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November 14, 2008

BY HAND

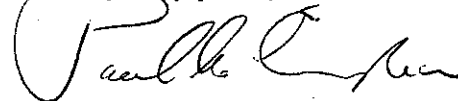
Ms. Victoria J. Rutson, Chief
Section of Environmental Analysis
Surface Transportation Board
395 E Street, S.W.
Washington, D.C. 20423-0001

Re: *Canadian National Railway Company and Grand Trunk Corporation – Control –
EJ&E West Company*, STB Finance Docket No. 38750

Dear Ms. Rutson:

Enclosed for your information, and for inclusion in the environmental record in this proceeding, are copies of my letters dated October 16 and November 14, 2008, to D.J. Gribbin IV, General Counsel of the United States Department of Transportation ("DOT"), responding to DOT's comments on the Draft Environmental Impact Statement in this proceeding.

Very truly yours,



Paul A. Cunningham

Enclosures

cc: D.J. Gribbin IV, Esquire (General Counsel, DOT)
Paul Samuel Smith, Esquire (Senior Trial Attorney, OGC, DOT)
S. Mark Lindsey, Esquire (Chief Counsel, FRA)
Phillis Johnson-Ball (Deputy Chief, SEA, STB)
John H. Morton (HDR Engineering, Inc.)

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October 16, 2008

BY HAND

D.J. Gribbin IV, Esquire
General Counsel
United States Department of Transportation
1200 New Jersey Avenue, S.E., Room W92-300
Washington, D.C. 20590

Re: *Canadian National Railway Company and Grand Trunk Corporation – Control –
EJ&E West Company, STB Finance Docket No. 38750*

Dear Mr. Gribbin:

I am writing on behalf of Canadian National Railway Company and Grand Trunk Corporation (together, "CN") to express CN's appreciation for the comments which the United States Department of Transportation filed with the Surface Transportation Board ("STB") on September 30, 2008, regarding the Draft Environmental Impact Statement ("DEIS") in this proceeding.

CN especially appreciates DOT's acknowledgement that the proposed acquisition of EJ&E West Company ("EJ&EW") by CN, and the shift of CN traffic from congested lines within the Chicago terminal to the now-underutilized Elgin, Joliet and Eastern Railway Company ("EJ&E") line (which would be among EJ&EW's assets), "would make greater use of and expand existing capacity, reduce rail congestion, increase transportation efficiency, and enhance safety" and that it would confer benefits "to shippers in the form of faster and more reliable service and lower logistics costs, and eventually to consumers in the form of lower prices" (DOT-6 at 5-6). In addition, CN whole-heartedly agrees with DOT's conclusions that "the transaction warrants approval (subject to fairly minor conditions)" and that requiring CN to mitigate virtually every adverse impact identified in this proceeding "would frustrate the rationalization of the rail industry and deprive the public of the manifest benefits of that process – higher efficiency, lower costs, reduced emissions, etc." (*id.* at 2, 4).

We would like to call to your attention, however, our concerns with the conclusions drawn by DOT from its examination of the three capacity analyses of the EJ&E rail line that were described in the DEIS (DEIS at 4.1-20—4.1-38, B-3; *id.* App. B, Attachment B4), and the recommendations it made based on that examination. DOT apparently did not conduct its own

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D.J. Gribbin IV, Esquire

October 16, 2008

Page 2

capacity analysis, but rather made a critique of the analyses done by STB's Section of Environmental Analysis ("SEA"). According to DOT, the SEA used unreasonably optimistic assumptions about CN's operations on the EJ&E line (DOT-6 at 7). DOT therefore concluded that "implementation of the Applicants' Operating Plan under current and projected circumstances will produce congestion on the EJ&E beyond that forecast by SEA, and that vehicular delays will increase commensurately" (*id.* at 13-14), and called for the SEA to "ground the final EIS on reasonable operating assumptions and to ensure that it fully address[es] the extent of rail congestion on the EJ&E and its consequences" (*id.* at 11).

While we agree that SEA must "ground its [Final Environmental Impact Statement ("FEIS")] on reasonable operating assumptions" and "ensure that it fully address[es] the extent of rail congestion on the EJ&E" and any consequences of that congestion, we have every reason to believe on the basis of our analyses and operating experience that SEA's capacity analyses – a "bottleneck analysis," a "Line Occupancy Index" ("LOI") analysis, and a Rail Traffic Controller analysis – were not based on over-optimistic assumptions, but were very conservative. Accordingly, while we understand the critique that led DOT to a contrary conclusion, we do not believe it is a good indicator of how CN would operate the EJ&EW, and therefore see no need to delay this proceeding any further in order to conduct new analyses using different assumptions.

We set forth the bases for our conclusions below. CN would welcome the opportunity for its operations experts to visit or hold a conference call with you and the relevant DOT staff to review these matters further.

Bottleneck Analysis

SEA's "bottleneck analysis" was a qualitative examination of the EJ&E line, as it would be configured following CN's proposed investment in infrastructure improvements, to determine where the most important chokepoints for traffic on the line would be found. On the basis of that examination, SEA determined that the 11-mile segment of EJ&E's line between Walker and Rock Island Junction would be a bottleneck effectively limiting the capacity of the entire EJ&E line. SEA identified several factors on this segment that would limit its capacity, most notably the moveable bridge over the Des Plaines River, which opens an average of 17 times per day for vessels on the river.

DOT cites that bridge as its reason for concluding "that congestion and its consequences are virtually inevitable on this segment as a practical matter" (DOT-6 at 7). While it is true, as DOT notes, that Des Plaines River bridge is opened an average of 17 times a day, requiring two minutes to raise the bridge and two minutes to lower it, in addition to the time necessary for the vessel to pass, DOT should be aware that CN planned capacity improvements to the line on the conservative assumption that the bridge would be unavailable for train movements for a total of four hours each day, which provides a comfortable margin that would accommodate all the traffic projected to move over the bridge.

HARKINS CUNNINGHAM LLP

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D.J. Gribbin IV, Esquire

October 16, 2008

Page 3

Moreover, in case of delay resulting from a bridge opening, there is double track (mainline and service/siding track) immediately north of the bridge up to and including Turner Siding. From the bridge to Oakland Street is 7,000 feet, which can hold one train of just under that length (or two trains if the main line is also used, with the intention that one follow immediately after the other once the bridge becomes available). From Oakland Street to the end of double track at Turner is over 12,000 feet, which provides a second spot to hold a train (two trains if the main line is also used), in the event the bridge is not available. Beyond Turner eastbound trains can hold at Renwick Road (2.1 miles away, with 7,390 feet between road crossings), at 111th Street (9.13 miles away; 8,290 feet between crossings), at Ogden Ave (13.55 miles away; 8,242 feet between crossings), or at Liberty Street (15.13 miles away; over 11,000 feet between crossings). East Joliet Yard, to the east of the bridge, can accommodate trains of up to 8,120 feet without blocking crossings. Also, although SEA claimed that westbound trains of 5,000 feet or longer would have no places west of School House Road to stop, without blocking road crossings, in case of congestion on the 11-mile bottleneck segment, EJ&E track charts indicate that there are five locations between School House Road and East Joliet Yard where there are more than 5,000 feet of track between road crossings.

