

**Evaluation of alternative routes for
"Milwaukee II"
between Savanna, Marquette, and St. Paul
by
Mr. W. G. Richmond
December 16, 1980**

1/1/81

JCS
-Work with Richmond
to resolve this, JAS
get this
info to WGR.
1/12

PFC 1/12

January 7, 1981

Mr. P. F. Cruikshank
Room 848

In reference to your letter of December 26, 1980 with attached copy of Mr. W. G. Richmonds's draft covering evaluation of alternate routes for "Milwaukee II" between Savanna-Marquette-St. Paul.

It appears the savings and operations via Marquette-River Junction versus via Chicago for car hire and crew costs as stated in the study might be inflated.

I assume the 7 fewer hours per trip southbound between St. Paul and Savanna was used as a factor in determining car hire savings. In actuality, this would not be the case if we were to continue to reap the benefits of run-through trains at Kansas City. These cars would be delayed at Savanna or Ottumwa to be switched into run-through trains with cars from Chicago and Milwaukee, and the overall transit time St. Paul to Kansas City would be the same.

This may also have a bearing on the projected savings of 25 tri-level auto racks because of the anticipated improvement in transit times.

I also assumed the crew costs were figured on the basis of one train being operated daily in each direction between St. Paul and Savanna as there are numerous days when these cars are handled on trains between St. Paul-Chicago-Savanna that would be operated even though the St. Paul-Savanna traffic was handled via Marquette-River Junction.

L. W. Nigus
L. W. Nigus
Director Operations Control Center

Handwritten initials

December 26, 1980

Messrs.

W. F. Plattenberger
N. E. Smith, Room 898
J. A. Schwinkendorf
L. W. Nigus, Room 861

For your information, attached is copy of Mr. W. G. Richmond's draft covering evaluation of alternative routes for "Milwaukee II" between Savanna, Marquette, and St. Paul.

I would be interested in any comments you may have regarding same.

Handwritten checkmark

Paul F. Cruikshank
Vice President-Operations

cc: Messrs.
C. B. Smith, Milwaukee Shops
~~W. Miller, 204 Canal~~

VICE PRESIDENT
JAN 6
OPERATIONS



P. F. Cruikshank:

Whatever route chosen will have no effect on security forces. Area in question presently covered by offices at La Crosse and Savanna. Spencer-Mason City-Austin area presently handled out of Minneapolis.

W. Miller
1-6-81

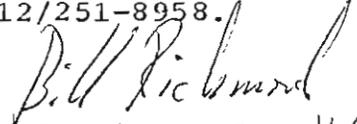
JGS
See corrections
&/or questions.

MHW
JGS

We will need to develop new
blocking strategies if River Jet-
Marquette is reinstated. Let's
start doing some thinking on
this..... JGS
12/17

Messrs. P. C. White/T. F. Power
M. J. Coomes/L. I. Larson
P. F. Cruikshank/W. F. Plattenberger
B. J. McCanna - St. Paul
J. A. Schwinkendorf/J. G. Schmidt
N. E. Smith/R. S. Johnson

Attached is draft covering evaluation of alternative routes
for Milwaukee II between Savanna, Marquette and St. Paul.
Kindly contact me with any corrections or comments as soon as
possible on Chicago extension 3708 or, if no answer call
312/251-8958.


W. G. Richmond

12/16/80

A complete discussion of findings appears in attachment form. Briefly, the conclusions reached are:

1. The St. Paul-Savanna traffic, currently being routed via Chicago, should be routed via Marquette-River Junction instead.
2. Running rights should be obtained, if possible, on the Rock Island (ROCK) line at least between Comus and Mason City (See Map in Exhibit 1). Rights south from Mason City to the joint ROCK/MILW. trackage at Polo, Missouri is desirable as well but not necessary for the routing decisions addressed here. Use of the Comus-Mason City rights will, without adversely affecting Milwaukee II's annual costs or market viability permit:
 - a. Closing of lines between Ramsey-Comus, Austin-Calmar, and Austin-Mason City, a total of 161.7 miles.
 - b. Serving of Austin via Jackson line from Albert Lea.
3. If the ROCK running rights cannot be obtained, then the Milwaukee's Mason City-Austin line should be opened and the Mason City-Calmar line closed; a net reduction of 29.6 miles. CNW's parallel line between Austin and Manly was considered as an alternative route, but does not appear to be more beneficial than the Milwaukee line.
4. Should funding limitations absolutely preclude ever opening the Marquette-River Junction line, long-term annual expenses will be adversely affected and the above recommendations will change as follows:
 - a. St. Paul-Savanna traffic should continue to be routed via Chicago if the Comus-Mason City ROCK line will be available and the Austin-Calmar line to be closed as a result.
 - b. If it is found that use of the ROCK line will not be available at all, then the Austin-Calmar line should be upgraded immediately and the St. Paul-Savanna traffic routed that way. This would be the next-least circuitous, and next-least cost route. The Mason City-Austin line would remain closed.

