

**APPENDIX I
SAFETY AUDIT**

WISCONSIN DEPARTMENT OF TRANSPORTATION

STH 23 EXPANSION ROAD SAFETY AUDIT

FOND DU LAC AND SHEBOYGAN COUNTIES



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Opus International Consultants Inc.

Prepared by:

Jeffrey Bagdade, P.E.
Vice President and Senior Transportation Engineer

Joyce Abinader, EIT
Transportation Engineer

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1.0 INTRODUCTION

1.1 Background

The Wisconsin Department of Transportation (WisDOT) is currently planning to expand STH 23 between CTH K in Fond du Lac County, and CTH P in Plymouth in Sheboygan County. The study corridor provides access to the surrounding residents and drivers passing through Fond du Lac County and Sheboygan Counties. STH 23 is identified as a primary east-west connection in the *Corridors 2020* plan. Average daily traffic levels reported in 2003 were between 6,300 vehicles per day at the east end of the corridor in Plymouth to 13,600 vehicles per day at the west end in Fond du Lac County. The project limits are illustrated in FIGURE 1.1



FIGURE 1.1 PROJECT LOCATION

The project will help to address long term transportation demand needs forecasted for 2030 traffic volumes. This project is designed to target improvements to roadway width, passing opportunities, driver comfort and safety along the corridor.

A public consultation process was conducted to identify and address concerns with the proposed design suggested by Fond du Lac County and Sheboygan, local communities, local business owners and the public. The RSA was conducted during the 30% design review. Construction is scheduled to begin in 2013.

1.2 Road Safety Audits

A road safety audit (RSA) is a formal safety performance examination of an existing or future road or intersection by an independent audit team. Road safety audits help to promote road safety by identifying safety issues at the design and implementation stages,

promoting awareness of safe design practices, integrating multimodal safety concerns, and considering human factors in the design.

1.3 Reminder

The RSA team has conducted this audit to the best of its professional abilities within the time available and by referring to available information. While every attempt has been made to identify significant safety issues, the design team and the project owner are reminded that responsibility for the design, construction, and performance of the project remains with the engineers of record.

1.4 Audit Project and Scope

The scope of the planned improvements will include:

- Widening STH 23 from a two lane undivided highway to a four lane divided expressway;
- Constructing grade-separated jug-handle intersections with roundabouts at CTH K;
- Constructing diamond interchange with roundabouts at CTH UU;
- Providing wider shoulders along the corridor; and,
- Access management enhancements throughout the corridor.

1.5 RSA Team and Process

The RSA team and the project material on which the RSA was based are described in Section 2. Site visits were conducted in November 2007 to gain an understanding of the existing conditions and surroundings. Notes on the site visits are contained in Section 3.

A RSA framework was applied in both the analysis and presentation of findings. The expected frequency and severity of crashes caused by each safety issue have been identified and rated according to the categories shown in TABLES 1.1 and 1.2. These two risk elements were then combined to obtain a risk assessment on the basis of the matrix shown in TABLE 1.3. Consequently, each safety issue is assessed on the basis of a ranking between F (highest risk and highest priority) and A (lowest risk and lowest priority).

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For each safety issue identified, possible mitigation measures have been suggested. The suggestions have focused on measures that can be cost-effectively implemented at the current design stage, and consequently include few geometric changes.

TABLE 1.1 FREQUENCY RATING

ESTIMATED		EXPECTED CRASH FREQUENCY (per audit item)	FREQUENCY RATING
EXPOSURE	PROBABILITY		
high	high	10 or more crashes per year	<i>frequent</i>
medium	high		
high	medium	1 to 9 crashes per year	<i>occasional</i>
medium	medium		
low	high		
high	low	less than 1 crash per year, but more than 1 crash every 5 years	<i>infrequent</i>
low	medium		
medium	low	less than 1 crash every 5 years	<i>rare</i>
low	low		

TABLE 1.2 SEVERITY RATING

TYPICAL CRASHES EXPECTED (per audit item)	EXPECTED CRASH SEVERITY	SEVERITY RATING
crashes involving high speeds or heavy vehicles, pedestrians, or bicycles	probable fatality or incapacitating injury	<i>extreme</i>
crashes involving medium to high speed; head-on, crossing, or run-off-road crashes	moderate to severe injury	<i>high</i>
crashes involving medium to low speeds; left-turn and right-turn crashes	minor to moderate injury	<i>moderate</i>
crashes involving low to medium speeds; rear-end or sideswipe crashes	property damage only or minor injury	<i>low</i>

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TABLE 1.3 CRASH RISK ASSESSMENT

FREQUENCY RATING	SEVERITY RATING			
	<i>Low</i>	<i>Moderate</i>	<i>High</i>	<i>Extreme</i>
<i>Frequent</i>	C	D	E	F
<i>Occasional</i>	B	C	D	E
<i>Infrequent</i>	A	B	C	D
<i>Rare</i>	A	A	B	C

Crash Risk Ratings:

A: minimal risk level

B: low risk level

C: moderate risk level

D: significant risk level

E: high risk level


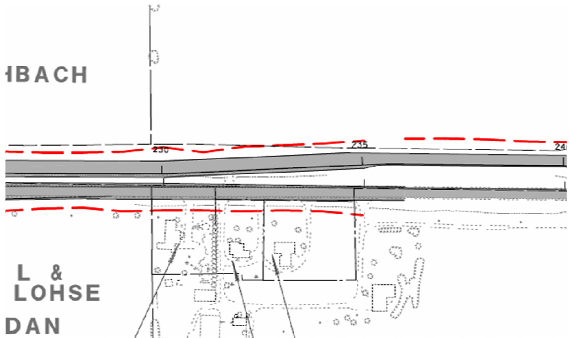
F: extreme risk level

2.0 AUDIT FINDINGS

2.1 Safety Benefits of the Proposed Improvements

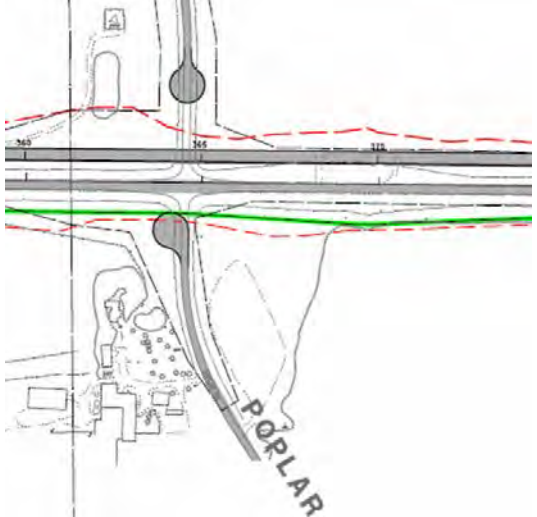


The STH 23 Corridor design already incorporates many features that are expected to substantially improve traffic safety. TABLE 2.1 outlines the safety benefits of the proposed design.

TABLE 2.1 SAFETY BENEFITS OF THE PROPOSED DESIGN


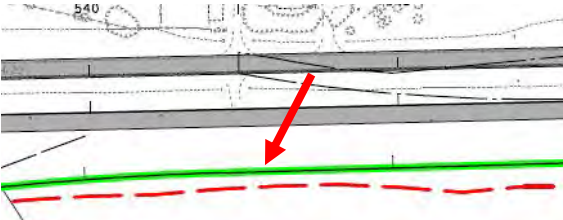
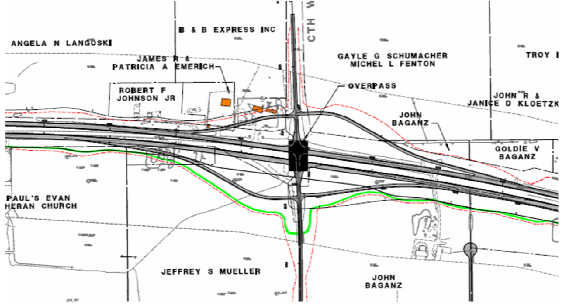
DESCRIPTION	BENEFIT	DETAILS
Additional Passing Opportunities	Drivers will feel more comfortable when passing vehicles ahead of them due to the additional lane in each direction. No longer are drivers faced with the decision of passing in the opposing lane. The likelihood of a head-on collision to occur are therefore highly reduced.	 <p style="text-align: center;"><i>Existing Laneage</i></p>
Wider Median	Knuiman et al. ¹ found that crash rates continued to decrease as median widths increased, decreasing head-on and opposite sideswipe collisions. Therefore, the implementation of medians will highly reduce crash frequency and crash severity.	 <p style="text-align: center;"><i>Proposed Median Cross Section</i></p>

¹ Transportation Research Board (2003). *Volume 6: NCHRP Report 500 A Guide for Addressing Run-Off-Road Collisions*. V-42.

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DESCRIPTION	BENEFIT	DETAILS
<p>Access Management</p>	<p>Measures to enhance access management such as cul-de-sacs are being implemented at existing intersections throughout the corridor to eliminate conflict points on STH 23. The access management improvements will improve safety by restricting turning movements and reducing the number of conflict points along the corridor.</p>	
<p>Wider Shoulder</p>	<p>Shoulders are proposed to be designed as a ten-foot paved shoulder with a two-foot gravel shoulder. The existing shoulder width is a three-foot paved shoulder with an eight-foot gravel shoulder (<i>right</i>). Wider paved shoulders can be expected to contribute to enhanced safety by providing increased recovery room.</p>	 <p style="text-align: center;">Existing Shoulder Width</p>
<p>Roundabouts</p>	<p>Roundabouts have been found to reduce delays and are effective in transitioning drivers from one type of facility to another, as in a jug-handle or a diamond interchange. The use of the roundabouts at the ramp terminals along the corridor will improve safety by reducing the number of conflict points and result in a high reduction of severity of all crashes.</p>	

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DESCRIPTION	BENEFIT	DETAILS
Grade Separation	Grade separations are proposed at CTH K and CTH UU, which were adopted after consideration of at-grade intersection designs. The use of grade separation reduces the potential for high-speed conflicts associated with at-grade intersections.	 <p>ST MARY'S SPRINGS HIGH SCHOOL ROEHRIG FAMILY TRUST CHRISTOPHER J <i>Proposed jug-handle intersection at CTH K</i></p>
Non-Motorized Facilities	New non-motorized facilities are proposed along the corridor. Due to the increased exposure of bicyclists due to the proposed trail, drivers will be more aware of bicyclists and therefore, the probability of a crash to occur is decreased.	 <p>540 <i>Proposed Bicycle Trail</i></p>
Long Term: Planning for New Interchanges	Due to the classification of STH 23 as a Corridor 2020 connector highway, right-of-way is being mapped at the CTH A and CTH W intersections where interchanges may be considered in the long-term. Proactive long term planning reduces costs for these major geometric upgrades in the future which may be needed to further improve safety or operations along the corridor.	 <p>B & B EXPRESS INC ANGELA N LANGOSKI JAMES R... PATRICIA A EMERCH... ROBERT F JOHNSON JR PAUL'S EVAN HERAN CHURCH JEFFREY S MUELLER GAYLE G SCHUMACHER MICHEL L FENTON TROY I OVERPASS JOHN BAGANZ JANIS D KLOETZK JOHN R S... GOLDIE V BAGANZ JOHN BAGANZ <i>Potential Interchange at CTH W</i></p>

2.2 RSA Issues and Suggestions

Safety issues and suggestions associated with the proposed improvements are discussed in SECTION 4, and summarized in TABLE 2.2.

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TABLE 2.2 SUMMARY OF RSA SAFETY ISSUES AND SUGGESTIONS

	SAFETY ISSUE (number and description)	RISK RATING	SUGGESTIONS
1	Narrow median: Risk of median crossovers within the 32 foot wide median section.	D	Implement median barrier
2	Pedestrians and bicyclists: Drivers may not expect crossing pedestrians and bicyclists crossing back from the intersection.	C	Design the path to cross at the road intersection
3	At-grade median openings: Direct left-turns	D	- Access restrictions - Median U-turns/J-turns - Provide lighting at intersections
4	Absence of Right-Turn Lanes: Drivers travelling at high speeds may have difficulty decelerating to turn on to minor streets.	C	Provide right-turn lanes
5	Right in/Right out access: Drivers may turn the wrong way at T-intersections with no median openings.	D	Right-turn islands
6	T-intersections: Skewed Geometry at T-intersections decreases intersection sight distance.	D	- Straighten skew - Consider right-turn lanes
7	CTH K: jug-handle intersection: - Auxiliary lane lengths at appear to be short, and ramp entry turn radii appear to be abrupt. - Westbound STH 23 deceleration lane is located on 7% downhill grade and on a bridge.	D	- Tighten right turn island - Provide a parallel acceleration lane - Surface treatment
8	CTH UU interchange: Roundabout located on a vertical curve.	C	Reduce grade
9	Restricted sight distance: Several of the intersections have restricted stopping and intersection sight distance.	D	Lighting

2.3 Conclusions

Ten safety issues have been identified in this RSA. Suggestions for improvements have been identified and are described in this report. The project owner and design team are invited to consider the suggested changes. To complete the RSA process, the owner and design team may prepare a short written response to the issues and options outlined in this report.

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3.0 ROAD SAFETY AUDIT TEAM AND MATERIALS




Location:	Fond du Lac and Sheboygan, WI
RSA Team	Jeffrey Bagdade, P.E. (Opus International Consultants) Erica Geddes, P.E., PTOE (Opus International Consultants) Greg Helgeson, P.E. (WisDOT Northwest Region) Scott Nelson, P.E. (WisDOT Northeast Region) Rebecca Yao, P.E., PTOE (WisDOT BHO)
Project Owner	Wisconsin Department of Transportation
Design Team	Wisconsin Department of Transportation
RSA Stage	Planning (30% complete)
Start Up Meeting	November 27, 2007
Preliminary Findings Meeting	November 30, 2008
Attended by	Wisconsin Department of Transportation Opus International Consultants

Project Documents Available for the RSA:



- Hard Copy Design Drawings provided during audit stage, revised December 14, 2007.
- Crash data (1994-2005) provided by the Wisconsin Department of Transportation.
- 30-year traffic forecast report- July 28, 2005
- Local Road Access Summary, WisDOT dated December 2007.
- Draft Environmental Impact Statement

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TABLE 3.1 NOTES OF SITE VISITS

CHARACTERISTIC	DETAILS	ILLUSTRATION OR COMMENT
Jurisdiction	Wisconsin Department of Transportation	--
Land Use	The surrounding land use for the STH 23 corridor is zoned primarily as residential, farm land and commercial/retail.	
Road User Characteristics	The primary road users for the STH 23 corridor were passenger cars, trucks and farm equipment. Commercial trucks represented 13.9% of all vehicles travelling the corridor.	
Influences	<ul style="list-style-type: none"> ○ Access points intersect at horizontal and vertical curves, contributing to an average of 43 percent 'no passing zones.' ○ USH 151 Bypass in Fond du Lac County 	

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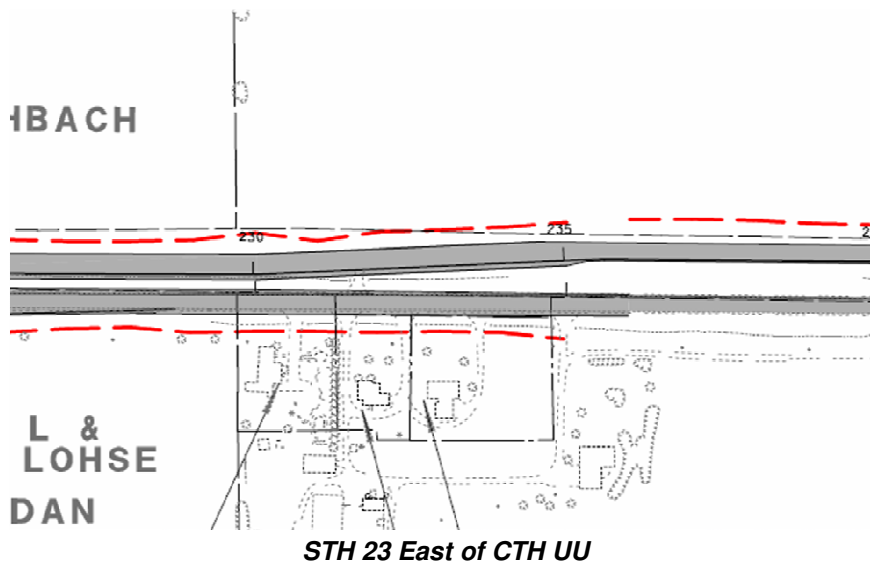
CHARACTERISTIC	DETAILS	ILLUSTRATION OR COMMENT
<p>Accesses</p>	<p>235 commercial driveways, residential homes, and intersecting roads are located along the corridor. The corridor averages 15.1 driveways per mile.</p>	
<p>Pedestrian Facilities/ Bicycle Facilities</p>	<p>The Prairie Trail currently runs parallel to the corridor in Sheboygan County.</p>	 <p><i>Prairie Trail near Julie Court</i></p>

4.0 ROAD SAFETY AUDIT ISSUES AND SUGGESTIONS

4.1 Safety Issue 1: Narrow Median

Safety Issue 1: Risk of median crossovers within the 32 foot wide median section.

Although the 32-foot wide median from American drive to the east of CTH UU exceeds the minimum median width of 30 feet for transitional or high speed urban roadway (outlined 11-20-1 of the *Facilities Development Manual*), it may still be too narrow. The guidelines include a maximum design speed of 60 mph. While the design speed in the section is less than 60 mph, STH 23 is transitioning from a section where the design speed is 70 mph. As a result, drivers who are entering the transition could be traveling at speeds higher than 60 mph. The rolled curb design may also contribute to median crossovers, due to the high operating speeds and the limited use of lighting. Median crossovers in this section may result in a high severity head-on collision.



Expected Crash Types: median crossover crashes

Expected Frequency: occasional

Expected Severity: high

Risk Rating: D (significant risk level)

Opportunities for Improvement

Implement median barrier

A median barrier such as a cable guardrail will help to prevent median crossover crashes. A cable guardrail will decrease the severity rating and the possibility of a severe injury due to a head-on collision.

4.2 Safety Issue 2: Pedestrians and Bicyclists

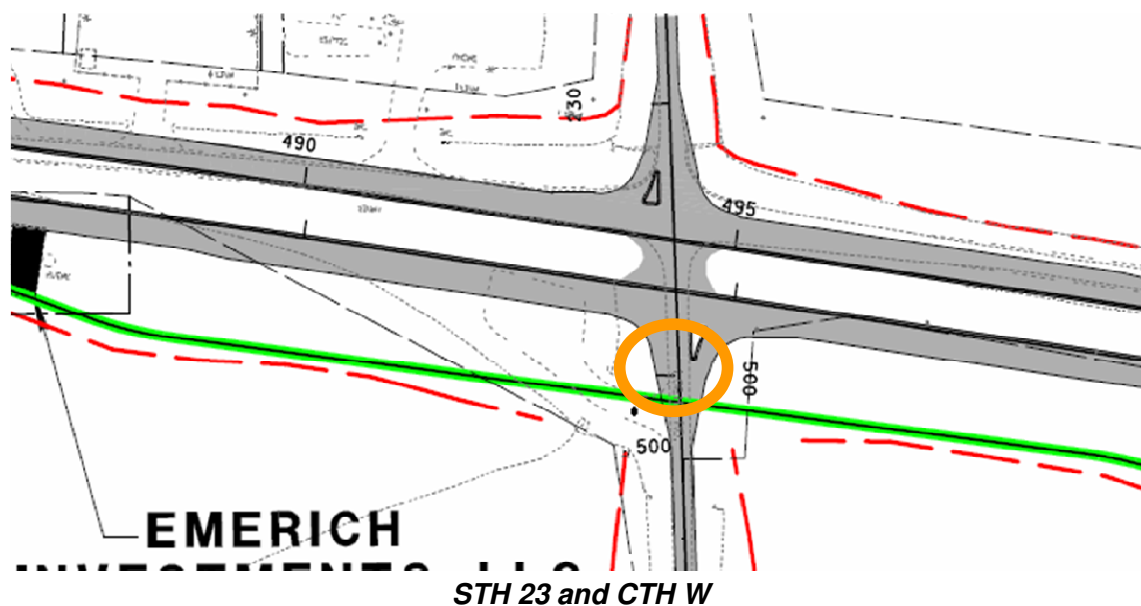
Safety Issue 2: Drivers may not expect crossing pedestrians and bicyclists crossing back from the intersection.

Drivers may not expect pedestrians and bicyclists due to the path being set back from the intersection. A driver turning right onto the side street may not see the path user and would not expect to have someone crossing in the path. The path being set back from the intersection also creates two intersections, requiring drivers stop twice within a short distance.

This design is based on the table on page 4-64 in the *Wisconsin Bicycle Facilities Design Handbook*². It is based on a Florida Department of Transportation publication, which in turn is based on specifications from *Main Roads In Urban Areas, Bikes and Pedestrians*, Finland, 1991 and *Sign Up For The Bike, Design Manual For a Cycle-friendly Infrastructure*, The Netherlands, 1993. The table does permit the path to cross over 99 feet from the parallel road.

² WIS Bicycle Facility Design Handbook

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The *Wisconsin Bicycle Facilities Design Handbook* additionally states:

1. It is preferable if the path crosses the intersection relatively close to the road it parallels (same page 64)
2. The same table shows highlights a preference for a distance of 3-6 feet from the road when there is a choice
3. Making the trail user stop at every crossroad is not recommended – the document suggests that the path should have the same right-of-way as the parallel road – multiple Stop signs on the path would just get ignored anyway and generate disrespect – this would indicate the path should be close to the road at intersections

The 1999 *AASHTO Guide for the Development of Bicycle Facilities*³ of which the Wisconsin guide is based on is very clear that the path should be close to the parallel road for the reasons stated above. It was observed on a section of the Prairie Trail which runs parallel to the USH 151 Bypass in Fond du Lac utilizes crossings close to the intersection so consistency with this design should be considered.

³ American Association of State Highway and Transportation Officials (1999). *Guide for the Development of Bicycle Facilities*. Page 48

Expected Crash Types: pedestrian and bicycle collisions

Expected Frequency: rare

Expected Severity: extreme

Risk Rating: C (moderate risk level)

Opportunities for Improvement

Design the path to cross at the road intersection

Designing the path to cross at the road intersection would increase driver's expectancy of pedestrians and bicyclists crossing the roadway. Pedestrians and bicyclists will feel safer crossing in the line of sight of approaching vehicles, and vehicles turning right onto the side street. This design will also allow drivers and bicyclists to stop only once at the intersection, to clear traffic and allow pedestrians and bicyclists to cross within the path.

4.3 Safety Issue 3: At-grade Median Openings

Safety Issue 3 Description: Direct left-turns

There are multiple conflict points (FIGURE 4.1) associated with making a direct left-turn onto STH 23 at stop-controlled intersections. Drivers turning left at a median break onto STH 23 will have to cross traffic traveling at high approach speeds posted at 65 mph on STH 23. These intersections also involve an unprotected left turn across two lanes of opposing or crossing traffic. The risk and potential severity of left-turn crashes is aggravated by:



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- high speeds on STH 23
- absence of night-time lighting
- a high proportion of trucks (with slower acceleration and braking capabilities) in forecast Bypass and ramp traffic
- winter road conditions (contributing to poor acceleration and braking capabilities).

FIGURE 4.1 illustrates a conflict diagram for the typical four-leg standard intersection on the STH 23 corridor. 42 total conflict points exist for this type of intersection configuration. Drivers who misjudge the gap appropriate to turn left or cross will result in an increased severity of rear-end and angle collisions with through vehicles traveling at high speeds.

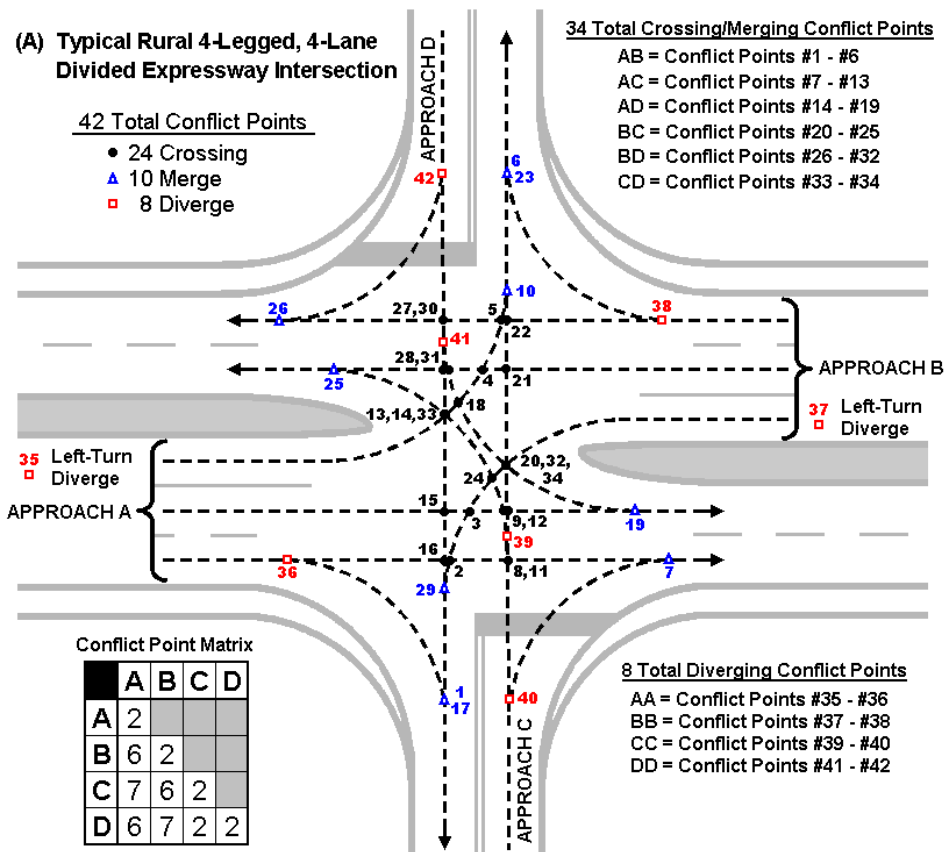


FIGURE 4.1 CONFLICT POINTS AT AT-GRADE MEDIAN OPENING⁴

⁴ Maze, T., NCHRP 15-30 Median Intersection Design for Rural High-Speed Divided Highways, Draft Report and Powerpoint Presentation, Transportation Research Board (2008).

Expected Crash Types:	angle, left-turn and rear-end collisions
Expected Frequency:	occasional
Expected Severity:	high
Risk Rating:	D (significant risk level)

Opportunities for Improvement

Access restrictions

Right In/Right Out control may be implemented to reduce conflict points by eliminating left-turn movements. Restricting left-turn movements will also decrease the chances of a severe injury crash occurring. Drivers would have to make a right and then a u-turn further down the corridor to travel in the desired direction. The intersection geometry may be redesigned to restrict left-turn movements and a No Left Turn (R3-2) sign may be posted.



Median U-turns/J-turns

Consider J-turns intersection configuration near intersections where vehicles would make a direct left-turn on to STH 23. The J-Turn intersection configuration has been implemented by the State DOTs including Florida, Iowa, Maryland, Michigan, Missouri and North Carolina. FHWA has also been promoting the concept using the term "Superstreet Intersection." Under a J-Turn configuration, direct left-turn movements would be allowed from STH 23 while cross traffic would have to make a right-turn followed by a U-turn. This is a similar treatment to what was applied on the USH 151 Bypass in Fond du Lac, but also includes median u-turn crossovers.

The J-turn configuration reduces the total number of intersection conflicts from 42 to 24. Of the conflict points which are eliminated, cross street left-turn and crossing conflicts which are those typically result in high severity angle crashes. These have been replaced with additional merge and diverge conflict points associated with the right-turn and u-turn movements.

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The J-turn configuration is considered an interim measure between allowing direct left-turns and an interchange. An Example of the layout of an intersection with Median U-turns/J-turns is shown in FIGURE 4.2. FIGURE 4.3 illustrates an effective guide sign which the Michigan Department of Transportation utilizes at these types of intersections. The Missouri Department of Transportation’s signing plan for intersections with J-turns is located in APPENDIX A.

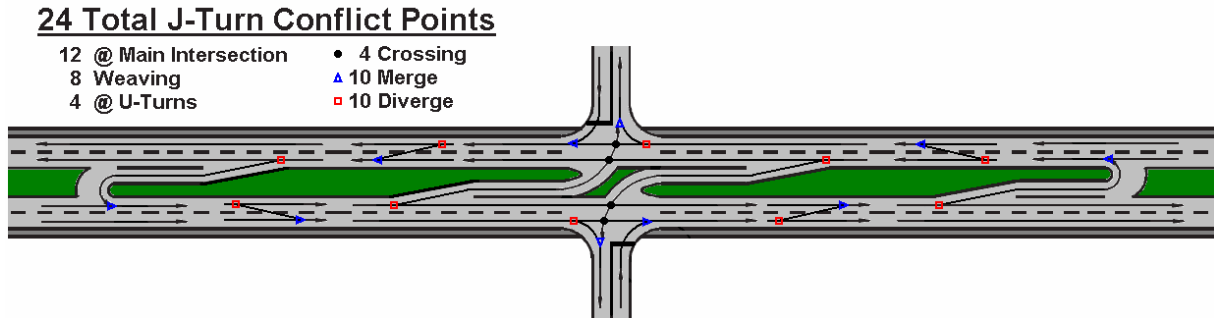


FIGURE 4.2 J-TURN INTERSECTION CONFIGURATION WITH CONFLICT POINTS



FIGURE 4.3 J-TURN GUIDE SIGNING⁵

⁵ Jagannathan , R., *Synthesis of Median U-Turn Intersection Treatment, Safety and Operational Benefits*, Federal Highway Administration, Washington, DC, FHWA-HRT-07-033 (2007).

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Provide lighting at intersections

Lighting is generally considered beneficial on the approaches to intersections as a means of improving sight distance and night-time visibility. The NCHRP Report 500 (*Volume 5: A Guide for Addressing Unsignalized Intersection Collisions*) states that provision of lighting at unsignalized intersection should be targeted at intersections with a substantial pattern of night-time crashes. Crash experience on similar facilities (the Fond du Lac, Whitewater and Oconomowoc Bypasses) suggests that lighting may be beneficial and should be considered. Although installation of lighting at isolated rural intersections may conflict with statewide practices concerning rural lighting, the following design elements that are present at all or some intersections increase the potential benefits that could be derived from intersection lighting:

ELEMENT	INTERSECTIONS (from west end to east end of the STH 23 corridor)							
	CTH K	CTH UU	CTH W	CTH G	CTH U	Sugarbush Road	CTH A	CTH S
channelization or auxiliary lanes on main line	√	√	√	√	√	√	√	√
limited sight distance on mainline	√		√	√			√	√
horizontal curve on mainline approach(es)				√			√	
unusual configuration (angle, offset, or jughandle)	√	√					√	
downhill approach on mainline	√	√	√	√			√	√
high volume on cross street		√						
Pedestrians and/or bicycles anticipated	√	√	√	√	√	√	√	√
high operating speed on cross street	√	√	√	√	√			√

Experience on the Fond du Lac, Whitewater and Oconomowoc Bypasses suggests that lighting may be considered in association with the local road authority to share the ongoing costs associated with lighting.

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4.4 Safety Issue 4: Absence of Right-Turn Lanes

Safety Issue 4: Drivers traveling at high speeds may have difficulty decelerating to turn on to minor streets.

Drivers traveling at high speeds may find it difficult to decelerate in order to turn onto minor roads along STH 23. The absence of right-turn lanes contributes to drivers suddenly slowing to make a right-turn, which may obstruct following vehicles traveling at high speeds, resulting in a severe rear-end collision or sideswipe collision. Drivers who use the shoulder to turn right may result in having to control an unstable vehicle, with one wheel on the gravel shoulder and one wheel on the paved shoulder.

Expected Crash Types: rear-end, and sideswipe collisions

Expected Frequency: infrequent

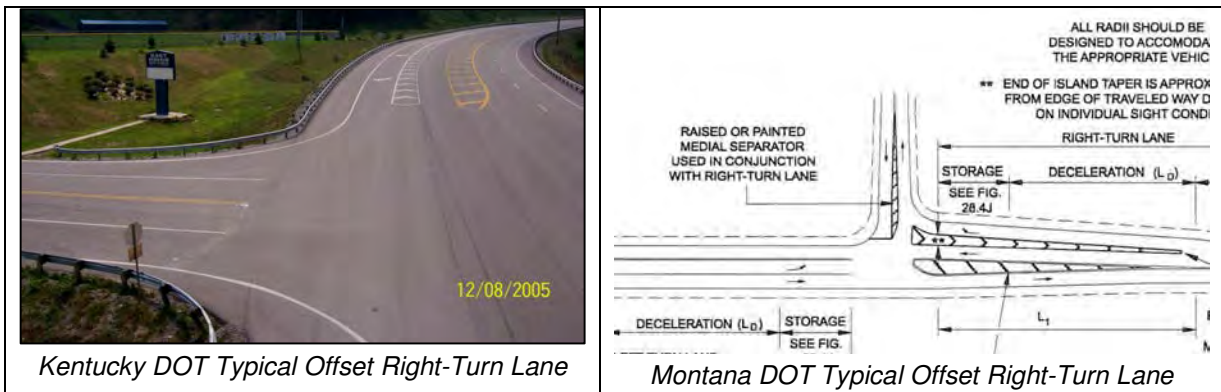
Expected Severity: high (pedestrian)

Risk Rating: C (moderate risk level)

Opportunities for Improvement

Provide right-turn lanes

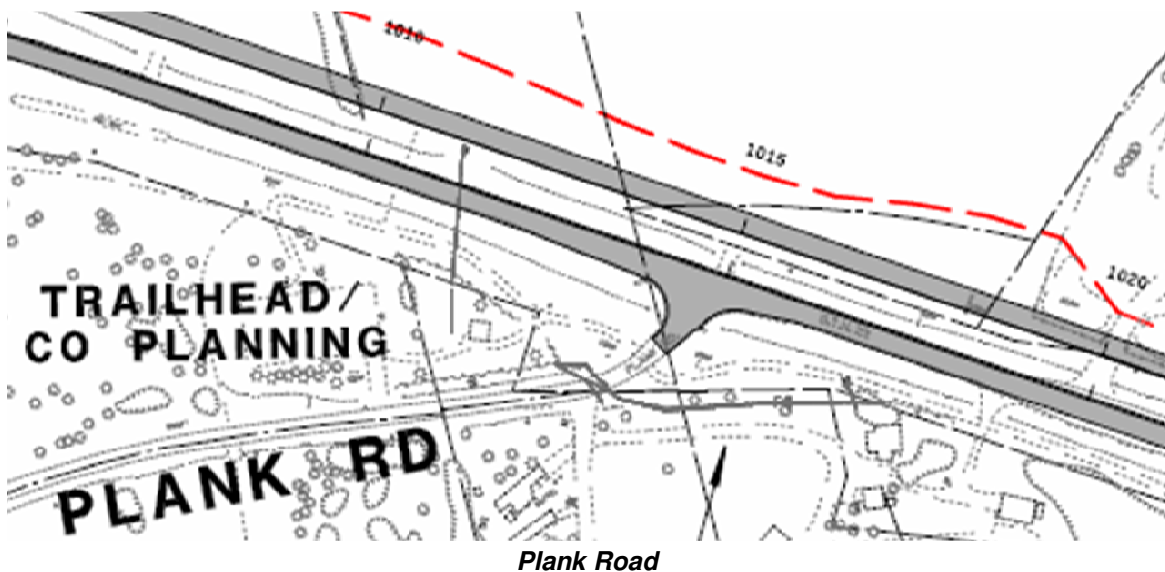
Offset right-turn lanes on STH 23 may be considered. The offset lane would provide a longer deceleration distance for drivers turning right onto the ramp, and would position these decelerating vehicles further right to reduce interference with sightlines between through traffic on STH 23 and drivers entering the roadway (turning either left or right).



4.5 Safety Issue 5: Right in/Right out Access

Safety Issue 5: Drivers may turn the wrong way at T-intersections with no median openings.

At T-intersections with no median openings along the corridor, drivers may turn the wrong way due to the geometry of the road. During nighttime conditions at intersections with no lighting unfamiliar drivers may not realize that STH 23 is a divided roadway and turn left at a T-intersection intersection. This would result in a high severity head-on collision.



Expected Crash Types: head-on collisions

Expected Frequency: infrequent

Expected Severity: extreme

Risk Rating: D (significant risk level)

Opportunities for Improvement

Right-turn islands:

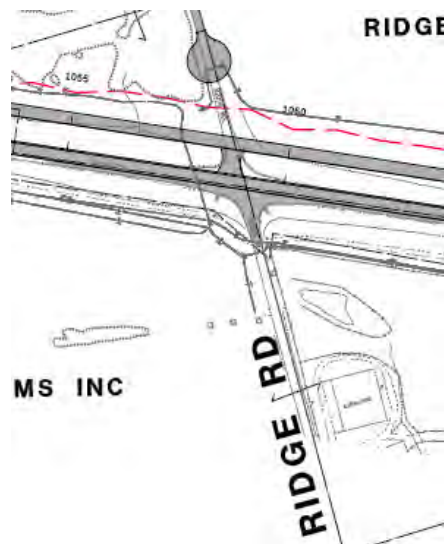
At all right-in/right-out intersection, it is suggested that right-turn islands be implemented as channelize right-turn lanes. The right-turn islands will help direct drivers to make the correct turning movement, and decrease the possibility of a head-on collision. The following intersections would be good candidates for right-turn islands:

- American Drive
- Whispering Springs Blvd.
- Taft Road
- Hinn Road
- Log Tavern
- Wirtz Lane
- Ckickadee Drive
- Feldman Lane
- Plank Road

4.6 Safety Issue 6: T-intersections

Safety Issue 6: Skewed Geometry at T-intersections decreases intersection sight distance.

The skewed geometry at several T-intersections decreases intersection sight distance and makes it difficult for drivers who can't look past their shoulder to identify appropriate gaps. Drivers may also have difficulty judging the high speeds of approaching vehicles. Due to limited visibility, drivers turning right may be braking when vehicles following are not expecting them to stop. Following vehicles, who are typically looking at the through traffic, may fail to see the vehicle in front stop suddenly, increasing the risk of rear-end conflicts.



STH 23 and Ridge Road

Expected Crash Types:	angle collisions
Expected Frequency:	occasional
Expected Severity:	high
Risk Rating:	D (significant risk level)

Opportunities for Improvement

Straighten skew

Reducing the intersection skew would improve drivers' visibility of oncoming traffic. Aligning the turn with the intersecting roadway would also aide drivers who are unable to look past their shoulder to yield to oncoming traffic. The following intersection may be reviewed to reduce the skew of the intersection:

- Log Tavern
- Ridge Road
- Triple T
- CTH U
- Pit

Consider right-turn lanes

See Section 4.5.

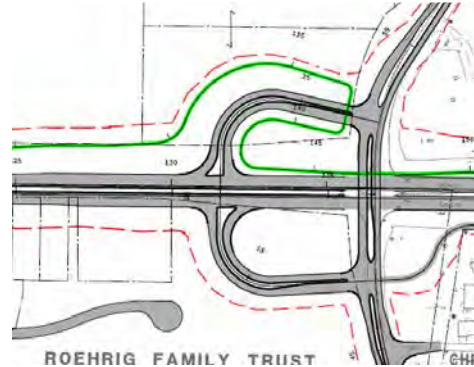
4.7 Safety Issue 7: CTH K – Jug-Handle Intersection

Safety Issue 7(a): Auxiliary lane lengths at appear to be short, and ramp entry turn radii appear to be abrupt.

The intersection of the CTH K jug-handle ramps with eastbound STH 23 includes short right-turn acceleration lanes. The short tapered acceleration lanes limit right-turning drivers' ability to accelerate to highway speed before merging into the right through lane.

*STH 23 EXPANSION ROAD SAFETY AUDIT
FOND DU LAC AND SHEBOYGAN COUNTIES*

Slower vehicles, especially slowly-accelerating trucks, may interfere with through traffic on STH 23, increasing the risk of rear-end and sideswipe collisions. This is further aggravated by the 7% vertical curve on eastbound STH 23. Drivers who fail to merge may leave the travel lane, resulting in run-off-road and fixed-object collisions.



STH 23 and CTH K

For drivers exiting STH 23 at CTH K, all deceleration lanes appear to have been designed to the minimum length advised in the AASHTO Green Book. If drivers approaching a ramp from highway speeds fail to sufficiently slow down (as they might where deceleration lanes are minimum length), they may strike the ramp median or enter the opposing lane of traffic on the ramp.

Safety Issue 7(b): Westbound STH 23 deceleration lane is located on 7% downhill grade and on a bridge.

Westbound STH 23 Drivers approaching the CTH K jug-handle are traveling down a 7% vertical gradient from while on a bridge. Icy pavement may prevail in this area leading to an increased risk for rear end and secondary run-off-road crashes. The challenging geometric features are in part the result of constraints reflecting limited right-of-way and environmental limitations.

Expected Crash Types: Rear-end, merging, run off the road collisions

Expected Frequency: occasional

Expected Severity: high

Risk Rating: D (significant risk level)

Opportunities for Improvement

Tighten right turn island

Realigning the right turn channelization island to reduce the turn radius will decrease the amount of unexpected stops and thus decrease the possibility of a collision occurring. It is noted that a redesigned right-turn channelization island must still be able to accommodate trucks and buses.

Provide a parallel acceleration lane

A parallel acceleration lane on the STH 23 for right-turning traffic may be considered to allow right-turning drivers to accelerate for a longer distance before merging into the right lane. Longer acceleration lanes may particularly assist older drivers, whose ability to view mainline traffic may be compromised. At most interchange locations, a longer acceleration lane may require widening of the adjacent overpass structure.

Surface treatment

Grooving of concrete pavement is an option to increase pavement friction along the vertical slopes. High friction pavement increases the control of a vehicle when sudden braking occurs and decreases stopping distance. Therefore, the increase in pavement friction may reduce run-off the road collisions and decrease vehicle skidding on wet or icy pavement conditions.

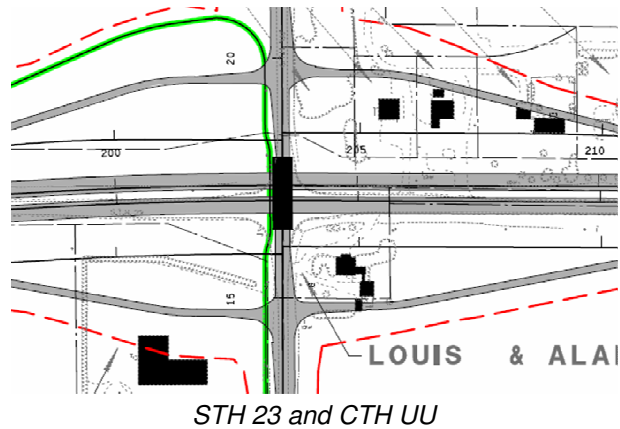
4.8 Safety Issue 8: CTH UU Interchange

Safety Issue 8: Roundabout located on a vertical curve.

The roundabout at the intersection of CTH UU and the eastbound STH 23 ramps is designed to be located on a vertical curve. It is not desirable to locate a roundabout where grades through the intersection are greater than four percent⁶. A four percent grade for the roundabout is at the upper limit of the acceptable range. Limited vertical sight distance at this location will be present, which may increase the risk of rear-end collisions on the roundabout approaches, or trucks overturning within the roundabout.

⁶ Federal Highway Administration (2000). *Roundabouts: An Informational Guide*. Page 167

STH 23 EXPANSION ROAD SAFETY AUDIT
FOND DU LAC AND SHEBOYGAN COUNTIES



Expected Crash Types: rear-end collisions

Expected Frequency: occasional

Expected Severity: moderate

Risk Rating: C (moderate risk level)

Opportunities for Improvement

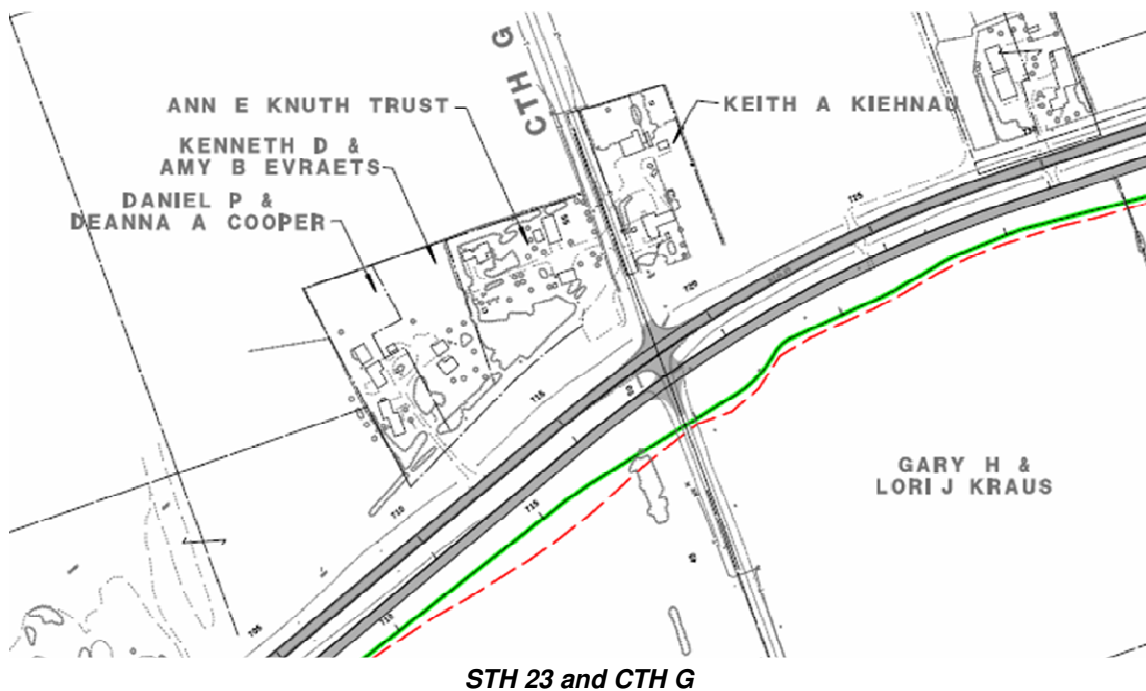
Reduce grade

Reducing vertical grade will improve sight distance at approaches to the roundabout, and will increase decision sight distance. The redesign of the geometry to reduce the grade may involve repositioning the roundabouts.

*STH 23 EXPANSION ROAD SAFETY AUDIT
FOND DU LAC AND SHEBOYGAN COUNTIES***4.9 Safety Issue 9: Restricted sight distance****Safety Issue 9: Several of the intersections have restricted stopping and intersection sight distance.**

The intersections of CTH W, CTH G, CTH A and Scenic View Drive are all located within a horizontal and/or vertical curve. These curves limit the stopping and intersection sight distance which may make it difficult for drivers looking to enter STH 23 from a cross street to judge approach speeds and gaps. A horizontal or vertical curve on an intersection approach also reduces decision sight distance and approaching drivers' ability to see and react to the vehicles at the intersection.

The gas station driveway at CTH W is quite close to the intersection, which could also contribute to conflicts with drivers approaching the intersection at a skew. The location of the driveway also has sight distance restrictions caused by the horizontal and vertical alignment approaching CTH W. Drivers turning onto STH 23 from the intersection may not be expecting vehicles to be entering the roadway from the driveway due to the sight distance restrictions.



STH 23 EXPANSION ROAD SAFETY AUDIT
FOND DU LAC AND SHEBOYGAN COUNTIES

Expected Crash Types: angle and rear-end collisions
Expected Frequency: occasional
Expected Severity: high
Risk Rating: D (significant risk level)

Opportunities for Improvement

Lighting

Lighting is generally considered beneficial at intersections to improve sight distance and night-time visibility. It is suggested that lighting be provided at approaches to intersections located within a horizontal or vertical curve.

APPENDIX A
J-TURN DETAILS

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FIGURE A-1 MISSOURI DEPARTMENT OF TRANSPORTATION J-TURN SIGN DETAIL PAGE 1

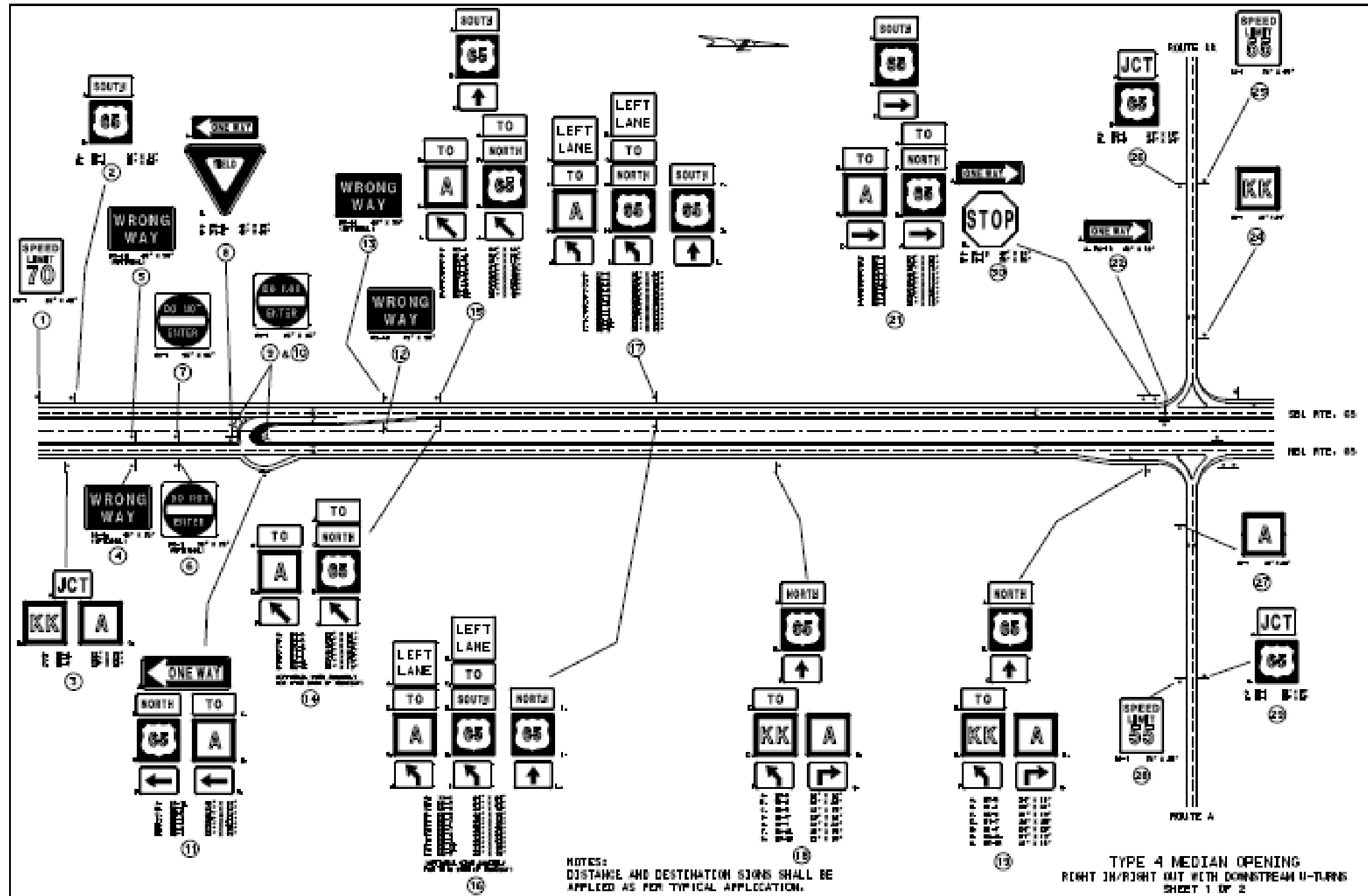
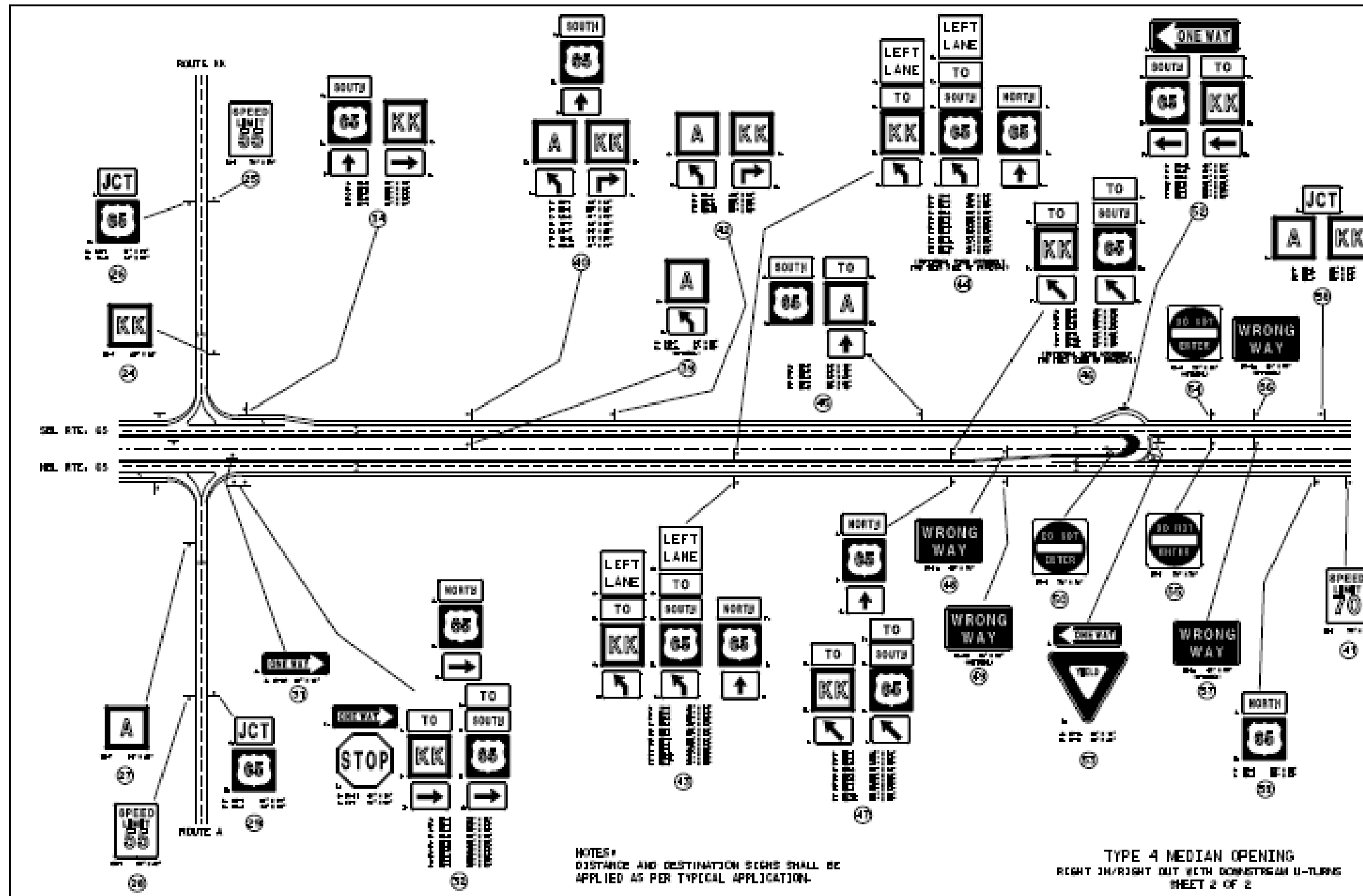


FIGURE A-1 MISSOURI DEPARTMENT OF TRANSPORTATION J-TURN SIGN DETAIL PAGE 2



**APPENDIX J
PASSING LANE STUDY**

Report

**WIS 23–Fond du Lac
to Plymouth
Sheboygan County,
Wisconsin
I.D. 1440-13-00**

**Passing Lane and Cost
Analysis**

**Wisconsin
Department of
Transportation**

May 2006

Report for Wisconsin Department of Transportation

WIS 23–Fond du Lac to Plymouth
Sheboygan County, Wisconsin
I.D. 1440-13-00

Passing Lane and Cost Analysis

Prepared by:

Thomas W. Lynch, P.E. PTOE

STRAND ASSOCIATES, INC.®

910 West Wingra Drive

Madison, WI 53715

(608) 251-4843

(608) 251-8655

Project No. 1-089.158

www.strand.com

May 2006



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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The Wisconsin Department of Transportation (WisDOT) hired Strand Associates Inc. evaluate the effectiveness and the cost/benefit of using passing lanes for WIS 23 in Fond du Lac and Sheboygan Counties. The 17-mile section spans from County UU in Fond du Lac to Pioneer Road in Plymouth. The comparison focused on installing passing lanes vs. constructing four-lane improvements.

The study investigated three options:

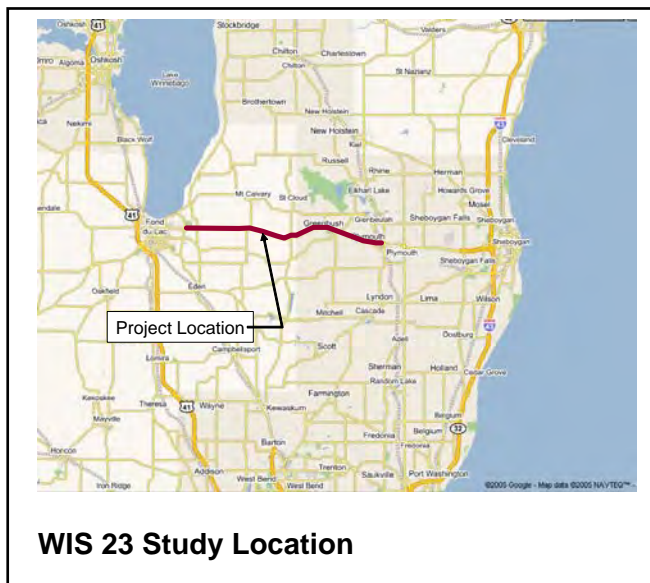
- Option 1 maintains a two-lane roadway, with passing lanes, the full length of the corridor from 2015 to 2025. In 2025 the full corridor is converted to a four-lane expressway.
- Option 2 constructs a four-lane expressway on the western portion of the corridor from CTH UU to CTH G in 2015. Option 2 also constructs passing lanes for the existing two-lane roadway that spans from CTH G to Pioneer Road. In 2025 the whole corridor is converted to a four-lane expressway.
- Option 2A constructs a four-lane expressway from GTH UU to GTH G and a two-lane roadway from GTH G to Pioneer Road in 2015. In 2040 a four-lane expressway will be constructed from CTH UU to Pioneer Road.
- Option 3 constructs a four-lane expressway for the whole corridor in 2015.

The cost/benefit analysis included multiple factors: a present worth analysis of construction costs, operation costs, travel time costs, crash costs, and maintenance costs. The effectiveness was measured by performing a level of service analysis and computer modeling to see how well the three options met Corridors 2020 objectives.

RESULTS

The study found that Option 3, constructing a full four-lane facility in the year 2015, provided the greatest present net benefit of \$30,750,000 over 50 years. The present net benefit is the sum of the benefits minus the costs, and adjusting both for time. Option 3's present net benefit is about five to twenty percent greater than the other alternatives that were studied.

The study found that constructing passing lanes on the existing two-lane WIS 23 did provide an initial operational benefit and did reduce congestion when compared to the No-Build alternative. Yet passing



WIS 23 Study Location

lanes did not provide enough benefit to maintain the Corridors 2020 objective LOS of C through the year 2025 for the entire length of the project. With passing lanes, the controlling direction of the west portion of WIS 23 falls to LOS D in 2021. When both directions are combined (averaged) the west portion of WIS 23 falls to LOS D in 2036.

The east portion operates slightly better with passing lanes. It falls to LOS D in the controlling direction in 2041. When both directions are combined (averaged) the east portion falls to LOS D in 2057.

SECTION 1
INTRODUCTION AND RESULTS

1.01 INTRODUCTION

The Wisconsin Department of Transportation (WisDOT) is investigating potential improvements of Wisconsin State Trunk Highway (WIS) 23 in Sheboygan and Fond du Lac Counties. The study area spans from County UU to Pioneer Road, a distance of 17.75 miles. The project is located in Fond du Lac and Sheboygan Counties between the cities of Fond du Lac and Plymouth, Wisconsin. The existing WIS 23 facility is approximately 17.75 miles of two-lane highway, 24 feet wide, with 10-foot shoulders.

This portion of WIS 23 has been approved for transportation improvement around 2015. A Draft Environmental Impact Statement (DEIS) has been released and a Final Environmental Impact Statement (FEIS) is pending.

WIS 23 is included in Wisconsin's part of the National Highway System (NHS) as designated under the 1998 Transportation Equity Act for the 21st Century (TEA21). NHS routes serve major population centers, intermodal transportation facilities, and major travel destinations and provide connections to the national defense highway network. WIS 23 provides the only NHS east-west link between Milwaukee (to the south) and Appleton (to the north).

Improvements are meant to increase traffic operations for the highway to levels consistent with WIS 23's classification with Wisconsin's statewide Corridors 2020 State Highway Plan. Corridors 2020 Plan classifies WIS 23 as a Connector as it connects US 41 and I-43 between Milwaukee and the Fox Cities. A Connector should be a high quality facility and provide the highest standards of roadway width, passing opportunities, safety, and driving comfort.

WIS 23 is a designated state long truck route. This designation further demonstrates its importance to commercial and economic development interests within the state. Trucks account for approximately 14 percent of the average daily traffic using the highway.

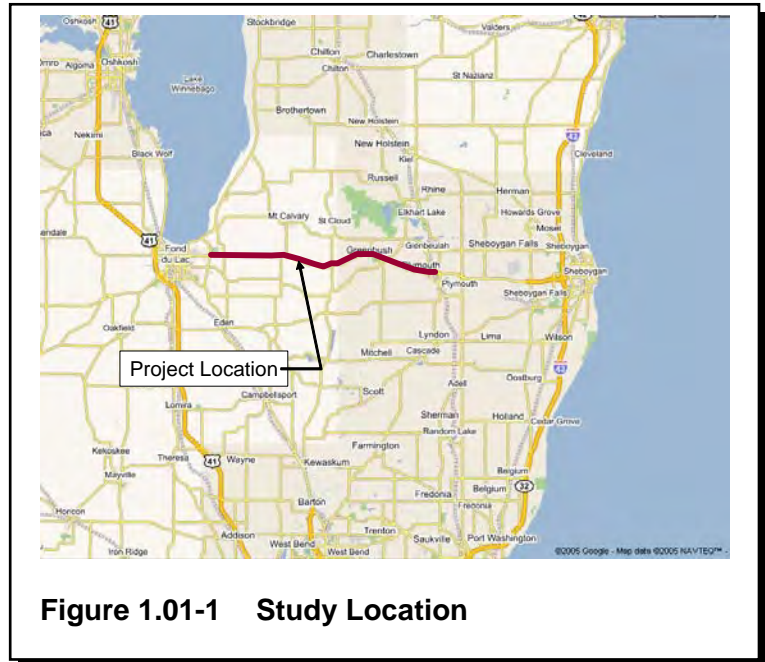


Figure 1.01-1 Study Location

WIS 23 is identified in the Corridors 2020 Plan as a connector route. As a connector highway within this network, existing WIS 23 is a major link between Sheboygan and Fond du Lac and connects the backbone routes of I-43 and US 41. These highways connect Sheboygan and Fond du Lac to other population, manufacturing, and trade centers beyond, such as Green Bay, Oshkosh, Madison, Milwaukee, and Chicago. These important highway connections ultimately provide economic links to national and international markets. Corridors 2020 routes make up just 3 percent of the state's highway, yet carry 34 percent of all auto travel and 57 percent of all truck travel. Because Corridors 2020 Routes play such a key role in the state's transportation system, they are built to higher safety and operational standards. These higher standards maintain mobility and safety on routes vital to Wisconsin's economy.

