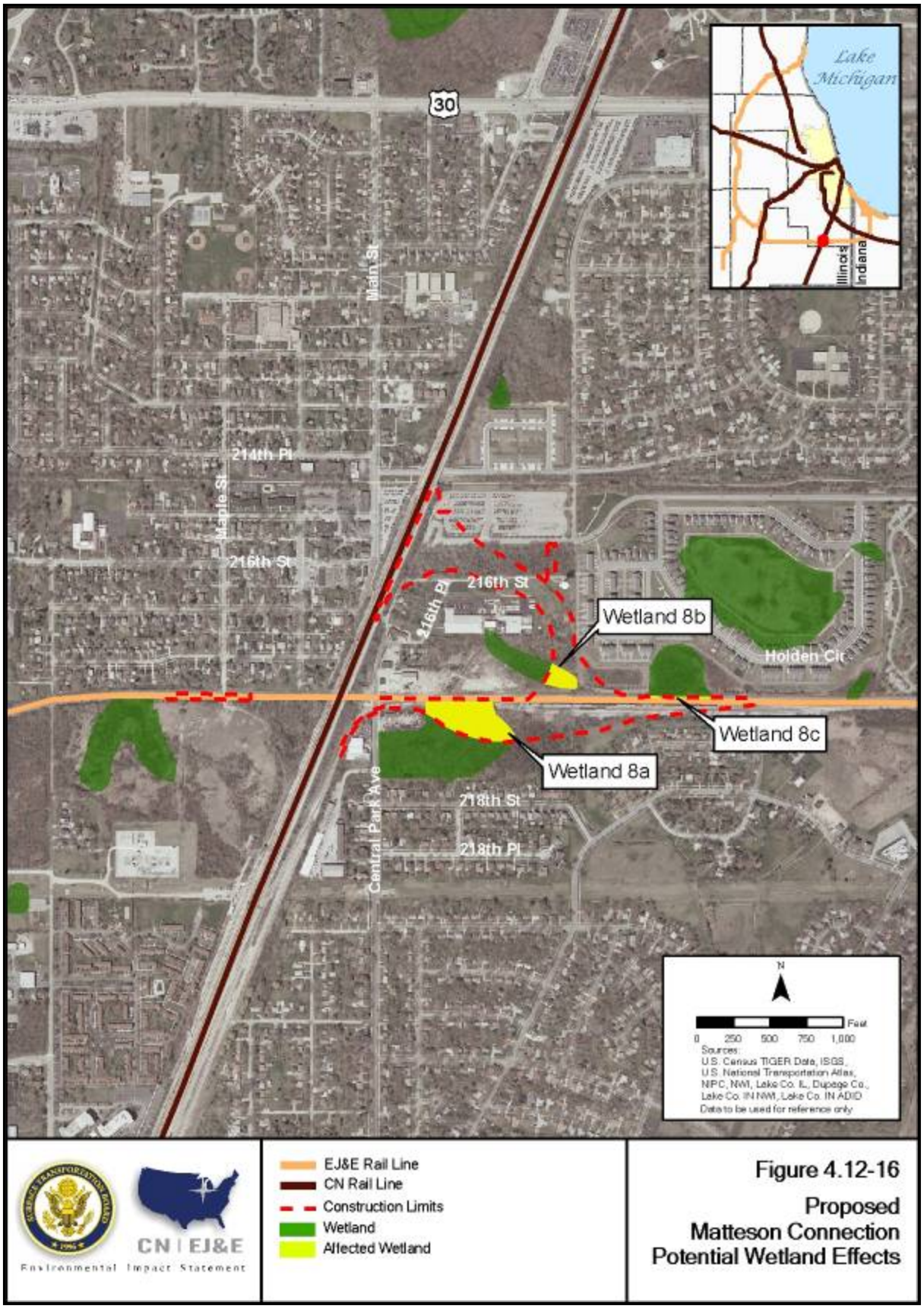
Figure 4.12-12

Munger Connection
- UP Alternative
- Potential Wetland Effects


Sterns Rd
Powis Rd
Lake Michigan
Illinois
Indiana
Wetland 3b - Alternative
Wetland 3c - Alternative
N
Feet
0 250 500 750 1,000
Sources:
U.S. Census TIGER Date, ISGS,
U.S. National Transportation Atlas,
NIPC, NWI, Lake Co. IL, Dupage Co.,
Lake Co. IN NWI, Lake Co. IN ADID
Data to be used for reference only
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Construction Limits
Wetland
Affected Wetland
Figure 4.12-13
Munger Connection Alternative
- Northwest Quadrant
- Potential Wetland Effects


Des Plaines River
Sanitary Drainage & Ship Canal
Illinois & Michigan Canal
Lake Michigan
Illinois
Indiana
171
Harvard St
Dartmouth Ave
N
Feet
0 250 500 750 1,000
Sources:
U.S. Census TIGER Data, ISGS,
U.S. National Transportation Atlas,
NPC, NWI, Lake Co. IL, Dupage Co.,
Lake Co. IN NWI, Lake Co. IN ADID
Data to be used for reference only
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Construction Limits
Wetland
Affected Wetland
Figure 4.12-14
Proposed
Joliet Connection
Potential Wetland Effects


Des Plaines River
Sanitary Drainage & Ship Canal
Illinois & Michigan Canal
171
Harvard St
Dartmouth Ave
Lake Michigan
Illinois
Indiana
N
Feet
0 250 500 750 1,000
Sources:
U.S. Census TIGER Date, ISGS,
U.S. National Transportation Atlas,
NIPC, NWI, Lake Co. IL, Dupage Co.,
Lake Co. IN NWI, Lake Co. IN ADID
Data to be used for reference only
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Construction Limits
Wetland
Affected Wetland
Figure 4.12-15
Joliet Connection
- Original Proposal
- Potential Wetland Effects