AUSTIN

DRAFT
(12-15-80)

Mr. P. C. White
Vice President-Marketing
The Milwaukee Road
516 West Jackson Boulevard
Chicago, IL 60606

Dear Peter:

This letter follows your request that an evaluation be made of alternative routes for Milwaukee II between St. Paul and Marquette, IA; including consideration as to whether St. Paul-Savanna, IL traffic should be routed via Marquette rather than via Chicago, and including consideration as to likely impacts the federal "Grain Funnel" proposal would have on Milwaukee's long range plans for the St. Paul/Marquette territory.*

As in past projects, Milwaukee Road people provided substantial technical assistance. In this study, the bulk of in-house data and information used was provided by:

J. G. Schmidt, Manager-Operations Planning
R. S. Johnson, Director-Engineering Planning
B. J. McCanna, Division Manager-Minnesota Division
K. A. Lussie, Manager-Market Development

Applicable strategy/policy information for the Marketing, Operating and Engineering Departments was obtained through discussions with Assistant Vice Presidents M. J. Coomes and L. I. Larson, W. F. Plattenberger, and N. E. Smith, respectively.

In certain cases data available are sufficient for comparative evaluation but cannot be considered precise in absolute magnitude. For this reason, figures in exhibits should not be used for purposes outside the context of this letter and attachments. Supporting calculations are available separately and may be reviewed any time.

*This territory is defined to include all of Milwaukee II's trackage west of the Mississippi River and north of Savanna, IL, but excluding the lines west from St. Paul to Miles City.

The net increase in maintenance of way cost reflects that 63 miles of line between Marquette and River Junction must be opened and used by only two trains per day, which would otherwise operate on principal mainlines with only incremental maintenance expense.

It is clear from the above that very substantial operating savings can be made by routing St. Paul-Savanna traffic via Marquette-River Junction rather than via Chicago. The shorter transit times will create a time 'cushion' to make up for unforeseen delays, thereby improving schedule reliability of existing traffic, which is service-sensitive. Because switching of Savanna-St. Paul trains would be handled at Savanna rather than at Bensenville, about two miles of trackage at Savanna Yard would be maintained that could otherwise be removed, and this additional cost has been included in the figures shown.

Nominal marketing benefits foreseen at this writing due to the opening of the Marquette-River Junction line are:

1. Automotive. Reduced transit time between Kansas City and St. Paul will directly improve critically important schedule reliability and will replace auto tri-level equipment needs from a current total of 265 cars in this service to 240 cars, a difference of 25. The cost of 25 tri-level racks alone (excluding flat car hire) amounts to nearly \$1.0 million. Removal of auto traffic from Bensenville Yard where cars stand long periods of time between movements is expected to result in fewer damage claims for vandalism.
2. Intermodal. Existing TOFC traffic between Kansas City/Quad City and St. Paul is about 1,200 carloads (two trailers per load) annually, all routed via Chicago. Routing via Marquette-River Junction will at least double this business and will materially improve net margins as well.
3. Coal. It is presently estimated that there is a 20% chance that coal for Columbia II would be routed via Kansas City from new sources after existing supply contracts expire in 1983. Availability of the River Junction line would substantially reduce Milwaukee's cost of handling this traffic.

It is emphasized both here and in the attached discussion that in addition to calculated benefits the Marquette-River Junction line has very substantial non-quantified strategic features important to the long-term health of Milwaukee II. Every effort should be made to return this line to service as early as possible.

Please feel free to call anytime should questions about this evaluation arise. It is a pleasure working again with the Milwaukee Road.

Sincerely,

W. G. Richmond

MILWAUKEE II ROUTE STRUCTURE BETWEEN ST. PAUL AND MARQUETTE

This evaluation is devoted first to the movement of St. Paul-Savanna traffic currently routed via Chicago, then to the alternate lines between St. Paul and Marquette and finally to Milwaukee II's possible relationship with other carriers and the proposed Grain Funnel. Map showing Grain Funnel (ROCK/CNW) and existing Milwaukee II system appears as Exhibit 1.

St. Paul-Savanna Traffic

The line between River Junction, Marquette, and Savanna is the most direct link available on the Milwaukee Road for St. Paul-Savanna traffic. As shown in Exhibit 2, compared with routing via Chicago, the Marquette-River Junction line is also the most desirable of the possible alternative routes north of Marquette in terms of annual cost savings and physical/operational attributes.

Movement of St. Paul-Savanna traffic involves 236 fewer miles per trip via Marquette-River Junction, an average of seven fewer hours per trip southbound, and 19 fewer hours northbound, than are necessary via Chicago. Running and terminal times southbound are about the same for either route, but northbound switching at Bensenville (Chicago route) is 24 hours, versus 12 hours at Savanna for the Marquette route. Overall, transit time southbound would be 17 hours via Marquette-River Junction versus 24 hours via Chicago. Northbound, the corresponding times would be 25 hours via Marquette versus 44 hours via Chicago. These differences translated into cost comparisons for the principal elements of fuel, train crews, car hire and maintenance of way are (1980 dollars):

Operation via Marquette/River Junction vs. via Chicago

<u>Fuel:</u>	1.626 million fewer gallons @ \$.90/gal.	\$1,463,000
<u>Crews:</u>	Two fewer crews per train (1,460 fewer crews per year)	664,300
<u>Car Hire:</u>	10.7 million fewer car miles and 588,000 fewer car hours (90% cars rail-owned, 10% private)	816,400
<u>Maintenance of Way:</u>	Net (increase) in annual normalized maintenance expense.	(129,100)
Total Savings versus Chicago Route		\$2,814,600

Alternative Routes between St. Paul and Marquette

This section addresses route choices taking into account all except very local traffic in the St. Paul/Marquette territory but only Milwaukee Road-owned trackage is considered. Possibilities for routing over the lines of other carriers are examined in the next section.