Figure 1.01-2 shows the WIS 23 corridor in relation to the Corridors 2020 State Highway System.

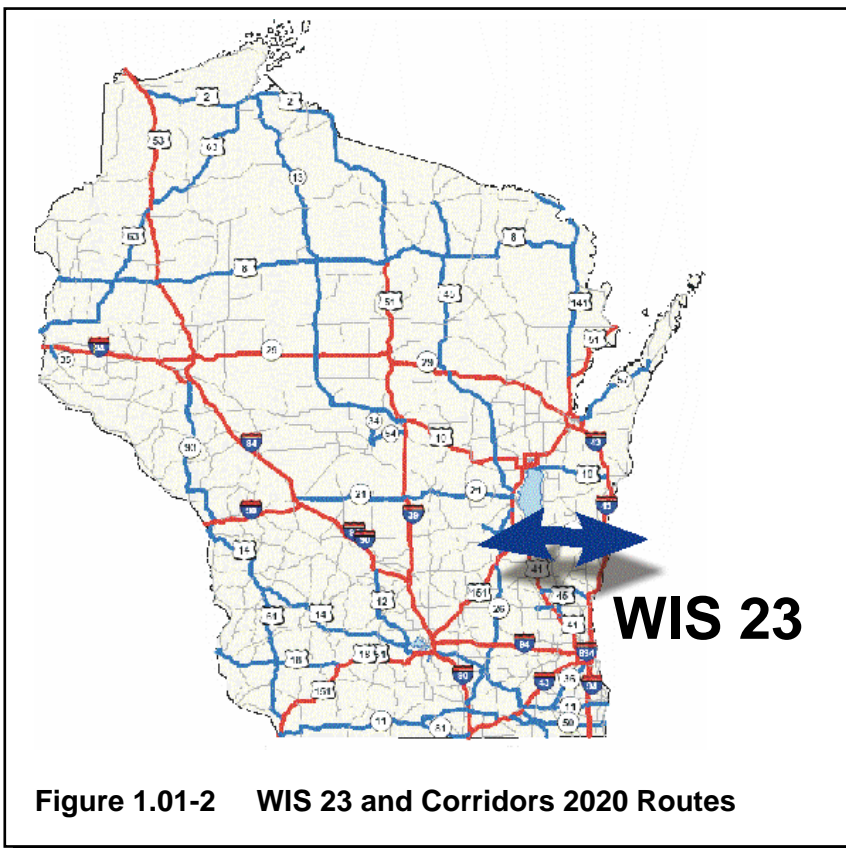


Figure 1.01-2 WIS 23 and Corridors 2020 Routes

1.02 PURPOSE

The purpose of this report is two-fold.

A. Operations

The study evaluates the traffic operations of WIS 23 and compares them with the operational objectives of Corridors 2020 routes. The existing two-lane facility, the two-lane facility with passing lanes, and a four-lane facility are all evaluated. The operational analysis includes the years 2015, 2025, and other horizon years where the corridor falls short of Corridors 2020 objectives.

B. Cost-Benefit Analysis

Second, this report evaluates benefits and costs associated with four improvement options: construction of a two-lane facility with passing lanes, a four-lane expressway facility, or some combinations of the two.

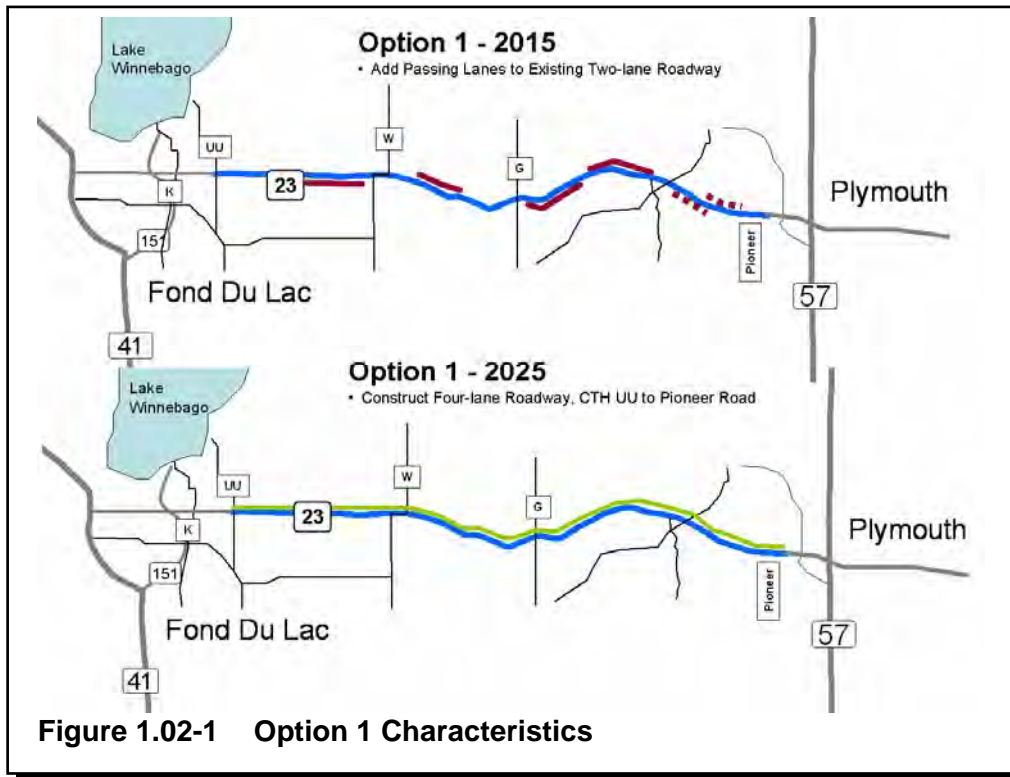
Option 1 maintains a two-lane roadway, with passing lanes, the full length of the corridor from 2015 to 2025. In 2025 the full corridor is converted to a four-lane expressway.

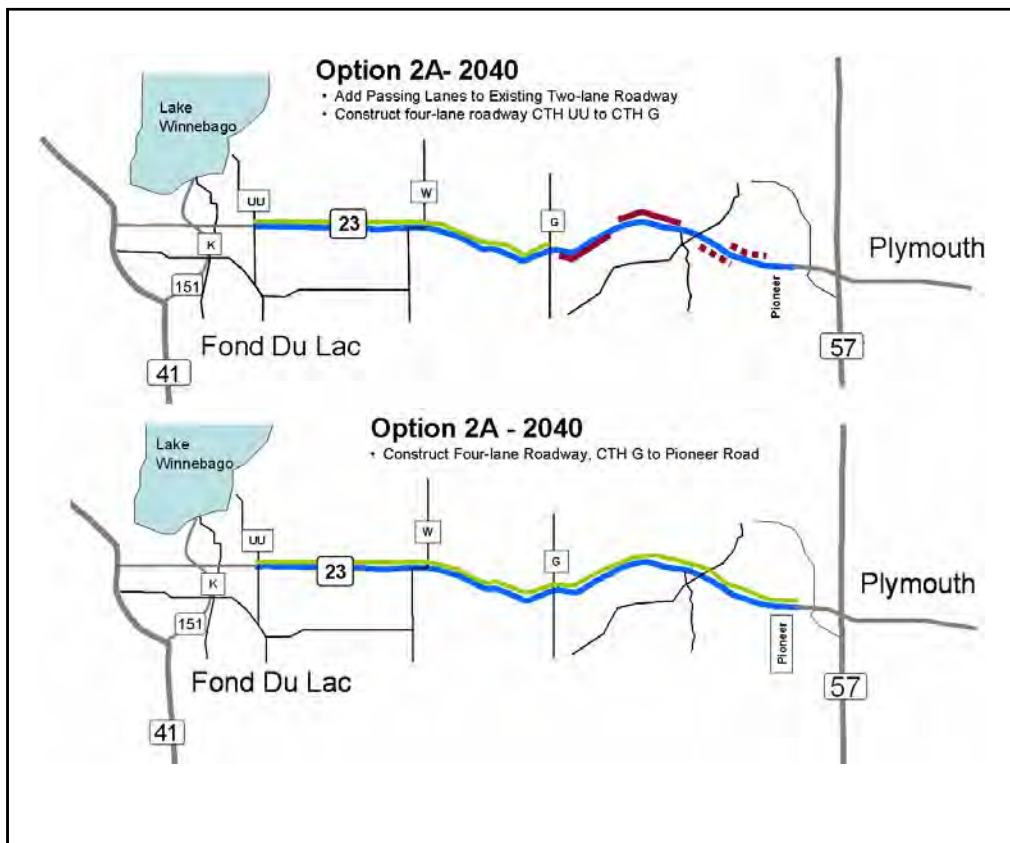
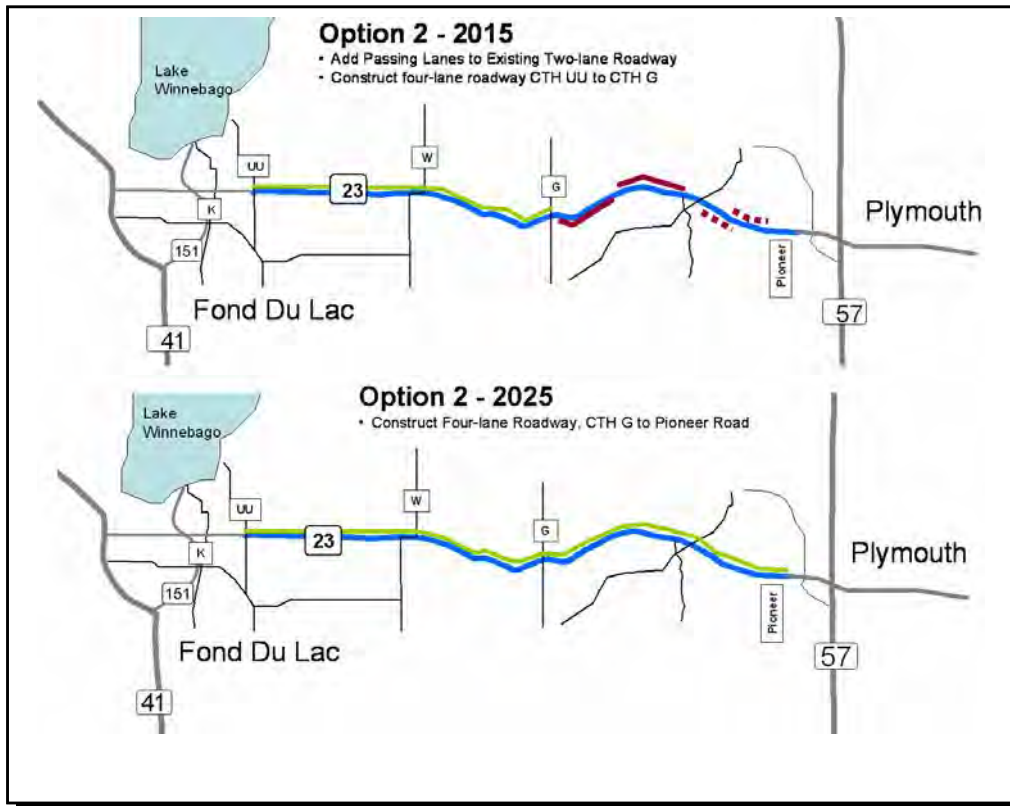
Option 2 constructs a four-lane expressway on the western portion of the corridor from CTH UU to CTH G in 2015. Option 2 also constructs passing lanes for the existing two-lane roadway that spans from CTH G to Pioneer Road. In 2025 the whole corridor is converted to a four-lane expressway.

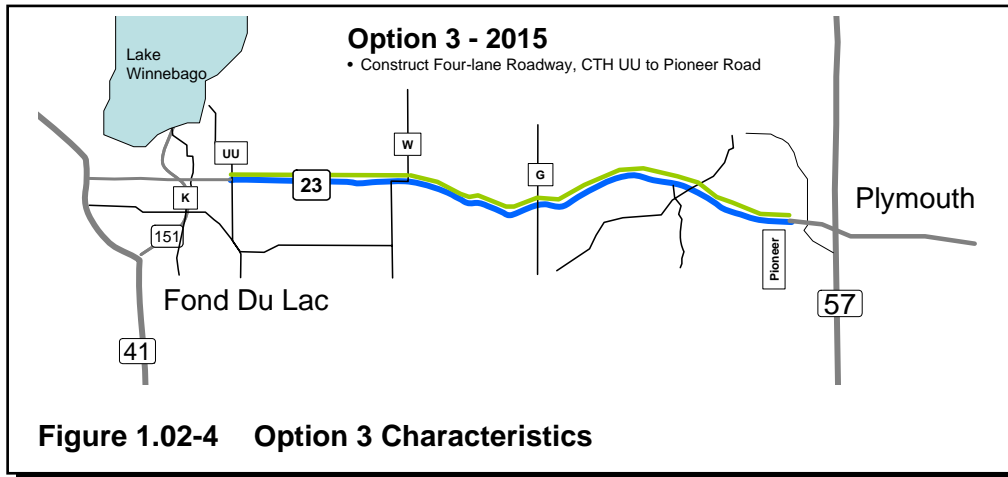
Option 2A is exactly like Option 2, except that the section from CTH UU to CTH G is converted to a four-lane expressway in 2040 instead of 2025.

Option 3 constructs a four-lane expressway for the whole corridor in 2015.

Figures 1.02-1 to 1.02-4 illustrate the options.







The study evaluated the present worth for several factors of these three options for the years 2015 through 2065. Factors in the analysis include:

- Reduced Crash Benefits Experienced by the Traveler—The cost associated with the predicted crashes occurring for each of the three options investigated.
- Travel Time Benefits Experienced by the Traveler—The cost of time incurred by travelers from congestion produced from a reduced capacity facility. (Note: Only the cost of the delay as compared with freeflow conditions is included in the analysis, not the full cost of travel through the corridor.)
- Reduced Operation Cost Benefits Experienced by the Traveler—The costs associated in operating the vehicle through the corridor including motor fuel costs and vehicle maintenance costs.
- Roadway Maintenance Costs Expended by WisDOT—The costs associated with routine maintenance and other regular expenditures that are not reflected in the facility costs.
- Construction and Pavement Maintenance Costs Expended by WisDOT—The costs associated with constructing the roadway facility and maintaining it through the 50-year period from 2015 to 2065.

Several costs were not included in the present worth analysis. The cost of right-of-way was not included because it is anticipated that even with the two-lane Option 1, right-of-way for a four-lane roadway would be purchased for corridor preservation. Right-of-way costs would therefore be constant through the three alternatives. Other environmental costs, such as air emissions, and secondary effects costs were not included in the cost analysis.

Section 2 provides a more detailed description of the analysis procedures.

1.03 RESULTS

A. Traffic Operations

Traffic operations are typically characterized as Level of Service (LOS) that ranges from LOS A (uncongested) to LOS F (very congested). Table 1.03-1 illustrates the conditions characteristic of each LOS designation.

LOS	Two-Lane Highway
A	Highest quality of traffic service, where motorists are able to drive at their desired speed. Average speeds of 60 mph. Drivers would be delayed no more than 30% of the time by slow-moving vehicles.
B	On average, drivers are delayed up to 45% of the time. Service flow rates of 750 pcph, total in both directions, can be achieved under ideal conditions. Speeds of 55 mph or slightly higher are expected on level terrain.
C	Noticeable increases in platoon formation, platoon size, and frequency of passing impediment. Percent delays are up to 60%. Average speed still exceeds 52 mph on level terrain, even though unrestricted passing demand exceeds passing capacity.
D	Passing demand is very high, while passing capacity approaches zero. Mean platoon sizes of 5 to 10 vehicles are common, although speeds of 50 mph can still be maintained under ideal conditions. The fraction of no passing zones along the roadway section usually has little influence on passing. The percentage of time motorists are delayed approaches 75%.
E	Defined as traffic flow conditions on two-lane highways having a percent time delay of greater than 75%. Maximum flow rates of 1,800 pcph, total in both directions, can be maintained under ideal conditions. This is the highest flow rate that can be maintained for any length of time over an extended section of level terrain without a high probability of breakdown.
F	As with other highway types, LOS F represents heavily congested flow with traffic demand exceeding capacity. Volumes are lower than capacity, and speeds are below capacity speed. LOS E is seldom attained over extended sections on level terrain as more than a transient condition; most often, perturbations in traffic flow as level E is approached cause a rapid transition to LOS F.

Table 1.03-1 Two-Lane Roadway LOS Characteristics

For Corridors 2020 Connector Routes, the State Highway Plan designates an LOS C or better. This higher LOS standard recognizes the importance of Corridors 2020 Routes from a mobility and economic development perspective. On Corridors 2020 routes, only “minimal” congestion is allowed.¹ The roadway should maintain this LOS through the design year, which is typically 20 years after the construction year. For WIS 23, the design year is about 2035.

To analyze operations on WIS 23, the study team used the Interactive Highway Safety Design Model (IHSDM) computer program. This program has a traffic operations component that uses microscopic simulation to determine traffic operations. This methodology is able to estimate the potential benefits of passing lanes to traffic operations. Table 1.03-2 shows the projected year that WIS 23, as a two-lane highway with and without passing lanes, falls from LOS C to LOS D.

¹ Except on Connectors in urban areas, where slightly higher congestion is allowed.

Alternative 2 - Passing Lanes	Western Corridor CTH UU to CTH G		Eastern Corridor CTH G to Pioneer Road		Whole Corridor CTH UU to Pioneer Rd	
	No Build	With Passing Lanes	No Build	With Passing Lanes	No Build	With Passing Lanes
	Year LOS C to D Controlling Direction	2005	2013	2019	2041	2005
Year LOS C to D Combined Directions	2007	2021	2021	2057	2008	2027

Table 1.03-2 Year LOS Falls from C to D

The table shows that without passing lane improvements, WIS 23 does not meet Corridors 2020 operational standards in the year 2015. In the whole corridor analysis with passing lanes, the controlling direction of WIS 23 meets Corridors 2020 operational standards until the year 2019. When both directions of travel are averaged, WIS 23 meets Corridors 2020 operational standards until the years 2027.

The western portion of the corridor has poorer operation levels with passing lanes than when the corridor is analyzed as a whole. The controlling direction of the western portion with passing lanes falls below Corridors 2020 standards in the year 2013. When both directions are averaged, the western portion of the corridor falls below Corridors 2020 operational standards in the year 2021.

The eastern portion of the corridor has better operation levels with passing lanes. The controlling direction of the eastern portion with passing lanes falls below Corridors 2020 standards in the year 2041. When both directions are averaged, the eastern portion of the corridor falls below Corridors 2020 operational standards in the year 2057. These numbers suggest that based on operational levels alone, passing lanes could be an option for the eastern portion of the corridor.

B. Net Present Benefit Analysis

Table 1.03-3 summarizes the net present benefit for the four options. The net present benefit compares the net user benefits, minus the department costs, over the No-Build alternative. Figure 1.03-1 illustrates this equation. All costs and benefits are adjusted for time for when they occur and brought back to 2005 present value, which results in the Net Present Benefit.

User Benefits – Department Costs = Net Benefit

Travel Time Savings	Construction Costs
Crash Reduction	Ongoing Maintenance Costs
Operational Cost Savings	

Figure 1.03-1 Net Benefit Equation

Option 3 (full four-lane option) provides the greatest net present benefit of \$37.1 million dollars. This is about \$1.8 million dollars greater than the next highest net present benefit of Option 2. Option 3 does have a \$4.7 million higher construction and maintenance present cost because of the earlier construction of the four-lane facility.

Over the course of 50 years, the present net benefit of all four alternatives differs by 5 to 20 percent. Most of the differences shown, such as difference in crash rate, time savings, and construction costs, are incurred in the first 10 years of the analysis from 2015 to 2025. After that the whole corridor is a four-lane facility experiencing the same travel times and crash rates².

	Option 1	Option 2	Option 2A	Option 3
Crash Cost Benefit	\$42,196,000	48,264,000	43,475,000	53,107,000
Travel Time Benefit	9,947,000	11,763,000	9,933,000	13,213,000
Vehicle Operation Benefit	648,000	767,000	656,000	863,000
Total Benefits	\$52,791,000	\$60,794,000	\$54,064,000	\$67,183,000
Construction Cost Difference	13,022,300	16,377,300	13,499,900	19,483,300
Maintenance Cost Difference	1,433,000	1,819,000	1,613,000	2,083,000
Total Cost Difference	\$14,455,300	\$18,196,300	\$15,112,900	\$21,566,300
Present Net Benefit	\$38,335,700	\$42,597,700	\$38,951,100	\$45,616,700

Table 1.03-3 Net Present Benefit Options 1 through 3

² The exception being Option 2A, which does not construct a four-lane facility on the eastern portion until 2040.

SECTION 2
ANALYSIS METHODOLOGY

2.01 TRAFFIC VOLUMES

WisDOT's Forecasting Section of the Division of Transportation Investment Management provided traffic projections for the years 2016, 2026, and 2036. Generally these projections increased by 1.5 percent a year for the west side of the corridor and by 1.7 percent for the east side of the corridor.

These traffic projections were used in the cost of time analysis and the crash cost analysis. WisDOT projected traffic at multiple locations along the corridor. To simplify these analysis, a weighted average was derived for the west end of the corridor (County UU to County G) and the east end of the corridor (County G to Pioneer Road).

To account for the life of the roadway bed and pavement, the analysis spanned 50 years. To obtain traffic projections through the year 2065, the study linearly extrapolated the traffic projections from 2016 to 2036. Ordinarily we would not use an extrapolation like this because projected traffic growth tapers off in later years. Yet the growth rates projected for WIS 23 are modest, and the extrapolation does not produce large or unreasonable traffic numbers for the year 2065. Additionally, the traffic forecasts are most important for the years where the options are different, from 2015 to 2025. These years fall well within the forecast years provided by the Forecasting Section.

The projections provided by the Forecasting Section were for the years 2016, 2026, and 2036, yet the analysis years are for 2015, 2025, and so on. To obtain the projections for one year prior, the study reduced the WisDOT projection by the annual growth rate.

Table 2.01-1 shows the WIS 23 traffic projections used for the analysis.

	County UU to County G	County G to Pioneer Road
2016	10,110	9,860
2026	11,870	11,550
2036	13,570	13,140
2046	15,300	14,810
2056	17,020	16,480
2066	18,750	18,140

Table 2.01-1 WIS 23 Traffic Projections

The study used different traffic volumes for the level of service analysis than it did for the economic analysis. The level of service analysis focused on the hundredth highest hour of the year. This is by definition the peak hour used for design in Wisconsin. For the economic analysis (eg travel time) the study used the 400th highest hour. This is the average peak hour of the highest 800 hours of the year, the time that congestion is

	Overall (Daily)	LOS Analysis	Economic Analysis
Analysis Hour (K value)	--	K100 = 10.4%	K400 = 9.3%
Truck Percentage	13.9%	9.3%	12%
Directional Distribution	50/50	60/40	60/40
Freeflow Speed	60 mph	60 mph	60mph

Table 2.01-2 Traffic Analysis Parameters

experienced repeatedly. The truck percentages used also differed between the two analyses. While the overall truck percentage on the highway is 14 percent, the level of service analysis used 9.3 percent since trucks make up a smaller percentage of the traffic flow stream during rush hours. For the economic analysis, the study used a truck percentage of 12 percent because a greater number of hours are capturing more trucks. Table 2.01-2 summarizes the parameters used for the analyses. These parameters were derived from Automatic Traffic Recorder (ATR) data obtained for other similar highways that are in the region.

2.02 CRASH COSTS

WIS 23 currently has a crash rate, excluding deer, of 75 crashes per hundred Million Vehicle Miles Traveled (100 MVMT) for the years between 1994 and 2004. This is below the state average crash rate of 119.5 crashes per 100 MVMT for two-lane roadways from 1994 to 2003.

The cost benefit analysis is very sensitive to the crash component. It is important to select a crash prediction methodology that fairly represents the anticipated safety benefits of a two-lane roadway with passing lanes and a four-lane expressway yet does not inflate the number of crashes and their influence on the cost benefit analysis. Several methodologies were investigated for projecting crash rates of a two-lane roadway with passing lanes and a rural four-lane expressway. The methodology that provided the most representative comparison between the three types of facilities was based on crash record data collected by WisDOT.

A. Two-Lane Roadway with Passing Lanes--Projected Crash Rate

There is not a great deal of literature that addresses the safety benefits of adding passing lanes to two-lane roadways. WisDOT has tried to understand the safety benefits of passing lanes by studying WIS 26. WisDOT collected crash data on WIS 26 from US 151 to US 41 before and after it had passing lanes installed. From this data, there did not appear to be any clear trends of a decreased or increased crash rate.¹

Other studies have shown greater safety benefits associated with passing lanes. One 1977 California Study by Rinde² shows crash rate reductions of up to 42 percent. A 1984 study by Harwood and St. John³ showed crash reductions in rolling and level terrain of about 9 percent. A more recent study performed by the Missouri Department of Transportation⁴ suggested a crash rate reductions ranging from 12 to 24 percent.

¹ Because of the limited crash data, wide variation, and small sample size, it is doubtful a statistically significant analysis could be performed on this data.

² Rinde, E.A., *Accident Rates vs. Shoulder Width: Two-Lane Roads with Passing Lanes*, Report No. CA-DOT-TR-3147-1-77-01, California Department of Transportation, September 1977.

³ Harwood, D.W., and A.D. St John, *Passing Lanes and Other Operational Improvements on Two-Lane Highways*, Report No. FHWA-RD-85/028, Federal Highway Administration, July 1984.

⁴ Harwood, D.W. and Potts, I.B., *Benefits and Design/Location Criteria for Passing Lanes*, Report No. RDT 04-008, Midwest Research Institute, February 2004

Because the WIS 23 facility is already experiencing crash rates below the state average, it is less likely that passing lanes will substantially reduce the crash rate. The types of crashes that passing lanes are likely to alleviate, head-on crashes, comprise 5 percent of the crashes on WIS 23. Therefore the study used a 15 percent reduction in crashes caused by the addition of passing lanes. The study did perform a sensitivity analysis to see how this reduction influences the outcome of the economic analysis. The study findings remain unchanged for passing lane crash reductions up to 20 percent.

B. Four-Lane Expressway--Projected Crash Rate

The WisDOT's Investment Management inventories crash rates on most of the state highways in the state. The Department then uses this data to compile typical crash rates for different types of facilities. These typical rates are used by the Department for Benefit/Cost analyses. A series of rates obtained from the Department in November of 2005 are shown in Table 2.02-1.

These crash rates show a 43 percent crash rate reduction going from a two-lane roadway with volumes above 3500 vpd to a small rural expressway facility. So the rates represent the intuitive effects of the safety benefits of a four-lane expressway. This data is not specific to the WIS 23 corridor, which has a crash rate that is 25 percent lower than the state average.

Therefore, to predict the crash rate for the WIS 23 four-lane expressway facility, the study took the 43 percent reduction shown by WisDOT's comparison of crash rates by facility type and applied them to the existing WIS 23 crash rate. This yields an expressway crash rate of about 42.3 crashes per 100 MVMT for WIS 23.

Facility Type	Fatal Crash Rate	Injury Crash Rate	Property Damage Crash Rate	Total Crash Rate
1. Rural and small urban freeways	0.004550	0.146683	0.283862	0.435098
2. Rural and small urban expressways	0.010380	0.211804	0.301254	0.523442
3. Rural STN ADT>3500	0.016266	0.369065	0.539215	0.924547
4. Rural STN ADT >2000 <3500	0.021290	0.377783	0.480095	0.879169
5. Rural STN ADT >750, <2000	0.019488	0.452312	0.605563	1.077364
6. Rural STN ADT < 750	0.032416	0.784476	1.119013	1.935905
7. Large urban freeways	0.003040	0.309022	0.622508	0.934570
8. Large urban divided highways and one-way roadways	0.008636	1.361204	2.040462	3.410303
9. Large urban undivided highways	0.012693	1.383383	2.111152	3.507228
10. Small urban STN	0.845900	0.704790	1.307497	2.020746

Table 2.02-1 WisDOT Crash Rates by Facility Type (in MVMT)

Table 2.02-2 shows the existing crash rates for WIS 23 as a two-lane roadway, a two-lane roadway with passing lanes, and as a four-lane expressway.

	Existing Two-lane WIS 23	Proposed Two-Lane WIS 23 with Passing Lanes	Proposed WIS 23 Expressway
Fatal	1.64	1.39	1.02
Injury	36.7	31.2	21.0
Property Damage	36.3	30.8	20.4
Total	74.8	63.6	42.3

Table 2.02-2 Analysis Crash Rates

C. Crash Costs

The study obtained crash costs from WisDOT Central Office. The costs themselves are from FHWA's Economic Cost of Crashes and adjusted to 2005 by using the Implicit Price Deflator for Gross Domestic Product. Table 2.02-3 shows the crash costs used for the analysis. A discount factor was applied to these costs for crash costs incurred in the future.

Cost of Property Damage (2005)	\$ 2,000
Cost of Injury (2005)	\$ 73,007
Cost of Fatality (2005)	\$ 3,442,000

Table 2.02-3 Analysis Crash Costs

Appendix B shows the worksheets for the crash analysis.

2.03 ADDED TIME COSTS

This study calculated the difference in facility speed between the existing two-lane facility, the two-lane with passing lanes, and four-lane options, and the value of time associated with it. The difference between the Option travel times and the travel times of the existing facility is considered a user benefit. The costs associated with the extra time incurred by vehicles traveling on the existing two-lane facility over what they experience with the two-lane facility with passing lanes or four-lane expressway facility were calculated. Options 2 and 2A have some two-lane portions and the delay associated with the two-lane portions was apportioned to these alternatives. Option 1, which is fully a two-lane roadway, has the greatest delay costs associated with it.

The study used 60 mph as the freeflow speed for the operations analysis programs. The freeflow speed represents the desired speed of travelers if left unencumbered. Increasing the freeflow speed to 65 mph produced more time savings for the four-lane options, thus increasing the difference between the options.

The IHSDM program was used to obtain the operating speed for the two-lane roadway with passing lanes. The traffic component of this program uses Two-Pass, a microsimulation program that acknowledges the operational benefits that passing lanes provide.

Tables 2.03-1 and 2 show the operational performance of WIS 23 with passing lanes for the years 2015, 2025 and 2035. The operational characteristics for the controlling direction depict the operation for the direction where the traffic flows are the greatest during the peak hour. The combined values represent the operational values for both directions averaged.

For the travel time cost analysis, the operational characteristics for both directions are averaged. The LOS values were obtained using the time-spent following and speed from IHSDM with Exhibit 20-2 (Class 1 Highways) in the Highway Capacity Manual.

	CTH UU to CTH G					
	No Build			With Passing Lanes		
	Increasing Station	Decreasing Station	Combined	Increasing Station	Decreasing Station	Combined
% Following 2015 LOS 2015	57.7 C	74.8 D	67.9 D	58.1 C	65.8 D	62.7 C
% Following 2025 LOS 2025	64.4 D	79.4 D	73.3 D	62.9 C	71.2 D	67.8 D
% Following 2035 LOS 2035	65 D	79.5 D	73.6 D	65.7 D	73.5 D	70.3 D
Year LOS passes from C to D - Controlling Direction		2005			2013	
Year LOS passes from C to D - Combined (Averaged)		2007			2021	

Table 2.03-1 IHSDM Operational Results for Two-Lane WIS 23 With and without Passing Lanes – CTH UU to CTH G

	CTH G to Pioneer Road					
	No Build			With Passing Lanes		
	Increasing Station	Decreasing Station	Combined	Increasing Station	Decreasing Station	Combined
% Following 2015 LOS 2015	66.6 D	53.4 C	61.3 C	53.9 C	46.1 C	50.8 C
% Following 2025 LOS 2025	70.4 D	56.4 C	64.9 C	58.2 C	49.8 B	54.9 C
% Following 2035 LOS 2035	73.5 D	62 C	68.9 D	62.4 C	54.4 C	59.2 C
Year LOS passes from C to D - Controlling Direction		2012			2041	
Year LOS passes from C to D - Combined (Averaged)		2021			2052	

Table 2.03-2 IHSDM Operational Results for Two-Lane WIS 23 With and without Passing Lanes –CTH G to Pioneer Road

The four-lane expressway will operate very well at LOS B throughout the analysis years and does not approach its capacity. To obtain average speeds for the four-lane expressway options, the study used the Highway Capacity Manual software, Multi-lane highway worksheet. The analysis showed that the four-lane expressway would have a density of between 13 and 14.1 passenger cars per mile per lane, an average speed of 58.5, and all LOS of B. This speed of 58.5 was used as the baseline from which the two-lane with passing lane speeds are compared.

The study assumed that congested conditions only occurred 800 hours per year and that at all other times speeds were at freeflow conditions. The study used a K_{400} value of 9.3 percent, with the K_{400} being the mid-point for the highest 800 hours.

The study used vehicle occupancy ratios and time values obtained from WisDOT's Division of Infrastructure Management. The vehicle occupancy ratios were 1.5 for light vehicles (autos) and 1.05 for heavy vehicles (trucks). The time values were \$10.94 an hour for passengers of light vehicles and \$25 an hour for passengers of heavy vehicles.

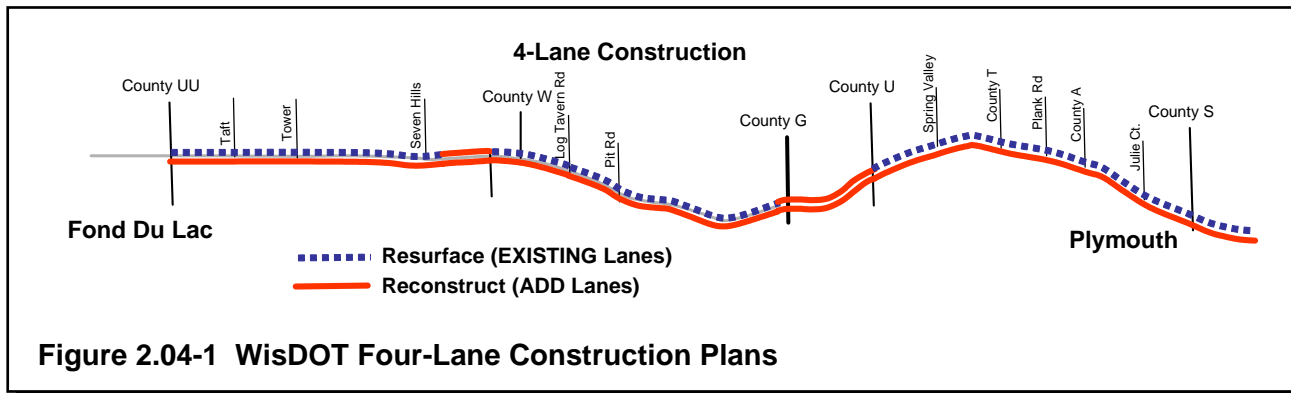
Appendix C shows the worksheets used for determining the cost of time.

2.04 CONSTRUCTION AND MAINTENANCE COSTS

The study modified the construction cost estimate spreadsheets provided by WisDOT Northeast Region that were used for WIS 23 DEIS. These spreadsheets were modified to account for the different construction staging scenarios presented by the three options and the different maintenance activities. Separate cost estimates were also performed by hand to verify the general accuracy of the spreadsheets. In most cases the estimates differed by less than 5 percent. The costs estimates were compared with dollars being programmed for WIS 23 improvements⁵ as of May 1, 2006 and differed by less than five percent. These costs should not be used for programming because unit prices and other miscellaneous items could influence the construction cost of these alternatives. Yet, because the same unit prices and methodology are applied consistently between the three options, they fairly represent the present worth investment differences between them.

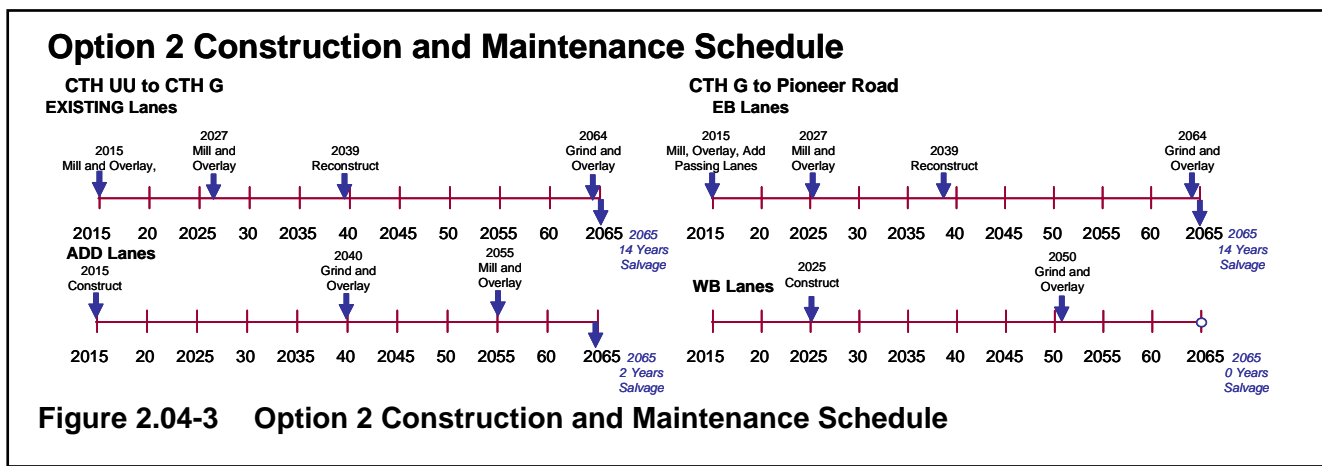
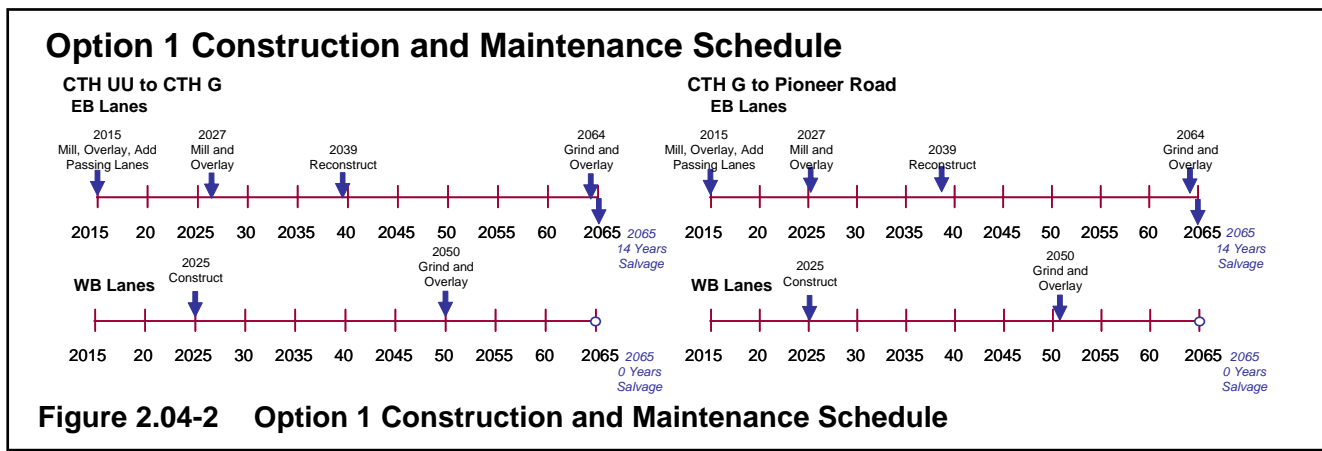
For Options 1 and portions of Option 2, the reconstruction of the roadway and resurfacing of the roadway was equally allocated between the eastbound and westbound lanes. For portions of Options 2 and 3, the reconstruction and resurfacing of the roadway was allocated based on WisDOT construction staging plans as of May 2006. Because of the need for cross-overs and small alignment adjustments, WisDOT construction staging plans contain more roadway reconstruction and less roadway resurfacing. Figure 2.04-1 shows the construction staging incorporated with current WisDOT plans. The reconstructed lane portions are referred to as ADD lanes. The resurfaced lane portions are referred to as EXISTING lanes. Both sets of lanes follow different maintenance schedules.

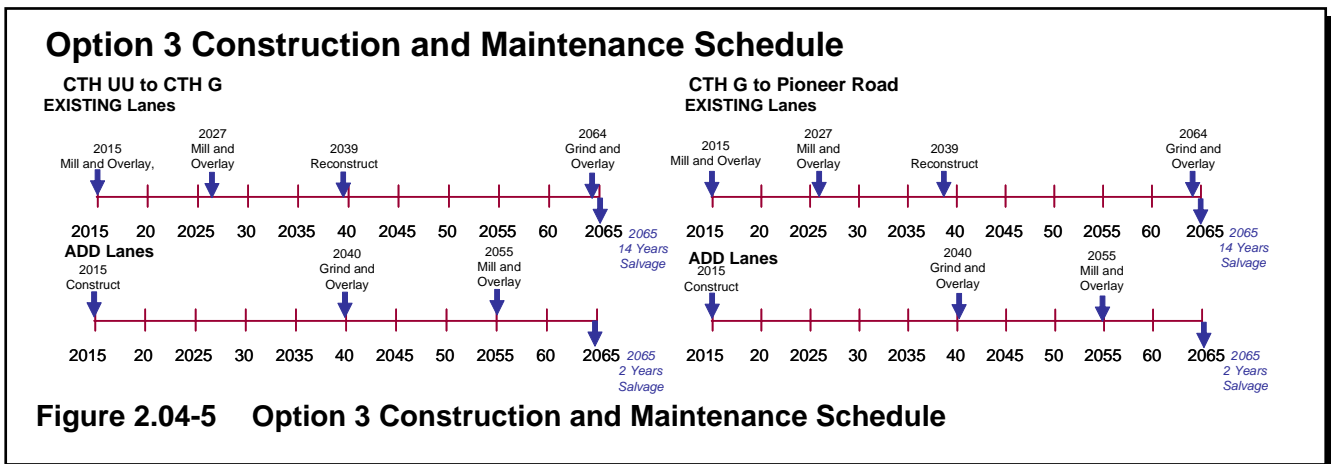
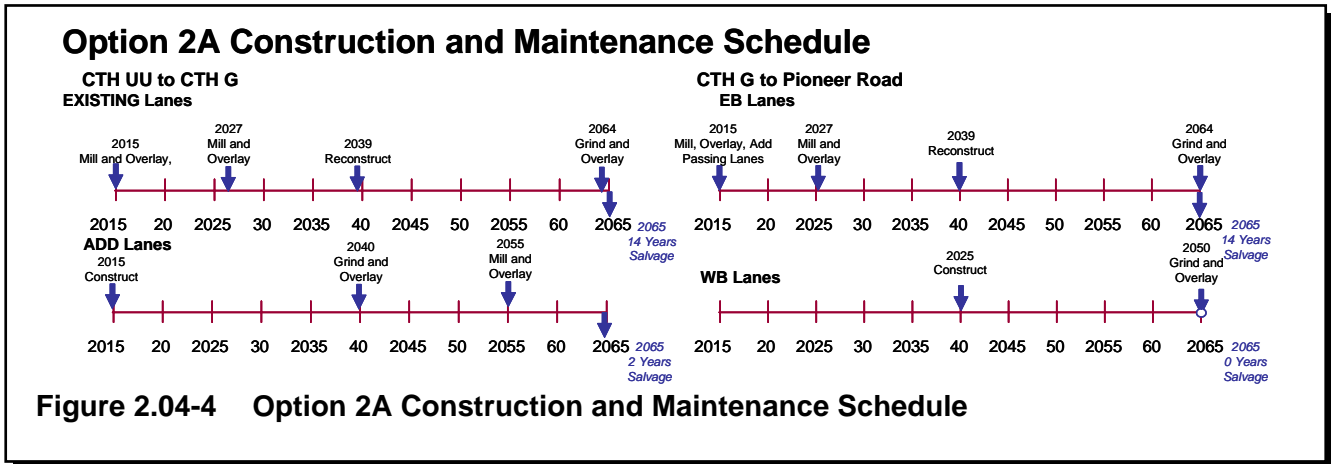
⁵ Note: Only WIS 23 roadway costs were used in the analysis. Side road, trail costs, mitigative measures, and interchanges were not included in the analysis.



Right-of-way costs were not included in the analysis since all three options will purchase right-of-way for a full four-lane facility.

Figures 2.04-2 to 5 illustrate the life cycle maintenance of the roadways for each of the options.





Funds spent on roadway construction do represent an opportunity cost. Funds spent on WIS 23 are not available for other highway infrastructure investments around the state. Therefore, a discount rate of 3.5 percent was used in the present worth analysis for the construction and maintenance costs as well as the user benefits of these options. This 3.5 percent represents the difference between the investment and the inflation rate.

Appendix D contains the present worth analysis of the options. Appendix E contains the construction cost estimates used for the present worth analysis.

2.05 OPERATIONAL COSTS

The operational costs represent the cost of running the vehicle through the corridor. Some of these costs remain constant no matter what the speed, such as vehicle maintenance (oil and tires). Other costs vary according to speed, such as fuel consumption.

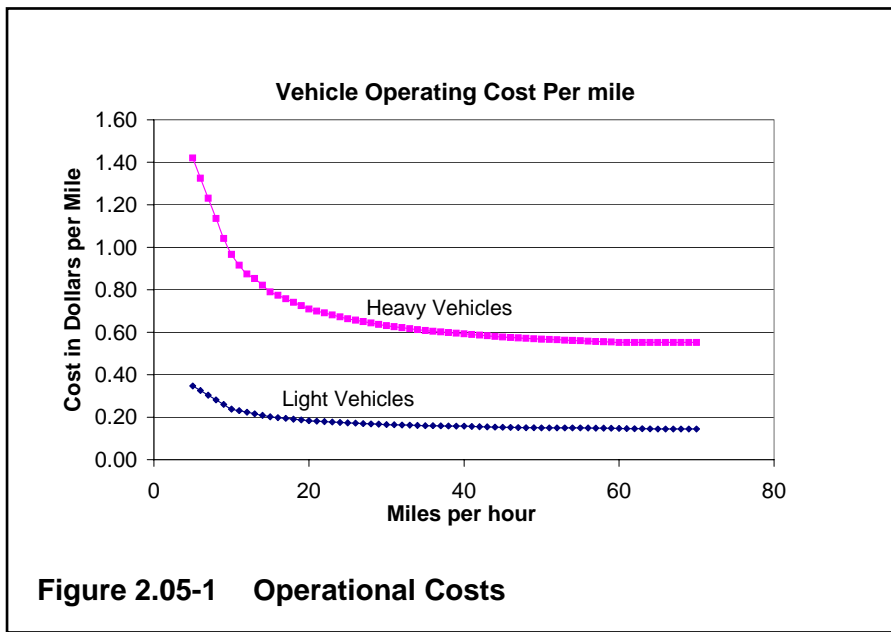


Figure 2.05-1 Operational Costs

This study used operational costs provided by WisDOT's Division of Transportation Investment Management. These costs are represented by the graph in Figure 2.05-1.

These costs assume a diesel cost of \$2.53 per gallon and a gasoline cost of \$2.60 per gallon. The graph also includes the maintenance costs shown in Table 2.05-1.

Appendix F contains the worksheets used for the operational cost analysis.

2.06 MAINTENANCE COSTS

The study included maintenance costs associated with each alternative based on WisDOT Bureau of Highway Operations Level of Service model. Table 2.06-1 shows the maintenance expenses for seven classifications of Wisconsin roadways. The expenses pertinent to this study are Class E, two-lane highways that have average daily traffic (ADTs) that are greater than 5000 vpd and Class D, four-lane highways with ADT's that are less than 25,000 vpd.

	Dollars per Mile
Auto	
Maint/repair	.0337
Tires	.0095
Truck	
Maint/repair	.1105
Tires	.0368

Table 2.05-1 Fixed Operational Costs

Wisconsin Department of Transportation
 Passing Lane and Cost Analysis

WIS 23-Fond du Lac to Plymouth Project
 WisDOT Project I.D. No. 1440-13-00
 Section 2—Analysis Methodology

LOS 2006 Rate Per Lane Mile

Road Class	Lane & Centerline Mile Costs	Supervision, Reimbursable Costs, Training	Structures & Waysides	Salt Sheds	Ferry	Total Cost	Total Lane Miles	Cost Per Lane Mile
A	6,805,763.19	966,397.38	634,559.00	10,230.90		\$8,416,950.47	1,062.54	\$7,921.54
B	9,288,367.55	1,318,919.55	228,510.32	16,785.36		\$10,852,582.77	1,743.26	\$6,225.45
C	10,424,852.67	1,480,296.93	386,472.21	28,388.54		\$12,320,010.35	2,948.32	\$4,178.65
D	26,197,345.85	3,719,942.32	1,077,886.12	79,176.76		\$31,074,351.05	8,222.98	\$3,778.96
E	13,439,432.85	1,908,358.02	642,411.47	47,188.71	553,984.00	\$16,591,375.04	4,900.83	\$3,385.42
F	38,267,195.99	5,433,823.81	1,853,973.89	136,184.74		\$45,691,178.42	14,143.60	\$3,230.52
Total	\$104,422,958.10	\$14,827,738.00	\$4,823,813.00	\$317,955.00	\$553,984.00	\$124,946,448.10	33,021.53	

NOTE: This does not include the adjustments for winter severity.

Table 2.06-1 Maintenance Costs

**SECTION 3
ALTERNATIVES**

3.01 PASSING LANE CRITERIA

The study located four new passing lanes to serve rising traffic volumes. These passing lanes were incorporated in both Options 1, 2, and 2A. The study developed two passing lane scenarios, each with four passing lanes. Then one of the scenarios was selected for the present worth and operational analysis. The following paragraphs summarize some of the criteria used for locating the passing lanes.

A. Passing Lane Criteria and Characteristics

1. The roadway must be a two-way, two-lane rural highway.
2. The passing lane must be placed where passing opportunities are limited because of traffic volumes, roadway alignment, or high proportion of slower vehicles.
3. The corridor that is being considered for passing lanes should be approximately 15 to 50 miles in length.

After considering passing lane criteria, there are also passing lane characteristics that should be followed. These characteristics include the following:

1. The passing lane should be constructed in roadway segments that have a minimal number of entrances.
2. The passing lane should not cross a side road with over 500 ADT.
3. The passing lane should not have driveways or field entrances in the merge taper on either side of the highway.
4. The passing lane should not have driveways, field entrances, or intersections closer than 500 feet from the end of the downstream taper.
5. If there are areas that require a four-lane undivided passing lane section, crossing intersections are not permitted and tee intersections are not desirable.
6. The passing lane should be avoided on horizontal curves greater than 3°.
7. Distance between passing lanes in the same direction should be 3 to 8 miles.
8. Signals downstream from passing lanes should be at least 1 mile from the closest merging taper end.
9. The passing lane approach taper and merge taper should be 700 feet.
10. Passing lane lengths should be consistent with the values in Figure 3.01-1.

Two-Way Design Year Total DHV	Length of Passing Lane (miles)
<600	0.5 – 1
600 – 1,000	0.75 – 1.50
1,000 – 1,400	1 – 2
>1,400	consider expanding the facility to 4 lanes

Figure 3.01-1 Design Hourly Volumes Used to Determine Passing Lane Length

3.02 PASSING LANE ALTERNATIVES

Two passing lane alternatives were developed. The main difference between them is when the passing lane is experienced. In Alternative 1, travelers see a passing lane in the opposing direction before they experience one in their direction. With this arrangement, Alternative 1 is able to have longer passing lane lengths. With Alternative 2, a traveler experiences a passing lane before they see one in the opposing direction. Generally, this is the preferred arrangement and for this reason, Alternative 2 is presented in this analysis. Both Alternatives were analyzed for operations. Generally Alternative 1 provides slightly better operations on the western portion of the corridor, and slightly worse operations on the eastern portion of the corridor. Figure 3.02-1 schematically shows the passing lane locations.

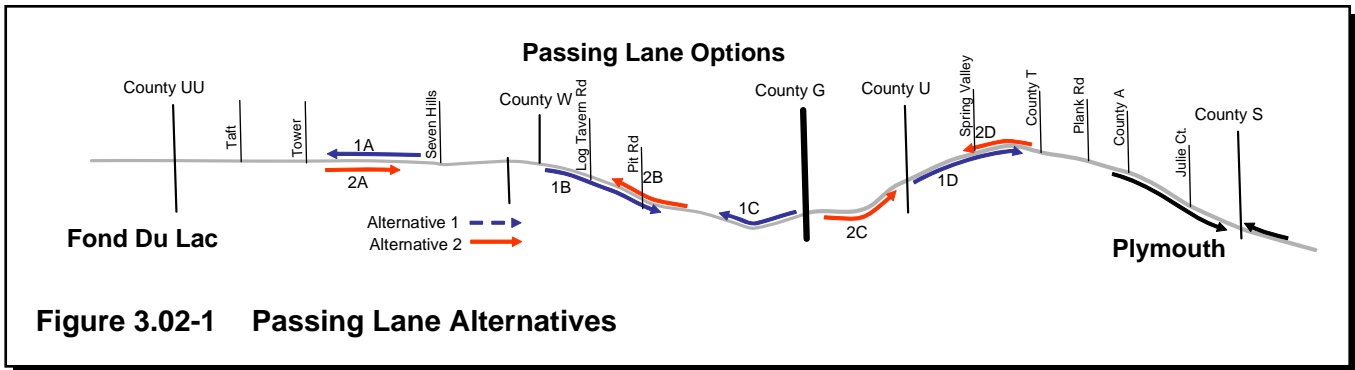


Figure 3.02-1 Passing Lane Alternatives

A. Alternative 1

Alternative 1 consists of four passing lanes, two for eastbound travel and two for westbound travel located between County UU and County A. The distance between westbound passing lanes is 4.2 miles and between eastbound passing lanes is 4.0 miles. Each passing lane is 12 feet wide with 4 feet of paved and 4 feet of gravel shoulder, similar to existing. This design does not follow the design guideline that suggests that drivers advancing on a highway should experience a passing lane in their travel direction prior to seeing one in the opposing direction.

Moving from west to east, passing lane 1A is in the westbound direction and runs from Sta. 332+00 to Sta. 393+25 (between Seven Hills Rd and Tower Rd) . The length of the passing lane is 6,125 feet not including 700-foot tapers at each end. Passing lane 1A was not located west of Taft Road because it

has an ADT of nearly 500, which should not cross a passing lane. There were also driveways located east of Taft Road. As required by the Facilities Development Manual (FDM), the end taper must not be within 500 feet of a driveway or field entrances. This requirement made it impossible for the taper to be located any farther west than Sta. 332+00 (Tower Rd). The passing lane could not extend east of Seven Hills Road because it has an ADT of nearly 500 and a high concentration of driveways and field entrances. A field entrance on the south side of the road could be relocated because it is located along the approach taper. There is a culvert structure located at Sta. 344+50 (between Tower Rd. and Popular Rd.) that will need to be extended 12 feet to accommodate a passing lane.

Passing lane 1B is in the eastbound direction and runs from Sta. 507+00 to Sta. 591+00 (Loehr Road/County W and Banner Road). The length of the passing lane is 8,400 feet not including 700-foot tapers at each end. Passing lane 1B was not located farther west because Loehr Road/County W greatly exceeds an ADT of 500. There are driveways located at Sta. 505+00 in the approach taper that need to be relocated to be in accordance with the FDM. Culvert structures at Sta. 573+00 and 588+00 (between Banner Rd and Wirtz Ln) will need to be widened by 12 feet to accommodate a passing lane. There is an exception to the design guidelines resulting from a field entrance existing within 500 feet of the end of the proposed merge taper on the south side of the road at Sta. 599+00. It may be possible to relocate this field entrance farther east. The passing lane was not located farther east because the length was sufficient and because there was a large concentration of driveways.

Passing lane 1C is in the westbound direction and runs from Sta. 651+60 to Sta. 705+00 (between County G and Triple T Road). The length of the passing lane is 5,340 feet not including the 700-foot tapers at each end. The passing lane was not located farther east because County G has a current ADT over 500. The passing lane was not extended farther west because the passing length was sufficient and because there was a large concentration of driveways to the east. There is an exception to the design guidelines resulting from two field entrances existing within 500 feet of the end of the proposed merge taper. One is on the south side of the road at Sta. 643+00, and one is on the north side of the road at Sta. 644+00. It may be possible to relocate these field entrances farther west.

Passing lane 1D is in the eastbound direction and runs from Sta. 813+00 to Sta. 895+00, between County T and County U. The length of the passing lane is 8,200 feet not including the 700-foot tapers at each end. The passing lane was not extended farther east because County T has an ADT over 500. The passing lane was not extended farther west because of County U and inadequate length.

B. Alternative 2

Alternative 2 consists of four passing lanes, two for eastbound travel and two for westbound travel. The distance between the westbound lanes is 4.3 miles and the eastbound lanes is 6.6 miles. Each passing lane is 12 feet wide with 2.5 feet of paved and 8 feet of gravel shoulder, similar to existing. Alternative 2 provides advancing drivers a passing lane in their travel direction prior to seeing one in the opposing direction. It provides shorter passing lanes than Alternative 1.

Moving from west to east, passing lane 2A is in the eastbound direction and runs from Sta. 332+00 to Sta. 375+00 (between Tower Rd. and Seven Hills Rd). The length of the passing lane is 4,300 feet not including the 700-foot tapers at each end. There is an exception to the design guidelines resulting from a field entrance/driveway existing within 500 feet of the end of the proposed merge taper on the north side of the road at Sta. 386+00. It may be possible to relocate this access point.

Passing lane 2B is in the westbound direction and runs from Sta. 557+50 to Sta. 611+00 (between Triple T and Log Tavern Rd.). The length of the passing lane is 5,350 feet not including the 700-foot tapers at each end. This passing lane crosses two large culverts.

Passing lane 2C is in the eastbound direction and runs from Sta. 737+90 to Sta. 786+80 (between County G and County U). The length of the passing lane is 4,890 feet not including the 700-foot tapers at each end. There is an exception to the design guidelines resulting from two field entrances existing within 500 foot of the end of the proposed merge taper. They are located on the north and south sides of the road at Sta. 796+00. It may be possible to relocate these field entrances farther east.

Passing lane 2D is in the westbound direction and runs from Sta. 855+65 to Sta. 900+65 between County T and Spring Valley Rd. The length of the passing lane is 4,500 feet not including the 700-foot tapers at each end.

APPENDIX K
AGRICULTURAL IMPACT STATEMENT
(Executive Summary)

AGRICULTURAL **I**MPACT **S**TATEMENT



STH 23: Fond du Lac to Plymouth Fond du Lac and Sheboygan Counties

Published October 17, 2006

Wisconsin Department of Agriculture,
Trade and Consumer Protection
DATCP #3225



Agricultural Impact Statement

Wisconsin Department of Agriculture,
Trade and Consumer Protection

Rod Nilsestuen, Secretary

Kathy F. Pielsticker, Administrator
Division of Agricultural Resource Management

David Jelinski, Director
Bureau of Land and Water Resources

Keith Foye, Chief
Land Management Section

Authors

Mike Wyatt, Secondary Impacts and Alice Halpin, Direct Impacts

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STH 23 Executive Summary

The Wisconsin Department of Transportation (WisDOT) is proposing to reconstruct a 19-mile segment of State Trunk Highway (STH) 23 between the cities of Fond du Lac and Plymouth as a four-lane divided highway. WisDOT is also proposing to extend the Old Plank Trail from Greenbush to Fond du Lac along STH 23. Construction of the added lanes is not expected to start until 2013 at the earliest. Until then, WisDOT will use official mapping, which will be completed in 2007, to protect the proposed corridor from development. About two years before construction is scheduled to start, WisDOT will acquire the needed land for the expansion. The proposed project will require the acquisition of 378.4 acres of land from 96 farmland owners. The farmland that will be acquired for this project is equivalent to 2.2 average sized Sheboygan County farms or 1.8 average sized Fond du Lac County farms.

The final design for this project has not yet been completed. Therefore, WisDOT's estimates for the amount of land that will be acquired are likely to be higher than the actual amount of land lost. WisDOT has also identified 24 farm parcels where buildings will be or are likely to be acquired as a result of this project. Because of the potential displacement impacts of the proposed project, WisDOT will be required to file a relocation service assistance plan with the Wisconsin Department of Commerce. Depending on their use, condition, and location, the loss of buildings could put a farmer out of business, force a farmer to find a new location for his or her operation, or it could only be a minor inconvenience.

In addition to making this highway four lanes, interchanges will be constructed at County Trunk Highway (CTH) "UU" and CTH "K." Future interchanges will be constructed at CTH "W," CTH "G," and CTH "A" when traffic volumes dictate their need and when funding becomes available. WisDOT also proposes to restrict access along the rural portion of the highway by restricting direct access from adjacent land to the highway, and by constructing interchanges, overpasses, cul-de-sacs, and frontage roads.

WisDOT has indicated that it is proposing these changes to increase capacity and improve safety on this portion of STH 23. WisDOT bases the project need on linkage between regions; importance of the corridor as a truck route; economic development and tourism benefits; growing traffic volumes; need to limit access; and safety concerns. After reviewing the projected traffic volume, safety and other data presented to justify the project's construction in 2013, the need for the highway's expansion may be questioned.

Agricultural Resources at Risk

According to estimates by the UW Extension, agriculture accounts for \$1.18 billion in economic activity in Fond du Lac County. Rated on a number of farmland preservation indicators, Fond du Lac County, though classified as an urban county, continues to have a very strong agricultural industry. It ranked 8th among Wisconsin counties in 2003 in production of corn for grain, 6th in production of corn for silage, 10th in soybean production, 1st in winter wheat, 14th in barley, 12th in oats, 6th in forage production, and 7th in total milk production. It ranked 7th in the total number of calves and cattle in 2004. The county's farm sector provides, directly or indirectly, 8,516 jobs for Fond du Lac County residents and contributes \$341.4 million annually to county income. It is

estimated that 17% of all economic activity in the county is agriculturally-related, about \$1.17 billion. Dairy is the largest sector within county agriculture, with on-farm sale and production of milk accounting for \$116 million and milk processing for another \$582.2 million per year. The county is also home to nine dairy processing plants, as well as four cheese and four vegetable processing plants.

The county had 65.4% more farms in 2002 than the median for urban counties, and also exceeded the median for all Wisconsin counties. It also retained a 24% greater share of its total land in farms than was the median for urban counties. It exceeded the median for counties in the percentage of farm operators who identify their primary occupation as farming and in the average value of farm machinery and equipment. The average net farm income of Fond du Lac County farms exceeded the median for urban counties and statewide in both 1997 and 2002. The proportion of farm operators relying primarily on off-farm income was lower than the median for other counties, measured by the percent of operators working over 200 days off the farm. Farm density exceeded the median as well in both years, and the percentage of farmland rented out was smaller than the median for urban counties.