SEA cited the slow main track speed through East Joliet Yard as an additional constraint on the capacity of the EJ&E line. CN has since entered into a voluntary mitigation agreement with the City of Joliet to address the issue of vehicular delay at Woodruff Road and Washington Street, and expects to implement this agreement by making alterations to the configuration of the yard track that would permit faster train movements.

SEA also cited the fact that UP coal trains and BNSF intermodal trains operate on the 11-mile segment as additional constraints on the capacity of the line. CN took account of those trains in both its pre-Transaction and post-Transaction train count. There is every reason to believe that, after acquiring the line, CN will be able to dispatch it in a manner that ensures fluid operations for trackage rights trains, just as it does today in other places where multiple railroads operate over CN lines.

LOI Analysis

SEA calculated a "Line Occupancy Index" ("LOI") for each of 20 affected EJ&E segments to determine what percentage of the segment's post-acquisition capacity would be taken up by trains, and concluded that, following CN's shift of traffic to the EJ&E line, two segments would operate at nearly 100% of capacity, and four would operate at over 70%, which according to SEA is the limit of a rail line's practical capacity.¹

¹ While Figure 4.1-8, in the body of the DEIS (p. 4.1-31), showed segments at no more than 98.0% and 98.1% of capacity, Appendix B contained a table purporting to show that those segments would be at 102.8% and 103.6% of capacity (DEIS, App. B, Attachment B2 at 14).

D.J. Gribbin IV, Esquire

October 16, 2008

Page 4

SEA, however, does not use a consistent definition of practical capacity. At one point, SEA describes LOI as the “ratio between the theoretical train capacity of a line segment and [its] projected actual use,” with an LOI of 60 (*i.e.*, 60% of theoretical capacity) being the “upper end of practical capacity.” DEIS at 4.1-27. Elsewhere, SEA suggests that “the rail line has exceeded its practical capacity” at LOIs of 70 or above. *Id.* And in the tables in which SEA reports its LOI calculations, it calculates practical capacity as being at 66.7% of theoretical capacity. *Id.*, App. B, Attachment B4 at 17, 20 (Tables B4-1, B4-2). Moreover, SEA defines LOI itself inconsistently. The text of the DEIS defines LOI as the percentage which actual use of a rail line bears to its theoretical capacity, as noted above, while the supporting tables show LOI as a percentage of “capacity,” which turns out to be lower than either theoretical capacity or practical capacity (however the latter is defined).² *Id.* at 4.1-27; *id.* App. B, Attachment B4 at 17, 20 (Tables B4-1, B4-2). SEA concludes that the trains CN plans to move over the EJ&E line following its acquisition “would consume nearly all of the main line capacity” of that line, and suggests that the line therefore “could have insufficient capacity to allow for non-interference with the existing trains of other railroads that cross the EJ&E rail line without incurring delays to Applicants’ trains.” *Id.* at 4.1-30. But it is a fallacy to conclude that train volumes close to practical capacity are an indication that any deviation from ideal operating conditions is likely to cause unacceptable congestion, as the use of practical rather than theoretical capacity is itself an allowance for the fact that actual operations will not be at ideal conditions.

Moreover, SEA appears to regard practical capacity as an absolute threshold, and LOIs approaching practical capacity as a warning sign of potential congestion. CN’s operating experience, however, is that practical capacity is not an upper threshold, beyond which railway operations will be degraded by uncontrollable train stops and delays, as suggested by SEA, but rather a practical level that maximizes service reliability in relation to operating costs. A line operating near practical capacity, in CN’s experience, is not one facing unacceptable congestion, but rather one on which the available infrastructure is neither inadequate nor excessive for the traffic it must handle.

Finally, SEA appears to have made exceptionally conservative assumptions about the capacity that would practically be available to CN, leading to unreasonable conclusions. If the methodology and assumptions SEA used to calculate LOI, as set forth in Tables B.4-1 and B-4-2 of the DEIS, are applied to CN’s core lines, they result in LOIs of over 70 on most of CN’s system, of over 80 on its Chicago-to-New Orleans line, and of over 200 on one of its key Montreal

² “Capacity” is computed, on Tables B4-1 and B4-2, by reducing theoretical capacity (“Available Track Minutes per Day”) by one-third (“Theoretical vs. Practical”), then making a further reduction of 20% (on segments governed by CTC) or 40% (on segments governed by TWC). DEIS App. B, Attachment B4 at 17, 20 (Tables B4-1, B4-2). Thus, the “capacity” used by SEA for computation of LOI is 53% of theoretical capacity on CTC segments and 40% of theoretical capacity on TWC segments.

HARKINS CUNNINGHAM LLP

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D.J. Gribbin IV, Esquire

October 16, 2008

Page 5

to Toronto lines. It would be a fallacy, however, to conclude that these lines are congested, or that CN's traffic on them adversely affects vehicular traffic on highways that cross them. Any such conclusions with respect to the EJ&E line, based on SEA's calculations, would be equally unwarranted.

RTC Analysis

SEA's third capacity analysis used the Rail Traffic Controller ("RTC") software package to model the performance of trains on the EJ&E line following its acquisition by CN. According to SEA, "[t]he essential output of the RTC model is a 'delay ratio,'" which SEA calculated would be at least 28, and could be even higher under different assumptions than those in CN's Operating Plan (DEIS at 4.1-33). In its comments, DOT stated that "[a] delay ratio of 20 or higher is generally avoided in the industry" and concluded, on the basis of string diagrams generated by RTC and reported in the DEIS, "that implementing the Applicants' Operating Plan would produce 'major delays at several locations'" (DOT-6 at 9 (quoting DEIS at 4.1-33)).

The creator of the RTC model, however, Eric Wilson of Berkeley Simulation Software, informs CN that the delay ratio is not an "essential output" of the model, and is unaware of any consensus in the rail industry that a ratio of 20 indicates that the line is at capacity. In addition, CN finds that, far from indicating that CN's Operating Plan would result in "major delays at several locations," the string diagrams generated by RTC (*see* DEIS at 4.10-34—4.10-38 (Figure 4.1-9); *id.* App. B, Attachment B4 at 24-28 (Figure 4.1-9)) show a railroad whose operations are fairly fluid, as indicated by the relatively small number of horizontal lines (which would show trains that are stopped), and the relatively short length of those lines (which would correspond to short time the trains are stopped).