Of numerous combinations possible, the four most practical route alternatives in the St. Paul/Marquette territory based on 1980, and contemplated, traffic flows are:

- Route 1. All traffic handled over Calmar-Austin-St. Paul lines. Marquette-River Junction and Austin-Mason City lines would not be operated.
- Route 2. All traffic handled over Mason City-Austin-St. Paul lines. Marquette-River Junction and Austin-Calmar lines would not be operated.
- Route 3. Traffic split between Marquette-River Junction, and Austin-Calmar lines according to destination. Through traffic between St. Paul and Savanna would be routed via River Junction, while traffic to and from the grain lines west of Marquette would be handled via Calmar. Mason City-Austin line would not be operated.
- Route 4. Traffic split between Marquette-River Junction and Mason City-Austin lines. Austin-Calmar line would not be operated.

The possibility of opening the Mason City-Austin line without concurrently closing the Austin-Calmar line was examined, but discarded because the potential benefits, primarily car hire savings, would clearly not warrant the necessary upgrading and maintenance expense of the additional trackage.

Principal long term operating and maintenance costs for the four routes are compared in the upper part of Exhibit 3. Comparison of physical attributes is shown in Exhibit 4. Route 4; joint use of River Junction and Mason City lines, features the least fuel consumption, least operating personnel expense, and least car hire expense, totaling to the least Operating Department expense among the four alternatives. This is because Route 4 would have the least traffic circuitry, (fewest overall car miles and car hours), most favorable overall combined profile (least amount of rise and fall) and the most expeditious operating schedules, especially for the St. Paul-Savanna traffic as discussed earlier. The Marquette-River Junction line has substantially more curvature than the other lines but has a nearly level profile and joins directly with the relatively high speed Chicago-St. Paul double track mainline at River Junction.

When the estimated cost of full normalized maintenance is added in, Route 4 remains the most desirable alternative even though it does involve more mileage and curvature than two of the other routes.

Estimated normalized maintenance figures are designed to cover complete renewal of all track components over the respective life cycles. All upgrading (constant track standards) is included in these average yearly figures, but uniformity of work throughout time is assumed rather than large rehabilitation projects following years of deferred work. Therefore, while the normalized maintenance figures include upgrading costs, no distinction is made between 'catch up' versus uniform timing of the work.

The cost of remaining upgrading (catch-up work) necessary to overcome deferred maintenance, as well as new construction needed is detailed for each of the four routes in Appendix A and summarized in the middle part of Exhibit 3. It is emphasized that upgrading costs are already included in the normalized maintenance figures discussed above and, therefore, the remaining upgrading costs must not be thought of as additional to long term normalized maintenance. Rather, the upgrading costs are the near-term cash requirements necessary to overcome deferred maintenance and bring track conditions to FRA Class III level.

New construction (sidings and connections) needed to accommodate the respective volumes of traffic is:

Routes 1 and 2: Three additional passing sidings at \$300,000 each to increase capacity for traffic currently routed via Chicago.

Route 2 : Wye connection at Mason City at \$300,000 to avoid yarding through trains.

The lower part of Exhibit 3 shows 'up-front' short term cash flows for the first three years considering the principal elements of upgrading/new construction requirements, operating costs, and savings due to routing St. Paul-Savanna traffic via the respective alternative routes through Marquette rather than via Chicago. Upgrading costs include second-hand rail at estimated market value. Operating and routing savings are assumed to begin July 1 of the first year to allow time for critical track upgrading.

In these cash comparisons, average annual normalized maintenance figures are excluded because they are partially, or fully, covered in the near term by the one-time upgrading costs and because normalized maintenance on a year-to-year basis is adjustable to a large extent. Comparative cash flows developed on this basis are valid one-to-another but are more approximate in total amount. The operating savings used are those of the upper part of Exhibit 3 (excluding average normalized maintenance) and the versus-Chicago route

savings are those developed in the prior section (also with average normalized maintenance excluded). In the case of each alternative route, the three-year upgrading figures include all foreseeable catch-up work; there are no additional 'surprise' requirements intended to follow the three year period.

Summarizing, comparative long term and short term costs for the four alternative routes in Exhibit 3 are:

	(1980 Dollars - 000's)			
	Route 1	Route 2	Route 3	Route 4
	All via Austin	All via Mason Cty	Joint: R. Jct/Aust	Joint: R. Jct/M. C.
<u>Long term*-Avg/Yr.</u>	\$ 8,444	\$ 8,571	\$ 8,342	\$ 7,898
<u>Short Term-3 Yr. Net Cash Outflow</u>	43,798	45,120	48,898	41,422

Route 4 has both the lowest long term average annual expense and the least three-year up-front cash requirement although the respective margins are only about 5% compared with the next-highest-cost route. In magnitude, however, these margins amount to:

	<u>Margin (000's)</u>
<u>Long term-Rt.4 vs. Rt.3:</u>	\$ 7,898-\$ 8,342 = \$444 less annually
<u>Short term-Rt.4 vs. Rt.1:</u>	\$41,422-\$43,798 = \$2,376 less over 3 yrs.

The second most desirable alternative from a combined long and short term cost viewpoint would be Route 1 - All traffic via Austin-Calmar (River Junction and Mason City line remain closed):

	<u>Margin Above Least-Cost Route 4 (000's)</u>		
	<u>Route 1</u>	<u>Route 2</u>	<u>Route 3</u>
<u>Long Term</u>	\$ 546	\$ 678	\$ 444
<u>Short Term (3 yrs.)</u>	2,075	\$3,397	7,175

*Average normalized maintenance included in long term figures; excluded in short term figures.