The UW Extension estimates that agriculture accounts for \$1.7 billion in economic activity in Sheboygan County. Sheboygan County is more urbanized than Fond du Lac, but still remains a very important agricultural county. Sheboygan County ranked 16th among Wisconsin counties in production of corn for silage, 16th in soybeans, 14th in oats, 4th in winter wheat, 12th in barley, and 15th in total milk production in 2003. The county's farm sector provides, directly or indirectly, 9,399 jobs for Sheboygan County residents and contributes \$485.2 million annually to county income. It is estimated that 21% of all economic activity in the county is agriculturally-related, about \$1.74 billion. Dairy is the largest sector within county agriculture, with on-farm sale and production of milk accounting for \$69.4 million and milk processing accounting for another \$1.1 billion per year. In other words, secondary milk processing produces most of the income here. The county is also home to twelve dairy processing plants, as well as at least six cheese, two ice cream processors, four cheese-packaging companies and two major sausage manufacturers.

In Sheboygan County, the number of farms exceeded the median in 2002, after having trailed the median in 1997. The percent of land in farms was below the median in 1997, but rose above the statewide median by 2002, almost equal to the median for urban counties. The percent of farm operators identifying their primary occupation as farming was above the median in both years. The average value of manufacturing machinery and equipment per farm was static from 1997 to 2002, remaining close to the median for urban counties and above the statewide median in 2002. The percent of farms with positive net farm income declined over time, while the median value of net farm income increased. The percent of farm operators working over 200 days off the farm was below the median in 1997, but rose to about the median by 2002. Farm density was typical of that for urban counties, as was the percent of farmland rented out in 2002.

Direct Agricultural Impacts

The principal direct agricultural impacts of this project include: direct loss of farmland to highway right-of-way; changes in access to farm parcels due to severance or relocation of access points;

displacement of buildings; increased travel distances to get to fields; interference with drainage systems and fencing; effects of uneconomic remnants; noise; and interference during construction. Reducing the size or changing the shape of a field can make it more costly to farm, and may make certain types of equipment unusable.

Almost all of the farmers who responded to DATCP's requests for information about the project's potential impacts on their farms identified changes to access as a significant concern. Where farmers work land on both sides of the highway, the expanded highway may act as a barrier to the movement of farm equipment where direct access is removed or where a median crossover point is not provided. In these instances, farmers will have to travel longer distances between their parcels, which may reduce the profitability of working these parcels. In addition, where farmers have to travel longer distances on STH 23 or other roads, they may expose themselves to greater risk of being involved in traffic accidents.

The amount of farmland that will be lost will vary among operations. Fourteen farmland owners will lose more than eight acres of land and four farmland owners will lose more than ten percent of their farmland. Loss of farmland can reduce the amount of crops that can be grown on a given farm for market and/or to feed livestock. In addition the loss of farmland can reduce the amount of land that is available for spreading manure. These changes can lead to reduced profits, the need to cull livestock, or the need to find replacement farmland.

Highway construction can also have negative impacts on drainage. Nine farmland owners are concerned that the project may affect drainage tiling, grassed waterways, ditches, culverts, or runoff. WisDOT is required by law to construct and maintain highways in a manner that does not unreasonably impede the flow of surface water. If drainage is impaired, crop damage as well as temporary and permanent damage to fields can result.

Secondary Land Use Impacts

Direct impacts of highways on individual farm operations are relatively immediate and measurable. Improved highways can also have secondary impacts, which are more difficult to predict and cannot be readily determined on the individual farm level. However, these impacts do affect individual farm operators because they affect the environment within which farm operators make decisions. The main secondary impacts considered here are possible induced land use changes as a result of a highway expansion.

Commuting data typically show that the number of trips made between a center of employment and a potential residential location decreases as the distance between them increases. However, many other factors affect residential location decisions besides distance or travel time to work or other destinations. These include: housing costs and quality, availability of infrastructure, school quality, neighborhood factors, local taxes, recreational factors, land use controls, demographics, amenities, real estate speculation, lifestyle factors and perceptual issues. Similarly, many other factors affect business location decisions aside from highway accessibility, including proximity to markets, raw materials and suppliers, costs and availability of labor, tax and insurance policies, quality of life, climate, amenities, venture capital, etc. **The accuracy of quantitative and qualitative secondary land use impact estimates depends on the extent to which such contextual factors are**

incorporated as fully as possible, and applied in their full historic and geographic specificity.

Disinvestment and Idling of Farmland: Increased pressure to develop nearby farmland for nonfarm use, which can result from highway expansion, may change the expectations of area farmers about the long-term viability of farming as a business and a way of life in their areas. They may reduce or stop investing in farm improvements, since these investments cannot be recaptured when farmland is valued for urban use, and may even decrease the urban value of the land at the time of sale.

Such resulting disinvestment and idling of farmland are commonly referred to as an "impermanence syndrome," because rational economic expectations may lead more local people to leave farming and keep fewer acres of prime farmland in use. This would have a negative multiplier effect on agribusiness in the area. The effects involve decreased farm capital investment, increased idling of farmland, and lower farm productivity. These effects may begin before substantial residential development occurs. Farmers may anticipate increasing difficulty in obtaining land for expansion to grow feed or to spread manure due to expected outward urban growth. They will find increasing costs for such land even if it is available.

As development pressure intensifies, the willingness of landowners to sell farmland increases. Development pressure is reflected in a higher selling price of agricultural land than would occur otherwise.

Farmland may be idled prematurely in expectation of eventual urban development. Farmland idled as a result of a speculative land market at the urban fringe may not be converted to urban use, yet once agricultural land has been idled for a number of years, it may be prohibitively expensive to bring it back into production. As the land reverts to forest cover or wetland, the cost of land clearance rises.

Fragmentation of Farmland, Shifts in Tenure, and Lowering of Farm Productivity: As urban fringe development grows, the tenure of farm operators may shift more from owners to renters who have less stake in the long-term integrity of the farmland. The percentage of farms that are renter-operated is higher in metropolitan counties than in nonmetropolitan counties.

At the same time that the value of farmland rises due to urban development pressure, the value of the land for farm use goes down. As urban uses impinge on farms, the productivity of the land for farm purposes declines. In part this may reflect the shift from full commercial utilization of farmland to part-time and hobby farm uses of land. The incidence of part-time and hobby farming has been observed to increase in proximity to urban areas. Land use conflicts with relocated urban dwellers can result in complaints about farm noise, odors, pesticide use, runoff problems and farm machinery traffic on local roads. Changes in farm operations to accommodate these complaints, or in expectation of future urban development, may lower farm productivity and reduce farm income. Vandalism may also be a problem.

Loss of commercial farmland thus cannot be measured simply by the actual acreage converted to non-farm uses. Lower farm income and productivity may in turn decrease production in other economic sectors, locally and statewide, through a multiplier effect.

As residential and other non-farm development makes incursions into agricultural areas, prices of land sought for farm expansion rise. Rental of additional farmland becomes a more attractive option for many farmers than buying land, particularly beginning farmers. However, increased rental of land creates added uncertainty for farm operators if the long-term preservation of the land in agriculture is not assured. This uncertainty of the availability of a future reservoir of land for farm rental increases as urban and residential pressure grows. If rental land is available, it often entails greater travel to access it. Increased farm fragmentation into multiple widely scattered parcels due to competition from non-farm development can adversely affect agricultural productivity.

The type of farming conducted has been shown to shift over time as urban development pressure increases in a region. A longitudinal study of zonal agricultural commodity production in rings around the New York City area shows this effect. The data display an evolutionary shift over time in the composition of farm commodities. Over a period of decades, the distribution of dairy, cash grains, vegetable and specialty crop groups in an urbanizing region shifts along this spectrum from the former to the latter commodity types, as development pushes outward over time.

Recommendations

In order to minimize or mitigate the impacts on farms from the proposed project, DATCP recommends for following.

1. Where access points must be relocated, WisDOT should consult with landowners to determine a new location that will be both safe and efficient for farm operations.
2. WisDOT should consult with farmers when determining the locations of median crossovers. If the placement of median crossovers is a concern to a landowner, he or she should identify that concern during negotiations with WisDOT.
3. In order to address potential drainage problems that may occur as a result of the proposed project, DATCP recommends that WisDOT representatives discuss design and construction plans with representatives of Fond du Lac County and Sheboygan County Land Conservation Departments during the design process.
4. The county conservationists should be consulted to ensure that construction of the facilities proceeds in a manner that minimizes crop damage, soil compaction, and soil erosion on adjacent farmland.
5. The owners and operators of the affected farmland should be given advance notice of the acquisition and construction schedules so that farm activities can be adjusted accordingly. To the extent feasible, the timing of the construction should be coordinated with them to minimize crop damage and disruption of farm operations.

6. Proactive, joint inter-municipal planning for land use along the STH 23 corridor is encouraged to help manage highway-induced growth and minimize undesirable land use impacts.
7. Inter-municipal cooperative agreements on boundaries, planning, land use regulations, and service delivery should be considered for the study area. This would help ensure a level playing field for development. Inter-municipal regulations to control the rate, type, and location of development could reduce the adverse impacts to agriculture.
8. Affected municipalities are encouraged to take advantage of financial aid available through the Department of Administration for comprehensive planning. A new state requirement mandates local governments to develop comprehensive plans by 2010. If local governments inform residents of the potential long-term effects of the STH 23 capacity increases, the affected communities can make better decisions to mitigate potential agricultural impacts.
9. Investments in local roads, sewer capacity, and other public infrastructure need to be considered in terms of their potential adverse secondary effects on the agricultural sector.
10. The agricultural component of comprehensive plans and any revision of agricultural preservation plans certified by DATCP should be enforced through zoning and subdivision ordinances. (See *Planning for Agriculture in Wisconsin: A Guide for Communities*, Nov. 2002, UW Cooperative Extension)
11. Local governments should consider other potential ways to support area agriculture through direct marketing, town road policies, etc. Economic development plans that encourage the expansion and retention of agriculture-related businesses and infrastructure near STH 23 may help reduce or partially substitute for agriculture-displacing, highway-induced commercial and residential development that would otherwise be attracted to the corridor study area.

Errata:

**Insert as Addendum to p. ES-5 of Agricultural Impact Statement for
STH 23: Fond du Lac to Plymouth : Fond du Lac and Sheboygan
Counties - Published October 17, 2006, just in front of the
Recommendations Section of the Executive Summary.**

Development Pressure in STH 23 Project Corridor

The probability of there being significant secondary land use impacts from highway expansion depends on the magnitude and geographic pattern of baseline trends in the area in terms of residential, commercial and industrial development, population growth and migration, as well as a host of other mediating factors mentioned earlier. In particular, the stronger the baseline development pressure in the region, the greater the likelihood that expansion of highway capacity will accelerate induced development as well as conversion of farmland. The potential for highway-induced development depends in particular on the relative attractiveness of various locations within the impact area given various other factors that are known to affect growth patterns. Here we apply this framework of analysis to the project area.

Land Use Regulation in Project Area

As discussed in the direct impacts section of this report, both Sheboygan and Fond du Lac counties have Farmland Preservation plans in place which delineate areas of the best farmland to be preserved and other areas intended for eventual development. These apply to the towns crossed by STH 23. In addition the corridor towns all have town-administered exclusive agricultural zoning ordinances which attempt to limit nonfarm development in agricultural preservation areas.

Baseline Commutershed Trends in Study Area: Sheboygan and Fond du Lac

From 1990 to 2000, the percent of workers who spend 30 minutes or more commuting to work in Sheboygan and Fond du Lac counties rose from 18 to 24 percent. Based on past data, there appears to be no constraint on potential commutershed expansion in terms of people's willingness to travel. However, such willingness could be potentially affected in the future by increased travel costs associated with an era of "peak oil." Census 2000 data shows a clear trend of decreased commuting times for towns located closer to the cities of Sheboygan and Fond du Lac.

Potential Decentralization of Commutersheds due to STH 23: Integrated Analysis of Relative Impacts

There is an a priori case that the 100 percent increase in highway capacity planned between Fond du Lac and Plymouth will, by improving accessibility, trigger accelerated development in and near the STH 23 corridor. This is particularly true because the

current STH 23 project is the last link in the larger STH 23 corridor between the major centers of Sheboygan and Fond du Lac to be converted to a four-lane facility. In effect, the incremental accessibility increase for the highway section between CTH "K" and CTH "P" segment is likely to be magnified due to latent travel demand attributable to the other four-lane portions of the STH 23 corridor which have already been built. Evidence exists of significant latent travel demand that could be re-channeled into this east-west corridor: intercounty commuting from Sheboygan County to the north and south is currently disproportionately high compared to that along the western STH 23 route leading to the city of Fond du Lac. Redistributing this travel demand in a spatially homogenous way based on completion of the STH 23 corridor expansion could result in potentially as much as a 186 percent increase in east-west intercommuting between Sheboygan and Fond du Lac Counties.

The effect of STH 23 expansion on corridor towns depends on the combined effects of outward commuting decentralization from both the cities of Sheboygan's and Fond du Lac's commutersheds. Census 2000 trip-to-work data shows that these two major commutersheds are almost completely independent. Using the standard 5% commuting contour line as the nominal boundary of each commutershed, an area of overlap applies only in the town of Greenbush. The presence of dual effects in Greenbush from both commutersheds suggests there could eventually be intensified impacts there from the STH 23 expansion. However, development indicators summarized later show that the primary areas of major impact in the short-to-medium term would be the STH 23 towns closest to the cities of Sheboygan and Fond du Lac, namely, Plymouth and Empire respectively. (The southeast area of Taycheedah in Fond du Lac could also be affected.) In the longer term, agricultural land in the towns of Forest and Greenbush further out may also be significantly affected.

Secondary Commutershed Trends in Sheboygan Falls and Plymouth

The STH 23 corridor between Sheboygan and Fond du Lac contains two other major employment centers, the cities of Sheboygan Falls and Plymouth. Although, an order of magnitude smaller in population than the major destinations of Sheboygan and Fond du Lac, they can still contribute measurable increments to induced highway effects on farmland in the STH 23 corridor. Their commutersheds potentially could expand outward due to STH 23's increased road capacity. However, an examination of actual commuting data points to particular asymmetries in the shape of their commutersheds. In the case of Plymouth, there is a preferred outward orientation toward the west, which should result in increased likelihood of development pressure on farmland from the STH 23 expansion. However, Sheboygan Falls shows a preferred north/south orientation, suggesting little or no effect on project corridor towns in terms of induced highway impacts.

Factors Mediating STH 23 Commutershed Impacts

Evidence for this particular project suggests that relative wage levels in the region would contribute little to catalyzing highway-induced effects of the STH 23 expansion. There is however evidence suggesting that the comparative pattern of local-purpose tax levies and

rates could contribute to an increase in the magnitude of highway-induced effects. Local-purpose property tax rates and levies in the corridor municipalities of Forest and Greenbush in particular are low compared to other towns closer in to Fond du Lac and Sheboygan/Plymouth respectively, and to nearby cities and villages, thereby providing an added inducement to those seeking rural residences. Housing prices in the STH 23 corridor could contribute moderately to increased highway-induced effects in the corridor towns, based on the prices there relative to other surrounding towns.

As mentioned earlier, towns in the corridor would be more likely to face accelerated highway-induced effects of STH 23 expansion if they show high baseline values in terms of recognized indices of development pressure. Is there any evidence for this?

Some major indicators were reviewed including: the growth in number of housing units from 1990-2000; the share of existing housing which was built in the recent period 1990-2000; the prices of agricultural land sold for development; the rate of population in-migration from 1995-2000; and growth in new residential, commercial and manufacturing construction value from 1998-2006. Several of the corridor towns ranked very high relative to all other towns in the study area on quite a number of these indicators.

In terms of the price of agricultural land sold that was diverted to nonfarm use from 1999-2005, the town of Plymouth ranked 5th highest over the entire two-county study area. It also ranked 5th highest in terms of the ratio of average price of farmland sold and diverted to nonfarm use, and the average price of farmland sold that continued in farm use. Plymouth ranked 3rd highest in terms of housing unit growth from 1990 to 2000. It also ranked 2nd highest in the total increase in commercial improvement value from 1999-2005. Plymouth tied for 1st place in the share of current residents in 2000 who migrated in from elsewhere in the county since 1995.

The corridor towns of Plymouth and Greenbush ranked 2nd and 3rd respectively in the percent of existing housing units as of year 2000 that had been built within the previous 10 years. Empire and Plymouth ranked 4th and 5th respectively in the two-county study area in terms of the value of new residential construction from 1999-2005. Greenbush ranked 1st in the two-county study area in the percent moving from other Wisconsin counties, most likely reflecting a significant rate of migration in from more inner parts of the Fond du Lac commutershed.

The rural corridor town of Forest ranked 6th highest in the two-county study area in the increase in total manufacturing improvement value from 1999-2005. Currently, of 11 industrial park sites in Sheboygan County, 7 are located in the Plymouth-Sheboygan-Sheboygan Falls area. The lower tax rates in Forest and Greenbush could contribute to highway-induced growth of an industrial corridor between Forest and Plymouth.

Interchange Induced Effects on Land Use

The current STH 23 project anticipates construction initially of interchanges at CTH "K" and CTH "UU". However, it plans for construction of additional interchanges in the post-2013 period at the intersections with CTH "W", CTH "G" and CTH "A" if and when traffic volumes justify this. Interchanges can have major secondary land use impacts because they tend to concentrate access to the corridor.

Based on a number of studies, distance to an interchange can be a better predictor of secondary land use effects than proximity to the highway corridor itself. However, there is considerable variation in the extent of land use impacts associated with interchanges based on factors that include: size of and distance to the nearest major urban center; traffic counts on the project highway corridor and the cross route involved; distance between interchanges; and location of interchange in relation to the edge of the existing developed area.

In terms of the current project, development pressure at the CTH "K" interchange is reinforced by several factors: proximity to the recently completed US 151 east bypass of the city of Fond du Lac, near areas considered prime for commercial and retail development; a relatively high average daily traffic volume on CTH "K" to the south above where "K" connects to USH 45 (4,500 average daily traffic (ADT) volume in 2002); proximity to the Fond du Lac sewer service area, with over 500 developable acres set aside; adjacency to corporate boundaries of Fond du Lac city; an intergovernmental growth agreement between the town of Empire and the city of Fond du Lac covering some of the potential impact area; and nearby areas planned and zoned for transition from agricultural use to development by both Empire and Taycheedah. The CTH "UU" interchange, for comparison, has a low cross-route traffic count (1,200 ADT in 2002). However, it is very close to the CTH "K" interchange (about 1.2 miles), and has areas to the southwest and northeast designated for commercial development in the Empire comprehensive plan.

Near Plymouth, a majority of the land adjacent to STH 23 to the west is zoned for residential use or as a transition area. The cross-route traffic volume at CTH "A" is only 300 ADT and that at CTH "P" is only 1500 ADT.

It is important to note that the planned construction of the STH 23 corridor is as an expressway. So there will be continued access at quite a number of existing at-grade intersections not to mention at existing property and field entrances. Therefore, induced development around interchanges and intersections would likely be more diffuse than if STH 23 were a limited access road, i.e. a freeway. Because of the many non-interchange access points that would exist, the normal spatial effects on land use induced by interchanges would be reduced or absent. Instead, a more scattered pattern of highway-induced development would occur.

Errata for Agricultural Impact Statement for STH 23: Fond du Lac to Plymouth, Fond du Lac and Sheboygan Counties. Published October 17, 2006

Table of Contents page: Under the subheading F. of "III. Agricultural Setting", the page number where Subheading F. begins should be p.20, instead of p.19.

p. 5: Delete the first complete sentence at the top of the page reading "The Appendix has a memo containing our detailed comments." Replace it with the following:

"Detailed DATCP comments on the issue of purpose and need for this project can be obtained from Wisconsin Department of Agriculture, Trade and Consumer Protection by calling (608) 224-4650 and requesting them. A copy of them will also be included in the Appendix of the Final Environmental Impact Statement (FEIS) for the STH 23 Project at the time of publication, and should be available on the WisDOT website then as part of the FEIS online."

p.20: Directly under the header which reads "F. Town Level Data on Agricultural Land Use and Production for STH 23 Corridor and Broader Study Area.", Insert the following paragraph:

"For purposes of comparison, the analysis in this report will look not only at the project corridor towns of Empire and Forest in Fond du Lac County and Greenbush and Plymouth in Sheboygan County. The study area for assessing baseline trends and secondary impacts will encompass all of Sheboygan County and the eastern part of Fond du Lac County. Specifically, in Fond du Lac County the following twelve towns will be included in the comparative analysis as part of the project study area: Fond du Lac, Friendship, Byron, Taycheedah, Calumet, Marshfield, Empire, Forest, Eden, Osceola, Ashford and Auburn."

p.20: In the first sentence present on the page under the heading, the number "26" is incorrect. It should read "27".

p.21: In the last sentence, last line just above Table 13, insert the word "had" in between the words "Empire" and "7.8%".

p.22: In the second sentence below Table 13, the third line down, delete "2nd" and in the same sentence, the fourth line down, delete the phrase ", the highest".

p.29: In line 1 of the text describing the farm of Mr. John A. Baganz, the phrase "60 acres of pasture" is wrong. It should read "6 acres of pasture".

p. 38: In the last paragraph, second sentence, 4th line down, replace "than" with the phrase "from that intended by".

p.39: In the last paragraph, third sentence insert the word "mean" after the phrase "this is likely to".

p.40: The last word "know" in the paragraph under heading labeled "E. Severances" should be replaced with the word "known".

p.44: At end of the second line under Table 18, the period should be a comma. Also the word "The" at the beginning of the third line down should not be capitalized, since it is not a new sentence.

p. 46: The "by 48%" phrase at the top of the page should be "by 46%".

p.47: In the last sentence above table 19C, insert the word "been" between the word "have" and the phrase "13% greater".

p.53: Delete Paragraph 2, which begins with the words "As a first-order approximation...". This paragraph does not apply to this project.

p.53: In last line, replace "Appendix 7" with "Appendix 11".

p.56: In first line at top of page, delete the phrase "and percent of land tillable". Also, change the comma following the word "price" to a period.

p. 58: In the second line of the second paragraph, change the phrase "shifts to farm use" to the phrase "shifts away from farm use".

p.58: In last line above Table 24A, add at end "(See next section for definition)."

p. 59: In the second to last paragraph from the bottom of the page, last line, change "Appendix 7" to "Appendix 11".

p. 63: At end of sentence that reads "Greenbush was about 28% below average.", append the following text:
"in terms of the amount of residential improvement value change due to new construction from 1998-2006."

p.65: In the last line of the first paragraph under the heading "I. Trends in Manufacturing Land and Improvement Values in Study Area", insert "of the Appendix" after "Figure C20".

p.65: In the last line of the third paragraph under the heading "I. Trends in Manufacturing Land and Improvement Values in Study Area", insert "of the Appendix" after "Figure C21".

p.66: In line one of the bottom paragraph, add the word "share" after the word "insignificant".

p.68: In the fifth line from the bottom of the text above Table 25B, add "the share of county" after the word "in".

p.74: In line six of the first paragraph under the headers at the top, change "include" to "included".

p.88: In the fourth to the last line in the first paragraph under the heading "D. Land Use Impacts of Highway Expansions on Commercial and Industrial Land Use", change the phrase "Section IX.C." to "Section VII.C.".

p.89: In the top paragraph, on lines 4 and 5, delete the end of the sentence which reads:
"consistent with the mechanism described above by Rephann and Isserman."

p.111: In first sentence under the Heading that reads "B. General Commuting Impact Analysis for STH 23 Corridor between Sheboygan and Fond du Lac", the phrase "land use" should be in front of the word "impacts", not following it.

p.136, Table 34: *Correction to the data in the column, Approximate Distances between Interchanges. Replace existing table with the table below:*

Table 34. Distances and Traffic Volumes (Average Daily Traffic (ADT) Counts) Between Planned Interchanges on Expanded STH 23 Project Corridor.

Portion of STH 23 Between Interchanges at:	Approximate Distance between Interchanges	Traffic Volume, on 2 nd Interchange, 2002-2003
I-41 and CTH "K"	3.2 miles	4500 ADT
CTH "K" and CTH "UU"	1.3 miles	1200 ADT
CTH "UU" and CTH "W"	5.5 miles	1700 ADT
CTH "W" and CTH "G"	4.0 miles	1200 ADT
CTH "G" and CTH "A"	5.3 miles	300 ADT
CTH "A" and CTH "P"	4.0 miles	1500 ADT

Note: Traffic Counts are from WisDOT traffic count website for Wisconsin counties.

p.137: In the third line from the bottom of the page, add the word "residential" just before "improvement value".

Errata:

Paragraph 2 on page 53 of the Agricultural Impact Statement should be deleted. It doesn't apply to this project.

AGRICULTURAL IMPACT STATEMENT ADDENDUM

**STH 23: Fond du Lac to Plymouth
Fond du Lac and Sheboygan Counties
Wisconsin Department of Transportation
Project ID#: 1440-13-00
Publication Date:**

I. INTRODUCTION AND PROJECT DESCRIPTION

On October 17, 2006, the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) published an Agricultural Impact Statement (AIS) for the proposed reconstruction of State Trunk Highway (STH) 23 from Fond du Lac to Plymouth. The Wisconsin Department of Transportation (WisDOT) has revised this project to provide interchanges and grade separation at some intersections and to identify areas for official mapping where the highway could be expanded in the future.

The original AIS described the proposed project as follows.

STH 23 will be officially designated as a Freeway/Expressway.¹ Interchanges will be constructed at County Trunk Highway (CTH) "UU" and CTH "K." Future interchanges will be constructed at CTH "W," CTH "G," and CTH "A" when traffic volumes dictate their need and when funding becomes available. CTH "K" will be constructed as a jug-handle interchange.

In the rural portion of the project, WisDOT is proposing to construct a divided highway with two 12-foot driving lanes in each direction and a 60-foot wide grass median. Between CTH "UU" and CTH "W" the new lanes will be added north of the existing highway. From CTH "W" to CTH "G" the new lanes will be added south of the existing lanes and from CTH "G" to CTH "P" they will be added north of the existing lanes. Inside shoulders (adjacent to the median) will be 6 feet wide with 3 feet of pavement and outside shoulders will be 10 feet wide with 8 feet of pavement. Most of the right-of-way will be between 100 and 120 feet wide, but it will be wider at interchanges. WisDOT anticipates that the proposed corridor preservation will alleviate development pressure along STH 23 and intersecting roads.

WisDOT also proposes to control the access along this portion of the highway by restricting direct access from adjacent land to the highway and constructing interchanges, cul-de-sacs, and frontage roads. In addition to the future interchanges at CTH "W," CTH "G," and CTH "A," overpasses for some local roads will be constructed when traffic levels warrant them and when funding becomes available.

¹ An expressway is a divided arterial highway for through traffic with full or partial control of access, generally with grade separation at intersections. A freeway is an expressway with full access control.

The Old Plank Trail will be constructed south of STH 23 from Greenbush to CTH “UU” and north of STH 23 from CTH “UU” to USH 41. STH 23 will be constructed as an overpass over the Ice Age Trail.

Project Changes

The above project description remains fundamentally accurate. However, WisDOT has made changes to the design of the project at several intersecting roads that were not discussed in the original AIS. It also proposes to use official mapping to preserve the corridor for future expansion to freeway standards.

WisDOT changed the design at the following locations:

- Lynn Road would be extended near the intersection with USH 151 on the west end of the project
- Alternative access to Ledgewood Drive would be provided
- Local road improvements at Triple T and Pit Road would be implemented
- Extensions of Coary Lane, Twinkle Lane and Sandstone Lane would be made.

WisDOT would also officially map this segment of STH 23 in order to preserve the corridor for future expansion. This would affect an estimated 176 acres of farmland. The main reasons for official mapping are to provide adequate space to evaluate various interchange alternatives at the STH 23 USH 151 intersection and to preserve the right-of-way needed to provide alternate access where direct access is removed. Where at-grade intersections and driveways are removed, they will be replaced with access roads, frontage roads, and other accommodations.

Wisconsin State Statute 84.295 gives WisDOT the authority to map right-of-way for freeways and expressways. Its purpose is to preserve areas along Wisconsin’s most important routes for the state’s long-term transportation needs. It also informs local governments, landowners, and public of future transportation needs, allowing them to integrate long-term, land-use planning and transportation projects. The official map is also recorded with the county register of deeds. Refer to Appendix I for the text of §84.295(10) *Wisconsin Statutes* regarding official mapping.

The statute does not involve the purchase of property. WisDOT will notify by letter the affected landowners with property on the mapped right-of-way. Landowners are required to notify WisDOT within 60 days in advance of any changes to the property or construction of improvements on the mapped right-of-way. WisDOT could then choose to purchase the property at fair market value or take no action, thereby allowing the landowner to make changes to the property or construct improvements in the mapped areas. If a landowner alters the property or constructs improvements in the mapped right-of-way without notifying WisDOT, he/she will not

receive compensation for the improvements when WisDOT ultimately purchase the property. The official mapping of farmland restricts the landowners' opportunities to develop the mapped property.

WisDOT has indicated that construction of the preferred alternative is expected to begin in 2015. Transportation improvements associated with corridor preservation will be constructed when safety and operational needs require their implementation. WisDOT anticipates that these improvements will be made in about 2035, but the transportation needs will dictate when these changes are made.

WisDOT has indicated that traffic is steadily increasing along STH 23. The 2005 traffic counts within the project limits range from 7,000 vehicles per day (vpd) to 11,400 vpd. WisDOT recommends that when the average daily traffic exceeds 8,700 vpd, rural connector routes should be four lanes.

WisDOT is proposing to eventually reduce direct access from adjacent land to STH 23. Vehicles entering and exiting STH 23 at the numerous access points interrupt the flow of traffic. Drivers must adjust their travel speed to accommodate these vehicles, and each access point creates potential for conflict and subsequent crashes. WisDOT has indicated that the high number of access points is directly related to highway safety and mobility. STH 23 has greater numbers of driveway and side-road accesses than what is typical for a Connector Route. Local traffic and farm machinery enter and exit the highway from approximately 235 county and local roads, private driveways, and field entrances.

WisDOT has indicated that although the crash rates on the existing STH 23 are comparable or lower than the average for a state trunk highway, WisDOT projects that the crash rates on STH 23 will increase as traffic volumes and side-road access increase.²

² Wisconsin State Highway 23, Supplemental Draft Environmental Impact Statement, Wisconsin Department of Transportation, December 2009, p. 1-12.

**APPENDIX L
CONFORMITY ANALYSIS**

**APPENDIX C: ASSESSMENT OF CONFORMITY OF THE YEAR
2035 SHEBOYGAN AREA TRANSPORTATION PLAN (SATP) AND
THE 2007 - 2010 SHEBOYGAN METROPOLITAN PLANNING
AREA TRANSPORTATION IMPROVEMENT PROGRAM (TIP)
WITH RESPECT TO THE STATE OF WISCONSIN AIR
QUALITY IMPLEMENTATION PLAN**

INTRODUCTION

This report demonstrates the conformity of the *Year 2035 Sheboygan Area Transportation Plan (SATP)* and the *2007 – 2010 Sheboygan Metropolitan Planning Area Transportation Improvement Program (TIP)* with respect to each of the five criteria established by the U.S. Environmental Protection Agency for such conformity assessment.

On August 26, 1996, Sheboygan County was redesignated from being a moderate nonattainment area to being a maintenance area for ground-level ozone. The Wisconsin Department of Natural Resources prepared (and had approved by USEPA) a maintenance plan for Sheboygan County as a condition of being designated to attainment status. Maintenance plans typically have a ten year planning horizon; the Sheboygan County maintenance plan budgeted emissions to 2007. A nonattainment area typically remains a maintenance area for 20 years following its return to attainment status.

In 2001, USEPA approved a one-hour attainment demonstration State Implementation Plan (SIP), which was prepared by the Wisconsin Department of Natural Resources. Although the primary intent of this plan was to bring six counties in southeastern Wisconsin and Manitowoc County into attainment of the one-hour standard for ozone, the plan also meant the establishment of new emissions budgets for the two ozone precursor emissions (volatile organic compounds and nitrogen oxides) for Sheboygan County. Budgets for these pollutants were established for 2002, 2005 and 2007.

In 2003, USEPA approved the Wisconsin 2003 One-Hour Ozone SIP. Updated motor vehicle emissions budgets for Sheboygan County were part of this SIP. These revisions utilized Mobile 6 in the development of updated motor vehicle emissions budgets (as opposed to Mobile 5a, which was used in numerous SIPs and conformity analyses in past years). Emissions budgets were established for volatile organic compounds and for nitrogen oxides for 2005, 2007 and for 2012.

This conformity assessment involves a comparison of forecast mobile sector emissions from the *Year 2035 SATP* and its implementing *2007 – 2010 TIP* to emissions budgets in the Wisconsin 2003 One-Hour Ozone SIP. Mobile 6.2 was used to generate emission factors for this conformity analysis.

On April 15, 2004, USEPA designated Sheboygan County a nonattainment area for ground-level ozone under the eight-hour standard for that pollutant. The effective date for that designation was June 15, 2004. The intent of this conformity assessment is to demonstrate conformity of the plan and TIP under the eight-hour standard. The Sheboygan MPO is allowed to demonstrate conformity utilizing the budgets for Sheboygan County from the Wisconsin 2003 One-Hour Ozone SIP, since (1) the newly designated nonattainment area and the area covered by the emissions budgets in the Wisconsin 2003 One-Hour Ozone SIP are identical (Sheboygan

County); and (2) the Wisconsin DNR will not have a SIP for the eight-hour standard prepared for Sheboygan County until mid 2007.

The five criteria established in the July 1, 2004, Federal Register (40 CFR Part 93, Subpart A), as applicable to the Sheboygan County ozone nonattainment area under the eight-hour standard, are (1) use of the most recent planning assumptions; (2) use of the latest emissions estimation model; (3) interagency and public consultation; (4) timely implementation of transportation control measures (TCMs); and (5) consistency with the motor vehicle emissions budgets for volatile organic compounds and for nitrogen oxides established in the Sheboygan County component of the Wisconsin 2003 One-Hour Ozone SIP.

USE OF THE MOST RECENT PLANNING ASSUMPTIONS

This criterion (40 CFR 93.110) specifies that the conformity assessment must be based upon the official and most current planning assumptions, including current and future population levels, housing units, employment levels, travel demand, traffic volumes and transit ridership.

The Bay-Lake Regional Planning Commission is the gubernatorially designated metropolitan planning organization (MPO) for the Sheboygan Urbanized Area in Wisconsin, and also prepares sewer service plans for eastern Sheboygan County. The Bay-Lake Regional Planning Commission also has developed comprehensive plans for several communities in Sheboygan County. As the MPO for the Sheboygan Urbanized Area, the Bay-Lake Regional Planning Commission is responsible for the preparation of current population, housing unit, household, employment, and travel and traffic forecasts. The Bay-Lake Regional Planning Commission and the Wisconsin Department of Transportation jointly maintain the travel and traffic simulation models which are used in Sheboygan County for transportation planning and for air quality conformity analysis; these models were expanded to include all of Sheboygan County in recent years for a more transparent air quality conformity analysis and so that capacity modifying projects in rural Sheboygan County could be modeled and analyzed. The estimates, forecasts and models used in this conformity analysis are the same as those used by the Bay-Lake Regional Planning Commission in its other planning efforts in Sheboygan County, and are consistent with planning assumptions made by other state agencies for Sheboygan County and for the Sheboygan metropolitan planning area.

The determination of conformity of the *Year 2035 SATP* and the *2007 – 2010 TIP* requires specific travel and emission forecasts for the years 2007, 2009, 2012, 2020, 2030 and 2035. The population, housing unit and employment data for the years 2007, 2009, 2012, 2020 and 2030 have been projected by interpolation at the traffic analysis zone (TAZ) level between the existing 2000 levels and the year 2035 forecasts for Sheboygan County based upon the adopted growth scenario for the Sheboygan metropolitan planning area. The 2000 existing levels and 2035 forecasts for population, housing units and employment are identified in Table C.1, along with the interpolated 2007, 2009, 2012, 2020 and 2030 population, housing unit and employment levels.

During the preparation of the *Year 2035 SATP*, the implications of a range of different future development scenarios for the Sheboygan metropolitan planning area were explored, including the effects of the scenarios on growth in vehicle miles of travel (VMT). The growth scenarios which were considered in plan development included (1) continuation of existing trends; (2) compact/infill development; and (3) corridor development (the selected growth scenario on which the *Year 2035 SATP* is based). VMT was minimized under the compact/infill development

scenario, but members of the Sheboygan MPO Technical and Policy Advisory Committees believed that corridor development would more realistically occur in the metropolitan planning area in the long-range future. Further analysis indicates that transportation improvements are expected to have little impact on VMT, accounting for VMT reductions of small fractions of a percent for all milestone years of analysis when compared to the baseline scenario.

CHARACTERISTIC	EXISTING		FORECAST				
	2000	2007	2009	2012	2020	2030	2035
POPULATION	112,656	117,395	118,747	120,803	126,540	133,031	135,712
HOUSING UNITS	45,947	48,384	49,149	50,319	53,383	56,908	58,977
EMPLOYMENT	59,446	63,594	64,852	66,798	72,382	80,248	84,597

Source: Bay-Lake Regional Planning Commission, 2004.

The determination of conformity utilizes the travel demand forecast model developed cooperatively by the Wisconsin Department of Transportation, its consultant team (HNTB Corporation and Cambridge Systematics), and the Bay-Lake Regional Planning Commission during the period between 2003 and 2005, and utilized in the preparation of the *Year 2035 SATP*. The travel demand forecast model was calibrated to simulate year 2000 conditions using data provided by an external origin-destination survey conducted in the summer of 2000, as well as using data from the Wisconsin Department of Transportation's triennial traffic counting program in Sheboygan County in 1999 and in 2002. The models were validated for the year 2000 by applying the models with 2000 Census data and 2000 transportation network data, and comparing model travel demand estimates to estimates derived from actual traffic counts. Travel demand estimates for 2000 were well within acceptable root mean square error (RMSE) figures for all traffic count ranges. Modeling was updated using the socioeconomic data indicated in Table C.1 during late 2004 and during much of 2005.

Major revisions to two transit routes and minor revisions to seven other transit routes are incorporated into this analysis, as recommended in the updated *Sheboygan Transit Development Program (TDP)*. Recommended changes to the fare, validated in this plan, included an increase in the base cash fare to \$1.50 in 2002, with no changes to the fare structure after 2002.

USE OF THE LATEST EMISSIONS ESTIMATION MODEL

A second criterion for the plan and program conformity determination as set forth in the July 1, 2004, *Federal Register* (40 CFR Part 93.111) requires use of the latest air pollutant emissions estimating model. Accordingly, this determination of conformity utilizes the latest emission estimation model available at the time the analysis was required to be conducted, the U.S. Environmental Protection Agency Mobile 6.2 air pollutant emissions estimation model.

The assumptions in the emissions estimation model for the years 2000, 2007, 2009, 2012, 2020, 2030 and 2035 are presented in Table C.2. The vehicle type mix assumptions are based on the Wisconsin Department of Transportation traffic monitoring program, which also is the basis for Highway Performance Monitoring System (HPMS) traffic count data. This emissions estimation model is the same model used by the State of Wisconsin Department of Natural Resources in the preparation of the State Implementation Plan for Air Quality. The specific emission factors used for each of the years of analysis in the conformity determination were provided to the Bay-Lake Regional Planning Commission by the State of Wisconsin Department of Natural Resources to assure complete consistency between this conformity determination and the State Implementation Plan.

Table C.3 indicates the specific emission factors produced by the Mobile 6.2 model for volatile organic compounds and for nitrogen oxides, by facility type and speed, for 2000, 2007, 2009, 2012, 2020, 2030 and 2035. It should be noted that the State of Wisconsin Department of Natural Resources only generated emission factors for speed ranges in which travel activity was projected to occur by the travel demand forecast model for each facility type.

INTERAGENCY AND PUBLIC CONSULTATION

A third criterion for plan and program conformity determination established in the July 1, 2004, *Federal Register* (40 CFR Part 93.112) relates to interagency and public consultation. The development of the *Year 2035 SATP* involved extensive interagency and public consultation, including, specifically, such consultations with respect to air quality impacts and the implications for conformity of the plan. In particular, the State of Wisconsin Department of Transportation, the State of Wisconsin Department of Natural Resources, the Federal Highway Administration, the Federal Transit Administration, the U.S. Environmental Protection Agency, Sheboygan County, and local units of government in the Sheboygan metropolitan planning area were all extensively involved in the development of the recommended plan, the consideration of the financial resources necessary to implement the recommended plan, and the evaluation of the potential air quality impacts of the recommended plan, in particular with respect to conformity to the State Implementation Plan. These Federal, State, county and local units and agencies of government also have been consulted, and have, as members of the Sheboygan MPO Technical and Policy Advisory Committees guiding the preparation of the *Year 2035 SATP*, reviewed and approved the travel simulation models utilized in the preparation of the *Year 2035 SATP* and conformity analysis and as well the level of detail of the *Year 2035 SATP*.

The *Year 2035 SATP* incorporates the entire functionally classified arterial and collector street and highway network of the Sheboygan metropolitan planning area, including both urban and rural facilities. As noted earlier, the travel model used to develop the *Year 2035 SATP* was expanded to include all of Sheboygan County in recent years for a more transparent air quality conformity analysis and so that capacity modifying projects in rural Sheboygan County could be modeled and analyzed.

Table C.2 Assumptions Associated With Mobile 6.2 Emissions Estimating Model 2000, 2007, 2009, 2012, 2020, 2030 and 2035							
CATEGORY	2000 INVENTORY	2007 PROJECTED	2009 PROJECTED	2012 PROJECTED	2020 PROJECTED	2030 PROJECTED	2035 PROJECTED
Fuel Inputs							
Fuel Volatility Level (Reid Vapor Pressure)	8.7 psi	8.7 psi	8.7 psi	8.7 psi	8.7 psi	8.7 psi	8.7 psi
Reid Vapor Pressure Waiver for Alcohol Blends	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Alcohol Blends							
Market Share	12.8 percent	15 percent	15 percent	15 percent	15 percent	15 percent	15 percent
Volume	10.0 percent	10.0 percent	10.0 percent	10.0 percent	10.0 percent	10.0 percent	10.0 percent
Ether Blends							
Market Share	0 percent	0 percent	0 percent	0 percent	0 percent	0 percent	0 percent
Volume	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Temperature Range (degrees Fahrenheit)	65.0 to 93.0	65.0 to 93.0	65.0 to 93.0	65.0 to 93.0	65.0 to 93.0	65.0 to 93.0	65.0 to 93.0
Absolute Humidity (grains water/lbs. dry air)	65.0	65.0	65.0	65.0	65.0	65.0	65.0
Refueling Emissions Modeled?	No	No	No	No	No	No	No
Inspection/Maintenance Inputs							
Start Year (January 1)	1994	1994	1994	1994	1994	1994	1994
Pre-1981 Stringency	30 percent	30 percent	30 percent	30 percent	30 percent	30 percent	30 percent
Model Years Tested	1968+	1968+	1968+	1968+	1968+	1968+	1968+
New Model Years Exempt	One	Three	Three	Three	Three	Three	Three
Waiver Rate (IM240-tested vehicles)	12 percent	26.7 percent	26.7 percent	26.7 percent	26.7 percent	26.7 percent	26.7 percent
Waiver Rate (Gas Cap-tested vehicles)	12 percent	0 percent	0 percent	0 percent	0 percent	0 percent	0 percent
Waiver Rate (OBD-tested vehicles)	Not Applicable	3 percent	3 percent	3 percent	3 percent	3 percent	3 percent
Compliance Rate	96 percent	96 percent	96 percent	96 percent	96 percent	96 percent	96 percent
Inspection Type	Test only	Test only	Test only	Test only	Test only	Test only	Test only
Test Frequency	Biennial	Biennial	Biennial	Biennial	Biennial	Biennial	Biennial
Vehicle Types Tested	LDGV	LDGV	LDGV	LDGV	LDGV	LDGV	LDGV
	LDGT1	LDGT1	LDGT1	LDGT1	LDGT1	LDGT1	LDGT1
	LDGT2	LDGT2	LDGT2	LDGT2	LDGT2	LDGT2	LDGT2
	LDGT3	LDGT3	LDGT3	LDGT3	LDGT3	LDGT3	LDGT3
	LDGT4	LDGT4	LDGT4	LDGT4	LDGT4	LDGT4	LDGT4
	HDGV2B	HDGV2B	HDGV2B	HDGV2B	HDGV2B	HDGV2B	HDGV2B
IM240 Test (LDGV and LDGT1 - LDGT4)	1968+	1968 - 1995	1968 - 1995	1968 - 1995	1968 - 1995	1968 - 1995	1968 - 1995
IM240 Test (HDGV2B)	1968+	1968+	1968+	1968+	1968+	1968+	1968+
IM240 Cutpoints	Per WDNR Memo	Per WDNR Memo	Per WDNR Memo	Per WDNR Memo	Per WDNR Memo	Per WDNR Memo	Per WDNR Memo
NOx Cutpoint Enforcement	No	Yes	Yes	Yes	Yes	Yes	Yes
OBD Test (LDGV and LDGT1 - LDGT4)	None	1996+	1996+	1996+	1996+	1996+	1996+
OBD Test (HDGV2B)	None	None	None	None	None	None	None
Gas Cap Test (All vehicle types)	1971+	1971+	1971+	1971+	1971+	1971+	1971+
Vehicle Type Mixes	Per WDNR Memo	Per WDNR Memo	Per WDNR Memo	Per WDNR Memo	Per WDNR Memo	Per WDNR Memo	Per WDNR Memo
Vehicle Age Distributions	Per WDNR Memo	Per WDNR Memo	Per WDNR Memo	Per WDNR Memo	Per WDNR Memo	Per WDNR Memo	Per WDNR Memo
Annual Mileage Accumulation Rates	Default	Default	Default	Default	Default	Default	Default
NOTE 1: The Mobile 6.2 default assumptions were used for all categories not listed.							
NOTE 2: The following abbreviations have been used in this table: IM = Inspection and Maintenance; OBD = On-Board Diagnostic; LDGV = Light Duty Gas Vehicle; LDGT1 = Light Duty Gas Truck 1; LDGT2 = Light Duty Gas Truck 2; LDGT3 = Light Duty Gas Truck 3; LDGT4 = Light Duty Gas Truck 4; HDGV2B = Heavy Duty Gas Vehicle 2B; NOx = Oxides of Nitrogen; and WDNR = Wisconsin Department of Natural Resources.							
NOTE 3: The "WDNR Memo" referred to in this table was prepared by Chris Bovee of the WDNR Bureau of Air Management on August 7, 2006, and can be found toward the end of this conformity analysis.							
Source: Wisconsin Department of Natural Resources, 2006; and Bay-Lake Regional Planning Commission, 2006.							

Table C.3 Year 2035 Sheboygan Area Transportation Plan (SATP) Summer Weekday Average Speeds (by Speed Range and Facility Type) Within Sheboygan County And Associated MOBILE6.2 VOC Emission Factors Forecast 2000, 2007, 2009, 2012, 2020, 2030 and 2035															
FACILITY TYPE	SPEED RANGE	2000 MODEL		2007 MODEL		2009 MODEL		2012 MODEL		2020 MODEL		2030 MODEL		2035 MODEL	
		Speed (mph)	Em. Fac. (g/v-m)	Speed (mph)	Em. Fac. (g/v-m)	Speed (mph)	Em. Fac. (g/v-m)	Speed (mph)	Em. Fac. (g/v-m)	Speed (mph)	Em. Fac. (g/v-m)	Speed (mph)	Em. Fac. (g/v-m)	Speed (mph)	Em. Fac. (g/v-m)
RURAL MINOR ARTERIALS	0-5	NA		NA		NA		NA		NA		NA		NA	
	5-10	NA		NA		NA		NA		NA		NA		NA	
	10-15	NA		NA		NA		NA		NA		NA		NA	
	15-20	NA		NA		NA		NA		NA		NA		NA	
	20-25	NA		NA		NA		NA		NA		NA		NA	
	25-30	NA		NA		NA		NA		NA		NA		NA	
	30-35	32.76	1.284	32.37	0.701	32.29	0.558	32.08	0.397	33.83	0.244	31.48	0.229	32.73	0.225
	35-40	38.65	1.218	38.64	0.661	38.49	0.528	38.33	0.376	38.87	0.232	38.37	0.212	38.36	0.211
	40-45	42.70	1.186	42.68	0.641	42.63	0.513	42.56	0.365	42.44	0.225	42.21	0.205	42.13	0.204
	45-50	NA		NA		NA		NA		NA		NA		NA	
	50-55	NA		NA		NA		NA		NA		NA		NA	
	55-60	NA		NA		NA		NA		NA		NA		NA	
	60-65	NA		NA		NA		NA		NA		NA		NA	
	65+	NA		NA		NA		NA		NA		NA		NA	
	RURAL MAJOR COLLECTORS	0-5	NA		NA		NA		NA		NA		NA		NA
5-10		NA		NA		NA		NA		NA		NA		NA	
10-15		NA		NA		NA		NA		NA		NA		NA	
15-20		NA		NA		NA		NA		NA		NA		NA	
20-25		NA		NA		NA		NA		NA		NA		NA	
25-30		NA		NA		NA		NA		NA		NA		29.95	0.246
30-35		31.51	1.306	31.41	0.717	31.38	0.574	31.33	0.411	31.20	0.264	31.28	0.242	31.55	0.240
35-40		39.29	1.216	39.09	0.666	39.11	0.535	39.06	0.384	38.86	0.243	38.72	0.222	38.60	0.222
40-45		41.60	1.198	41.55	0.655	41.54	0.526	41.52	0.378	41.42	0.238	41.31	0.217	41.26	0.217
45-50		NA		NA		NA		NA		NA		NA		NA	
50-55		NA		NA		NA		NA		NA		NA		NA	
55-60		NA		NA		NA		NA		NA		NA		NA	
60-65		NA		NA		NA		NA		NA		NA		NA	
65+		NA		NA		NA		NA		NA		NA		NA	
RURAL MINOR COLLECTORS		0-5	NA		NA		NA		NA		NA		NA		NA
	5-10	NA		NA		NA		NA		NA		NA		NA	
	10-15	NA		NA		NA		NA		NA		NA		NA	
	15-20	NA		NA		NA		NA		NA		NA		NA	
	20-25	NA		NA		NA		NA		NA		NA		NA	
	25-30	NA		NA		NA		NA		NA		NA		NA	
	30-35	31.68	1.322	31.66	0.739	31.66	0.597	31.65	0.435	31.63	0.289	31.62	0.268	31.62	0.268
	35-40	39.67	1.234	39.65	0.688	39.64	0.557	39.63	0.407	39.60	0.268	39.55	0.248	39.51	0.247
	40-45	NA		NA		NA		NA		NA		NA		NA	
	45-50	NA		NA		NA		NA		NA		NA		NA	
	50-55	NA		NA		NA		NA		NA		NA		NA	
	55-60	NA		NA		NA		NA		NA		NA		NA	
	60-65	NA		NA		NA		NA		NA		NA		NA	
	65+	NA		NA		NA		NA		NA		NA		NA	
	RURAL LOCALS	0-5	NA		NA		NA		NA		NA		NA		NA
5-10		NA		NA		NA		NA		NA		NA		NA	
10-15		NA		NA		NA		NA		NA		NA		NA	
15-20		NA		NA		NA		NA		NA		NA		NA	
20-25		24.83	1.455	24.80	0.812	24.79	0.653	24.78	0.476	24.74	0.321	24.69	0.300	24.65	0.300
25-30		30.00	1.352	30.00	0.756	30.00	0.610	30.00	0.444	30.00	0.297	30.00	0.276	30.00	0.276
30-35		NA		NA		NA		NA		NA		NA		NA	
35-40		NA		NA		NA		NA		NA		NA		NA	
40-45		NA		NA		NA		NA		NA		NA		NA	
45-50		NA		NA		NA		NA		NA		NA		NA	
50-55		NA		NA		NA		NA		NA		NA		NA	
55-60		NA		NA		NA		NA		NA		NA		NA	
60-65		NA		NA		NA		NA		NA		NA		NA	
65+		NA		NA		NA		NA		NA		NA		NA	

NOTES:

- The emission factors (EFs) for INTERSTATES (OVERALL AVERAGE) = 0.725*[EF for INTERSTATES (Rural)] + 0.275*[EF for INTERSTATES (Urban)].
- The EFs for RAMPS (OVERALL AVERAGE) = 0.562*[EF for RAMPS (for Rural Interstates)] + 0.146*[EF for RAMPS (for Rural Principal Arterials)] + 0.213*[EF for RAMPS (for Urban Interstates)] + 0.079*[EF for RAMPS (for Urban Other Freeways and Expressways)].
- The MOBILE6.2 model provides EFs for Ramp travel only at an average speed of 34.6 mph.
- The MOBILE6.2 model provides EFs for Urban Local travel only at an average speed of 12.9 mph.

Source: HNTB, 2005; Wisconsin Department of Transportation, 2005; Bay-Lake Regional Planning Commission, 2005; and Wisconsin Department of Natural Resources, 2006.

Table C.3															
Year 2035 Sheboygan Area Transportation Plan (SATP)															
Summer Weekday Average Speeds (by Speed Range and Facility Type) Within Sheboygan County															
And Associated MOBILE6.2 NOx Emission Factors															
Forecast 2000, 2007, 2009, 2012, 2020, 2030 and 2035															
FACILITY TYPE	SPEED RANGE	2000 MODEL		2007 MODEL		2009 MODEL		2012 MODEL		2020 MODEL		2030 MODEL		2035 MODEL	
		Speed (mph)	Em. Fac. (g/v-m)	Speed (mph)	Em. Fac. (g/v-m)	Speed (mph)	Em. Fac. (g/v-m)	Speed (mph)	Em. Fac. (g/v-m)	Speed (mph)	Em. Fac. (g/v-m)	Speed (mph)	Em. Fac. (g/v-m)	Speed (mph)	Em. Fac. (g/v-m)
INTERSTATES (Rural)	0-5	NA		NA		NA		NA		NA		NA		NA	
	5-10	NA		NA		NA		NA		NA		NA		NA	
	10-15	NA		NA		NA		NA		NA		NA		NA	
	15-20	NA		NA		NA		NA		NA		NA		NA	
	20-25	NA		NA		NA		NA		NA		NA		NA	
	25-30	NA		NA		NA		NA		NA		NA		NA	
	30-35	NA		NA		NA		NA		NA		NA		NA	
	35-40	NA		NA		NA		NA		NA		NA		NA	
	40-45	NA		NA		NA		NA		NA		NA		NA	
	45-50	NA		NA		NA		NA		NA		NA		NA	
	50-55	55.00	4.062	54.99	2.152	54.99	1.760	54.98	1.189	54.94	0.437	54.82	0.233	53.35	0.208
	55-60	57.98	4.279	57.93	2.298	57.91	1.880	57.85	1.269	57.59	0.464	56.83	0.242	56.66	0.217
60-65	NA		NA		NA		NA		NA		NA		NA		
65+	65.00	4.917	65.00	2.734	65.00	2.246	65.00	1.518	65.00	0.557	65.00	0.283	65.00	0.251	
INTERSTATES (Urban)	0-5	NA		NA		NA		NA		NA		NA		NA	
	5-10	NA		NA		NA		NA		NA		NA		NA	
	10-15	NA		NA		NA		NA		NA		NA		NA	
	15-20	NA		NA		NA		NA		NA		NA		NA	
	20-25	NA		NA		NA		NA		NA		NA		NA	
	25-30	NA		NA		NA		NA		NA		NA		NA	
	30-35	NA		NA		NA		NA		NA		NA		NA	
	35-40	NA		NA		NA		NA		NA		NA		NA	
	40-45	NA		NA		NA		NA		NA		NA		NA	
	45-50	NA		NA		NA		NA		NA		NA		NA	
	50-55	55.00	3.669	54.99	1.943	54.99	1.579	54.98	1.065	54.94	0.396	54.82	0.226	53.35	0.205
	55-60	57.98	3.854	57.93	2.067	57.91	1.681	57.85	1.133	57.59	0.419	56.83	0.233	56.66	0.214
60-65	NA		NA		NA		NA		NA		NA		NA		
65+	65.00	4.399	65.00	2.440	65.00	1.990	65.00	1.342	65.00	0.496	65.00	0.269	65.00	0.244	
INTERSTATES (OVERALL AVERAGE)	0-5	NA		NA		NA		NA		NA		NA		NA	
	5-10	NA		NA		NA		NA		NA		NA		NA	
	10-15	NA		NA		NA		NA		NA		NA		NA	
	15-20	NA		NA		NA		NA		NA		NA		NA	
	20-25	NA		NA		NA		NA		NA		NA		NA	
	25-30	NA		NA		NA		NA		NA		NA		NA	
	30-35	NA		NA		NA		NA		NA		NA		NA	
	35-40	NA		NA		NA		NA		NA		NA		NA	
	40-45	NA		NA		NA		NA		NA		NA		NA	
	45-50	NA		NA		NA		NA		NA		NA		NA	
	50-55	55.00	3.954	54.99	2.095	54.99	1.710	54.98	1.155	54.94	0.426	54.82	0.231	53.35	0.207
	55-60	57.98	4.162	57.93	2.234	57.91	1.825	57.85	1.232	57.59	0.452	56.83	0.240	56.66	0.216
60-65	NA		NA		NA		NA		NA		NA		NA		
65+	65.00	4.775	65.00	2.653	65.00	2.176	65.00	1.470	65.00	0.540	65.00	0.279	65.00	0.249	
OTHER FREEWAYS	0-5	NA		NA		NA		NA		NA		NA		NA	
	5-10	NA		NA		NA		NA		NA		NA		NA	
	10-15	NA		NA		NA		NA		NA		NA		NA	
	15-20	NA		NA		NA		NA		NA		NA		NA	
	20-25	NA		NA		NA		NA		NA		NA		NA	
	25-30	NA		NA		NA		NA		NA		NA		NA	
	30-35	NA		NA		NA		NA		NA		NA		NA	
	35-40	NA		NA		NA		NA		NA		NA		NA	
	40-45	NA		NA		NA		NA		NA		NA		NA	
	45-50	NA		NA		NA		NA		NA		NA		NA	
	50-55	51.99	2.067	51.99	1.147	51.98	0.934	51.98	0.646	51.96	0.255	51.89	0.177	51.81	0.170
	55-60	56.00	2.144	56.00	1.200	56.00	0.978	56.00	0.677	56.00	0.266	56.00	0.183	55.99	0.175
60-65	NA		NA		NA		NA		NA		NA		NA		
65+	65.00	2.405	65.00	1.381	65.00	1.127	65.00	0.781	65.00	0.306	65.00	0.201	65.00	0.190	
RAMPS (for Rural Interstates)	0-65	34.60	2.728	34.60	1.690	34.60	1.386	34.60	0.937	34.60	0.359	34.60	0.219	34.60	0.202
RAMPS (for Rural Principal Arterials)	0-65	34.60	2.250	34.60	1.366	34.60	1.115	34.60	0.759	34.60	0.299	34.60	0.200	34.60	0.190
RAMPS (for Urban Interstates)	0-65	34.60	2.536	34.60	1.556	34.60	1.269	34.60	0.856	34.60	0.332	34.60	0.215	34.60	0.201
RAMPS (for Urban Other Freeways and Expressways)	0-65	34.60	1.879	34.60	1.106	34.60	0.897	34.60	0.613	34.60	0.248	34.60	0.185	34.60	0.180
RAMPS (OVERALL AVERAGE)	0-65	34.60	2.550	34.60	1.568	34.60	1.283	34.60	0.868	34.60	0.336	34.60	0.213	34.60	0.198

FACILITY TYPE	SPEED RANGE	2000 MODEL		2007 MODEL		2009 MODEL		2012 MODEL		2020 MODEL		2030 MODEL		2035 MODEL	
		Speed (mph)	Em. Fac. (g/v-m)	Speed (mph)	Em. Fac. (g/v-m)	Speed (mph)	Em. Fac. (g/v-m)	Speed (mph)	Em. Fac. (g/v-m)	Speed (mph)	Em. Fac. (g/v-m)	Speed (mph)	Em. Fac. (g/v-m)	Speed (mph)	Em. Fac. (g/v-m)
RURAL MINOR ARTERIALS	0-5	NA		NA		NA		NA		NA		NA		NA	
	5-10	NA		NA		NA		NA		NA		NA		NA	
	10-15	NA		NA		NA		NA		NA		NA		NA	
	15-20	NA		NA		NA		NA		NA		NA		NA	
	20-25	NA		NA		NA		NA		NA		NA		NA	
	25-30	NA		NA		NA		NA		NA		NA		NA	
	30-35	32.76	1.995	32.37	1.146	32.29	0.943	32.08	0.651	33.83	0.255	31.48	0.174	32.73	0.165
	35-40	38.65	2.006	38.64	1.154	38.49	0.949	38.33	0.654	38.87	0.258	38.37	0.174	38.36	0.166
	40-45	42.70	2.045	42.68	1.182	42.63	0.972	42.56	0.671	42.44	0.264	42.21	0.177	42.13	0.169
	45-50	NA		NA		NA		NA		NA		NA		NA	
	50-55	NA		NA		NA		NA		NA		NA		NA	
	55-60	NA		NA		NA		NA		NA		NA		NA	
	60-65	NA		NA		NA		NA		NA		NA		NA	
	65+	NA		NA		NA		NA		NA		NA		NA	
RURAL MAJOR COLLECTORS	0-5	NA		NA		NA		NA		NA		NA		NA	
	5-10	NA		NA		NA		NA		NA		NA		NA	
	10-15	NA		NA		NA		NA		NA		NA		NA	
	15-20	NA		NA		NA		NA		NA		NA		NA	
	20-25	NA		NA		NA		NA		NA		NA		NA	
	25-30	NA		NA		NA		NA		NA		NA		29.95	0.171
	30-35	31.51	1.946	31.41	1.107	31.38	0.909	31.33	0.625	31.20	0.250	31.28	0.176	31.55	0.170
	35-40	39.29	1.952	39.09	1.113	39.11	0.914	39.06	0.628	38.86	0.250	38.72	0.176	38.60	0.169
	40-45	41.60	1.974	41.55	1.129	41.54	0.927	41.52	0.638	41.42	0.254	41.31	0.178	41.26	0.171
	45-50	NA		NA		NA		NA		NA		NA		NA	
	50-55	NA		NA		NA		NA		NA		NA		NA	
	55-60	NA		NA		NA		NA		NA		NA		NA	
	60-65	NA		NA		NA		NA		NA		NA		NA	
	65+	NA		NA		NA		NA		NA		NA		NA	
RURAL MINOR COLLECTORS	0-5	NA		NA		NA		NA		NA		NA		NA	
	5-10	NA		NA		NA		NA		NA		NA		NA	
	10-15	NA		NA		NA		NA		NA		NA		NA	
	15-20	NA		NA		NA		NA		NA		NA		NA	
	20-25	NA		NA		NA		NA		NA		NA		NA	
	25-30	NA		NA		NA		NA		NA		NA		NA	
	30-35	31.68	1.665	31.66	0.960	31.66	0.790	31.65	0.548	31.63	0.233	31.62	0.180	31.62	0.176
	35-40	39.67	1.668	39.65	0.965	39.64	0.795	39.63	0.552	39.60	0.234	39.55	0.181	39.51	0.177
	40-45	NA		NA		NA		NA		NA		NA		NA	
	45-50	NA		NA		NA		NA		NA		NA		NA	
	50-55	NA		NA		NA		NA		NA		NA		NA	
	55-60	NA		NA		NA		NA		NA		NA		NA	
	60-65	NA		NA		NA		NA		NA		NA		NA	
	65+	NA		NA		NA		NA		NA		NA		NA	
RURAL LOCALS	0-5	NA		NA		NA		NA		NA		NA		NA	
	5-10	NA		NA		NA		NA		NA		NA		NA	
	10-15	NA		NA		NA		NA		NA		NA		NA	
	15-20	NA		NA		NA		NA		NA		NA		NA	
	20-25	24.83	1.656	24.80	0.956	24.79	0.790	24.78	0.551	24.74	0.237	24.69	0.188	24.65	0.184
	25-30	30.00	1.591	30.00	0.916	30.00	0.758	30.00	0.529	30.00	0.228	30.00	0.180	30.00	0.177
	30-35	NA		NA		NA		NA		NA		NA		NA	
	35-40	NA		NA		NA		NA		NA		NA		NA	
	40-45	NA		NA		NA		NA		NA		NA		NA	
	45-50	NA		NA		NA		NA		NA		NA		NA	
	50-55	NA		NA		NA		NA		NA		NA		NA	
	55-60	NA		NA		NA		NA		NA		NA		NA	
	60-65	NA		NA		NA		NA		NA		NA		NA	
	65+	NA		NA		NA		NA		NA		NA		NA	

NOTES:

- The emission factors (EFs) for INTERSTATES (OVERALL AVERAGE) = 0.725*[EF for INTERSTATES (Rural)] + 0.275*[EF for INTERSTATES (Urban)].
- The EFs for RAMPS (OVERALL AVERAGE) = 0.562*[EF for RAMPS (for Rural Interstates)] + 0.146*[EF for RAMPS (for Rural Principal Arterials)] + 0.213*[EF for RAMPS (for Urban Interstates)] + 0.079*[EF for RAMPS (for Urban Other Freeways and Expressways)].
- The MOBILE6.2 model provides EFs for Ramp travel only at an average speed of 34.6 mph.
- The MOBILE6.2 model provides EFs for Urban Local travel only at an average speed of 12.9 mph.