* * * * *

For these reasons, while CN would face challenges in operating the EJ&EW, it is more than equal to those challenges, which are far less than those it faces every day in operating through Chicago over its present lines. CN is confident that the capacity improvements it has planned for the EJ&E line would be sufficient, while not excessive, to ensure that the line would operate fluidly.

We therefore believe that there is no reason to believe that the DEIS "may understate the likely extent of rail congestion on the EJ&E" (DOT-6 at 7), much less that the acquisition of EJ&E line would cause "vehicular delays [to] increase commensurately" (*id.* at 14). Moreover, whatever vehicular delays may be expected as a result of the acquisition would not require the

³ SEA explains that "[t]he delay ratio captures the lost time in a rail operation – the time trains spend waiting for a clear track ahead" – as compared to the time the trains would take to operate unimpeded. DEIS at 4.1-32.

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D.J. Gribbin IV, Esquire

October 16, 2008

Page 6

extensive, unprecedented mitigation that would be necessary according to the DEIS.⁴ As CN demonstrated in its comments on the DEIS (at 90-92), even under SEA's new "exposure" and "total delay" standards, if reasonable assumptions were made regarding vehicular and train volumes, only five grade crossings would require mitigation, two of which are already the subject of CN's voluntary mitigation agreement with the City of Joliet. CN further explained that the "high incidence of predicted accidents" standard, which SEA purported to have based on Federal Highway Administration guidelines, would not apply to any of the 15 crossings, and that, because SEA's new queue length standard has no relationship to the number of trains, it is an inappropriate ground for requiring any mitigation of vehicular delay. In summary, CN demonstrated that, under standards applied by the STB in previous proceedings, the proposed transaction would not cause delays to vehicular traffic that would warrant mitigation at any grade crossing other than the two already addressed by CN's agreement with the City of Joliet.

We would appreciate an opportunity for CN operating and technical personnel who are familiar with the proposed operations to meet with your technical personnel in the next week or two, either in person or by telephone, to explain in greater detail how CN plans to operate the EJ&E line after its acquisition and why there is no reason to believe that the infrastructure improvements CN has proposed would be insufficient to ensure fluid operations and prevent blockages of road or rail crossings other than those accounted for in the DEIS. We believe that such a meeting would help assure DOT that the proposed transaction would not lead to unforeseen congestion, and that no additional environmental analysis is needed for the STB to

⁴ SEA claimed that mitigation of vehicular delay (potentially involving any of a wide variety of measures, up to and including grade separation) would be warranted at 15 highway-rail at-grade crossings. It identified these crossings by applying, not only the level of service ("LOS") criterion previously used by SEA to identify grade crossings for which grade separation should be considered in order to mitigate vehicular delay, but also four additional criteria (total delay exceeding 40 hours per day, vehicle queue blocking major thoroughfare, "exposure" (i.e., product of average daily vehicular traffic and average number of trains), and high incidence of predicted accidents), that had never before used as a basis for requiring mitigation of delay.

These mitigation measures, it should be noted, have been proposed to address the consequences of adding no more than 22, and in some cases as few as 13, trains per day to the affected rail segments. By way of comparison, only three grade separations were ordered in the DM&E Construction case, where an increase of up to 34 trains a day was projected, and in the Conrail Acquisition case, although there were many at-grade crossings that would experience increases in volume of more than 22 trains per day, only 13 grade crossings were found to exceed SEA's criteria of significance, and grade separation was ordered at only one of those (Randolph Street in Garrett, De Kalb County, where the transaction was expected to lead to the addition of 26.3 trains per day to the affected CSXT line).

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D.J. Gribbin IV, Esquire

October 16, 2008

Page 7

comply with any requirements of the National Environmental Policy Act of 1969 that might apply to this transaction.

I look forward to hearing from you.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Paul A. Cunningham".

Paul A. Cunningham

cc: Joseph H. Boardman (Administrator, FRA)
Paul Samuel Smith, Esquire (Senior Trial Attorney, OGC, DOT)
S. Mark Lindsey, Esquire (Chief Counsel, FRA)
Victoria J. Rutson (Chief, SEA, STB)
Phillis Johnson-Ball (Deputy Chief, SEA, STB)

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November 14, 2008

BY HAND

D.J. Gribbin IV, Esquire
General Counsel
United States Department of Transportation
1200 New Jersey Avenue, S.E., Room W92-300
Washington, D.C. 20590

Re: *Canadian National Railway Company and Grand Trunk Corporation – Control –
EJ&E West Company, STB Finance Docket No. 38750*

Dear Mr. Gribbin:

I am writing to follow up on my letter dated October 16, 2008, on behalf of Canadian National Railway Company and Grand Trunk Corporation (together, "CN"), regarding the comments filed by the United States Department of Transportation ("DOT") with the Surface Transportation Board ("STB"), regarding the Draft Environmental Impact Statement ("DEIS") in this proceeding.

In my October 16 letter, I requested the opportunity for CN's operating and technical personnel to meet with DOT technical personnel to discuss in greater detail the questions DOT, in its comments on the DEIS, had raised regarding the capacity of the EJ&E line that CN proposes to acquire. As I believe you know, the requested meeting was held at DOT headquarters on November 7, 2008, between representatives of CN, your office, and the Federal Railroad Administration ("FRA"). We believe this was a productive meeting, and we appreciate having had the opportunity to explain in greater detail how CN plans to operate the EJ&E line and why CN's proposed infrastructure improvements should be sufficient to ensure fluid operations and to prevent blockages of road or rail crossings by stopped or delayed trains.

Much of the November 7 meeting was devoted to CN's explanation of how SEA's "Line Occupancy Index" ("LOI")¹ was calculated in a way that led to unreasonable conclusions. First, as CN explained, SEA appears to have made two adjustments for the difference between theoretical and practical capacity, resulting in the assumption that only 53% of the theoretical

¹ DEIS at 4.1-27—4.1-31; *id.*, App. B, Attachment B4 at 10-20.

D.J. Gribbin IV, Esquire
November 14, 2008
Page 2

capacity of lines controlled by CTC ($80\% \times 66.7\% = 53\%$), and only 40% of the theoretical capacity of lines controlled by TWC ($60\% \times 66.7\% = 40\%$), would actually be available for train movements. SEA appears to have calculated LOI as a percentage of practical capacity (calculated by SEA at 66.7% of theoretical capacity), even though, according to the DEIS, it should have been calculated as a percentage of theoretical capacity.² Had SEA based its LOI calculations on theoretical capacity, it would have arrived at much lower LOI values.

