4.2 Rail Safety

SEA evaluated the potential effects of the proposed acquisition on rail safety. SEA ordinarily analyzes impacts associated with an increase of eight or more trains per day. However, in response to concerns over the potential effects of the increases, or decreases, in the number of trains proposed to be operated, SEA analyzed rail operations and safety issues associated with the Proposed Action for all line segments (EJ&E and CN) that would experience changes in traffic volume, as described in Applicants' operating plan. This section addresses the following safety issues:

1) Freight rail safety
2) Vehicle safety
3) Passenger rail safety
4) Hazardous materials safety
5) Pedestrian/bicycle safety

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

- Based on historical accident rates for rail lines in general and for CN and EJ&E in particular, SEA concluded that there would be an increase in the risk of main track train accidents on the EJ&E rail line due to the increase in rail traffic and miles traveled. Although the risk does increase, the actual number of potential additional accidents would be small. (Note that a reportable "accident" on which accident rates are based is one with equipment damage greater than $8,500.) [Section 4.2.1.1]

- There would be a decrease in the risk of potential accidents on the CN subdivisions due to the reduction in rail traffic and miles traveled, with an overall system-wide small potential decrease in accidents. The potential for yard accidents in CN yards would diminish with the reduction in switching, and the number of yard accidents in the EJ&E yards would likely increase with the increase in activity. [Section 4.2.1.1]

- SEA also calculated the potential risk of accidents at public highway/rail at-grade crossings. Under the No-Action Alternative (current conditions), the SEA analysis predicted 4.455 accidents annually on the EJ&E line segments and 6.233 on the CN line segments, with three CN and two EJ&E crossings having a high predicted accident frequency (one accident every 7 years). Under the Proposed Action, the SEA analysis predicted an increase of 1.566 (to 6.021) highway/rail accidents annually on the EJ&E line segments and a decrease of 2.514 (to 3.719) on the CN line segments, with four EJ&E crossings having a high accident frequency (one accident every 7 years). Overall, SEA predicted that potential highway/rail at-grade crossing accidents would decrease by 9 percent (from 10.688 to 9.740) under the Proposed Action. [Section 4.2.2]

- There are no commuter rail services currently operating on the EJ&E rail line and on several of the CN rail line segments freight traffic would be reduced. For those reasons, the Proposed Action would have no effect on passenger safety. [Section 4.2.3]

- Under the Proposed Action, one area (Barrington) that currently qualifies as a Quiet Zone (areas where routine sounding of locomotive horns is not necessary) could lose that status because of the increase in number of trains per day and the corresponding increase in the risk index for the crossings within the existing Quiet Zone. For safety reasons, a risk index above a specified level requires the sounding of horns. Other Quite Zone communities along the EJ&E rail line are not expected to be affected. [Section 4.2.4]

- With respect to hazardous materials transportation, SEA's analysis showed that the number of "major key routes" (rail segments where the volume of hazardous materials

transported would exceed 20,000 carloads annually) would increase from 2 to 14 on the EJ&E rail line and decrease from 23 to 3 on the CN subdivisions. Because of the large percentage increase in the volume of hazardous materials that would be transported on the EJ&E rail line due to the Proposed Action, the potential for a reportable hazardous material release would also increase, although the likelihood of a release of hazardous materials would still be very low. [Section 4.2.5]

- SEA concluded that the consequences of increased train traffic on the EJ&E line segments would increase the risk for pedestrians and bicycles at 21 trail/rail crossings and decrease the risk at the 36 trail/rail crossings along the CN subdivisions. [Section 4.2.6]

4.2.1 Freight Rail Safety

4.2.1.1 Train Accidents

What is a train accident?
Reportable accidents are those with equipment damage greater that $8,500. FRA defines a train accident as "safety-related event involving on-track rail equipment (both standing and moving), causing monetary damage to the rail equipment and track above a prescribed amount."

This section discusses the accident statistics for the major U.S. railroads, followed by a discussion of accident statistics for CN and EJ&E specifically. The Federal Railroad Administration (FRA) collects historical accident statistics for all railroads operating within the U.S.[1] Reportable accidents include collisions, derailments, and accidents involving the operation of on-track equipment causing damage above an established threshold;[2] and impacts between railroad on-track equipment and highway users at crossings. Table 4.2-1 on the next page compares EJ&E and CN with their respective peer groups among the U.S. railroads for the five-year period of 2003 through 2007. CN is compared with statistics for the average of the seven Class 1 railroads[3] (which includes CN) and EJ&E is compared with the average statistics for the 30 Group 2 railroads[4] (which includes EJ&E) and the 117 switching and terminal companies that FRA identifies. SEA noted that the variance in accident rates among the Class 1 railroads was considerably less than among the Group 2 railroads. The Group 2 railroads include regional railroads, switching and terminal railroads, and commuter railroads.

1 FRA's jurisdiction includes CN rail lines within the U.S. The train crews, operating practices, and reporting procedures for CN lines in Canada differ from those within the United States. A Canadian agency, Transport Canada, has jurisdiction over CN lines operated in Canada. Although the agencies share some similar duties and responsibilities, they do not have jurisdiction or regulatory authorities over operations across borders. For the purpose of this EIS, SEA considered only accidents and incidents in the U.S.

2 Reportable accidents are those with equipment damage greater that $8,500. FRA defines a train accident as "A safety-related event involving on-track rail equipment (both standing and moving), causing monetary damage to the rail equipment and track above a prescribed amount. Reported on form FRA F 6180.54, RAIL EQUIPMENT ACCIDENT/INCIDENT REPORT" (FRA 2008b).

3 A Class 1 railroad is defined by the Surface Transportation Board as any railroad with an average annual operating revenue of $255.9 million or more. FRA uses STB's definition in reporting accident statistics.

4 Railroads are stratified by class by STB based on annual revenues, and by group by FRA based on annual labor hours; FRA Group 2 is all railroads except Class 1 with 400,000 annual employee hours or more. FRA Group 3 railroads have fewer than 400,000 annual employee hours. The FRA accident reporting requirements for accidents and incidents are the same for all railroads, regardless of size as determined by their revenue or employee hours.

Table 4.2-1. FRA Reportable Accident Rates per Million Train Miles						
	2003	2004	2005	2006	2007	Average
Class I	4.1	4.4	4.1	3.6	3.2	3.9
CN	4.9	4.1	3.0	4.6	4.4	4.2
Group II	5.4	5.8	5.0	4.3	4.2	4.9
Switching and Terminal Companies	18.4	19.0	15.2	15.5	14.2	16.5
EJ&E	13.5	24.4	22.2	10.5	20.5	18.2

Source: FRA (2008c), *Federal Railroad Administration, Office of Safety Analysis*, retrieved on June 13, 2008, http://safetydata.fra.dot.gov/OfficeofSafety/.

SEA considered the expected change in number of train accidents due to the Proposed Action on main tracks and in yards separately. Because of the substantial differences in the sizes of the railroad companies involved in this operations safety analysis, and because the number of train accidents in any one year is relatively small and the occurrence of a few events can skew the analysis, SEA's analysis took into account the average FRA accident and production data for the five-year period 2003 through 2007. That data is shown in Table 4.2-2 below.

- For train accidents, SEA used FRA accident and incident data for both CN and EJ&E.
- For switching and yard accidents, SEA examined the records of the four railroads involved in CN and EJ&E train and yard activity in the Chicago area: EJ&E, CN, Belt Railway of Chicago (BRC), and Indiana Harbor Belt (IHB).[5]

Table 4.2-2. Summary of Five-Year (2003 – 2007) Average FRA Accident and Production Data						
Railroad	Production Data		Accidents			
	Train Miles	Yard Switching Miles	Number of System Main Track Train Accidents	Average Rate per Million Train Miles	Number of System Yard Track Accidents	Average Rate per Million Yard Switching Miles
EJ&E	715,260	264,638	1.4	3.1	8.8	33.3
CN	21,784,986	4,720,403	26.2	1.5	55.4	11.7
BRC	505,834	459,967	2.2	4.0	17.6	38.3
IHB	1,450,568	952,598	2.6	1.8	15.2	16.0

Source: FRA (2008c), *Federal Railroad Administration, Office of Safety Analysis*, retrieved on June 13, 2008, http://safetydata.fra.dot.gov/OfficeofSafety/.

Methodology

SEA used the operating data that the Applicants provided in the Application and subsequent revisions to determine the parameters[6] of the No-Action Alternative and Proposed Action accident evaluations. SEA collected historically reported FRA accident data, including number of accidents and rates of occurrence per train mile, and used it to estimate the changes in number of accidents and general locality where they might be expected to occur.

[5] CN uses switching services of BRC and IHB in the Chicago metropolitan region to supplement their own switching activities. CN provided estimates of the change in the use of those services that would occur under the Proposed Action.

[6] Operational parameters include train miles and cars switched in yards.

Main Track Train Accidents

SEA evaluated the data provided by CN which enumerated the number of trains that would be operated on each EJ&E and CN rail line segment. To calculate train miles, SEA multiplied the number of trains in each case (No-Action and Proposed Action) by the length of the segment and summed the resulting products. SEA converted the daily number of trains to an annualized number by multiplying the daily traffic by 365. Table 4.2-3 shows the results of these calculations. In estimating a Proposed Action train accident rate (accidents per million train miles), SEA used the pre-transaction CN rate for the CN and EJ&E line segments. For the No-Action Alternative, SEA used EJ&E's historic accident rates for EJ&E rail line segments and CN's historic accident rates for CN rail line segments.[7]

The Applicants are working with FRA to finalize their Safety Integration Plan (SIP), addressing how the two railroads would integrate their operations under the Board's rules at 49 CFR Part 1106. The Applicants' current SIP, along with SEA's comments on the SIP, is included in Appendix D. SEA will recommend that, in any decision approving the Proposed Action, the Board require compliance with the final SIP. Therefore, because the SIP will provide for safe integration of EJ&E into the CN rail system, and because FRA is working with the Applicants on the SIP, SEA believes that by using CN's existing (pre-transaction) accident rate its analysis presents a reasonable estimate of the likelihood of train accidents from the Proposed Action.

Table 4.2-3. Analysis of Potential Change in Main Track Train Accidents on Study Area Line Segments

Railroad Line Segments	Description	No-Action	Proposed Action	Anticipated Change	Percent Change (%)
EJ&E -2 to 23	Annual Train Miles	373,778	1,167,891	794,112	212
CN 1 to 33	Annual Train Miles	465,412	103,978	(361,434)	(78)
	Annual Total	839,190	1,271,868	432,678	52
EJ&E -2 to 23	Train Accident Rate[a]	3.11	1.54	n/a	n/a
CN 1 to 33[b]	Train Accident Rate	1.54	1.54	n/a	n/a
EJ&E -2 to 23	Accidents	1.4	1.8	0.4	28
CN 1 to 33	Accidents	0.7	0.1	(0.6)	(77)
Total CN, EJ&E	Accidents	2.1	1.9	(0.2)	(8)

Sources: FRA (2008c), *Federal Railroad Administration, Office of Safety Analysis*, retrieved on June 13, 2008, http://safetydata.fra.dot.gov/OfficeofSafety/.
Applicants (2007a), STB Finance Docket No. 35087, Canadian National Railway Company and Grand Trunk Corporation–Control–EJ&E West Company, Railroad Control Application, October 30, 2007.

Notes:

[a] Train accident rate is a system-wide number and is expressed in number of accidents per million train miles. FRA calculates the rate by dividing the number of accidents by the number of train miles minus the number of yard switching miles.

[7] Under the Applicants' Safety Integration Plan, CN will own, operate and maintain the acquired EJ&E rail line as part of CN's United States system, therefore, the historic accident rates for CN are more representative of what would be expected to occur on the EJ&E rail line segments than the historic EJ&E rates. Different railroad companies often experience significantly different safety results during the same time period. Management practices, strategies, and philosophies about safety have historically had a larger influence on a particular railroad's results than geographic or rail traffic conditions.

[b] Reported by Applicants to SEA – only includes train miles actually involved in the Proposed Action.

This analysis shows that under the Proposed Action, SEA expects a minor increase of 0.4 train accidents per year in mainline accidents on the EJ&E line. To establish an appropriate perspective, SEA found that there were seven main track accidents on the EJ&E in the five-year period 2003 through 2007. SEA used historical FRA data to calculate the Five-Year Rolling Average[8] of the number of main track train accidents. The result of that computation is shown in Table 4.2-4 below, which shows that main track accidents are relatively rare events.

Table 4.2-4. Five-Year Rolling Average of Number of EJ&E Main Track Accidents

Year	Number of System Main Track Train Accidents	Five-Year Rolling Average
2003	1	1.00
2004	2	1.20
2005	2	1.20
2006	0	1.00
2007	2	1.40

Source: FRA (2008c), *Federal Railroad Administration, Office of Safety Analysis*, retrieved on June 13, 2008, http://safetydata.fra.dot.gov/OfficeofSafety/.

Conclusion. Under the Proposed Action, SEA found:

- There would be a potential reduction of more than 70 percent in accidents on all five affected CN rail line segments.
- Main track accidents on the EJ&E rail line would experience a potential increase of greater than 20 percent.
- Combined, there would be a small potential decrease in accidents.

SEA acknowledges that under the Proposed Action the increased potential for main track accidents on the EJ&E rail line would be adverse. However, at the same time there would be a corresponding decrease in the accident rate along the CN rail lines. The potential increased accident rate along the EJ&E line would be directly related to the increased number of train miles traveled rather than an indication of an unsafe rail system. SEA is recommending mitigation (see Chapter 6) that it believes could reduce the potential accident rate.

Yard Accidents

SEA analyzed the potential for yard accidents using the same FRA database and five-year time frame as was used for train accidents. SEA aggregated county information from the FRA database to analyze CN "local" operations which may differ significantly from the operations in the wider geographic area of CN operations. That data, along with information CN provided to SEA in response to an information request, is shown in Table 4.2-5 below. CN proposes to modify switching operations and make improvements to Kirk Yard required to increase the switching activity. Given the proposed changes in the operation of Kirk Yard and the changes in the operation of East Joliet Yard that CN identified in the Application, and the wide variation in number of accidents and number of cars switched among the EJ&E and CN Chicago-area yards, SEA determined that specific

[8] The rolling average for each year includes that year and the previous four years; the value for Year 2003 is the average of years 1999 through 2003

numerical projections of yard accidents after the Proposed Action are not meaningful; therefore, SEA conducted a qualitative assessment of the safety effects of yard activities. SEA notes that, based on information provided by CN, total switching activity is projected to increase a relatively small amount. SEA also noted that approximately one-half of the yard accidents at Kirk Yard in 2007 were on facilities that are not included within the Proposed Action and will become part of the Gary Railway.

Table 4.2-5. Average Daily Rail Cars Switched for and by CN and by EJ&E and Yard Accidents

Location and Railroad	Cars Switched		Average Daily Cars Switched	Five-Year Average Number of Annual Yard Accidents
	By	For		
EJ&E Kirk	EJ&E	EJ&E	685	5.6
EJ&E East Joliet	EJ&E	EJ&E	500	3.2[a]
EJ&E Total	EJ&E	EJ&E	1,185	8.8
BRC Clearing	BRC	CN	632[b]	17.6[c]
IHB Gibson	IHB	CN	112[b]	15.2[c]
CN Glenn	CN	CN	415	Note[d]
CN Hawthorne	CN	CN	282	Note[d]
CN Markham	CN	CN	418	Note[d]
Total By CN	CN	CN	1,115	14.0
Total For CN	CN BRC IHB	CN	1,859	32.8
Total CN and EJ&E	CN BRC IHB EJ&E	CN EJ&E	3,044	41.6

Sources: Applicants (2007a), STB Finance Docket No. 35087, Canadian National Railway Company and Grand Trunk Corporation–Control–EJ&E West Company, Railroad Control Application, October 30, 2007. Applicants (2008k), letter from Paul A. Cunningham, Counsel for Canadian National Railway Company and Grand Trunk Corporation, Harkins Cunningham LLP, to Victoria J. Rutson, Chief, Section of Environmental Analysis, Surface Transportation Board, in response to the Board's Data and Information Request #2, April 1, 2008.