Lake Michigan
Illinois
Indiana
30
Main St
214th Pl
Maple St
216th St
216th St
216th Pl
Wetland 8b
Holden Cir
Wetland 8c
Wetland 8a
218th St
218th Pl
Central Park Ave
N
Feet
0 250 500 750 1,000
Sources:
U.S. Census TIGER Data, ISGS,
U.S. National Transportation Atlas,
NIPC, NWI, Lake Co. IL, Dupage Co.,
Lake Co. IN NWI, Lake Co. IN ADID
Data to be used for reference only
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Construction Limits
Wetland
Affected Wetland
Figure 4.12-16
Proposed
Matteson Connection
Potential Wetland Effects


Lake Michigan
Illinois
Indiana
30
Main St
214th Pl
Maple St
216th St
216th St
216th Pl
Holden Cir
Wetland 8d - Alternative
218th St
218th Pl
Central Park Ave
N
Feet
0 250 500 750 1,000
Sources:
U.S. Census TIGER Data, ISGS,
U.S. National Transportation Atlas,
NIPC, NWI, Lake Co. IL, Dupage Co.,
Lake Co. IN NWI, Lake Co. IN ADID
Data to be used for reference only
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Construction Limits
Wetland
Affected Wetland
Figure 4.12-17
Matteson Connection
- Northeast and Southwest Quadrants
- Potential Wetland Effects


Lake Michigan
Illinois
Indiana
E Miller Ave
N Broad St
N Indiana Ave
E Columbia St
W Main St
Wetland 9a
S Broad St
S Colfax St
N
Feet
0 250 500 750 1,000
Sources:
U.S. Census TIGER Data, ISGS,
U.S. National Transportation Atlas,
NIPC, NWI, Lake Co. IL, Dupage Co.,
Lake Co. IN NWI, Lake Co. IN ADID
Data to be used for reference only
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Construction Limits
Wetland
Affected Wetland
Figure 4.12-18
Proposed
Griffith Connection
Potential Wetland Effects


Lake Michigan
Illinois
Indiana
Cline Ave
20
W 9th Ave
W 10th Ave
W 11th Ave
N
Feet
0 250 500 750 1,000
Sources:
U.S. Census TIGER Date, ISGS,
U.S. National Transportation Atlas,
NIPC, NWI, Lake Co. IL, Dupage Co.,
Lake Co. IN NWI, Lake Co. IN ADID
Data to be used for reference only
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Construction Limits
Wetland
Affected Wetland
Figure 4.12-19
Proposed
Ivanhoe Connection
Potential Wetland Effects


Lake Michigan
Illinois
Indiana
Buchanan St
90
Grand Calumet River
W 2nd Ave
W 3rd Ave
Buchanan St
12
20
20
12
N
Feet
0 250 500 750 1,000
Sources:
U.S. Census TIGER Data, ISGS,
U.S. National Transportation Atlas,
NPC, NWI, Lake Co. IL, Dupage Co.,
Lake Co. IN NWI, Lake Co. IN ADID
Data to be used for reference only
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Construction Limits
Wetland
Affected Wetland
Figure 4.12-20
Proposed
Kirk Yard Connection
Potential Wetland Effects


Lake Michigan
Illinois
Indiana
Allanson Rd
Tower Rd
Campus Dr
Butterfield Rd
Wetland 1a
45
60
Leighton Rd
N
Feet
0 250 500 750 1,000
Sources:
U.S. Census TIGER Date, ISGS,
U.S. National Transportation Atlas,
NIPC, NWI, Lake Co. IL, Dupage Co.,
Lake Co. IN NWI, Lake Co. IN ADID
Data to be used for reference only
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Construction Limits
Wetland
Affected Wetland
Figure 4.12-21
Leithton Double Track
Potential Wetland Effects