Route 1 has lower long term average costs than Route 2 (all traffic via Austin-Mason City) primarily because, when the Marquette-River Junction traffic is included, routing via Austin-Calmar versus via Mason City-Austin involves less circuitry and more favorable gradients for the preponderance of traffic. Route 3's upgrading costs are the greatest of the four routes, because the largest amount of trackage must be returned to service under this alternative.

Of the two most promising alternatives (Route 4 and Route 1), Route 4 is clearly the better route in terms of both long term and short term costs. Route 4's inclusion of the Marquette-River Junction segment also provides superior strategic features:

1. Shortest rail route for St. Paul-Quad City traffic. There is no direct interstate highway link between these points. Opening this route will improve schedule reliability for service sensitive traffic, will increase chances that future traffic not currently foreseen can be developed, and will increase the number of potential sites available for future rail-water transfer facilities.
2. Expeditious detour route between St. Paul, Chicago, and Milwaukee in the event of Twin Cities mainline blockage. St. Paul-Portage crews would need fewer crews and locomotives detouring via River Junction than would be necessary going via other routes.
3. Very nearly all-weather route. Train-interfering snow is common along inland lines through Mason City and Austin, but rare along the river. Use of the River Junction line would, therefore, serve to minimize costly crew and power imbalances resulting from winter storms. Flooding of the river lines is rare.
4. Favorable physical characteristics. As shown in Exhibit 4, the River Junction route has substantial curvature but has a nearly water-level profile. On the other hand, the lines west of Marquette have very significant grades, high rise and fall levels and roller coaster profiles which can lead to train handling difficulties due to slack-action. The line between Marquette and Calmar also has 12'6" horizontal clearance restrictions not present on the river line.

5. Greater operational flexibility. Any two road units will handle normal trains via River Junction while two six-axle SD 40 units are required west of Marquette for comparable train sizes. In case trains must be held for any reason, sidings at River Junction (and at Kains if upgraded) can hold long trains without doubling but yards and sidings via Mason City and Austin cannot. Flexibility of meeting trains is greater via River Junction owing to the double track between there and St. Paul.
6. Value to future merger partners. The River Junction line would be redundant only in case of merger with BN or possibly with CNW.
7. Greater bargaining strength and investment safety. Availability of River Junction line will add strength to the railroad's position when negotiating for rights on Grain Funnel trackage (discussed later). Upgrading effort on River Junction line is needed whether or not use of funnel trackage is obtained.

The River Junction line upgrading cost is \$14.662 million (Appendix A). The annual Operating Department savings moving the St. Paul-Savanna traffic via Marquette-River Junction instead of via Chicago amount to \$2.944 million (Exhibit 2). This means that operating savings for existing traffic levels would cover the upgrading cost in less than five years, and to the extent traffic increases on the River Junction line, the payback period would be shorter.

The amount of funding actually available for the projects discussed here is certainly important. The Engineering Department's 1981 budget for system rehabilitation projects is \$66 million. Of that, about \$4.5 million is currently earmarked for work in the St. Paul-Marquette territory, which compares with \$18 million shown in Exhibit 3 as necessary for first-year Route 4 upgrading and construction, (\$9.1 million of that is for the Marquette-River Junction line). This would represent a sizeable budget increase and it is not clear the Milwaukee Road currently has the physical engineering resources to accomplish this additional work. The use of other carrier's trackage is, therefore, considered next as a means to reduce up-front budget requirements.

Alternatives for operation over lines of other carriers

On January 31, 1980, Vice President Mondale announced a proposal for a \$100 million rail project to rehabilitate a 500 mile route connecting Minneapolis-St. Paul, Des Moines, and Kansas City. The resulting Grain Funnel is intended to draw substantial amounts of grain into a "high speed distribution system", which would give farmers a fast, reliable way to move their crops to markets and which would form the basis for a consolidation of Iowa and Southern Minnesota rail lines.

Discussions with FRA confirm that as of December, 1980, Booz Allen Hamilton is completing a study of the proposed funnel. At this writing, the study is not available for review, but the FRA did say that route chosen is the ROCK line between the Twin Cities and Kansas City. Compared with Milwaukee Road St. Paul-Kansas City line via Savanna, the ROCK line is 186 miles shorter, but has about 20% more rise and fall. In April, 1980, CNW leased the line from the Rock Island trustee, is upgrading parts of it, and is shifting much of its through traffic to the ROCK route in preference to CNW's own lines. The BN/KCS is also interested in buying the ROCK line.

It does not appear that the Grain Funnel project is anywhere close to implementation, but if it is possible for Milwaukee Road to obtain trackage rights on the ROCK line in the near future between Comus and Mason City (Exhibit 1), then about \$18 million of the up-front costs shown in Exhibit 3 for Route 4 could be avoided if the Milwaukee operated the River Junction line, diverted its grain-lines traffic over the ROCK and,

1. Closed Comus-Ramsey line.
2. Closed Austin-Mason City line, as at present.
3. Closed Austin-Calmar line.
4. Served Austin from Albert Lea via Jackson line.