Source: HNTB, 2005; Wisconsin Department of Transportation, 2005; Bay-Lake Regional Planning Commission, 2005; and Wisconsin Department of Natural Resources, 2006.

For the conformity analysis for the *Year 2035 SATP* and its implementing *2007 – 2010 TIP*, the State of Wisconsin Department of Natural Resources provided Bay-Lake Regional Planning Commission staff with revised emission factors based on the Wisconsin 2003 One-Hour Ozone SIP (as it applies to Sheboygan County), complete with an updated and more localized fleet mix, with adjustments for diesel defeat devices, for Tier 2 motor vehicle standards and for low sulfur gasoline, and with an adjustment to exempt the first three vehicle model years from testing under the state vehicle inspection and maintenance program (due to state legislation), in March of 2006. The Bay-Lake Regional Planning Commission then performed the conformity analysis based on the updated factors in April, May and June of 2006. The Conformity Transportation Work Group (CTWG) reviewed this draft conformity analysis in late September and early October of 2006.

In addition, there was public consultation with respect to the *Year 2035 SATP*, including consultation on land use, transportation deficiencies, potential transportation improvements, the recommended plan and its financial impacts, and on the potential air quality impacts of the recommended plan. This consultation is documented in Appendix F (Public Participation Process) of the *Year 2035 SATP*. Public consultation efforts included an extensive focus on transit in the update to the *Sheboygan Transit Development Program* (including numerous review committee meetings and public information meetings), extensive transit survey research, as well as responding to corridor test ideas with the travel demand forecast model.

The *Year 2035 SATP* and the *2007 – 2010 TIP* were each subjected to 30 day public comment periods. Public information meetings on the *Year 2035 SATP* and on the *2007 – 2010 TIP* were held in September and December of 2006, respectfully. Comments received from the public on the *Year 2035 SATP*, the *2007 – 2010 TIP*, and on this air quality conformity statement were primarily editorial in nature, and have been incorporated into the respective documents.

All meetings of the Sheboygan MPO Technical and Policy Advisory Committees, of any special project specific committees, and of the Bay-Lake Regional Planning Commission have been open to the public during the planning process, and notice of these meetings has been provided to area news media on a timely basis. Periodic newsletters and annual reports of the Bay-Lake Regional Planning Commission also have kept the public involved of this and other MPO planning efforts.

TIMELY IMPLEMENTATION OF TRANSPORTATION CONTROL MEASURES (TCM)

A fourth criterion for plan and program conformity determination established in the July 1, 2004, *Federal Register* (40 CFR Part 93.113[b] and [c]) is that the transportation plan and the transportation improvement program must provide for timely implementation of all transportation control measures (TCMs) in the State Implementation Plan for Air Quality. More specifically, the transportation plan and the transportation improvement program must provide for timely completion of any TCMs in the State Implementation Plan, and nothing in the transportation plan or transportation improvement program may interfere with the implementation of any TCM in the State Implementation Plan. The staff of the Wisconsin Department of Natural Resources has indicated to Bay-Lake Regional Planning Commission staff that there are no TCMs specified for Sheboygan County in the State Implementation Plan, including the Sheboygan metropolitan planning area. Therefore, this criterion for plan and program conformity determination is not applicable to this planning effort at this time.

CONSISTENCY WITH THE MOTOR VEHICLE EMISSIONS BUDGETS IN THE WISCONSIN 2003 ONE-HOUR OZONE STATE IMPLEMENTATION PLAN (AS APPLICABLE TO SHEBOYGAN COUNTY)

The fifth and final criterion for plan and program conformity determination, established in the July 1, 2004, *Federal Register* (40 CFR Part 93.118), requires that the transportation system emissions forecasts under the transportation plan and transportation improvement program must be consistent with, that is equal to or less than, the transportation system emissions forecasts, or “motor vehicle emissions budgets,” in the State Implementation Plan component for Sheboygan County. The State Implementation Plan for this conformity analysis is the Wisconsin 2003 One-Hour Ozone State Implementation Plan submitted to the U.S. Environmental Protection Agency (USEPA) by the Wisconsin Department of Natural Resources, and approved by the USEPA in 2003. It presents motor vehicle emissions budgets for 2005, 2007 and 2012 as part of the required Wisconsin 2003 One-Hour Ozone State Implementation Plan as applicable to Sheboygan County. This requirement for consistency of the transportation emissions forecasts incorporated in the long-range transportation plan and the transportation improvement program with those incorporated in the Wisconsin 2003 One-Hour Ozone State Implementation Plan applies to volatile organic compound and nitrogen oxide emissions as precursors to ozone.

Table C.4 indicates the established budgets in the Wisconsin 2003 One-Hour Ozone State Implementation Plan for two ozone precursor pollutants, volatile organic compounds and nitrogen oxides, in 2005, 2007 and in 2012. It should be noted that this conformity analysis only addresses emission forecasts in comparison to 2007 and 2012 emissions budgets, since the conformity analysis is being conducted in 2006.

Table C.4 Ozone Precursor Emissions Budgets for Sheboygan County Wisconsin 2003 One-Hour State Implementation Plan: 2005, 2007 and 2012 (On a Hot Summer Day)		
Year	Pollutant (Tons)	
	Volatile Organic Compounds (VOCs)	Nitrogen Oxides (NOx)
2005	3.700	7.400
2007	3.240	6.400
2012	1.990	3.970

Source: Wisconsin Department of Natural Resources, 2002 and 2003; and Bay-Lake Regional Planning Commission, 2006.

The transportation system emissions attendant to the transportation systems plan and transportation improvement program were forecast through the application of the MPO travel and traffic simulation models to the transportation system plan and transportation improvement program under forecast population, housing unit and employment growth assuming the adopted growth scenario involving corridor development. The Sheboygan MPO Technical and Policy Advisory Committees selected the corridor development growth scenario as the preferred development vision for the Sheboygan metropolitan planning area in August of 2005. This decision came after several months of debate over the merits of each growth scenario. As stated earlier, VMT was minimized under the compact/infill development scenario, but members of the Sheboygan MPO Technical and Policy Advisory Committees believed that corridor development would more realistically occur in the metropolitan planning area in the long-range future.

Table C.5 presents the forecast vehicle miles of travel attendant to the transportation system plan and transportation improvement program by functional classification and speed range for the plan base year of 2000, as well as for the forecast years of 2007, 2009, 2012, 2020, 2030 and 2035. The transportation plan projects which are not exempt from regional emissions analysis are identified in Table 7.1 of the *Year 2035 SATP*. The transportation improvement program projects which are not exempt from regional emissions analysis are marked as “Non-Exempt” in Table 6 of the *2007 – 2010 TIP*.

It should be noted that one capacity modifying project outside the Sheboygan metropolitan planning area but within Sheboygan County was incorporated into the travel demand forecast modeling for the *Year 2035 SATP*, and therefore, is incorporated into this air quality conformity analysis. This project involves an increase from two to four lanes on State Highway 23 from Plymouth to Fond du Lac (modeled to the Fond du Lac county line for purposes of this analysis). This project was assumed to be completed in the 2013 – 2020 implementation period.

Table C.5 indicates that average annual rates of VMT increase were as follows for all of the modeled area (Sheboygan County): 1.32 percent from 2000 to 2007, 1.24 percent from 2007 to 2009, 1.19 percent from 2009 to 2012, 1.14 percent from 2012 to 2020, 1.01 percent from 2020 to 2030, and 1.00 percent from 2030 to 2035. Growth in VMT is expected to average about 1.13 percent within the countywide modeling domain through 2035 under the corridor development recommended scenario.

Table C.5 Year 2035 Sheboygan Area Transportation Plan (SATP) Summer Weekday Vehicle Miles of Travel Within Sheboygan County Forecast 2000, 2007, 2009, 2012, 2020, 2030 and 2035								
FACILITY TYPE	SPEED RANGE	2000 MODEL	2007 MODEL	2009 MODEL	2012 MODEL	2020 MODEL	2030 MODEL	2035 MODEL
INTERSTATES	0-5	0	0	0	0	0	0	0
	5-10	0	0	0	0	0	0	0
	10-15	0	0	0	0	0	0	0
	15-20	0	0	0	0	0	0	0
	20-25	0	0	0	0	0	0	0
	25-30	0	0	0	0	0	0	0
	30-35	0	0	0	0	0	0	0
	35-40	0	0	0	0	0	0	0
	40-45	0	0	0	0	0	0	0
	45-50	0	0	0	0	0	0	0
	50-55	30,855	35,520	36,781	38,778	43,831	138,827	365,732
	55-60	0	0	0	0	0	0	0
	60-65	0	0	0	0	0	0	0
	65+	751,808	856,948	885,940	931,170	1,042,111	1,093,012	938,186
	Subtotal	782,663	892,468	922,721	969,948	1,085,941	1,231,839	1,303,918
OTHER FREEWAYS	0-5	0	0	0	0	0	0	0
	5-10	0	0	0	0	0	0	0
	10-15	0	0	0	0	0	0	0
	15-20	0	0	0	0	0	0	0
	20-25	0	0	0	0	0	0	0
	25-30	0	0	0	0	0	0	0
	30-35	0	0	0	0	0	0	0
	35-40	0	0	0	0	0	0	0
	40-45	0	0	0	0	0	0	0
	45-50	0	0	0	0	0	0	0
	50-55	21,007	22,906	23,525	24,345	26,381	29,028	30,611
	55-60	3,097	3,365	3,459	3,573	3,892	4,309	4,621
	60-65	0	0	0	0	0	0	0
	65+	0	0	0	0	0	0	0
	Subtotal	24,105	26,270	26,985	27,918	30,273	33,337	35,232
RAMPS	0-5	0	0	0	0	0	0	0
	5-10	0	0	0	0	0	0	0
	10-15	0	0	0	0	0	0	0
	15-20	0	0	0	0	0	0	0
	20-25	0	0	0	0	0	0	0
	25-30	0	0	0	0	0	1,651	1,704
	30-35	0	0	1,381	1,416	3,069	3,954	4,107
	35-40	39,138	44,268	44,283	46,054	50,399	53,384	56,194
	40-45	0	0	0	0	0	0	0
	45-50	0	0	0	0	0	0	0
	50-55	0	0	0	0	0	0	0
	55-60	0	0	0	0	0	0	0
	60-65	0	0	0	0	0	0	0
	65+	0	0	0	0	0	0	0
	Subtotal	39,138	44,268	45,664	47,469	53,468	58,989	62,004

Table C.5								
Year 2035 Sheboygan Area Transportation Plan (SATP)								
Summer Weekday Vehicle Miles of Travel Within Sheboygan County								
Forecast 2000, 2007, 2009, 2012, 2020, 2030 and 2035								
FACILITY TYPE	SPEED RANGE	2000 MODEL	2007 MODEL	2009 MODEL	2012 MODEL	2020 MODEL	2030 MODEL	2035 MODEL
EXPRESSWAYS	0-5	0	0	0	0	0	0	0
	5-10	0	0	0	0	0	0	0
	10-15	0	0	0	0	0	0	0
	15-20	0	0	0	0	0	0	0
	20-25	0	0	0	0	0	0	0
	25-30	0	0	0	0	0	0	0
	30-35	0	0	0	0	0	0	0
	35-40	0	0	0	0	0	0	0
	40-45	6,957	8,071	8,379	8,845	10,085	11,757	12,580
	45-50	9,474	10,567	10,896	11,364	12,596	14,299	15,289
	50-55	31,047	33,888	34,825	36,036	39,287	43,490	46,278
	55-60	0	0	0	0	0	0	0
	60-65	0	0	0	0	0	0	0
	65+	0	0	0	0	0	0	0
	Subtotal	47,478	52,526	54,100	56,244	61,968	69,546	74,147
URBAN PRINCIPAL ARTERIALS	0-5	0	0	0	0	0	0	0
	5-10	0	0	0	0	0	0	0
	10-15	0	0	0	0	0	0	0
	15-20	0	0	0	0	0	0	0
	20-25	0	0	0	0	0	1,395	2,791
	25-30	0	0	0	1,162	3,080	2,557	1,336
	30-35	12,787	12,930	13,039	11,988	10,881	10,533	11,266
	35-40	184,360	192,778	195,523	199,468	206,844	219,522	227,169
	40-45	0	0	0	0	2,481	15,369	15,590
	45-50	36,057	38,951	39,707	40,482	40,677	31,834	33,802
	50-55	0	0	0	0	0	0	0
	55-60	0	0	0	0	0	0	0
	60-65	0	0	0	0	0	0	0
	65+	0	0	0	0	0	0	0
	Subtotal	233,204	244,659	248,269	253,099	263,964	281,211	291,954
URBAN MINOR ARTERIALS	0-5	0	0	0	0	0	0	0
	5-10	0	0	0	0	0	0	0
	10-15	0	0	0	0	0	0	0
	15-20	0	0	0	0	0	0	0
	20-25	0	0	0	0	0	0	0
	25-30	25,834	27,295	27,962	27,814	33,672	24,254	25,266
	30-35	121,599	133,631	149,746	162,383	174,065	197,820	214,553
	35-40	248,844	252,053	239,122	232,916	243,893	259,169	256,231
	40-45	72,400	71,017	71,925	73,016	67,377	75,359	75,695
	45-50	22,414	22,930	23,122	23,277	23,722	11,305	11,120
	50-55	0	0	0	0	0	0	0
	55-60	0	0	0	0	0	0	0
	60-65	0	0	0	0	0	0	0
	65+	0	0	0	0	0	0	0
	Subtotal	491,090	506,927	511,878	519,406	542,730	567,908	582,865

Table C.5 Year 2035 Sheboygan Area Transportation Plan (SATP) Summer Weekday Vehicle Miles of Travel Within Sheboygan County Forecast 2000, 2007, 2009, 2012, 2020, 2030 and 2035								
FACILITY TYPE	SPEED RANGE	2000 MODEL	2007 MODEL	2009 MODEL	2012 MODEL	2020 MODEL	2030 MODEL	2035 MODEL
URBAN COLLECTORS	0-5	0	0	0	0	0	0	0
	5-10	0	0	0	0	0	0	0
	10-15	0	0	0	0	0	0	0
	15-20	0	0	0	0	0	0	0
	20-25	1,514	1,514	1,572	1,577	1,662	1,631	1,767
	25-30	602	3,618	7,762	8,343	15,450	20,723	22,268
	30-35	159,442	166,023	163,654	165,798	167,040	176,205	180,780
	35-40	32,783	33,929	35,152	35,785	37,849	40,055	40,849
	40-45	0	0	0	0	0	0	0
	45-50	0	0	0	0	0	0	0
	50-55	0	0	0	0	0	0	0
	55-60	0	0	0	0	0	0	0
	60-65	0	0	0	0	0	0	0
	65+	0	0	0	0	0	0	0
	Subtotal		194,341	205,084	208,140	211,503	222,001	238,614
URBAN LOCALS	0-5	0	0	0	0	0	0	0
	5-10	98,970	103,262	104,588	106,328	111,465	117,634	120,786
	10-15	0	0	0	0	0	0	0
	15-20	68,260	74,342	76,088	78,615	85,515	92,142	96,061
	20-25	0	0	0	0	0	0	0
	25-30	7,640	7,868	7,840	7,761	8,419	11,072	7,769
	30-35	25,174	26,368	26,760	27,098	27,538	26,889	29,851
	35-40	0	0	0	0	0	0	0
	40-45	0	0	0	0	0	0	0
	45-50	0	0	0	0	0	0	0
	50-55	0	0	0	0	0	0	0
	55-60	0	0	0	0	0	0	0
	60-65	0	0	0	0	0	0	0
	65+	0	0	0	0	0	0	0
	Subtotal		200,043	211,841	215,276	219,802	232,937	247,737
RURAL PRINCIPAL ARTERIALS	0-5	0	0	0	0	0	0	0
	5-10	0	0	0	0	0	0	0
	10-15	0	0	0	0	0	0	0
	15-20	0	0	0	0	0	0	0
	20-25	0	0	0	0	0	0	0
	25-30	0	0	0	0	0	0	0
	30-35	0	179	180	2,452	2,670	5,204	5,358
	35-40	8,691	12,775	12,932	11,008	11,469	13,498	16,027
	40-45	183,739	193,930	199,417	204,863	243,693	272,212	301,334
	45-50	277,333	322,683	334,354	351,786	381,215	430,534	445,725
	50-55	0	0	0	0	0	0	0
	55-60	0	0	0	0	0	0	0
	60-65	0	0	0	0	0	0	0
	65+	0	0	0	0	0	0	0
	Subtotal		469,762	529,567	546,883	570,109	639,047	721,448

Table C.5 Year 2035 Sheboygan Area Transportation Plan (SATP) Summer Weekday Vehicle Miles of Travel Within Sheboygan County Forecast 2000, 2007, 2009, 2012, 2020, 2030 and 2035								
FACILITY TYPE	SPEED RANGE	2000 MODEL	2007 MODEL	2009 MODEL	2012 MODEL	2020 MODEL	2030 MODEL	2035 MODEL
RURAL MINOR ARTERIALS	0-5	0	0	0	0	0	0	0
	5-10	0	0	0	0	0	0	0
	10-15	0	0	0	0	0	0	0
	15-20	0	0	0	0	0	0	0
	20-25	0	0	0	0	0	0	0
	25-30	0	0	0	0	0	0	0
	30-35	1,292	1,447	1,479	1,547	10,301	2,366	5,052
	35-40	28,370	42,531	42,327	43,352	53,115	73,045	86,389
	40-45	234,752	243,102	249,869	258,195	267,513	289,146	290,194
	45-50	0	0	0	0	0	0	0
	50-55	0	0	0	0	0	0	0
	55-60	0	0	0	0	0	0	0
	60-65	0	0	0	0	0	0	0
	65+	0	0	0	0	0	0	0
	Subtotal		264,414	287,080	293,675	303,093	330,929	364,557
RURAL MAJOR COLLECTORS	0-5	0	0	0	0	0	0	0
	5-10	0	0	0	0	0	0	0
	10-15	0	0	0	0	0	0	0
	15-20	0	0	0	0	0	0	0
	20-25	0	0	0	0	0	0	0
	25-30	0	0	0	0	0	0	1,774
	30-35	4,067	4,500	4,634	4,819	5,320	6,527	5,216
	35-40	41,422	48,141	50,053	54,878	66,914	79,859	92,901
	40-45	179,661	200,678	205,692	211,192	234,663	262,292	272,309
	45-50	0	0	0	0	0	0	0
	50-55	0	0	0	0	0	0	0
	55-60	0	0	0	0	0	0	0
	60-65	0	0	0	0	0	0	0
	65+	0	0	0	0	0	0	0
	Subtotal		225,151	253,320	260,379	270,889	306,897	348,679
RURAL MINOR COLLECTORS	0-5	0	0	0	0	0	0	0
	5-10	0	0	0	0	0	0	0
	10-15	0	0	0	0	0	0	0
	15-20	0	0	0	0	0	0	0
	20-25	0	0	0	0	0	0	0
	25-30	0	0	0	0	0	0	0
	30-35	6,215	6,534	6,623	6,768	7,074	7,395	7,508
	35-40	82,051	88,499	90,756	96,611	106,292	117,830	124,784
	40-45	0	0	0	0	0	0	0
	45-50	0	0	0	0	0	0	0
	50-55	0	0	0	0	0	0	0
	55-60	0	0	0	0	0	0	0
	60-65	0	0	0	0	0	0	0
	65+	0	0	0	0	0	0	0
	Subtotal		88,266	95,033	97,379	103,379	113,366	125,225

FACILITY TYPE	SPEED RANGE	2000 MODEL	2007 MODEL	2009 MODEL	2012 MODEL	2020 MODEL	2030 MODEL	2035 MODEL
RURAL LOCALS	0-5	0	0	0	0	0	0	0
	5-10	0	0	0	0	0	0	0
	10-15	0	0	0	0	0	0	0
	15-20	0	0	0	0	0	0	0
	20-25	22,677	24,352	25,047	26,017	29,014	33,197	35,607
	25-30	134,192	153,205	158,465	166,517	187,882	213,270	227,277
	30-35	0	0	0	0	0	0	0
	35-40	0	0	0	0	0	0	0
	40-45	0	0	0	0	0	0	0
	45-50	0	0	0	0	0	0	0
	50-55	0	0	0	0	0	0	0
	55-60	0	0	0	0	0	0	0
	60-65	0	0	0	0	0	0	0
	65+	0	0	0	0	0	0	0
		Subtotal	156,869	177,557	183,512	192,535	216,896	246,467
ALL TYPES	0-5	0	0	0	0	0	0	0
	5-10	98,970	103,262	104,588	106,328	111,465	117,634	120,786
	10-15	0	0	0	0	0	0	0
	15-20	68,260	74,342	76,088	78,615	85,515	92,142	96,061
	20-25	24,191	25,866	26,620	27,594	30,675	36,223	40,165
	25-30	168,268	191,986	202,028	211,596	248,504	273,528	287,394
	30-35	330,576	351,612	367,496	384,268	407,959	436,895	463,691
	35-40	665,658	714,974	710,148	720,071	776,776	856,362	900,544
	40-45	677,509	716,799	735,282	756,110	825,812	926,136	967,702
	45-50	345,277	395,130	408,079	426,910	458,210	487,972	505,936
	50-55	82,909	92,314	95,131	99,158	109,499	211,344	442,621
	55-60	3,097	3,365	3,459	3,573	3,892	4,309	4,621
	60-65	0	0	0	0	0	0	0
	65+	751,808	856,948	885,940	931,170	1,042,111	1,093,012	938,186
		TOTAL	3,216,524	3,526,599	3,614,859	3,745,394	4,100,418	4,535,557

Source: HNTB, 2005; Wisconsin Department of Transportation, 2005; and Bay-Lake Regional Planning Commission, 2005.

Table C.6 presents the attendant volatile organic compound emissions. The forecasts are presented for the years 2007, 2009, 2012, 2020, 2030 and 2035 for all of Sheboygan County. In addition, Table C.6 presents the 2007 and 2012 motor vehicle emissions budgets for volatile organic compounds incorporated in the Wisconsin 2003 One-Hour Ozone State Implementation Plan component for Sheboygan County. The transportation system volatile organic compound emissions under the transportation system plan and transportation improvement program, when analyzed for all of Sheboygan County, are less than the motor vehicle emissions budgets for volatile organic compounds included in the Wisconsin 2003 One-Hour Ozone State Implementation Plan component for Sheboygan County, thus meeting this criterion for consistency.

Table C.6		
Forecast Volatile Organic Compound Emissions from the Transportation System in Sheboygan County Under the Year 2035 SATP/2007 - 2010 TIP and the State Implementation Plan for Air Quality: 2007, 2009, 2012, 2020, 2030 and 2035 (On a Hot Summer Weekday) Using Mobile 6.2 Emission Factors		
Year	Sheboygan County	
	State Implementation Plan (tons)*	Year 2035 SATP (tons)
2007	3.240	2.592
2009	3.240	2.125
2012	1.990	1.577
2020	1.990	1.085
2030	1.990	1.092
2035	1.990	1.144
*The Wisconsin Department of Natural Resources estimates that there were 4.660 tons of mobile sector volatile organic compound emissions in Sheboygan County in 2000. The 2005 State Implementation Plan budget for volatile organic compounds was 3.700 tons.		
Source: Wisconsin Department of Natural Resources, 2002 and 2006; and Bay-Lake Regional Planning Commission, 2006.		

Table C.7 presents the forecast nitrogen oxide emissions. The forecasts are presented for the years 2007, 2009, 2012, 2020, 2030 and 2035 for all of Sheboygan County. In addition, Table C.7 presents the 2007 and 2012 motor vehicle emissions budgets for nitrogen oxides incorporated in the Wisconsin 2003 One-Hour Ozone State Implementation Plan component for Sheboygan County. The transportation system nitrogen oxide emissions under the transportation system plan and transportation improvement program, when analyzed for all of Sheboygan County, are less than the motor vehicle emissions budgets for nitrogen oxides included in the Wisconsin 2003 One-Hour Ozone State Implementation Plan component for Sheboygan County, thus meeting this criterion for consistency. It should be noted that some NO_x cutpoints were relaxed in the state's inspection and maintenance program in April 2006, resulting in small increases in NO_x emissions. This only affects NO_x emissions, and off-model adjustments were made to Table C.7 to reflect these increases. This analysis assumes the same VMT and socioeconomic growth rates over the planning period as those which were assumed in the test for volatile organic compounds.

Table C.7 Forecast Nitrogen Oxide Emissions from the Transportation System in Sheboygan County Under the Year 2035 SATP/2007 - 2010 TIP and the State Implementation Plan for Air Quality: 2007, 2009, 2012, 2020, 2030 and 2035 (On a Hot Summer Weekday) Using Mobile 6.2 Emission Factors		
Year	Sheboygan County	
	State Implementation Plan (tons)*	Year 2035 SATP (tons)
2007	6.400	5.874
2009	6.400	4.954
2012	3.970	3.518
2020	3.970	1.488
2030	3.970	1.015
2035	3.970	0.987
*The Wisconsin Department of Natural Resources estimates that there were 8.540 tons of mobile sector nitrogen oxide emissions in Sheboygan County in 2000. The 2005 State Implementation Plan budget for nitrogen oxides was 7.400 tons.		
Source: Wisconsin Department of Natural Resources, 2002 and 2006; and Bay-Lake Regional Planning Commission, 2006.		

The transportation plan, the transportation improvement program and the travel simulation modeling analysis of attendant emissions fully meet the requirements for transportation plans and programs established in the July 1, 2004, *Federal Register* (40 CFR 93.122). The transportation plan includes all additions to the transportation system. All additions of arterial and collector street and highway system capacity, including widening of arterial and collector streets to provide additional traffic lanes and construction of new facilities, are incorporated in the plan.

The travel simulation modeling conducted under this conformity analysis is fully consistent with the travel simulation modeling conducted for the preparation of the *Year 2035 Sheboygan Area Transportation Plan (SATP)*. The travel simulation modeling for the conformity determination is sensitive to the added capacity and service provided by each arterial and collector route expansion or improvement, accurately reflecting its potential effect through changes in travel time and attendant route choice, mode choice, travel patterns and trip generation. The *Year 2035 SATP* and its treatment in the travel simulation modeling analysis goes beyond the federally required consideration of federally defined regionally significant projects (principal arterial routes and transit fixed guideways) in that it includes all arterial and collector facilities within Sheboygan County (including the Sheboygan metropolitan planning area). In addition, the *Year 2035 SATP* is consistent with the approved growth plan and boundaries for the metropolitan planning area, which in turn are consistent with adopted local land use plans. The *Year 2035 SATP* was designed to serve and promote implementation of current and emerging land use plans for communities within the Sheboygan metropolitan planning area.

The *Year 2035 SATP* and the *2007 – 2010 TIP* are fiscally constrained pursuant to U.S. Department of Transportation metropolitan planning regulations (23 CFR 450). The total costs of the *Year 2035 SATP* and of the *2007 – 2010 TIP*, including both capital and operating costs, were estimated and compared to existing available federal, state and local funding levels. No funding shortfalls were identified. This financial analysis of the *Year 2035 SATP* and of the *2007*

– *2010 TIP* was coordinated with, and is consistent with, the current statewide transportation system plan, *Translinks 21*, as well as with other modal state transportation plans as they have been developed.

The procedures for estimating the regional transportation plan and transportation improvement program emissions also fully meet the requirements established in the July 1, 2004, *Federal Register* (40 CFR 93.122). Specifically, the travel simulation modeling analysis for this conformity determination incorporates in the analysis all planned street and highway capacity improvements and expansion for all arterial and collector facilities. The travel simulation modeling analysis does not assume emission reductions for any transportation control measures or control programs external to the transportation system, such as changes in motor fuel volatility or vehicle inspection and maintenance programs, except with respect to such programs incorporated in the State Implementation Plan.

In addition, federal requirements for determination of conformity after January 1, 1997, have been met under this conformity determination. The travel and traffic simulation models used to estimate the transportation plan air pollutant emissions are network-based models. The models represent current professional practice, and were approved by the Sheboygan MPO Technical and Policy Advisory Committees, which include representatives from federal, state and local governments. The model estimation of trip generation is dependent on population, number of housing units, number of households, employment (including employment in the manufacturing, trade and service sectors), vehicle availability and school enrollment. Projections for these independent variables were developed as part of this planning effort, and are consistent with similar projections developed by state agencies in their planning processes, where such state-level projections exist.

This conformity analysis indicates that the *Year 2035 SATP* and the *2007 – 2010 TIP* are consistent with the mobile sector goals of the Wisconsin 2003 One-Hour Ozone State Implementation Plan component for Sheboygan County prepared by the Wisconsin Department of Natural Resources and approved by the U.S. Environmental Protection Agency.

CONSISTENCY OF THE 2007 – 2010 TIP WITH THE YEAR 2035 SATP

The same non-exempt projects appear in the *2007 – 2010 TIP* as those which appear in the *Year 2035 SATP* for the 2006 – 2007, 2008 – 2009 and 2010 – 2012 implementation periods. Non-exempt projects recommended in the *2007 – 2010 TIP* are identical in project scope to those in the *Year 2035 SATP*. In addition, the schedule of project implementation for the *2007 – 2010 TIP* is identical to that of the *Year 2035 SATP*.

The *2007 – 2010 TIP* is consistent with the *Year 2035 SATP*. The *2007 – 2010 TIP* is therefore an accurate subset of the *Year 2035 SATP* (i.e.: includes the identical projects being implemented on the identical implementation schedule of the *Year 2035 SATP*), and consequently, the regional emissions analysis for the *Year 2035 SATP* has also been utilized to demonstrate conformity of the *2007 – 2010 TIP* to the Wisconsin State Implementation Plan for Air Quality.

STATUS REPORT ON AIR QUALITY CLASSIFICATION STATUS

On August 26, 1996, Sheboygan County was redesignated from being a moderate nonattainment area to being a maintenance area for ground-level ozone under the one-hour standard. The Wisconsin Department of Natural Resources prepared (and had approved by USEPA) a maintenance plan for Sheboygan County as a condition of being designated to attainment status.

Maintenance plans typically have a ten year planning horizon; the Sheboygan County maintenance plan budgeted emissions to 2007. A nonattainment area typically remains a maintenance area for 20 years following its return to maintenance status.

During 2000, the Wisconsin Department of Natural Resources prepared a One-Hour Attainment Demonstration State Implementation Plan to bring existing nonattainment areas in the Lake Michigan basin (including six counties in southeastern Wisconsin as well as Manitowoc County) into attainment of the one-hour standard for ground-level ozone. This led to revised budgets for volatile organic compounds and for nitrogen oxides for Sheboygan County, and established new budgets for those pollutants for 2002, 2005 and 2007. The USEPA approved this One-Hour Attainment Demonstration SIP. The *2003 – 2006 TIP* and the *Year 2025 SATP* were found to conform to the One-Hour Attainment Demonstration SIP as it applied to Sheboygan County in early 2003.

A maintenance plan for all four former nonattainment counties in northeastern Wisconsin (Sheboygan, Manitowoc, Kewaunee and Door counties) was prepared by the Wisconsin Department of Natural Resources in 2002, and was submitted to USEPA in January of 2003. This maintenance plan, the Wisconsin 2003 One-Hour Ozone SIP, had three of four parts approved by USEPA in October of 2003, while a fourth part (updates to maintenance plans in Sheboygan and Kewaunee counties) was approved by USEPA shortly thereafter. The motor vehicle emission budgets in this plan were all determined to be adequate for transportation conformity purposes in a letter from USEPA dated March 25, 2003. Conformity was redemonstrated on the *Year 2025 SATP* and on the *2004 – 2007 TIP* utilizing this maintenance plan in October of 2003. Conformity was redemonstrated on the *Year 2025 SATP* and on the *2005 – 2008 TIP* utilizing this maintenance plan in November of 2004. In addition, conformity has been demonstrated on the *Year 2035 SATP* and on the *2007 – 2010 TIP* utilizing this maintenance plan. Both the maintenance plan and this conformity analysis involved use of the Mobile 6 emissions estimating model, which has been utilized in the development of mobile sector emissions budgets in the maintenance plan for the four northeastern Wisconsin counties.

On July 18, 1997, the U.S. Environmental Protection Agency established an eight-hour standard of 0.08 parts per million for ground-level ozone which would be used for air quality determinations around the United States. The Governor of the State of Wisconsin recommended designation of Sheboygan County as a nonattainment area under this new standard in the summer of 2003 based on air monitoring readings in the county. On April 15, 2004, USEPA designated Sheboygan County a nonattainment area for ground-level ozone under the new eight-hour standard for that pollutant; the effective date for that designation was June 15, 2004. WDNR has until June 15, 2007, to prepare a new SIP to attain the eight-hour standard in Sheboygan County. Demonstration of conformity of a SAFETEA-LU compliant *Year 2035 SATP* and a new *2008 – 2011 TIP* to this new SIP is expected to occur in the late summer of 2007.

CORRESPONDENCE/MEMORANDUM

DATE: August 7, 2006

FILE REF: 4516-18B

TO: Jeff Agee-Aguayo, Bay Lake Regional Planning Commission

FROM: Chris Bovee, Wisconsin Department of Natural Resources

SUBJECT: MOBILE6.2 Modeling Assumptions

This memo provides some of the modeling assumptions for the MOBILE6.2 emission factors that I provided to you on March 3, 2006. In particular, it lists those assumptions that would be too lengthy to fit in the one page table "Assumptions Associated With Mobile 6.2 Emissions Estimating Model", of which you have provided me a draft for my comments.

"Attachment 1" provides the "Vehicle Type Mixes for Vehicle-Miles Traveled" for each of the seven years of concern (2000, 2007, 2009, 2012, 2020, 2030 and 2035). For each year, mixes are shown for the 12 facility types I used in my MOBILE6.2 modeling. Since these 12 facility types in some cases differ from those used in the conformity analysis, I also provided a table in "Attachment 1" which matches the facility types in the conformity analysis with those I used to calculate the emission factors.

"Attachment 2" provides the "Vehicle Age Distributions (Proportion of Vehicles in Fleet by Age)" for each of the seven years of concern.

"Attachment 3" provides the "IM240 Cutpoints" modeled (those in effect at the time I provided you the emission factors) as well as the cutpoints currently in effect (which first took effect on April 1, 2006). These cutpoints are the pass/fail standards for tailpipe emissions for the state's motor vehicle inspection and maintenance (I/M) program. In comparison to the cutpoints modeled, the cutpoints currently in effect are more lenient for oxides of nitrogen (NOx) for some categories of vehicles. The net changes in emissions from the cutpoints currently in effect relative to those modeled are also presented in "Attachment 3".

If you have any questions, feel free to contact me at (608) 266-5542 or at christopher.bovee@dnr.state.wi.us

Attachment 1

Vehicle Type Mixes for Vehicle-Miles Traveled

Year	Facility Type	LDV	LDT1	LDT2	LDT3	LDT4	HDV2B	HDV3	HDV4	HDV5	HDV6	HDV7	HDV8A	HDV8B	HDBS	HDBT	MC	ALL
2000	Rural – Interstate	.5530	.0518	.1723	.0596	.0274	.0182	.0041	.0031	.0024	.0089	.0141	.0163	.0568	.0061	.0029	.0030	1
	Rural – Other Principal Arterial	.5760	.0550	.1830	.0630	.0290	.0216	.0028	.0021	.0016	.0060	.0080	.0090	.0319	.0048	.0022	.0040	1
	Rural – Minor Arterial	.5850	.0559	.1862	.0644	.0296	.0223	.0022	.0017	.0013	.0048	.0057	.0063	.0226	.0041	.0019	.0060	1
	Rural – Major Collector	.5860	.0559	.1861	.0637	.0293	.0219	.0022	.0017	.0013	.0047	.0057	.0062	.0223	.0014	.0006	.0110	1
	Rural – Minor Collector	.5950	.0569	.1890	.0651	.0299	.0130	.0013	.0010	.0008	.0028	.0033	.0037	.0132	.0014	.0006	.0230	1
	Rural – Local	.6030	.0566	.1884	.0651	.0299	.0103	.0010	.0008	.0006	.0022	.0027	.0029	.0105	.0014	.0006	.0240	1
	Urban – Interstate	.5410	.0573	.1907	.0658	.0302	.0149	.0036	.0027	.0021	.0077	.0125	.0144	.0501	.0027	.0013	.0030	1
	Urban – Other F-way & X-way	.6060	.0573	.1906	.0664	.0306	.0114	.0014	.0011	.0008	.0030	.0040	.0045	.0159	.0027	.0013	.0030	1
	Urban – Other Principal Art.	.5870	.0575	.1915	.0658	.0302	.0186	.0019	.0014	.0011	.0040	.0048	.0053	.0189	.0034	.0016	.0070	1
	Urban – Minor Arterial	.6010	.0557	.1853	.0637	.0293	.0190	.0019	.0014	.0011	.0041	.0049	.0054	.0192	.0027	.0013	.0040	1
	Urban – Major Collector	.6170	.0578	.1921	.0664	.0306	.0086	.0009	.0007	.0005	.0019	.0022	.0025	.0088	.0020	.0010	.0070	1
	Urban – Minor Collector	.6190	.0580	.1930	.0664	.0306	.0070	.0007	.0005	.0004	.0019	.0022	.0025	.0088	.0020	.0010	.0070	1
	Urban – Local	.4940	.0603	.2007	.0726	.0334	.0198	.0041	.0034	.0025	.0093	.0143	.0164	.0572	.0062	.0028	.0030	1
	Rural – Interstate	.5190	.0633	.2107	.0760	.0350	.0228	.0028	.0022	.0017	.0062	.0082	.0090	.0321	.0048	.0022	.0040	1
	Rural – Other Principal Arterial	.5270	.0647	.2153	.0774	.0356	.0224	.0022	.0018	.0013	.0050	.0059	.0064	.0230	.0041	.0019	.0060	1
	Rural – Minor Arterial	.5270	.0647	.2153	.0774	.0356	.0221	.0022	.0018	.0013	.0049	.0058	.0063	.0226	.0041	.0006	.0110	1
Rural – Major Collector	.5350	.0659	.2191	.0788	.0362	.0132	.0013	.0011	.0008	.0029	.0035	.0038	.0230	.0014	.0006	.0230	1	
Rural – Minor Collector	.5400	.0661	.2199	.0801	.0369	.0102	.0010	.0008	.0006	.0006	.0027	.0029	.0105	.0014	.0006	.0240	1	
Urban – Interstate	.5030	.0615	.2045	.0746	.0344	.0158	.0036	.0029	.0022	.0081	.0081	.0127	.0147	.0510	.0028	.0012	.0070	1
Urban – Other F-way & X-way	.5460	.0663	.2207	.0801	.0369	.0119	.0014	.0011	.0008	.0031	.0040	.0046	.0161	.0028	.0012	.0030	1	
Urban – Other Principal Art.	.5340	.0652	.2168	.0788	.0362	.0188	.0018	.0015	.0011	.0042	.0050	.0054	.0192	.0034	.0016	.0070	1	
Urban – Minor Arterial	.5350	.0656	.2184	.0788	.0362	.0191	.0019	.0015	.0011	.0042	.0050	.0055	.0197	.0028	.0012	.0040	1	
Urban – Major Collector	.5530	.0672	.2238	.0815	.0375	.0089	.0009	.0007	.0005	.0020	.0023	.0026	.0091	.0021	.0009	.0070	1	
Urban – Minor Collector	.5550	.0677	.2253	.0815	.0375	.0069	.0007	.0006	.0004	.0004	.0015	.0018	.0020	.0071	.0021	.0009	.0090	1
Urban – Local	.4860	.0610	.2030	.0747	.0343	.0202	.0041	.0035	.0026	.0095	.0095	.0145	.0167	.0579	.0060	.0030	.0030	1
Rural – Interstate	.5100	.0642	.2138	.0788	.0362	.0231	.0028	.0023	.0017	.0063	.0083	.0083	.0091	.0324	.0047	.0023	.0040	1
Rural – Other Principal Arterial	.5180	.0656	.2184	.0802	.0368	.0227	.0022	.0019	.0014	.0051	.0060	.0060	.0065	.0232	.0040	.0020	.0060	1
Rural – Minor Arterial	.5180	.0656	.2184	.0802	.0368	.0224	.0022	.0018	.0014	.0050	.0059	.0059	.0064	.0229	.0013	.0007	.0110	1
Rural – Major Collector	.5270	.0668	.2221	.0815	.0375	.0132	.0013	.0011	.0008	.0029	.0035	.0035	.0038	.0135	.0013	.0007	.0230	1
Rural – Minor Collector	.5320	.0670	.2231	.0822	.0378	.0105	.0010	.0009	.0006	.0023	.0028	.0028	.0030	.0108	.0013	.0007	.0240	1
Urban – Interstate	.4950	.0624	.2076	.0767	.0353	.0160	.0036	.0030	.0023	.0082	.0082	.0128	.0148	.0513	.0027	.0013	.0070	1
Urban – Other F-way & X-way	.5370	.0675	.2244	.0829	.0381	.0121	.0014	.0012	.0009	.0032	.0040	.0040	.0045	.0158	.0027	.0013	.0030	1
Urban – Other Principal Art.	.5260	.0661	.2198	.0808	.0372	.0191	.0019	.0016	.0012	.0043	.0050	.0050	.0055	.0195	.0033	.0017	.0070	1
Urban – Minor Arterial	.5260	.0665	.2215	.0815	.0375	.0194	.0019	.0016	.0012	.0043	.0051	.0051	.0056	.0199	.0027	.0013	.0040	1
Urban – Major Collector	.5440	.0684	.2276	.0843	.0387	.0089	.0009	.0007	.0005	.0020	.0023	.0023	.0026	.0091	.0020	.0010	.0070	1
Urban – Minor Collector	.5460	.0686	.2285	.0843	.0387	.0072	.0007	.0006	.0004	.0004	.0016	.0019	.0021	.0074	.0020	.0010	.0090	1
Urban – Local	.4830	.0612	.2038	.0753	.0347	.0203	.0042	.0035	.0026	.0095	.0095	.0147	.0168	.0584	.0060	.0030	.0030	1
Rural – Interstate	.5070	.0644	.2146	.0794	.0366	.0231	.0028	.0023	.0018	.0064	.0064	.0084	.0093	.0329	.0047	.0023	.0040	1
Rural – Other Principal Arterial	.5150	.0658	.2192	.0808	.0372	.0230	.0022	.0019	.0014	.0051	.0061	.0061	.0066	.0237	.0040	.0020	.0060	1
Rural – Minor Arterial	.5150	.0658	.2192	.0808	.0372	.0227	.0022	.0019	.0014	.0051	.0060	.0060	.0065	.0232	.0040	.0007	.0110	1
Rural – Major Collector	.5250	.0670	.2230	.0822	.0378	.0132	.0013	.0011	.0008	.0029	.0035	.0035	.0038	.0134	.0013	.0007	.0230	1
Rural – Minor Collector	.5300	.0672	.2238	.0829	.0381	.0105	.0010	.0009	.0006	.0023	.0028	.0028	.0030	.0109	.0013	.0007	.0240	1
Urban – Interstate	.4920	.0626	.2084	.0774	.0356	.0160	.0036	.0031	.0023	.0083	.0083	.0130	.0149	.0518	.0027	.0013	.0070	1
Urban – Other F-way & X-way	.5340	.0677	.2253	.0836	.0384	.0121	.0014	.0012	.0009	.0032	.0042	.0042	.0047	.0163	.0027	.0013	.0030	1
Urban – Other Principal Art.	.5230	.0663	.2207	.0815	.0375	.0194	.0019	.0016	.0012	.0043	.0051	.0051	.0056	.0199	.0033	.0017	.0070	1
Urban – Minor Arterial	.5240	.0667	.2223	.0822	.0378	.0194	.0019	.0016	.0012	.0043	.0051	.0051	.0056	.0199	.0027	.0013	.0040	1
Urban – Major Collector	.5420	.0686	.2284	.0849	.0391	.0089	.0009	.0007	.0005	.0020	.0023	.0023	.0026	.0091	.0020	.0010	.0070	1
Urban – Minor Collector	.5440	.0688	.2292	.0849	.0391	.0072	.0007	.0006	.0004	.0004	.0016	.0019	.0021	.0075	.0020	.0010	.0090	1

Year	Facility Type	LDV	LDT1	LDT2	LDT3	LDT4	HDV2B	HDV3	HDV4	HDV5	HDV6	HDV7	HDV8A	HDV8B	HDBS	HDBT	MC	ALL
2020	Rural - Interstate	.4770	.0610	.2031	.0753	.0347	.0205	.0044	.0037	.0028	.0101	.0156	.0179	.0619	.0060	.0030	.0030	1
	Rural - Other Principal Arterial	.5030	.0645	.2145	.0794	.0366	.0234	.0029	.0025	.0019	.0067	.0089	.0099	.0348	.0047	.0023	.0040	1
	Rural - Minor Arterial	.5120	.0659	.2190	.0808	.0372	.0240	.0023	.0020	.0015	.0054	.0064	.0069	.0245	.0040	.0020	.0060	1
	Rural - Major Collector	.5120	.0659	.2191	.0808	.0372	.0236	.0023	.0020	.0015	.0053	.0063	.0068	.0242	.0013	.0007	.0110	1
	Rural - Minor Collector	.5230	.0672	.2238	.0822	.0378	.0135	.0013	.0011	.0008	.0030	.0036	.0039	.0138	.0013	.0007	.0230	1
	Rural - Local	.5270	.0675	.2245	.0835	.0385	.0108	.0011	.0009	.0007	.0024	.0029	.0031	.0111	.0013	.0007	.0240	1
	Urban - Interstate	.4870	.0624	.2075	.0774	.0356	.0163	.0038	.0033	.0025	.0088	.0138	.0158	.0548	.0027	.0013	.0070	1
	Urban - Other F-way & X-way	.5310	.0679	.2261	.0835	.0385	.0122	.0015	.0013	.0010	.0034	.0044	.0049	.0173	.0027	.0013	.0030	1
	Urban - Other Principal Art.	.5190	.0666	.2213	.0822	.0378	.0200	.0020	.0017	.0013	.0045	.0053	.0058	.0205	.0033	.0017	.0070	1
	Urban - Minor Arterial	.5210	.0668	.2221	.0822	.0378	.0204	.0020	.0017	.0013	.0046	.0054	.0059	.0208	.0027	.0013	.0040	1
	Urban - Major Collector	.5400	.0689	.2291	.0849	.0391	.0092	.0009	.0008	.0006	.0021	.0024	.0026	.0094	.0020	.0010	.0070	1
	Urban - Minor Collector	.5410	.0691	.2299	.0856	.0394	.0076	.0007	.0006	.0005	.0017	.0020	.0022	.0077	.0020	.0010	.0090	1
	Rural - Interstate	.4760	.0610	.2030	.0753	.0347	.0206	.0045	.0038	.0029	.0102	.0157	.0179	.0624	.0060	.0030	.0030	1
	Rural - Other Principal Arterial	.5030	.0645	.2145	.0794	.0366	.0234	.0029	.0025	.0019	.0067	.0089	.0099	.0348	.0047	.0023	.0040	1
	Rural - Minor Arterial	.5120	.0659	.2190	.0808	.0372	.0240	.0024	.0020	.0015	.0054	.0064	.0069	.0245	.0040	.0020	.0060	1
Rural - Major Collector	.5120	.0659	.2191	.0808	.0372	.0236	.0023	.0020	.0015	.0053	.0063	.0068	.0242	.0013	.0007	.0110	1	
Rural - Minor Collector	.5220	.0672	.2238	.0829	.0381	.0135	.0013	.0011	.0008	.0030	.0036	.0039	.0138	.0013	.0007	.0230	1	
Rural - Local	.5270	.0675	.2245	.0835	.0385	.0108	.0011	.0009	.0007	.0024	.0029	.0031	.0111	.0013	.0007	.0240	1	
2030 and 2035	Urban - Interstate	.4860	.0624	.2076	.0774	.0356	.0162	.0039	.0033	.0025	.0089	.0139	.0159	.0554	.0027	.0013	.0070	1
	Urban - Other F-way & X-way	.5300	.0679	.2261	.0842	.0388	.0122	.0015	.0013	.0010	.0034	.0044	.0049	.0173	.0027	.0013	.0030	1
	Urban - Other Principal Art.	.5180	.0666	.2213	.0822	.0378	.0204	.0020	.0017	.0013	.0046	.0054	.0059	.0208	.0033	.0017	.0070	1
	Urban - Minor Arterial	.5210	.0668	.2221	.0822	.0378	.0204	.0020	.0017	.0013	.0046	.0054	.0059	.0208	.0027	.0013	.0040	1
	Urban - Major Collector	.5400	.0689	.2291	.0849	.0391	.0092	.0009	.0008	.0006	.0021	.0024	.0026	.0094	.0020	.0010	.0070	1
	Urban - Minor Collector	.5410	.0691	.2299	.0856	.0394	.0076	.0007	.0006	.0005	.0017	.0020	.0022	.0077	.0020	.0010	.0090	1

Vehicle Types

Abbreviation	Description
LDV	Light-Duty Vehicles (Passenger Cars)
LDT1	Light-Duty Trucks 1 (0-6,000 lbs. GVWR, 0-3,750 lbs. LVW)
LDT2	Light-Duty Trucks 2 (0-6,000 lbs. GVWR, 3,751-5,750 lbs. LVW)
LDT3	Light-Duty Trucks 3 (6,001-8,500 lbs. GVWR, 0-5,750 lbs. ALVW)
LDT4	Light-Duty Trucks 4 (6,001-8,500 lbs. GVWR, 5,751 lbs. and greater ALVW)
HDV2B	Class 2b Heavy-Duty Vehicles (8,501-10,000 lbs. GVWR)
HDV3	Class 3 Heavy-Duty Vehicles (10,001-14,000 lbs. GVWR)
HDV4	Class 4 Heavy-Duty Vehicles (14,001-16,000 lbs. GVWR)
HDV5	Class 5 Heavy-Duty Vehicles (16,001-19,500 lbs. GVWR)
HDV6	Class 6 Heavy-Duty Vehicles (19,501-26,000 lbs. GVWR)
HDV7	Class 7 Heavy-Duty Vehicles (26,001-33,000 lbs. GVWR)
HDV8A	Class 8a Heavy-Duty Vehicles (33,001-60,000 lbs. GVWR)
HDV8B	Class 8b Heavy-Duty Vehicles (>60,000 lbs. GVWR)
HDBS	School Buses
HDBT	Transit and Urban Buses
MC	Motorcycles (All)

GVWR = Gross Vehicle Weight Rating

LVW = Loaded Vehicle Weight (vehicle curb weight plus 300 pounds)

ALVW = Adjusted loaded vehicle weight (numerical average of the vehicle curb weight and the GVWR)

Matching of Facility Types

Facility Type in BLRPC Conformity Analysis	Associated Facility Type(s) Used in WDNR Emission Factor Calculations
Interstates	$0.725 * [\text{Rural} - \text{Interstate}] + 0.275 * [\text{Urban} - \text{Interstate}]$; <i>VMT weighted average</i>
Other Freeways	Urban - Other F-way & X-way
Ramps	$0.562 * [\text{Rural} - \text{Interstate}] + 0.146 * [\text{Rural} - \text{Other Principal Arterial}] + 0.213 * [\text{Urban} - \text{Interstate}] + 0.079 * [\text{Urban} - \text{Other F-way \& X-way}]$; <i>VMT weighted average</i>
Expressways	Urban - Other F-way & X-way
Urban Principal Arterials	Urban - Other Principal Art.
Urban Minor Arterials	Urban - Minor Arterial
Urban Collectors	Urban - Collector
Urban Locals	Urban - Local
Rural Principal Arterials	Rural - Other Principal Arterial
Rural Minor Arterials	Rural - Minor Arterial
Rural Major Collectors	Rural - Major Collector
Rural Minor Collectors	Rural - Minor Collector
Rural Locals	Rural - Local

BLRPC = Bay-Lake Regional Planning Commission
 WDNR = Wisconsin Department of Natural Resources
 VMT = Vehicle-Miles of Travel

Attachment 2

Vehicle Age Distributions (Proportion of Vehicles in Fleet by Age)

Year 2000

Age (Years)	LDV	LDT1	LDT2	LDT3	LDT4
1	0.058	0.075	0.075	0.073	0.073
2	0.073	0.099	0.099	0.125	0.125
3	0.061	0.095	0.095	0.086	0.086
4	0.064	0.079	0.079	0.078	0.078
5	0.067	0.081	0.081	0.072	0.072
6	0.080	0.081	0.081	0.085	0.085
7	0.072	0.082	0.082	0.077	0.077
8	0.075	0.076	0.076	0.058	0.058
9	0.068	0.059	0.059	0.053	0.053
10	0.071	0.061	0.061	0.038	0.038
11	0.061	0.046	0.046	0.045	0.045
12	0.064	0.047	0.047	0.047	0.047
13	0.047	0.035	0.035	0.034	0.034
14	0.040	0.028	0.028	0.031	0.031
15	0.028	0.018	0.018	0.022	0.022
16	0.024	0.013	0.013	0.019	0.019
17	0.014	0.008	0.008	0.012	0.012
18	0.008	0.004	0.004	0.008	0.008
19	0.004	0.002	0.002	0.003	0.003
20	0.003	0.002	0.002	0.002	0.002
21	0.002	0.001	0.001	0.002	0.002
22	0.004	0.002	0.002	0.008	0.008
23	0.002	0.001	0.001	0.007	0.007
24	0.002	0.001	0.001	0.005	0.005
25+	0.008	0.004	0.004	0.010	0.010
SUM	1	1	1	1	1
AVE. AGE	8.2	7.0	7.0	7.4	7.4

Year 2007

Age (Years)	LDV	LDT1	LDT2	LDT3	LDT4
1	0.062	0.067	0.067	0.068	0.068
2	0.081	0.088	0.088	0.089	0.089
3	0.069	0.075	0.075	0.077	0.077
4	0.067	0.072	0.072	0.074	0.074
5	0.069	0.074	0.074	0.076	0.076
6	0.078	0.085	0.085	0.086	0.086
7	0.072	0.079	0.079	0.080	0.080
8	0.074	0.074	0.074	0.071	0.071
9	0.061	0.064	0.064	0.080	0.080
10	0.061	0.073	0.073	0.065	0.065
11	0.057	0.055	0.055	0.053	0.053
12	0.060	0.057	0.057	0.050	0.050
13	0.047	0.037	0.037	0.038	0.038
14	0.038	0.034	0.034	0.031	0.031
15	0.028	0.022	0.022	0.016	0.016
16	0.024	0.016	0.016	0.014	0.014
17	0.014	0.010	0.010	0.006	0.006
18	0.008	0.005	0.005	0.005	0.005
19	0.004	0.002	0.002	0.002	0.002
20	0.004	0.002	0.002	0.002	0.002
21	0.002	0.001	0.001	0.001	0.001
22	0.005	0.003	0.003	0.003	0.003
23	0.003	0.001	0.001	0.002	0.002
24	0.003	0.001	0.001	0.002	0.002
25+	0.009	0.003	0.003	0.009	0.009
SUM	1	1	1	1	1
AVE. AGE	8.1	7.5	7.5	7.4	7.4

Year 2009

Age (Years)	LDV	LDT1	LDT2	LDT3	LDT4
1	0.063	0.065	0.065	0.065	0.065
2	0.083	0.086	0.086	0.086	0.086
3	0.071	0.074	0.074	0.074	0.074
4	0.068	0.070	0.070	0.071	0.071
5	0.070	0.072	0.072	0.073	0.073
6	0.080	0.083	0.083	0.083	0.083
7	0.074	0.077	0.077	0.077	0.077
8	0.073	0.076	0.076	0.076	0.076
9	0.063	0.065	0.065	0.066	0.066
10	0.064	0.066	0.066	0.067	0.067
11	0.058	0.055	0.055	0.051	0.051
12	0.056	0.057	0.057	0.069	0.069
13	0.041	0.047	0.047	0.041	0.041
14	0.037	0.034	0.034	0.033	0.033
15	0.027	0.024	0.024	0.021	0.021
16	0.023	0.018	0.018	0.018	0.018
17	0.013	0.011	0.011	0.010	0.010
18	0.008	0.006	0.006	0.004	0.004
19	0.004	0.002	0.002	0.002	0.002
20	0.004	0.002	0.002	0.001	0.001
21	0.002	0.001	0.001	0.001	0.001
22	0.005	0.003	0.003	0.003	0.003
23	0.002	0.001	0.001	0.001	0.001
24	0.002	0.001	0.001	0.001	0.001
25+	0.009	0.004	0.004	0.006	0.006
SUM	1	1	1	1	1
AVE. AGE	8.0	7.6	7.6	7.6	7.6

Year 2012

Age (Years)	LDV	LDT1	LDT2	LDT3	LDT4
1	0.064	0.064	0.064	0.065	0.065
2	0.083	0.085	0.085	0.085	0.085
3	0.071	0.073	0.073	0.073	0.073
4	0.069	0.070	0.070	0.070	0.070
5	0.070	0.072	0.072	0.072	0.072
6	0.080	0.082	0.082	0.082	0.082
7	0.074	0.076	0.076	0.076	0.076
8	0.073	0.075	0.075	0.075	0.075
9	0.064	0.064	0.064	0.065	0.065
10	0.065	0.066	0.066	0.066	0.066
11	0.056	0.056	0.056	0.057	0.057
12	0.058	0.058	0.058	0.059	0.059
13	0.044	0.042	0.042	0.039	0.039
14	0.035	0.035	0.035	0.043	0.043
15	0.024	0.027	0.027	0.024	0.024
16	0.022	0.020	0.020	0.019	0.019
17	0.013	0.011	0.011	0.010	0.010
18	0.008	0.006	0.006	0.006	0.006
19	0.003	0.003	0.003	0.002	0.002
20	0.003	0.003	0.003	0.002	0.002
21	0.002	0.002	0.002	0.001	0.001
22	0.005	0.003	0.003	0.002	0.002
23	0.002	0.002	0.002	0.001	0.001
24	0.003	0.001	0.001	0.001	0.001
25+	0.009	0.004	0.004	0.005	0.005
SUM	1	1	1	1	1
AVE. AGE	7.9	7.7	7.7	7.7	7.7

Year 2020

Age (Years)	LDV	LDT1	LDT2	LDT3	LDT4
1	0.064	0.064	0.064	0.064	0.064
2	0.083	0.085	0.085	0.085	0.085
3	0.072	0.072	0.072	0.072	0.072
4	0.069	0.069	0.069	0.069	0.069
5	0.071	0.071	0.071	0.071	0.071
6	0.081	0.082	0.082	0.081	0.081
7	0.075	0.075	0.075	0.075	0.075
8	0.074	0.074	0.074	0.074	0.074
9	0.064	0.064	0.064	0.064	0.064
10	0.065	0.065	0.065	0.065	0.065
11	0.056	0.056	0.056	0.056	0.056
12	0.058	0.058	0.058	0.058	0.058
13	0.043	0.043	0.043	0.043	0.043
14	0.036	0.036	0.036	0.036	0.036
15	0.025	0.025	0.025	0.025	0.025
16	0.021	0.021	0.021	0.021	0.021
17	0.012	0.012	0.012	0.012	0.012
18	0.007	0.007	0.007	0.007	0.007
19	0.003	0.003	0.003	0.003	0.003
20	0.003	0.003	0.003	0.003	0.003
21	0.002	0.002	0.002	0.002	0.002
22	0.004	0.004	0.004	0.005	0.005
23	0.002	0.002	0.002	0.002	0.002
24	0.002	0.002	0.002	0.002	0.002
25+	0.008	0.005	0.005	0.005	0.005
SUM	1	1	1	1	1
AVE. AGE	7.9	7.8	7.8	7.8	7.8

Years 2030 and 2035

Age (Years)	LDV	LDT1	LDT2	LDT3	LDT4
1	0.064	0.064	0.064	0.064	0.064
2	0.084	0.084	0.084	0.084	0.084
3	0.072	0.072	0.072	0.072	0.072
4	0.069	0.069	0.069	0.069	0.069
5	0.071	0.071	0.071	0.071	0.071
6	0.081	0.081	0.081	0.081	0.081
7	0.075	0.075	0.075	0.075	0.075
8	0.074	0.074	0.074	0.074	0.074
9	0.064	0.064	0.064	0.064	0.064
10	0.065	0.065	0.065	0.065	0.065
11	0.056	0.056	0.056	0.056	0.056
12	0.058	0.058	0.058	0.058	0.058
13	0.043	0.043	0.043	0.043	0.043
14	0.036	0.036	0.036	0.036	0.036
15	0.025	0.025	0.025	0.025	0.025
16	0.021	0.021	0.021	0.021	0.021
17	0.012	0.012	0.012	0.012	0.012
18	0.007	0.007	0.007	0.007	0.007
19	0.003	0.003	0.003	0.003	0.003
20	0.003	0.003	0.003	0.003	0.003
21	0.002	0.002	0.002	0.002	0.002
22	0.004	0.004	0.004	0.004	0.004
23	0.002	0.002	0.002	0.002	0.002
24	0.002	0.002	0.002	0.002	0.002
25+	0.007	0.007	0.007	0.007	0.007
SUM	1	1	1	1	1
AVE. AGE	7.8	7.8	7.8	7.8	7.8

Vehicle Types

Abbreviation	Description
LDV	Light-Duty Vehicles (Passenger Cars)
LDT1	Light-Duty Trucks 1 (0-6,000 lbs. GVWR, 0-3,750 lbs. LVW)
LDT2	Light-Duty Trucks 2 (0-6,000 lbs. GVWR, 3,751-5,750 lbs. LVW)
LDT3	Light-Duty Trucks 3 (6,001-8,500 lbs. GVWR, 0-5,750 lbs. ALVW)
LDT4	Light-Duty Trucks 4 (6,001-8,500 lbs. GVWR, 5,751 lbs. and greater ALVW)

GVWR = Gross Vehicle Weight Rating

LVW = Loaded Vehicle Weight (vehicle curb weight plus 300 pounds)

ALVW = Adjusted loaded vehicle weight (numerical average of the vehicle curb weight and the GVWR)

NOTE: The MOBILE6.2 default vehicle age distributions were used for the remaining 11 vehicle types. These vehicle types comprise heavy-duty vehicles, buses, and motorcycles.