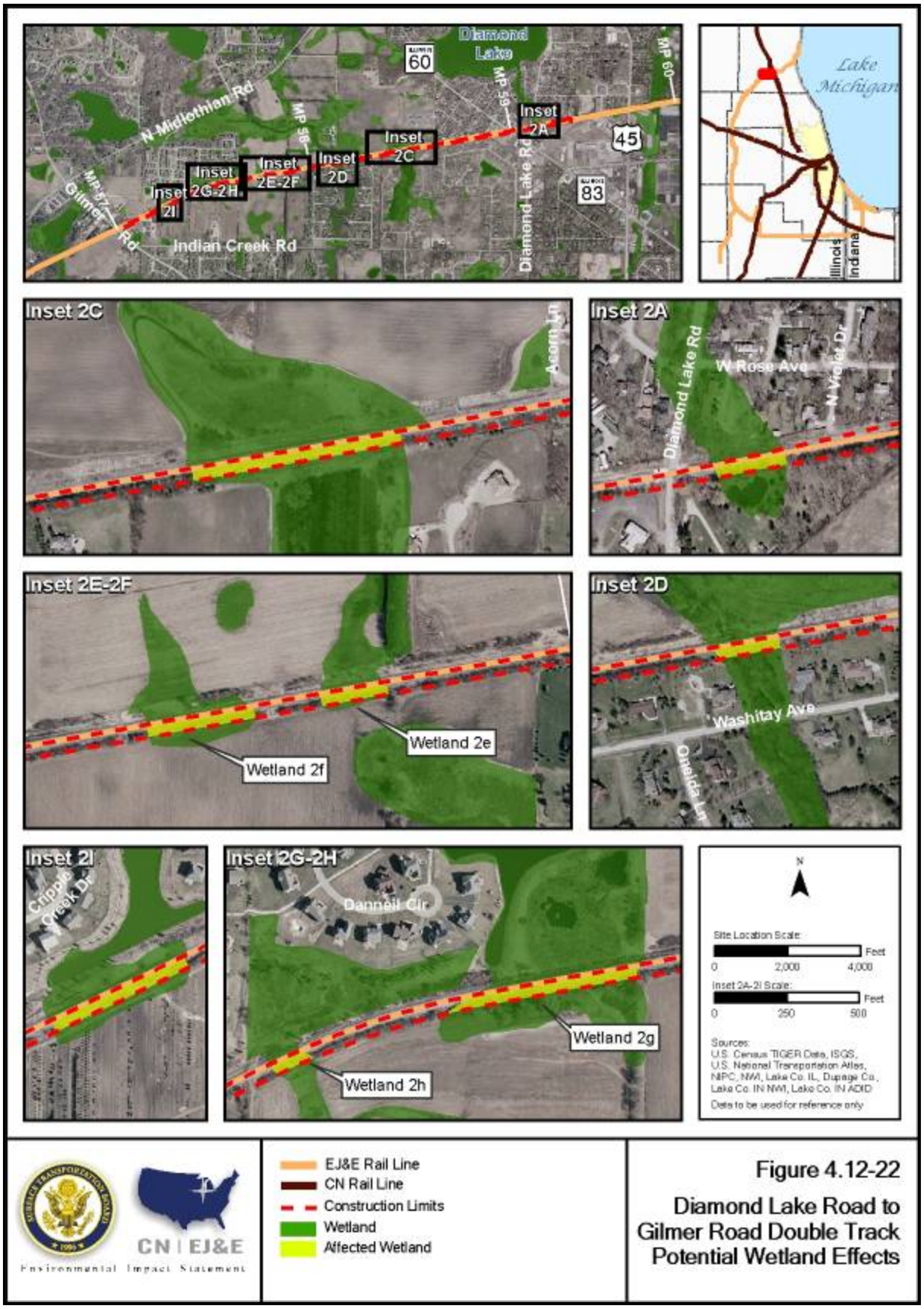
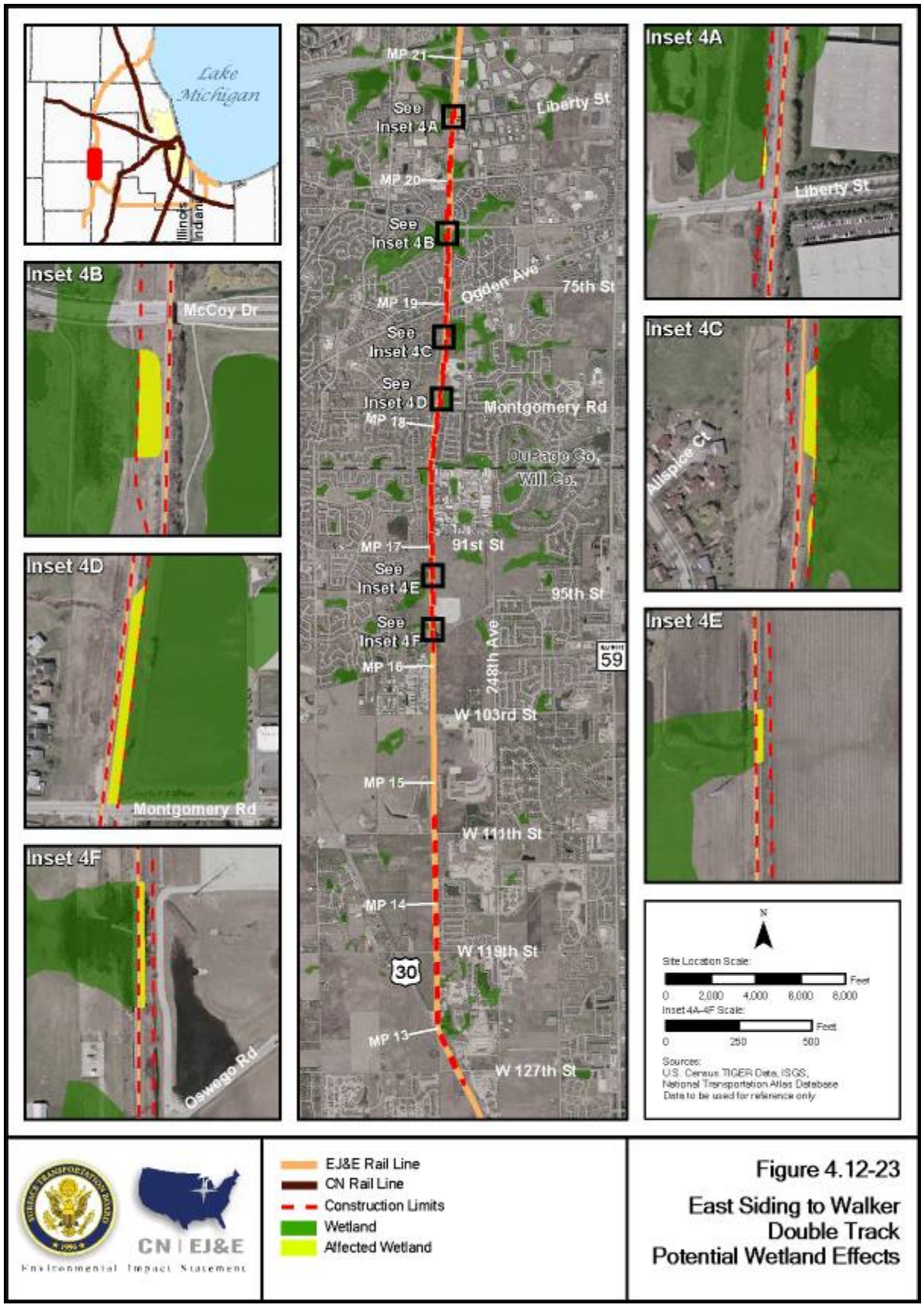