Second, it appears to CN, based on its examination of SEA's calculations,³ that SEA increased the length of time needed for a train to move over each segment by adding a "v-time" of 10 minutes. In conducting this kind of capacity analysis (which CN refers to as a "return grid" analysis), it is appropriate to include a v-time allowance in calculating segment travel time, to account for the difference between the time a train would take to cross the segment if it had to stop for a meet or pass, compared to the time it would take if it were unimpeded. CN generally assumes a v-time of only 5 minutes (which exceeds the v-time of about three minutes that CN calculated for trains on the EJ&E, using CN's Train Performance Calculator model), and it understands that other railroads use a similar 5 minute v-time rule of thumb. For this reason, CN believes it would be unduly conservative to assume a v-time of 10 minutes, as SEA appears to have done.⁴

As CN explained at the November 7 meeting, when the assumptions and methodology SEA appears to have used to calculate LOI⁵ are tested by applying them to CN's actual operations, they result in conclusions that conflict with CN's experience. As Exhibit A to this letter demonstrates, they yield LOIs on most of CN's core lines of 70 or higher, which, according to SEA would mean that the rail line segments in question have "exceeded [their] practical capacity, and [that] maintenance activities will likely result in interruption to train traffic, or rerouting of train traffic to other lines, or temporary reductions in rail service levels offered to shippers, or all three." DEIS at 4.1-27. Only two of CN's principal corridors would have LOIs of between 40 and 69, computed according to SEA's methodology and assumptions, which according to SEA would mean that the rail line segments in question "[are] reaching an upper

² DEIS at 4.1-27 (defining LOI as "a ratio between the theoretical train capacity of a line segment and the projected actual train use of a line segment").

³ See DEIS App. B, Attachment B2 at 14; *id.*, Attachment B4 at 15-20 (Tables B4-1, B4-2).

⁴ As CN noted, when trains meet or pass on a single-track line, only one needs to take a siding, so a v-time allowance should be applied only to one of the trains. SEA's apparent use of a 10-minute v-time allowance is tantamount to an assumption that both trains need to stop at a meet or pass.

⁵ As set forth in Tables B.4-1 and B.4-2 (DEIS, App. B, Attachment B4 at 15-20).

D.J. Gribbin IV, Esquire

November 14, 2008

Page 3

threshold for adding more train traffic, and maintenance activities will need to be carefully scheduled to avoid excessive interruption to train traffic." *Id.*

These calculations are illustrated graphically on the map attached as Exhibit B. This map identifies the principal corridors with the same color codes that SEA used in Figure 4.1.31 of the DEIS (*i.e.*, red for those with LOIs of 70 or higher, and yellow for those of LOIs between 40 and 69).⁶

As Exhibits A and B show, SEA's approach leads to the conclusion that the majority of CN's system is seriously gridlocked. This is simply not the case, and it is inconsistent with the reality that CN operates the most efficient railroad in North America. If, on the other hand, slight adjustments are made to SEA's approach to reflect more realistic assumptions – that is, if the LOI is based on theoretical capacity (rather than practical capacity), and if a v-time allowance of 5 minutes (rather than 10 minutes) is used in the return grid calculation – then more realistic conclusions are reached. Calculations using those more realistic assumptions are set forth in Exhibit A, and the results are illustrated graphically in the map attached as Exhibit C, which identifies most of the corridors in CN's system in yellow (indicating LOIs between 40 and 69), and the others in green (which SEA used to identify lines with LOIs lower than 40, indicating "that the rail line segment[s] in question have] adequate capacity for additional train traffic and to perform track, structure, and signal maintenance," DEIS at 4.1-27).

As reported at the November 7 meeting, CN has recalculated the LOIs for the affected EJ&E rail segments, using these more realistic assumptions. Those calculations are set forth in Exhibit D to this letter, which is based on Table B4-1 of the DEIS and compares SEA's calculations, as found in that table, with CN's corrected calculations. As can be seen from Exhibit D, the revised calculations indicate that no EJ&E segment would operate with an LOI of higher than 53, which is well in line with LOIs on CN's other principal corridors. Exhibit E to this letter provides a graphic comparison between SEA's calculations of LOI for the EJ&E rail segments, both before and after implementation of the proposed transaction, and CN's corrected calculations.⁷

I am providing a copy of this letter, as well as of my letter dated October 16, 2008, to SEA so that the environmental record may include our comments on the capacity analysis in the DEIS. Please let us know if the information CN has thus far provided adequately addresses the questions raised in DOT's DEIS comments about potential "the likely extent of rail congestion

⁶ DEIS at 4.1-31.

⁷ Exhibit E also points out that the LOI for segment N (CP 198 to Rock Island Junction) should be based on a train speed of 20 miles per hour, rather than 10 miles per hour as assumed by SEA, because CN expects to implement its settlement agreement with the City of Joliet by reconfiguring the track at this location to permit train movements at the higher speed.

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D.J. Gribbin IV, Esquire

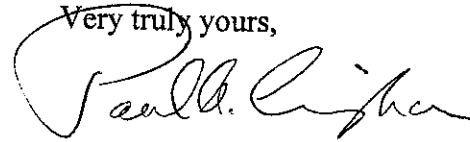
November 14, 2008

Page 4

on the EJ&E" and of commensurate increases in vehicular delay resulting from blocked grade crossings (DOT-6 at 7, 14), or if further information may be needed in order to ally DOT's concerns regarding those issues.

Once again, thank you for providing CN the opportunity to explain its proposed operations. If you or they have any further questions about those operations, please let me know, and we will provide you the needed information in a face-to-face meeting, by telephone, or in writing, as may be most appropriate.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Paul A. Cunningham".

Paul A. Cunningham

Enclosures

cc: Joseph H. Boardman (Administrator, FRA)
Paul Samuel Smith, Esquire (Senior Trial Attorney, OGC, DOT)
S. Mark Lindsey, Esquire (Chief Counsel, FRA)
Victoria J. Rutson (Chief, SEA, STB)
Phillis Johnson-Ball (Deputy Chief, SEA, STB)
John H. Morton (HDR Engineering, Inc.)

EXHIBIT A

Network Capacity by Corridor - Summary
(Current Plant)