Attachment 3

IM240 Cutpoints

Units: Grams per Mile

A. Cutpoints Used In MOBILE6.2 Modeling

Model Year	LDGV			LDGT1 & LDGT2			LDGT3 & LDGT4			HDGV2B		
	HC	CO	NOx*	HC	CO	NOx*	HC	CO	NOx*	HC	CO	NOx*
2005 and newer	0.8	15.0	2.0	0.8	15.0	2.0	0.8	15.0	2.0	2.0	30.0	4.0
2004	0.8	15.0	2.0	0.8	15.0	2.0	0.8	15.0	2.0	2.0	30.0	4.0
2003	0.8	15.0	2.0	0.8	15.0	2.0	0.8	15.0	2.0	2.0	30.0	4.0
2002	0.8	15.0	2.0	0.8	15.0	2.0	0.8	15.0	2.0	2.0	30.0	4.0
2001	0.8	15.0	2.0	0.8	15.0	2.0	0.8	15.0	2.0	2.0	30.0	4.0
2000	0.8	15.0	2.0	0.8	15.0	2.0	0.8	15.0	2.0	2.0	30.0	4.0
1999	0.8	15.0	2.0	0.8	15.0	2.0	0.8	15.0	2.0	2.0	30.0	4.0
1998	0.8	15.0	2.0	0.8	15.0	2.0	0.8	15.0	2.0	2.0	30.0	4.0
1997	0.8	15.0	2.0	0.8	15.0	2.0	0.8	15.0	2.0	2.0	40.0	5.0
1996	0.8	15.0	2.0	0.8	15.0	2.0	1.6	40.0	3.5	2.0	40.0	5.0
1995	0.8	15.0	2.0	1.6	40.0	2.5	1.6	40.0	3.5	2.0	40.0	5.0
1994	0.8	15.0	2.0	1.6	40.0	2.5	1.6	40.0	3.5	2.0	40.0	5.0
1993	0.8	15.0	2.0	1.6	40.0	2.5	1.6	40.0	3.5	2.0	40.0	5.0
1992	0.8	15.0	2.0	1.6	40.0	2.5	1.6	40.0	3.5	2.0	40.0	5.0
1991	0.8	15.0	2.0	1.6	40.0	2.5	1.6	40.0	3.5	2.0	40.0	5.0
1990	0.8	15.0	2.0	1.6	40.0	2.5	1.6	40.0	3.5	2.0	40.0	6.0
1989	0.8	15.0	2.0	1.6	40.0	2.5	1.6	40.0	3.5	2.0	40.0	6.0
1988	0.8	15.0	2.0	1.6	40.0	2.5	1.6	40.0	3.5	2.0	40.0	6.0
1987	0.8	15.0	2.0	1.6	40.0	4.5	1.6	40.0	4.5	2.0	40.0	6.0
1986	2.0	30.0	3.0	3.2	70.0	4.5	3.2	70.0	4.5	5.0	80.0	8.0
1985	2.0	30.0	3.0	3.2	70.0	4.5	3.2	70.0	4.5	5.0	80.0	8.0
1984	2.0	30.0	3.0	3.2	70.0	4.5	3.2	70.0	4.5	7.5	100.0	8.0
1983	2.0	30.0	3.0	3.4	70.0	4.5	3.4	70.0	4.5	7.5	100.0	8.0
1982	2.0	60.0	3.0	3.4	70.0	4.5	3.4	70.0	4.5	7.5	100.0	8.0
1981	2.0	60.0	3.0	3.4	70.0	4.5	3.4	70.0	4.5	7.5	100.0	8.0
1980	2.0	60.0	4.0	3.4	70.0	4.5	3.4	70.0	4.5	7.5	100.0	8.0
1979	3.0	65.0	4.0	3.4	70.0	4.5	3.4	70.0	4.5	7.5	100.0	8.0
1978	3.0	65.0	4.0	4.0	80.0	6.0	4.0	80.0	6.0	10.0	150.0	10.0
1977	3.0	65.0	4.0	4.0	80.0	6.0	4.0	80.0	6.0	10.0	150.0	10.0
1976**	3.0	65.0	6.0	4.0	80.0	6.0	4.0	80.0	6.0	10.0	150.0	10.0

*Since the NOx cutpoints were not enforced until May 2001, no NOx cutpoints were used for the modeling of calendar year 2000.

** Even though the vehicle inspection program tests vehicles back to model year 1968, cutpoints are not specified before model year 1976, since MOBILE6.2 accepts cutpoint values for only the 25 most recent model years. Thus, since 2000 was the earliest calendar year modeled, the oldest cutpoints needed were those for model year 1976.

B. Current Wisconsin Inspection and Maintenance Program Cutpoints

Model Year	LDGV			LDGT1			LDGT2			LDGT3			LDGT4			HDGV2B		
	HC	CO	NOx	HC	CO	NOx	HC	CO	NOx	HC	CO	NOx	HC	CO	NOx	HC	CO	NOx
2005 and newer	0.6	10.0	1.5	0.6	10.0	1.5	0.8	13.0	1.8	0.8	13.0	1.8	0.8	15.0	2.0	1.0	30.0	3.0
2004	0.6	10.0	1.5	0.6	10.0	1.5	0.8	13.0	1.8	0.8	13.0	1.8	0.8	15.0	2.0	2.0	30.0	7.0
2003	0.6	10.0	1.5	0.6	10.0	1.5	0.8	13.0	1.8	0.8	13.0	1.8	0.8	15.0	2.0	2.0	30.0	7.0
2002	0.6	10.0	1.5	0.6	10.0	1.5	0.8	13.0	1.8	0.8	13.0	1.8	0.8	15.0	2.0	2.0	30.0	7.0
2001	0.6	10.0	1.5	0.6	10.0	1.5	0.8	13.0	1.8	0.8	13.0	1.8	0.8	15.0	2.0	2.0	30.0	7.0
2000	0.6	10.0	1.5	0.6	10.0	1.5	0.8	13.0	1.8	0.8	13.0	1.8	0.8	15.0	2.0	2.0	30.0	7.0
1999	0.6	10.0	1.5	0.6	10.0	1.5	0.8	13.0	1.8	0.8	13.0	1.8	0.8	15.0	2.0	2.0	30.0	7.0
1998	0.6	10.0	1.5	0.6	10.0	1.5	0.8	13.0	1.8	0.8	13.0	1.8	0.8	15.0	2.0	2.0	30.0	7.0
1997	0.6	10.0	1.5	0.6	10.0	1.5	0.8	13.0	1.8	0.8	13.0	1.8	0.8	15.0	2.0	2.0	40.0	9.0
1996	0.6	10.0	1.5	0.6	10.0	1.5	0.8	13.0	1.8	1.6	40.0	3.5	1.6	40.0	3.5	2.0	40.0	9.0
1995	0.8	15.0	2.0	1.6	40.0	2.5	1.6	40.0	3.5	1.6	40.0	3.5	1.6	40.0	3.5	2.0	40.0	9.0
1994	0.8	15.0	2.0	1.6	40.0	2.5	1.6	40.0	3.5	1.6	40.0	3.5	1.6	40.0	3.5	2.0	40.0	9.0
1993	0.8	15.0	2.0	1.6	40.0	2.5	1.6	40.0	3.5	1.6	40.0	3.5	1.6	40.0	3.5	2.0	40.0	9.0
1992	0.8	15.0	2.0	1.6	40.0	2.5	1.6	40.0	3.5	1.6	40.0	3.5	1.6	40.0	3.5	2.0	40.0	9.0
1991	0.8	15.0	2.0	1.6	40.0	2.5	1.6	40.0	3.5	1.6	40.0	3.5	1.6	40.0	3.5	2.0	40.0	9.0
1990	0.8	15.0	2.0	1.6	40.0	2.5	1.6	40.0	3.5	1.6	40.0	3.5	1.6	40.0	3.5	2.0	40.0	11.0
1989	0.8	15.0	2.0	1.6	40.0	2.5	1.6	40.0	3.5	1.6	40.0	5.5	1.6	40.0	5.5	2.0	40.0	11.0
1988	0.8	15.0	2.0	1.6	40.0	2.5	1.6	40.0	3.5	1.6	40.0	5.5	1.6	40.0	5.5	2.0	40.0	11.0
1987	0.8	15.0	2.0	1.6	40.0	5.5	1.6	40.0	5.5	1.6	40.0	5.5	1.6	40.0	5.5	2.0	40.0	11.0
1986	2.0	30.0	3.0	3.2	70.0	5.5	3.2	70.0	5.5	3.2	70.0	5.5	3.2	70.0	5.5	5.0	80.0	16.0
1985	2.0	30.0	3.0	3.2	70.0	5.5	3.2	70.0	5.5	3.2	70.0	5.5	3.2	70.0	5.5	5.0	80.0	16.0
1984	2.0	30.0	3.0	3.2	70.0	5.5	3.2	70.0	5.5	3.2	70.0	5.5	3.2	70.0	5.5	7.5	100.	16.0
1983	2.0	30.0	3.0	3.4	70.0	5.5	3.4	70.0	5.5	3.4	70.0	5.5	3.4	70.0	5.5	7.5	100.	16.0
1982	2.0	60.0	3.0	3.4	70.0	5.5	3.4	70.0	5.5	3.4	70.0	5.5	3.4	70.0	5.5	7.5	100.	16.0
1981	2.0	60.0	3.0	3.4	70.0	5.5	3.4	70.0	5.5	3.4	70.0	5.5	3.4	70.0	5.5	7.5	100.	16.0
1980	2.0	60.0	5.0	3.4	70.0	5.5	3.4	70.0	5.5	3.4	70.0	5.5	3.4	70.0	5.5	7.5	100.	16.0
1979	3.0	65.0	5.0	3.4	70.0	5.5	3.4	70.0	5.5	3.4	70.0	5.5	3.4	70.0	5.5	7.5	100.	16.0
1978	3.0	65.0	5.0	4.0	80.0	6.0	4.0	80.0	6.0	4.0	80.0	6.0	4.0	80.0	6.0	10.0	150.	20.0
1977	3.0	65.0	5.0	4.0	80.0	6.0	4.0	80.0	6.0	4.0	80.0	6.0	4.0	80.0	6.0	10.0	150.	20.0
1976	3.0	65.0	6.0	4.0	80.0	6.0	4.0	80.0	6.0	4.0	80.0	6.0	4.0	80.0	6.0	10.0	150.	20.0
1975	3.0	65.0	6.0	4.0	80.0	6.0	4.0	80.0	6.0	4.0	80.0	6.0	4.0	80.0	6.0	10.0	150.	20.0
1974	7.0	120.	6.0	7.0	120.	6.0	7.0	120.	6.0	7.0	120.	6.0	7.0	120.	6.0	10.0	150.	20.0
1973	7.0	120.	6.0	7.0	120.	6.0	7.0	120.	6.0	7.0	120.	6.0	7.0	120.	6.0	10.0	175.	20.0
1972	7.0	120.	7.0	7.0	120.	7.0	7.0	120.	7.0	7.0	120.	7.0	7.0	120.	7.0	10.0	175.	20.0
1971	7.0	120.	7.0	7.0	120.	7.0	7.0	120.	7.0	7.0	120.	7.0	7.0	120.	7.0	10.0	175.	20.0
1970	7.0	120.	7.0	7.0	120.	7.0	7.0	120.	7.0	7.0	120.	7.0	7.0	120.	7.0	10.0	175.	20.0
1969	7.0	120.	7.0	7.0	120.	7.0	7.0	120.	7.0	7.0	120.	7.0	7.0	120.	7.0	20.0	200.	30.0
1968	7.0	120.	7.0	7.0	120.	7.0	7.0	120.	7.0	7.0	120.	7.0	7.0	120.	7.0	20.0	200.	30.0

- NOTES: 1. These cutpoints took effect April 1, 2006.
 2. The cutpoints for model year 1996 and newer LDGV's and LDGT's have only a negligible effect on emissions since most of these vehicles are not subject to these cutpoints, but rather are subject to an on-board diagnostic check.
 3. In comparison to the cutpoints used in the MOBILE6.2 modeling, these current cutpoints change emissions in Sheboygan County as follows:

**Change in Emissions in Sheboygan County
 Resulting from Revision to I/M Program Cutpoints
 Which Took Effect April 1, 2006.
 (Units: Tons Per Summer Weekday)**

Year	VOC	NOx
2000	N/A	N/A
2007	0.000	+0.005
2009	0.000	+0.003
2012	0.000	+0.001
2020	0.000	0.000
2030	0.000	0.000
2035	0.000	0.000

Vehicle Types

Abbreviation	Description
LDGV	Light-Duty Gasoline-powered Vehicles (Passenger Cars)
LDGT1	Light-Duty Gasoline-powered Trucks 1 (0-6,000 lbs. GVWR, 0-3,750 lbs. LVW)
LDGT2	Light-Duty Gasoline-powered Trucks 2 (0-6,000 lbs. GVWR, 3,751-5,750 lbs. LVW)
LDGT3	Light-Duty Gasoline-powered Trucks 3 (6,001-8,500 lbs. GVWR, 0-5,750 lbs. ALVW)
LDGT4	Light-Duty Gasoline-powered Trucks 4 (6,001-8,500 lbs. GVWR, 5,751 lbs. and greater ALVW)
HDGV2B	Class 2B Heavy-Duty Gasoline-powered Vehicles (8,501-10,000 lbs. GVWR)

GVWR = Gross Vehicle Weight Rating

LVW = Loaded Vehicle Weight (vehicle curb weight plus 300 pounds)

ALVW = Adjusted loaded vehicle weight (numerical average of the vehicle curb weight and the GVWR)

APPENDIX M
ARCHITECTURE/HISTORY SURVEY FORM

ARCHITECTURE/HISTORY SURVEY FORM

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1. PROJECT INFORMATION

Project ID	County
1440-13/15-00	Fond du Lac / Sheboygan
USGS Topographic Map Fond du Lac 7.5, St. Peter 7.5, St. Cloud 7.5, Elkhart Lake 7.5	
Prepared By Timothy F. Heggland	Survey Date September 2002/June 2006

2. RECOMMENDATIONS
(Based on the work described in this report, the following steps are recommended to complete the Section 106 Review. Check the appropriate choice(s) below.)

No potentially eligible buildings/structures identified. Section 106 Review is complete.

Potentially eligible buildings/structures identified. List and specify Criteria A, B, C, D:

- | | | |
|-------------------|------------------------------------|----------------|
| N6568 Hickory Rd. | Farm Complex | Criterion C |
| W7710 Spruce St. | House | Criterion C |
| 255 CTH K | St. Mary's Springs Academy Complex | Criteria A & C |

Upon further review of project scope, no further work is required (explain):

Determinations of Eligibility are recommended for the following properties (list):

- | | | |
|-----------|------------------------------------|----------------|
| 255 CTH K | St. Mary's Springs Academy Complex | Criteria A & C |
|-----------|------------------------------------|----------------|

ARCHITECTURE/HISTORY SURVEY FORM

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Wisconsin Department of Transportation
Page 2**3. PREVIOUSLY IDENTIFIED SITES AND SURVEYS WITHIN THE AREA OF POTENTIAL EFFECTS (APE)**
(Indicate if any properties within the APE are included in the following categories, attach additional sheets if necessary)

Sites listed on the National and State Registers

N/A

Locally designated historic sites

N/A

Properties previously determined eligible for the National Register

N/A

Properties included in the Wisconsin Inventory of Historic Places

N6601 Tower Rd.
 W2090 STH 23
 W1985 STH 23
 N6411 CTH G
 W1769 Poplar Rd.
 N3679 CTH W
 W2889 Poplar Rd.
 N6364 Townline Rd.
 W3213 Artesian Rd.
 255 CTH K

Previous surveys in the project area

N/A

4. PROJECT DESCRIPTION AND AREA OF POTENTIAL EFFECTS (APE)
(Briefly describe the project and explain why surveyed properties are in the APE)

The project description states that the project consists of the expansion of the current two-lane portion of STH 23 that straddles the border between Fond du Lac and Sheboygan counties into a 4-lane divided highway that will be in conformance with and will complete the 4-lane divided highway portions that already exist at both the east and west ends of this two-lane section of STH 23. Proposed alternate corridors provide both expressway and freeway facilities. The project description further states that all 5 alternates as shown on a map provided by WisDOT need archaeological and historical surveys for 300 feet on either side of the alignment centerline or the existing centerline for Alternate A. The project's western terminus is the intersection of STH 23 with CTH K in Fond du Lac County and its eastern terminus is the intersection of STH 23 with Pioneer Rd. in Sheboygan County.

The multiple APEs for this project were therefore considered to be 600-foot-wide corridors centered on the 19.1-mile-long existing two-lane alignment of STH 23 (Alternate A) and on each of the four alternate routes (Alternates B, C, D, and E) as shown on the submitted maps.

5. AREA SURVEYED AND RESEARCHED
(Research may extend beyond the APE in order to provide an appropriate historic context for potentially eligible properties identified within the APE. If the geographic scope of research was larger than the APE for this project, please explain.)

The area surveyed consisted of all properties adjacent to and fronting on the existing two-lane portion of STH 23 within and immediately adjacent to a 600-foot wide corridor whose centerline corresponds to the centerline of the existing STH 23 alignment. Similar corridors were also surveyed for the four alternate corridors as well and the surveyed properties are all located within these five 600-foot-wide corridors. However, since the precise locations of the four new alternate corridors are not set, all the historic

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resources visible from the centerlines of alternate routes B, C, D, and E were also evaluated as well, not just those within the 600-foot-wide corridors.

Most of these properties were quickly eliminated from consideration after the initial visual survey found that they were either less than 50 years old, were of only ordinary design and history, or were too altered to warrant further consideration. For the same reasons, no part of the project area has potential for being considered as part of a National Register of Historic Places (NRHP) historic district. Ten properties within the project area have been previously surveyed and one of these, St. Mary's Springs Academy Complex at 255 CTH K, is believed to have potential for listing in the NRHP. Twelve new historic properties that had not been surveyed in the past were also surveyed as a result of this project and two of these also have potential for being listed in the NRHP.

Neither of the two newly surveyed properties that have NRHP potential are likely to be effected by this project. Consequently, no further research is indicated at this time and the only action taken was to produce new survey cards for them, for nine of the previously surveyed properties, and for the remaining ten previously unsurveyed properties. The tenth previously unsurveyed property, however, the St. Mary's Springs Academy Complex, does have the potential for being affected by the project and for this reason, a DOE was prepared for the Complex and constitutes a part of this submittal.

6. PHYSICAL SETTING

(Describe in brief the physical setting of any potentially eligible properties identified during the survey. The description should include a discussion of the following issues as they relate to the findings of the survey: existing and historical land uses, density of development, settlement patterns, and general types of properties identified.)

The surveyed properties are all situated within the boundaries of the Towns of Empire and Forest in Fond du Lac County, and the Town of Greenbush in Sheboygan County. Historic plat maps and other records show that land within and surrounding the project area has historically been given over primarily to the pursuit of agriculture. Today, however, the growth of the cities of Sheboygan and Plymouth and also the Village of Kohler in Sheboygan County and the city of Fond du Lac in Fond du Lac County, all of which are located near either the east or the west ends of the project area, coupled with the previous transformation of STH 23 into a 4-lane divided highway east and west of the project area, have all contributed to the creation of numerous mostly small residential subdivisions on historic farmland that borders STH 23. As a result, the rolling countryside that characterizes the project area and the areas bordering it are now a mixture of farmed and vacant open land and modern residential subdivisions, a mixture that is especially noticeable at the east and west ends of the project area.

7. BIBLIOGRAPHY

(List sources consulted. Add additional sources if necessary.)

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Sheboygan County

- Map of Sheboygan County.* Milwaukee: G. A. Randall & C. Palmer, 1862.

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Illustrated Historical Atlas of Sheboygan County. Oshkosh: G. A. Randall & Co., 1875.
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Farm and Land Ownership of Sheboygan County. Milwaukee: Marathon Map Service, 1951.

ATTACHMENT CHECKLIST

1. Section 106 Review Form (Form ED889)
2. USGS or city map with surveyed properties identified by map code
3. Inventory cards with photographs attached
4. Negatives

8. SURVEY RESULTS

(For each potentially eligible property in the APE, provide a brief description, property-specific historic context, areas of significance and applicable criteria, and a recommendation on eligibility for the National Register. List each property by address, map code, and NRHP evaluation. If potential historic districts are identified, provide a recommendation on eligibility, summary of types of resources contained therein, statement of significance, and applicable criteria. Attach additional sheets if necessary.)

Address	Map Code	NRHP Evaluation
W182 STH 23	12/24	Not Eligible

Description and Statement of Significance

This previously surveyed Italianate Style farmhouse (AHI #59475) is clad in orange brick and rests on a cut stone foundation. Although the house still retains its original entrance porch and doors, all its original segmental-arched windows have since been replaced by modern windows, a new triple window group placed to the left of the entrance door has replaced the original window in this location, and modern shutters have been placed on either side of each window.

Historic Fond du Lac County plat books suggest that this farmstead was owned by G. N. Shoemaker during the period when this house was probably built. The house, however, is only a representative example of the Italianate style and it has been considerably altered over the years and is not considered to be eligible for the NRHP

Address	Map Code	NRHP Evaluation
N6001 Tower Rd.	12/25	Not Eligible

Description and Statement of Significance

This unusual, previously surveyed former farmhouse (AHI # 59477) is clad in orange brick and rests on a rubble stone foundation. Historic Fond du Lac County plat books suggest that this farmstead was owned by the Rosenbaum family during the period when this house was probably built and it is now the only surviving remnant of the original farmstead that the house was associated with. This house has a one-and-one-half story-tall Side Gable form main block that has a symmetrical west-facing five-bay-wide main façade. A smaller one-story-tall Side Gable form rear wing is now attached to the main block by a large one-and-one-half story-tall gable roofed hyphen that may be original to the house but which could also be a somewhat later addition. There is also a brick-clad shed-roofed extension attached to the north side of the hyphen that now completely fills the space between the front and rear blocks and this one-story extension may have been an original part of the hyphen or it may have been a later addition to it. Both the front and rear blocks also have segmental-arched window and door openings and these contain six-over-six light windows that may be either original to the house or modern replacements.

The historic portions of this house are in very good condition and they appear to have been both well cared for and recently restored. Never-the-less, a new front porch has been added across much of the width of the main block's principal façade and one or more modern additions have also been added to the rear of the house. Consequently, this house is now believed to have been too altered for listing in the NRHP.

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Address	Map Code	NRHP Evaluation
W2090 STH 23	11/18	Not Eligible

Description and Statement of Significance

The original part of this Gothic Revival style cream brick-clad church was previously surveyed (AHI # 58888) and it was built in 1877 according to a date stone and was originally known as the Evangelical Lutheran St. Paul's Kirche. In 1960, however, a Modern Movement style school wing was added to the rear of the church (date stone), a modern entrance vestibule was added to the front of the church between 1999 and 2000, and an addition to the school is currently (2004) under construction. Consequently, the church, which is now known as St. Paul's Lutheran Church, no longer retains sufficient integrity to be listed in the NRHP.

Address	Map Code	NRHP Evaluation
W1985 STH 23	11/17	Not Eligible

Description and Statement of Significance

This previously surveyed (AHI# 58887) Greek Revival style farmhouse was originally clad in clapboard but it has since been resided in vinyl, several of its original windows have now been replaced with modern units, additional wings have been built, and it does not retain sufficient integrity to support a listing in the NRHP.

Address	Map Code	NRHP Evaluation
W1982 STH 23	0/0	Not Eligible

Description and Statement of Significance

This intact American Foursquare style farmhouse (AHI# 122907) has a rock-faced concrete block foundation and it is sided in clapboards. The house has all the typical features of its style including a full-width open front porch whose roof is supported by columns resting on rock-faced concrete block pedestals. Historic Fond du Lac County plat books also suggest that this farmstead was owned by Otto Pfeifer during the period when this house was probably built. Never-the-less, while still in original condition, the house is at best just a typical example of this style and its associated farmstead now contains only a few of the smaller buildings that were historically associated with it. Consequently, it is believed that this house does not have sufficient historic or architectural significance to support a listing in the NRHP.

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Address	Map Code	NRHP Evaluation
W1398 STH 23	0/0	Not Eligible

Description and Statement of Significance

This small orange brick-clad one-and-one-half story-tall rectilinear plan Colonial Revival style house (AHI# 121194) was probably built between 1925 and 1945 and it is in very good, highly original condition today. Never-the-less, this house is only a very typical representative of the smaller examples of this style built in Wisconsin and elsewhere throughout the country between the two world wars and it is of minimal architectural significance and it is believed that this house does not have sufficient historic or architectural significance to support a listing in the NRHP.

Address	Map Code	NRHP Evaluation
W151 STH 23	0/0	Not Eligible

Description and Statement of Significance

This American Foursquare style farmhouse (AHI# 122909) has a rubble stone foundation and it is sided in clapboards and one of its original barns still survives in an altered state. The house is a typical example of the style and has such typical features as a full-width open front porch. This porch, however, now has a roof that is supported by modern wood posts and all the house's original windows have now been replaced by modern ones having snap-in muntins. Consequently, it is believed that this house does not have sufficient integrity or sufficient historic or architectural significance to support a listing in the NRHP.

Address	Map Code	NRHP Evaluation
N6568 Hickory Rd	0/0	Potentially Eligible

Description and Statement of Significance

This large two-story-tall American Foursquare style farmhouse (AHI# 122940) has a rectilinear plan, clapboard-clad exterior walls, it appears to retain its original windows and it has a broad one-story open veranda that spans all of its main east-facing façade and half of the south-facing side elevation. The house is in excellent, recently restored or renovated condition and appears to displays a very high degree of integrity. Historic Fond du Lac County plat books suggest that this house was owned by the Sipple family when it was constructed and the historic farmstead buildings that were historically associated with the house are also still extant and highly intact, although these farm buildings are in much worse condition than the house and appear to be unused at the present time. The excellent condition of the house and the retention of its historic associated farmstead buildings suggest that this farmstead complex may be eligible for listing in the NRHP for both its architectural and historic significance.

Please note, however, that the surveyor did not get close enough to the house to see if its siding is clapboard or vinyl. This, and questions about the design of the veranda, which may represent a restoration of the original but may also represent a modern addition and enlargement of the original, are both questions that need to be answered before a preliminary assessment of its NR potential can be made.

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Address	Map Code	NRHP Evaluation
N6411 CTH G	12/09	Not Eligible

Description and Statement of Significance

Located on the NE corner of the intersection of STH 23 and CTH G, the former Elder Grove School was previously surveyed (AHI# 58890) and it was originally a Front Gable form one or two room school house that had a rubble stone foundation, clapboard-clad walls, and was one-story-tall. Since the 1974 survey, however, the building has been converted into a single family house and in the process has been raised an additional story, has had wings added to both ends, and has been resided in vinyl clapboards. Consequently, the building is no longer recognizable as an historic building and it is not eligible for listing in the NRHP.

Address	Map Code	NRHP Evaluation
W9204 STH 23	0/0	Not Eligible

Description and Statement of Significance

This intact American Foursquare style farmhouse (AHI# 122910) has a rubblestone-clad foundation and it is sided in clapboards and has a standing seam metal roof. The house has all the typical features of its style including a full-width open front porch whose roof is supported by columns resting on brick pedestals and historic Sheboygan County plat books suggest that this farmstead was owned by John Limberg during the period when this house was probably built. Never-the-less, while still in original condition, the house is at best just a typical example of this style and while several of the associated farm outbuildings that were historically associated with it are also still extant it is believed that this house does not have sufficient historic or architectural significance to support a listing in the NRHP.

Address	Map Code	NRHP Evaluation
W8830 STH 23	0/0	Not Eligible

Description and Statement of Significance

This simple, quite intact two-story-tall Queen Anne style former farmhouse (AHI# 122911) has a cruciform plan, clapboard-clad walls, gable ends clad with diamond pattern wood shingles, and a multi-gable roof that is covered in standing seam metal. The farm buildings that were once associated with this house have now been mostly demolished and while the house still retains integrity it is believed it does not have sufficient historic or architectural significance to support a listing in the NRHP.

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Address	Map Code	NRHP Evaluation
W8255 STH 23	0/0	Not Eligible

Description and Statement of Significance

This simple, quite intact and quite large two-and-one-half story-tall Queen Anne style former farmhouse (AHI# 122912) has a cruciform plan and rock-faced concrete block-clad walls, and historic Sheboygan County plat books suggest that this farmstead was owned by Carl Reiss during the period when this house was probably built. While not unique, Queen Anne style houses clad primarily in concrete block are unusual and this was the only example found in this survey. Never-the-less, the design of the house is very simple despite its size, and all the house's gable ends and two small first story ells that flank the rear of the first story have now been resided in wide steel or aluminum clapboards. Integrity is of great importance to any historic structure when evaluating its NRHP potential and this is even more true when evaluating a simple example of an architectural style or vernacular form. Consequently, it is believed that this house no longer retains sufficient historic or architectural significance to support a listing in the NRHP and its potential significance is further diminished by the fact that almost none of the original farm buildings associated with the house have survived.

Address	Map Code	NRHP Evaluation
W7432 Plank Rd	0/0	Not Eligible

Description and Statement of Significance

This rectilinear plan Side Gable form pioneer log cabin (AHI# 122913) was restored and then reassembled on this site between 1995 and 2002 and it is located next to the parking lot that serves the Old Plank Road Trail as a shelter house. The building has walls composed of square hewn logs held together with dove(c)tail notches and its gable roof is clad in thin wood shakes. The building is now in excellent condition. Never-the-less, no windows are installed, the building has a poured concrete floor, and it was moved to this location from an unidentified site. Consequently, it is not believed to retain sufficient integrity either of location or construction, to warrant being listed in the NRHP.

Address	Map Code	NRHP Evaluation
N6660 W CTH A	0/0	Not Eligible

Description and Statement of Significance

This simple, quite intact two-story-tall Queen Anne style former farmhouse (AHI# 122914) has a cruciform plan, stucco-clad foundation walls, clapboard-clad exterior walls, gable ends clad with common butt end wood shingles laid in staggered courses, and a multi-gable roof that is covered in asphalt shingles. Some of the historic farm buildings that are associated with this house are still extant, others have been demolished and while the house still retains integrity it is believed that it does not have sufficient historic or architectural significance to support a listing in the NRHP.

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Address	Map Code	NRHP Evaluation
W7710 Spruce St. (Village of Greenbush)	0/0	Potentially Eligible

Description and Statement of Significance

This large two-and-one-half story-tall Shingle-style influenced Queen Anne style house (AHI# 122915) is located along the north edge of the Village of Greenbush and it sits on a large corner lot whose east edge is bordered by a low fieldstone wall that is believed to be original to the property. The house has an irregular plan, clapboard-clad exterior walls and gable ends that are clad in wood shingles and a broad one-story open veranda spans the width of its east-facing side elevation. Also much in evidence are several large brick chimney masses that feature corbelled and paneled decoration and the house is in good overall shape and displays a quite high degree of integrity. While nothing is known of the history of this house, which is one of the largest if not the largest house in the Village, its size, design quality, and somewhat informal design all suggest that it was built as a summer home for owners who lived elsewhere the rest of the year. If true, then this house is probably best evaluated within the historic resort context of nearby Elkhart Lake and its size, design, and relatively high degree of integrity all suggest that this house has potential for being listed in the NRHP on the basis of its architectural significance and possibly for its historic significance as well.

Address	Map Code	NRHP Evaluation
W1518 CTH TTT	0/0	Not Eligible

Description and Statement of Significance

This very simple American Foursquare style farmhouse (AHI# 122941) is sided in stucco and some of its original outbuildings still survive, although in an altered state. The house is a typical example of this style and has such features as a hip roof, a nearly symmetrical main façade, and a full-width open front porch. This porch, however, now has a roof that is supported by modern wood and the design of the house is ordinary at best. Consequently, it is believed that this house has neither sufficient integrity nor sufficient historic or architectural significance to support a listing in the NRHP.

Address	Map Code	NRHP Evaluation
W1769 Poplar Rd	12/11	Not Eligible

Description and Statement of Significance

This previously surveyed (AHI# 58889) Gable Ell form farmhouse was originally clad in clapboard but it has since been resided in vinyl, its original windows have now been replaced with modern units, and it does not retain sufficient integrity to support a listing in the NRHP.

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Address	Map Code	NRHP Evaluation
N3679 CTH W	11/12	Not Eligible

Description and Statement of Significance

This previously surveyed (AHI# 58894) Queen Anne style farmhouse was clad in stucco when surveyed in 1974 but it has since been resided with vinyl clapboards; its original windows have now been replaced with modern units with snap-in muntins, new wings have been added, and it does not retain sufficient integrity to support a listing in the NRHP.

Address	Map Code	NRHP Evaluation
W2889 Poplar Rd	12/12	Not Eligible

Description and Statement of Significance

Originally a Greek Revival style farmhouse (AHI# 58885) having returned eaves and a Gable Ell form with a two-story-tall upright wing and a one-and-one-half story ell, this house had been resided with aluminum clapboards when first surveyed in 1974. Since then, the house has been resided in vinyl clapboards, the ell has been raised two stories, wings have been added, all original windows have been replaced with smaller modern ones, and the original house is now unrecognizable and it does not retain sufficient integrity to support a listing in the NRHP.

Address	Map Code	NRHP Evaluation
N6364 Townline Rd	11/37	Not Eligible

Description and Statement of Significance

Originally a two-story Gable Ell form farmhouse (AHI# 58891) that was sided with clapboards when first surveyed in 1974, this house has since been resided in vinyl clapboards and it does not retain sufficient integrity to support a listing in the NRHP.

Address	Map Code	NRHP Evaluation
W3213 Artesian Rd	12/33	Not Eligible

Description and Statement of Significance

Originally a two-story-tall Greek Revival style farmhouse (AHI# 59479) having returned eaves and a Side Gable form, this house had corner pilasters and was sided with clapboards when first surveyed in 1974 and it might well have eligible for NRHP listing at that time. Since then, however, the house has been resided in wide vinyl or aluminum clapboards, a one-story shed-roofed enclosed front porch has been centered on the main façade, and all the original windows have been replaced with smaller modern ones. Consequently, the house no longer retains sufficient integrity to support a listing in the NRHP.

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Address	Map Code	NRHP Evaluation
255 CTH K	DOE Map No. 9	Demolished

Description and Statement of Significance

This outstanding, previously surveyed (AHI# 59470) building was completed in 1902 and was originally named Boyle Hall. In 2002, when first surveyed, this building was still an excellent and very intact late example of the Richardsonian Romanesque Revival style. The Hall measured 41x80-feet in size, was rectilinear in plan and had a full raised basement story, two main stories, and an attic story. The building was completely clad in rock-faced limestone that was quarried from the site and its side-gabled main roof was then still clad in its original ceramic tiles. The main west-facing façade of the Hall was symmetrical in design and two identical four-story-tall circular plan corner towers capped with conical tile-clad roofs were placed at either end of it. The portion of the façade that was located between these towers was seven-bays-wide and the three center bays consisted of a projecting four-story-tall gable-roofed pavilion of complex design whose first story consisted of an inset open porch that sheltered the main entrance to the Hall. Access to this porch was via a complex stone staircase that began at ground level, had a center run of steps, a landing, and two branch runs that led up to an open terrace supported on stone-clad piers that spanned the middle five bays of the façade's first story. The entrance porch covered just the center three of these five bays, it was not enclosed, and its roof was upheld by four dressed stone piers, but the equal-width second story of the pavilion and the attic story above it were enclosed and they were clad in the same stone as the rest of the building. Windows were one-over-one-light double wood hung sash throughout and some had transoms above them.

Boyle Hall was originally designed to serve as a sanitarium and its basement story originally contained a library, a dining room and kitchen. The first story contained a small reception hall and fourteen guest rooms, the second story contained another larger reception hall and additional guest rooms, and the attic story contained a chapel and rooms for the nuns who operated the facility. When the Hall was converted into a boarding school for girls in 1907, the usage of the basement story remained essentially the same but the functions of the stories above were altered to suit the new usage.

This building was demolished in 2005.

Address	Map Code	NRHP Evaluation
255 CTH K	DOE Map No. 13	Potentially Eligible

Description and Statement of Significance

This outstanding, previously surveyed (AHI# 59472) building was originally the Main Building of the St. Mary's Springs Academy Complex. This building was completed in 1929 and it is an exceptionally fine and intact example of the Georgian Revival style as applied to a large high school building. The building measures 309x50-feet in size, it is essentially T-shaped in plan, and it has a full basement story and two main stories, and much of the main block is also crowned by a full attic story. This building has a poured concrete foundation, it is clad in red brick trimmed with dressed limestone, and the main roof is flat and is edged with parapet walls topped with stone. The principal west-facing façade of the building is asymmetrical in design and consists of (continued next page)

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two unequal length blocks, the smaller south block being five-bays wide without an attic story while the longer north block is approximately seventeen-bays-wide and has a full attic story.

The length of this north block is further extended by the width of a large projecting square-plan 106-foot-tall carillon tower that divides this façade into two unequal length portions of seven and ten bays and has the main entrance to the building in its basement story. A large flat-roofed two-story-tall rectilinear plan chapel wing projects at a right angle from the main façade and is located just to the left (north) of the tower. Most of this wing has a flat roof but its west end consists of a slightly less tall gable-roofed and pedimented portion that serves as the chapel's apse. The result is an essentially T-plan building whose footprint is further expanded by a large rectilinear plan one-story-tall gymnasium wing that fills the basement story of the space that is bounded on the south by the chapel wing and on the east by the north portion of the main block.

The Main Building was originally designed to serve as a boarding school for girls and it housed class rooms, a library, living quarters for the boarding students, living quarters for the nuns who taught them, and ancillary rooms such as living rooms, bathrooms, kitchens, the chapel and the gymnasium. The conversion of the school into a coed institution in 1939 and the eventual elimination of boarding students in 1954 both resulted in changes to room usage but the building continued to function as a school even after the completion of the new high school building just to the north of it in 1971. Indeed, the building continued to be used until the first years of the current century but it is now vacant, although it is still in excellent, highly original condition today and is believed to be eligible for listing in the NRHP for both its historic and architectural significance.

Address	Map Code	NRHP Evaluation
255 CTH K	DOE Map No. 10	Demolished

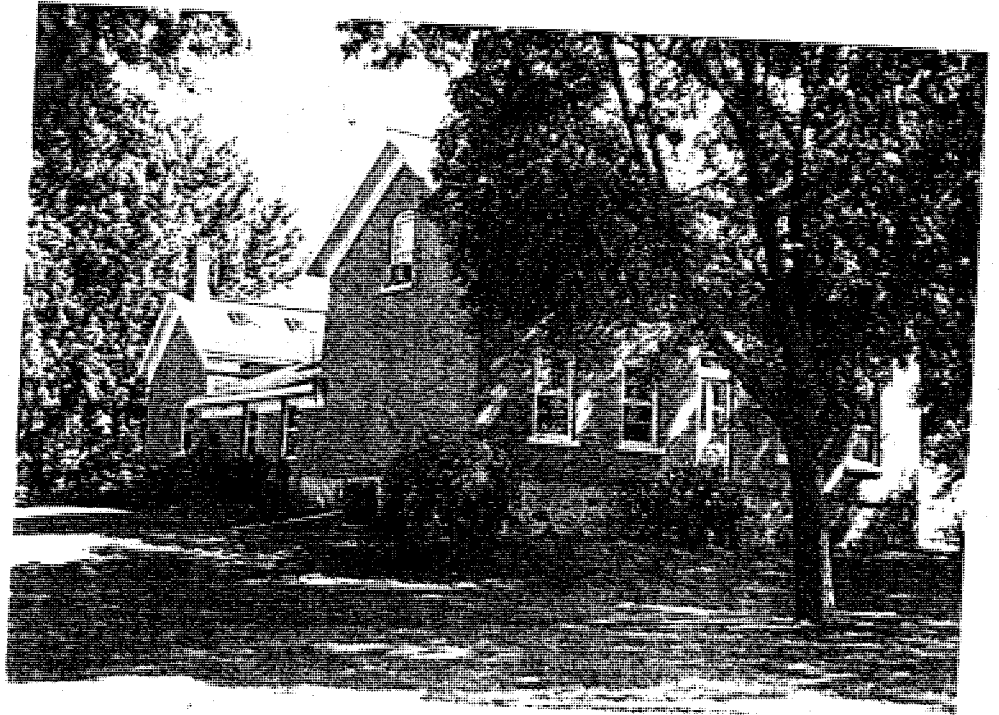
Description and Statement of Significance

This Astylistic Utilitarian form building was the second powerhouse built for the St. Mary's Springs Academy Complex and it was also built in 1929 and originally served the new Main Building as well as the now demolished Boyle Hall and St. Agnes Hall. This building was rectilinear in plan and its main façade faced west and it stepped down from a four-story-tall portion at its north end to a three-story portion and then to a two-story-tall portion at its south end. The building had a poured concrete foundation, walls that were clad in brown brick, flat roofs, and windows that were either multi-light steel sash or wood sash depending on the function of the rooms behind them. The two-story-tall south end of the building originally housed two large boilers that provided steam for heating and cooling while other rooms in the taller north half of the building contained other mechanical functions and the school's laundry. Like Boyle Hall, this building was also demolished in 2005.

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County MOND DU LAC	AHI Record No. 59475	Location W4182 STATE HIGHWAY 23				
City or Village		50 Town, Range, Section			Quarter Sections	
		Township	Range	Section	Q	QQ
		15	18	8	SE	NE
Civil Town EMPIRE	NR Date	SR Date	Eligibility Not Eligible		Classific.	Local
Unincorporated Community		District				
Photo Codes		Current Name			Multiple Property Nam	
Roll	Frame					
12	24					
0	0					
Survey Map JSGS St. Peter		Historic Name G. N. Shoemaker Farmstead		Wall Material Brick		
Map Code 2/24		Construction Date		Structural System		
Survey Date 1974		Designer Name		Other Buildings On Sit N		
Tax Certification No.		Style or Form Italianate		Cultural Affiliation		
Compliance No.		Resource Type house		Add. Com./Bib. Ref.		
Comments (DHP Use Only)						

County MOND DU LAC	AHI Record No. 59477	Location N6601 TOWER RD				
City or Village		50 Town, Range, Section			Quarter Sections	
		Township	Range	Section	Q	QQ
		15	18	11	SW	NW
Civil Town EMPIRE	NR Date	SR Date	Eligibility Potentially Eligible		Classific.	Local
Unincorporated Community		District				
Photo Codes		Current Name			Multiple Property Nam	
Roll	Frame					
12	25					
12	26					
0	0					
Survey Map JSGS St. Peter's		Historic Name Rosenbaum Farmstead		Wall Material Cream Brick		
Map Code 2/25		Construction Date		Structural System		
Survey Date 1974		Designer Name		Other Buildings On Sit N		
Tax Certification No.		Style or Form Side Gabled		Cultural Affiliation		
Compliance No.		Resource Type house		Add. Com./Bib. Ref.		



2010 WIS 23 FEIS VOL 2 Appendices

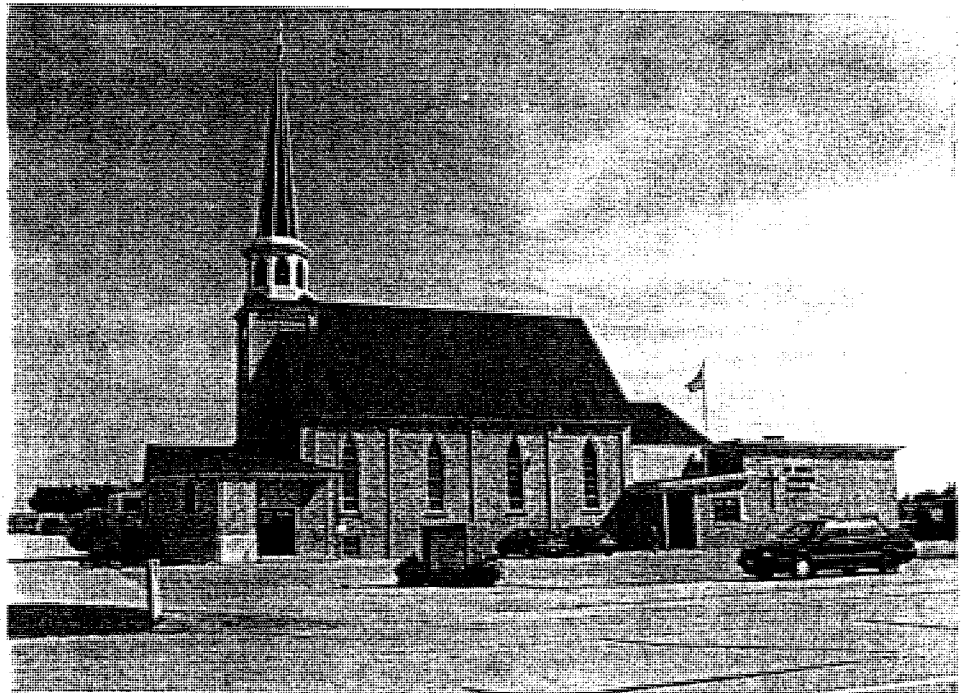
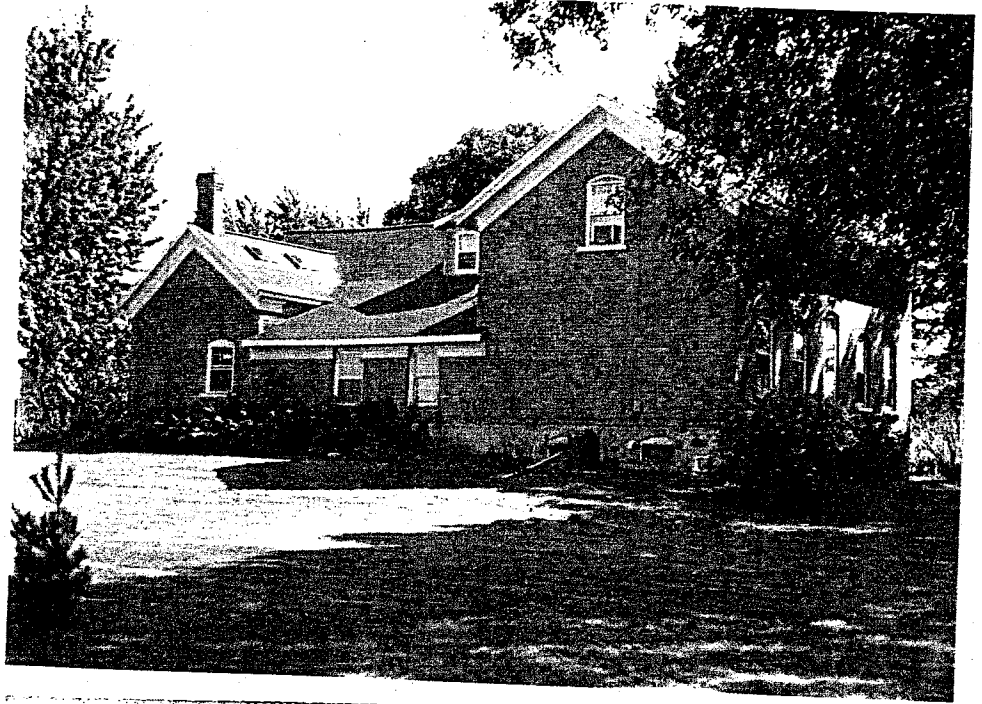
10 County	AHI Record No.	40 Location			
20 City or Village	50 Town, Range, Section			55 Quarter Sections	
30 Civile Town	165 NR Date	SR Date	235 Eligibility	237 Classific.	305 Local Des.
35 Unincorporated Community	245 District				
90 Photo Codes	430 Current Name		170 NR Multiple Property Name		
100 Survey Map	440 Historic Name		530 Wall Material		
110 Map Code	450 Construction Date		550 Structural System		
130 Survey Date	500 Designer Name		650 Other Buildings on Site		
250 Tax Certification No.	510 Style or Form		687 Cultural Affiliation		
260 Compliance No.	520 Resource Type		590/690 Add. Com./Bib. Ref.		
590 Comments (DHP Use Only)					

HP-02-44P(rev. 7/95)

County	AHI Record No.	Location			
FOND DU LAC	58888	W2090 STATE HIGHWAY 23			
City or Village	50 Town, Range, Section			Quarter Sections	
	Township	Range	Section	Q	QC
	15	19	8	NW	SW
Civil Town	NR Date	SR Date	Eligibility		Classific.
FOREST			Not Eligible		Loca
Unincorporated Community		District			
Photo Codes		Current Name		Multiple Property N	
Roll	Frame	St. Paul's Lutheran Church			
11	18				
11	19				
11	20				
Survey Map		Historic Name		Wall Material	
JSGS St. Peter's		Evangelical Lutheran St. Paul's Kirche		Cream Brick	
Map Code		Construction Date		Structural System	
11/18		1877 1960		Unknown	
Survey Date		Designer Name		Other Buildings On	
1974				N	
Tax Certification No.		Style or Form		Cultural Affiliation	
		Gothic Revival			

Fond du Lac Co. 1A1 * 59477

Empire 15-18 E Sec. 11



2010 WIS 23 FEIS VOL 2 Appendices

County FOND DU LAC	AHI Record No. 122907	Location W1982 STATE HIGHWAY 23				
City or Village		50 Town, Range, Section			Quarter Sections	
		Township 15	Range 19	Section 8	Q SE	QQ SE
Civil Town FOREST	NR Date	SR Date	Eligibility Not Eligible		Classific. Local	
Unincorporated Community		District				
Photo Codes		Current Name			Multiple Property Nam	
Roll 0	Frame 0					
Survey Map St. Peter's USGS 7.5 Quad						Historic Name Otto Pfeifer Farmstead
Map Code 0/0		Construction Date			Structural System	
Survey Date 2002		Designer Name			Other Buildings On Sit	
Tax Certification No.		Style or Form American Foursquare			Cultural Affiliation	
Compliance No.		Resource Type house			Add. Com./Bib. Ref.	
Comments (DHP Use Only)						

County FOND DU LAC	AHI Record No. 58887	Location W1985 STATE HIGHWAY 23				
City or Village		50 Town, Range, Section			Quarter Sections	
		Township 15	Range 19	Section 8	Q NW	QQ SW
Civil Town FOREST	NR Date	SR Date	Eligibility Not Eligible		Classific. Local	
Unincorporated Community		District				
Photo Codes		Current Name			Multiple Property Nam	
Roll 11	Frame 17					
0	0					
Survey Map USGS St. Peter		Historic Name			Wall Material Aluminum/Vinyl Siding	
Map Code 11/17		Construction Date			Structural System Unknown	
Survey Date 1974		Designer Name			Other Buildings On Sit N	
Tax Certification No.		Style or Form Greek Revival			Cultural Affiliation	
Compliance No. 87-1774		Resource Type house			Add. Com./Bib. Ref.	
Comments (DHP Use Only)						



Fond du Lac Co. AHI # 122907 Forest 15-19E Sec. 8

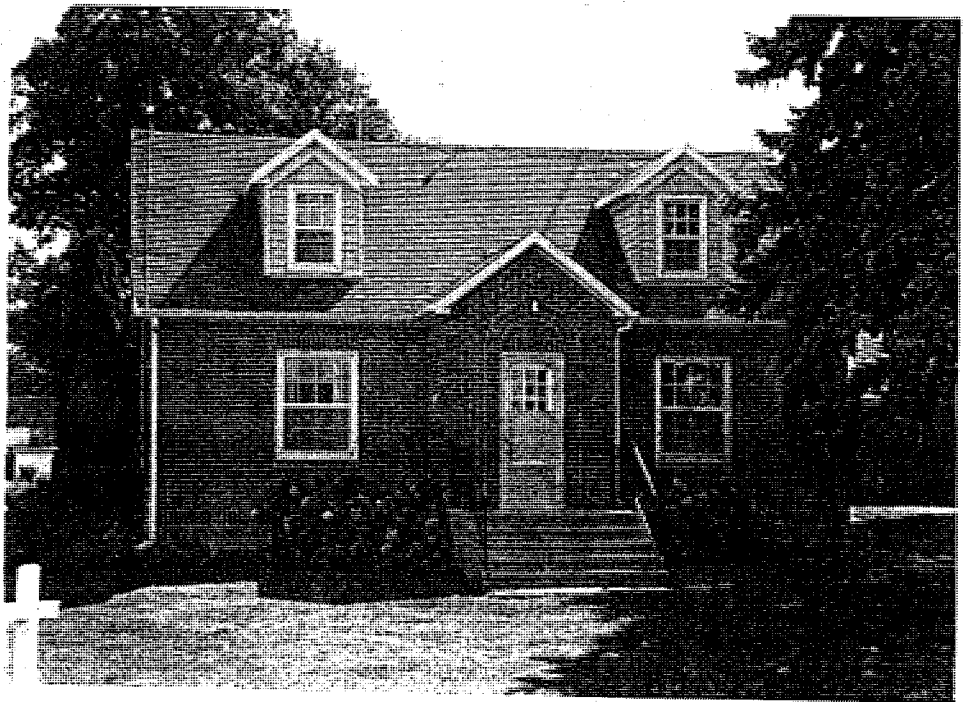


County FOND DU LAC	AHI Record No. 122908	Location W1398 STATE HIGHWAY 23				
City or Village		50 Town, Range, Section			Quarter Sections	
		Township 15	Range 19	Section 9	Q SE	QQ SE
Civil Town FOREST	NR Date	SR Date	Eligibility Not Eligible	Classific.	Local	
Unincorporated Community		District				
Photo Codes		Current Name		Multiple Property Nam		
Roll	Frame					
Survey Map		Historic Name		Wall Material Brick		
Map Code		Construction Date		Structural System		
Survey Date		Designer Name		Other Buildings On Sit		
Tax Certification No.		Style or Form Colonial Revival		Cultural Affiliation		
Compliance No.		Resource Type house		Add. Com./Bib. Ref.		
Comments (DHP Use Only)						

2010 WIS 23 FEIS VOL 2 Appendices

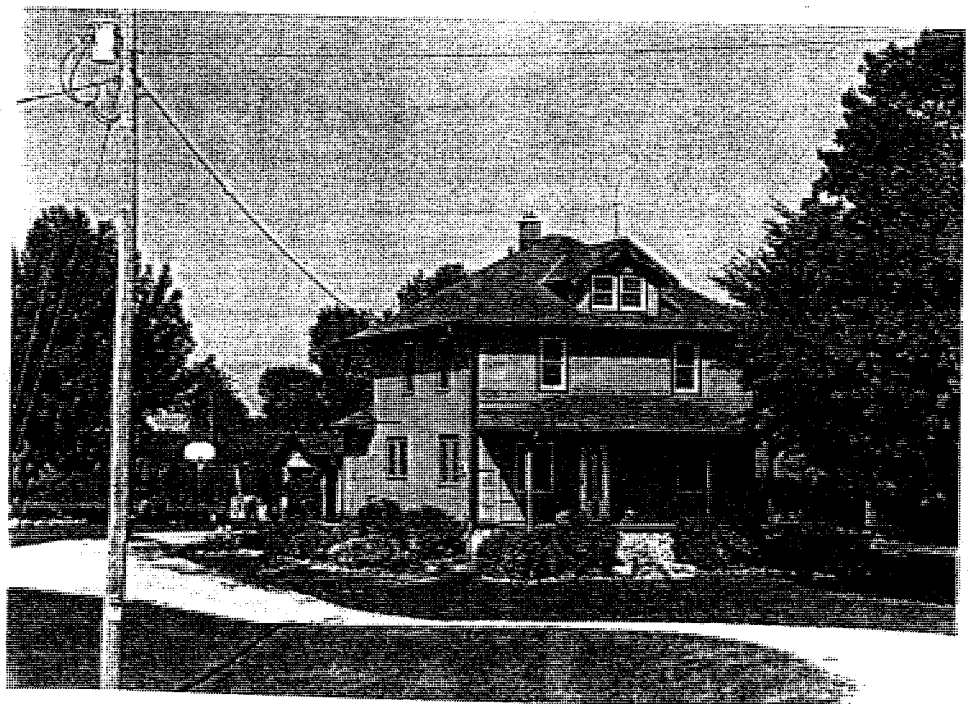
10 County	AHI Record No.	40 Location			
20 City or Village		50 Town, Range, Section		55 Quarter Sections	
30 Civile Town		165 NR Date	SR Date	235 Eligibility	237 Classific. 305 Local Des.
35 Unincorporated Community		245 District			
90 Photo Codes	430 Current Name		170 NR Multiple Property Name		
100 Survey Map	440 Historic Name		530 Wall Material		
110 Map Code	450 Construction Date		550 Structural System		
130 Survey Date	500 Designer Name		650 Other Buildings on Site		
250 Tax Certification No.	510 Style or Form		687 Cultural Affiliation		
260 Compliance No.	520 Resource Type		590/690 Add. Com./Bib. Ref.		
590 Comments (DHP Use Only)					

HP-02-44P(rev. 7/95)

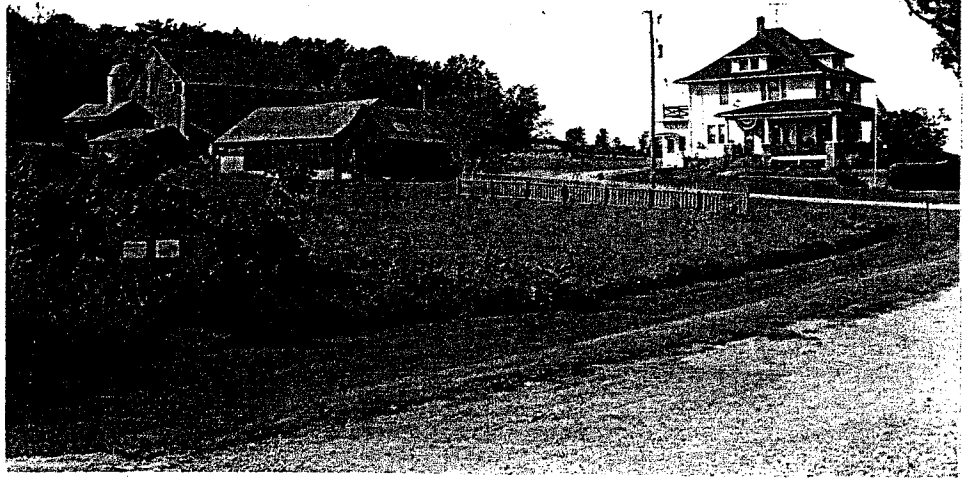


County FOND DU LAC	AHI Record No. 122940	Location N6568 HICKORY RD				
City or Village		50 Town, Range, Section			Quarter Sections	
		Township 15	Range 19	Section 11	Q SE	QQ SE
Civil Town FOREST	NR Date	SR Date	Eligibility Potentially Eligible		Classific.	Local
Unincorporated Community		District				
Photo Codes		Current Name			Multiple Property Nam	
Roll 0	Frame 0					
Survey Map St. Cloud USGS 7.5 Quad		Historic Name SIPPLE FAMILY FARMSTEAD			Wall Material Clapboard	
Map Code 0/0		Construction Date			Structural System	
Survey Date 2002		Designer Name			Other Buildings On S Y	
Tax Certification No.		Style or Form American Foursquare			Cultural Affiliation	
Compliance No.		Resource Type house			Add. Com./Bib. Ref.	
Comments (DHP Use Only)						

County FOND DU LAC	AHI Record No. 122909	Location W151 STH 23				
City or Village		50 Town, Range, Section			Quarter Sections	
		Township 15	Range 19	Section 13	Q NE	QQ NW
Civil Town FOREST	NR Date	SR Date	Eligibility Not Eligible		Classific.	Local
Unincorporated Community		District				
Photo Codes		Current Name			Multiple Property Nam	
Roll 0	Frame 0					
Survey Map St. Cloud USGS 7.5 Quad		Historic Name			Wall Material Clapboard	
Map Code 0/0		Construction Date			Structural System	
Survey Date 2002		Designer Name			Other Buildings On Sit	
Tax Certification No.		Style or Form American Foursquare			Cultural Affiliation	
Compliance No.		Resource Type house			Add. Com./Bib. Ref.	
Comments (DHP Use Only)						



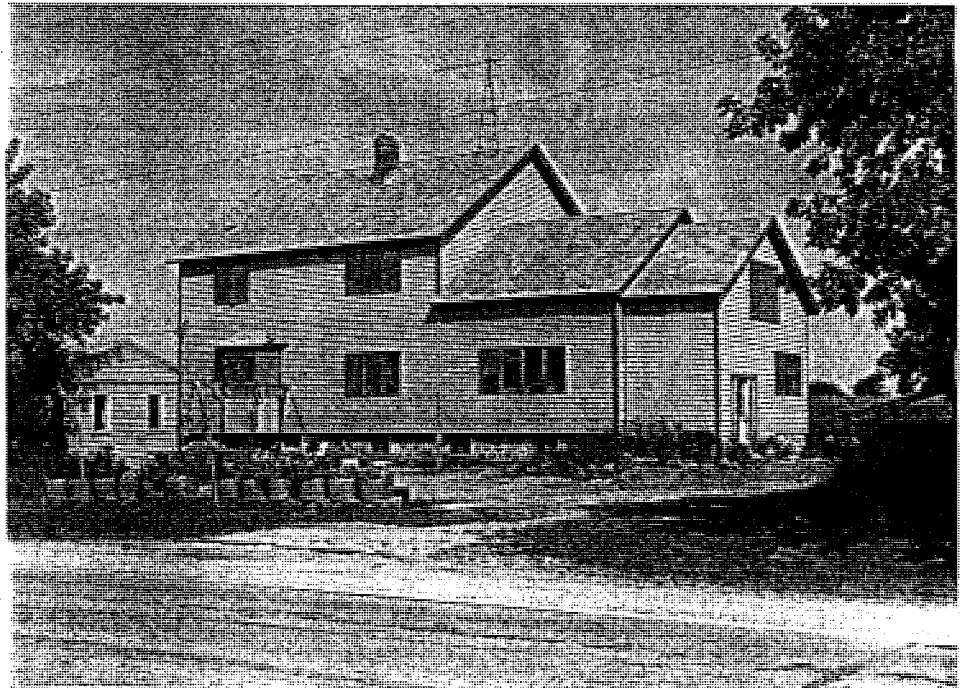
Fond du Lac Co. AHI* 122940 Forest 15-19.4 Sec. 11



County FOND DU LAC		AHI Record No. 58890		Location N6411 COUNTY HIGHWAY G			
City or Village		50 Town, Range, Section			Quarter Sections		
		Township	Range	Section	Q	QQ	
		15	19	13	NE	NW	
Civil Town FOREST	NR Date	SR Date	Eligibility Not Eligible	Classific.	Local		
Unincorporated Community		District					
Photo Codes		Current Name		Multiple Property Nam			
Roll	Frame						
12	9						
0	0						
Survey Map USGS St. Cloud	Historic Name Elder Grove School	Construction Date		Wall Material Aluminum/Vinyl Siding			
Map Code 12/9	Designer Name	Style or Form Front Gabled		Structural System Unknown			
Survey Date 1974	Resource Type one to six room school	Other Buildings On Sit N		Cultural Affiliation			
Tax Certification No.		Add. Com./Bib. Ref.					
Compliance No.							
Comments (DHP Use Only)							