The ROCK line between Comus and Mason City is in fairly good repair, is CTC controlled and has eight sidings about 10 miles apart, typically 5,000 to 6,000 feet in length. Train capacity of the line is clearly adequate and, assuming the host road was cooperative in handling Milwaukee's trains, overall annual costs would probably be similar to those shown for Route 4 in Exhibit 3. Construction funds of about \$600,000 would be necessary for connections at Albert Lea and Mason City.

Even if it does not prove feasible to obtain these trackage rights early, it may be desirable to use the estimated differences in up-front and annual costs as a basis for determining what the states and shippers should pay for keeping the Milwaukee lines open, since the Milwaukee would have a very clear alternative operating plan.

Given that use of the ROCK line between Mason City and Comus is arranged, three alternative routes are readily available:

1. Via Chicago and via ROCK. St. Paul-Savanna traffic would continue operating via Chicago. Grain lines traffic would be handled via Marquette-Mason City, ROCK line Mason City-Comus, and Comus-St. Paul. Austin would be served from Albert Lea via Jackson line.
2. All via ROCK. All traffic, including St. Paul-Savanna business would be handled via Marquette-Mason City and the ROCK line. Austin would be served from Albert Lea.
3. Via River Junction and via ROCK. St. Paul-Savanna traffic would move via Marquette-River Junction. Grain-lines traffic would be handled via Marquette-Mason City, and the ROCK line. Austin would be served from Albert Lea.

In the table below, it can be seen that the route via Chicago/via ROCK has the least up front (three year) upgrading cost, but is most costly to operate overall during a ten year period.

Alternative Routes Using ROCK Line Comus-Mason City: 10 Year Period
(St. Paul-Marquette Territory: 1980 Dollars - 000's)

	<u>Via Chicago/ Via ROCK</u>	<u>All Via ROCK</u>	<u>Via River Jct./ Via ROCK</u>
Upgrading/const. (All during 1st 3 yrs.)	\$ 8,179	\$16,758	\$22,841
On-going Maintenance	16,904	14,307	16,358
ROCK Trackage Rights	1,748	4,503	1,748
Operating Expense	<u>66,776</u> \$93,607	<u>51,281</u> \$86,849	<u>38,808</u> \$79,755
Margin vs. Least Cost	\$13,852	\$ 7,094	--

The River Junction/ROCK alternative has the greatest up-front expense, while over ten years is \$7.1 million to \$13.4 million more economical versus the other two routes. Using discounted cash flows would narrow these margins, depending upon the rate used, owing to the relatively large upfront cost of the River Junction/ROCK alternative. However, even if this route, on a discounted basis, were equivalent in cash outflow to the other alternatives, the non-quantified strategic considerations discussed earlier strongly support operation of the River Junction line.

In addition, routing the River Junction traffic over the ROCK line has major drawbacks:

1. All of Milwaukee's traffic north of Mason City would be subject to a joint facility operation. While this is thought acceptable for the small amount of north-south grain-line traffic in that area, it could prove very unacceptable to service-sensitive through Savanna-St. Paul traffic, especially considering that routing this traffic via the ROCK rather than via the River Junction line would add about 72 miles of circuitry in each direction.
2. All of the River Junction line's non-quantified features, discussed earlier, would be forfeited.
3. Of the total 1980 daily traffic handled in the territory, some 52% is destined to/from Kansas City. However, as a practical matter only about 18% (50 cars/day) would efficiently be moved direct to Kansas City from Mason City if Milwaukee obtained running rights on the ROCK line south to Polo. The remaining business, mostly merchandise traffic, would necessarily be routed first to Savanna or Ottumwa so that it could be combined there into direct run through trains for Kansas City connections. Non-grain train traffic routed direct between Kansas City and Mason City would incur terminal switching delays at the MILW/KCS joint agency yard in Kansas City. Routing River Junction traffic via the ROCK would, therefore, produce no operating, marketing, or equipment utilization benefits even if Milwaukee Road later gained access to the funnel.

4. If the River Junction traffic is routed via ROCK at Mason City, difficulties could develop in establishing state and shipper support for future upgrading cost on the Mason City-Marquette line since nearly half the traffic moving over the line will be 'overhead' rather than locally received/forwarded. About \$13 million in upgrading work remains to be completed between Mason City and Marquette during the next three years.

In the event trackage rights cannot be obtained between Comus and Mason City on the ROCK line, and assuming the River Junction line is opened, upgrading of a route between Mason City and Austin would be necessary. A possible alternative to Milwaukee trackage would be use of CNW's line between Austin and Manly, which is to be abandoned. Data available at this writing, however, do not suggest the CNW line would be more economical than Milwaukee's trackage.

1. In its abandonment application, CNW estimated that as of October 1980 \$5,236 per mile would be necessary to keep the line maintained to Class 1 condition. Milwaukee's corresponding estimate of \$5,500 is only slightly greater. Both lines have mostly 85 lb. and 90 lb. rail except CNW has 5.7 miles of 75 lb.; and 3.3 miles of 100-115 lb. rail. Ballast conditions appear somewhat better on the CNW line. Upgrading requirements for the CNW line have not been estimated, but would likely be similar to those of the Milwaukee line except for mileage differences.
2. The Milwaukee line is 39.5 miles while the CNW line Austin to Manly is 32.2 miles. Using the CNW would eliminate 6.3 miles of upgrading and maintenance, but it would be necessary to obtain trackage rights between Mason City and Manly, 10 miles, on the ROCK* line and build a wye connection to Milwaukee trackage at Mason City. If Milwaukee industry at Lyle is to be served, a connection would be needed there as well.
3. Trains headed to Mason City from Austin via CNW would enter the yard from the west and would first occupy the ROCK mainline part of the time while doing so. Trains from Austin via MILW would enter the yard directly from the east, without using _____ entering the ROCK mainline.
4. It is anticipated that a Mason City-Austin-Mason City train would be operated. If delays were experienced entering the ROCK trackage, 12 Hour-Law crew relief might be necessary.