Notes:

[a] FRA data is not specific by yard location but is specific by county. Kirk Yard is in Lake County, Indiana, and East Joliet Yard is in Will County, Illinois. SEA used that county-specific data as the surrogate for yard accidents.

[b] Average daily cars switched data for IHB and BRC is for cars switched by those companies for CN. Both IHB and BRC switch cars for other railroads.

[c] Accident data for BRC and IHB are system-wide data

[d] Included in CN total but not assigned to a specific location – FRA data is county-specific; the CN Glenn, Hawthorne, and Markham are all in Cook County, IL

In the Application, CN estimated that switching at EJ&E yard facilities at Kirk Yard in Gary, Indiana, and at East Joliet Yard in Joliet, Illinois, would increase, as shown in Table 4.2-6 below.

Table 4.2-6. Change in Daily Yard Switching Volumes (Rail Cars Switched)

Yard Location	Daily Switching Volume			
	No-Action Volume (cars)	Proposed Action Daily Volume (cars)	Change in Daily Volume (cars)	Change in Daily Volume (%)
Kirk	685	2,039	1,354	198
East Joliet	500	1,209	709	142
EJ&E Total	1,185	3,248	2,063	174
Clearing BRC	632	80	(552)	(87)
Gibson IHB	112	112	0	No Change
Glenn	415	122	(293)	(71)
Hawthorne	282	89	(193)	(68)
Markham	418	45	(373)	(89)
CN Total	1,116	448	(668)	(60)
CN & EJ&E Total	3,044	3,696	652	(21)

Sources: Applicants (2007a), STB Finance Docket No. 35087, Canadian National Railway Company and Grand Trunk Corporation–Control–EJ&E West Company, Railroad Control Application, October 30, 2007. Applicants (2008k), letter from Paul A. Cunningham, Counsel for Canadian National Railway Company and Grand Trunk Corporation, Harkins Cunningham LLP, to Victoria J. Rutson, Chief, Section of Environmental Analysis, Surface Transportation Board, in response to the Board's Data and Information Request #2, April 1, 2008.

Conclusion. Under the Proposed Action, SEA found:

- Yard accidents in the CN yards (Glenn Yard, Hawthorne Yard, and Markham Yard), all in Cook County, Illinois, would potentially diminish with the reduction in switching.
- The number of yard accidents in EJ&E's Kirk Yard in Indiana and East Joliet Yard in Illinois would potentially increase with the increases in rail car switching activity.
- The combined system yard accidents would potentially slightly increase with the projected increase in yard activity.

SEA acknowledges that under the Proposed Action the increased potential for yard accidents due to increases in car handling activity would be adverse. SEA is recommending mitigation (see Chapter 6) that it believes could reduce the potential yard accident rate.

4.2.1.2 Rail/Rail Crossings

Methodology

SEA identified the locations where CN or EJ&E trains cross other rail lines at-grade. At those rail/rail crossings that would experience changes in freight train traffic as a result of the Proposed Action, there would be a corresponding increase or decrease in potential risk or safety. Existing and proposed daily train counts for each respective crossing location were determined. These train counts were obtained from CN, Metra, and Amtrak as well as the FRA database. These counts indicate average trains per day (TPD) and include both freight and passenger trains. SEA developed and calculated a daily exposure index using the following formula:

Exposure = (Number of Daily Trains on Route A) x (Number of Daily Trains on Route B)

This exposure is a measurement of the total number of potential conflicts at each rail-rail crossing based on the number of trains that cross the location in a 24-hour period. Each type of train movement, whether freight or passenger, is accounted for equally in this calculation. The exposure is not intended to represent the actual potential of train accidents that are possible, because it is the product of all trains on route A multiplied by all trains on route B. It is, however, a relative number that can be used to provide a comparison. SEA calculated the change in the exposure for each of the EJ&E and CN rail-rail crossings. The Applicants provided train counts for existing EJ&E trains and for the total number of CN and EJ&E trains that would be included in the Proposed Action. The freight train counts for other railroads that cross the EJ&E were obtained from the current FRA crossing database by averaging the number of trains per day obtained from at-grade crossings on either side of the rail/rail intersection. Metra, Northern Indiana Commuter Transportation District (NICTD), and Amtrak train counts were obtained from current public timetables for these services. Where the FRA database was not specific on train traffic, SEA assumed a default number of 10 freight trains per day on the secondary route. The analysis for this section does not include rail/rail grade-separated crossings, nor does it include EJ&E and CN rail/rail at-grade crossings on rail line segments that would not experience changes in freight train traffic as a result of the Proposed Action.

No-Action Alternative

The Applicants provided train counts for existing EJ&E trains and CN trains. The freight train counts for other railroads that cross the EJ&E were obtained from the current FRA crossing database. Metra, NICTD, and Amtrak train counts were obtained from current public timetables for these services. The analysis for this section does not include rail/rail grade-separated crossings, nor does it include EJ&E and CN rail/rail at-grade crossings on rail line segments that would not experience changes in freight train traffic.

Table 4.2-7 and Table 4.2-8, below, list the rail/rail at-grade crossings on the EJ&E and CN rail line segments, respectively. The daily exposure was computed for each of the locations and then added to arrive at a cumulative daily exposure. The existing, or No-Action, cumulative total was calculated to be 12,606. This is the sum of the accumulated exposure of 3,727 along the EJ&E lines and 8,879 along the CN lines. Table 4.2-7 and Table 4.2-8 list the rail/rail at-grade crossings on the EJ&E and CN rail line segments, respectively that would experience changes in freight train traffic under the Proposed Action. The exposure accounts only for changes due to the changes in the number of trains at each location.

4.2.1.3 Proposed Action

The Applicants provided train counts for existing EJ&E trains and for the total number of CN and EJ&E trains that would be included in the Proposed Action. The freight train counts for other railroads that cross the EJ&E were obtained from the current FRA crossing database. Metra, NICTD, and Amtrak train counts were obtained from current public timetables for these services. The analysis for this section does not include rail/rail grade-separated crossings, nor does it include EJ&E and CN rail/rail at-grade crossings on rail line segments that would not experience changes in freight train traffic.

Table 4.2-9 and Table 4.2-10, below, list the rail/rail at-grade crossings on the EJ&E and CN rail line segments, respectively, that would experience changes in freight train traffic following implementation of the Applicants' operating plan. For the locations where more train traffic would be present at a rail/rail at-grade crossing under the Proposed Action, the daily exposure increased. For the locations where less train traffic would be present at a rail/rail at-grade crossing, the daily exposure decreased. The daily exposure only accounts for changes due to the changes in the number of trains at each location. Based on whether the train counts increase or decrease, the potential for a conflict would increase or decrease accordingly.

Table 4.2-7. Rail/Rail At-Grade Crossings for EJ&E Rail Line Segments							
Location	**EJ&E Subdivision & Milepost**	**Railroad That EJ&E Crosses**	**Current Daily EJ&E Freight Trains**	**Current Weekday Passenger Trains On EJ&E Route**	**Current Weekday Passenger Trains On Route Crossed**	**Current Daily Freight Trains On Route Crossed**	**Railroad That Controls Operations**
Upton	Western 67.1	UP	3.2	0	0	23	Automatic
Rondout	Western 65.5	CP/Metra/Amtrak	3.2	0	46 Metra 16 Amtrak	10	Metra
Leithton	Western 60.3	CN/Metra	5.3	0	22 Metra	19.1	CN
Barrington	Western 49.6	UP/Metra	5.3	0	56 Metra	7	EJ&E
Spaulding	Western 37.5	CP/ICE/Metra	5.5	0	50 Metra	31	Metra
West Chicago	Western 28.9	UP/Metra	10.7	0	52 Metra	51	EJ&E
Joliet-Rock Island Tower	Eastern 0.8	Metra/CSXT/ IAIS	6.4	0	47 Metra	10	Metra
Chicago Heights	Eastern 25.2	UP/CSXT	8.6	0	0	53	EJ&E
Dyer	Eastern 31.3	CSXT/Amtrak	10.2	0	2 Amtrak	2	Automatic
Hartsdale	Eastern 33.7	NS	10.2	0	0	2	Automatic
Griffith	Eastern 36.2	CN	10.2	0	0	22.1	Joint CN-EJ&E
Van Loon	Eastern 39.8	NS	7.6	0	0	23	EJ&E
Ivanhoe	Eastern 42.5	CSXT/IHB	9.8	0	0	2	Joint IHB-EJ&E

Source: FRA (2008c), *Federal Railroad Administration, Office of Safety Analysis*, retrieved on June 13, 2008, http://safetydata.fra.dot.gov/OfficeofSafety/.

Table 4.2-8. Rail/Rail At-Grade Crossings for CN Rail Line Segments							
Location	**CN Subdivision and Milepost**	**Railroad That CN Crosses**	**Current Daily CN Freight Trains**	**Current Weekday Passenger Trains on CN Route**	**Current Weekday Passenger Trains on Route Crossed**	**Current Daily Freight Trains on Route Crossed**	**Railroad That Controls Operations**
Tower B-12	Waukesha 15.5	CP/Metra	19.3	0	58 Metra	46.0	Metra
Deval	Waukesha 23.4	UP/Metra	19.1	22 Metra	65 Metra	10.0	Deval Tower
21st Street	Freeport 2.0	Amtrak	6.4	0	12 Amtrak	0.0	Amtrak
Ash Street	Freeport 5.6	CSXT/NS	2.5	0	0	10.0	CN
IN Crossing	Freeport 7.1	BNSF	2.5	0	11	11.0	Automatic
Belt Crossing	Freeport 8.3	BRC	4.5	0	10	10.0	BRC
16th Street	Chicago 1.5	Metra	4.6	6 Amtrak	68 Metra	0.0	16th Street Tower
Kensington	Chicago 14.5	NICTD	8.4	6 Amtrak	37 NICTD	0.0	Kensington Tower
Panhandle	Joliet 5.1	CSXT/NS	2.1	6 Metra 10 Amtrak	0	10.0	TBD-Rebuilt in 2007
Corwith	Joliet 6.6	BNSF	2.1	6 Metra 10 Amtrak	0	10.0	Corwith Tower
Lemoyne	Joliet 7.9	BRC	2.1	6 Metra 10 Amtrak	0	10.0	BRC
CP Canal/Argo	Joliet 13.1	CSXT/IHB	5.8	6 Metra 10 Amtrak	0	10.0	IHB
Hayford	Elsdon 11.8	BRC	3.4	0	0	90.0	BRC
Ashburn	Elsdon 12.8	NS/Metra	3.4	0		10	NS
Blue Junction/Blue Island	Elsdon 19.3	IHB	3.4	0	0	18.0	BI Junction Operator
Thornton Junction	Elsdon 25.2	UP	19.5	0	0	48.0	CN
Hays	Elsdon 34.0	NS	19.5	0	0	11.0	CN

Source: FRA (2008c), *Federal Railroad Administration, Office of Safety Analysis*, retrieved on June 13, 2008, http://safetydata.fra.dot.gov/OfficeofSafety/.

Table 4.2-9. Rail/Rail At-Grade Crossings on the EJ&E that Would Experience Changes in Freight Rail Traffic Under the Proposed Action.								
Location	EJ&E Subdivision & Milepost	Railroad That EJ&E Crosses	Current Daily EJ&E and CN Freight Trains	Current Weekday Passenger Trains on EJ&E Route	Proposed Daily CN+EJ&E Freight Trains	Current Weekday Passenger Trains on Route Crossed	Current Daily Freight Trains on Route Crossed	Railroad That Controls Operations
Upton	Western 67.1	UP	3.2	0	3.2	0	23	Automatic
Rondout	Western 65.5	CP/Metra/ Amtrak	3.2	0	3.2	46 Metra 16 Amtrak	10	Metra
Leithton	Western 60.3	CN/Metra	5.3	0	5.3	22 Metra	2	CN
Barrington	Western 49.6	UP/Metra	5.3	0	20.3	56 Metra	7	EJ&E
Spaulding	Western 37.5	CP/ICE/Metra	5.5	0	20.3	50 Metra	31	Metra
West Chicago	Western 28.9	UP/Metra	10.7	0	31.6	52 Metra	51	EJ&E
Joliet-Rock Island Tower	Eastern 0.8	Metra/CSXT/ IAIS	6.4	0	28.3	47 Metra	10	Metra
Chicago Heights	Eastern 25.2	UP/CSXT	8.6	0	31.6	0	53	EJ&E
Dyer	Eastern 31.3	CSXT/Amtrak	10.2	0	34.2	2 Amtrak	2	Automatic
Hartsdale	Eastern 33.7	NS	10.2	0	34.2	0	2	Automatic
Griffith	Eastern 36.2	CN	10.2	0	34.2	0	2.9	Joint CN-EJ&E
Van Loon	Eastern 39.8	NS	7.6	0	28.6	0	23	EJ&E
Ivanhoe	Eastern 42.5	CSXT/IHB	9.8	0	29.8	0	2	Joint IHB-EJ&E

Source: FRA (2008c), *Federal Railroad Administration, Office of Safety Analysis*, retrieved on June 13, 2008, http://safetydata.fra.dot.gov/OfficeofSafety/.

Table 4.2-10. Rail/Rail At-Grade Crossings on the CN That Experience Changes in Freight Rail Traffic Under the Proposed Action.								
Location	**CN Subdivision and Milepost**	**Railroad That CN Crosses**	**Current Daily CN Freight Trains**	**Current Weekday Passenger Trains on CN Route**	**Proposed Daily CN and EJ&E Freight Trains**	**Current Weekday Passenger Trains on Route Crossed**	**Current Daily Freight Trains on Route Crossed**	**Railroad That Controls Operations**
Tower B-12	Waukesha 15.5	CP/Metra	19.3	0	2	58 Metra	46	Metra
Deval	Waukesha 23.4	UP/Metra	19.1	22 Metra	2	65 Metra	10	Deval Tower
21st Street	Freeport 2.0	Amtrak	6.4	0	0	12 Amtrak	0	Amtrak
Ash Street	Freeport 5.6	CSXT, NS	2.5	0	0	0	10	CN
IN Crossing	Freeport 7.1	BNSF	2.5	0	0	11	11	Automatic
Belt Crossing	Freeport 8.3	BRC	4.5	0	0	10	10	BRC
16th Street	Chicago 1.5	Metra	4.6	6 Amtrak	0	68 Metra	0	16th Street Tower
Kensington	Chicago 14.5	NICTD	8.4	6 Amtrak	2	37 NICTD	0	Kensington Tower
Panhandle	Joliet 5.1	CSXT/NS	2.1	6 Metra 10 Amtrak	0	0	10	TBD-Rebuilt in 2007
Corwith	Joliet 6.6	BNSF	2.1	6 Metra 10 Amtrak	0	0	10	Corwith Tower
Lemoyne	Joliet 7.9	BRC	2.1	6 Metra 10 Amtrak	2	0	10	BRC
CP Canal/ Argo	Joliet 13.1	CSXT/IHB	5.8	6 Metra 10 Amtrak	2	0	10	IHB
Hayford	Elsdon 11.8	BRC	3.4	0	0	0	90	BRC
Ashburn	Elsdon 12.8	NS/Metra	3.4	0	0	0	10	NS
Blue Junction/ Blue Island	Elsdon 19.3	IHB	3.4	0	2	0	18	BI Junction Operator
Thornton Junction	Elsdon 25.2	UP	19.5	0	1	0	48	CN
Hays	Elsdon 34.0	NS	19.5	0	1	0	11	CN

Source: FRA (2008c), *Federal Railroad Administration, Office of Safety Analysis*, retrieved on June 13, 2008, http://safetydata.fra.dot.gov/OfficeofSafety/.