2010 WIS 23 FEIS VOL 2 Appendices

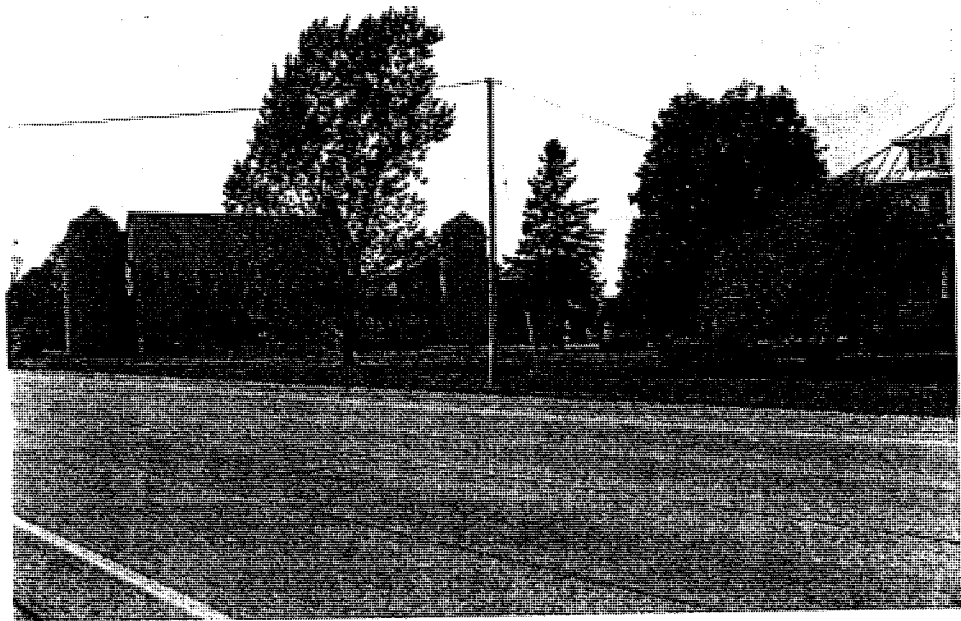
10 County	AHI Record No.	40 Location				
20 City or Village		50 Town, Range, Section			55 Quarter Sections	
30 Civile Town		165 NR Date	SR Date	235 Eligibility	237 Classific.	305 Local Des.
35 Unincorporated Community		245 District				
90 Photo Codes		430 Current Name		170 NR Multiple Property Name		
100 Survey Map		440 Historic Name		530 Wall Material		
110 Map Code		450 Construction Date		550 Structural System		
130 Survey Date		500 Designer Name		650 Other Buildings on Site		
250 Tax Certification No.		510 Style or Form		687 Cultural Affiliation		
260 Compliance No.		520 Resource Type		590/690 Add. Com./Bib. Ref.		
590 Comments (DHP Use Only)						HP-02-44P(rev. 7/95)



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County SHEBOYGAN	AHI Record No. 122910	Location W9024 STATE HIGHWAY 23				
City or Village		50 Town, Range, Section			Quarter Sections	
		Township	Range	Section	Q	QQ
		15	20	7	SE	SW
Civil Town GREENBUSH	NR Date	SR Date	Eligibility Not Eligible		Classific.	Local
Unincorporated Community		District				
Photo Codes		Current Name			Multiple Property Name	
Roll	Frame	H. Limberg Farmstead				
0	0					
Survey Map St. Cloud USGS 7.5 Quad		Historic Name John Limberg Farmstead			Wall Material Clapboard	
Map Code 0/0		Construction Date			Structural System	
Survey Date 2002		Designer Name			Other Buildings On Site	
Tax Certification No.		Style or Form American Foursquare			Cultural Affiliation	
Compliance No.		Resource Type house			Add. Com./Bib. Ref.	
Comments (DHP Use Only)						

Sheboygan Co. AH) # 122910 In Greenbush 15-20 E Sec. 7



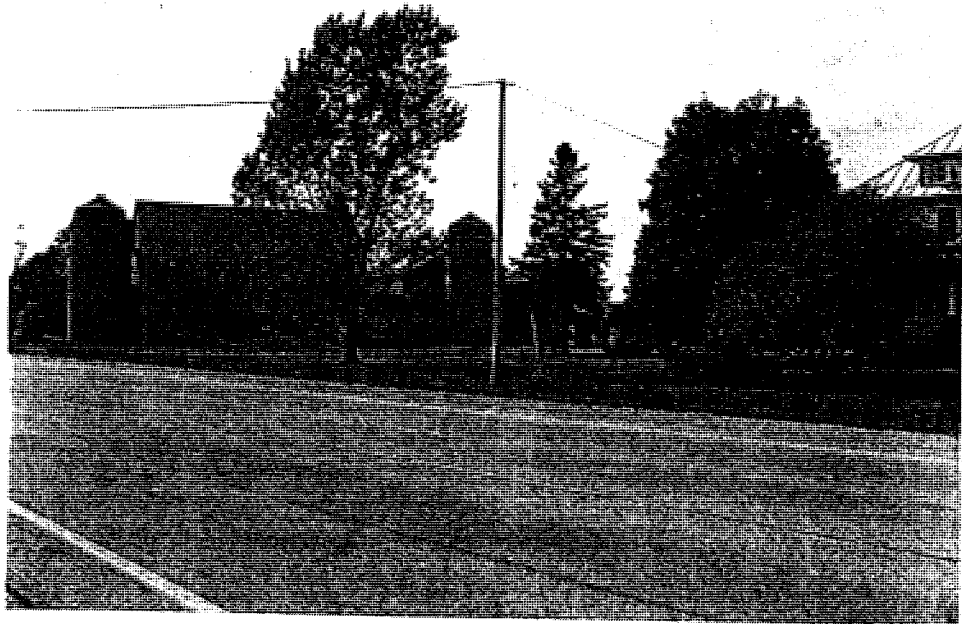


10 County	AHI Record No.	40 Location			
20 City or Village		50 Town, Range, Section			55 Quarter Sections
30 Civile Town		165 NR Date	SR Date	235 Eligibility	237 Classific. 305 Local Des.
35 Unincorporated Community		245 District			
90 Photo Codes	430 Current Name		170 NR Multiple Property Name		
100 Survey Map	440 Historic Name		530 Wall Material		
110 Map Code	450 Construction Date		550 Structural System		
130 Survey Date	500 Designer Name		650 Other Buildings on Site		
250 Tax Certification No.	510 Style or Form		687 Cultural Affiliation		
260 Compliance No.	520 Resource Type		590/690 Add. Com./Bib. Ref.		
590 Comments (DHP Use Only)					

2010 WIS 23 FEIS VOL 2 Appendices

County SHEBOYGAN	AHI Record No. 122910	Location W9024 STATE HIGHWAY 23				
City or Village		50 Town, Range, Section			Quarter Sections	
		Township	Range	Section	Q	QQ
		15	20	7	SE	SW
Civil Town GREENBUSH	NR Date	SR Date	Eligibility Not Eligible		Classific.	Local
Unincorporated Community		District				
Photo Codes		Current Name H. Limberg Farmstead			Multiple Property Name	
Roll	Frame					
0	0					
Survey Map St. Cloud USGS 7.5 Quad		Historic Name John Limberg Farmstead		Wall Material Clapboard		
Map Code 0/0		Construction Date		Structural System		
Survey Date 2002		Designer Name		Other Buildings On Site		
Tax Certification No.		Style or Form American Foursquare		Cultural Affiliation		
Compliance No.		Resource Type house		Add. Com./Bib. Ref.		
Comments (DHP Use Only)						

Sheboygan Co. AH) # 122910 In Greenbush 15-20 E Sec. 7



2010 WIS 23 FEIS VOL 2 Appendices

County SHEBOYGAN	AHI Record No. 122911	Location W8830 STATE HIGHWAY 23				
City or Village		50 Town, Range, Section			Quarter Sections	
		Township	Range	Section	Q	QQ
		15	20	8	NW	SW
Civil Town GREENBUSH	NR Date	SR Date	Eligibility Not Eligible		Classific.	Local
Jnincorporated Community		District				
Photo Codes		Current Name			Multiple Property Name	
Roll	Frame					
0	0					
Survey Map St. Cloud USGS 7.5 Quad		Historic Name			Wall Material Clapboard	
Map Code J/O		Construction Date			Structural System	
Survey Date 2002		Designer Name			Other Buildings On Site	
Tax Certification No.		Style or Form Queen Anne			Cultural Affiliation	
Compliance No.		Resource Type house			Add. Com./Bib. Ref.	
Comments (DHP Use Only)						

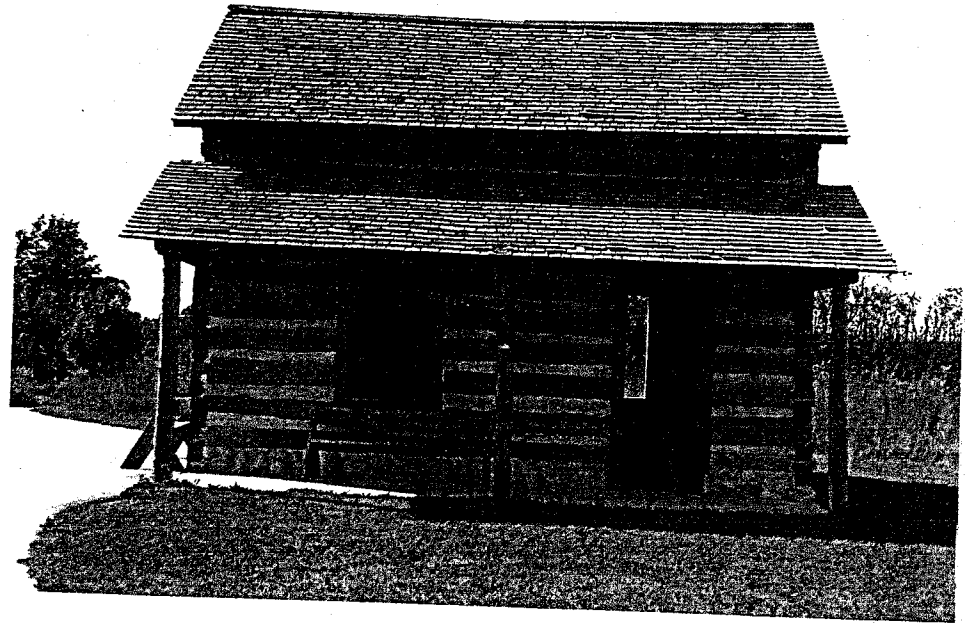
County SHEBOYGAN	AHI Record No. 122912	Location W8255 STATE HIGHWAY 23				
City or Village		50 Town, Range, Section			Quarter Sections	
		Township	Range	Section	Q	QQ
		15	20	9	SW	NE
Civil Town GREENBUSH	NR Date	SR Date	Eligibility Not Eligible		Classific.	Local D
Jnincorporated Community		District				
Photo Codes		Current Name			Multiple Property Name	
Roll	Frame					
0	0					
Survey Map Elkhart Lake USGS 7.5 Quad		Historic Name Carl Reiss Farmstead			Wall Material Rock-Faced Concrete Bloc	
Map Code J/O		Construction Date			Structural System	
Survey Date 2002		Designer Name			Other Buildings On Site	
Tax Certification No.		Style or Form Queen Anne			Cultural Affiliation	
Compliance No.		Resource Type house			Add. Com./Bib. Ref.	
Comments (DHP Use Only)						

County SHEBOYGAN	AHI Record No. 122913	Location W7432 PLANK RD			
City or Village		50 Town, Range, Section			Quarter Sections
		Township 15	Range 20	Section 11	Q SW
Civil Town GREENBUSH	NR Date	SR Date	Eligibility Not Eligible	Classific.	Loca
Unincorporated Community		District			
Photo Codes		Current Name		Multiple Property Na	
Roll 0	Frame 0	Old Plank Rd. Trail Parking Facility			
Survey Map Elkhart Lake USGS 7.5 Quad		Historic Name		Wall Material Log	
Map Code 0/0		Construction Date		Structural System Log	
Survey Date 2002		Designer Name		Other Buildings On S N	
Tax Certification No.		Style or Form Side Gabled		Cultural Affiliation	
Compliance No.		Resource Type house		Add. Com./Bib. Ref.	
Comments (DHP Use Only)					

Sheboygan Co. AHI # 122913 Tn. Greenbush 15-206



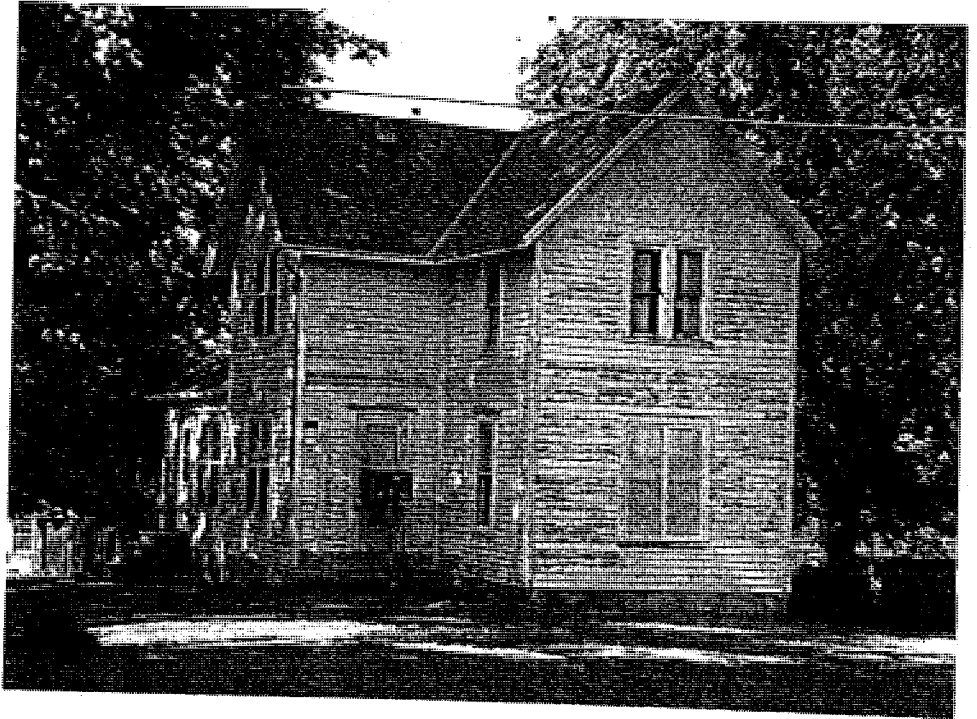
Sec 11



10 County	AHI Record No.	40 Location			
20 City or Village	50 Town, Range, Section			55 Quarter Sections	
30 Civile Town	165 NR Date	SR Date	235 Eligibility	237 Classific.	305 Local Des.
35 Unincorporated Community	245 District				
90 Photo Codes	430 Current Name		170 NR Multiple Property Name		
100 Survey Map	440 Historic Name		530 Wall Material		
110 Map Code	450 Construction Date		550 Structural System		
130 Survey Date	500 Designer Name		650 Other Buildings on Site		
250 Tax Certification No.	510 Style or Form		687 Cultural Affiliation		
260 Compliance No.	520 Resource Type		590/690 Add. Com./Bib. Ref.		
590 Comments (DHP Use Only)					

County SHEBOYGAN	AHI Record No. 122914	Location N6660 W COUNTY HIGHWAY A				
City or Village		50 Town, Range, Section			Quarter Sections	
		Township 15	Range 20	Section 11	Q NW	QQ SW
Civil Town GREENBUSH	NR Date	SR Date	Eligibility Not Eligible	Classific.	Local	
Unincorporated Community		District				
Photo Codes		Current Name		Multiple Property Name		
Roll 0	Frame 0					
Survey Map Elkhart Lake USGS 7.5 Quad		Historic Name		Wall Material Clapboard		
Map Code 0/00		Construction Date		Structural System		
Survey Date 2002		Designer Name		Other Buildings On Site		
Tax Certification No.		Style or Form Queen Anne		Cultural Affiliation		
Compliance No.		Resource Type house		Add. Com./Bib. Ref.		
Comments (DHP Use Only)						

County SHEBOYGAN	AHI Record No. 122915	Location W7710 SPRUCE ST				
City or Village		50 Town, Range, Section			Quarter Sections	
		Township 15	Range 20	Section 10	Q SE	QQ NW
Civil Town GREENBUSH	NR Date	SR Date	Eligibility Potentially Eligible	Classific.	Local	
Unincorporated Community Greenbush		District				
Photo Codes		Current Name		Multiple Property Name		
Roll 0	Frame 0					
Survey Map Elkhart Lake USGS 7.5 Quad		Historic Name		Wall Material Clapboard		
Map Code 0/0		Construction Date		Structural System		
Survey Date 2002		Designer Name		Other Buildings On Site		
Tax Certification No.		Style or Form Queen Anne		Cultural Affiliation		
Compliance No.		Resource Type house		Add. Com./Bib. Ref.		
Comments (DHP Use Only)						



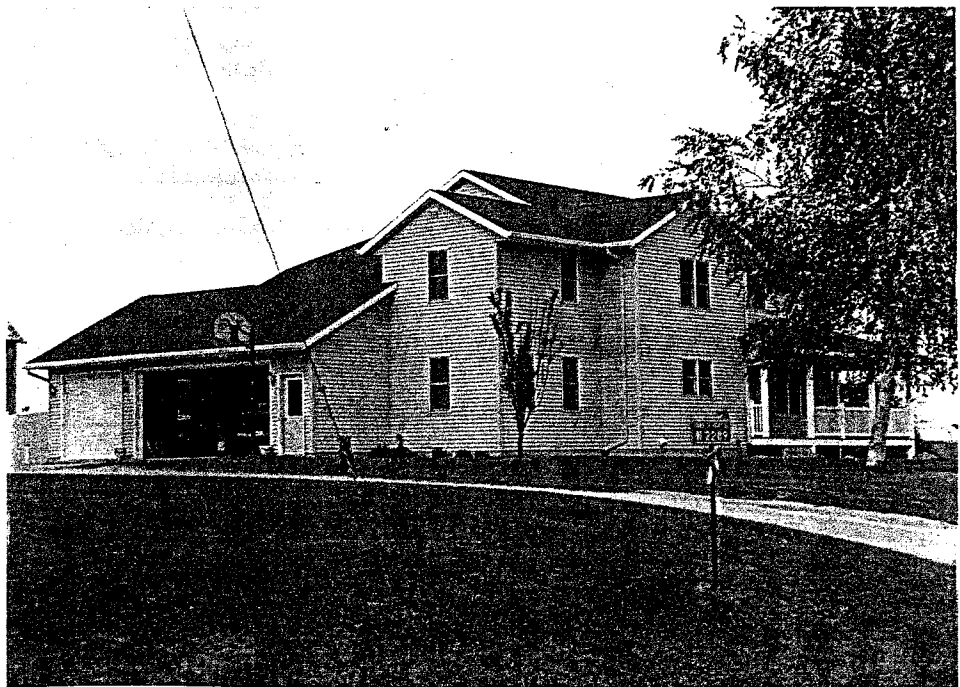
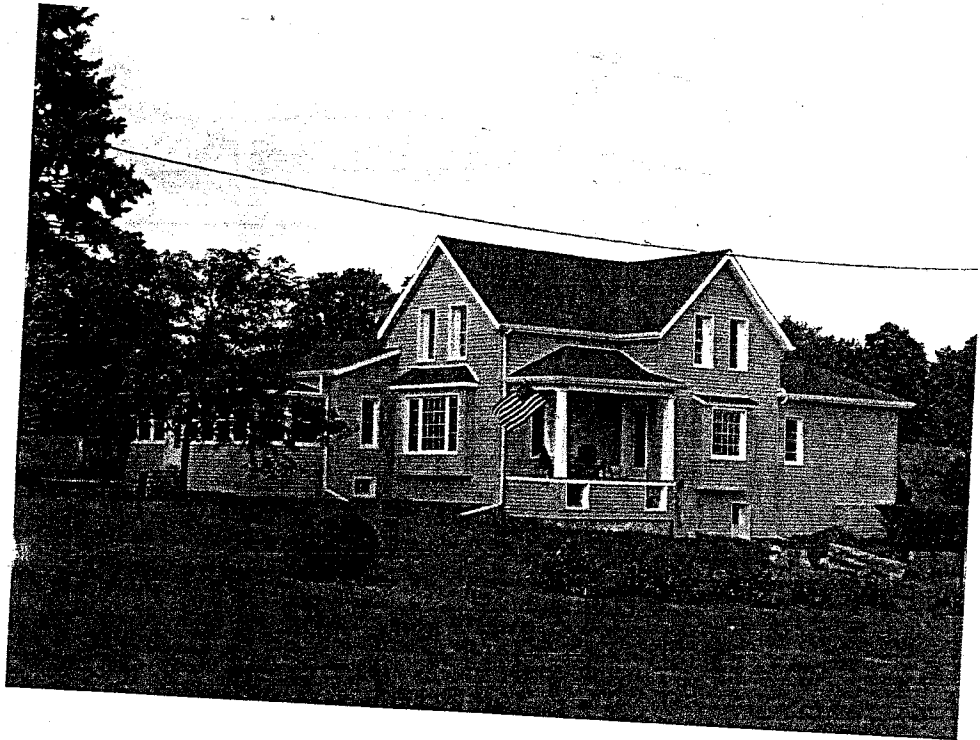
County FOND DU LAC	AHI Record No. 122941	Location W1518 COUNTY HIGHWAY TTT				
City or Village		50 Town, Range, Section			Quarter Sections	
		Township	Range	Section	Q	QQ
		15	19	16	NE	NW
Civil Town FOREST	NR Date	SR Date	Eligibility Not Eligible	Classific.	Local	
Unincorporated Community		District				
Photo Codes		Current Name			Multiple Property Nam	
Roll	Frame					
0	0					
Survey Map St. Cloud USGS 7.5 Quad		Historic Name			Wall Material Stucco	
Map Code J/0		Construction Date			Structural System	
Survey Date 2002		Designer Name			Other Buildings On Sit	
Tax Certification No.		Style or Form American Foursquare			Cultural Affiliation	
Compliance No.		Resource Type house			Add. Com./Bib. Ref.	
Comments (DHP Use Only)						

County FOND DU LAC	AHI Record No. 58889	Location W1769 POPLAR RD				
City or Village		50 Town, Range, Section			Quarter Sections	
		Township	Range	Section	Q	QQ
		15	19	8	SE	SE
Civil Town FOREST	NR Date	SR Date	Eligibility Not Eligible	Classific.	Local	
Unincorporated Community		District				
Photo Codes		Current Name			Multiple Property Nam	
Roll	Frame					
12	11					
0	0					
Survey Map USGS St. Cloud		Historic Name			Wall Material Aluminum/Vinyl Siding	
Map Code 12/11		Construction Date			Structural System Unknown	
Survey Date 1974		Designer Name			Other Buildings On Sit N	
Tax Certification No.		Style or Form Gabled Ell			Cultural Affiliation	
Compliance No.		Resource Type house			Add. Com./Bib. Ref.	
Comments (DHP Use Only)						



County FOND DU LAC	AHI Record No. 58894	Location N3679 COUNTY HIGHWAY W			
City or Village		50 Town, Range, Section			Quarter Sections
		Township	Range	Section	Q
		15	19	17	NW
Civil Town FOREST	NR Date	SR Date	Eligibility Not Eligible	Classific.	Local
Unincorporated Community		District			
Photo Codes		Current Name		Multiple Property Nam	
Roll	Frame				
11	22				
0	0				
Survey Map USGS St. Peter		Historic Name		Wall Material Aluminum/Vinyl Siding	
Map Code 11/22		Construction Date		Structural System Unknown	
Survey Date 1974		Designer Name		Other Buildings On Sit N	
Tax Certification No.		Style or Form Queen Anne		Cultural Affiliation	
Compliance No.		Resource Type house		Add. Com./Bib. Ref.	
Comments (DHP Use Only)					

County FOND DU LAC	AHI Record No. 58885	Location W2889 POPLAR RD			
City or Village		50 Town, Range, Section			Quarter Sections
		Township	Range	Section	Q
		15	19	7	SE
Civil Town FOREST	NR Date	SR Date	Eligibility Not Eligible	Classific.	Local
Unincorporated Community		District			
Photo Codes		Current Name		Multiple Property Nam	
Roll	Frame				
12	12				
0	0				
Survey Map USGS St. Peter		Historic Name		Wall Material Aluminum/Vinyl Siding	
Map Code 12/12		Construction Date		Structural System Unknown	
Survey Date 1974		Designer Name		Other Buildings On Sit N	
Tax Certification No.		Style or Form Greek Revival		Cultural Affiliation	
Compliance No.		Resource Type house		Add. Com./Bib. Ref.	
Comments (DHP Use Only)					



County FOND DU LAC	AHI Record No. 58891	Location N6364 TOWNLIN RD				
City or Village		50 Town, Range, Section			Quarter Sections	
		Township 15	Range 18	Section 13	Q NE	QQ SE
Civil Town EMPIRE	NR Date	SR Date	Eligibility Not Eligible	Classific.	Local	
Unincorporated Community		District				
Photo Codes		Current Name		Multiple Property Nam		
Roll	Frame					
11	37					
0	0					
Survey Map USGS St. Peter		Historic Name		Wall Material Aluminum/Vinyl Siding		
Map Code 11/37		Construction Date		Structural System Unknown		
Survey Date 1974		Designer Name		Other Buildings On Sit N		
Tax Certification No.		Style or Form Gabled Ell		Cultural Affiliation		
Compliance No.		Resource Type house		Add. Com./Bib. Ref.		
Comments (DHP Use Only)						

County FOND DU LAC	AHI Record No. 59479	Location W3213 ARTESIAN RD				
City or Village		50 Town, Range, Section			Quarter Sections	
		Township 15	Range 18	Section 14	Q NW	QQ SW
Civil Town EMPIRE	NR Date	SR Date	Eligibility Not Eligible	Classific.	Local	
Unincorporated Community		District				
Photo Codes		Current Name		Multiple Property Nam		
Roll	Frame					
12	33					
12	34					
0	0					
Survey Map USGS St. Peter		Historic Name		Wall Material Aluminum/Vinyl Siding		
Map Code 12/33		Construction Date		Structural System		
Survey Date 1974		Designer Name		Other Buildings On Sit N		
Tax Certification No.		Style or Form Greek Revival		Cultural Affiliation		
Compliance No.		Resource Type house		Add. Com./Bib. Ref.		



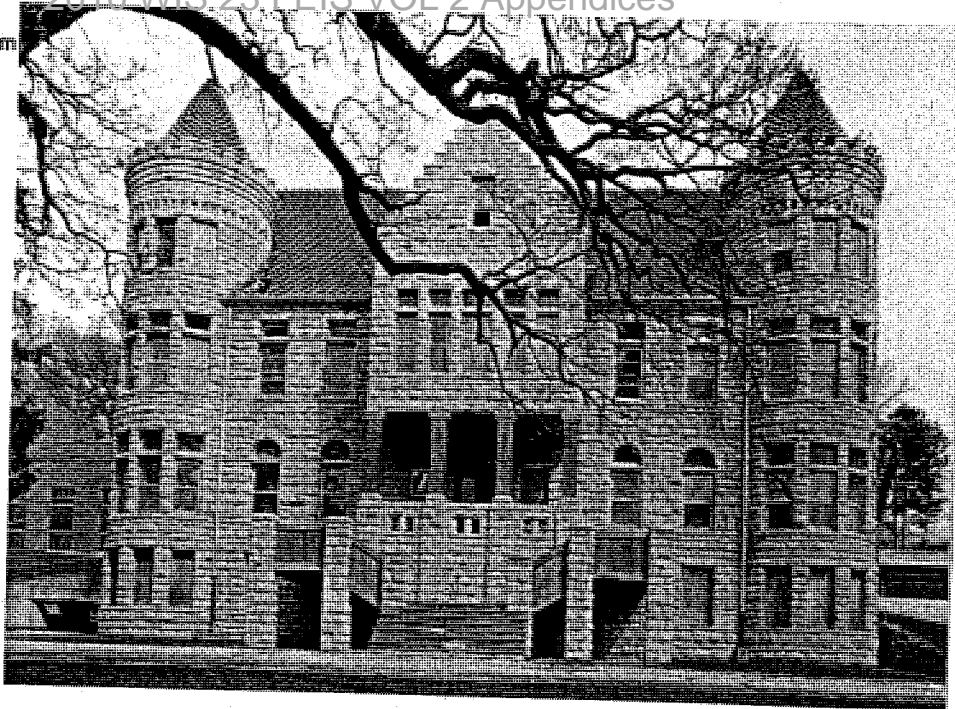
2010 WIS 23 FEIS VOL 2 Appendices

County	AHI Record No.	Location			
FOND DU LAC	59470	255 COUNTY HIGHWAY K			
City or Village		Township, Range, Section		Quarter	Sections
FOND DU LAC		15	18	7	NE SE
Civil Town	NR Date	SR Date	Eligibility	Classific.	Local Des.
				Contributing	
Unincorporated Community		District			
		ST. MARY'S SPRINGS ACADEMY COMPLEX			
Photo Codes		Current Name		Multiple Property Name	
13	21				
DOE	9-14				
Survey Map		Historic Name		Wall Material	
DOE MAP		BOYLE HALL		Stone - Unspecified	
Map Code		Construction Date		Structural System	
9		1902			
Survey Date		Designer Name		Other Buildings On Site	
2002		A. D. WERNER		Y	
Tax Certification No.		Style or Form		Cultural Affiliation	
		Richardsonian Romanesque			
Compliance No.		Resource Type		Add. Com./Bib. Ref.	

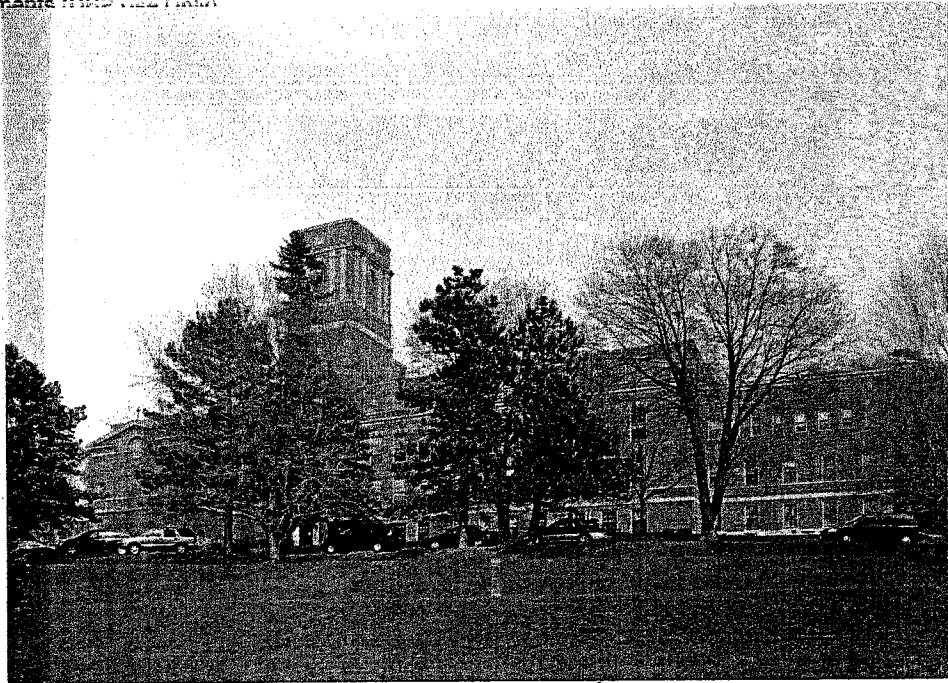
County	AHI Record No.	Location			
FOND DU LAC	59472	255 COUNTY HIGHWAY K			
City or Village		Township, Range, Section		Quarter	Sections
FOND DU LAC		15	18	7	NE SE
Civil Town	NR Date	SR Date	Eligibility	Classific.	Local Des.
				Contributing	
Unincorporated Community		District			
		ST. MARY'S SPRINGS ACADEMY COMPLEX			
Photo Codes		Current Name		Multiple Property Name	
13	22	St. Mary's Springs Academy Building			
13	23				
DOE	18-22				
Survey Map		Historic Name		Wall Material	
DOE MAP		ST. MARY'S SPRINGS ACADEMY MAIN BUILDING		Brick	
Map Code		Construction Date		Structural System	
13		1929			
Survey Date		Designer Name		Other Buildings On Site	
2002		SCHMIDT, GARDEN, & ERICKSON		Y	
Tax Certification No.		Style or Form		Cultural Affiliation	
		Georgian Revival			
Compliance No.		Resource Type		Add. Com./Bib. Ref.	
		elementary, middle, jr.high, or high		FOND DU LAC COMMONWEALTH	

Comm

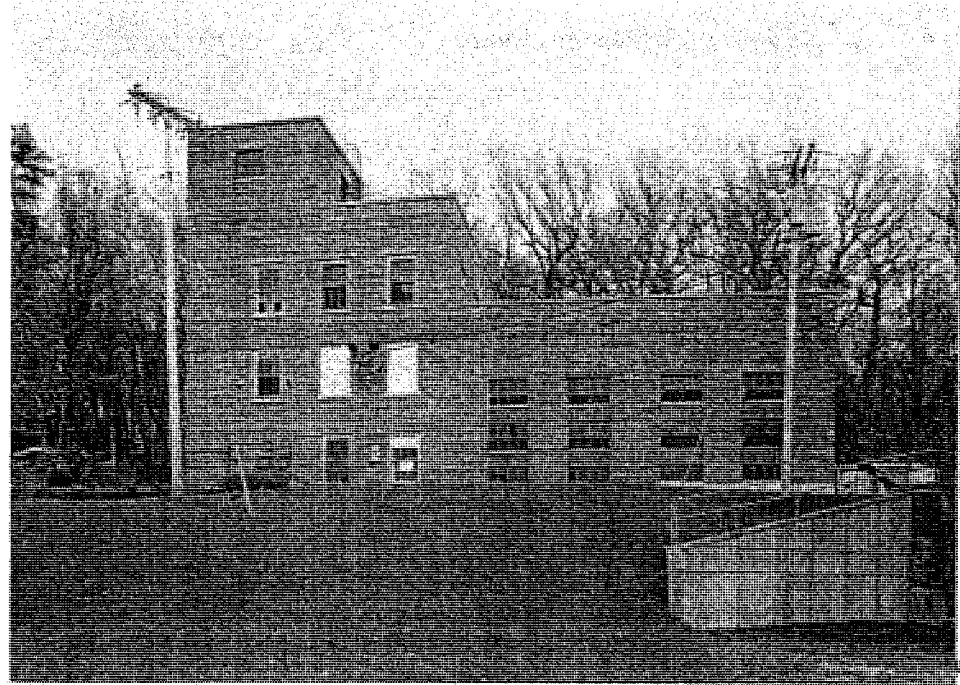
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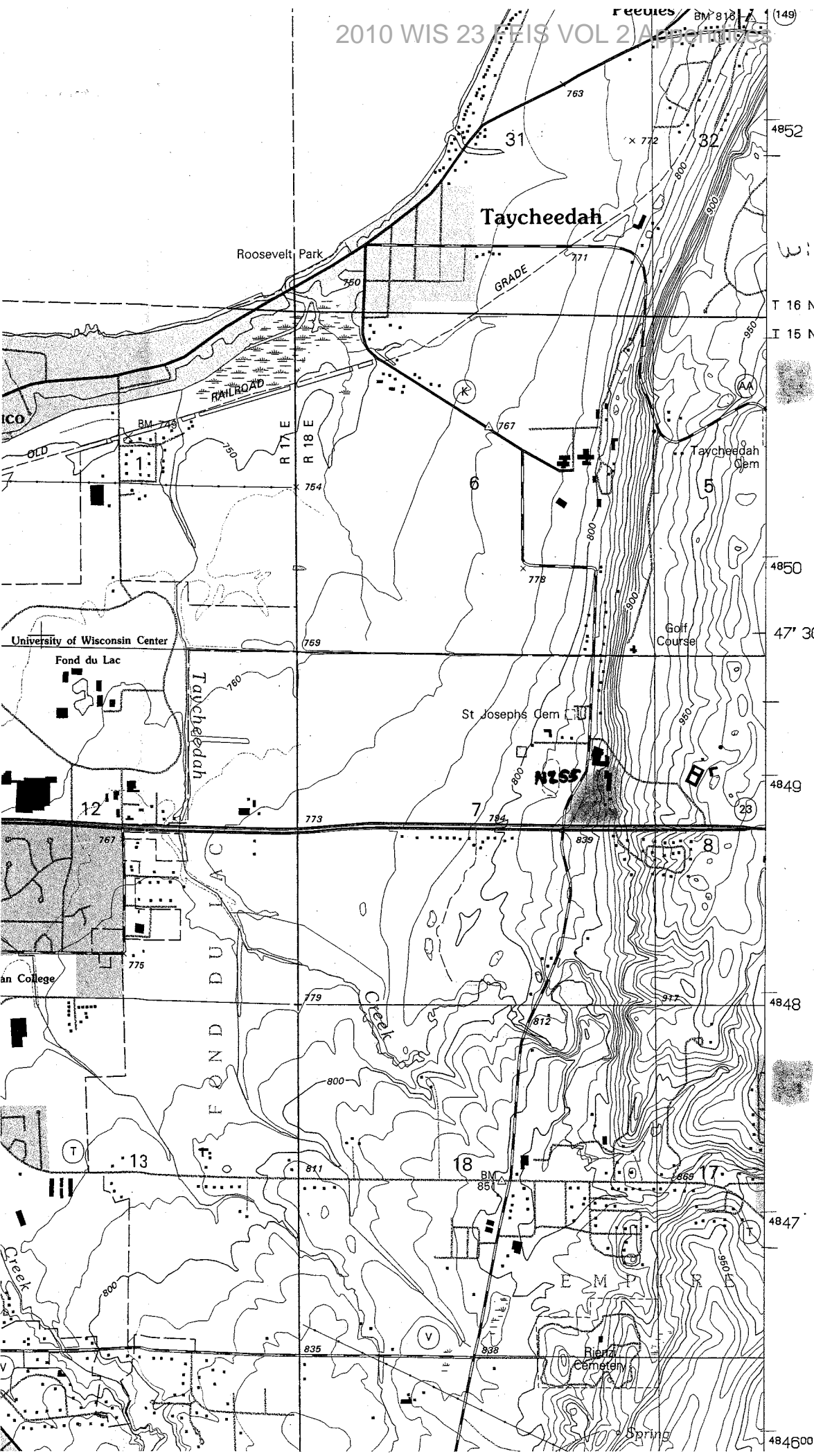
Comments (DND Miss Gault)



County	AHI Record No.	Location			
FOND DU LAC	141378	255 COUNTY HIGHWAY K			
City or Village		Township, Range, Section		QuarterSections	
FOND DU LAC					
Civil Town	NR Date	SR Date	Eligibility	Classific. Contributing	Local De
Unincorporated Community		District			
		ST. MARY'S SPRINGS ACADEMY COMPLEX			
Photo Codes		Current Name		Multiple Property Name	
DOE	14-16				
Survey Map		Historic Name		Wall Material	
DOE MAP		ST. MARY'S SPRINGS ACADEMY SECOND POWERHOUSE		Brick	
Map Code		Construction Date		Structural System	
10		1929			
Survey Date		Designer Name		Other Buildings On Site	
2002		SCHMIDT, GARDEN, & ERICKSON		Y	
Tax Certification No.		Style or Form		Cultural Affiliation	
		Astylistic Utilitarian Building			
Compliance No.		Resource Type		Add. Com./Bib. Ref.	
		power plant		FOND DU LAC COMMONWEAL	

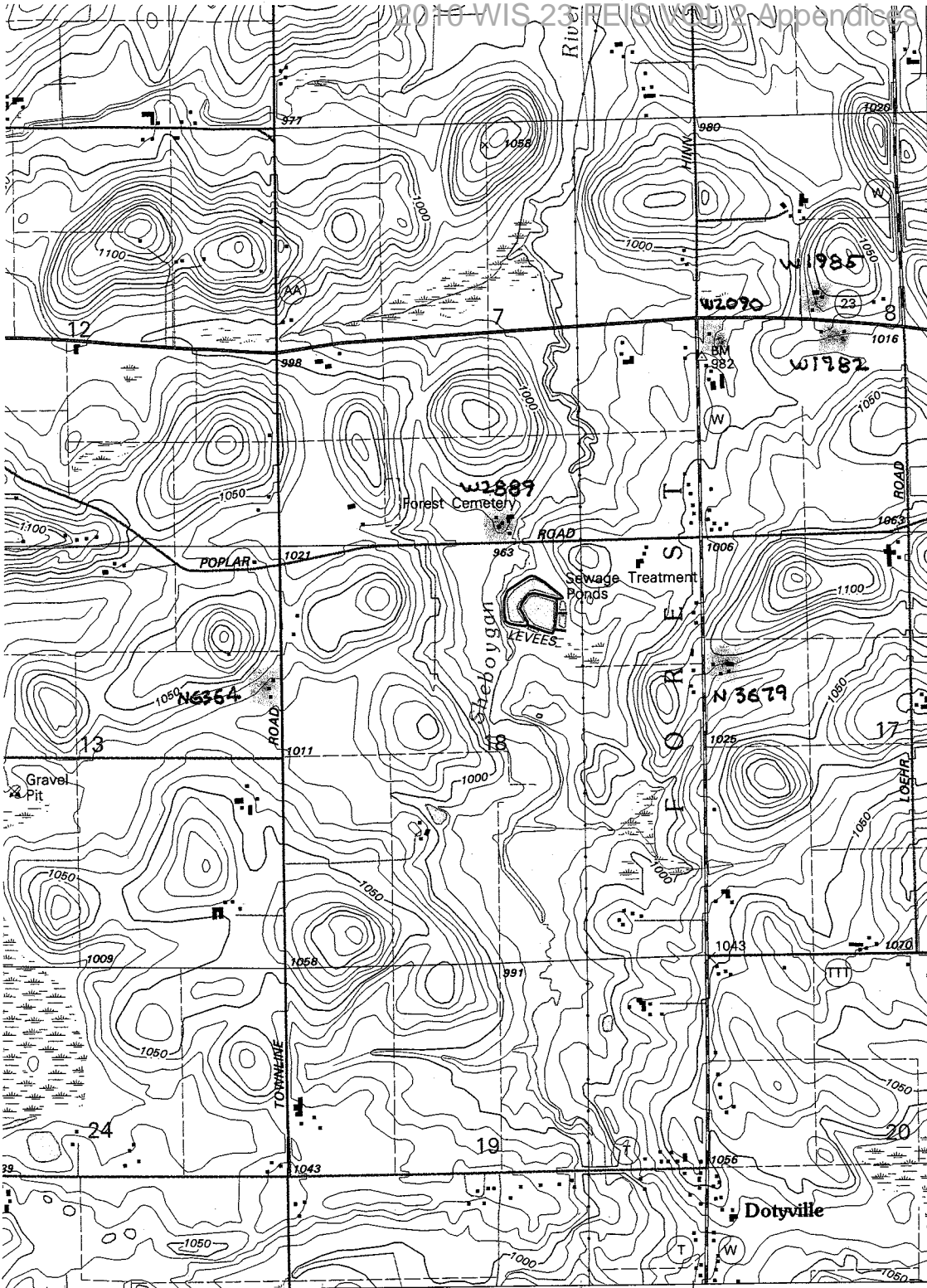


Comment



Fond du Lac, WI
WisDOT #1040-13/15-00
STH 23
= Surveyed Property
1 of 4

FOND DU LAC, WI
43088-G4-TF-024
1992
DMA 3371 IV SW-SERIES V861



47' 30"
 4849
 Fond du Lac Co., WI
 WisDOT #1440-13/15-0
 STA 23
 = surveyed property
 2 of 4

17' 30" R 18 E R 19 E 308000mE 399 88°15' 00"
 4845000mN 43°45' 00"

INTERIOR-GEOLOGICAL SURVEY, RESTON, VIRGINIA-1996

ROAD CLASSIFICATION

- Primary highway hard surface
- Secondary highway hard surface
- Light-duty road, hard or improved surface
- Unimproved road

- Interstate Route
- U.S. Route
- State Route



QUADRANGLE LOCATION

1	2	3	1 Fahrney Point
			2 Brothertown
			3 Marytown
4		5	4 Fond Du Lac
			5 Saint Cloud
			6 Byron
			7 Eden
6	7	8	8 Dundee

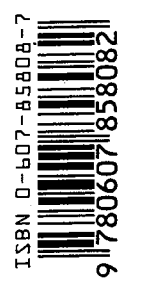
ADJOINING 7.5' QUADRANGLE NAMES

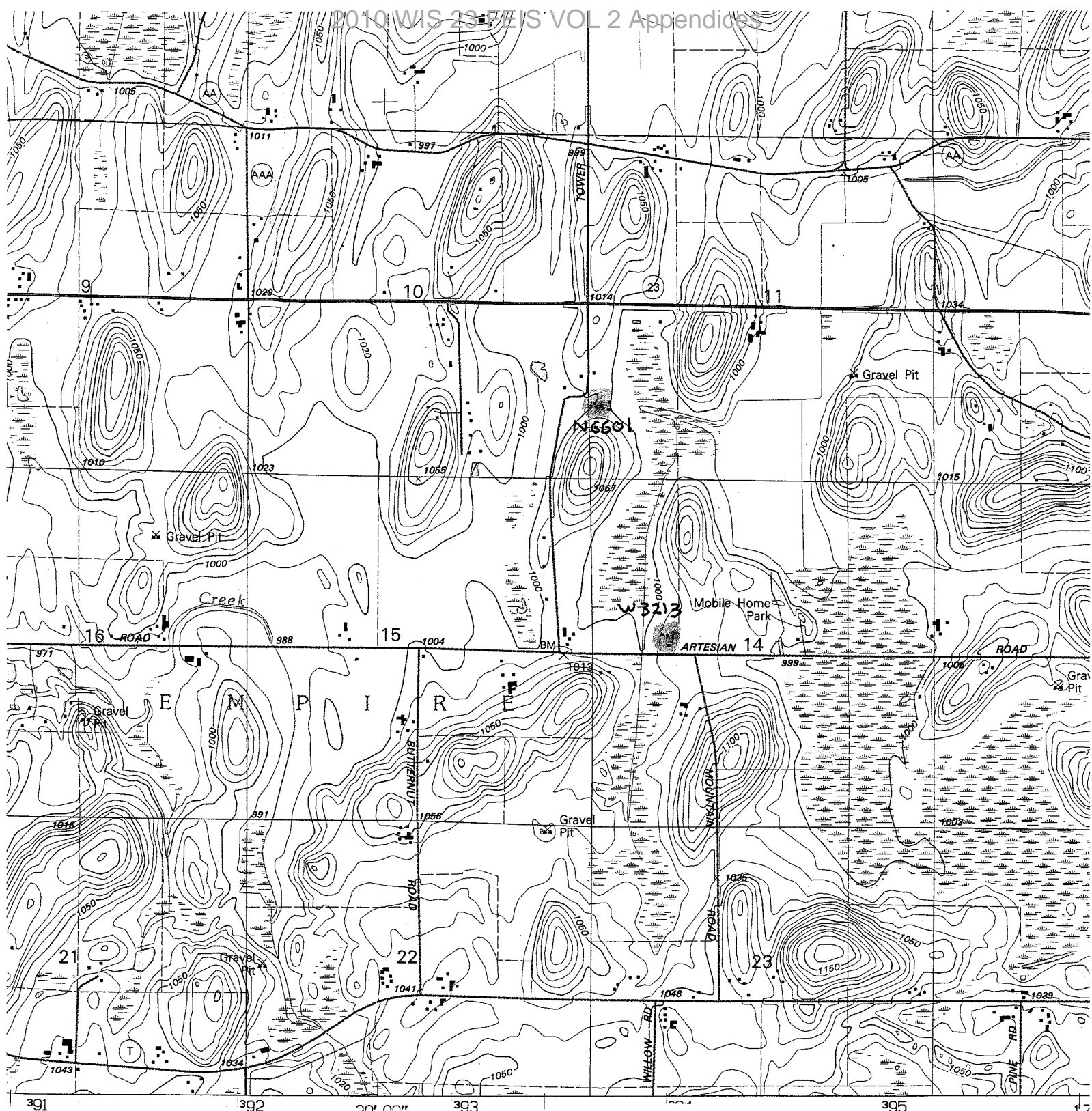
SAINT PETER, WI
 43088-G3-TF-024

1992

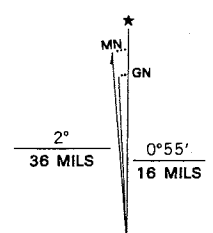
DMA 3371 IV SE-SERIES V861

INIA 22092
 N 53706

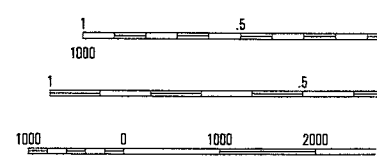




Irvey
995
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l NAD 27
Geodetic



UTM GRID AND 1995 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET



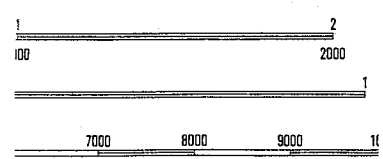
SAINT PETER, WI

43088-G3-TF-024

1992

DMA 3371 IV SE-SERIES V861

FLC1



CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

47° 30"

4849

4848

197 500 METERS

4846

43° 45' 00"

88° 22' 30"

390

732 500 METERS

391

392

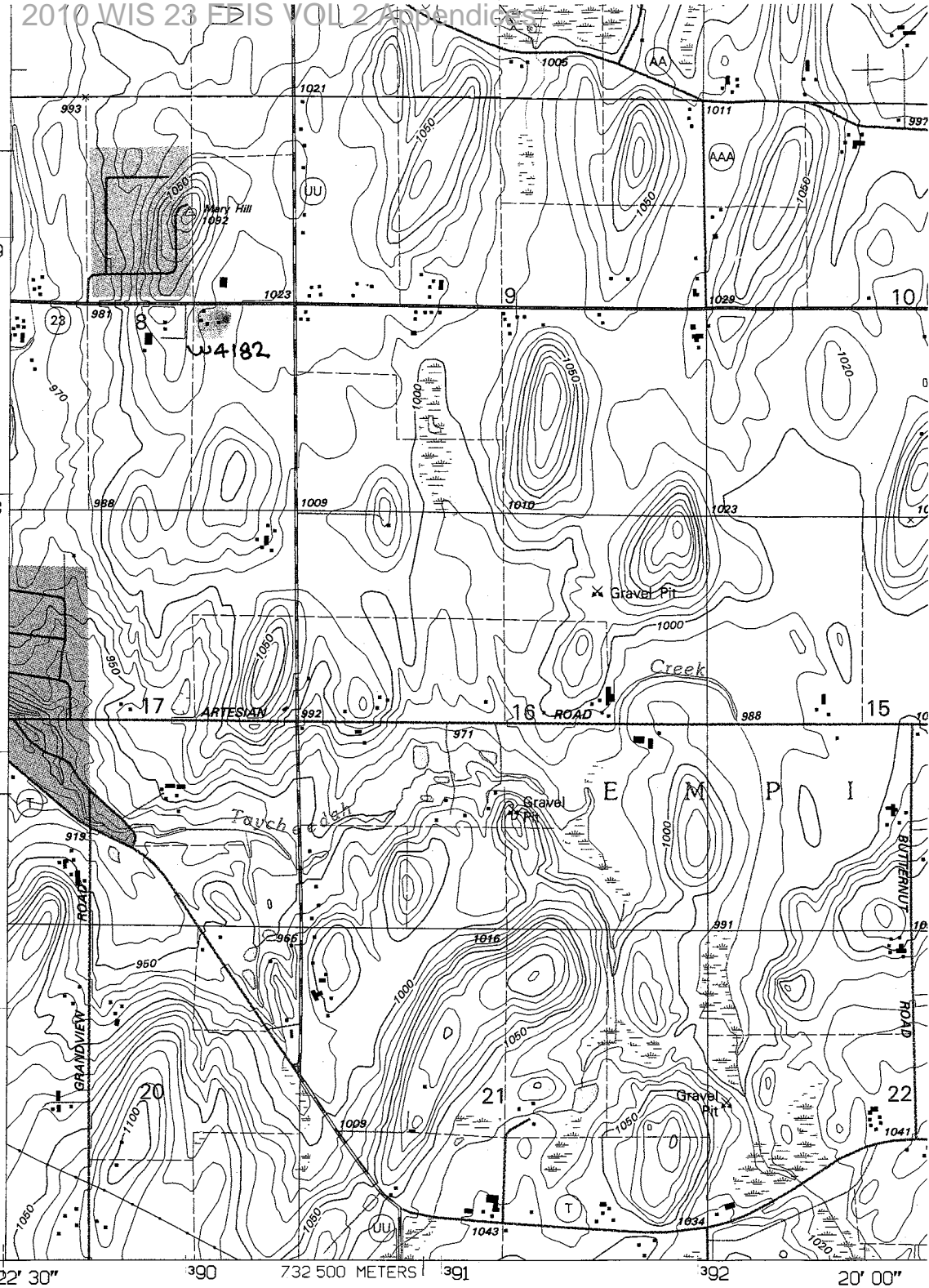
20° 00"

SAINT PETER, WI

43088-G3-TF-024

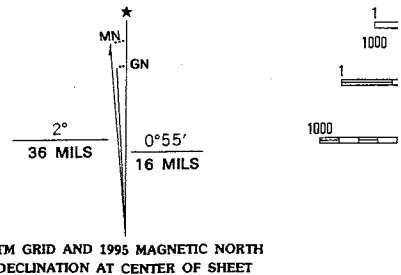
1992

DMA 3371 IV SE-SERIES V861

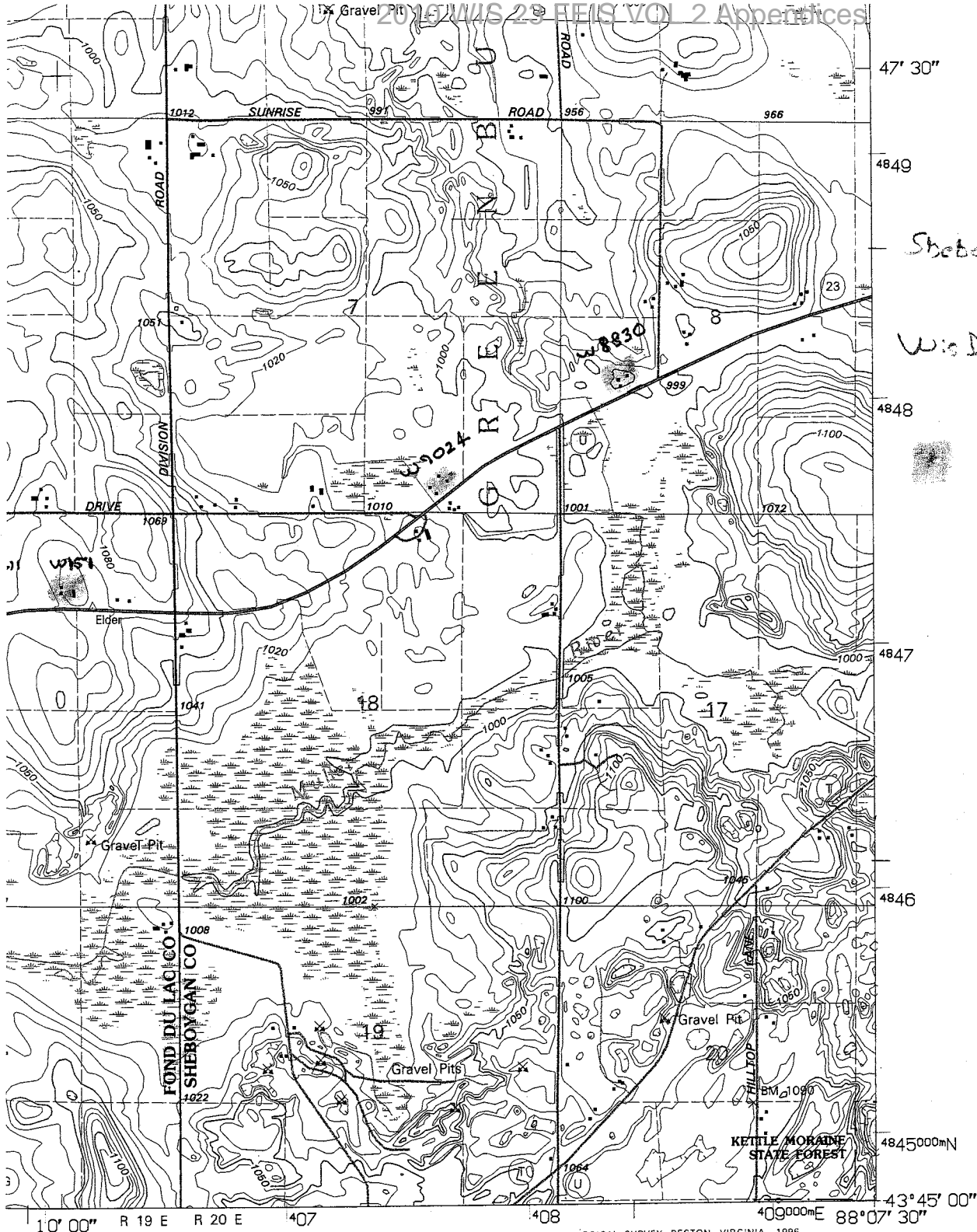


Produced by the United States Geological Survey

Compiled from imagery dated 1973. Revised from imagery dated 1992. PLSS and survey control current as of 1974
 Contours and elevations current as of 1973. Map edited 1995
 North American Datum of 1983 (NAD 83). Projection and blue 1000-meter ticks: Universal Transverse Mercator, zone 16
 2500-meter ticks: Wisconsin Coordinate System of 1983 (south zone)
 North American Datum of 1927 (NAD 27) is shown by dashed corner ticks. The values of the shift between NAD 83 and NAD 27 for 7.5-minute intersections are obtainable from National Geodetic Survey NADCON software



UTM GRID AND 1995 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET



Shelbygan / Fond du Lac
 Counties, WI
 Wis DOT #1440-13/15.00
 STA 23
 = Surveyed property
 3 of 4

INTERIOR-GEOLOGICAL SURVEY, RESTON, VIRGINIA-1996

ROAD CLASSIFICATION

- Primary highway hard surface
- Secondary highway hard surface
- Light-duty road, hard or improved surface
- Unimproved road

- Interstate Route
- U.S. Route
- State Route

QUADRANGLE LOCATION



1	2	3
4		5
6	7	8

- 1 Brothertown
- 2 Marytown
- 3 Kiel
- 4 Saint Peter
- 5 Elkhart Lake
- 6 Eden
- 7 Dundee
- 8 Cascade

ADJOINING 7.5' QUADRANGLE NAMES

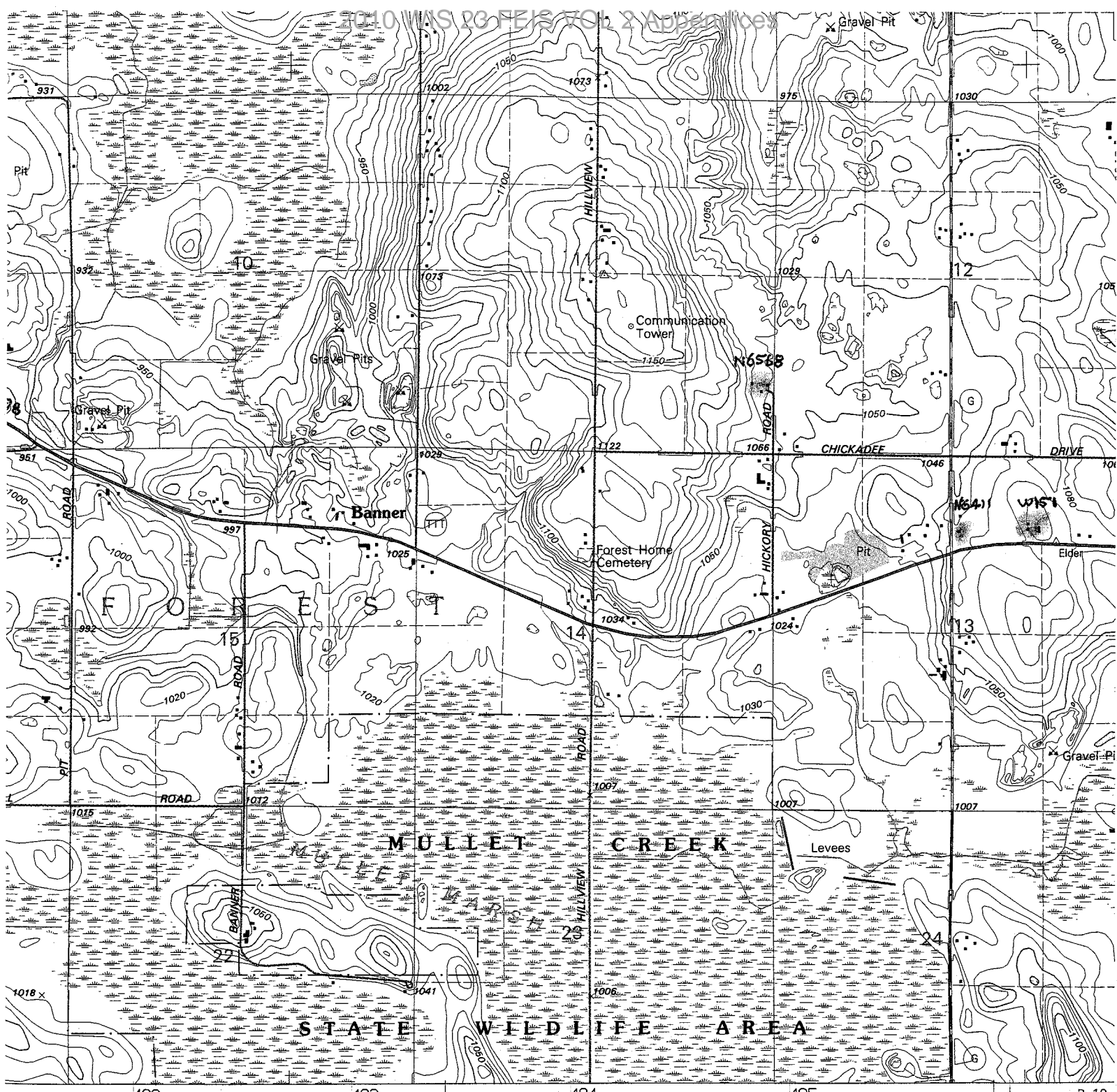
SAINT CLOUD, WI
 43088-G2-TF-024

1992

DMA 3371 I SW-SERIES V861

NIA 22092
 I 53706





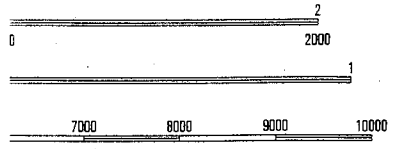
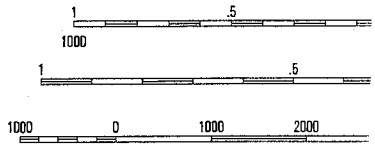
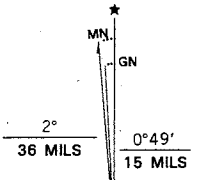
SAINT CLOUD, WI

43088-G2-TF-024

1992

DMA 3371 I SW-SERIES V861

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929



UTM GRID AND 1995 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
AND WISCONSIN GEOLOGICAL AND NATURAL HISTORY SURVEY, MADISON, WISCONSIN 53706

A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUA

1
4
6

ADJOINING

SAINT CLOUD, WI
 43088-G2-TF-024
 1992
 DMA 3371 I SW-SERIES V861

1 97 500 METERS

43° 45' 00"
 88° 15' 00"

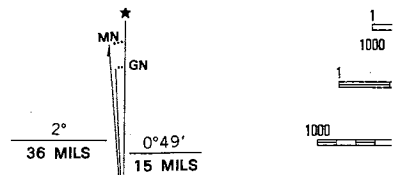
400 742 500 METERS 401

12' 30"

Produced by the United States Geological Survey

Compiled from imagery dated 1973. Revised from imagery dated 1992. PLSS and survey control current as of 1974
 Contours and elevations current as of 1973. Map edited 1995
 North American Datum of 1983 (NAD 83). Projection and blue 1000-meter ticks: Universal Transverse Mercator, zone 16
 2500-meter ticks: Wisconsin Coordinate System of 1983 (south zone)
 North American Datum of 1927 (NAD 27) is shown by dashed corner ticks. The values of the shift between NAD 83 and NAD 27 for 7.5-minute intersections are obtainable from National Geodetic Survey NADCON software

There may be private inholdings within the boundaries of the National or State reservations shown on this map



UTM GRID AND 1995 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

FOR SALE AND W.