Corridor	Subdivision	Short Trains (1.0 HPT)		Details Attachment	Capacity on Old Map	Variance Old Map vs. Marketing Capacity	Variance Old Map vs. Practical Capacity	Added V-time A Added V-time B Pairs of trains CTC Practical		THEORETICAL & PRACTICAL CAPACITY - Different Methodologies							
		Marketing Capacity (83% Theoretical) (Trains / Day)	Practical Capacity (67% Theoretical) (Trains / Day)							TRAFFIC VOLUME Trains / Day	RECALCULATED - (check) Practical Capacity 67% Theoretical Trains / Day 5" v-time	SEA CALCULATION Practical Capacity 67% Theoretical Trains / Day 10" v-time	RECALCULATED Theoretical Capacity Practical / 67% Trains / Day 10" v-time	RECALCULATED Theoretical Capacity Practical / 67% Trains / Day 5" v-time	LOI CALCULATIONS - Different Methodologies		
															LOI CALCULATION DEIS Methodology "A" Actual vs. Practical Capacity 10" v-time	LOI CALCULATION DEIS Methodology "B" Actual vs. Theoretical Capacity 10" v-time	LOI CALCULATION Actual vs. Theoretical Capacity 5" v-time
BC North	Tate-Jauna	28	22.5	A						12	22.5	21.0	31.4	33.7	57%	38%	36%
	Fraser	23	18.5	A						12	18.5	17.4	26.1	27.7	99%	46%	43%
	Nechako	22	17.7	A						12	17.7	16.7	25.1	26.5	72%	48%	45%
	Telkwa	26	20.9	A						12	20.9	19.9	29.3	31.3	81%	41%	38%
	Bulkley	18	14.5	A						12	14.5	13.8	20.7	21.7	87%	58%	55%
		17.3								12	17.3	16.4	24.6	25.0	73%	49%	46%
	Skeena	23	18.5	A						12	18.5	17.4	26.1	27.7	69%	46%	43%
	Corridor capacity ==>	18	14.5		21	(3)	(7)										
	Rounded:	18	14.0		21	(3)											
	With one pinch pt removed		18.0														
Edmonton - Vancouver	Edson East	43	34.5	B						12	14.0	13.4	20.1	21.0	90%	80%	57%
	Edson West	43	36.1	B						12	18.0	17.4	25.5	27.0	71%	47%	44%
	Albera	43	34.5	B						28	34.5	31.0	46.8	51.3	90%	60%	54%
	Clearwater	33	26.5	B						28	38.1	32.3	48.5	54.2	87%	58%	52%
	one pinch pt removed (Vancouver)	33	31.5	B						28	34.5	31.0	46.6	51.6	90%	60%	54%
	Ashcroft	45	36.1	B						28	31.5	24.4	36.8	39.8	115%	77%	70%
	Yale	85	68.3	B						28	36.1	28.6	42.9	47.3	98%	65%	59%
	Corridor capacity ==>	33	26.5		39	(6)	(12)			28	68.3	55.9	83.8	102.4	87%	56%	52%
	Rounded:	32	28.0		39	(7)									50%	33%	27%
	With one pinch pt removed		32.0														
Winnipeg - Edmonton	Rivers	35	28.1	C						28	28.0	25.7	38.5	42.0	100%	73%	67%
	Wabou	35	28.1	C						28	32.0	29.0	43.6	48.0	97%	84%	58%
	Wainwright	32	25.7	C						24	28.1	25.8	38.6	42.2	93%	62%	67%
	one pinch pt removed	32	32.4							24	26.1	25.8	38.6	42.2	93%	62%	67%
	Corridor capacity ==>	32	25.7		38	(6)	(12)			24	25.7	23.7	35.8	38.6	101%	67%	62%
	Rounded:	32	28.0		38	(6)				24	32.4	29.3	44.0	48.8	82%	55%	49%
	With one pinch pt removed		28.0														
	Bedford / Springfield	22	17.7	D						24	28.0	24.0	36.0	39.0	100%	87%	82%
	Napadogon	18	14.5	D						24	28.0	24.0	36.0	39.0	94%	82%	57%
	Pedder	20	16.1	D						8	17.7	16.7	25.1	26.5	48%	32%	30%
Halifax - Montreal	Montmagny	45	36.1	D						8	14.5	13.8	20.7	21.7	56%	39%	37%
	Drummondville	54	43.4	D						8	18.1	15.3	22.9	24.1	52%	35%	33%
	Corridor capacity ==>	18	14.5		16	2	(2)			8	38.1	32.3	48.5	54.2	25%	16%	15%
	Rounded:	18	14.0		16	2				8	43.4	38.0	57.0	65.1	21%	14%	12%
	Montreal (DT)	56	50.0	J						8	14.0	13.4	20.1	21.0	80%	40%	35%
	Kingston (DT)	56	50.0							44	49.6	21.4	32.1	74.3	208%	137%	59%
	York (ruling gnd)	56	45.0							44	49.6	21.4	32.1	74.3	208%	137%	59%
	Corridor capacity ==>	56	45.0		58		(11)			44	45.0	30.2	38.9	67.5	112%	75%	65%
	Rounded:		46.0														
	With one pinch pt removed																
Toronto - Winnipeg	Bala	32	25.7	E						15	25.7	23.7	35.8	36.8	63%	42%	38%
	Ruel East	35	28.1	E						15	28.1	25.8	39.8	42.2	58%	39%	36%
	Ruel West	34	27.3	E						15	27.3	25.1	37.8	41.0	60%	40%	37%
	Caramet	31	24.9	E						15	24.9	23.0	34.5	37.3	65%	43%	40%
	Alkanwater	40	32.1	E						15	32.1	29.1	43.6	48.2	52%	34%	31%
	Redditt	33	28.5	E						15	28.5	24.4	36.6	38.8	61%	41%	36%
	Corridor capacity ==>	31	24.9		25	8	(9)			15	25.7	23.7	35.8	36.8	63%	42%	38%
	Rounded:	32	28.0		25	7											
	With one pinch pt removed																
	Corridor capacity ==>	31	24.9		25	8	(9)			15	25.7	23.7	35.8	36.8	63%	42%	38%
Toronto - Chicago	Haton	70	58.2	F						27	58.2	47.5	71.3	84.3	57%	38%	32%
	Strathroy	61	49.0	F						27	49.0	42.3	63.4	73.5	84%	43%	37%
	Flint	42	33.7	F						27	33.7	30.4	45.8	50.8	69%	58%	53%
	South Bend	56	45.0	F						27	45.0	39.2	58.9	67.5	69%	46%	40%
	Corridor capacity ==>	42	33.7		36	6	(2)			27	33.7	30.4	45.8	50.8	69%	58%	53%
	Rounded:	42	34.0		36	6											
	With one pinch pt removed																
	Corridor capacity ==>	42	33.7		36	6	(2)			27	33.7	30.4	45.8	50.8	69%	58%	53%
	Rounded:	42	34.0		36	6											
	With one pinch pt removed																
Winnipeg - Chicago	Waukesha	40	31.0	G						14	31.0	28.2	42.2	48.5	50%	33%	30%
	Neenah	35	26.0	G						14	26.0	24.0	36.0	39.0	56%	39%	36%
	Superior	32	24.0	G						14	24.0	22.3	33.4	36.0	63%	42%	39%
	Rainy / Missabe	24	19.0	G						14	19.0	17.9	28.8	30.0	78%	52%	49%
	Fort Frances	34	28.0	G						14	28.0	24.0	36.0	39.0	58%	39%	36%
	Sprague	30	23.0	G						14	23.0	21.4	32.1	34.5	65%	44%	41%
	Corridor capacity ==>	24	19.0		19	5				14	19.0	18.8	28.2	30.0	75%	50%	47%
	Rounded:		20.0														
	With one pinch pt removed																
	Corridor capacity ==>	24	19.0		19	5				14	19.0	18.8	28.2	30.0	75%	50%	47%
Chicago - New Orleans	Chicago	48	36.8	H						18	36.8	33.0	46.5	55.4	55%	36%	32%
	Champaign	34	27.3	H						18	27.3	25.1	37.6	41.0	72%	49%	44%
	Caro	43	34.5	H						18	34.5	31.0	46.8	51.8	58%	39%	35%
	Fulton	33	26.0	H						18	26.0	24.0	36.0	39.0	75%	50%	46%
	Yazoo	29	23.3	H						16	23.3	21.7	32.5	34.9	83%	55%	52%
	McComb	32	25.7	H						18	25.7	23.7	35.8	38.6	76%	51%	47%
	Corridor capacity ==>	29	23.3		25	4	(2)			18	23.3	21.7	32.5	34.9	83%	55%	52%
	Rounded:		24.0														
	With one pinch pt removed																
	Corridor capacity ==>	29	23.3		25	4	(2)			18	23.3	21.7	32.5	34.9	83%	55%	52%
	Rounded:		24.0														