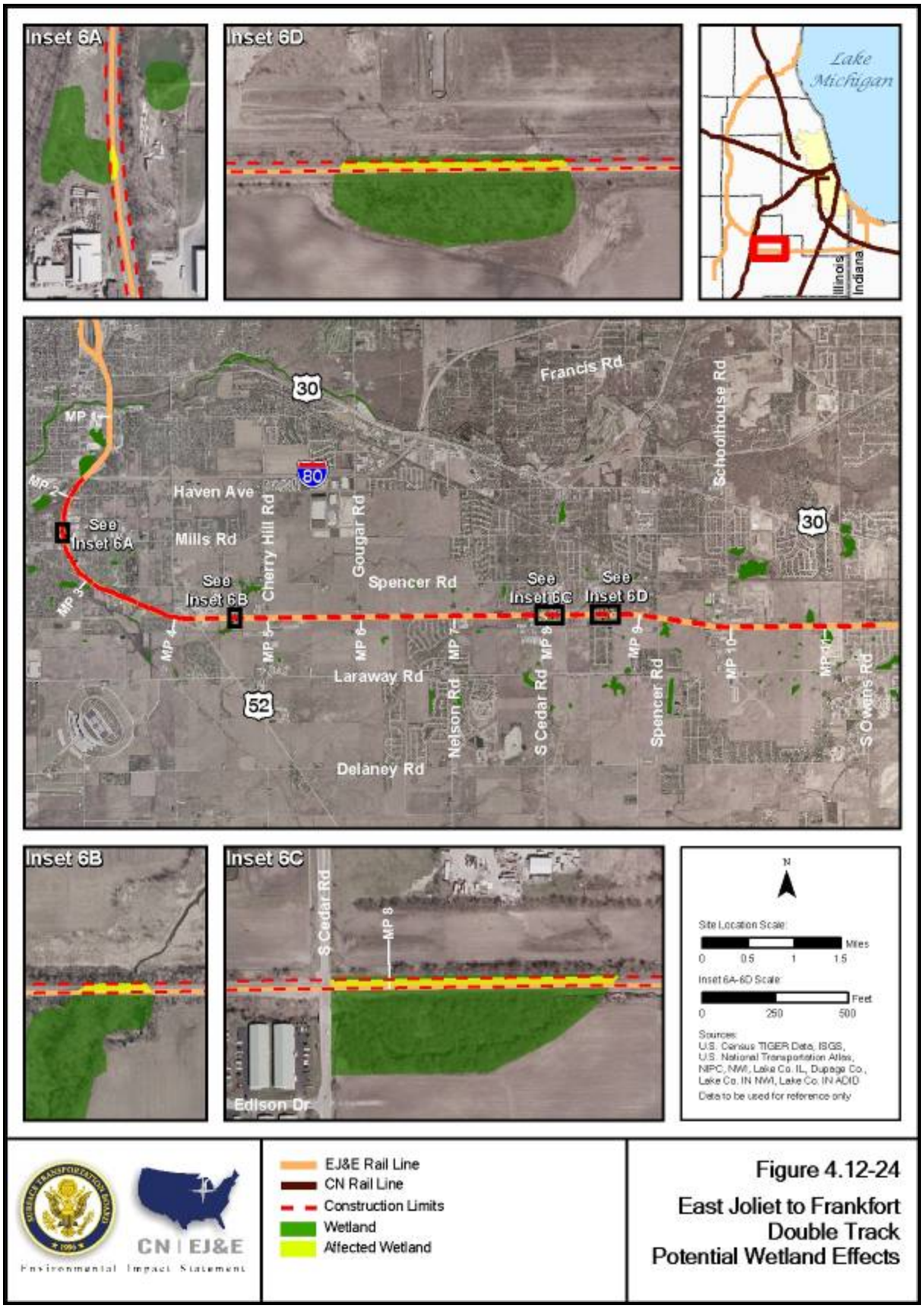