The cumulative daily exposure for the Proposed Action was calculated to be 14,393. This is the sum of the accumulated exposure of 10,906 along the EJ&E lines and 3,487 along the CN lines.

The occurrence of an accident between trains at a rail/rail at-grade crossing is extremely rare. The cumulative exposure as a result of the Proposed Action increases by 1,787, which represents an increase of 14 percent. The exposure along the EJ&E lines increases by 7,179, which represents an increase of 193 percent over the No-Action exposure, and the exposure along the CN lines decreases by 5,392, which represents a decrease of 61 percent over the No-Action scenario. This information is summarized in Table 4.2-11 below.

What is daily exposure?
The total number of potential conflicts at each rail-rail at-grade crossing based on the number of trains that cross the location in a 24-hour period.

What is a rail/rail at-grade crossing?
An intersection where two railroads join or cross at the same ground level, sometimes referred to as an interlocking or a railroad diamond.

Table 4.2-11. Summary Daily Exposure Index for Rail/Rail At-Grade Crossings Under the Proposed Action

Rail Line	No-Action	Proposed Action	Change	Percent Change (%)
EJ&E	3,727	10,906	7,179	193
CN	8,879	3,487	(5,392)	(61)
Total	12,606	14,393	1,787	14

Based on its analysis of rail/rail at-grade crossings on both the EJ&E and CN rail lines, SEA believes the overall increase in rail/rail at-grade exposure as a result of the Proposed Action would be minimal.

4.2.1.4 Constructions

There are no rail/rail crossings within the areas affected by the proposed constructions.

4.2.2 Vehicle Safety

4.2.2.1 Methodology

Accident Prediction

SEA compiled historical (most recent five-year period) accident data and highway/rail characteristics for public highway/rail at-grade crossings within the Study Area and calculated the risk of accidents at highway/rail at-grade crossings. The calculation relied on a method developed by FRA and described in *Summary of the DOT Rail-Highway Crossing Resource Allocation Procedure - Revised* (Farr 1987). The method calculates the risk of an accident at a highway/rail at-grade crossing based on the characteristics of the crossing and statistical information on historical accident experience. The historical data is based on FRA records of accidents, along with the inventory of relevant characteristics of the crossings. Appendix C contains details of the accident prediction formula as well as a crossing-by-crossing analysis.

The incidence of highway/rail accidents has decreased over the years as improvements are made to warning devices, railroads have improved their safety records, and roadway authorities have improved educational and enforcement programs. FRA makes periodic adjustments to the formula to reflect this. The most recent update to the prediction formula was made in October 2007, and SEA's analysis reflects these recent modifications.

The prediction formula requires inputting the number of day trains and the number of night trains. For this analysis, SEA assumed that the trains are 50 percent night trains and 50 percent day trains.

As most railroads, including CN and EJ&E, operate trains on an as-needed-basis instead of a normal timetable, this is consistent with how the railroads (the source of the train count information) normally report their information to FRA. The forecasted number of daily trains was provided by CN, and the average daily traffic (ADT) information for vehicular use was provided by roadway authorities and was adjusted to reflect 2015 projected ADT. This date was selected as representing a reasonable time frame for studying the potential effects of the Proposed Action. It should be noted that the prediction formula reflect the current (2008) formula with adjustments made to the number of daily trains and the vehicular ADT adjusted to 2015.

The accident prediction formula includes all types of motorized vehicles, including cars, trucks, buses, motorcycles, and any other motorized roadway users. The prediction formula does not include a breakdown of accident by type of vehicle.

High Accident Frequency Crossings

SEA further analyzed the predicted accidents under the Proposed Action at each crossing and identified specific crossings that had a predicted accident frequency of greater than 0.15. This is the equivalent of one accident every seven years, which indicates the crossing should be considered for upgraded warning devices or, if the warning devices already are sufficient, additional measures such as median barriers, active advance signing, removal of sight obstructions, nighttime illumination, geometric modifications to the roadway approaches, special signing, or other measures that can lower the frequency of accidents. This is not an indicator that shows the change due to the Proposed Action but rather shows crossings that are predicted to have a high accident frequency.

Changed Accident Frequency Crossings

SEA also analyzed the predicted accidents at each crossing and identified specific crossings that had a change in predicted accident frequency of 0.05 accidents per year, which is the equivalent of one accident every twenty years. Crossings that show a change greater than 0.05 accidents per year in accident prediction indicate where the Proposed Action warranted detailed evaluation.

Grade Separations

SEA analyzed the potential impacts of the Proposed Action and alternatives on grade crossings and considered whether the proposed acquisition, construction, and operation would significantly affect traffic safety. SEA's analysis included the potential need for grade separations at higher volume at-grade crossings.

To evaluate the potential need for grade separation at proposed grade crossings, SEA analyzed the proposed grade crossings based on Federal Highway Administration (FHWA) guidelines. These guidelines suggest that grade crossings should be considered for grade separation or otherwise eliminated across the railroad right-of-way whenever one or more of the following conditions exist:

- The highway is a part of the designated Interstate Highway System.
- The highway is otherwise designed to have fully controlled access.
- The posted highway speed equals or exceeds 70 mph.
- ADT exceeds 100,000 in urban areas or 50,000 in rural areas.
- Maximum authorized train speed exceeds 110 mph.
- Rail traffic averages 150 or more trains per day or 300 million-gross-tons per year.
- Passenger trains average 75 or more per day in urban areas or 30 or more per day in rural areas.

- Crossing exposure (the product of the number of trains per day and ADT) exceeds 1,000,000 in urban areas or 250,000 in rural areas.
- Passenger train crossing exposure (the product of the number of passenger trains per day and ADT) exceeds 800,000 in urban areas or 200,000 in rural areas.
- The expected accident frequency for active devices with gates, as calculated by the USDOT Accident Prediction Formula, including 5-year history, exceeds 0.5.
- Vehicle delay exceeds 40 vehicle hours per day.

SEA evaluated the proposed grade crossings in relation to these FHWA guidelines (see Section 4.2.2.3).

4.2.2.2 No-Action

Accident Prediction

SEA analyzed the predicted accidents for the line segments under the No-Action Alternative. The analysis shows an expected 4.471 accidents per year on the EJ&E line segments and 6.264 on the CN line segments. The overall expected number of accidents is 10.735 per year. Appendix C shows the accident prediction for all public at-grade crossings and the cumulative totals for both EJ&E and CN rail line segments. (See Figure 3.1-1 in Section 3.1, Rail Operations, for an illustration of rail line segments.)

High Accident Frequencies

Four crossings currently met or exceeded the predicted high rates of accidents or predicted collision rate greater than 0.15 (one accident per 7 years). They range from 0.17774 (one accident every 5.6 years) to 0.21486 (one accident every 4.5 years). These are shown in Table 4.2-12 on the next page.

Table 4.2-12. High Accident Frequency (>0.15 accidents per year) No-Action									
USDOT	**Segment**	**Street**	**MP**	**Subdivision**	**Municipality**	**County**	**State**	**Warning Devices**	**Predicted Accidents**
689657J	CN 22	Graceland Avenue (US 12)	22.67	Waukesha	Des Plaines	Cook	IL	CFLS with gates	0.21486
689654N	CN 22	Oakton Street	21.82	Waukesha	Des Plaines	Cook	IL	CFLS with gates	0.18277
260597M	EJ&E 8	Woodruff Road	0.82	Western	Joliet	Will	IL	FLS with gates	0.18007
283169F	CN 25	Sibley Boulevard/147th Street (IL 83)	22.00	Elsdon	Harvey	Cook	IL	CFLS with gates	0.17774

Note: CFLS = Cantilever Flashing-Light Signal; FLS = Flashing-Light Signal

Vehicle Exposure

SEA evaluated the public at-grade crossings for both the EJ&E and CN rail line segments. There were eleven factors (see list above in Section 4.2.2.1) evaluated. Exposure (number of trains per day times number of vehicles per day) was the only one of the eleven factors that applied under the No-Action Alternative. One public at-grade crossing, Broad Street in Griffith, Indiana, currently exceeds the 1,000,000 exposure factor suggested by the FHWA guidelines; this is shown in Table 4.2-13 below.

What is vehicle exposure? The total number of potential conflicts between highway traffic and train traffic at highway-rail grade crossings at each rail-rail crossing based on the number of trains that cross the location in a 24-hour period.

Table 4.2-13. Exposure (Trains x Vehicles) No-Action

USDOT	Segment	Street	MP	Subdivision	Municipality	County	State	Exposure Factor (No-Action)
283201W	CN 23	Broad Street	36.09	Eastern	Griffith	Lake	IN	1,049,836

Broad Street is a unique crossing in that it has seven tracks (two CN main tracks, two EJ&E main tracks, and three industrial switching tracks) that are in close proximity to each other and utilize the same set of warning devices. The double track EJ&E main crosses the CN double track main at an at-grade or diamond rail/rail crossing just east of the roadway crossing. This crossing's DOT identification number is listed within the FRA's inventory as a CN crossing, which includes the EJ&E tracks. This crossing is not listed on the FRA database as an EJ&E crossing.

4.2.2.3 Proposed Action

Accident Prediction

SEA analyzed the predicted accidents for the affected line segments assuming the Applicants' Proposed Action was fully implemented. The findings predict that the expected accidents or incidents at crossings would increase from 4.455 to 6.021 accidents per year on the EJ&E line segments and decrease from 6.233 to 3.719 on the CN line segments. The findings predict that the overall accidents would decrease from 10.688 to 9.740 accidents per year.

SEA concluded that the predicted annual accidents as a result of full implementation of the Applicants' operating plan would result in an increase of 1.566 highway/rail accidents per year on the EJ&E line, and a decrease of 2.514 accidents per year on the CN line, for a net decrease of 0.948 accidents per year. This represents a 9 percent decrease.

High Accident Frequencies

Four crossings would meet or exceed the predicted high rates of accidents following the implementation of Applicants' Operating Plan under the Proposed Action. These crossings, listed in Table 4.2-14 below, are predicted to have a collision rate greater than 0.15 (one accident per 7 years).

Table 4.2-14. High Accident Frequency (> 0.15 accidents per year) Proposed Action									
USDOT	Segment	Street	MP	Sub-division	Municipality	County	State	Warning Devices[a]	Proposed Rate
260597M	EJ&E 8	Woodruff Road	0.82	Western	Joliet	Will	IL	FLS with gates	0.21359
260661J	EJ&E 4	Lake Street	36.77	Eastern	Griffith	Lake	IN	X-Bucks	0.16751
260662R	EJ&E 4	Miller Street	36.89	Eastern	Griffith	Lake	IN	X-Bucks	0.16751
260585T	EJ&E 9	Renwick Road	7.60	Western	Near Plainfield	Will	IL	FLS[b]	0.16020

Notes:
[a] X-Bucks = Cross Bucks; FLS = Flashing-Light Signal
[b] Upgraded to FLS with gates in 2008.

Woodruff Road shows a high accident frequency either with or without the Proposed Action. The crossings at Lake Street and Miller Street have passive warning devices. Analysis shows that installation of automatic warning devices at Lake and Miller streets would lower the predicted accident frequency at these locations below 0.15 accidents per year under the Proposed Action. Renwick Road is listed in the FRA database as having active warning devices—flashing lights but not gates. SEA determined that gates were installed in 2008. Because this highway/rail at-grade crossing has had a recent warning device upgrade, SEA is not proposing any additional mitigation for this crossing.

Six crossings on CN rail line segments would have a substantial decrease in predicted collisions (greater than 0.05, or one accident per 20 years). These are shown in Table 4.2-15 below.

Table 4.2-15. Predicted Accidents, Change of +/- 0.0500 or Greater Accidents Per Year								
USDOT	Segment	Street	MP	Sub-division	Municipality	County	State	Change
689657J	CN-22	Graceland Avenue (US 12)	22.67	Waukesha	Des Plaines	Cook	IL	-0.07735
283169F	CN-25	Sibley Boulevard/ 147th Street (IL 83)	22	Elsdon	Harvey	Cook	IL	-0.07560
689654N	CN-22	Oakton Street	21.82	Waukesha	Des Plaines	Cook	IL	-0.06858
283177X	CN-24	Halsted Street (IL 1)	23.52	Elsdon	Harvey	Cook	IL	-0.05591
283158T	CN-26	127th Street/Burr Oak Avenue	18.58	Elsdon	Blue Island	Cook	IL	-0.05309
283153J	CN-26	103rd Street	15.53	Elsdon	Chicago	Cook	IL	-0.05132

As the table shows, there are no highway/rail at-grade crossings on the EJ&E rail line that would experience a substantial increase in accident frequency. All of the reductions occur along CN line segments.

Vehicle Exposures

SEA evaluated the public at-grade crossings for both the EJ&E and CN line segments, using the eleven factors described above. SEA's analysis showed that exposure (number of trains per day times number of vehicles per day) was the only one of the eleven factors that applied to either existing conditions or Proposed Action conditions. There are four locations, shown in Table 4.2-16, below,

that exceed the 1,000,000 exposure factor suggested by the DOT guidelines under the Proposed Action.

Table 4.2-16. Vehicle Exposure (Trains x Vehicles) No-Action and Proposed Action

Street	MP	Subdivision	Municipality	County	State	Exposure Factor	
						No-Action	Proposed Action
Ogden Avenue (US 34)	19.05	Western	near Aurora	DuPage	IL	719,500	1,810,206
Lincoln Highway	30.69	Eastern	Lynwood	Cook	IL	404,491	1,356,235
Broad Street	36.09	Eastern	Griffith	Lake	IN	1,049,836	1,113,462
Montgomery Road	18.18	Western	near Aurora	DuPage	IL	425,957	1,071,675

Broad Street is a unique crossing in that it currently has seven tracks (two CN main tracks, two EJ&E main tracks, and three industrial switching tracks) that are in close proximity to each other and utilize the same set of warning devices. The double track EJ&E main crosses the CN double track main at a diamond rail/rail crossing just east of the roadway crossing. The existing exposure at this location (year 2015) exceeds one million and the proposed exposure would increase marginally under the Proposed Action. SEA is considering mitigation for these locations (see Chapter 6).

4.2.2.4 Conclusions

In this evaluation, SEA reached a number of conclusions on the risks of vehicle/train accidents.

Current Rates

Under the No-Action alternative four at-grade crossings (three on the CN rail line and one on the EJ&E rail line) have a predicted high accident frequency rate. (A high accident frequency rate is 1 in every 7 years.) Under the Proposed Action, the three CN crossings would no longer have a predicted high accident frequency rate. However, SEA predicts that three additional highway/rail at-grade crossings on the EJ&E rail line would have high accident frequency rates, for a total of four high accident highway/rail at-grade crossings. SEA is recommending mitigation relating to warning devices (see Chapter 6) that it believes could reduce potential accident rates.

Changed Rates

Under the Proposed Action, SEA concluded that no highway/rail at-grade crossing would experience a change of accident rate greater than 0.05 accidents per year. Six highway/rail at-grade crossings on CN rail line segments would experience a decreased accident rate of at least 0.05 accidents per year (one less accident every 20 years). In past transactions, SEA has considered an increase of 0.05 accidents per year to be a significant increase.

Vehicle Exposure

Under the No-Action alternative, SEA concluded that one crossing exceeds the 1 million exposure factor; Broad Street in Griffith, Indiana (see discussion above). Under the Proposed Action SEA concluded that Ogden Avenue and Montgomery Road, both near Aurora, Illinois, and Lincoln Highway in Lynwood, Illinois would exceed the 1 million exposure factor. Broad Street's exposure factor would minimally increase. SEA concluded that these four highway/rail at-grade crossings are eligible for consideration for grade separation under FHWA guidelines.