Not included in above (Blufford / Centralia should not be ruling grid since the DT; Centralia is primary route per Service Design):
Blufford 21 15.9
Centralia 24 20.0

2.6
5
10000 1.86
45 1.33

81.4 81.4
162.8 162.8
4 88.0
74.8 162.8
49.9 108.5
88.0
20.5

EXHIBIT B

CN Capacity – LOI as per DEIS

(Actual / Practical Capacity @ 67% & 10" v-time)

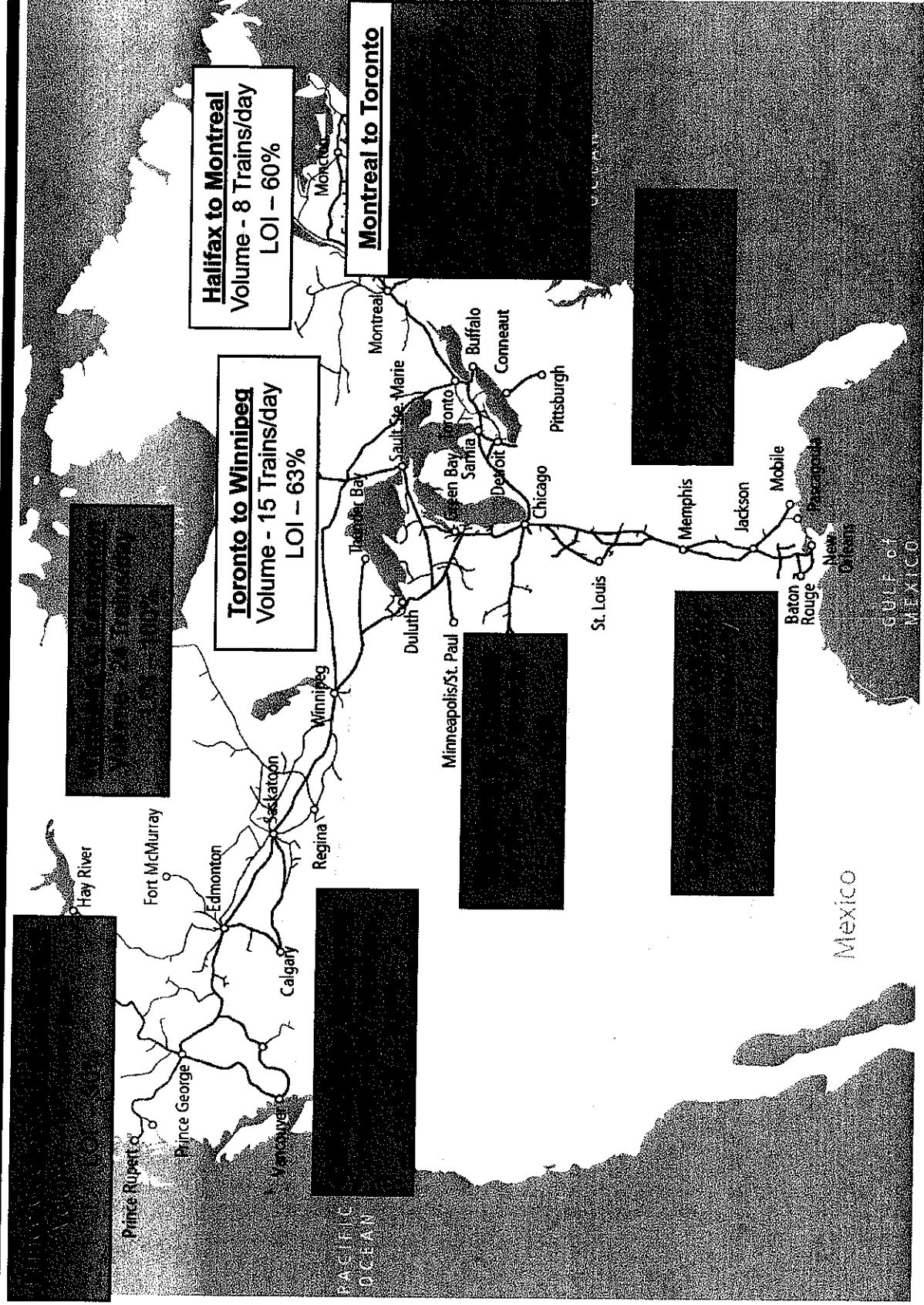


EXHIBIT C

CN Capacity – LOI as per DEIS (Actual / Theoretical Capacity @ 5" v-time)