Sheboygan Co, WI
Greenbush Township
Wis DOT # 1440-13/15-00
STH 23
= surveyed property

4 of 4

ELKHART LAKE, WI
43088-G1-TF-024
1992

197 500 METERS

43° 45' 00"
88° 07' 30"

752 500 METERS

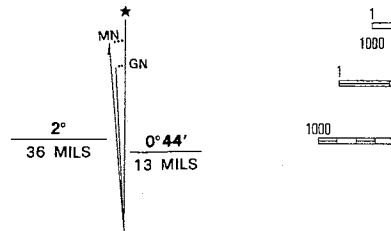
Produced by the United States Geological Survey

Compiled from imagery dated 1973. Revised from imagery dated 1992. PLSS and survey control current as of 1974. Contours and elevations current as of 1973. Map edited 1995

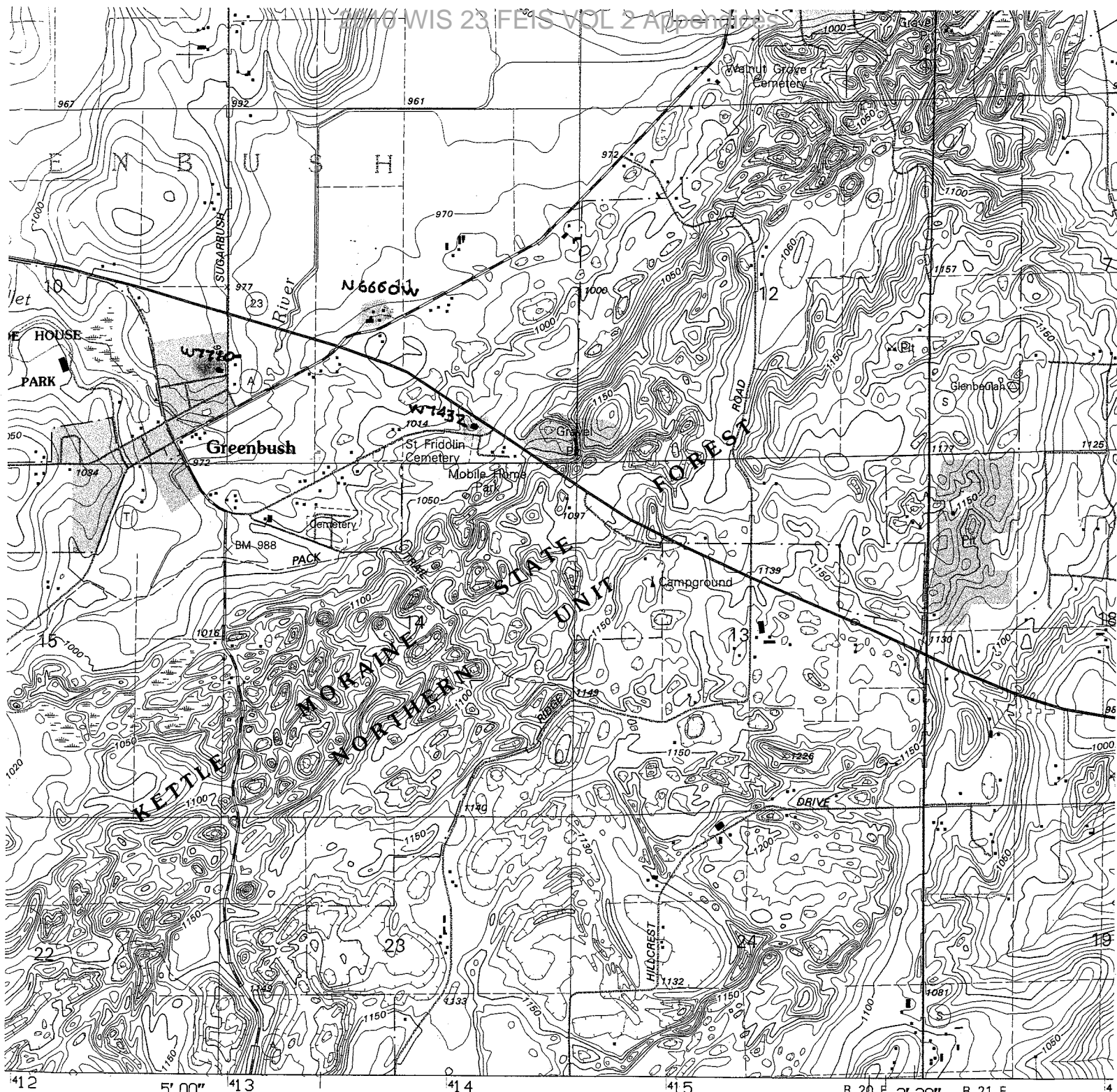
North American Datum of 1983 (NAD 83). Projection and blue 1000-meter ticks: Universal Transverse Mercator, zone 16. 2500-meter ticks: Wisconsin Coordinate System of 1983 (south zone)

North American Datum of 1927 (NAD 27) is shown by dashed corner ticks. The values of the shift between NAD 83 and NAD 27 for 7.5-minute intersections are obtainable from National Geodetic Survey NADCON software

There may be private inholdings within the boundaries of the National or State reservations shown on this map



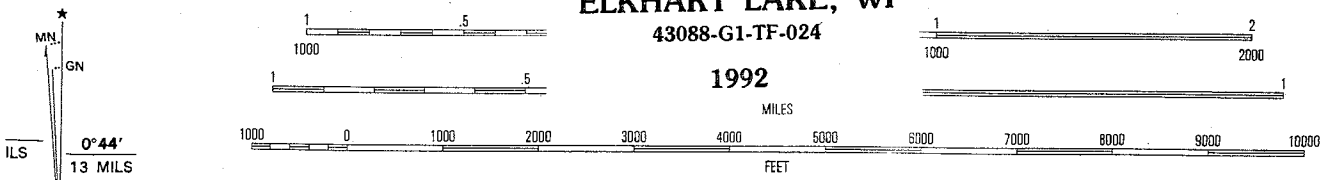
UTM GRID AND 1995 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET



ELKHART LAKE, WI

43088-G1-TF-024

1992



QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

ADJOINING 7.5' QUAD

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
AND WISCONSIN GEOLOGICAL AND NATURAL HISTORY SURVEY, MADISON, WISCONSIN 53706
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

AND 1995 MAGNETIC NORTH
ON AT CENTER OF SHEET

Hamilton, Kelly E - WHS

From: Wagner, Rob - NE Region [robert.wagner@dot.state.wi.us]
Sent: Tuesday, December 05, 2006 1:48 PM
To: Hamilton, Kelly E - WHS
Cc: Harris, Colleen - DOT
Subject: RE: STH 23 history/architecture survey

Kelly,

Thanks for the information.

In response to your question on the property at W7710 Spruce Street: Our proposed improvements for the WIS 23 expansion project, currently scheduled in 2013-2014, do not affect this property. The nearest roadwork is over 600 feet north of the north property line.

For access management purposes, we are official mapping an interchange at CTH A and an overpass at Sugarbush Road. There is no plan to construct either of these with the expansion project, nor in the foreseeable future beyond that. When the work is done, well in the future, this parcel may be effected with minimal grading work in the far northeast corner of the property, well over a 100 feet from the historic structure.

I hope these answers address your concern. Please contact me if you need any additional information.

Rob

Robert J. Wagner, P.E.
Corridor Planning Engineer
WisDOT-Northeast Region
920-492-5983 (FAX: 920-492-5640)
robert.wagner@dot.state.wi.us

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

From: Hamilton, Kelly E - WHS [mailto:Kelly.Hamilton@wisconsinhistory.org]
Sent: Monday, December 04, 2006 2:24 PM
To: Wagner, Robert - DOT
Subject: STH 23 history/architecture survey

WisDOT project ID: 1440-13-00 and 1440-15-00
Sheboygan and Fond du Lac Counties
STH 23: WCL - CTH P, and CTH K - ECL
MAP project ID: 02-5016 and 02-5017

Rob,

As I mentioned, Bob Newbery (WisDOT/BEES historian) and Tim Heggland (MAP architectural historian) met to discuss the architecture/history resources and MAP's recommendations.

St. Mary's Springs Academy

Bob agrees with the assessment that the project, as currently designed, will have no adverse effect on the St. Mary's Springs Academy.

W7710 Spruce Street in the community of Greenbush

This Queen Anne house is considered to be potentially eligible for the National Register of Historic Places. It is our understanding that the area of potential effect for S. Sugarbush Road/interchange extends onto this parcel. Please clarify whether this interchange is proposed for the current STH 23 improvement project, or if it is being considered for a future undertaking? MAP has been directed to prepare a determination of eligibility form only if the Queen Anne house will be affected by the current project.

Kelly

Kelly Hamilton
Museum Archaeology Program Director
Wisconsin Historical Society
816 State Street
Madison, WI 53706

office: 608-264-6560

fax: 608-264-6577

email: kelly.hamilton@wisconsinhistory.org

please visit our website at <http://www.wisconsinhistory.org>

ARCHITECTURE/HISTORY SURVEY COVER SHEET

DT1446 4/2008

Wisconsin Department of Transportation

Instructions: Please complete this cover sheet and Worksheets A and B for all Wisconsin Department of Transportation (WisDOT) architecture/history surveys. Directions for completing the worksheets are included in the *WisDOT Survey Manual*. If a letter report is appropriate, the cover sheet **must** be completed, but Worksheets A and B are not required.

1. PROJECT INFORMATION

WisDOT Project ID 4050-12-00	County Fond du Lac
Highway/Street USH 151 Bypass	City/Town/Village Fond du Lac, Byron and Empire Townships
Project Termini STH 175 to CTH WH	
USGS Topographic Map/Survey Map USGS Fond du Lac, USGS Byron	
Prepared By Elizabeth L. Miller	Survey Date May 24 and 25, 2008

2. RECOMMENDATIONS - Based on the work described on Worksheets A and B, the following steps are recommended to complete the Section 106 Review:

No listed, eligible, or potentially eligible buildings/structures are identified - No further work recommended.

Listed, eligible, or potentially eligible buildings/structures are identified – Check all that apply:

Listed or previously determined eligible properties – List each property below:

The John B. Macy House Historic District at N5620 USH 45 was determined in eligible in 1992 under Criterion B, for its association with three men significant in local history, and under Criterion C, for its excellent and intact Italianate farmhouse and the historic landscape the seven other contributing buildings create. It is within the refined, final APE.

The St. Mary's Springs Academy Complex at 255 CTH K was determined eligible in 2007, under Criterion C, for its high style institutional buildings. While this property is located in the broad APE initially surveyed, it is outside the refined, final APE.

Potentially eligible properties - DOE recommended – List each property and applicable National Register criteria below:

The Phillips House at N6579 CTH K is potentially eligible under Criterion C, as a good and intact example of Gothic Revival residential design, and potentially eligible under Criterion B, for its association with Elihu Phillips, who was politically active and founded a local bank. It lies within the refined, final APE.

Potentially eligible properties – DOE **not** recommended – List each property and applicable National Register criteria and explain why a DOE is not recommended:

The Rienzi Cemetery at N6101 CTH K is potentially eligible under Criterion A, in community planning, and under Criterion C, for its collection of funerary art and its fine 1930 NeoGothic Revival mausoleum. However, while the Rienzi Cemetery lies within the broad, initial APE for the project, it stands outside of the refined, final APE. The right-of-way preservation corridor as currently envisioned is confined to the west of the existing USH 151 Fond du Lac bypass; the existing USH 151 bypass runs between the Rienzi Cemetery and the right-of-way preservation corridor. Therefore, as currently envisioned, this project has no potential to impact the historic character of the Rienzi Cemetery. A Determination of Eligibility is NOT recommended at this time. If the parameters of the preservation corridor change, this recommendation should be reconsidered.

3. ATTACHMENT CHECK LIST

2010 WIS 23 FEIS VOL 2 Appendices

- Architecture/History Survey Worksheet A
- Architecture/History Survey Worksheet B
- Letter report (if applicable) with supplemental information
- Map with surveyed properties clearly labeled
- Appropriate survey images, see below:

County is digitized

- Images uploaded to WHPD
- 1 set of labeled color prints for SHPO
- 1 set of labeled color prints for BEES

County is **not** digitized

- Inventory cards with ^{b/w}~~color~~ prints attached
- 1 set of labeled color prints for BEES

ARCHITECTURE/HISTORY SURVEY WORKSHEET A

1. Project Description and Area of Potential Effects (APE)

The Wisconsin Department of Transportation is preparing a corridor preservation study and plan for the USH 151 bypass of the city of Fond du Lac between STH 175 and CTH WH (at STH 23). This project will evaluate different access alternatives for side roads and interchanges on the USH 151 bypass, with the intent of converting the bypass into an access-controlled freeway within the next eight to 20 years. Following traffic modeling, preliminary geometric design of access alternatives, impact evaluation, the preparation of an environmental document, and public and agency interaction, a right-of-way preservation plat will be prepared. The right-of-way preservation plat will propose right-of-way acquisition. Because this study includes a variety of alternatives, a very broad APE was initially identified, which extended beyond all properties adjacent to and within the viewshed of each alternative, and all properties adjacent to and within the viewshed of the existing alignment of the USH 151 bypass from USH 41 to STH 23, and adjacent to and within the viewshed of the existing alignment of STH 23 from the USH 151 bypass to just west of CTH WH. See attached exhibits.

Within the broad initial APE, those properties that were at least 40 years old and displayed some potential for architectural or historical significance, while maintaining a degree of integrity, were surveyed. Three properties met these criteria: N5774 CTH K (FD-13/18); the Rienzi Cemetery at N6101 CTH K (FD-13/17); and the Phillips House at N6579 CTH K (FD-12/29). One architecturally interesting property that is approaching 40 years old was also surveyed: the A-frame at N4924 Hickory Road (FD-114/16). Four properties included in the Wisconsin Historical Society's Architecture/History Inventory had been altered since last surveyed, or had a poor photo, or a missing survey card, and so were resurveyed. These properties are: N4764 Martin Road (altered, FD-22/38); W4182 STH 23 (survey card missing, FD-12/24); W4819 CTH V (poor photo, FD-60/25); and N4902 CTH V (altered, FD-21/37). One property of local interest was included because the property owner indicated that her house had been a stop on the Underground Railroad. This is the house at N6437 CTH K (FD-114/4). **Two properties in the initial APE were identified as potentially eligible for the National Register. The Phillips House at N6579 CTH K is potentially eligible under Criterion C, as a good and intact example of Gothic Revival residential design, and potentially eligible under Criterion B, for its association with Elihu Phillips, who was politically active and founded a local bank. The Rienzi Cemetery at N6101 CTH K is potentially eligible under Criterion A, in community planning, and under Criterion C, for its collection of funerary art and its fine 1930 NeoGothic Revival mausoleum. In addition, two properties within the initial APE were previously determined eligible for the National Register. The John B. Macy House Historic District at N5620 USH 45 was determined eligible in 1992 under Criterion B, for its association with three men significant in local history, and under Criterion C, for its excellent and intact Italianate farmhouse and the historic landscape the seven other contributing buildings create. The St. Mary's Springs Academy Complex at 255 CTH K (FD-13/22) was determined eligible in 2007, under Criterion C, for its high style institutional buildings.**

After surveying the initial APE, I reviewed the areas currently under consideration for the right-of-way preservation corridor and consulted with the project engineer to refine the APE, so that only those properties adjacent to and within the viewshed of each alternative, or adjacent to and within the viewshed of the existing alignment of the USH 151 bypass from USH 41 to STH 23, or adjacent to and within the viewshed of the existing alignment of STH 23 from the USH 151 bypass to just west of CTH WH were included. It is believed that the preservation corridor project, as currently envisioned, has no potential to impact properties outside the refined, final APE. **The Rienzi Cemetery and the St. Mary's Springs Academy Complex lie outside the final APE, given the alternatives currently under consideration as part of the right-of-way preservation corridor. Therefore, a Determination of Eligibility is not recommended for the Rienzi Cemetery at this time.** If the parameters of the right-of-way preservation corridor change, this recommendation should be reconsidered. **The Phillips House and the John Macy House Historic District lie within the final APE. A Determination of Eligibility is recommended for the Phillips House.**

2. Previously Identified/Surveyed Properties and Previous Surveys within the Area of Potential Effects (APE) - Indicate if any properties within the APE are included in the following categories (enter *None* if there are no properties in the category):

Locally designated historic sites/landmarks
None

Properties included in the Wisconsin Inventory of Historic Places

1. Martin Road, W. side, .2 N of Lost Arrow Road (AHI # 58979, current address N4764 Martin Road). C. 1900, Gable ell house. RESURVEYED. SURVEY CARD UPDATED.

2. John Macy House Historic District, N5620 USH 45 (AHI #s 27792 through 27800, determined eligible 1992). Italianate farmhouse and mid-19th century outbuildings. Unchanged since 1992. NOT RESURVEYED. SURVEY CARDS NOT UPDATED.
3. N5774 CTH K (AHI # 59488). Side-gabled vernacular house. RESURVEYED. SURVEY CARD UPDATED.
4. Rienzi Cemetery off CTH K (AHI #59486, current address N6101 CTH K). Large cemetery. RESURVEYED, SURVEY CARD UPDATED.
5. CTH T, N side, .4 miles E of CTH K (AHI #59485). Vernacular, one-story cube house. DEMOLISHED.
6. G. N. Shoemaker Farmhouse, W4182 STH 23 (AHI # 59475). Brick Italianate farmhouse with modern barns. CARD MISSING FROM AHI. May be acquired. RESURVEYED, SURVEY CARD UPDATED.
7. W4810 CTH V (AHI # 59484, correct address W4819 CTH V). Bungalow farmhouse. Altered since last surveyed in 1991, may be acquired. RESURVEYED, SURVEY CARD UPDATED.
8. L. H. Phillips House, CTH K, E. side, .4 miles S of STH 23 (AHI # 59467, current address N6579 CTH K, actual historic name, Elihu Phillips House. Lyman Phillips House destroyed by fire in 1876). High style, Gothic Revival house. Abandoned and deteriorating. RESURVEYED, SURVEY CARD UPDATED.
9. St. Mary's Springs Academy, 255 CTH K (AHI #s 59472, and 141378 through 141383, determined eligible 2006). Early twentieth century school complex. Unchanged since 2006. NOT RESURVEYED, SURVEY CARDS NOT UPDATED. Outside final APE.
10. N5385 CTH V (AHI # 59405). Vernacular farmhouse dating from late 19th century, large enclosed front porch. Undistinguished, and unchanged since surveyed in 1991. NOT RESURVEYED, SURVEY CARD NOT UPDATED.
11. N5042 CTH V (AHI #59434). Altered and composition sided, Greek Revival-influenced house. Undistinguished when originally surveyed. Unchanged since 1991. RECOMMEND REMOVAL FROM AHI. NOT RESURVEYED, SURVEY CARD NOT UPDATED.
12. N5244 Martin Road (AHI #59435). Undistinguished Gable Ell farmhouse, altered with aluminum siding and 1/1 replacement windows. Unchanged since surveyed in 1991. NOT RESURVEYED, SURVEY CARD NOT UPDATED.
13. N5498 Martin Road (AHI #59407). Intact but undistinguished Gable Ell house. No association with significant person or event discovered. Unchanged since surveyed in 1991. NOT RESURVEYED, SURVEY CARD NOT UPDATED.
14. N5560 Martin Road (AHI #59408, correct address N5506 Martin Road). Intact but undistinguished Two-story cube house. No association with significant person or event discovered. Unchanged since surveyed in 1991. NOT RESURVEYED, SURVEY CARD NOT UPDATED.
15. Martin Road Bridge, Martin Road (AHI #59409). 1910 Bedstead pony truss bridge. Determined not eligible 2005. DEMOLISHED.
16. Inters Kelly Rd & CTH V, NW corner (AHI #59437, current address N4902 CTH V). Greek Revival residence. Altered since last survey. RESURVEYED, SURVEY CARD UPDATED. RECOMMEND REMOVAL FROM AHI.
17. N5001 CTH V (AHI #59438). Italianate-influenced house. Undistinguished and altered with asphalt siding and 20th century enclosed front porch. Unchanged since surveyed in 1991. NOT RESURVEYED, SURVEY CARD NOT UPDATED.
18. N5069 CTH V (AHI #59441). Two-story Gable-Ell residence. Undistinguished and altered with vinyl siding, partially enclosed porch, and replacement windows in reduced openings. Unchanged since surveyed in 1991. RECOMMEND REMOVAL FROM AHI. NOT RESURVEYED, SURVEY CARD NOT UPDATED.
19. N5221 CTH V (AHI #59443). Two-story Gable Ell residence. Undistinguished, and altered with vinyl-siding, and replacement windows in altered openings (some enlarged, some reduced). Unchanged since surveyed in 1991. RECOMMEND REMOVAL FROM AHI. NOT RESURVEYED, SURVEY CARD NOT UPDATED.
20. Marshall School, CTH V, E side, .8 mile N of Kelly Road (AHI #59446). Brick schoolhouse. DEMOLISHED.

Previous surveys within the project area
 Fond du Lac County Survey, 1974
 STH 151 Compliance Survey, 1991

3. Historic Context for Project Area

Fond du Lac County was organized in 1836. Permanent European-American settlement of Fond du Lac, Empire and Byron townships began in the late-1830s, with a few pioneers, predominantly from New York state and New England. The area experienced rapid growth beginning in the mid-1840s. By 1860, Byron and Fond du Lac townships (excluding the city of Fond du Lac) counted just over 1,000 residents each, while the town of Empire numbered close to 900 persons. These figures would fluctuate only slightly until the 1920s, and then increase again after World War II. Most European-American settlers who arrived before 1870 came to farm, and the principal crop they raised was wheat. The first grist mill (in the APE, not extant) in the county was erected in 1845. Wheat cultivation in Fond du Lac County peaked around 1880, at which time the county was the second leading producer in Wisconsin. The

wheat crop declined rapidly thereafter, and Fond du Lac County farmers moved into other agricultural pursuits, notably dairying and raising sheep. The county's leading agricultural product from the late nineteenth to the mid twentieth century was cheese.¹ Since the end of World War II, the population of Fond du Lac, Empire and Byron townships has increased, largely as suburban development on the outskirts of the city of Fond du Lac has spread into the countryside. While the areas south and east of the current alignment of the USH 151 bypass retain an agricultural appearance, new residential and commercial development is extending into these areas, and the acreage of land under cultivation is decreasing.

4. Physical Setting - Briefly describe the overall physical setting of surveyed properties. The description should include a discussion of the following issues as they relate to the findings of the survey: existing and historical land uses, density of development, settlement patterns and general types of properties identified in the APE.

The physical setting of properties surveyed ranges from gently rolling to relatively flat terrain. Historically, the land use for the entire APE was predominantly agricultural from the mid-nineteenth century until the mid-to-late twentieth century. Moderate-density, residential developments built in the last 25 years appear north and west of the current alignment of the USH 151 bypass, while the areas south and east of the current alignment retain much of their low-density, agricultural appearance. General property types identified in the APE are houses, agricultural outbuildings, and a cemetery.

5. Bibliography - List sources consulted.

Atlas and Plat Book, Fond du Lac County, Wisconsin, 1975. Rockford: Rockford Map Publishers, 1975.

Cartwright, Carol Lohry. "City of Fond du Lac Intensive Survey Report." Prepared for the City of Fond du Lac, October 1992.

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Glaze, A. T. *Incidents and Anecdotes of Early Days and History of Businesses in the City and County of Fond du lac From Early Times to the Present.* Fond du Lac: P. B. Haber Printing Co., 1905.

Henion, J.W. and C.M. Foote. *Plat Book of Fond du Lac County, Wisconsin.* Minneapolis: Henion and Foote, 1893.

History of Fond du Lac County, Wisconsin. Chicago: Western Historical Company, 1880.

Illustrated Historical Atlas of Fond du Lac County, Wisconsin. Fond du Lac, Wisconsin: Harney and Tucker, 1874.

Inscriptions of Rienzi Cemetery, Empire Township, Fond du Lac County. Fond du Lac: Fond Du Lac County Genealogical Society, 1997.

Land Atlas and Plat Book, Fond du Lac County, Wisconsin. Rockford: Rockford Map Publishers, 1982; 1990; and 2005.

McKenna, Maurice, editor. *Fond du Lac County, Wisconsin: Past and Present.* Two volumes. Chicago: S. J. Clarke Publishing Company, 1912.

Map of Fond du Lac County, Wisconsin. Fond du Lac, Wisconsin: Bogert and Haight, 1862.

Mentzner, Michael. *Fond du Lac County: A Gift of the Glacier.* Fond du Lac: Fond du Lac County Historical Society, 1991.

Official Plat Book of Fond du Lac County, Wisconsin. Fond du Lac, Wisconsin: Fond du Lac County Treasurer, 1948.

Ownership Map and Pure Bred Stock Breeders Guide to Fond du Lac County, Wisconsin. Rockford: W.W. Hixson and Company, c. 1920.

Portrait and Biographical Album of Fond du Lac County, Wisconsin. Chicago: Acme Publishing Co., 1889.

¹ Barbara L. Wyatt, editor, *Cultural Resource Management in Wisconsin*, (Madison, Wisconsin: State Historical Society of Wisconsin, 1986), II:2-1 to 2-3; A. T. Glaze, *Incidents and Anecdotes of Early Days and History of Businesses in the City and County of Fond du Lac From Early Times to Present*, (Fond du Lac: P. B. Haber Printing Co., 1905), pp. 108-112; and Wisconsin Crop and Livestock Reporting Service, *A Century of Wisconsin Agriculture: 1848-1948*, (Madison, Wisconsin: Wisconsin State Department of Agriculture, 1949), pp. 110-111.

Thornton, Ray. *A Photographer's History of Fond du Lac County, City, and Townships*. Fond du Lac: Ray Thornton, 1977.

Tri-annual Atlas and Plat Book, Fond du Lac County, Wisconsin. Rockford: Rockford Map Publishers, 1966.

Wisconsin Crop and Livestock Reporting Service. *A Century of Wisconsin Agriculture: 1848-1948*. Madison, Wisconsin: Wisconsin State Department of Agriculture, 1949.

Wyatt, Barbara L., editor. *Cultural Resource Management in Wisconsin*. Three volumes. Madison, Wisconsin: State Historical Society of Wisconsin, 1986.

ARCHITECTURE/HISTORY SURVEY WORKSHEET B

1. Survey Results – For each surveyed property in the APE, provide a brief description, relevant property-specific history, a statement of significance that addresses both the applicable National Register Criteria and integrity, and a National Register eligibility recommendation. Complete the formatted heading for each surveyed property. Copy and paste the formatted heading if you have additional properties.

Address	AHI #	Map Code	NRHP Evaluation
N4764 Martin Road	58979	FD-22/38	not eligible

Township-Range-Section (Rural Properties Only)
1417E-02

Description

This two-story, frame, Gable Ell house appears to date from c. 1890. It rests on a stone foundation and exhibits 1/1 sash windows, a cottage window with a plain header, a triangular dormer with a diamond-shaped window, and a gabled overdoor tucked into the ell. Asphalt shingles cover the roof. Since it was last surveyed in 1991, the house's asphalt siding has been replaced with vinyl/aluminum siding.

Statement of Significance

This house was probably built for Daniel D. Treleven c. 1890.¹ Treleven immigrated from Cornwall in 1843, with his brothers John, Joseph and Thomas. From at least 1874 until at least 1893, Daniel Treleven owned this property. Treleven represented the area in the state assembly in 1880. Thomas Treleven owned the property from at least 1904 until at least 1920. By 1948, it was owned by Theodore Ott, and it remained in the Ott family as late as 2005.² The Treleven House was evaluated under Criteria B and C, at the local level. Although Daniel Treleven was civic-minded and a long-time farmer in Fond du Lac County, his contribution to the development of the area was not significant enough to qualify the property for the National Register under Criterion B. Under Criterion C, the house is a modest example of a vernacular form, and is not sufficiently distinguished to meet National Register criteria for its architecture. In addition, the house displays only fair integrity, because it has been altered with the application of vinyl/aluminum siding.

Recommendation

The Daniel Treleven House is not eligible for the National Register. **A Determination of Eligibility is not recommended.**

Address	AHI #	Map Code	NRHP Evaluation
N5774 CTH K	59488	FD-13/18	not eligible

Township-Range-Section (Rural Properties Only)
1518E-19

Description

This two-story, frame, Side Gable house displays the influence of the Greek Revival style and may date from c. 1862. The house is finished with clapboards, trimmed with corner and cornice boards, and sits on a stone foundation. Returned eaves enclose the gable ends. One-over-one sash windows light the house. The roof is surfaced with asphalt shingles. The asymmetrical front façade appears to date from a c. 1920 remodeling, and possesses a flat-roofed, off-center portico and a rectangular, shed-roofed bay window.

Statement of Significance

This house was probably built for John Treleven c. 1862.³ Treleven immigrated from Cornwall in 1843, with his brothers Joseph, Thomas and Daniel. The property remained in the Treleven family until at least 1966.⁴ Under Criterion C, the house is an undistinguished example of a Greek Revival-influenced residence. The *Illustrated Historical Atlas of Fond du Lac County, Wisconsin, 1874* includes a drawing of the Treleven House, which shows that it originally had a central entrance sheltered by a full-façade front porch with plain posts, and 6/6 windows. The

¹ *Illustrated Historical Atlas of Fond du Lac County, Wisconsin, 1874*, (Fond du Lac: Harney & Tucker, 1874); and J. W. Henion and C. M. Foote, *Plat Book of Fond du Lac County, Wisconsin*, (Minneapolis: Henion & Foote, 1893).

² A. T. Glaze, *Incidents and Anecdotes of Early Days and History of Businesses in the city and county of Fond du Lac from Early Times to the Present*, (Fond du Lac: P. B. Haber Printing Company, 1905), p. 95; and historical maps listed in the bibliography.

³ *Map of Fond du Lac County, Wisconsin*, (Fond du Lac: Bogert & Haight, 1862).

⁴ *Portrait and Biographical Album of Fond du Lac County, Wisconsin*, (Chicago: Acme Publishing Company, 1889), p. 373; and historical maps listed in the bibliography.

early twentieth century alterations compromise the house's integrity, such that it is not eligible for its architecture. Further, no historical significance was found that would qualify the house for the National Register under Criteria A or B.

Recommendation

The John Treleven House is not eligible for the National Register. **A Determination of Eligibility is not recommended.**

Address	AHI #	Map Code	NRHP Evaluation
N6101 CTH K	59486	FD-13/17	potentially eligible

Township-Range-Section (Rural Properties Only)

1518E-18

Description

The Rienzi Cemetery is a 136-acre tract that includes several plats, two mausoleums (1930 and 2003), and numerous grave markers dating from 1845 to the present, exhibiting a wide range of funerary art. The 1930 mausoleum is a NeoGothic Revival structure clad with smooth-faced gray ashlar. A long, low structure capped with a hip roof, the 1930 mausoleum possesses a projecting, front-gabled, entrance pavilion with a shouldered parapet and a pair of doors flanked by slender buttresses and pointed-arch windows.

Statement of Significance

The Rienzi Cemetery was established in 1845 by Nathaniel Potter Tallmadge, second Wisconsin Territorial Governor, as a family cemetery. Tallmadge named the cemetery after the 14th century Italian politician, Cola di Rienza, who attempted to restore Rome to a position of power, and to unify Italy. Prior to coming to Wisconsin, Tallmadge was a prominent senator representing New York state, and had declined the vice presidential spot on the 1840 Whig ticket with William Henry Harrison. In 1853, Tallmadge gave what was then an 8-1/2 acre burying ground to the city of Fond du Lac to serve as a public cemetery. Tallmadge made additional gifts of land in 1863 and 1877. Carol Cartwright's 1992, "City of Fond du Lac Intensive Survey Report," identifies the Rienzi Cemetery as potentially eligible for the National Register under Criterion A, in community planning. The cemetery may also be eligible under Criterion C, as a designed landscape and for its collection of grave markers, which reflect the evolution in funerary art from the mid-nineteenth to the mid-twentieth century. The 1930 mausoleum may also be individually eligible under Criterion C, as a fine and intact example of NeoGothic Revival design.

Recommendation

The Rienzi Cemetery is potentially eligible for the National Register. However, while the Rienzi Cemetery lies within the broad, initial APE for the USH 151 Fond du Lac bypass preservation corridor project, it stands outside of the refined, final APE. The right-of-way preservation corridor as currently envisioned is confined to the west of the existing USH 151 Fond du Lac bypass; the existing USH 151 bypass runs between the Rienzi Cemetery and the right-of-way preservation corridor. Therefore, as currently envisioned, this project has no potential to impact the historic character of the Rienzi Cemetery. **A Determination of Eligibility is NOT recommended at this time. If the parameters of the preservation corridor change, this recommendation should be reconsidered.**

Address	AHI #	Map Code	NRHP Evaluation
W4182 STH 23	59475	FD-12/24	not eligible

Township-Range-Section (Rural Properties Only)

1518E-08

Description

This two-story, brick, Italianate farmhouse was probably erected for G. N. Shoemaker c. 1873. The Shoemaker Farmhouse is rectangular in form, with a low-pitched, asphalt-shingled, hip roof. The foundation has been stuccoed, but likely is stone. The front façade displays an off-center entrance composed of a pair of wood-and-glass doors surmounted by a segmental-arch transom and accented with a hip-roofed portico with slender, beveled posts. This configuration appears to be original. However, all the windows are replacements, set in slightly reduced openings, and a large picture window, flanked by smaller sash windows, has been installed on the front façade. The house retains its original cornice boards, embellished with scrolled brackets. A large addition is attached to the rear of the house. No intact outbuildings from the historic period remain.

Statement of Significance

G. N. Shoemaker came from New York state in 1849. The Shoemaker family owned this property from at least 1874 until at least 1904.⁵ The Shoemaker Farmhouse was evaluated under criterion C. It is a modest example of an Italianate residence, and the picture window and replacement windows in reduced openings compromise its integrity. Further, no historical significance was discovered that would qualify the farmhouse under criteria A or B.

⁵ *Illustrated Historical Atlas of Fond du Lac County, Wisconsin, 1874*; and other historical maps listed in the bibliography.

Recommendation

The Shoemaker Farmhouse is not eligible for the National Register. **A Determination of Eligibility is not recommended.** It should be noted that one alternative under consideration as part of the corridor preservation plan calls for the acquisition and demolition of the Shoemaker Farmhouse.

Address	AHI #	Map Code	NRHP Evaluation
W4819 CTH V (house)	59484	FD-60/25	not eligible
W4819 CTH V (barn)	149821	FD-114/20	

Township-Range-Section (Rural Properties Only)

1518E-18

Description

This one and one-half story, side gabled, Bungalow is set on a concrete block foundation. It was probably built c. 1920 for T. J. Kelly. The house is finished with vertical boards and vinyl/aluminum siding, and the cutaway front porch displays Doric columns and wrought iron railings. Replacement casement windows light the house. A gabled dormer with a casement bay window perches on the front slope of the asphalt shingled roof. One outbuilding from the historic period remains on the property. It is a large, gambrel-roofed barn (**AHI No. 149821, map code FD-114/20**) with vertical board siding rests on a poured concrete foundation northwest of the house. It appears to date from c. 1920.

Statement of Significance

Although this Bungalow was probably built for T. J. Kelly c. 1920, the property has been in the Stanchfield family since at least 1948.⁶ The house was evaluated under Criterion C, but it is a modest example of a Bungalow, and the replacement windows, vertical board and vinyl/aluminum siding, and wrought iron porch railings compromise its integrity. Further, no historical significance was discovered that would qualify the house under Criteria A or B.

Recommendation

This property is not eligible for the National Register. **A Determination of Eligibility is not recommended.** It should be noted that one alternative under consideration as part of the corridor preservation plan would acquire and demolish this property.

Address	AHI #	Map Code	NRHP Evaluation
N6579 CTH K	59467	FD-12/29	potentially eligible

Township-Range-Section (Rural Properties Only)

1518E-7

Description

This two-story, frame Gothic Revival house was erected for Elihu L. Phillips c. 1853.⁷ The house features steeply-pitched gable roofs, pointed-arch wall dormers with bargeboards, and a projecting center gable with large, stepped, three-part windows at each of the first and second stories. Label moldings and bargeboards further embellish the center gable. The house is finished with clapboards and rests on a stone foundation. Asphalt shingles cover the roofs. It appears that the entrance is set off-center, but the opening has been boarded. The Phillips House is abandoned and deteriorating.

Statement of Significance

This house was built for Elihu Phillips c. 1853. Phillips (1800-1884) settled in the vicinity of Fond du Lac in 1852, arriving with his brother, Lyman Phillips. A native of New York state, Phillips had served as sheriff of Onondaga County, New York in 1837, and as a state representative of that area in 1847. Phillips was a contractor on the Great Western Railway in New York State, and was Erie Canal Appraiser from 1848-50. In Wisconsin, Phillips primarily farmed, although he was elected state senator in 1860, and provost marshal of the Fond du Lac district in 1863-64. He was also the founder and first president of the Fond du Lac Savings Bank. The Phillips House is potentially eligible for the National Register under Criterion C as a good example of the Gothic Revival style, of which few intact residential examples remain. A drawing of the Lyman Phillips House, a very similar design erected in 1854, can be found on the Bogert & Haight's 1862, *Map of Fond du Lac County, Wisconsin*. That house (not extant) had board and batten siding, and small porticos on the front façade. It seems likely that the Elihu Phillips House also had board and batten siding, and at least one portico; these elements are no longer present. According to the Architecture History Inventory of the Wisconsin Historical Society's Office of Historic Buildings, only five other Gothic Revival residences have been identified in Fond du Lac County. Four are in the city of Fond du Lac, and one is in the city of Ripon. Four of the five are frame; all four have clapboard siding, and three of those four have been identified as potentially eligible for their architecture in Carol Cartwright's 1992, "City of Fond du Lac Intensive Survey Report." In addition, this property may be eligible under Criterion B, for its association with Elihu Phillips.

⁶ W. W. Hixson, *Ownership Map and Pure Bred Stock Breeders Guide of Fond du Lac, Wisconsin*, (Rockford, Illinois: W. W. Hixson and Company, c. 1920); and other historical maps listed in the bibliography.

⁷ *Portrait and Biographical Album of Fond du Lac County, Wisconsin*, pp. 239 and 620.

Recommendation

The Elihu Phillips House is potentially eligible for the National Register. **A Determination of Eligibility is recommended.**

Address	AHI #	Map Code	NRHP Evaluation
N6437 CTH K	149701	FD-114/4	not eligible

Township-Range-Section (Rural Properties Only)

1518E-18

Description

This two-story, frame Other Vernacular house is composed of a central, two-story, front-gabled section, flanked by one-story, side-gabled wings. The south wing and attached two-car garage were appended to the house c. 1990- 2000. Around 2003, the house was raised, a new poured concrete basement constructed underneath it, replacement 6/6 windows installed throughout the house, and vinyl siding was applied.⁸ The older upright-and-wing sections of the house could predate 1862, but appear much altered.⁹ The north wing displays a cutaway front porch with turned posts and a plain balustrade. The south wing possesses an enclosed, full-façade front porch. The roofs are surfaced with asphalt shingles.

Statement of Significance

This property was evaluated under Criterion A, because the current owner has been told that the house was a stop on the Underground Railroad. While that is possible, no evidence has been uncovered to date that would support such an association. Further, the house has been altered with a new basement, additions, replacement windows, and vinyl siding, compromising its integrity and its ability to convey its historic association with the Underground Railroad (if it had one). The house is not eligible under Criterion C, as it is an undistinguished example of a vernacular form, and the alterations compromise its integrity.

In 1845, this property was part of an 80-acre parcel, on which Henry Conklin erected the first grist mill in the area, north of the house on a parcel currently owned by the Izaak Walton League. By 1862, the house and mill were owned by Frederick F. Davis, who operated the flour mill under the name, Empire Mill. In 1868, L. D. Leonard purchased the house and the mill, maintaining both until at least 1893. The business was then called the Mountain Mill. The property remained in the Leonard family until 1948, when a large part of it was sold to the Izaak Walton League.¹⁰ The mill is believed to have been demolished, and the millpond filled, in the 1960s, when a go-cart track was built on that site.¹¹

Recommendation

This property is not eligible for the National Register. **A Determination of Eligibility is not recommended.** It should be noted that one alternative under consideration as part of the USH 151 Fond du Lac Bypass preservation corridor would acquire and demolish this property.

Address	AHI #	Map Code	NRHP Evaluation
N4902 CTH V	59437	FD-21/37	not eligible

Township-Range-Section (Rural Properties Only)

1517E-35

Description

This frame residence is composed of a two-story front-gabled section and a one-story wing. Asphalt shingles cover the roofs, and the foundation is fieldstone. Since the house was last surveyed in 1974, it has lost its Greek Revival appearance. The house has been clad with vinyl/aluminum siding. One-over-one replacement sash windows, and projecting bay windows with grouped casements have been installed. The Greek Revival details, which included engaged Doric pilasters and broad returned eaves on the front façade of the two-story section, frieze windows on the side façade, and a cutaway front porch on the one-story wing, have been removed.

Statement of Significance

This house was built c. 1861, perhaps for D. C. Brooks, who owned the property in 1862.¹² The property was evaluated under Criterion C. At one time, it was a good example of a Greek Revival residence, but the loss of Greek Revival decorative elements,

⁸ Donna Sertich, current owner, personal communication, 9 June 2008.

⁹ *Map of Fond du Lac County, Wisconsin.*

¹⁰ *History of Fond du Lac County, Wisconsin*, (Chicago: Western Historical Co., 1880), pp. 795-96; Michael Metzner, *Fond du Lac County: A Gift of the Glacier*, (Fond du Lac: Fond du Lac County Historical Society, 1991), p. 53; and historical maps listed in the bibliography.

¹¹ J. Clark, archaeologist, Commonwealth Cultural Resources Group, field notes, 3 June 2008 and 10 June 2008.

¹² *Map of Fond du Lac County, Wisconsin.*

windows, and cutaway porch have compromised its integrity. Further, no historical significance was found that would qualify the house under Criteria A or B.

Recommendation

This property is not eligible for the National Register. **A Determination of Eligibility is not recommended.**

Address	AHI #	Map Code	NRHP Evaluation
N4924 Hickory Road	149702	FD-114/16	not eligible

Township-Range-Section (Rural Properties Only)

1517E-33

Description

This one and one-half story A-frame residence was erected c. 1974.¹³ The house is set on a poured concrete slab foundation and clad with clapboards. The roof is surfaced with asphalt shingles. The front façade exhibits a polygonal bay window, surmounted by a pair of triangular casements. An enclosed, shed-roofed entrance porch and a blocky, clapboarded chimney appear on the south (side) façade.

Statement of Significance

This A-frame house was evaluated under Criterion C. However, because it is not yet 50 years old, it must be of exceptional architectural importance in order to qualify for the National Register. It is not of exceptional architectural importance. Further, no historical significance was discovered that would make this property eligible under Criteria A or B.

Recommendation

This property is not eligible for the National Register. **A Determination of Eligibility is not recommended.**

2. No Listed, Eligible, or Potentially Eligible Historic District(s) Identified – Check the box at left if there is no historic district present. Do not check this box if a historic district was identified during survey activities.

3. Listed, Eligible, or Potentially Eligible Historic District(s) Identified – After reviewing the *WisDOT Survey Manual* and *WisDOT Historic District Survey Methodology*, complete the following for each historic district.

A. Historic District Status

- 1. Listed or previously determined eligible historic district – Complete Section 2 on WisDOT Form DT1446 (Cover Sheet). **Do not** complete B-F below.
- 2. Previously identified historic district(s) present – For each district, complete B-F below.
- 3. Potential historic district(s) identified during fieldwork – For each district, complete B-F below.

B. Location

Historic District Name	
City or Town	County
Location – General Street Boundaries	

C. Identification Process

- 1. Newly identified historic district
Coordinated findings with WisDOT Bureau of Equity and Environmental Services – Correspondence attached.
- 2. Previously identified historic district – Check all that apply
 - a. Intensive survey – Include report author, title, and date: _____
 - b. WisDOT survey – Include project ID, name, and date: _____

¹³ *Atlas and Plat Book, Fond du Lac County, Wisconsin, 1975*, (Rockford, Illinois: Rockford Map Publishers, 1975); and *Tri-annual Atlas and Plat Book, Fond du Lac County, Wisconsin*, (Rockford, Illinois: Rockford Map Publishers, 1966).

c. Other – Explain: _____

D. Recommendation – Determination of Eligibility (DOE)

1. DOE recommended – Attach documentation explaining recommendation
2. DOE not recommended; Project will have no effect on potential district – Attach documentation
3. DOE not recommended; Historic district is not eligible – Attach documentation

E. Attachments

Historic district sketch map labeled with proposed historic boundary and contributing/noncontributing resources within the APE.

Photos sufficient to evaluate integrity

Correspondence with WisDOT – Memos, E-mail, and/or letters

Architecture and History Inventory (AHI) cards for contributing resources within APE

F. Summary

1. **Architectural Description** – 1-2 paragraphs describing the general setting, architectural styles, and range of property dates within the historic district.
2. **Significance** – 1-2 paragraphs describing significance of district and application of National Register criteria.
3. **Project APE and Historic District Boundary** – 1-2 paragraphs describing the relationship of the project to the district.

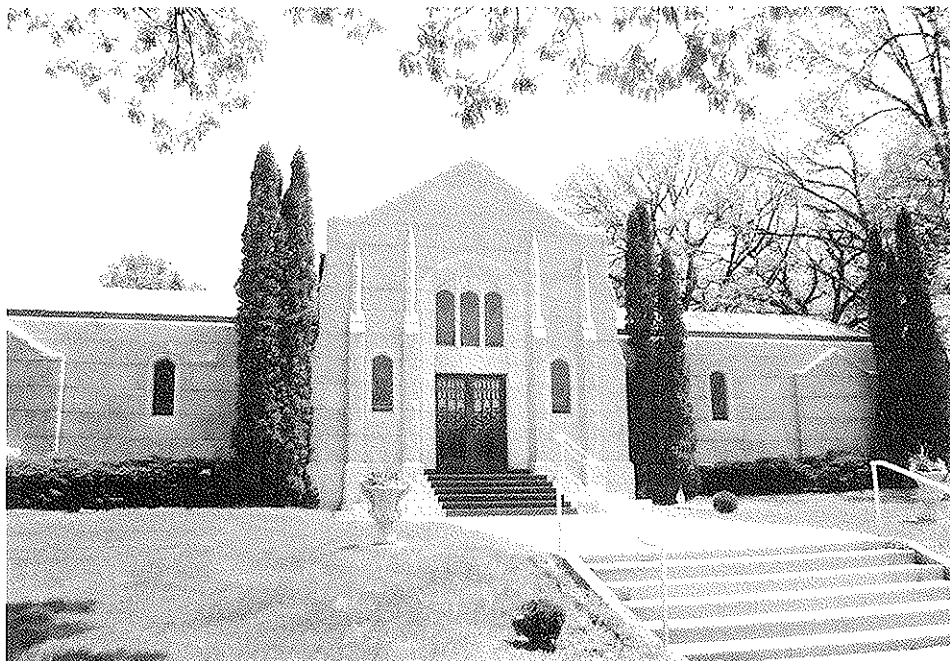
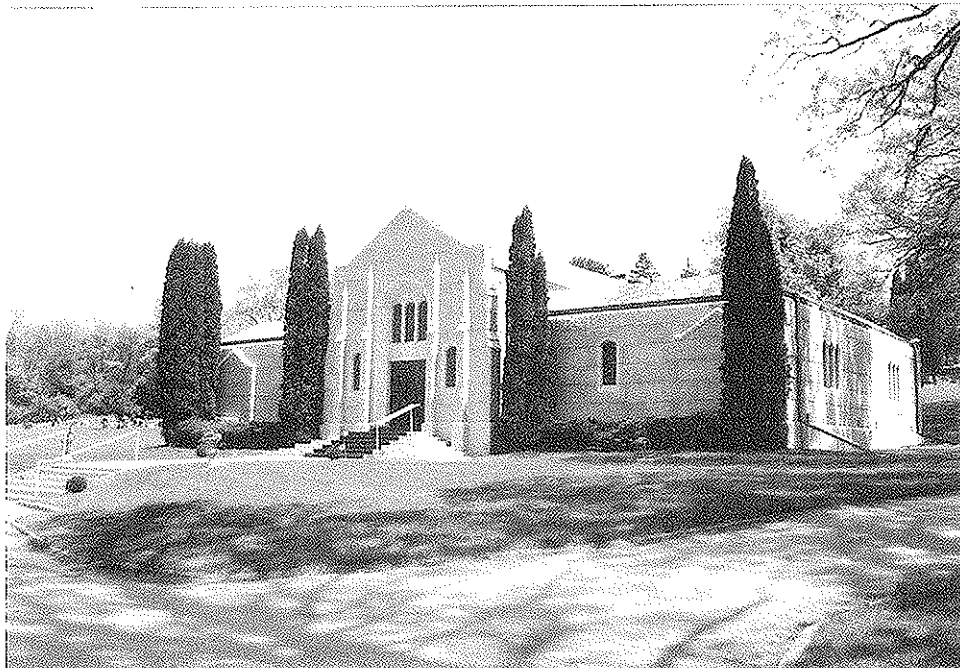
N4764 Martin Road, Byron Township, Fond du Lac County, AHI#58979



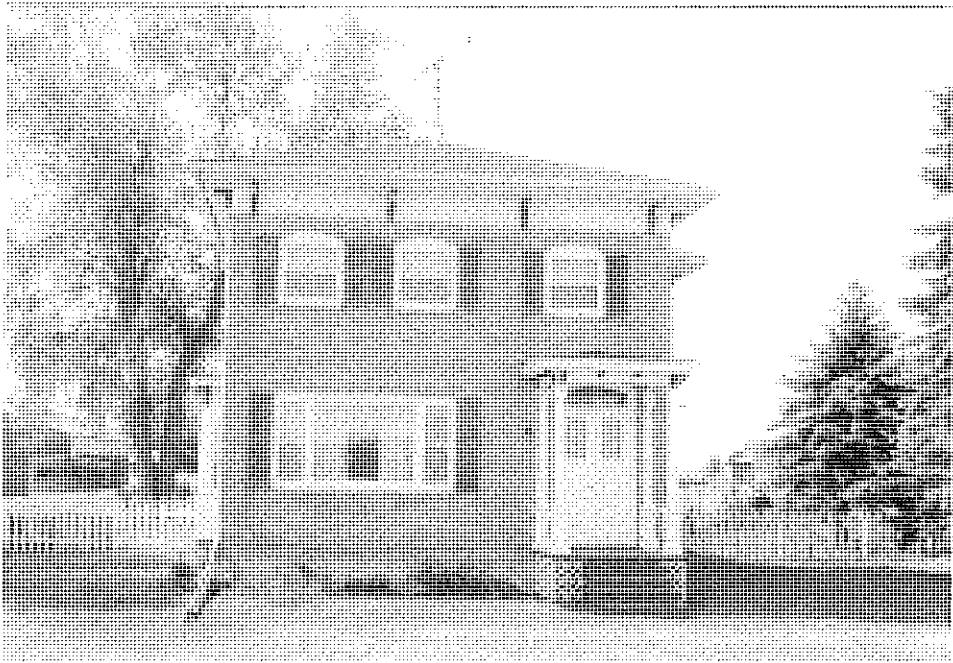
N5774 CTH K, Empire Township, Fond du Lac County, AHI#59488



N6101 CTH K, Empire Township, Fond du Lac County, AHI#59486



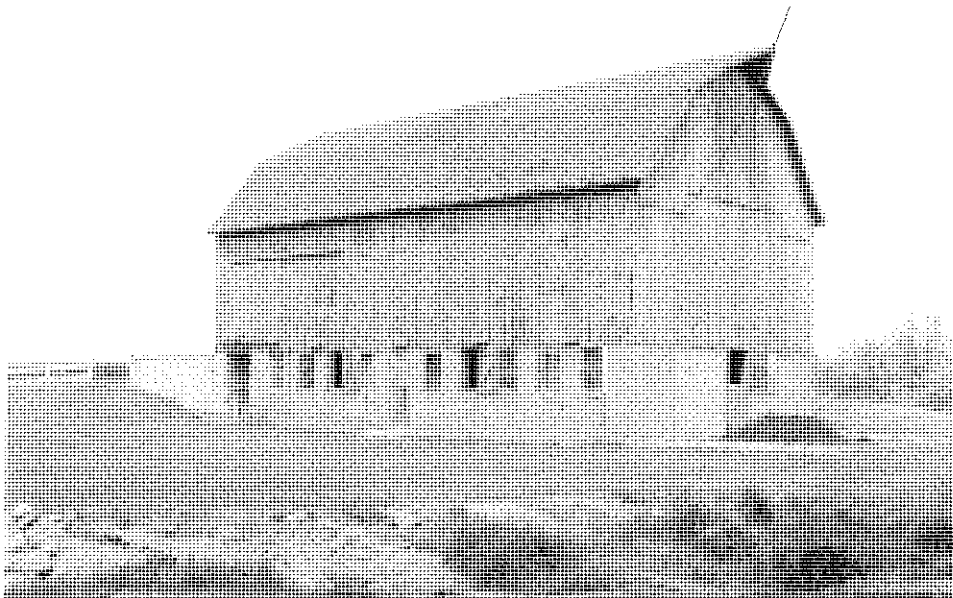
W4182 STH 23, Town of Empire, Fond du Lac County, AHI#59475



W4819 CTH V, Empire Township, Fond du Lac County, AHI#59484



W4819 CTH V, Empire Township, Fond du Lac County, AHI#149821



N6579 CTH K, Empire Township, Fond du Lac County, AHI#59467



N4902 CTH V, Fond du Lac Township, Fond du Lac County, AHI#59437



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County	AHI Record No.	Location				
FOND DU LAC	149701	N6437 COUNTY HIGHWAY K				
City or Village		Township, Range, Section			QuarterSections	
		15	18	18	NE	NW
Civil Town	NR Date	SR Date	Eligibility		Classific.	Local Des
EMPIRE						
Unincorporated Community		District				
Photo Codes		Current Name		Multiple Property Name		
114	4	Serich House				
Survey Map		Historic Name		Wall Material		
USGS Byron				Aluminum/Vinyl Siding		
Map Code		Construction Date		Structural System		
114/4		1861		Balloon Frame		
Survey Date		Designer Name		Other Buildings On Site		
2008				Y		
Tax Certification No.		Style or Form		Cultural Affiliation		
		Other Vernacular				
Compliance No.		Resource Type		Add. Com./Bib. Ref.		
		house			



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County FOND DU LAC	AHI Record No. 149702	Location N4924 HICKORY RD			QuarterSections	
City or Village		Township, Range, Section 15 17 33			SW	SE
Civil Town FOND DU LAC	NR Date	SR Date	Eligibility		Classific.	Local Des
Unincorporated Community		District				
Photo Codes 114	NR Date 16	Current Name		Multiple Property Name		
Survey Map USGS Fond du Lac		Historic Name		Wall Material Clapboard		
Map Code 114/16		Construction Date 1974		Structural System Balloon Frame		
Survey Date 2008		Designer Name		Other Buildings On Site N		
Tax Certification No.		Style or Form Contemporary		Cultural Affiliation		
Compliance No.		Resource Type house		Add. Com./Bib. Ref.		