*The portion of the ROCK mainline between Mason City and Manly is owned by CNW (former CGW) with ROCK having trackage rights.

Unless there are major differences in upgrading costs, the Milwaukee trackage between Mason City and Austin appears preferable.

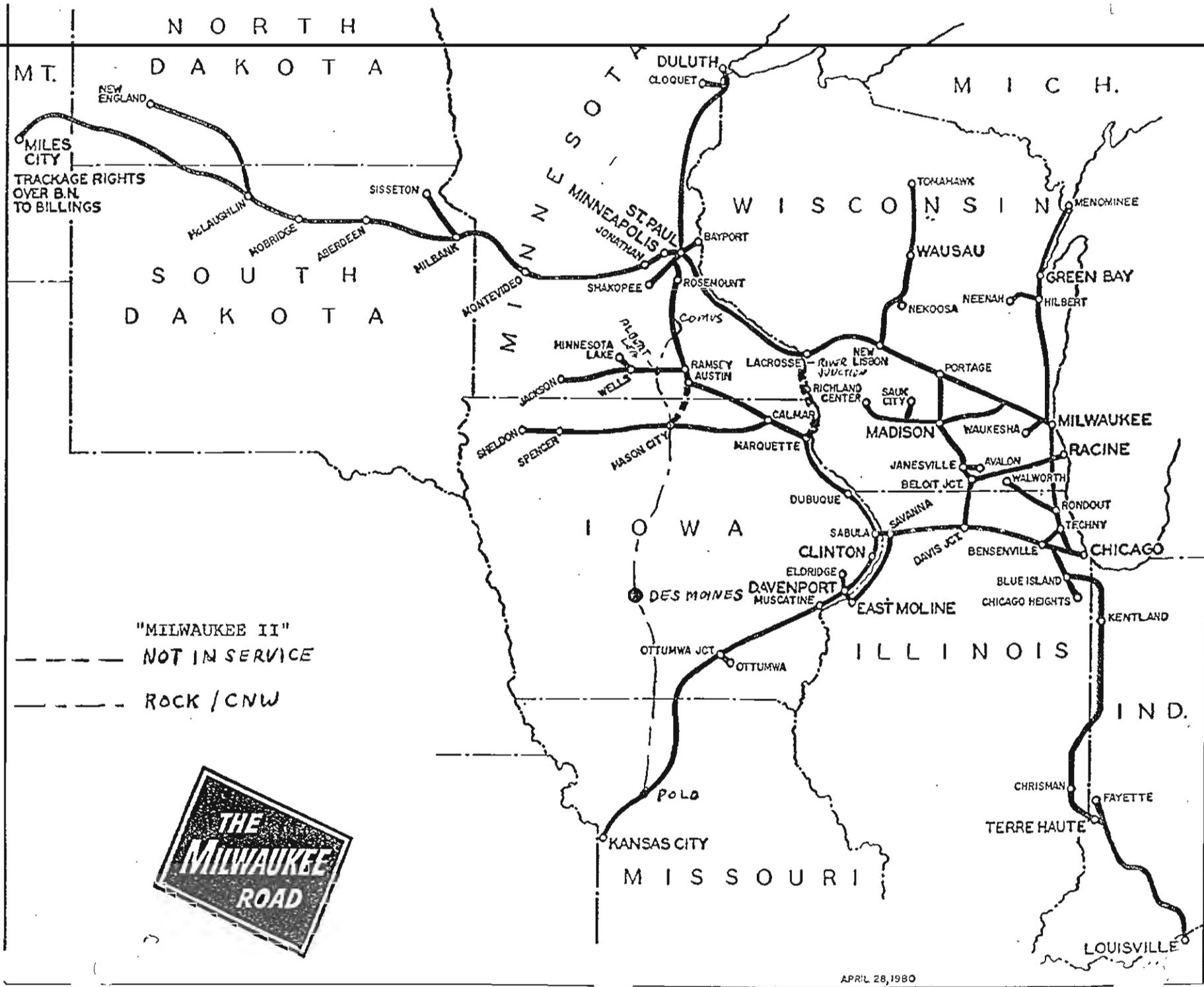
Conclusion

St. Paul-Savanna traffic should be routed Marquette-River Junction rather than via Chicago. Cost differences and strategic considerations to this end are clearly definitive. Effort should be made to obtain trackage rights on the ROCK line, at least between Comus and Mason City (and preferably south to Polo as well). This will potentially allow abandonment of 161.7 miles of low density trackage currently in poor condition, will reduce annual maintenance, and will preclude near-term track expenditures of about \$18 million without compromising Milwaukee II's viability, in the St. Paul-Marquette territory.

It is recommended that the Marquette-River Junction line be opened at an early date. If lack of funds prevent opening in 1981, ownership of the River Junction line should be retained and opening scheduled as soon as possible thereafter. A 'minimum-outlay' 10 MPH operation for the 63.1 miles could probably be worked out, although the Engineering Department has expressed concern this would lead to track-caused derailments on the many curves of the line.