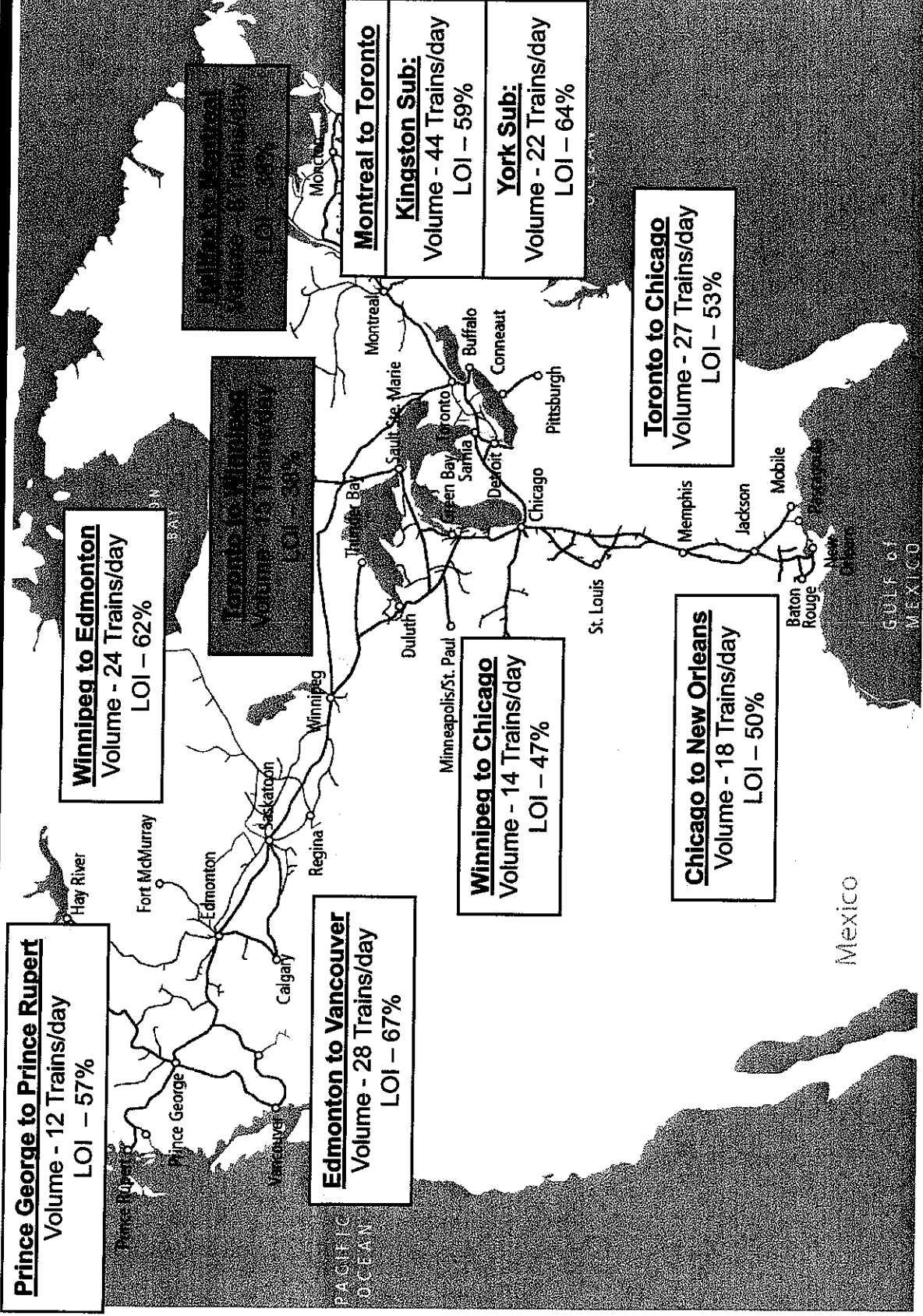


EXHIBIT D

Table B4-1. Line Occupancy Index Calculations
Existing Conditions

										CN LOI Calculations - Based on Theoretical Capacity as per definition in DEIS 4.1.5.2, page 4.1-27			
From	To	Route Miles	Train Speed (mph)	Train Length (feet)	Segment Travel Time (min)	Train Length Time (min)	Total Travel Time per Train (min)	Number of Trains in a Block	Capacity (%)	Theoretical Capacity recreated from data in DEIS Table B4-2, using 10 minutes V-Time	Capacity (%) - corrected LOI as defined DEIS section 4.1.5.2, page 4.1-27 based on Theoretical Capacity, using 10 minutes V-Time	Theoretical Capacity recreated from data in DEIS Table 4.1-8, using 5 minutes V-Time	Capacity (%) - corrected LOI as defined DEIS section 4.1.5.2, page 4.1-27 based on Theoretical Capacity, using 5 minutes V-Time
Leithton	Gilmer Road	3.7	30	2760	7.40	1.05	8.45	1.00	0%	80.3	7%	98.6	5%
Gilmer Road	W. Sutton	13.0	40	2760	19.50	0.78	20.28	2.50	10%	75.5	7%	93.3	6%
W. Sutton	E. Sutton	1.8	40	2760	2.64	0.78	3.42	1.20	0%	281.3	2%	412.7	1%
E. Sutton	W. Spaulding	4.6	40	2760	6.96	0.78	7.74	1.00	10%	79.6	7%	99.0	5%
W. Spaulding	E. Spaulding	1.6	40	3042	2.33	0.86	3.19	1.00	0%	205.1	3%	295.3	2%
E. Spaulding	Hawthorne Lane	4.1	40	2246	6.18	0.64	6.82	1.00	0%	72.4	6%	91.8	5%
Hawthorne Lane	W. Chicago	2.6	30	2246	5.24	0.85	6.09	1.00	0%	151.8	3%	166.0	2%
W. Chicago	W. Eola	6.4	40	3769	9.62	1.07	10.69	2.00	10%	75.3	14%	95.3	11%
W. Eola	W. East Siding	2.2	40	3769	3.29	1.07	4.36	1.00	10%	123.1	9%	167.9	6%
W. East Siding	Walker	9.7	40	3881	14.57	1.10	15.67	2.00	10%	58.8	27%	73.1	21%
Walker	Turner	5.4	40	3398	8.07	0.97	9.04	1.20	10%	68.2	27%	85.2	22%
Turner	East Bridge Jct	3.7	30	3398	7.42	1.29	8.71	1.00	10%	165.9	11%	202.9	9%
East Bridge Jct	CP 198	0.3	10	3398	1.80	3.86	5.66	1.00	10%	91.2	20%	119.1	16%
CP 198	Rock Island Jct	2.3	10	2742	14.04	3.12	17.16	1.00	10%	74.0	25%	83.4	22%
Rock Island Jct	Frankfort	13.8	40	3795	20.63	1.08	21.70	3.00	10%	66.2	10%	83.2	8%
Frankfort	Richton	5.8	40	3795	8.69	1.08	9.76	1.20	10%	81.6	10%	76.1	8%
Richton	Matteson	1.1	40	3615	1.61	1.03	2.63	1.00	0%	212.2	4%	315.7	3%
Matteson	Chicago Heights	3.6	40	3615	5.40	1.03	6.43	1.00	0%	142.9	6%	183.0	5%
Chicago Heights	Griffith	10.8	40	3261	16.20	0.93	17.13	2.00	10%	122.1	8%	149.7	7%
Griffith	Kirk Yard	9.3	40	2920	13.95	0.83	14.78	2.00	10%	124.5	8%	155.0	6%