4.2.3 Passenger Rail Safety

SEA evaluated the potential effects of the Proposed Action on commuter and intercity rail passenger service. Under the Proposed Action, the number of freight trains operating on the CN rail lines inside the arc would decrease, and the number of trains operating on the EJ&E rail lines would increase. Currently, there are no commuter rail services operating on the EJ&E rail lines; the Proposed Action would have no effect on passenger safety.

Freight trains operate on some of the CN tracks along with passenger and commuter trains. Table 4.2-17, below, compares the number of freight trains operating on tracks with Amtrak or Metra services under the No-Action and Proposed Action alternatives. This table shows that the number of freight trains is substantially reduced. Therefore, passenger rail safety would not be diminished and possibly could improve a result of the Proposed Action. This is due to the reduced number of freight trains sharing track space with passenger trains.

Table 4.2-17. Shared Lines for Passenger/Commuter Service and Freight

Passenger/Commuter Service	Passenger Trains per day	Operating on CN Subdivision:	Number of Freight Trains	
			No-Action	Proposed Action
Amtrak	6	St. Charles Air Line	4.6	0
Amtrak	10	Joliet and Freeport	2 to 5	0 to 2
Amtrak	8	Elsdon	20	1
Metra	6	Joliet and Freeport	2 to 5	0 to 2
Metra	22	Waukesha	5 to19	0 to 2
Amtrak	6	Chicago	6 to 21	2 to 10

Section 4.1 provides additional discussion of passenger rail operations, particularly as it pertains to future commuter rail operations on or within the EJ&E rail corridor.

Conclusions. SEA concluded that because the Proposed Action would reduce the number of freight trains operating on the CN rail lines within the EJ&E arc, it would therefore have no effect on passenger rail safety. SEA concluded that under the No-Action alternative there would be no change in the likelihood of passenger rail accidents.

4.2.4 Quiet Zones

SEA evaluated the No-Action Alternative and the effects of the Proposed Action in terms of locomotive horn quiet zones. There are nine quiet zones included in the analysis. Seven were established, or in the case of Warrenville, in the process of being established, when the Applicants filed for acquisition of EJ&E. Each is listed below:

- Vernon Hills, Illinois; established on EJ&E (see Figure 4.2-1, below)
- Mundelein, Illinois; established on CN's Waukesha subdivision (see Figure 4.2-1, below)
- Lake Zurich, Illinois; established on EJ&E (see Figure 4.2-2, below)
- Barrington, Illinois; established on EJ&E (see Figure 4.2-2, below)
- Plainfield, Illinois; established on EJ&E (see Figure 4.2-4, below)
- Warrenville, Illinois; Notice of Intent filed on EJ&E (see Figure 4.2-4, below)
- Munster, Indiana; established on CN's Elsdon subdivision (see Figure 4.2-5, below)

FRA's final rule for establishing quiet zones recognized that many communities within the greater Chicago area had preexisting ordinances prohibiting the routine sounding of locomotive horns at at-grade crossings (FRA 2008d). The crossings covered by those ordinances were exempt from FRA's rule. The Illinois Commerce Commission (ICC) regulates the horn, or whistle-free, exempt zones not covered by the FRA's rule. Unlike the FRA, the ICC does not have a risk-based evaluation method and, therefore, evaluates these quiet zones on a case-by-case basis. These "quiet zones" are noted, but not included within the analysis. These include:

- Prospect Heights to Des Plaines, established on CN's Waukesha subdivision (see Figure 4.2-3, below)
- Franklin Park to River Forest, established on CN's Waukesha subdivision (see Figure 4.2-3, below)

4.2.4.1 Methodology

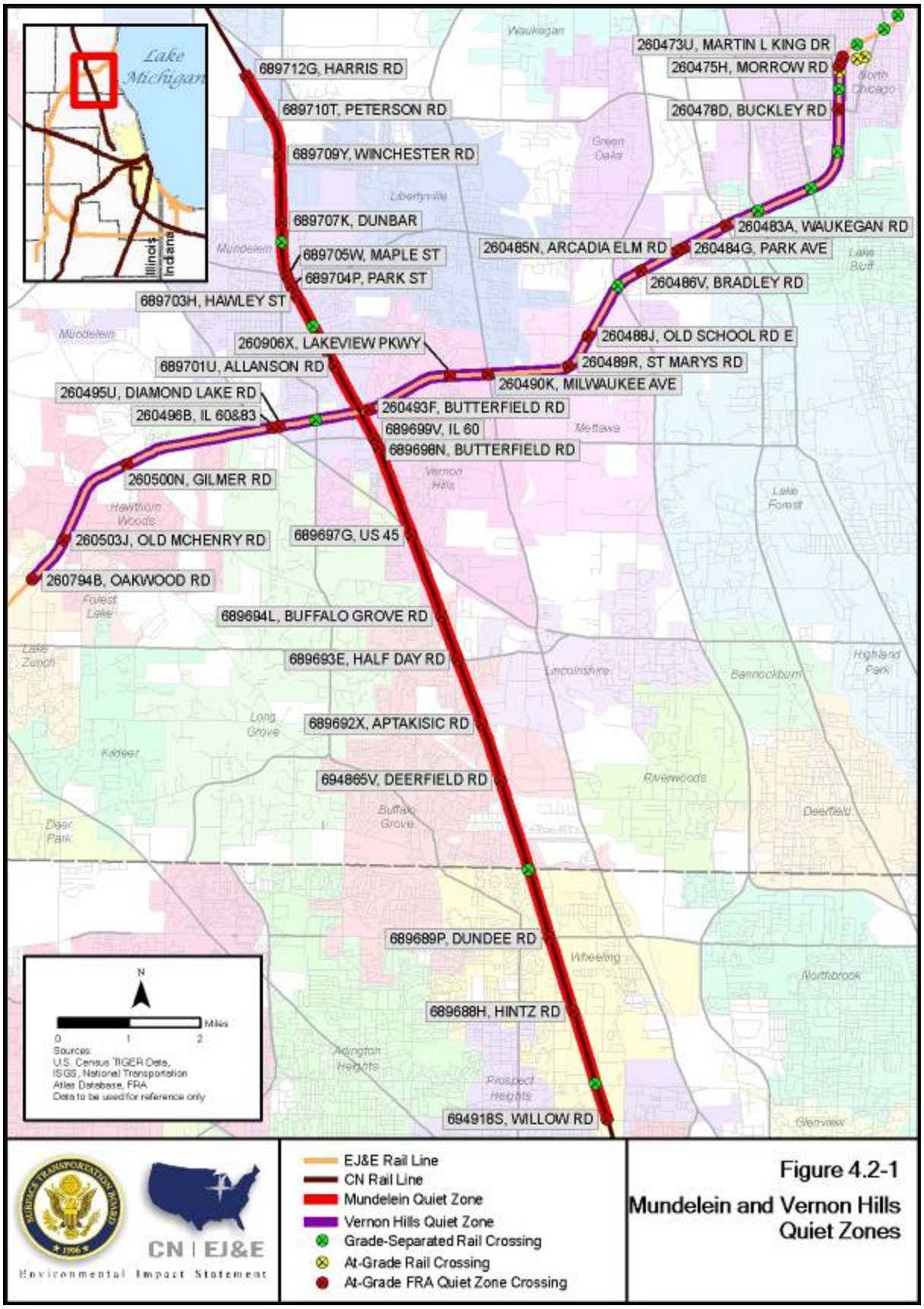
Quiet Zones are evaluated using FRA's quiet zone calculator on the basis of Quiet Zone Risk Index (QZRI). This measure averages the risk index for the crossings within the zone. In addition to a number of minimum requirements, a zone must satisfy the requirement that the QZRI fall below one of two thresholds: the National Safety Risk Threshold (NSRT), or the Risk Index with Horns (RIWH).

The NSRT, which is updated yearly by FRA, represents the average risk at the average rail/highway crossing nationwide. If the QZRI falls below the NSRT, the risk is lower than the average risk at a crossing. The 2008 update to the NSRT occurred on May 28, 2008, and its value at the time of this writing is 17,610.00. Analysis in this chapter will reference this updated value, even though it is expected to continue to fluctuate on a yearly basis up to and through the design year (2015).

The second threshold a QZRI may fall below to in order to establish a quiet zone is the RIWH. This is a calculated risk of the crossings within the zone if horns were routinely sounded. SEA documented the conditions of the existing quiet zones to establish a baseline to measure against the impact of the proposed acquisition. For the purposes of this analysis, projections focus on the year 2015. Vehicular ADT volumes corresponding to this year have been forecast and incorporated into the analysis.

In the Application, CN identified line segments that would experience net changes in train volume. These locations have been identified and compared to the quiet zone locations described above to determine where and to what degree the change in train volume would affect the zones' qualification to be continued as quiet zones under FRA regulations.

In order to isolate the impacts of this proposed acquisition, only two factors are modified from the existing conditions to calculate the QZRI for the design year (2015) scenarios. Two 2015 scenarios have been evaluated. The first is one that represents no acquisition of the EJ&E. The second estimates impacts assuming the CN is allowed to acquire the EJ&E. The two factors to be modified are vehicular ADT and proposed total trains per day (including proposed total trains per day during daylight hours.)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Illinois
Indiana
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689704P, PARK ST
689703H, HAWLEY ST
260906X, LAKEVIEW PKWY
689701U, ALLANSON RD
260495U, DIAMOND LAKE RD
260496B, IL 60&83
260500N, GILMER RD
260503J, OLD MCHENRY RD
260794B, OAKWOOD RD
689694L, BUFFALO GROVE RD
689693E, HALF DAY RD
689692X, APTAKISIC RD
694865V, DEERFIELD RD
689689P, DUNDEE RD
689688H, HINTZ RD
694918S, WILLOW RD
260473U, MARTIN L KING DR
260475H, MORROW RD
260478D, BUCKLEY RD
260483A, WAUKEGAN RD
260484G, PARK AVE
260485N, ARCADIA ELM RD
260486V, BRADLEY RD
260488J, OLD SCHOOL RD E
260489R, ST MARYS RD
260490K, MILWAUKEE AVE
260493F, BUTTERFIELD RD
689699V, IL 60
689698N, BUTTERFIELD RD
Waukegan
North Chicago
Green Oaks
Libertyville
Mundelein
Lake Bluff
Vernon Hills
Lake Forest
Hawthorn Woods
Forest Lake
Lake Zurich
Long Grove
Kildeer
Buffalo Grove
Deer Park
Riverwoods
Deerfield
Lincolnshire
Bannockburn
Highland Park
Wheeling
Northbrook
Arlington Heights
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Glenview
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ISGS, National Transportation
Atlas Database, FRA
Data to be used for reference only
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Mundelein Quiet Zone
Vernon Hills Quiet Zone
Grade-Separated Rail Crossing
At-Grade Rail Crossing
At-Grade FRA Quiet Zone Crossing
Figure 4.2-1
Mundelein and Vernon Hills
Quiet Zones

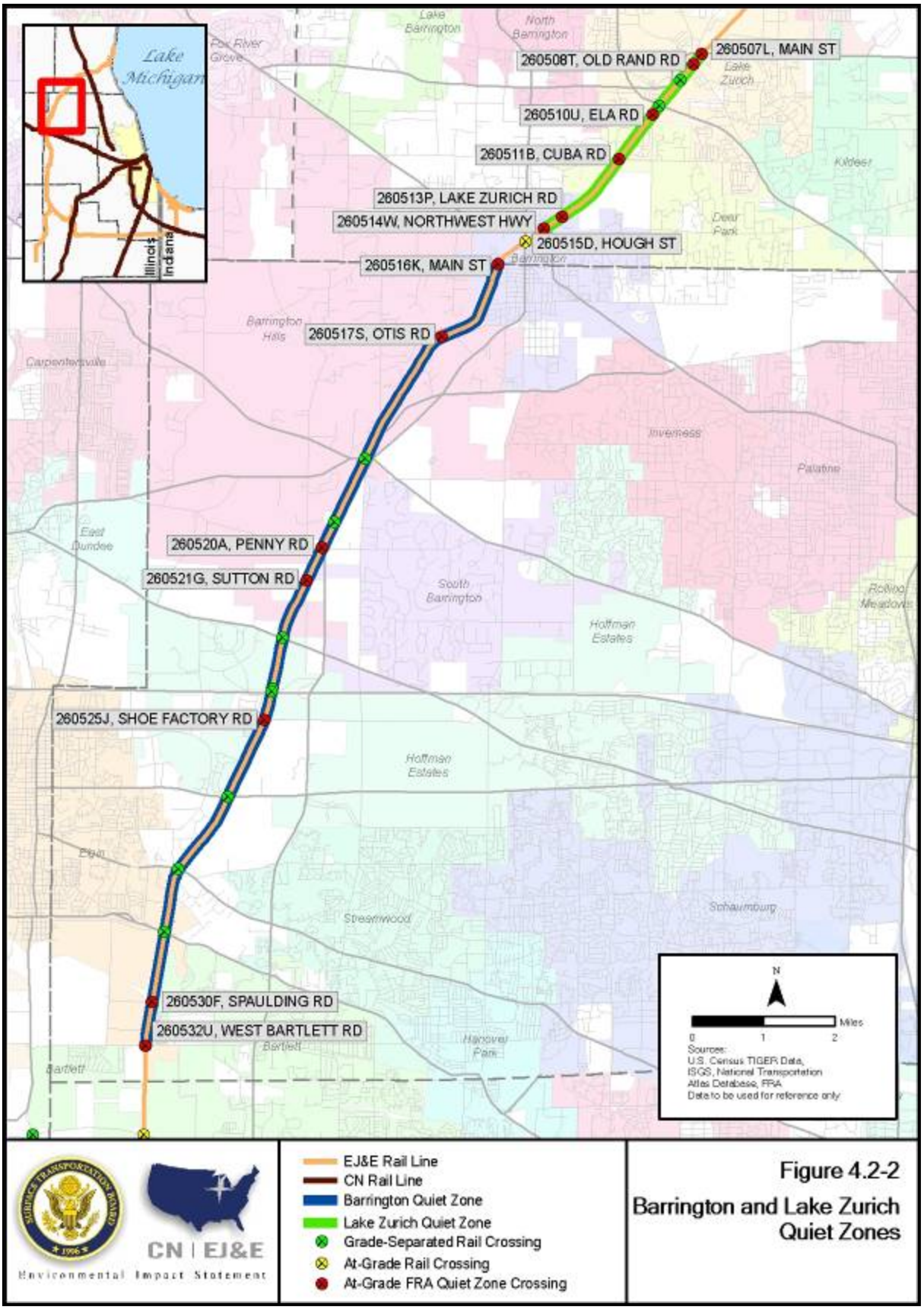
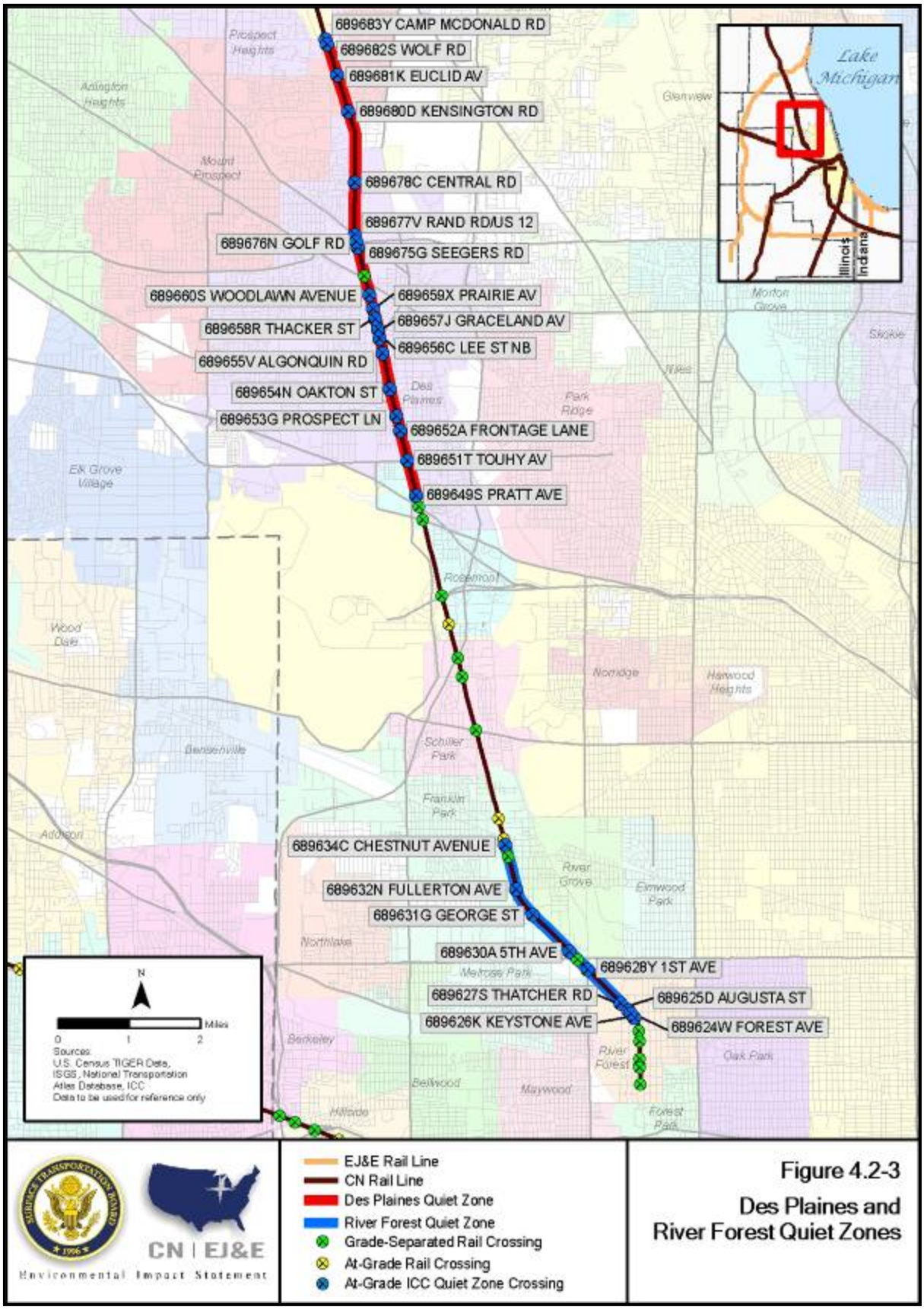