Figure 4.12-22

Diamond Lake Road to Gilmer Road Double Track Potential Wetland Effects


Lake Michigan
Illinois
Indiana
Inset 4A
Inset 4B
Inset 4C
Inset 4D
Inset 4E
Inset 4F
McCoy Dr
Montgomery Rd
Oswego Rd
Liberty St
Allspice Ct
MP 21
MP 20
MP 19
MP 18
MP 17
MP 16
MP 15
MP 14
MP 13
See Inset 4A
See Inset 4B
See Inset 4C
See Inset 4D
See Inset 4E
See Inset 4F
Ogden Ave
75th St
Montgomery Rd
DuPage Co.
Will Co.
91st St
95th St
248th Ave
59
W 103rd St
W 111th St
W 119th St
30
W 127th St
N
Site Location Scale:
Feet
0 2,000 4,000 8,000 8,000
Inset 4A-4F Scale:
Feet
0 250 500
Sources:
U.S. Census TIGER Data, ISGS,
National Transportation Atlas Database
Data to be used for reference only
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Construction Limits
Wetland
Affected Wetland
Figure 4.12-23
East Siding to Walker
Double Track
Potential Wetland Effects


Inset 6A
Inset 6D
Lake Michigan
Illinois
Indiana
Francis Rd
Schoolhouse Rd
30
80
MP 1
MP 2
Haven Ave
See Inset 6A
Mills Rd
Cherry Hill Rd
Gougar Rd
Spencer Rd
See Inset 6B
See Inset 6C
See Inset 6D
MP 3
MP 4
MP 5
MP 6
MP 7
MP 8
MP 9
MP 10
Laraway Rd
52
Nelson Rd
S Cedar Rd
Spencer Rd
S Owens Rd
Delaney Rd
Inset 6B
Inset 6C
S Cedar Rd
MP 8
Edison Dr
N
Site Location Scale:
Miles
0 0.5 1 1.5
Inset 6A-6D Scale:
Feet
0 250 500
Sources:
U.S. Census TIGER Data, ISGS, U.S. National Transportation Atlas, NIPC, NWI, Lake Co. IL, Dupage Co., Lake Co. IN NWI, Lake Co. IN ADID
Data to be used for reference only
EJ&E Rail Line
CN Rail Line
Construction Limits
Wetland
Affected Wetland
CN | EJ&E
Environmental Impact Statement
Figure 4.12-24
East Joliet to Frankfort
Double Track
Potential Wetland Effects

To provide an easily understood classification system with unified concepts and terms, the U.S. Fish and Wildlife Service (USFWS) developed the *Classification of Wetlands and Deepwater Habitats of the United States* by Cowardin, Carter, Golet, and LaRoe (Cowardin 1979).[1] This approach, referred to as the Cowardin Classification System, provides a hierarchical framework for classifying all wetland and deepwater areas. The system is a widely accepted standard for the classification of wetland types on a state and national level and is used as the basis for NWI mapping. The hierarchical classification breaks wetlands and deepwater habitats into systems, subsystems, classes, and subclasses. The NWI Type provided in Table 4.12-7 and Table 4.12-8 is based on the Cowardin system.[2]

Connections

Table 4.12-7, below, presents the potential effects on wetlands from construction at the connections. The following sections provide narrative descriptions of the potential effects at each connection site.

Proposed Munger Connection. This alternative would require construction of two retaining walls to create railroad gradients sufficient for the connection to remain within EJ&E ROW and ComEd property (see Figure 2.4-3 in Chapter 2). Construction would occur within a mixed Palustrine Emergent wetland with a mix of communities that appears to include shrub swamp, and a marsh dominated by giant reed and reed canary grass. This alternative also may affect a portion of forested area that includes floodplain and upland tree species, highly invaded by common buckthorn.

Wetlands associated with this site are considered important from a biological resources perspective and are listed under the Illinois Natural Areas Initiative as an important habitat. Species listed by Illinois as threatened and endangered are known to inhabit these wetlands during at least some portion of the year. Listed species known to occur in the wetlands of Pratt's Wayne Woods include sandhill crane, Blanding's turtle, yellow-headed blackbird, black tern, Henslow's sparrow, common moorhen, black-crowned night heron, least bittern, and king rail.

To retain a hydrologic link between basins, the Applicants will need to address drainage from the north of the CN tracks. This likely would require an additional culvert connection. SEA's review of available wetland data indicates this alternative would directly affect up to 2.48 acres of wetlands.

Munger Alternative – Original Proposal. This alternative would encroach into the Powis Marsh area of the Pratt's Wayne Woods Forest Preserve. This proposal includes a wide, sweeping curve on a berm connecting the grade-separated tracks and would require the Applicants to fill 4.80 acres of mostly monotype (Reed Canary Grass and Giant Reed) marsh.

[1] Cowardin, Lewis M.; Carter, Virginia; Golet, Francis C.; and Laroe, Edward T. 1979. Classification of Wetlands and Deepwater Habitats of the United States, FWS/OBS-79/31. U.S. Department of the Interior, Fish and Wildlife Service, Office of Biological Services, Washington, D.C.

[2] A full description of the coding is available at http://www.fws.gov/nwi/Pubs_Reports/Class_Manual/class_titlepg.htm. An abbreviated description is available at: http://www.fws.gov/nwi/MapCodesLegend.pdf.