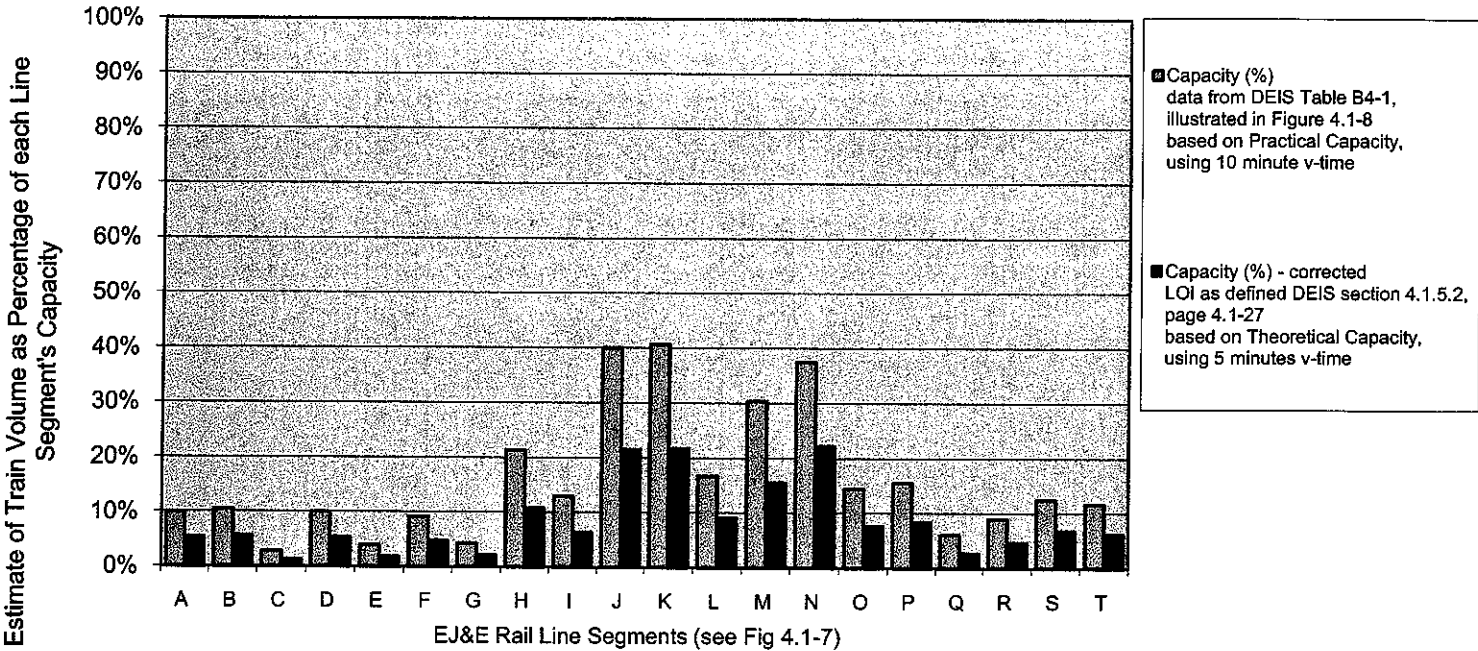
Table B4-2. Line Occupancy Index Calculations
Proposed Action

										CN LOI Calculations - Based on Theoretical Capacity as per definition in DEIS 4.1.5.2, page 4.1-27			
From	To	Route Miles	Train Speed (mph)	Train Length (feet)	Segment Travel Time (min)	Train Length Time (min)	Total Travel Time per Train (min)	Number of Trains in a Block	Capacity (%)	Theoretical Capacity recreated from data in DEIS Table B4-2, using 10 minutes V-Time	Capacity (%) - corrected LOI as defined DEIS section 4.1.5.2, page 4.1-27 based on Theoretical Capacity, using 10 minutes V-Time	Theoretical Capacity recreated from data in DEIS Table 4.1-8, using 5 minutes V-Time	Capacity (%) - corrected LOI as defined DEIS section 4.1.5.2, page 4.1-27 based on Theoretical Capacity, using 5 minutes V-Time
Leithton	Gilmer Road	3.7	20	6829	11.1	3.88	14.98	1	3%	111.7	18.2%	127.7	15.9%
Gilmer Road	W. Sutton	13	40	6829	19.5	1.94	21.44	2.5	7%	72.9	27.8%	89.4	22.7%
W. Sutton	E. Sutton	1.76	40	6829	2.64	1.94	4.58	1.2	2%	250.3	8.1%	349.4	5.8%
E. Sutton	W. Spaulding	4.54	40	6829	6.96	1.94	8.9	1	3%	72.9	30.8%	88.9	25.3%
W. Spaulding	E. Spaulding	1.55	40	6714	2.33	1.91	4.23	1	5%	182.0	12.4%	249.6	9.0%
E. Spaulding	Hawthorne Lane	4.12	40	6714	5.18	1.91	8.09	1	7%	65.4	36.6%	80.8	29.0%
Hawthorne Lane	W. Chicago	2.62	30	6714	5.24	2.54	7.78	1	0%	131.7	24.0%	163.7	19.3%
W. Chicago	W. Eola	6.41	42	6494	9.16	1.76	10.91	2	7%	74.4	42.4%	97.8	32.3%
W. Eola	W. East Siding	2.19	40	6494	3.29	1.84	5.13	1	7%	113.7	27.6%	151.0	20.9%
W. East Siding	Walker	9.71	40	6203	14.57	1.76	16.33	2	1%	164.0	24.1%	202.5	19.5%
Walker	Turner	5.38	40	6203	8.07	1.76	9.83	1.2	3%	64.8	65.3%	79.9	52.9%
Turner	East Bridge Jct	3.71	25	5842	8.9	2.66	11.56	1	2%	137.4	30.6%	161.8	26.1%
East Bridge Jct	CP 198	0.3	10	5842	1.8	6.64	8.44	1	8%	72.3	59.9%	88.3	46.7%
CP 198	Rock Island Jct	2.34	10	5552	14.04	6.31	20.35	1	1%	64.6	65.4%	129.3	32.7%
Rock Island Jct	Frankfort	13.75	40	6684	20.63	1.9	22.52	3	8%	178.4	15.9%	223.0	12.7%
Frankfort	Richton	5.79	35	6684	9.93	2.17	12.1	1.2	3%	53.7	52.7%	64.4	44.0%
Richton	Matteson	1.07	20	6256	3.21	3.55	6.76	1	8%	137.7	20.8%	174.9	16.2%
Matteson	Chicago Heights	3.6	30	6256	7.2	2.37	9.57	1	3%	112.1	28.2%	136.4	23.3%
Chicago Heights	Griffith	10.8	35	5721	18.51	1.86	20.37	2	3%	109.0	31.4%	130.5	26.2%
Griffith	Kirk Yard	9.3	33	5721	16.91	1.97	18.88	2	3%	106.8	29.0%	129.2	23.1%

EXHIBIT E

EJ&E Rail Line - Existing Conditions
Line Occupancy Index Table

(each bar shows the percent of each segments capacity is consumed by the applicants train volume)



EJ&E Rail Line - Proposed Conditions
Line Occupancy Index Table

(each bar shows the percent of each segments capacity is consumed by the applicants train volume)