Figure 4.2-2
Barrington and Lake Zurich Quiet Zones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689677V RAND RD/US 12
689676N GOLF RD
689675G SEEGERS RD
689660S WOODLAWN AVENUE
689659X PRAIRIE AV
689658R THACHER ST
689657J GRACELAND AV
689656C LEE ST NB
689655V ALGONQUIN RD
689654N OAKTON ST
689653G PROSPECT LN
689652A FRONTAGE LANE
689651T TOUHY AV
689649S PRATT AVE
689634C CHESTNUT AVENUE
689632N FULLERTON AVE
689631G GEORGE ST
689630A 5TH AVE
689628Y 1ST AVE
689627S THATCHER RD
689625D AUGUSTA ST
689626K KEYSTONE AVE
689624W FOREST AVE
Lake Michigan
Illinois
Indiana
Prospect Heights
Arlington Heights
Mount Prospect
Glenview
Morton Grove
Skokie
Niles
Des Plaines
Park Ridge
Elk Grove Village
Rosemont
Wood Dale
Norridge
Harwood Heights
Bensenville
Schiller Park
Franklin Park
Addison
River Grove
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Berkeley
River Forest
Oak Park
Bellwood
Maywood
Hillside
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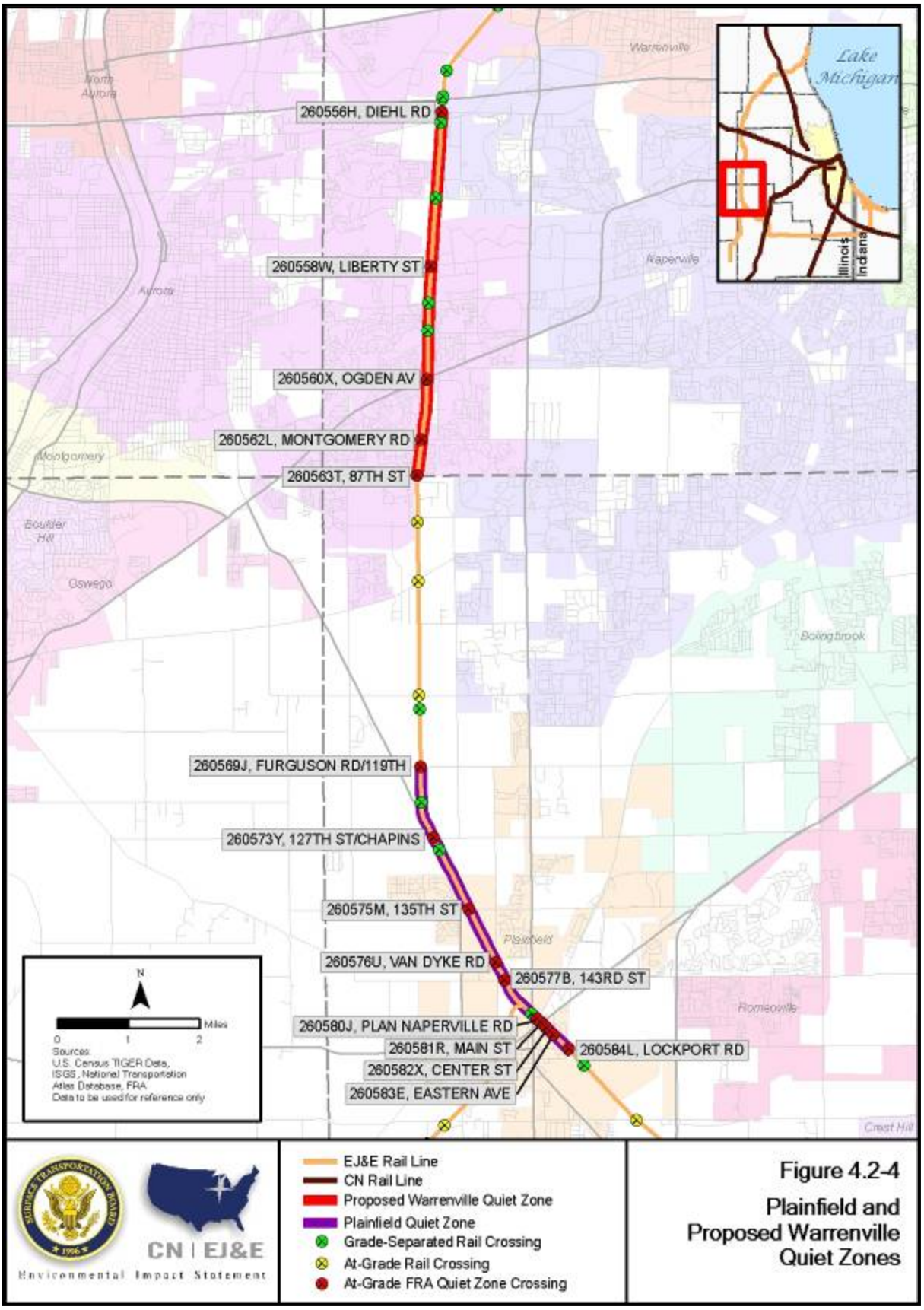
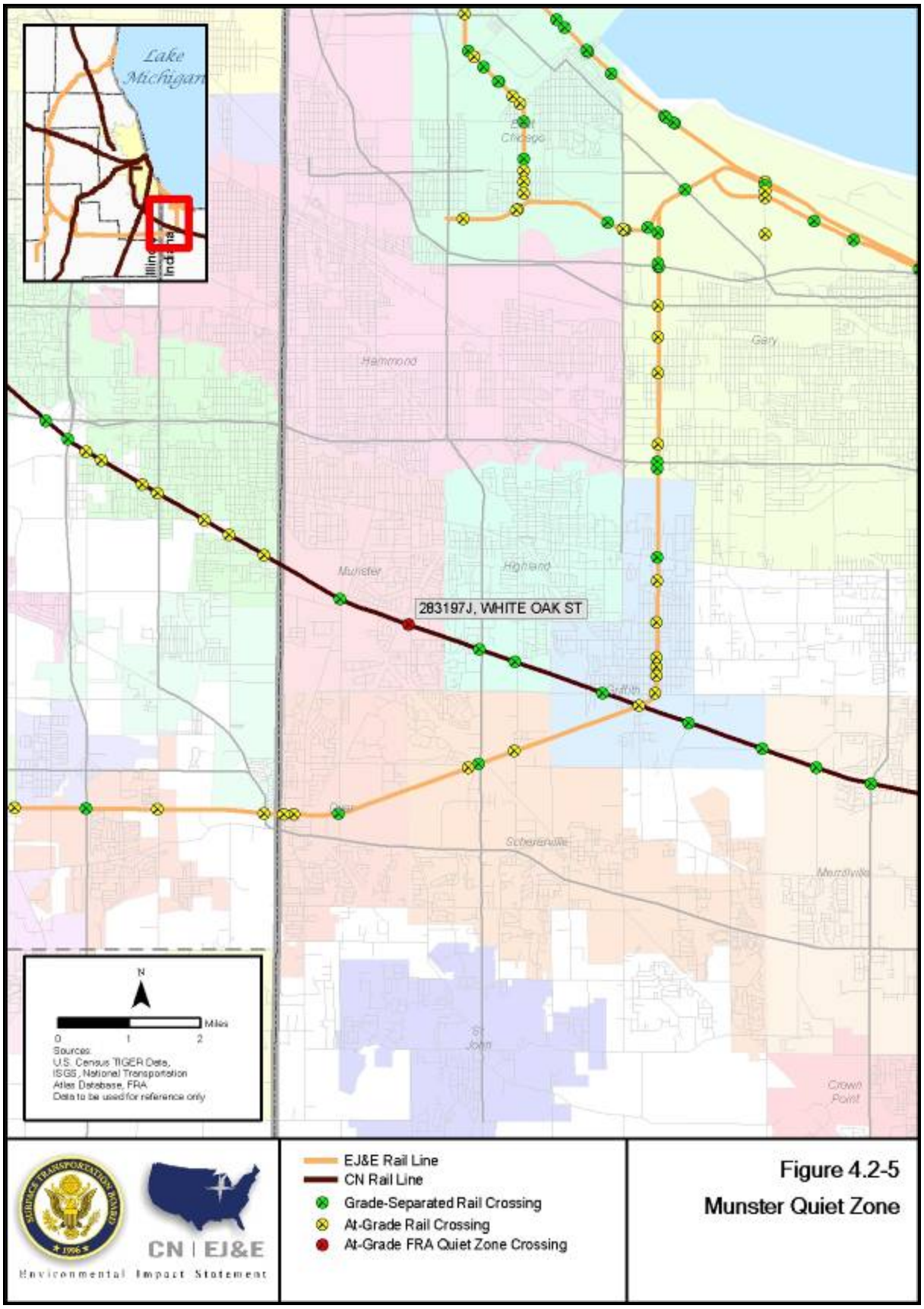
Sources:
U.S. Census TIGER Data,
ISGS, National Transportation
Atlas Database, ICC
Data to be used for reference only
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Des Plaines Quiet Zone
River Forest Quiet Zone
Grade-Separated Rail Crossing
At-Grade Rail Crossing
At-Grade ICC Quiet Zone Crossing
Figure 4.2-3
Des Plaines and
River Forest Quiet Zones


Lake Michigan
Illinois
Indiana
Warrenville
North Aurora
Naperville
Aurora
Montgomery
Boulder Hill
Oswego
Bolingbrook
Plainfield
Romeoville
Crest Hill
260556H, DIEHL RD
260558W, LIBERTY ST
260560X, OGDEN AV
260562L, MONTGOMERY RD
260563T, 87TH ST
260569J, FURGUSON RD/119TH
260573Y, 127TH ST/CHAPINS
260575M, 135TH ST
260576U, VAN DYKE RD
260577B, 143RD ST
260580J, PLAN NAPERVILLE RD
260581R, MAIN ST
260582X, CENTER ST
260583E, EASTERN AVE
260584L, LOCKPORT RD
N
Miles
0 1 2
Sources:
U.S. Census TIGER Data,
ISGS, National Transportation
Atlas Database, FRA
Data to be used for reference only
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Proposed Warrenville Quiet Zone
Plainfield Quiet Zone
Grade-Separated Rail Crossing
At-Grade Rail Crossing
At-Grade FRA Quiet Zone Crossing
Figure 4.2-4
Plainfield and Proposed Warrenville Quiet Zones


Lake Michigan
Hammond
Gary
East Chicago
Munster
Highland
283197J, WHITE OAK ST
Griffith
Schererville
Merrillville
St. John
Crown Point
N
Miles
0 1 2
Sources:
U.S. Census TIGER Data,
ISGS, National Transportation
Atlas Database, FRA
Data to be used for reference only
CN | EJ&E
Environmental Impact Statement
EJ&E Rail Line
CN Rail Line
Grade-Separated Rail Crossing
At-Grade Rail Crossing
At-Grade FRA Quiet Zone Crossing
Figure 4.2-5
Munster Quiet Zone

4.2.4.2 No-Action

Table 4.2-18 below represents the estimated QZRI in each of seven studied quiet zones under the No-Action Alternative.

Table 4.2-18. 2015 FRA Quiet Zone Status Under No-Action

Quiet Zone	Segments Involved	Begin Milepost	End Milepost	NSRT	RIWH	QZRI
Vernon Hills	EJ&E 14 to EJ&E 16	50.10	69.75	17,610	39,404.35	31,665.54
Lake Zurich	EJ&E 14	50.10	53.44	17,610	36,048.49	26,733.31
Barrington	EJ&E 13 to EJ&E 14	36.95	49.30	17,610	10,431.99	17,400.56
Warrenville (proposed)	EJ&E 10 to EJ&E 11	17.17	22.80	17,610	147,325.83	78,352.09
Plainfield	EJ&E 9 to EJ&E 10	9.00	13.59	17,610	68,443.72	39,323.78
Munster, IN	CN -29	32.25	32.75	17,610	N/A[a]	N/A[a]
Mundelein	CN 22 to CN 29	27.37	43.03	17,610	56,963.37	54,070.69

Notes:
[a] Quiet zones in which every crossing has a supplemental safety measure are not established or evaluated on the basis of risk.

The analysis shows that each of the seven existing quiet zones would maintain their quiet zone status under the No-Action scenario because each zone's QZRI would continue to fall below the type of threshold that they were established under. In all cases except for Barrington, this threshold was the RIWH. Barrington was established due to the QZRI being lower than the NSRT.

4.2.4.3 Proposed Action

Table 4.2-19 below represents the estimated impact that the Proposed Action would have on the existing quiet zones.