Table 4.12-7. Wetland Effects from Proposed Connections								
Construction Site	Wetland ID	Rail Line Segment(s)	County	Jurisdiction (USACE Tributary)[a]	Map Sources	NWI Type	Acreage	Total Acreage
No-Build at Munger	Wetlands 3a-3f	EJ&E 12 and CN30A	DuPage	USACE (Lower Fox), DSMA	1.5	PEMC, PFO1C, PUBGX	0.00	0.00
Proposed Munger Connection	Wetland 3a	EJ&E 12 and CN30A	DuPage	USACE (Lower Fox), DSMA	1, 5	PEMC	2.48	2.48
Munger Alternative - Original Proposal	Wetland 3f	EJ&E 12 and CN30A	DuPage	USACE (Lower Fox), DSMA	1, 5	PEMC	4.80	4.80
Munger Alternative - UP Connection	Wetland 3d	CN30b	Kane	USACE (Lower Fox), ADID, Kane County Stormwater Ordinance	1, 8	PFO1C	0.32	2.20
	Wetland 3e	CN30b	Kane	USACE (Lower Fox), ADID, Kane County Stormwater Ordinance	1, 8	PUBGX	1.88	
Munger Alternative - Northwest Quadrant	Wetland 3b	EJ&E 12 and CN30A	DuPage	USACE (Lower Fox), DSMA	1, 5	PEMC	1.44	2.45
	Wetland 3c	EJ&E 12 and CN30A	DuPage	USACE (Lower Fox), DSMA	1, 5	PEMC	1.01	
No-Build at Joliet	N/A	EJ&E 8B	Will	USACE, WCLU	-	-	0.00	0.00
Proposed Joliet Connection	N/A	EJ&E 8B	Will	USACE, WCLU	-	-	0.00[b]	0.00[b]
Joliet Alternative - Original Proposal	N/A	EJ&E 8B	Will	USACE, WCLU	-	-	0.00[b]	0.00[b]
No-Build at Matteson	Wetland 8a-8d	EJ&E 6	Cook	USACE (Thorn Creek)	1, 5	PEMC, PFO1C	0.00	0.00
Proposed Matteson Connection	Wetland 8a	EJ&E 6	Cook	USACE (Thorn Creek)	1, 5	PEMC/ PFO1C	2.83	3.62
	Wetland 8b	EJ&E 6	Cook	USACE (Thorn Creek)	1, 5	PFO1C	0.58	
	Wetland 8c	EJ&E 6	Cook	USACE (Thorn Creek)	1, 5	PEM/FO1C	0.21	
Matteson Alternative - Northeast and Southwest Quadrants	Wetland 8d	EJ&E 6	Cook	USACE (Thorn Creek)	1, 5	PEM/FO1C	0.21	0.21
Matteson Alternative - Southwest Quadrant	N/A	EJ&E 6	Cook	USACE (Thorn Creek)	-	-	0.00[b]	0.00[b]

Table 4.12-7. Wetland Effects from Proposed Connections								
Construction Site	Wetland ID	Rail Line Segment(s)	County	Jurisdiction (USACE Tributary)[a]	Map Sources	NWI Type	Acreage	Total Acreage
No-Build at Griffith	Wetland 9a	EJ&E 4 and CN 33	Lake	IDEM	1, 6	PEMC	0.00	0.00
Proposed Griffith Connection	Wetland 9a	EJ&E 4 and CN 33	Lake	IDEM	1, 6	PEMC	0.77	0.77
No-Build at Ivanhoe	N/A	EJ&E 2	Lake	IDEM	-	-	0.00	0.00
Proposed Ivanhoe Connection	N/A	EJ&E 2	Lake	IDEM	-	-	0.00[b]	0.00[b]
No-Build at Kirk Yard	N/A	EJ&E 0	Lake	IDEM	-	-	0.00	0.00
Proposed Kirk Yard Connection	N/A	EJ&E 0	Lake	IDEM	-	-	0.00[b]	0.00[b]

Source: 1) National Wetlands Inventory, 2) Lake County, Illinois, Wetland Inventory and ADID Wetland Inventory, 3) DuPage County Wetland Inventory, 4) Lake County Land Use Cover, 5) Northeastern Illinois Land Use Cover, 6) Lake County, Indiana, National Wetlands Inventory, 7) Lake County, Indiana, ADID Wetland Inventory

Notes:

[a] USACE: U.S. Army Corps of Engineers, LCSMC: Lake County Stormwater Management Commission, DSMC: DuPage County Stormwater and Flood Plain Ordinance-Special Management Area, WCLU: Will County Land Use Department

[b] Based on available data, SEA did not identify wetlands that would be affected by construction of the Joliet, Ivanhoe, and Griffith alternatives. Field surveys would be required during final design.

Munger Alternative – UP Connection. This alternative would require construction of a crossover at the edge of Forest Preserve lands at the southern end of the Pratt's Wayne Woods and a connection along the edge of the Brewster Creek Fen Nature Preserve.

This alternative would shift connecting rail traffic away from the Powis Marsh within Pratt's Wayne Woods Forest Preserve. Construction associated with this alternative would directly affect Brewster's Creek Fen Illinois Nature Preserve. These activities would directly affect wetland 3d, and may require fill over a portion of the fen contained within this wetland complex. This fen is located adjacent to the UP rail line south of the crossing of CN rail line segment No. 30B, as shown in Figure 4.12-12, above. As fill would be required to widen the existing embankment upslope of the fen, these activities could indirectly affect the fen portion of this wetland complex by altering groundwater flows that discharge into this highly valued wetland type. The surficial geologic formations that underlie this crossing provide mineralized and cold groundwater discharges necessary to support the fen (Dey, et al. 2007).

The UP alternative connection would have both direct and indirect effects on this fen in the form of direct fill within the fen along the UP rail line, and potentially altering subsurface groundwater flows through excavation and placement of fill up gradient of the fen

None of the other proposed or alternative actions at Munger appear to have a subsurface link to Brewster Creek Fen, Tri-County Fen or the South Elgin Sedge Meadow Fen (Fen Complex 5). All other proposed construction areas are located at the existing crossing of the CN and EJ&E rail lines, near the Powis Marsh complex, draining via direct surface connection to Brewster's Creek. Additionally, the construction area of the Munger Alternative - Northwest Quadrant would be located within 0.3 miles of the Tri-County Fen and 0.2 miles of an additional EOR-identified graminoid fen located north of the existing CN rail line. Kane County's ADID wetland mapping ranks all of the wetlands described here as high-quality habitat. While "ADID results are only advisory to the Federal regulatory process, designation as an ADID high quality habitat or high functional value wetland means that special scrutiny will be given to permit reviews. The Corps will generally require an individual permit which allows for public review and comment. High quality habitat sites are considered unmitigatable, though, and generally are determined to be unsuitable for filling activities. While some modification of high functional value sites may be allowed, special mitigation will be necessary to protect critical water quality and stormwater storage functions." (Kane County 2005). However mitigation may be possible at a high compensation rate. Otherwise, if design measures can not avoid the wetland impact, then this alternative may not be viable.