If the River Junction line cannot be opened early-on, and use of the ROCK line appears likely, then St. Paul-Savanna traffic should be routed via Chicago until the River Junction line is opened later.

If use of the ROCK trackage does not appear feasible, then the Mason City-Austin line should be opened and the Calmar-Austin line closed. This is the least-cost alternative as long as the River Junction line is also operated. However, if that line is not opened, then the shift in Savanna-St. Paul traffic flow through Austin would result in the least-cost alternative being retention of the Calmar-Austin line. The Mason City-Austin line would, in this case, remain closed.



St. Paul-Savanna Traffic Via Marq. Riv. Jct; Via Austin-Calmar;
Via Mason City, Versus Via Chicago

(124 Cars Per Day; 62 Car Each Way)

1. Annual Cost Savings Vs. Routing Via Chicago: St. Paul-Savanna Traffic

	<u>Via Marq.-Riv.Jct.</u>	<u>Via Austin-Calmar</u>	<u>Via Austin-Mason City</u>
Fuel	\$1,463,000	\$ 467,800	\$ 133,500
Crews	664,300	664,300	664,300
Car Hire	816,400	667,500	520,200
Opr. Total	<u>\$2,943,700</u>	<u>\$1,799,600</u>	<u>\$1,318,000</u>
M of W	(129,100)	542,500	651,000
	<u>\$2,814,600</u>	<u>\$2,342,100</u>	<u>\$1,969,000</u>

2. Attributes Vs. Routing Via Chicago: St. Paul-Savanna Traffic

	<u>Via Marq.-Riv.Jct.</u>	<u>Via Austin-Calmar</u>	<u>Via Austin-Mason City</u>
Route Mileage	236 Fewer Miles	210 Fewer Miles	165 Fewer Miles
Transit Time(a)	13 Fewer Hours	5 Fewer Hours	3 Fewer Hours
Fuel (000's)	1,626 Fewer Gal.	520 Fewer Gal.	148 Fewer Gal.
Crews	2 Fewer Crews	2 Fewer Crews	2 Fewer Crews

(a) Including intermediate and terminal switching. Figures are averages of north and southbound differences.

BR:bt/401

Comparison Of Alternatives Routes; St. Paul/Marquette Territory

(1980 Traffic Volumes) (a)

Long-term Annual Cost (1980 Dollars-000's):

	<u>Route 1</u> All Via Aust.	<u>Route 2</u> All Via M.C.	<u>Route 3</u> Joint R.Jct./Aust.	<u>Route 4</u> Joint R.Jct./M.C.
Fuel	\$ 2,443	\$ 2,760	\$ 2,112	\$ 2,115
Labor (b)	996	839	664	507
Car Hire	1,659	1,799	1,491	1,468
Subtotal-Operating	<u>\$ 5,098</u>	<u>\$ 5,398</u>	<u>\$ 4,267</u>	<u>\$ 4,085</u>
Maint. of Way(c)	3,346	3,173	4,075	3,813
Total of Above	<u>\$ 8,444</u>	<u>\$ 8,571</u>	<u>\$ 8,342</u>	<u>\$ 7,898</u>

Short-term Relative "Upfront" Cash Flow: First Three Years (1980 Dollars-000's)

	<u>Route 1</u>	<u>Route 2</u>	<u>Route 3</u>	<u>Route 4</u>
(d)				
Upgrade/Const:Year 1	\$19,470	\$18,492	\$13,969	\$17,963
Upgrade/Const:Year 2	13,204	10,505	18,590	15,373
Upgrade/Const:Year 3	2,879	5,923	13,031	5,233
3 Year Total	<u>\$35,553</u>	<u>\$34,920</u>	<u>\$45,590</u>	<u>\$38,569</u>
(e)				
Operating: Year 1	\$ 2,549	\$ 2,699	\$ 2,134	\$ 2,043
Operating: Year 2	5,098	5,398	4,267	4,085
Operating: Year 3	5,098	5,398	4,267	4,085
3 Year Total	<u>\$12,745</u>	<u>\$13,495</u>	<u>\$10,668</u>	<u>\$10,213</u>
(f)				
Savings: Year 1	\$ (900)	\$ (659)	\$ (1,472)	\$ (1,472)
Savings: Year 2	(1,800)	(1,318)	(2,944)	(2,944)
Savings: Year 3	(1,800)	(1,318)	(2,944)	(2,944)
3 Year Total	<u>\$(4,500)</u>	<u>\$(3,295)</u>	<u>\$(7,360)</u>	<u>\$(7,360)</u>
Net Outflow:Year 1	\$21,119	\$20,532	\$14,631	\$18,534
Net Outflow:Year 2	16,502	14,585	19,913	16,514
Net Outflow:Year 3	6,177	10,003	14,354	6,374
3 Year Total	<u>\$43,798</u>	<u>\$45,120</u>	<u>\$48,898</u>	<u>\$41,422</u>

- a) Nine months actual; remainder estimated
- b) T&E Crew cost with offsets for clerical/mechanical savings applicable on Routes 2 and 4.
- c) Annual normalized maintenance expense computed by Engineering Dept.
- d) Detailed breakdown in Appendix A, Page 3.
- e) From upper part of table. Assume new operation begins July 1 of Year 1. Normalized maintenance excluded.
- f) Savings for operating St. Paul-Savanna traffic via respective routes rather than via Chicago. Assume savings begin July 1 of Year 1. Normalized maintenance excluded.