Table 4.2-19. 2015 FRA Quiet Zone Status Under the Proposed Action

Quiet Zone	Segments Involved	Begin Milepost	End Milepost	NSRT	RIWH	QZRI
Vernon Hills	EJ&E 14 to EJ&E 16	50.10	69.75	17,610	43,188.59	37,977.64
Lake Zurich	EJ&E 14	50.10	53.44	17,610	59,473.86	43,486.16
Barrington	EJ&E 13 to EJ&E 14	36.95	49.30	17,610	17,810.17	29,707.36
Warrenville (proposed)	EJ&E 10 to EJ&E 11	17.17	22.80	17,610	205,444.72	107,315.23
Plainfield	EJ&E 9 to EJ&E 10	9.00	13.59	17,610	95,048.43	55,048.02
Munster, IN	CN 29	32.25	32.75	17,610	N/A[a]	N/A[a]
Mundelein	CN 22 to CN 29	27.37	43.03	17,610	40,516.04	25,739.71

Notes:
[a] Quiet zones in which every crossing has a supplemental safety measure are not established or evaluated on the basis of risk.

The analysis shows that six of the seven quiet zones are expected to remain in compliance. The quiet zone in Barrington is anticipated to fall out of compliance with FRA regulations for Quiet Zones, if the train volumes reach the level proposed by CN.

It was observed that both the RIWH and the QZRI increase as ADT and the number of trains per day increase.

Conclusion. SEA evaluated the effect of the No-Action Alternative and the Proposed Action on the 7 existing Quiet Zones located on the EJ&E rail line. Under the No-Action alternative all 7 Quiet Zones would be unaffected. Under the Proposed Action, 6 of the 7 Quiet Zones would continue to meet FRA requirements. The Barrington Quiet Zone, however, would no longer qualify as a Quiet Zone without changes or mitigation.

4.2.5 Hazardous Materials Transportation Safety

4.2.5.1 Methodology

An important part of SEA's analysis in this EIS involved a study of the hazardous materials transportation safety. This section presents a summary of the methods used by SEA to determine the increased potential of a release of hazardous materials during rail transportation that would result from the Proposed Action. In order to assess the overall potential risk associated with the change in the transportation of hazardous materials (see Figure 4.2-6. Anticipated Changes to Hazardous Material Transportation, below) , SEA considered the extent of the existing risk in the Study Area, as well as the extent of the potential changes in risk implementation of the Proposed Action might cause. SEA also considered the existence of strong emergency response capabilities in the project area. Appendix C presents a detailed description of the method and the equations used by SEA, the underlying assumptions, and information about the hazardous materials that would likely be transported by the Applicants.

What is a release?
A release is an unwanted discharge of hazardous materials into the environment.

Most hazardous materials are transported in tank cars. USDOT has special rules for tank cars and the shipment of hazardous materials by rail. One of the main safety concerns in transporting hazardous materials on rail lines is the possibility of a spill, or a "release." Tank car releases of hazardous materials can occur because of accidents, human error, packaging failure, and other problems. Accidents that can result in a release include derailments, collisions, and fires. Human errors, such as not closing a valve tightly or overfilling a tank, can cause a release. Packaging failures include situations where inner liners are compromised or containers leak. Other sources of releases include vandalism and improperly vented tank cars.

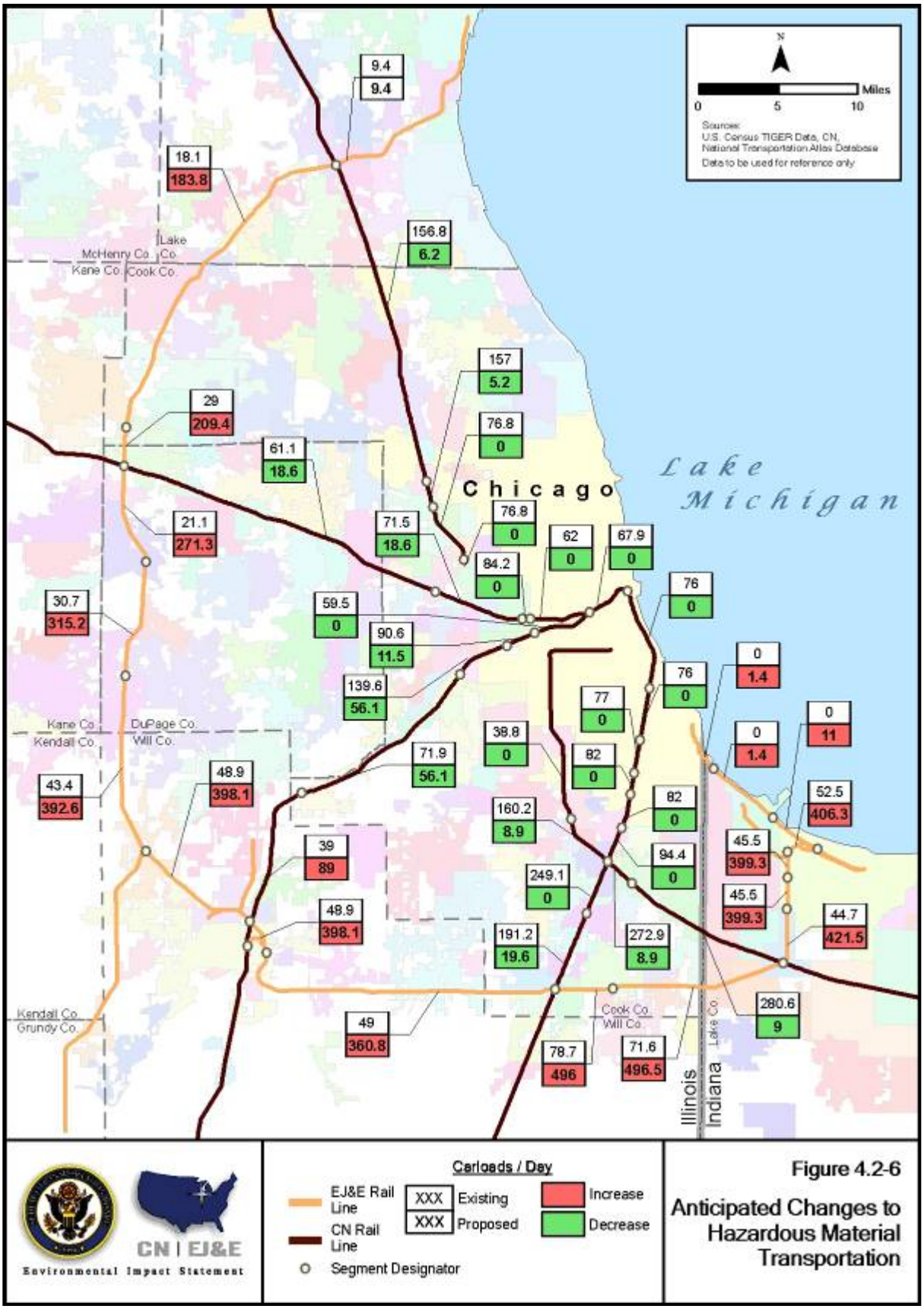
USDOT regulations require the railroads to submit a report each time a release occurs.[9] SEA used this USDOT information to develop its analysis of the effects the Proposed Action may have on the transport of potentially hazardous materials.

SEA calculated the likelihood of a release of hazardous materials as a result of a potential derailment or collision, or other accidents that may lead to derailments, along a rail line. SEA used various inputs, including characteristics of the rail lines and trains, as well as safety statistics for different types of accidents, such as derailments, collisions, and other accidents.

SEA evaluated the frequency of release based on information provided by the Applicants,[10] safety statistics compiled by FRA, and historical data on hazardous materials releases resulting from derailments, collisions, and other accidents.

[9] These reports to USDOT include specifics of when and where the release occurred, and a description of the type and quantity of chemicals involved.

[10] Subsequently verified by SEA.


N
Miles
0
5
10
Sources:
U.S. Census TIGER Data, CN,
National Transportation Atlas Database
Data to be used for reference only
Lake Michigan
Chicago
McHenry Co.
Lake Co.
Kane Co.
Cook Co.
DuPage Co.
Will Co.
Kendall Co.
Grundy Co.
Illinois
Indiana
9.4
9.4
18.1
183.8
156.8
6.2
157
5.2
29
209.4
76.8
0
61.1
18.6
21.1
271.3
71.5
18.6
76.8
0
62
0
67.9
0
84.2
0
76
0
30.7
315.2
59.5
0
90.6
11.5
139.6
56.1
76
0
0
1.4
77
0
0
11
38.8
0
0
1.4
71.9
56.1
82
0
43.4
392.6
48.9
398.1
160.2
8.9
82
0
52.5
406.3
45.5
399.3
39
89
94.4
0
249.1
0
45.5
399.3
48.9
398.1
44.7
421.5
191.2
19.6
272.9
8.9
280.6
9
49
360.8
78.7
496
71.6
496.5
CN | EJ&E
Environmental Impact Statement
Carloads / Day
EJ&E Rail Line
CN Rail Line
XXX Existing
XXX Proposed
Segment Designator
Increase
Decrease
Figure 4.2-6
Anticipated Changes to Hazardous Material Transportation

4.2.5.2 No-Action Alternative

Under the No-Action Alternative, shipments of hazardous materials would continue as they have in the past on both the CN and EJ&E rail lines as shown in Table 4.2-20, below. Almost all of the line segments on the CN[11] and EJ&E[12] lines currently carry more than 10,000 carloads of hazardous materials annually and the carriage of hazardous materials could increase without the Proposed Action, if the demand for rail transportation of hazardous materials along these lines increases. Frequency of releases likely would be similar to past events as shown in Table 4.2-23.

What is a Key Route?
A Key Route is a route that carries more than 10,000 carloads of hazardous materials per year and thus warrants additional safety measures.
A Major Key Route is a term used by SEA to identify routes that carry more than 20,000 carloads of hazardous materials per year.

4.2.5.3 Proposed Action

SEA evaluated the frequency of release based on information provided by the Applicants, which was subsequently verified by SEA, as well as safety statistics that were compiled by FRA from CN and EJ&E data, and historical data on hazardous materials releases resulting from derailments, collisions, and other accidents. Frequency of releases are presented in Table 4.2-20. The analysis is based on safety statistics compiled by FRA, derived from a five-year average from 1998 to 2007 for both CN and EJ&E.

4.2.5.4 Key Route Analysis

SEA analysis showed that currently, with three exceptions,[13] hazardous materials are transported on all of the rail line segments in the Study Area. SEA evaluated whether increases in the transport of hazardous materials on rail line segments that would result from the Proposed Action might increase to a level severe enough to warrant imposing mitigation measures to improve safety and protect human health, and what SEA's potential mitigation might be. As part of its analysis, SEA determined whether a rail line segment would become either a new Key Route[14] or a Major Key Route[15] due to the Proposed Action.

SEA determined that twelve EJ&E segments and 24 CN segments are currently Key Routes; 2 EJ&E segments and 23 CN segments are currently Major Key Routes as shown in Table 4.2-20 below. Under the Proposed Action, the number of Major Key Routes on the EJ&E would increase to 14; the number of Major Key Routes on CN would decrease from 23 to 3.

---

11 All 26 CN line segments are Key Routes, meaning they carry over 10,000 carloads of hazardous materials annually.

12 Twelve of the 18 EJ&E line segments are Key Routes, meaning they carry over 10,000 carloads of hazardous materials annually.

13 The Applicants Attachment A2 to the Operating Plan shows that EJ&E rail line segments -2, -1, and 0 linking Gary and South Chicago through Indiana Harbor and Hammond currently carry no hazardous materials and would carry small amounts under the Proposed Action. See Table 4.2-6.

14 Key Route is a designation the Association of American Railroads developed to identify routes that carry more than 10,000 carloads of hazardous materials per year and thus warrant additional safety measures. Key Route practices include requirements to place defective-bearing detectors a maximum of 40 miles apart, (or an equivalent level of protection), the use of rail defect detection cars to inspect main track and sidings (or perform an equivalent level of inspection) no less than twice a year, use of track-geometry inspection cars to inspect main track and sidings (or perform an equivalent level of inspection) no less than once per year, and use of FRA Class 2 or better track for meeting and passing key trains.

15 Major Key Route is a term SEA developed to identify rail line segments where the volume of hazardous materials transported would exceed 20,000 carloads per year and thus warrant greater safety measures than Key Routes.

Key Trains[16] are subject to special restrictions, including a maximum authorized speed of 50 mph. FRA regulations specify that if a Key Train is stopped by any emergency brake application or by some unknown cause, the train must be inspected for derailed or defective cars. Based on the Proposed Action volumes shown in Table 4.2-20, SEA believes that most if not all of the hazardous materials being transported under the Proposed Action would move in Key Trains. Table 4.2-20 below compares the annual carloads of hazardous materials that would be carried under the No-Action Alternative to the carloads anticipated under the Proposed Action, by segment. Table 4.2-20 also identifies the Key Routes and Major Key Routes.

Table 4.2-20. Hazardous Materials Annual Carloads Comparison

Segment No.	From	To	No-Action		Proposed Action	
			Current Hazmat Carloads	Key Route Yes or No	Proposed Annual Hazmat Carloads	Key Route
EJ&E -2	Hammond	South Chicago	0	No	515	No
EJ&E -1	Indiana Harbor	Hammond	0	No	515	No
EJ&E 0	Gary	Indiana Harbor	0	No	4,021	No
EJ&E 1	Cavanaugh	Gary	19,162	Yes	148,299	Yes
EJ&E 2	Ivanhoe	Cavanaugh	16,607	Yes	145,744	Yes
EJ&E 3	Van Loon	Ivanhoe	16,607	Yes	145,744	Yes
EJ&E 4	Griffith	Van Loon	16,315	Yes	153,847	Yes
EJ&E 5	Chicago Hts.	Griffith	26,134	Yes	181,222	Yes
EJ&E 6	Matteson	Chicago Heights	28,725	Yes	181,040	Yes
EJ&E 7	Rock Island Junction	Matteson	17,885	Yes	131,692	Yes
EJ&E 8	Bridge Junction	Rock Island Junction	17,848	Yes	145,306	Yes
EJ&E 9	Walker	Bridge Junction	17,848	Yes	145,306	Yes
EJ&E 10	East Siding	Walker	15,841	Yes	143,299	Yes
EJ&E 11	West Chicago	East Siding	11,205	Yes	115,048	Yes
EJ&E 12	Munger	West Chicago	7701	No	99,024	Yes
EJ&E 13	Spaulding	Munger	10,585	Yes	76,431	Yes
EJ&E 14	Leithton	Spaulding	6,606	No	66,904	Yes
EJ&E 15	Rondout	Leithton	3,431	No	3,431	No
CN 1	Matteson	Markham	69,775	Yes	7,146	No
CN 2	Markham	Harvey	90,992	Yes	0	No
CN 3	Harvey	Riverdale	34,455	Yes	0	No
CN 4	Riverdale	Wildwood	29,932	Yes	0	No
CN 5	Wildwood	Kensington	29,932	Yes	0	No
CN 6	Kensington	94th Street	27,110	Yes	0	No
CN 7	94th Street	67th Street	27,753	Yes	0	No
CN 8	67th Street	16th Street	27,753	Yes	0	No
CN 9	16th Street	Bridgeport	24,767	Yes	0	No

[16] A Key Train is any train with five or more tank carloads or chemicals classified as a Poison Inhalation Hazard (PIH), or with a total of 20 rail cars with any combination of PIHs, flammable gases, explosives, or environmentally sensitive chemicals.