Munger Alternative – Northwest Quadrant. This alternative connection would occur within the Pratt's Wayne Wood Forest Preserve, but would minimize direct effects on Powis Marsh. This alternative would potentially affect a total of 4.5 acres covering a range of community types including a monotype (Phragmites) marsh, agricultural field (corn) and restored prairie. The proposal would directly affect 2.45 acres of wetlands in two different wetland complexes.

Proposed Joliet connection. SEA's review of available wetland data indicated no wetlands area of construction.

Joliet Alternative – Original Proposal. SEA's review of available wetland data indicated no wetlands area of construction.

Proposed Matteson Connection. This alternative would affect three mixed Palustrine Emergent and Forested wetlands identified on NWI maps. Two of the three wetlands appear to have been recently altered by development. IDNR does not identify any of the three wetlands as high-quality habitat. These wetlands are at the upper end of the watershed for a branch of Thorn Creek and, as such, likely would fall under USACE regulatory jurisdiction. SEA's review of available wetland data indicated this alternative would directly affect up to 3.62 acres of wetlands.

Matteson Alternative – Northeast and Southwest Quadrants. This alternative generally would occur within mixed disturbed landscapes. Only a small sliver (0.21 acre) of this connection is mapped by the NWI, though the wetland appears to be located on existing railroad berm. SEA's review of available wetland data did not identify any other wetlands.

Matteson Alternative – Southwest Quadrant. SEA's review of available wetland data did not identify any wetlands in this location.

Proposed Griffith Connection. Proposed construction at Griffith would directly affect a Palustrine Emergent wetland surrounded by forest. The wetland appears to have been bisected by an earlier railroad connection, no longer in use. Mapped as a Palustrine Emergent wetland, aerial photo analysis appears to indicate that this may be a mix of herbaceous emergent, shrub swamp and wooded wetland. SEA's review of available wetland data indicated this alternative would directly affect 0.77 acre of wetlands.

Proposed Ivanhoe Connection. This proposed connection would transect an excavated basin. The basin appears to be overgrown with giant reed and is in an area of mixed dune and swale preserves, residential development, industry, and storage yards. Directly north of the proposed connection is The Nature Conservatory's Ivanhoe Dune and Swale Preserve, though it is across a double set of tracks. Given the highly disturbed nature of the ground surface at this site, SEA's review of available wetland data indicated no jurisdictional wetland effects are likely at this connection.

Proposed Kirk Yard Connection. This connection, located in the dune and swale region of Gary, Indiana, likely was a mix of upland and wetland prior to development of the yard. SEA's review of available data indicates that no effects on jurisdictional wetlands would likely occur.

Double Track

Table 4.12-8, as follows, presents the potential effects on wetlands from construction at the double track areas. The following sections provide narrative descriptions of the potential wetland effects at each double track area.

Leithton Double Track. This construction involves double-tracking on the west side of an existing connection between the EJ&E and CN railroads. The Applicants have proposed a construction area of up to 75 feet from the existing connection. Construction activity is proposed in an area shown as Palustrine Emergent and Open Pond wetlands, and likely would involve filling of an existing wetland. The existing wetland appears to be highly degraded with combined railroad, transmission line pole footing, industrial development, and roads creating squared edges. A site visit and aerial photo analysis suggests vegetation is dominated by cattails and invasive giant reed. SEA's review of available data indicated this double track would affect up to 2.44 acres of wetlands.

Table 4.12-8. Wetland Effects from Proposed Double Track								
Construction Site	**Wetland ID**	**Rail Line Segment(s)**	**County**	**Jurisdiction (USACE Tributary)[a]**	**Map Sources**	**NWI Type**	**Acreage**	**Total Acreage**
Leithton Double Track	Wetland 1a	EJ&E 14B, CN 29	Lake	LCSMC	1, 2, 4, 5	PUB/AB4F, PEM/AB4F	2.44	2.44
Diamond Lake Road to Gilmer Road Double Track	Wetland 2a	EJ&E 14C	Lake	LCSMC	1	PEMC, PUBHx	0.29	2.87
	Wetland 2c	EJ&E 14C	Lake	LCSMC	1, 2, 4, 5	PEMC, PEMF	0.72	
	Wetland 2d	EJ&E 14C	Lake	USACE (Des Plaines), LCSMC	1, 2	PEMC, PEMF	0.01	
	Wetland 2e	EJ&E 14C	Lake	USACE (Des Plaines), LCSMC	2	N/A (PEMC)	0.22	
	Wetland 2f	EJ&E 14C	Lake	na	4	N/A	0.23	
	Wetland 2g	EJ&E 14C	Lake	LCSMC	2	N/A (PEMC)	0.37	
	Wetland 2h	EJ&E 14C	Lake	LCSMC	1, 2, 4, 5	PEMF, PEMC	0.62	
	Wetland 2i	EJ&E 14C	Lake	LCSMC	2	N/A (PEMB)	0.13	
	Wetland 2j	EJ&E 14C	Lake	LCSMC	2	N/A (PEMB)	0.5	
East Siding to Walker Double Track	Wetland 4a	EJ&E 10B	DuPage	DSMC	3	N/A (PEM1Ca)	0.02	1.92
	Wetland 4b	EJ&E 10B	DuPage	USACE, DSMC	1	PEMCD	0.64	
	Wetland 4c	EJ&E 10B	DuPage	DSMC	3, 5	N/A (PEMC)	0.32	
	Wetland 4d	EJ&E 10B	DuPage	DSMC	1, 3, 5	PEMA	0.61	
	Wetland 4e	EJ&E 10B	Will	WCLU	1, 5	PEMADF	0.12	
	Wetland 4f	EJ&E 10B	Will	WCLU	1, 5	PUBF	0.21	
East Joliet to Frankfort Double Track	Wetland 6a	EJ&E 7	Will	WCLU	1	PEMF	0.06	1.41
	Wetland 6b	EJ&E 7	Will	WCLU, USACE (Sugar Run)	1	PFO1A	0.15	
	Wetland 6c	EJ&E 7	Will	WCLU, USACE (Jackson Creek)	1, 5	PFO1A	0.67	
	Wetland 6d	EJ&E 7	Will	WCLU, USACE (Jackson Creek)	1, 5	PEMC	0.53	
Total								8.64