Comparison Of Alternatives Routes; St. Paul/Marquette Territory
(1980 Traffic Volumes)

	Route 1 All Via Aust.	Route 2 All Via M.C.	Route 3 Joint R.Jct./Aust.	Route 4 Joint R.Jct./M.C.
Track Miles Involved	289	259.4	477.3 (a)	447.3 (a)
Main Track Changes (b)	None	Reduce 29.6 Miles	Add 63.1 Miles	Add 33.5 Miles
Secondary Track Changes	Add 3 Sidings	Add 3 Sidings Add Wye @ M.C.	None	None
Daily Car Volume	281	281	157 via Calmar 124 via R.Jct.	157 via Calmar 124 via R. Jct.
Car Days/Yr. (000's)	1,075	1,043	894	773
Car Miles/Yr. (000's)	18,785	20,734	17,595	17,517
Avg. Locos Required Per Day (c)	10	10	10	9
Aggregate HP Required Per Day	22,000	27,000	22,000	22,000
Miles-Short Rte. (d)	214.6	259.4	188.3	188.3
Ruling Grades-Short Route WB:	1.2%	1.2%	0.3%	0.3%
Ruling Grades-Short Route EB:	0.9	1.4	0.3	0.3
Rise & Fall-Short Route (e)	2,336 Ft.	3,280 Ft.	650 Ft.	650 Ft.
Curves-Short Route Total	260	303	492	492
Over 40 Degrees	42	45	71	71

Note: M.C. denotes Mason City; R. Jct. denotes River Junction (near LaCrosse).

- (a) 125.2 miles of this total are on Milwaukee-St. Paul main line.
- (b) Additions are return of existing track to service, not new construction.
- (c) Excludes trains operating between Mason City and the south.
- (d) Shortest route for given alternative between Marquette and St. Paul.
- (e) Overall rise of 87 feet Marquette to St. Paul.

BR:bt/0212

REMAINING UPGRADING AND NEW CONSTRUCTION: MARQUETTE-ST. PAUL
(1980 Dollars)

1. Remaining Upgrading

Marquette - River Junction

62.8 Miles Ballast & Ties	\$ 9,105,000
33.6 Miles Rail	5,557,000
	<u>\$14,662,000</u>

This line can be opened by May 1, 1981 with speed not to exceed 10 MPH. The ballast and ties must be done in the first year and will take 126 working days. The rail should be done the first year, but can be deferred until the following year and will take 42 working days.

Marquette - Calmar

8.5 Miles Ballast & Ties	\$ 988,000
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This work is scheduled for 1981 and will take 17 working days. This line is open now and upgrading should be done before additional traffic is routed on this segment.

If all traffic is routed on this segment, 15.5 miles of 90# rail should be relaid the first year but certainly within three years at an estimated cost of \$1,891,000.

Calmar - Mason City

35.5 Miles Ballast & Ties	\$ 4,070,000
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19.5 miles of this is scheduled for 1981. The entire 35.5 miles must be done before additional traffic is routed on this segment and will take 71 working days.

If all traffic is routed over this segment, 49.9 miles of 90# rail should be relaid the first year but certainly within three years at an estimated cost of \$6,088,000.

Calmar - Austin

69.2 Miles Ballast & Ties	\$ 7,931,000
69.2 Miles Rail	<u>8,491,000</u>
	\$16,422,000

If all traffic is routed over this segment, the tie and ballast work must be done the first year and before shifting the traffic onto this line, the rail should also be done before routing additional traffic over this line but can be deferred until the following year. Tie and ballast work will take 140 working days and rail 86 working days.

Austin - Mason City

39.5 Miles Ballast & Ties	\$ 4,819,000
39.5 Miles Rail	<u>4,582,000</u>
	\$ 9,401,000

Tie and ballast work must be done before routing traffic over this line. Rail should be relaid before opening the line, but can be deferred until the following year. Tie and ballast work will take 80 working days and rail 50 working days.

Austin - Mendota

92.9 Miles Ballast & Ties	\$ 5,524,000
47.2 Miles Rail	<u>5,758,000</u>
	\$11,282,000

If all traffic is routed over this segment, the tie and ballast work should be stepped up and completed in the first year and rail lighter than 100# changed within three years.

Marquette - Savanna

There is \$1,494,000 programmed in 1981 for this segment. This work must be progressed without fail for any of the routes.

2. New Sidings and Connections

Route 1
3 Sidings @ \$300,000 each \$ 900,000

Route 2
3 Sidings @ \$300,000 each \$ 900,000
New Wye connection at Mason City 300,000
\$1,200,100

Route 3
No construction

Route 4
No construction

3. Summary of Upgrading & New Trackage by Route Alternatives
(1980 Dollars-000's)

	<u>Remaining Upgrading</u>	<u>New Sidings & Connections</u>	<u>Upgrading and New TRACKAGE</u>			
			<u>Total Required</u>	<u>Total by Year</u> 1st	2nd	3rd
Route 1	\$34,653	\$ 902	\$35,553	\$19,480	\$13,204	\$ 2,879
Route 2	33,720	1,200	34,920	18,492	10,505	5,923
Route 3	45,590	None	45,590	13,969	18,590	13,031
Route 4	38,569	None	38,569	17,963	15,373	5,233