Table 4.2-20. Hazardous Materials Annual Carloads Comparison						
Segment No.	From	To	No-Action		Proposed Action	
			Current Hazmat Carloads	Key Route Yes or No	Proposed Annual Hazmat Carloads	Key Route
CN 10	Bridgeport	Belt Crossing	22,641	Yes	0	No
CN 11	Belt Crossing	Hawthorne	30,723	Yes	0	No
CN 12	Hawthorne	Broadview	26,084	Yes	6,779	No
CN 13	Broadview	Munger	22,318	Yes	6,779	No
CN 14	Bridgeport	Lemoyne	21,692	Yes	0	No
CN 15	Lemoyne	Glenn Yard	33,074	Yes	4,188	No
CN 16	Glenn Yard	Argo	50,950	Yes	20,463	Yes
CN 17	Argo	Lemont	26,228	Yes	20,463	Yes
CN 18	Lemont	Joliet	14,223	Yes	32,468	Yes
CN 19	Madison Street	Forest Park	28,023	Yes	0	No
CN 20	Forest Park	B12	28,023	Yes	0	No
CN 21	B12	Schiller Park	57,300	Yes	1,916	No
CN 22	Schiller Park	Leithton	57,220	Yes	2,256	No
CN 23	Griffith	Thornton Junction	102,401	Yes	3,270	No
CN 24	Thornton Junction	CN Junction	99,622	Yes	3,266	No
CN 25	CN Junction	Blue Island	58,473	Yes	3,249	No
CN 26	Blue Island	Hayford	14,162	Yes	0	No

Source: Applicants (2008d), letter from Paul A. Cunningham, Counsel for Canadian National Railway Company and Grand Trunk Corporation, Harkins Cunningham LLP, to The Honorable Vernon A. Williams, Secretary, Surface Transportation Board, regarding corrections and clarifications to the Railroad Control Application, January 3, 2008.

4.2.5.5 Probability of Release of Hazardous Material

As part of its analysis SEA identified the hazardous materials currently transported over the CN line segments that are likely to be transported over EJ&E line segments under the Proposed Action. The hazardous materials identified for transport by CN are presented in Chapter 3. These hazardous materials represent a wide range of potential hazards that can cause death, serious injury, long-lasting health effects, and damage to buildings, homes, and other property.

Accident data for the U.S. as a whole and for CN and EJ&E are presented in Table 4.2-21, below. Table 4.2-22, below, presents accident data for CN and EJ&E during the five-year period between 2003 and 2007.

Table 4.2-21. 2007 Statistics On Train Accidents				
	Number of Train Accidents	Number of Accidents Resulting in Hazardous Materials Release	Number of Cars Releasing Hazardous Materials	Number of Persons Evacuated
All Railroads	2,600	45	75	11,698
CN	89	3	3	0
EJ&E	15	0	0	0

Source: FRA (2008c), *Federal Railroad Administration, Office of Safety Analysis*, retrieved on June 13, 2008, http://safetydata.fra.dot.gov/OfficeofSafety/.

Table 4.2-22. CN And EJ&E Accident Data, 2003-2007

County	Train Accidents on Mainline	Accidents on Yard Track	Cars Carrying Hazardous Materials Involved in Accidents	Hazardous Materials Cars Damaged/Derailed in Accidents	Hazardous Materials Cars Releasing Materials in Accidents
CN					
Lake, IL	1	0	13	0	0
Cook, IL	24	71	513	62	2
DuPage, IL	1	0	26	0	0
Will, IL	0	1	24	0	0
Lake, IN	1	0	5	0	0
Total	27	72	581	62	2
EJ&E					
Lake, IL	0	0	0	0	0
Cook, IL	0	0	0	0	0
DuPage, IL	0	0	0	0	0
Will, IL	4	16	0	0	0
Grundy, IL	0	0	0	0	0
Lake, IN	3	28	0	0	0
Total	7	44	0	0	0

Source: FRA (2008c), *Federal Railroad Administration, Office of Safety Analysis*, retrieved on June 13, 2008, http://safetydata.fra.dot.gov/OfficeofSafety/.

4.2.5.6 Effects Analysis - Frequency of Release

SEA evaluated the predicted frequency of hazardous materials releases on rail line segments based on the frequency of derailments, collisions, and other accidents. SEA used various inputs, including characteristics of the particular rail line segment and trains, as well as safety statistics for different types of accidents, such as derailments and collisions. The analysis resulted in a measure of the likelihood or chance of a release.

SEA calculated the likelihood of hazardous materials releases before and after the implementation of the Proposed Action in order to assess the extent to which the Proposed Action would affect the potential for a release. Table 4.2 23 shows the anticipated change (potential increase or decrease) in the estimated frequency of release of hazardous materials under the Proposed Action. This calculation was done for those rail segments that are expected to experience a potential increase or a reduction in hazardous materials traffic volume resulting from the implementation of the Proposed Action. SEA determined the overall predicted rate of release of hazardous materials on a rail line segment as a result of an accident based on an overall predicted rate of derailments from accidents, including derailments, collisions, and other accidents. (A collision, as well as other types of accidents, may result in derailments.) The overall predicted rate (or frequency) of release of hazardous materials on a rail line segment can also be described as the chance that one or more hazardous materials railcars involved in a derailment would release such materials to the environment. SEA calculated the overall predicted rate of release of hazardous materials on a rail line segment as a function of the number of hazardous materials cars per train, the number of trains, and

What is a release interval?
The interval between releases on a segment is essentially the average or expected time that would elapse between two successive release events on a particular rail segment.

the statistics of previous releases on that rail line. The potential for a hazardous materials release is a function of both the likelihood of a hazardous materials rail car (or cars) being derailed and the likelihood of one or more cars releasing in the event of a derailment. Not all rail line accidents result in hazardous materials releases. SEA used statistics reflecting CN's operating history to estimate potential release intervals for the Proposed Action.

Table 4.2-23. Changes in Potential Hazardous Material Releases No-Action vs. Proposed Action

Rail Line Segment	Current Annual Hazardous Material Carloads	Proposed Action Annual Hazardous Material Carloads	Segment Length (Miles)	Current Interval Between Anticipated Hazardous Material Releases (Years)	Proposed Action Interval Between Anticipated Hazardous Material Releases (Years)
CN 1	69,775	7,146	7.9	355	3,462
CN 2	90,922	-	1.8	1,194	n/a
CN 3	34,455	-	2.1	2,701	n/a
CN 4	29,932	-	2.4	2,721	n/a
CN 5	29,932	-	1.0	6,529	n/a
CN 6	28,110	-	2.8	2,483	n/a
CN 7	27,753	-	3.6	1,956	n/a
CN 8	27,753	-	6.6	1,067	n/a
CN 9	24,767	-	2.3	3,431	n/a
CN 10	22,641	-	3.9	2,213	n/a
CN 11	30,723	-	0.6	10,602	n/a
CN 12	26,084	6,779	5.8	1,292	4,971
CN 13	22,318	6,779	21.0	417	1,373
CN 14	21,692	-	4.4	2,048	n/a
CN 15	33,074	4,188	2.5	2,364	18,667
CN 16	50,950	20,463	2.7	1,421	3,537
CN 17	26,228	20,463	12.2	611	783
CN 18	14,223	32,468	11.5	1,195	523
CN 19	28,023	-	0.1	69,743	n/a
CN 20	28,023	-	4.5	1,550	n/a
CN 21	57,300	1,916	2.3	1,483	44,350
CN 22	57,220	2,256	20.1	170	4,310
CN 23	102,401	3,270	10.9	175	5,483
CN 24	99,622	3,266	2.0	981	29,921
CN 25	58,469	3,249	3.9	857	15,424
CN 26	14,146	-	7.5	1,842	n/a
EJ&E -2	-	515	4.2	n/a	90,356
EJ&E -1	-	515	4.6	n/a	82,499
EJ&E 0	-	4,021	3.4	n/a	14,296
EJ&E 1	19,163	148,299	2.2	7,974	599
EJ&E 2	16,608	145,744	1.4	14,459	958
EJ&E 3	16,608	145,744	2.0	10,121	670
EJ&E 4	16,316	153,847	3.6	5,723	353
EJ&E 5	26,134	181,222	11.0	1,169	98

Table 4.2-23. Changes in Potential Hazardous Material Releases No-Action vs. Proposed Action					
Rail Line Segment	Current Annual Hazardous Material Carloads	Proposed Action Annual Hazardous Material Carloads	Segment Length (Miles)	Current Interval Between Anticipated Hazardous Material Releases (Years)	Proposed Action Interval Between Anticipated Hazardous Material Releases (Years)
EJ&E 6	28,726	181,040	3.5	3,344	308
EJ&E 7	17,885	131,692	20.9	899	71
EJ&E 8	17,849	145,306	3.1	6,076	434
EJ&E 9	17,849	145,306	8.6	2,190	156
EJ&E 10	15,841	143,299	10.2	2,081	134
EJ&E 11	11,206	115,048	7.8	3,846	218
EJ&E 12	7,702	99,024	6.6	6,614	299
EJ&E 13	10,585	76,431	2.1	15,123	1,218
EJ&E 14	6,607	66,904	22.7	2,242	129
EJ&E 15	3,431	3,431	5.2	18,842	10,954

Rail Yard Activity

SEA also evaluated existing and Proposed Action conditions at Kirk Yard and East Joliet Yard and at CN's Markham, Glenn, and Hawthorne yards. EJ&E Kirk and East Joliet yards would experience increases in the volume of rail activity as a result of the Proposed Action. SEA expects that the increased activity at those two yards could result in more derailments of cars carrying hazardous materials, because of the increased hazardous materials traffic, as shown in Table 4.2-23, above. SEA believes that the decreased switching activity at the CN yards at Markham, Glenn, and Hawthorne would result in fewer hazardous material cars being derailed, and hence, fewer potential releases of hazardous materials.

4.2.5.7 Impact Analysis - Consequences of Release

Historical Impacts

According to the Pipeline and Hazardous Material Safety Administration (PHMSA) Database, CN reported a total of 85 hazardous material incidents in the Chicago metropolitan area (Lake, Cook, DuPage, and Will counties in Illinois and Lake County, Indiana) from 2003 to 2007. Within this same area and timeframe, EJ&E reported 7 hazardous material incidents. These are incidents which were reported to the National Response Center and state and local authorities in accordance with 49 CFR 171.15. Of these incidents, 84 of the CN reported incidents occurred in Cook County, Illinois and one occurred in Lake County, Illinois. All 7 of the EJ&E-reported incidents occurred in Will County, Illinois. No incidents were reported by CN or EJ&E in DuPage County, Illinois or Lake County, Indiana from 2003 to 2007.)

PHMSA considers only 6 of the reported incidents to be serious. PHMSA defines a serious incident as any of the following conditions:

- A fatality or major injury caused by the release of a hazardous material (as defined in Section 3.4, Hazardous Waste Sites)

- The evacuation of 25 or more persons as a result of release of a hazardous material or exposure to fire
- A release or exposure to fire which results in the closure of a major transportation artery
- The alteration of an aircraft flight plan or operation
- The release of radioactive materials from Type B packaging[17]
- The release of over 11.9 gallons or 88.2 pounds of a severe marine pollutant[18]
- The release of a bulk quantity (over 119 gallons or 882 pounds) of a hazardous material

CN reported the following four serious incidents:

- A spill of 14,000 liquid gallons (LGA) of flammable liquid, not otherwise specified (NOS) (UN1993) in Chicago on April 26, 2005. No evacuation was required.
- A vapor leak of 0.0078 LGA of turpentine (UN 1993) on June 7, 2005 in Buffalo Grove, IL (Lake County) which required the evacuation of 80 people (the public) for 3 hours.
- A spill of 5 LGA of toluene (UN1294) on April 18, 2007 in Bedford Park, IL in which one CN employee was hospitalized. No evacuation was required.
- A spill of 270 LGA of alcohol, NOS (UN 1987) on August 27, 2007 in Chicago. No evacuation was required.

EJ&E reported the following two serious incidents:

- A spill of 0.625 LGA of liquefied petroleum gases (UN1075) on May 28, 2005 in Joliet, IL which required the closure of Highway 6 for 2 hours and the evacuation of 9 EJ&E employees for 2 hours.
- A spill of 1 LGA of hexane (UN 2370) on March 23, 2006 required the closure of Highway 6 for 4 hours. No evacuation was required.

From 2003 through 2007, there were no fatalities and one hospitalization (of a railroad employee) associated with CN and EJ&E operations in the Chicago metropolitan area. There were no fires, explosions, or releases to sewers, waterways, or the environment.

No-Action Alternative

Under the No-Action Alternative, shipments of hazardous materials would continue as they have in the past for both the CN and EJ&E rail lines. Consequences of releases would be similar to past events (see Table 4.2-22).

Proposed Action

SEA assumed that a release of hazardous materials into the environment as a result of a rail accident likely would lead to human exposure for a relatively short time. That is because the duration of a release is limited by the volume in the rail car or rail cars involved in the accident. Typically, the scene would be contained and cleaned within a relatively short time, usually within 24 hours, by emergency response teams, who would know the precise point of release. Moreover, the release of any toxicity would be addressed by teams on the local, state, and Federal levels responsible for the clean-up of such incidents. Therefore, SEA's analysis focused on acute toxicity (specifically, toxicity

[17] Type B packaging must be able to survive severe accidents; it is typically used for transporting large quantities of radioactive material.

[18] Severe marine pollutants are listed in 49 CFR 171.101.

typically associated with short-term exposure, which results in toxic effects that are typically experienced immediately or within days of exposure), rather than on chronic toxicity (that is, toxicity typically resulting from repeated or long-term exposure, which results in toxic effects that are typically detected after months or years of exposure).

SEA also considered the potential impacts to water and biological resources in the Study Area if exposed to a hazardous material (presented in the Water Resources and Biological Resources sections of this chapter). SEA considered the characteristics of the materials, hazardous and non-hazardous, that would potentially be transported under the Proposed Action. It also studied potential effects on the environment in the case of a release of hazardous materials. The evaluation focused on water resources—including groundwater, surface waters, flood plains, and wetlands—because they may be the most sensitive natural resource and are typically the most susceptible to immediate impact from a release. SEA determined that potential soil contamination would be limited by the prompt containment and clean-up of a spill. Moreover, the implementation of appropriate actions in the event of a release to surface water—such as cleaning up the spill and perhaps temporarily restricting the use of the water body—would minimize the potential for longer-term impacts.

For the analysis of potential resource consequences (water and biological resources) associated with the Proposed Action, SEA focused on the aquatic toxicity, danger to living resources (nonhuman), and bioaccumulation potential of the hazardous materials that would be transported over the new rail line. Several of the proposed hazardous materials that might be transported on the EJ&E rail line following implementation of the Proposed Action are classified as toxic to aquatic life in very low concentrations (for example, flammable liquids). Other materials (for example, alcohols) are classified as toxic to aquatic life only in very high concentrations. Several materials are classified as non-toxic to aquatic life. For a few materials, toxicity information is unknown or unavailable. The methodology used to evaluate the consequences to biological resources (non-human) considers flammable liquids to be moderately toxic, while other materials are considered to be slightly toxic (for instance, ethylene oxide), practically nontoxic, or non-hazardous. Styrene is known to potentially bioaccumulate in the food chain and potentially taints seafood in the event of a release into surface waters. All of the other hazardous materials proposed to be transported under the Applicants' Operating Plan are not known to bioaccumulate in the food chain if they are released into the environment. The materials typically ionize into non-hazardous constituents, volatilize, or react with water, biodegrade, or they are metabolized.

All of the hazardous materials that the Applicants would handle under the Proposed Action are expected to be transported downstream if they are spilled into water and are not immediately contained. SEA anticipates that a release of hazardous materials into the environment could potentially lead to environmental exposure of relatively short duration based on the fact that the release would be contained/remediated within a relatively short time as required by local, state, and Federal requirements. A release of hazardous materials routinely triggers a notification to the Illinois EPA within 24 hours. In the notification process, local authorities are alerted as a matter of course. The Federal authorities typically defer to the state EPA on these issues. Also, the duration of a release is limited by the volume in the railcar.