Source: 1) National Wetlands Inventory, 2) Lake County, Illinois, Wetland Inventory and ADID Wetland Inventory, 3) DuPage County Wetland Inventory, 4) Lake County Land Use Cover, 5) Northeastern Illinois Land Use Cover, 6) Lake County, Indiana, National Wetlands Inventory, 7) Lake County, Indiana, ADID Wetland Inventory

Notes:

[a] USACE: U.S. Army Corps of Engineers, LCSMC: Lake County Stormwater Management Commission, DSMC: DuPage County Stormwater and Flood Plain Ordinance-Special Management Area, WCLU: Will County Land Use Department. SEA estimated jurisdiction based on existing information. A jurisdictional determination and delineation will be conducted by the Applicant, as appropriate.

Diamond Lake to Gilmer Road Double Track. This segment of double track would be constructed in mixed residential, farming, and open-space areas. It crosses numerous historic wetland basins and small isolated wetlands, likely filled during the original construction of the EJ&E rail line. Wetlands 2a, 2c and 2g are shown in the Lake County Wetland Inventory as basins crossing the existing EJ&E tracks. The same inventory shows the likely historic extents of these wetlands. Currently, culverts under the EJ&E tracks connect the waters of each of the basins. Areas of fill in these basins likely would affect existing wetlands.

Lake County, Illinois, and EPA mapped one ADID wetland along the corridor during their 1992 study (Dreher, 1992[3]). Wetland 2d, which represents the floodplain of Indian Creek, was mapped as an ADID wetland. USACE and EPA consider ADID wetlands, as mapped in Lake County, of exceptionally high functional value and "as areas generally unsuitable for disposal of dredged or fill material." ADID designation is not regulatory, but typically triggers EPA review of USACE permits, and permits often are denied. Careful wetland delineation by the Applicant and proper design measures, such as retaining walls and/or a bridge, will be necessary at this location to avoid ADID wetland impacts.

SEA's review of available data indicated this double track would affect up to 2.87 acres of wetlands, though the estimate likely is conservative given wetland mapping that includes the existing rail bed.

East Siding to Walker Double Track. This section generally is surrounded by residential development and farmland. Available mapping identifies large wetland bodies along this section, some of which would have crossed the EJ&E tracks before original construction of the railroad. Recent residential development appears to have affected all the large basins.

SEA identified wetlands only in the northern portion of this area of double track (between West EJ&E MP 16.2 and West EJ&E MP 21.2), though there appear to be additional wetlands along the banks of an unnamed stream along West EJ&E MP 14.2 to 14.7. Illinois Department of Natural Resources EOR records identify Wetland 4c as a rookery, although SEA did not identify rookery nesting activities during field surveys in April 2008. This site has been highly disturbed by residential development in recent years.

SEA's review of available wetland data indicated this double track would directly affect up to 1.92 acres of wetlands.

East Joliet to Frankfort Double Track. This segment begins in the southern portion of Joliet along the valley of the Des Plaines River, and quickly rises onto the relatively flat outwash plain of the Chicago Moraine. Wetlands are generally associated with the floodplain and stream banks of two branches of Sugar Run and Jackson Branch Creek. Railroad ditches supporting hydrophytic vegetation are present along portions of this segment, but many appear to have been created in the process of constructing the original EJ&E railroad. Wetland delineations prior to construction would clarify whether this is the case. SEA's review of available wetland data indicated this double track would directly affect up to 1.41 acres of wetlands.

Conclusion

Under the Proposed Action SEA found:

- Groundwater could be impacted during construction by dewatering construction sites and by potential spills of petroleum and hazardous materials from construction equipment.
- Floodplain water surface elevations could be impacted by construction of double track. Stream velocities could increase, potentially increasing headcuts from erosion.

[3] Dreher, Dennis, Sue Elston, and Carroll Schaal (1992). Advanced identification (ADID) Study, Lake County, Illinois. Lake County Stormwater Management Commission.

- Surface water quality could be impacted by increased siltation and spills of petroleum during construction.
- Wetlands would be impacted from placement of fill and changes in drainage patterns (disconnecting parts of wetlands) during construction. Construction of the proposed connections would impact nearly 7 acres of wetlands. Construction of the proposed connection near Munger would potentially impacted high quality wetlands listed by the Illinois Natural Areas Initiative. Construction of double track would impact about 9 acres of wetlands, including an estimated 0.01 acres of exceptional high value wetland near Diamond Lake and Gilmer Roads.

SEA acknowledges that under the Proposed Action groundwater and surface water quality could be impacted by construction. Implementation of erosion and siltation control measures under the required USACE and NPDES permits would limit impacts to water bodies. Potential impacts to water body elevations would be reduced in the design of bridges and culverts. SEA is recommending mitigation (discussed in Chapter 6, Mitigation) to reduce potential impacts to wetlands and floodplains.

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