For the purposes of the assessment of potential health consequences, SEA considered the total population close to the CN and EJ&E line segments. SEA found that the total population in the census block tracts along the EJ&E arc (Leithton to Gary) is 337,767. SEA also found that the population in the census block tracts along the five CN lines inside the EJ&E arc is 903,719.[19] SEA also identified the most densely populated area along each particular segment on each route. For the EJ&E rail line, SEA noted that the most densely populated areas along the segments extending from

[19] The overlapping census block groups at the five rail junctions were counted in both population totals.

Leithton to Gary are located in Park Forest (4,708 residents per square mile) and North Chicago (4,641 residents per square mile).

Conclusion

SEA concluded that hazardous material releases have historically been, and should continue to be, extremely rare because of existing regulatory requirements and best management practices that prevent circumstances that might otherwise result in a release, and regulations and procedures that typically lead to prompt response by the appropriate authorities. SEA evaluated whether the Proposed Action would increase the likelihood of a hazardous materials release. SEA concluded that there would be a potential increase in the possibility of a release because of increased train miles resulting from the longer route, and more carloads of hazardous materials, on the EJ&E rail line. But, even on the EJ&E rail line, the possibility of a hazardous materials release would remain remote because of the regulatory and other safeguards already in place. Moreover, there would be a substantial reduction in the risk of a release on the CN rail lines as a result of the Proposed Action because of the downward redistribution of railroad traffic. In addition, the CN rail lines tend to be in more densely populated areas than the areas along the EJ&E rail line, where hazardous materials transportation would increase.

Finally, SEA notes that under the No-Action Alternative, hazardous materials take more time to move through Chicago on the CN rail lines than they would under the Proposed Action, thus continuing to potentially expose people in the vicinity of the CN rail lines to risk for a longer period of time.

4.2.6 Pedestrian/Bicycle Safety

4.2.6.1 Methodology

Pedestrians, bicyclists, and other types of non-motorized travelers regularly cross the EJ&E and CN tracks. These non-motorized users are hereafter collectively referred to as pedestrians. There is a distinction between officially sanctioned pedestrian crossings located on public rights of way, and unofficial crossings. The former are addressed in this analysis, but the latter occur at locations where individuals are trespassing onto and across railroad rights-of-way and as such, are not included within this analysis.

SEA developed an inventory of pedestrian crossings using information on pedestrian crossings obtained from the Illinois Department of Natural Resources and the Indiana Department of Natural Resources (DNR). These crossings were then located by line segment, milepost location, and trail name. SEA subdivided the crossings into one of three categories: grade separated (the trail crossed over or beneath the tracks), at-grade and adjacent to an existing highway/rail crossing (similar to a sidewalk), and at-grade trail crossings not associated with a highway/rail crossing (trail crossings only).

Neither FHWA, DOT, FRA, ICC, nor the Illinois or Indiana Departments of Transportation, have a systematic method for quantifying impacts of safety at rail/pedestrian at-grade crossings. The selection of warning devices and other factors that are appropriate for each location are dependent upon their unique characteristics. In consultation with SEA, all of the above agencies recommended that an on-site diagnostic team consisting of rail, agency, and trail authorities representatives ascertain the existing conditions and determine if the existing warning devices are adequate and appropriate with the expected change in traffic. If not, the diagnostic team should recommend appropriate modifications. SEA has included potential mitigation to accomplish this. See chapter 6 of this Draft EIS.

4.2.6.2 No-Action Alternative

There are 21 pedestrian trails that cross the EJ&E line segments and 36 that cross the CN line segments. Table 4.2-24 provides a summary and Table 4.2-25 lists each of the 57 crossings.

Table 4.2-24. Summary of Pedestrian Trails

	EJ&E	CN
At-Grade	16	19
Grade Separated	5	17
At-Grade Adjacent to Roadway	13	17
At-Grade Trail crossing only	3	2

Table 4.2-25. Pedestrian Crossing Inventory											
USDOT#	**Trail Name**	**MP**	**Segment**	**Subdivision**	**County**	**State**	**Type**	**Warning Device Trail**	**Warning Device Road-way**	**Close Proximity to Roadway Crossing**	**Roadway**
CN - At-Grade											
689627S	Des Plaines River Trail	12.39	CN 20	Waukesha	Cook	IL	AG	X-Bucks	CFLS with gates	YES	Thatcher Avenue
689689P	Wheeling Bike Path	30.06	CN 22	Waukesha	Cook	IL	AG	FLS	CFLS with gates	YES	Dundee Road (IL 22)
694865V	Buffalo Grove Bike System	32.37	CN 22	Waukesha	Lake	IL	AG	FLS	CFLS with gates	YES	Deerfield Road / Busch Pkwy.
689694L	Buffalo Grove Bike System	34.82	CN 22	Waukesha	Lake	IL	AG	FLS	FLS with gates	YES	North Buffalo Grove Road
689694L	Buffalo Grove Bike System	34.82	CN 22	Waukesha	Lake	IL	AG	FLS	FLS with gates	YES	North Buffalo Grove Road
689703H	North Shore Bike Trail	39.80	CN 29	Waukesha	Lake	IL	AG	CFLS with gates	CFLS with gates	YES	East Hawley Street
911764J	Woodlawn Drive Bike Path	31.17	CN 13	Freeport	DuPage	IL	AG	None	CFLS with gates	YES	County Farm Road
283169F	Harvey Boulevard System	22.00	CN 25	Elsdon	Cook	IL	AG	CFLS with gates	CFLS with gates	YES	Sibley Boulevard (IL 83)
283171G	Harvard Greenway Path	22.64	CN 25	Elsdon	Cook	IL	AG	FLS	FLS with gates	YES	150th Street
283173V	Harvard Greenway Path	22.95	CN 25	Elsdon	Cook	IL	AG	CFLS with gates	CFLS with gates	YES	Broadway
283174C	Harvey Boulevard System	23.13	CN 25	Elsdon	Cook	IL	AG	FLS	CFLS with gates	YES	Park Avenue
283177X	Harvey Boulevard System	23.52	CN 24	Elsdon	Cook	IL	AG	FLS	CFLS with gates	YES	Halsted Street (IL 1)
283186W	Lancing Route	27.49	CN 23	Elsdon	Cook	IL	AG	FLS with gates	FLS with gates	YES	Volbrecht Road
283188K	Lancing Route	27.74	CN 23	Elsdon	Cook	IL	AG	FLS with gates	FLS with gates	YES	Thornton Road
283191T	Lancing Route	29.42	CN 23	Elsdon	Cook	IL	AG	FLS with gates	FLS with gates	YES	186th Street

Table 4.2-25. Pedestrian Crossing Inventory											
USDOT#	**Trail Name**	**MP**	**Segment**	**Subdivision**	**County**	**State**	**Type**	**Warning Device Trail**	**Warning Device Road-way**	**Close Proximity to Roadway Crossing**	**Roadway**
283193G	Lancing Route	29.80	CN 23	Elsdon	Cook	IL	AG	FLS	FLS with gates	YES	Burnham Avenue
283201W	Griffith Bike Trail	36.09	CN 23	Elsdon	Lake	IN	AG	FLS with gates	FLS with gates	YES	Broad Street
CN -At-Grade Trail Crossings											
289852E	Illinois Prairie Path - Main Branch	19.65	CN 13	Freeport	DuPage	IL	AG	X-Bucks	N/A	NO	N/A
840410S	Lockport Historical Trail (Joliet Heritage Trail)	33.70	CN 18	Joliet	Will	IL	AG	FLS	N/A	NO	N/A
CN - Grade Separated											
289783Y	Wabash Lane	1.80	CN 9	Freeport	Cook	IL	GS	GS	GS	YES	Wabash Avenue
289790J	Canal Lane	2.80	CN 9	Freeport	Cook	IL	GS	GS	GS	YES	Canal Avenue
289805W	Boulevard Route	5.50	CN 19	Freeport	Cook	IL	GS	GS	GS	YES	Western Avenue
289896E	West Branch Trail (Stuckman Boulevard Bike Path)	32.10	CN 13	Freeport	DuPage	IL	GS	GS	GS	YES	Schick Road
289899A	South Bartlett Path	33.05	CN 13	Freeport	DuPage	IL	GS	GS	GS	YES	South Bartlett Road
	Illinois Prairie Path - Elgin Branch	37.60	CN 30	Freeport	Kane	IL	GS	GS	N/A	NO	N/A
289907P	Fox River Trail	39.10	CN 30	Freeport	Kane	IL	GS	GS	GS	YES	IL 31
289703D	Boulevard Route	5.05	CN 5	Joliet	Cook	IL	GS	GS	GS	YES	Western Avenue
004340A	Centennial Trail	17.34	CN 17	Joliet	Cook	IL	GS	GS	GS	YES	Willow Springs Road
289524M	Boulevard Route	7.88	CN 8	Chicago	Cook	IL	GS	GS	GS	YES	East 63rd Street
289576E	South Chicago Ave Lane	9.30	CN 7	Chicago	Cook	IL	GS	GS	GS	YES	South Chicago Avenue
289635E	Harvey Boulevard System	19.50	CN 3	Chicago	Cook	IL	GS	GS	GS	YES	Halsted Street (IL 1)

Table 4.2-25. Pedestrian Crossing Inventory											
USDOT#	**Trail Name**	**MP**	**Segment**	**Subdivision**	**County**	**State**	**Type**	**Warning Device Trail**	**Warning Device Road-way**	**Close Proximity to Roadway Crossing**	**Roadway**
289646S	Harvey Boulevard System	20.60	CN 2	Chicago	Cook	IL	GS	GS	GS	YES	US Hwy 6
CN - Grade Separated											
289675C	Olympic Fields Bike Route	27.65	CN 1	Chicago	Cook	IL	GS	GS	GS	YES	US Hwy 30
289678X	Woodward Avenue Extension Trail	29.30	CN 1	Chicago	Cook	IL	GS	GS	GS	YES	Sauk Tr.
283126F	Western Avenue Lane /Boulevard Route	7.06	CN 28	Elsdon	Cook	IL	GS	GS	GS	YES	Western Avenue
283181M	State Street Bike Path	24.88	CN 24	Elsdon	Cook	IL	GS	GS	GS	YES	State Street
EJ&E Pedestrian Crossing Inventory											
260584L	Lockport Road Trail	9.00	EJ&E 9	Western	Will	IL	AG	X-Bucks	FLS with gates	YES	Lockport Road
260935H	Ogden Avenue	19.02	EJ&E 10	Western	DuPage	IL	AG	CFLS with gates	CFLS with gates	YES	Ogden Avenue
260550S	Fermilab Trail	25.63	EJ&E 11	Western	DuPage	IL	AG	None	FLS with gates	YES	Batavia Road
260538K	West Chicago Bike Path	30.24	EJ&E 12	Western	DuPage	IL	AG	X-Bucks	FLS with gates	YES	Hawthorne Lane
260532U	West Bartlett Road Path	36.95	EJ&E 13	Western	Cook	IL	AG	FLS with gates	FLS with gates	YES	West Bartlett Road
260525J	Streamwood Route	41.90	EJ&E 14	Western	Cook	IL	AG	FLS with gates	FLS with gates	YES	Shoe Factory Road
260516K	Dundee Avenue Corridor	49.30	EJ&E 14	Western	Cook	IL	AG	FLS	CFLS with gates	YES	Lake Cook Road/ Main Street
260513P	Lake Zurich Road Corridor	50.40	EJ&E 14	Western	Lake	IL	AG	FLS with gates	FLS with gates	YES	Lake Zurich Road
260490K	Libertyville Bike Path	62.20	EJ&E 14	Western	Lake	IL	AG	CFLS with gates	CFLS with gates	YES	South Milwaukee Avenue
260852U	Des Plaines River Trail	63.87	EJ&E 14	Western	Lake	IL	AG	X-Bucks	X-Bucks	YES	Old School Road

Table 4.2-25. Pedestrian Crossing Inventory

USDOT#	Trail Name	MP	Segment	Subdivision	County	State	Type	Warning Device Trail	Warning Device Road-way	Close Proximity to Roadway Crossing	Roadway
260473U	Robert McClory Bike Path	69.75	EJ&E 16	Western	Lake	IL	AG	CFLS with gates	CFLS with gates	YES	MLK Jr. Drive
260601A	Old Plank Road Trail	0.95	EJ&E 7	Eastern	Will	IL	AG	X-Bucks	FLS with gates	YES	East Washington Street
260639W	Thornton Creek Trail	24.63	EJ&E 6	Eastern	Cook	IL	AG	FLS with gates	FLS with gates	YES	Euclid Avenue
EJ&E - At-Grade Trail Crossing											
260805L	Illinois Prairie Path - Aurora Spur	22.65	EJ&E 11	Western	DuPage	IL	AG	X-Bucks	N/A	NO	N/A
260804E	Illinois Prairie Path - Batavia Spur	23.02	EJ&E 11	Western	DuPage	IL	AG	X-Bucks	N/A	NO	N/A
260803X	Illinois Prairie Path	33.70	EJ&E 12	Western	DuPage	IL	AG	X-Bucks	N/A	NO	N/A
EJ&E - Grade Separated											
260902V	Wabaunsee Trail	19.37	EJ&E 10	Western	DuPage	IL	GS	GS	GS	YES	McCoy Drive
260901N	Illinois Prairie Path-Geneva Spur	29.63	EJ&E 12	Western	DuPage	IL	GS	GS	N/A	NO	N/A
260810H	Pratt's Wayne Woods Forest Trail	34.83	EJ&E 12	Western	DuPage	IL	GS	GS	N/A	NO	N/A
260811P	North Shore Bike Path	65.70	EJ&E 16	Western	Lake	IL	GS	GS	N/A	NO	N/A
260667A	Little Calumet River Trail	38.34	EJ&E 4	Eastern	Lake	IN	GS	GS	GS	YES	East Ridge Road
260698Y	Calumet Park South	1.83	EJ&E -2	LFL	Cook	IL	GS	GS	GS	YES	East 95th Street
260698Y	Calumet Park North	1.83	EJ&E -2	LFL	Cook	IL	GS	GS	GS	YES	East 95th Street
260695D	I & M Canal Path	2.46	EJ&E -2	LFL	Cook	IL	GS	GS	GS	YES	East 100th Street
260925C	Whiting Beach Trail	4.07	EJ&E -2	LFL	Lake	IN	GS	GS	GS	YES	Casino Center Drive

Notes: AG = At-Grade; X-Bucks = Cross Bucks; CFLS = Cantilever Flashing-Light Signal; FLS = Flashing-Light Signal; GS = Grade Separated.

SEA identified the DOT number of the crossing, the trail name, whether the crossing is at-grade or grade separated, the type of warning devices that exist at the adjacent highway/vehicle crossing, the type of warning devices that exist at the pedestrian crossing, and the name of the adjacent street or roadway. These crossings are periodically reviewed by the appropriate state agencies having jurisdiction, and safety improvements, if justified, are programmed, funded, and made.

4.2.6.3 Proposed Action

Under the Proposed Action, the number of trains operating on most of the EJ&E rail line segments would increase and operations on CN line segments would decrease. Because there is no recognized and accepted analysis available, and because no agency keeps data on pedestrian use, SEA did not quantify the impacts that more or less train traffic would have on these existing crossings. SEA assumed, however, that the consequences of increasing train traffic on the EJ&E line segments would increase the risk for those pedestrians, and a decrease in the number of trains on the CN line segments would decrease the risk for those pedestrians. For pedestrian crossings on the EJ&E rail line expecting increased train traffic, SEA has recommended a crossing-specific diagnostic study as mitigation. See Chapter 6.

4.2.7 Conclusion

SEA concluded that it is likely that the increase in train traffic on the EJ&E rail line as a result to the Proposed Action could pose a greater risk to pedestrian and bicyclist safety. Consequently, SEA is recommending mitigation that would require CN to work with appropriate state and local agencies and trail authorities to determine if existing warning devices are adequate and if not, to recommend appropriate safety improvements.