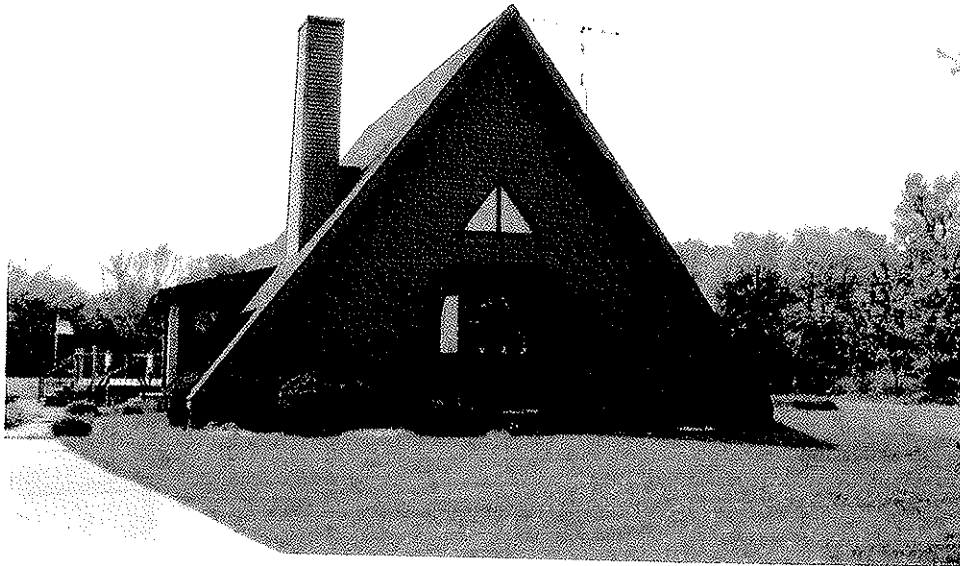


EXHIBIT 1: OVERVIEW OF RESOURCES SURVEYED

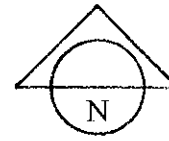
WisDOT ID. ID 4050-12-00

Fond du Lac Bypass Corridor Preservation Plan

USH 151

STH 175 to CTH WH

Fond du Lac County



Final APE

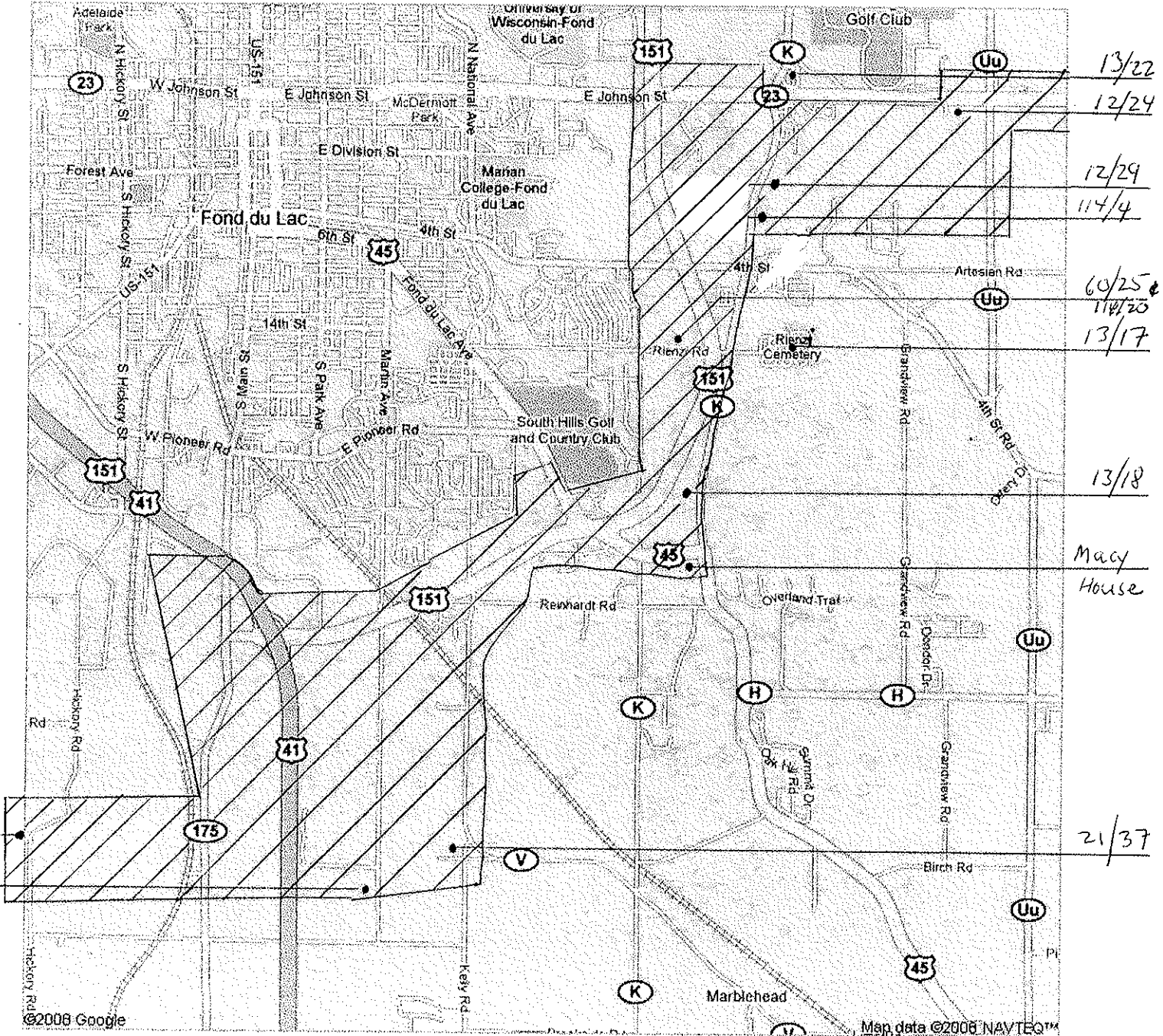


EXHIBIT 2: RESOURCES SURVEYED, SOUTHWEST SECTION

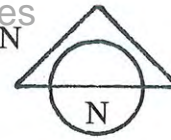
WisDOT ID. ID 4050-12-00

Fond du Lac Bypass Corridor Preservation Plan

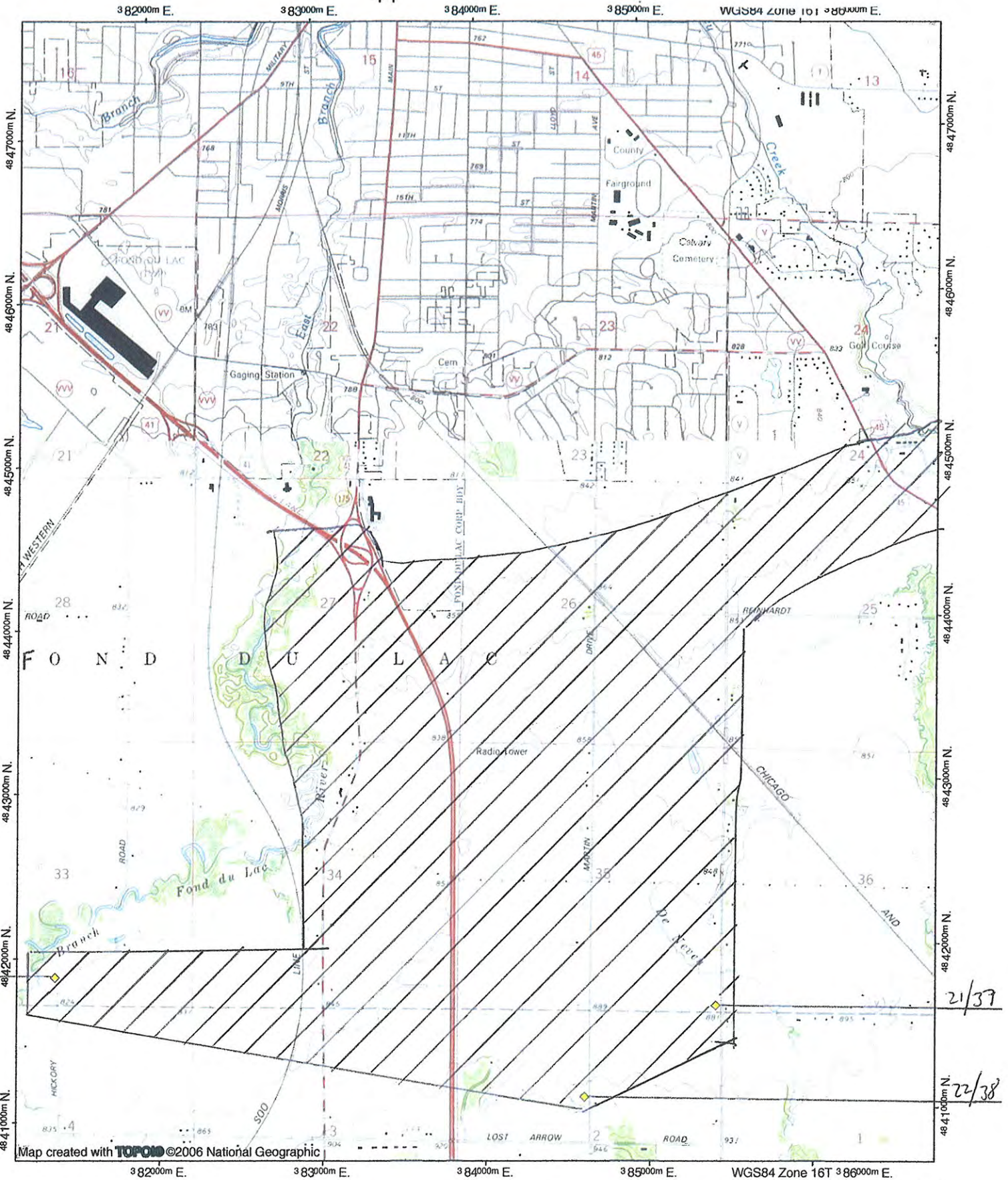
USH 151

STH 175 to CTH WH

Fond du Lac County



Final APE

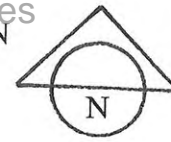


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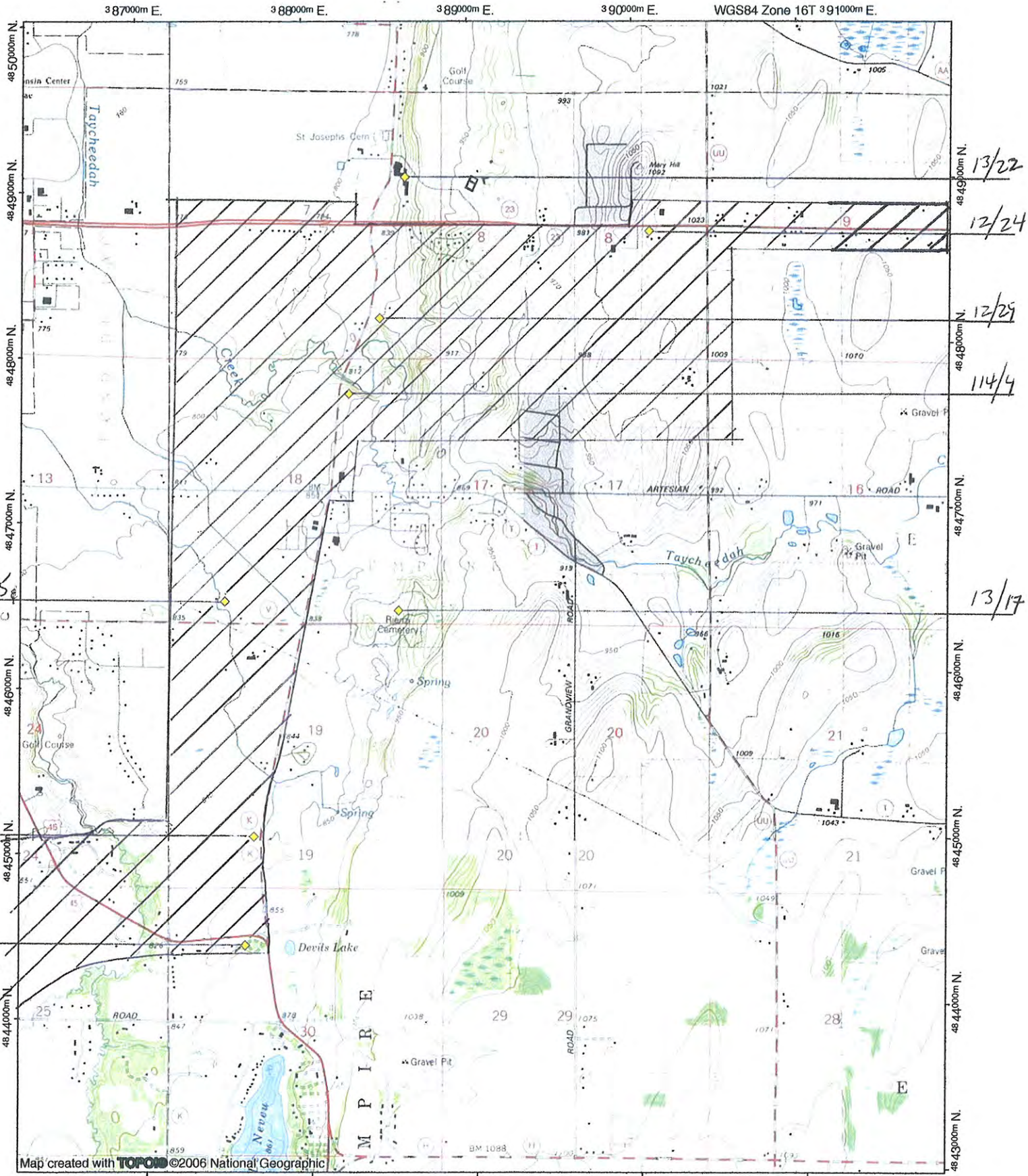
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2010 WIS 23 FEIS VOL 2 Appendices
EXHIBIT 3: RESOURCES SURVEYED NORTHEAST SECTION
 WisDOT ID. ID 4050-12-00
 Fond du Lac Bypass Corridor Preservation Plan
 USH 151
 STH 175 to CTH WH
 Fond du Lac County



Final APE 



ELIZABETH L. MILLER

4033 TOKAY BOULEVARD
MADISON, WISCONSIN 53711
(608)233-5942
elmiller@mailbag.com

May 25, 2008

William J. Weinshrott, president
Fond du Lac County Historical Society
P.O. Box 1284
Fond du Lac, WI 54936-1284

RE: USH 151 Bypass
Fond du Lac County
Wisconsin

The Wisconsin Department of Transportation is considering possible improvements to the USH 151 bypass between USH 41 and STH 23, along the southeastern edge of the city of Fond du Lac. An interchange at CTH V, and an alternate route between USH 151 and STH 23 are under consideration.

I have been hired to identify any buildings and structures that may be eligible for the National Register of Historic Places in the area adjacent to this project. The attached map shows the area I have been asked to study. Records found at the Wisconsin Historical Society indicate that there are two properties that have been determined eligible for the National Register of Historic Places: The John B. Macy House and outbuildings at N5620 USH 45; and the St. Mary's Springs High School complex at 255 CTH K. Both of these properties lie at the outer edge of the study area for this project. Other properties that may have historical or architectural significance include the Rienzi Cemetery at N6101 CTH K and the L. H. Phillips House at N6579 CTH K. I am writing to ask whether the Fond du Lac County Historical Society is aware of any other historic resources in the area of this project, especially any that you feel might be affected by this project. Your input will be invaluable in the treatment of cultural resources associated with this project. If you would like to comment, please do so in writing, by June 30, 2008 to:

Elizabeth L. Miller
4033 Tokay Blvd
Madison, WI 53711

Thank you very much for your help.

Sincerely,

Elizabeth L. Miller
Historic Preservation Consultant

ELIZABETH L. MILLER

4033 TOKAY BOULEVARD
MADISON, WISCONSIN 53711
(608)233-5942
elmiller@mailbag.com

May 25, 2008

Ron Langacker, Chair
Fond du Lac Historic Preservation Commission
160 S. Macy Street
Fond du Lac, WI 54935

RE: USH 151 Bypass
Fond du Lac County
Wisconsin

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Elizabeth L. Miller
4033 Tokay Blvd
Madison, WI 53711

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Sincerely,

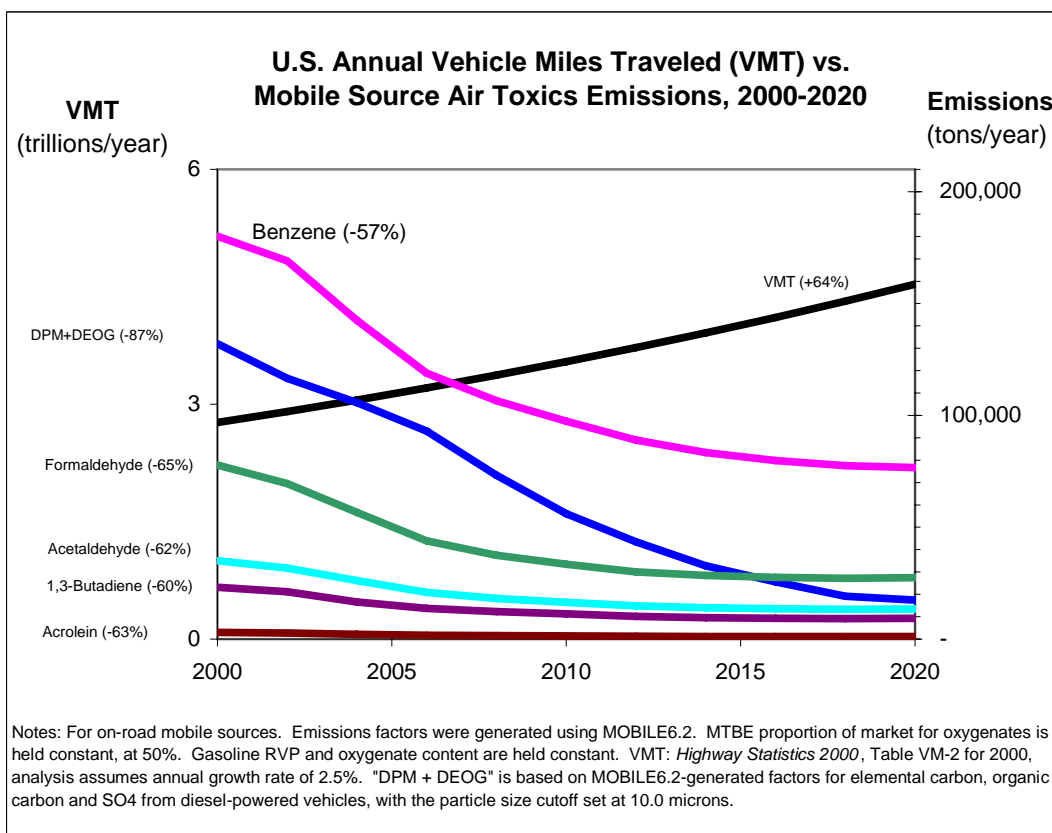
Elizabeth L. Miller
Historic Preservation Consultant

**APPENDIX N
MOBILE SOURCE AIR TOXICS**

In addition to the criteria air pollutants for which there are National Ambient Air Quality Standards (NAAQS), EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners) and stationary sources (e.g., factories or refineries).

Mobile Source Air Toxics (MSATs) are a subset of the 188 air toxics defined by the Clean Air Act. The MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

The EPA is the lead Federal Agency for administering the Clean Air Act and has certain responsibilities regarding the health effects of MSATs. The EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources. 66 FR 17229 (March 29, 2001). This rule was issued under the authority in Section 202 of the Clean Air Act. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline (RFG) program, its national low emission vehicle (NLEV) standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, FHWA projects that even with a 64 percent increase in VMT, these programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde by 57 percent to 65 percent, and will reduce on-highway diesel PM emissions by 87 percent, as shown in the following graph:



As a result, EPA concluded that no further motor vehicle emissions standards or fuel standards were necessary to further control MSATs. The agency is preparing another rule under authority of CAA Section 202(l) that will address these issues and could make adjustments to the full 21 and the primary six MSATs.

Unavailable Information for Project Specific MSAT Impact Analysis

This EIS includes a basic analysis of the likely MSAT emission impacts of this project. However, available technical tools do not enable us to predict the project-specific health impacts of the emission changes associated with the alternatives in this EIS. Due to these limitations, the following discussion is

included in accordance with CEQ regulations (40 CFR 1502.22(b)) regarding incomplete or unavailable information:

Information that is Unavailable or Incomplete. Evaluating the environmental and health impacts from MSATs on a proposed highway project would involve several key elements, including emissions modeling, dispersion modeling in order to estimate ambient concentrations resulting from the estimated emissions, exposure modeling in order to estimate human exposure to the estimated concentrations, and then final determination of health impacts based on the estimated exposure. Each of these steps is encumbered by technical shortcomings or uncertain science that prevents a more complete determination of the MSAT health impacts of this project.

1. **Emissions:** The EPA tools to estimate MSAT emissions from motor vehicles are not sensitive to key variables determining emissions of MSATs in the context of highway projects. While MOBILE 6.2 is used to predict emissions at a regional level, it has limited applicability at the project level. MOBILE 6.2 is a trip-based model--emission factors are projected based on a typical trip of 7.5 miles, and on average speeds for this typical trip. This means that MOBILE 6.2 does not have the ability to predict emission factors for a specific vehicle operating condition at a specific location at a specific time. Because of this limitation, MOBILE 6.2 can only approximate the operating speeds and levels of congestion likely to be present on the largest-scale projects, and cannot adequately capture emissions effects of smaller projects. For particulate matter, the model results are not sensitive to average trip speed, although the other MSAT emission rates do change with changes in trip speed. Also, the emissions rates used in MOBILE 6.2 for both particulate matter and MSATs are based on a limited number of tests of mostly older-technology vehicles. Lastly, in its discussions of PM under the conformity rule, EPA has identified problems with MOBILE6.2 as an obstacle to quantitative analysis.

These deficiencies compromise the capability of MOBILE 6.2 to estimate MSAT emissions. MOBILE6.2 is an adequate tool for projecting emissions trends, and performing relative analyses between alternatives for very large projects, but it is not sensitive enough to capture the effects of travel changes tied to smaller projects or to predict emissions near specific roadside locations.

2. **Dispersion.** The tools to predict how MSATs disperse are also limited. The EPA's current regulatory models, CALINE3 and CAL3QHC, were developed and validated more than a decade ago for the purpose of predicting episodic concentrations of carbon monoxide to determine compliance with the NAAQS. The performance of dispersion models is more accurate for predicting maximum concentrations that can occur at some time at some location within a geographic area. This limitation makes it difficult to predict accurate exposure patterns at specific times at specific highway project locations across an urban area to assess potential health risk. The NCHRP is conducting research on best practices in applying models and other technical methods in the analysis of MSATs. This work also will focus on identifying appropriate methods of documenting and communicating MSAT impacts in the NEPA process and to the general public. Along with these general limitations of dispersion models, FHWA is also faced with a lack of monitoring data in most areas for use in establishing project-specific MSAT background concentrations.
3. **Exposure Levels and Health Effects.** Finally, even if emission levels and concentrations of MSATs could be accurately predicted, shortcomings in current techniques for exposure assessment and risk analysis preclude us from reaching meaningful conclusions about project-specific health impacts. Exposure assessments are difficult because it is difficult to accurately calculate annual concentrations of MSATs near roadways, and to determine the portion of a year that people are actually exposed to those concentrations at a specific location. These difficulties are magnified for 70-year cancer assessments, particularly because unsupported assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over a 70-year period. There are also considerable uncertainties associated with the existing estimates of toxicity of the various MSATs, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. Because of these shortcomings, any calculated difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with calculating the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against other project impacts that are better suited for quantitative analysis.

Summary of Existing Credible Scientific Evidence Relevant to Evaluating the Impacts of MSATs.

Research into the health impacts of MSATs is ongoing. For different emission types, there are a variety of studies that show that some either are statistically associated with adverse health outcomes through epidemiological studies (frequently based on emissions levels found in occupational settings) or that animals demonstrate adverse health outcomes when exposed to large doses.

Exposure to toxics has been a focus of a number of EPA efforts. Most notably, the agency conducted the National Air Toxics Assessment (NATA) in 1996 to evaluate modeled estimates of human exposure applicable to the county level. While not intended for use as a measure of or benchmark for local exposure, the modeled estimates in the NATA database best illustrate the levels of various toxics when aggregated to a national or State level.

The EPA is in the process of assessing the risks of various kinds of exposures to these pollutants. The EPA Integrated Risk Information System (IRIS) is a database of human health effects that may result from exposure to various substances found in the environment. The IRIS database is located at <http://www.epa.gov/iris>. The following toxicity information for the six prioritized MSATs was taken from the IRIS database *Weight of Evidence Characterization* summaries. This information is taken verbatim from EPA's IRIS database and represents the Agency's most current evaluations of the potential hazards and toxicology of these chemicals or mixtures.

- **Benzene** is characterized as a known human carcinogen.
- The potential carcinogenicity of **acrolein** cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.
- **Formaldehyde** is a probable human carcinogen, based on limited evidence in humans, and sufficient evidence in animals.
- **1,3-butadiene** is characterized as carcinogenic to humans by inhalation.
- **Acetaldehyde** is a probable human carcinogen based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.
- **Diesel exhaust** (DE) is likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust as reviewed in this document is the combination of diesel particulate matter and diesel exhaust organic gases.
- **Diesel exhaust** also represents chronic respiratory effects, possibly the primary noncancer hazard from MSATs. Prolonged exposures may impair pulmonary function and could produce symptoms, such as cough, phlegm, and chronic bronchitis. Exposure relationships have not been developed from these studies.

There have been other studies that address MSAT health impacts in proximity to roadways. The Health Effects Institute, a non-profit organization funded by EPA, FHWA, and industry, has undertaken a major series of studies to research near-roadway MSAT hot spots, the health implications of the entire mix of mobile source pollutants, and other topics. The final summary of the series is not expected for several years.

Some recent studies have reported that proximity to roadways is related to adverse health outcomes -- particularly respiratory problems¹. Much of this research is not specific to MSATs, instead surveying the full spectrum of both criteria and other pollutants. The FHWA cannot evaluate the validity of these studies, but more importantly, they do not provide information that would be useful to alleviate the uncertainties listed above and enable us to perform a more comprehensive evaluation of the health impacts specific to this project.

¹ South Coast Air Quality Management District, Multiple Air Toxic Exposure Study-II (2000); Highway Health Hazards, The Sierra Club (2004) summarizing 24 Studies on the relationship between health and air quality); NEPA's Uncertainty in the Federal Legal Scheme Controlling Air Pollution from Motor Vehicles, Environmental Law Institute, 35 ELR 10273 (2005) with health studies cited therein.

Relevance of Unavailable or Incomplete Information to Evaluating Reasonably Foreseeable Significant Adverse Impacts on the Environment, and Evaluation of impacts based upon theoretical approaches or research methods generally accepted in the scientific community.

Because of the uncertainties outlined above, a quantitative assessment of the effects of air toxic emissions impacts on human health cannot be made at the project level. While available tools do allow us to reasonably predict relative emissions changes between alternatives for larger projects, the amount of MSAT emissions from each of the project alternatives and MSAT concentrations or exposures created by each of the project alternatives cannot be predicted with enough accuracy to be useful in estimating health impacts. (As noted above, the current emissions model is not capable of serving as a meaningful emissions analysis tool for smaller projects.) Therefore, the relevance of the unavailable or incomplete information is that it is not possible to make a determination of whether any of the alternatives would have "significant adverse impacts on the human environment."

In this document, FHWA has provided a quantitative analysis of MSAT emissions relative to the various alternatives, (or a qualitative assessment, as applicable) and has acknowledged that (some, all, or identify by alternative) the project alternatives may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be estimated.

APPENDIX O
TRAFFIC NOISE NOTIFICATION TO LOCAL GOVERNMENTS



**Division of Transportation
System Development**
Northeast Regional Office
944 Vanderperren Way
PO Box 28080
Green Bay, WI 54324-0080

Jim Doyle, Governor
Frank J. Busalacchi, Secretary
Internet web site: www.dot.wisconsin.gov

Telephone: (920)492-5643
Teletypewriter (TTY): (920)492-5673
Facsimile (FAX): (920)492-5640
E-mail: greenbay.dtd@dot.state.wi.us

DATE

ATTN

COMPANY NAME

STREET ADDRESS

PO BOX

CITY, STATE 9-DIGIT ZIP CODE

144-13/15/-00

STH 23

Fond du Lac to Plymouth

Fond du Lac and Sheboygan Counties

A highway improvement is currently being developed for the above project. In the process, we have evaluated noise levels for developed lands and minimized their impact on these lands as much as practical.

We believe it's vitally important to do all we can to ensure that the future noise levels we foresee are compatible with future development on presently undeveloped lands. The Wisconsin Department of Transportation's Noise Information program is designed to assist in reaching this goal.

Attached is a discussion of the Noise Information Program and specific noise information for the above project that may be useful to you. If you have any questions, please contact me at 920-492-5740

Sincerely,

Carrie Webb
Environmental Coordinator

BUSINESS	CONTACT	ADDRESS	CSZ
Fond du Lac County Highway Department	Ernie Winters, Commissioner	310 Dixie Street	Fond du Lac, WI 54936-1234
Fond du Lac County	Martin Farrell, County Chairperson	160 S. Macy Street	Fond du Lac, WI 54935
Fond du Lac County Planning	Sam Tobias, Director	160 S. Macy Street	Fond du Lac, WI 54935
Fond du Lac County Land and Water Conservation	Lynn Mathias, County Conservationist	W6529 Forest Avenue	Fond du Lac, WI 54937
Sheboygan County Highway Department	Roger Laning, Commissioner	P.O. Box 716	Sheboygan, WI 53081
Sheboygan County	William Goehring, County Chairperson	508 New York Avenue	Sheboygan, WI 53081
Sheboygan County Planning	Shannon Haydin, Director	508 New York Avenue, Room 335	Sheboygan, WI 53081
Sheboygan County Land & Water Conservation	Patrick Miles, Manager	650 Forest Avenue	Sheboygan Falls, WI 53085
City of Fond du Lac	Hal Wortman, Director of Admin	160 S. Macy Street	Fond du Lac, WI 54935
City of Fond du Lac	Joellyn Dahlin, Principal Planner	160 S. Macy Street	Fond du Lac, WI 54935
City of Fond du Lac	Thomas A. Herre, City Manager	160 S. Macy Street	Fond du Lac, WI 54935
City of Plymouth	Patricia Huberty, City Clerk	128 Smith Street	Plymouth, WI 53073
City of Plymouth	William Immich, DPW	P.O. Box 107	Plymouth, WI 53073
City of Fond du Lac	Mark Lentz, DPW	160 S. Macy Street	Fond du Lac, WI 54935
Town of Plymouth	Jim Lubach, Town Chairman	W5085 Green Tree Road	Plymouth, WI 53073
Town of Greenbush	Mike Limberg, Town Chairman	W8537 Limberg Lane	Glenbeulah, WI 53023
Town of Forest	Norman Loehr, Town Chairman	N6174 Banner Road	Mt. Calvary, WI 53057
Town of Empire	James Pierquet, Town Chairman	W3204 Fourth Street Road	Fond du Lac, WI 54935-1818
Town of Empire	Norbert Kolell, Town Supervisor	N6254 Creek Road	Fond du Lac, WI 54935-8726
Town of Taycheedah	Jerome Guelig, Town Chairman	N8071 W. Ann Randall Drive	Fond du Lac, WI 54935
Town of Plymouth	Laura Raeder, Town Clerk	W5977 County Road J	Plymouth, WI 53073
Town of Greenbush	Brenda Phipps, Town Clerk	N6802 Sugarbush Drive	Glenbeulah, WI 53023
Town of Forest	Edward Leonard, Town Clerk	W2170 Walnut Road	Mt. Calvary, WI 53057
Town of Empire	John Meyst, Town Supervisor	W4478 Mary Hill Park Drive	Fond du Lac, WI 54935-9313
Town of Empire	Michael Morgan, Town Clerk	W3897 Fourth Street Road	Fond du Lac, WI 54935-9340
Town of Taycheedah	Brenda Schneider, Town Clerk	W2695 Loehr Street	Malone, WI 53049
Bay-Lake Regional Planning Commission		211 N. Broadway	Green Bay, WI 54303-2757
East Central WI Regional Planning Commission		132 Main Street	Menasha, WI 54952



**Division of Transportation
System Development**
Northeast Regional Office
944 Vanderperren Way
PO Box 28080
Green Bay, WI 54324-0080

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Telephone: (920)492-5643
Teletypewriter (TTY): (920)492-5673
Facsimile (FAX): (920)492-5640
E-mail: greenbay.dtd@dot.state.wi.us

To: Town Boards, Municipal Planning Commissions and Zoning
Boards of Review, County Planning and Zoning Agencies
and Other Local Agencies Exercising Development Control
or Zoning Responsibility Over Lands Adjacent to Proposed Highway Improvements

Subject: Wisconsin Department of Transportation
Noise Information Program

In recent years, a great deal of effort has been put forth to control highway generated noise and its effects on the human environment. Various agencies of the federal government have been striving to reach this goal by reducing the noise emitted by motor vehicles and by improving highway designs.

The Wisconsin Department of Transportation endorses the use of all practical design and traffic control measures in the development of highway projects to minimize noise impacts. We are applying on our own projects, and monitoring on federally funded projects of local agencies, all feasible and prudent measures aimed at enhancing compatibility of highway location and design with existing and planned land use.

To be truly effective these efforts must be supplemented by those of local governmental agencies. Local governments have traditionally been responsible for exercising land development controls and zoning within their jurisdictions. Through its authority in these areas local governments can do much to ensure that future land uses and developments are compatible with the noise environment of major arterials highways as well as local streets and roads.

It is the policy of the Wisconsin Department of Transportation that a maximum effort should be made to obtain this compatibility. Accordingly, this department has produced approximate generalized future noise levels for both developed and undeveloped lands or properties in the immediate vicinity of projects improving the State Trunk Highway System. This information is turned over to local governmental agencies with jurisdiction over land use on abutting properties. In processing their federal-aid projects, the Wisconsin Department of Transportation will expect transportation officials at local units of government to also develop generalized future noise levels and to provide it to their sister agencies having development control and zoning responsibilities.

Noise information for a particular highway improvement project is attached to this letter. Your agency constitutes a logical recipient and user of this information in fulfilling the purpose stated above.

How can you use this noise information to ensure that the desired compatibility between future development and anticipated highway noise levels is achieved? There are several types of administrative controls available, including the use of exclusive zoning, public ownership, financial incentives, advisory services, and various forms of legal controls such as building codes, subdivision regulations, health codes, etc. These and others are described in a publication produced by the Federal Highway Administration entitled "The Audible Landscape: A Manual for Highway Noise and Land Use." The sole purpose of this manual is to assist local governmental officials, developers, and designers in dealing with noise-sensitive land uses near highways.

The Wisconsin Division of Highways, in December 1975, distributed copies of this booklet to nearly every municipality within the state. If you do not have, it can be ordered from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402. The price is \$1.55. The stock number is 5000-00079. The publication date is November 1974.

You may be asking yourself, "Why should my agency bother with all of this?" The answer is simple. "It is needed." Noise becomes more and more of a problem every year. Our population continues to increase, causing more highways, more vehicles, and more residences near highways. Good, strong administrative action is needed. It can only be applied at the local level because that's where the responsibility lies. The efforts you expend can be used to prevent noise problems along local streets and roads as well as those on the State Trunk Highway System.

As a final inducement, the Federal Highway Administration has provided that, in certain instances, they will apply matching funds to projects aimed at reducing noise levels along existing roadways. However, these noise abatement projects will not be approved for any activities or land uses unless local authorities have taken measures to exercise land use control over the remaining undeveloped lands adjacent to highways within their jurisdiction so as to prevent further development of incompatible activities.

In summary, we urge you to use the attached and referenced noise information to the greatest extent possible in the interest of ensuring a less noisy environment for all.

NOISE DATA
FOR
PROJECT ID 1440-13/15-00
PLYMOUTH – FOND DU LAC
STH 23
SHEBOYGAN & FOND DU LAC COUNTIES

Noise Definition

Noise is defined as unwanted sound. The sounds generated by vehicular traffic constitute noise to people and can interrupt normal activities when they reach a certain level. Areas that are sensitive to noise include residences, recreation areas, schools, churches, and cemeteries. Commercial and industrial land uses are generally less sensitive to noise.

Sound levels are measured in decibels (dB). Measured sound levels are often adjusted or weighted to correspond to the frequency response of human hearing and the human perception of loudness. The weighted sound level is expressed in units called “A-weighted decibels” (dBA) and is measured with a calibrated sound level meter. An illustration of typical sound levels in dBA can be found in *Table 1, Weighted Sound Levels & Human Responses*.

Noise Level Criteria

The criteria defining traffic noise impacts has been established by WisDOT through Wisconsin Administrative Code – Chapter Trans 405, Siting Noise Barriers (Trans 405). Traffic noise impacts occur when the predicted average sound levels approach or exceed the noise level criteria (NLC) established for a type of land use, or, when predicted sound levels substantially exceed existing levels. “Approach” is defined as 1 dBA less than the NLC, and “substantial increase” is 15 dBA or more than existing levels. The NLC established as part of Trans 405 are shown in *Table 2, FHWA Noise Level Criteria*.

Existing and Future Noise Levels along STH 23

Noise sensitive sites along the existing and proposed STH 23 route have been identified using the STAMINA noise modeling software. Noise readings were also taken using a Larson/Davis Model 812 Sound Level Meter, at representative locations to determine the existing noise levels. Presently, there are residences and businesses along the existing route that are experiencing noise levels above the NLC. Anticipated future noise levels have also been calculated for those receptors along the recommended alternative for the STH 23 proposal. To see a detailed breakdown of the noise impacts for the recommended alternative as determined in 2003, see *Table 3, Noise Impacts for Recommended Alternative*, and the detailed sheets from the Environmental Impact Statement.

Table 1

Weighted Sound Levels and Human Responses		
Sound Sources	dBA	Human Response
-----	140	(Threshold of Pain)
Military Jet Takeoff with after-burner at 50'	130	-----
Rock and Roll Band	120	(Uncomfortably Loud)
Jet Fly-over at 1000'	110	-----
Power Lawn Mower at Operator	100	(Very Loud)
Diesel Truck (55 mph) at 50'	90	-----
High Urban Ambient Sound Automobile at 50'	80	(Moderately Loud)
TV Audio, Vacuum Cleaner	70	-----
Normal Conversation	60	-----
-----	50	(Quiet)
Lower Limit Urban Ambient Sound	40	-----
-----	30	(Very Quiet)
Unoccupied Broadcast Studio	20	-----
-----	10	(Just Audible)
-----	0	(Threshold of hearing)
Sources: <i>Noise Assessment Guidelines Technical Background</i> , HUD Report No. TE/NA 172 <i>Handbook of Noise Control</i> , C.M. Harris, 1979 <i>FHWA Highway Traffic Noise Prediction Model</i> , FHWA-RD-77-108, 1978		

Table 2

FHWA Noise Level Criteria (23 CFR 772)		
Activity Category	Noise Level Criteria (dBA) $L_{eq}(h)$	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, and parks not included in category A plus residences, motels, hotels, public meeting rooms, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A and B above.
D	---	Undeveloped lands.
C	52 (Interior)	Residences, motels, public meeting rooms, churches, libraries, hospitals, and auditoriums.

$L_{eq}(h)$ = the hourly value of L_{eq}
Source: 23 CFR 772, Federal Register, Vol.47 No. 131

Table 3
Noise Impacts for Recommended Alternative

Distance to Receptors	CTH T - CTH P		CTH G - CTH T		CTH W - CTH G		CTH UU - CTH W		LEDGEVIEW - CTH UU		CTH K - LEDGEVIEW	
	2001	2030	2001	2030	2001	2030	2001	2030	2001	2030	2001	2030
50 feet	73	75	71	73	72	75	72	74	73	76	75	77
100 feet	68	70	67	69	67	70	68	70	69	71	70	72
200 feet	63	66	62	64	62	65	63	65	64	66	65	67
300 feet	61	63	59	61	60	63	60	62	61	63	63	65
400 feet	59	61	57	59	58	61	58	60	59	61	61	63

STH 23 Fond du Lac - Plymouth

Projected Traffic Volumes (ADT)		
Highway Section	Existing	Design year
	2000	2030
CTH K - Ledgeview	13600	21800
Ledgeview - CTH UU	10200	16500
CTH UU - CTH W	7950	11050
CTH W - CTH G	6800	11000
CTH G - CTH T	6400	10400
CTH T - CTH P	8800	14600

Average
Average

Truck Classification (For all highway sections)	
Truck Type	% ADT
2D	3.4
3 AX	2
2-S1 & 2-S2	2.3
3-S2+	5.5
DBL BTM	0.7
Total	13.90%

Hourly Volume (For all highway sections)	
K(30)	11.3%
K(100)	10.3%
P(PHV)	14.4%
T(DHV)	9.3%
T(PHV)	7.3%
D	55-45

**APPENDIX P
4(f) AND 6 (f) EVALUATIONS**

2010 WIS 23 FEIS VOL 2 Appendices

A 6(f) Evaluation for one site, De Minimis 4(f) Impact Evaluations for four sites, and a 4(f) Evaluation for one site are provided on the following pages.

Property Name	General Location:	Description/Comments (Administration/Use):
Northern Unit of the Kettle Moraine State Forest	Sheboygan County, near Greenbush, between County A and County S.	The northern unit contains approximately 30,000 acres of forestlands. Outdoor recreation is the primary use. Owned and administered by WDNR. (Section 6(f) land)
Ice Age Trail	Within the Kettle Moraine State Forest	Designated National Scenic Trail and is Wisconsin's only State Scenic Trail. The trail is administered by the NPS in cooperation with the WDNR and the Ice Age Park and Trail Foundation. The trail crosses WIS 23 near Julie Road within the Kettle Moraine State Forest. (Section 4(f) trail)
State Equestrian Trail	Adjacent to the Ice Age Trail	The bridle trail winds the length of the forest (39.5 miles). Owned and maintained by WDNR. The trail crosses WIS 23 near Julie Road within the Kettle Moraine State Forest Management Area. (Section 4(f) trail)
Old Wade House State Park	Greenbush	Owned and operated by WDNR in cooperation with the Wisconsin Historical Society. The park includes over 500 acres of land surrounding a 1860s stagecoach inn. (Section 4(f) property)
St. Mary's Springs Academy	City of Fond du Lac	This is a privately owned Catholic high school with several potentially eligible historic structures on the property. (Section 4(f) property)
Sipple Archaeological Site	Site 47 SB-394	Historic Euro American homestead site that is about 0.3 acres in size. (Section 4(f) property)

Section 6(f) Evaluation Public Parks and Recreational Lands

Name of Resource: Kettle Moraine State Forest – Northern Unit

Complete all items. Any response in a shaded box requires additional information prior to approval. This determination will be attached to the applicable environmental document.

Eligibility Criteria		YES	NO
1.	Is the 6(f) site adjacent to the existing highway?	x	
2.	Does the amount and location of the land to be used impair the use of the remaining Section 6(f) lands, in whole or in part, for its intended purpose?		x
3.	a. If the total 6(f) site is less than 10 acres, is the land to be acquired/used less than 10% of the total area? b. If the total 6(f) site is from 10-100 acres, is land to be acquired/used less than 1 acre? c. If the total 6(f) site is greater than 100 acres, is the land to be acquired/used less than 1% of the site? Approximately 3.7 acres of the 30,000 acre State Forest will be acquired.	c	
4.	Are there any proximity impacts which would impair the use of the 6(f) lands for their intended purpose?		x
5.	Have the officials with jurisdiction over the Section 6(f) lands agreed in writing with the assessment of impacts of the proposed project on, and the proposed mitigation for the Section 6(f) lands?	x	
6.	Have Federal funds been used in the acquisition or improvements of the 6(f) site? Federal Land & Water Conservation Funds used. If yes, has the land conversion/transfer been coordinated with the appropriate Federal agency, and are they in agreement with the land conversion or transfer? WisDOT has an Agreement in place with the State (WDNR) and is committed to completing the 6(f) Conversion Request Package and providing replacement lands for the 6(f) property to be acquired (Agreement attached).	x	
7.	Does the project require the preparation of an EIS?	x	
8.	Is the project on a new location?		x
9.	The scope of the project is one of the following: (indicate one in Yes-box)) a. Improved Traffic Operations b. Safety Improvements c. 4R d. Bridge Replacement on Essentially the Same Alignment e. Addition of Lanes	e	
Alternatives Considered		YES	NO
1.	The "Do Nothing" alternative has been evaluated and is considered not to be feasible and prudent?	x	
2.	An alternative has been evaluated which improves the highway without the use of the adjacent 6(f) land and it is considered not to be feasible and prudent?	x	
3.	An alternative on new location avoiding the use of the 6(f) land has been evaluated and is considered not to be feasible and prudent?	x	

Measures to Minimize Harm		YES	NO
1.	The proposed action includes all possible planning to minimize harm?	x	
2.	Mitigation measures include one or more of the following: (Check applicable mitigation measures.)		
a.	Replacement of lands used with lands of reasonably equivalent usefulness and location, and of at least comparable value?	x	
b.	Replacement of facilities impacted by the project including sidewalks, paths, benches, lights, trees, and other facilities?	x	
c.	Restoration and landscaping of disturbed areas?	x	
d.	Special design features? (Grade Separated Trail Crossing.)	x	
e.	Payment of the fair market value of the land and improvements taken?		x
f.	Improvements to the remaining 6(f) site equal to the fair market value of the lands and improvements taken?	x	
g.	Other measures? (describe briefly)		

Coordination		YES	NO
1.	The proposed project has been coordinated with the Federal, State, and/or local officials having jurisdiction over the 6(f) lands?	x	
2.	In the case of non-Federal 6(f) lands, the official jurisdiction has been asked to identify any Federal encumbrances and there are none?	x	
3.	For bridge projects coordination with the U.S. Coast Guard has been completed (if applicable)? Not Applicable		x

Based on the environmental documentation and results of agency consultation and coordination, there appear to be no feasible and prudent alternatives to acquiring land from the Northern Unit of the Kettle Moraine State Forest for WIS 23 Improvements. Impacts could not be avoided if trails crossing WIS 23 were to continue to be used, but improvements have been design to minimize impacts and enhance the trails. Upland habitat mitigation will not be pursued. Effects to the State Forest will be minimized by constructing a grade separated crossing at WIS 23 that will allow users of the State Forest, the Ice Age Trail, and Equestrian Trail to cross WIS 23 at a safe location. The underpass will improve the quality of the trails and the State Forest and improve safety for the trail users and motorists.

The impacts to the State Forest are 6(f), but are tied to the 4(f) Ice Age Trail and Equestrian Trail impacts and mitigation as agreed to by the agencies having authority over these resources, the NPS and the WDNR. The WisDOT is committed to completing the 6(f) Conversion Request Package and purchasing replacement lands for the 6(f) property that will be acquired from the Forest for WIS 23 improvements. Refer to figures and the Commitment on the following pages.

Determination and Approval

Description/Location of Project:

WISDOT ID: 1440-13-00

Route: WIS 23, Fond du Lac to Plymouth

Temini: County K in Fond du Lac County to County P in Sheboygan County

County: Fond du Lac and Sheboygan

Name of Resources: Northern Unit of the Kettle Moraine State Forest

Based on the environmental documentation, the results of public and agency consultation and coordination as evidenced by the materials in this document, the FHWA has determined that:

The project meets all applicable criteria in Section 6(f) of the Land and Water Conservation Fund Act (LAWCON). LAWCON funds were utilized for the Kettle Moraine State Forest.

The alternatives set forth in the Alternatives Considered section of the above Section 6(f) Evaluation have been fully evaluated.

Based on those Findings, it is determined there are no feasible and prudent alternatives to the use of land on the subject resource.

The project provides Mitigation and Measures to Minimize Harm to the Section 6(f) resource and there are assurances that the measures to minimize harm will be incorporated into the project.

The coordination and public involvement efforts called for in the Section 6(f) Evaluation have been successfully completed and necessary written agreements have been obtained.

Accordingly, the signature and approval of this FEIS and subsequent Record of Decision (ROD) indicates the FHWA approves the proposed use of the subject 6(f) land in accordance with the criteria set forth in Land and Water Conservation Fund Act (Section 6(f)): 16 U.S.C. 460-4 to -11 (P.L. 88-578).

CORRESPONDENCE/MEMORANDUM**State of Wisconsin**

DATE: June 10, 2008

TO: Wisconsin Department of Natural Resources

FROM: Robert Wagner, WisDOT NE Region, Project Manager

SUBJECT: Commitment to replace state forest lands

WISCONSIN DEPARTMENT OF TRANSPORTION COMMITMENT

As a part of the Wisconsin Highway 23 expansion project, the Wisconsin Department of Transportation (WisDOT) has considered avoiding the lands within the Kettle Moraine State Forest (KMSF) and has determined that it is not a prudent alternative. Preliminary design of the highway expansion shows that WisDOT will need to acquire approximately 3.71 acres of KMSF land. This land has an appraised value of \$26,600 as of October 18, 2007 by Sterio Appraisal Service, Inc. In good faith, WisDOT has been working at finding replacement land to mitigate these takings. As of June 10, 2008, a replacement property has not yet been acquired. At this time WisDOT is committing to acquire the necessary land to mitigate the KMSF land prior to the construction of the project, scheduled to begin in 2013. WisDOT will commit to finding and purchasing available land that will meet the requirements of the Wisconsin Department of Natural Resources that will complete the 6(f) Conversion Request. WisDOT is unable to condemn any land that is not available for purchase.

Thomas Kelly, SER Real Estate Co.

 WDNR
 APPROVED

6/13/08

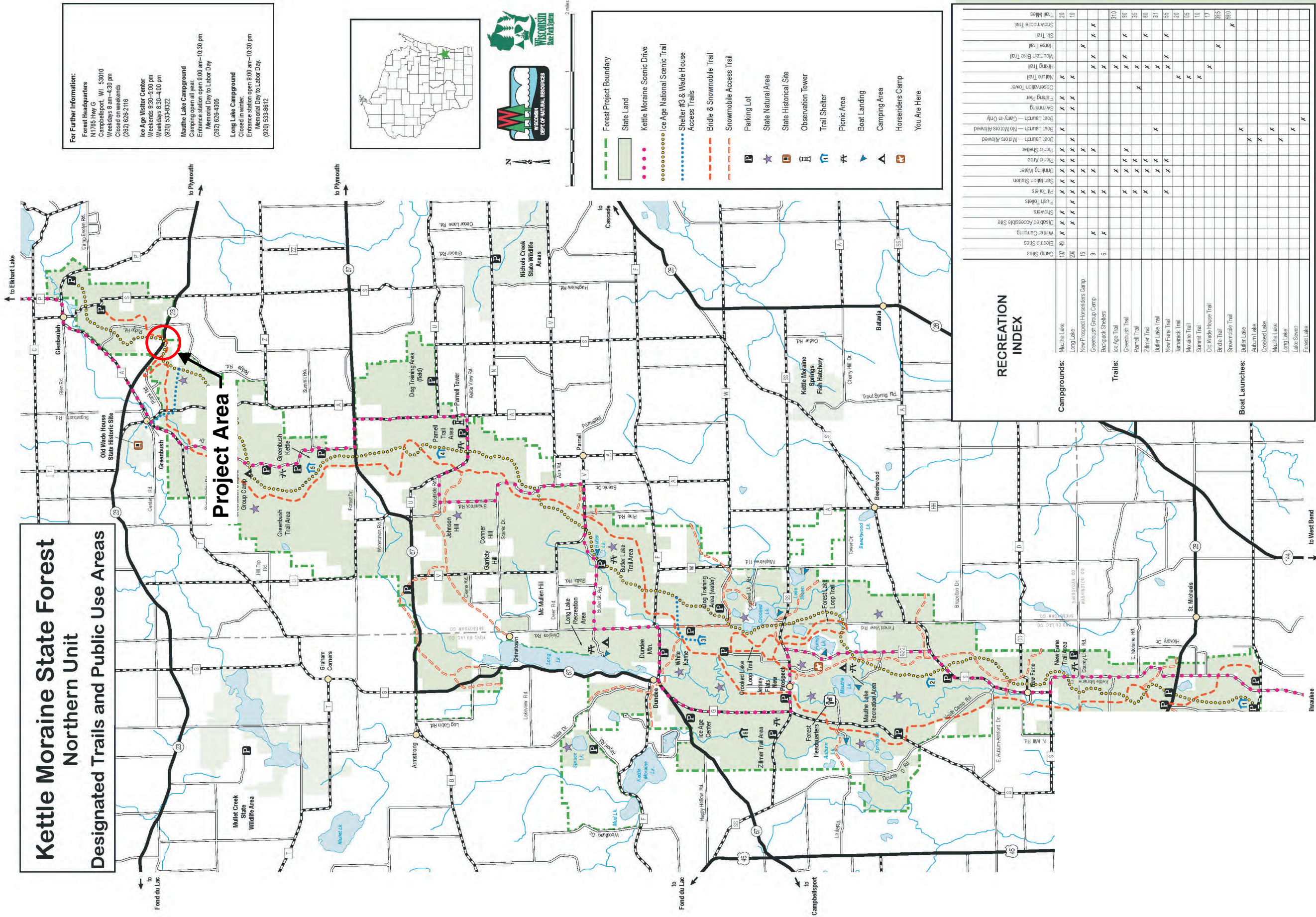
 DATE

Michael J. Berg

 WisDOT
 APPROVED

6/30/08

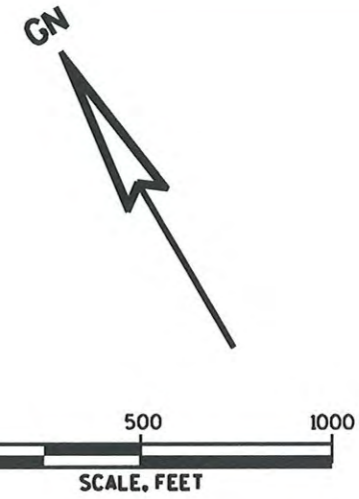
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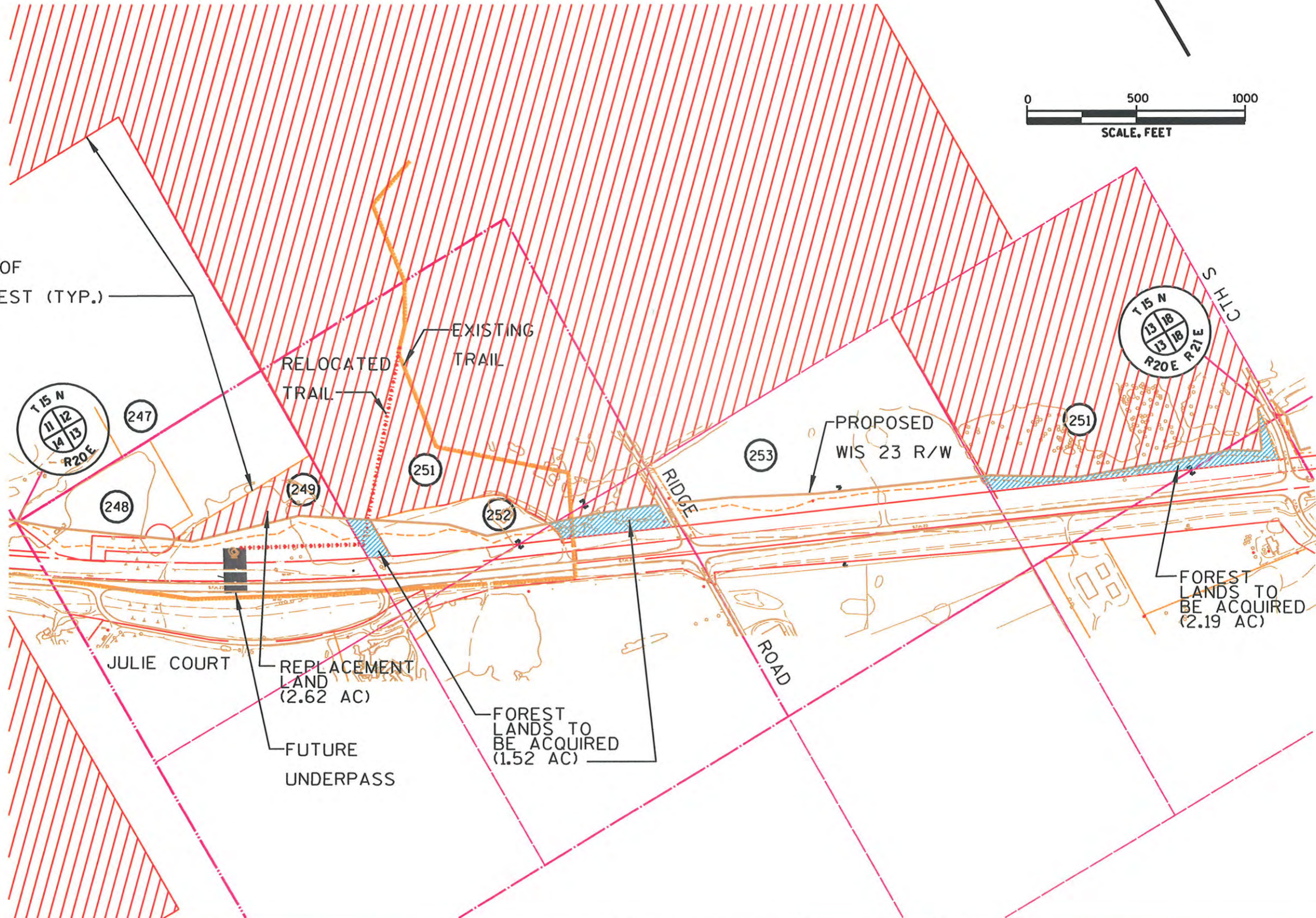
**6(f) CONVERSION REQUEST
 KETTLE MORaine STATE FOREST-NORTHERN UNIT
 WIS 23, FOND DU LAC TO PLYMOUTH
 WISDOT PROJECT ID 1440-13-00**

AFFECTED PROPERTIES

PARCEL NUMBER	OWNER(S)
247	SHEBOYGAN COUNTY GRAVEL PIT
248	JOSEPH W. KNEDLE
249	BRUCE GRAF
251	STATE OF WISCONSIN D.N.R.
252	DAVID A. HEIN
253	RIDGE LANDS FARMS, INC.



PROPOSED
BOUNDARY OF
STATE FOREST (TYP.)



6(F) CONVERSION REQUEST
KETTLE MORRAINE STATE FOREST-NORTHERN UNIT
WIS 23, FOND DU LAC TO PLYMOUTH
WISDOT PROJECT ID 1440-13-00



FIGURE NO. 4
1089-165

\$FILES\$

\$USERS\$

\$DATES\$

\$TIMES\$

CORRESPONDENCE/MEMORANDUM**State of Wisconsin**

Date: 9/19/2007

To: NE Region Files

From: Rob Wagner

Subject: Kettle Moraine State Forest Mitigation – Meeting with DNR at
Plymouth DNR Office Building Sept 19, 2007 10:00am

Attendees: Dan Kaemmerer - WDNR, Joanne Kline - WDNR, Jim Jackley - WDNR, Paul Brauer, Mike Helmrick and Rob Wagner of WisDOT. By phone Jerome Leiterman - WDNR (Park Superintendent).

We met to discuss and initiate the mitigation for the Kettle Moraine State Forest (KMSF), a 6(f) property in the Town of Greenbush. Background information on the other 4(f) properties in the area (The Old Plank Trail, Ice Age Trail, and State Equestrian Trail) was discussed, including the DeMinimus effect on the properties. The KMSF is the only 4(f) or 6(f) property that requires acquisition of property, approximately 6.2 to 8.1 acres possible.

Dan discussed the conversion process of lands to be mitigated. All needed information is put together, sent to Dan who will forward to proper and eventually sent to the National Park Service for approval. When Dan receives the packet, he will send a letter confirming WisDOT's mitigation plan and commitment.

The Conversion packet will include:

- Certified fair market value (Yellow Book Std) of both lands taken and replacement lands
- Archeological survey completed on new property
- Revised boundary Map
- An environmental assessment
- A conversion request

We then went through the area looking for possible replacement properties, looking at several, since a willing seller is necessary to sell the land to (condemnation is not possible). The following properties were looked at and ranked with the most desirable ranked first.

1. The Ridgeland Farms property on the NE corner of WIS 23 and Ridge Rd.
2. The David Hein property (including House), which may not be possible due to the relocation
3. The Ridgeland Farm property surrounded by the KMSF south of WIS 23.
4. The Kathryn Thackery property north of the Sheboygan County Pit.
5. The Bruce Graf property near Castle Court Rd.

Other items discussed during the meeting include the location of the cul-du-sac for Ridge Road. The DNR would prefer if the road is shortened as much as possible, putting the cul-du-sac closer to CTH A. Ownership of the road and township interests need to be determined.

There is Wisconsin owned land near CTH A. Department ownership should be determined for the parcel.

Rob will follow up with getting the market assessment complete and coordinate with the owners of the potential parcel acquisitions.

The conversion request should be complete this fall.

**WISCONSIN DIVISION
FEDERAL HIGHWAY ADMINISTRATION**

**SECTION 4(f) EVALUATION & DETERMINATION OF
DE MINIMIS IMPACTS TO SECTION 4(f) PROPERTY
(Revised March 18 2008)**

Description/Location of Project:

WisDOT ID: 1440-13-00
Route: WIS 23, Fond du Lac to Plymouth
Termini: County K in Fond du Lac County to County P in Sheboygan County
County: Fond du Lac and Sheboygan
Name of Resource: Ice Age Trail and State Equestrian Trail

Consult the Section 4(f) evaluation criteria as it relates to the following items. Complete all items. Any response in a shaded box requires additional information prior to approval. This determination will be attached to the applicable Environmental Document.

Applicability Criteria		YES	NO
1.	The proposed transportation project uses a Section 4(f) park, recreation area, wildlife or waterfowl refuge, or historic site.	X	
2.	The proposed project includes all appropriate measures to minimize harm and subsequent mitigation necessary to preserve and enhance those features and values of the property that originally qualified the property for Section 4(f) protection.	X	
3a.	For historic properties, a determination has been made under Section 106 of the National Historic Preservation Act (16 USC 470f) that "No Historic Properties Are Effected" or the project will have "No Adverse Effect" on the characteristics that qualify the property for the National Register of Historic Places (NRHP) such that the property would no longer retain sufficient integrity to be considered eligible for listing. (Consultation as in 36 CFR part 800)	NA	
3b.	For archeological properties, the project does not require disturbance or removal of the archaeological resources that have been determined important for preservation in place rather than for the information that can be obtained through data recovery. (Consultation as in 36 CFR part 800)	NA	
4.	For historic and archeological properties, the SHPO or THPO have been informed of FHWA's intent to make a "De Minimis" impact finding based on the Section 106 concurrence. And all measures to mitigate and/or minimize harm that have been agreed upon will be incorporated into the project. (See following section on "Mitigation and Measures to Minimize Harm.")	NA	
Alternatives Considered		YES	NO
1.	The "Do Nothing" alternative has been evaluated and is considered not to be prudent because it would neither address nor correct the transportation need that necessitated the project.	X	
2.	An alternative has been evaluated to improve the transportation facility in a manner that addresses the project's purpose and need without use of the Section 4(f) property and is considered not to be prudent.	X	

Mitigation and Measures to Minimize Harm		YES	NO
1.	The proposed action includes all possible planning to minimize harm.	X	
2.	Mitigation measures include one or more of the following: (Check applicable mitigation measures.)		
a.	Replacement of lands used with lands of reasonably equivalent usefulness and location, and of at least comparable value.		X
b.	Replacement of facilities impacted by the project including sidewalks, paths, benches, lights, trees, and other facilities.	X	
c.	Restoration and landscaping of disturbed areas.	X	
d.	Special design features. (Grade Separated Trail Crossing)	X	
e.	Payment of the fair market value of the land and improvements taken.		X
f.	Improvements to the remaining 4(f) site equal to the fair market value of the lands and improvements taken.	X	
g.	Other measures. (describe briefly)		

Coordination		YES	NO
1.	The proposed project has been coordinated with the Federal, State, and/or local officials having jurisdiction over the 4(f) lands. The officials have agreed in writing with the assessment of impacts; the proposed measures to minimize harm; and that the impacts will not have an adverse impact on the activities, features, or attributes of the 4(f) resource.	X	
2.	If Federal funds have been used in the acquisition or improvements of the 4(f) site, the land conversion/transfer has been coordinated with the appropriate Federal agency, and they are in agreement with the land conversion or transfer. (ie - Land and Water Conservation Fund Act, 16 USC 460/(8)(f)(3), etc). Documentation is attached.	X	
3.	<i>Public involvement activities have occurred, consistent with the specific requirements of "23 CFR 771.111, Early coordination, public involvement and project development".</i>	X	
4.	For a project where one or more public meetings or hearings were held, information on the proposed use of Section 4 (f) property was communicated at the public meeting(s) or hearings(s). Documentation is attached (see Section 6, Comments and Coordination).	X	

Based on the environmental documentation and results of agency consultation and coordination, there appear to be no feasible and prudent alternatives to crossing the Ice Age Trail and State Equestrian Trail with the proposed highway expansion project. Measures to minimize harm will be met by constructing a new grade-separated trail crossing at WIS 23. State and Federal agencies concur with WisDOT's conclusions and the de minimis impact finding for both the Ice Age Trail and State Equestrian Trail. Refer to Agency correspondence and figures on the following pages.

Determination and Approval

Description/Location of Project:

WISDOT ID: 1440-13-00

Route: WIS 23, Fond du Lac to Plymouth

Temini: County K in Fond du Lac County to County P in Sheboygan County

County: Fond du Lac and Sheboygan

Name of Resources: Ice Age Trail and State Equestrian Trail

Based on the environmental documentation, the results of public and agency consultation and coordination as evidenced by the attachments to this document, the FHWA has determined that:

The project meets all applicable criteria in Section 4(f) Evaluation for "De Minimis" Impacts.

The alternatives set forth in the Alternatives Considered section of the above Section 4(f) Evaluation have been fully evaluated.

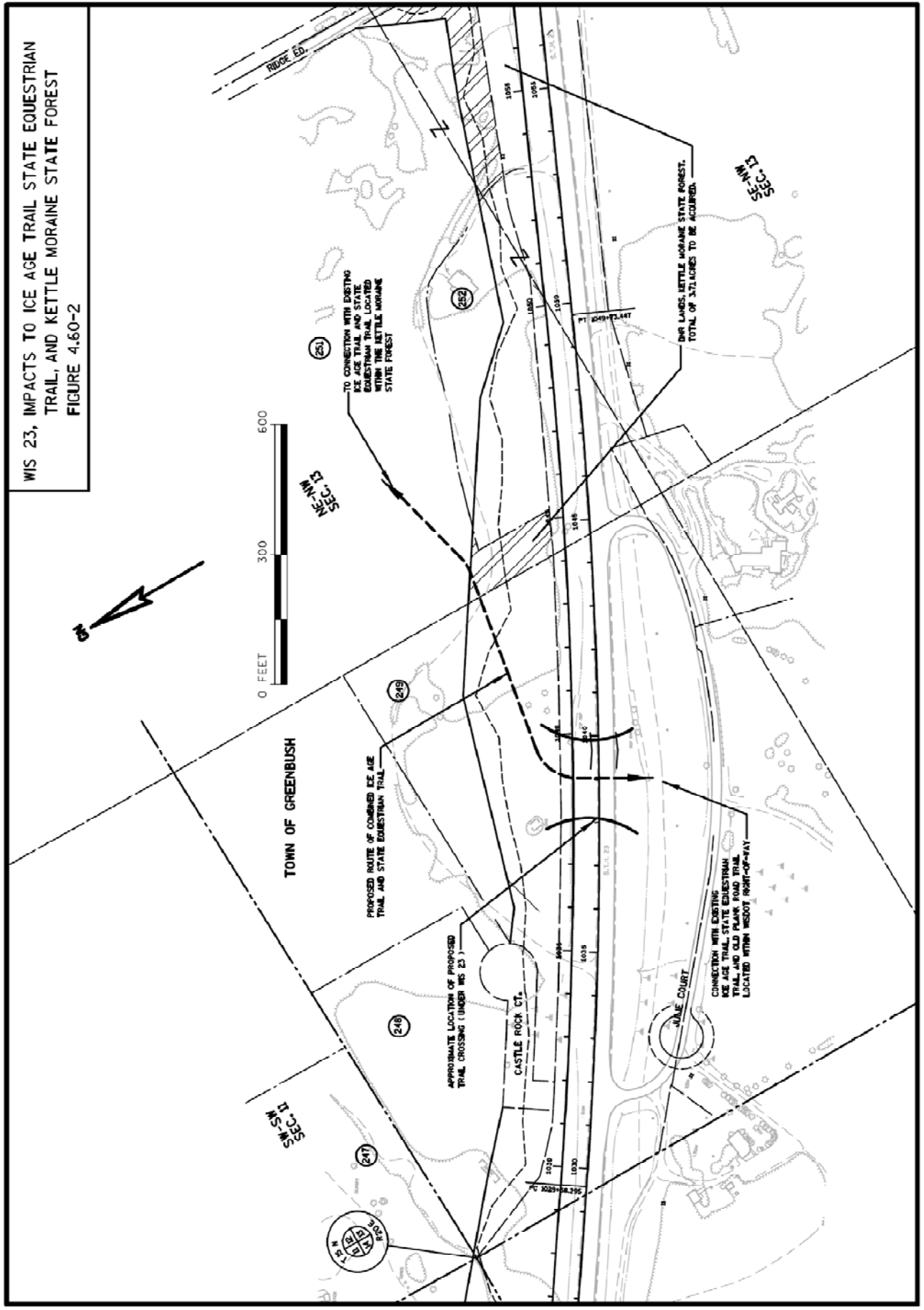
The findings in the Alternative Considered Section conclude the recommended alternative is the only prudent alternative and results in a "De Minimis" impact to the Section 4(f) property.

The project provides Mitigation and Measures to Minimize Harm to the Section 4(f) resource and there are assurances that the measures to minimize harm will be incorporated into the project.

The coordination and public involvement efforts required for a "De Minimis" finding have been successfully completed and necessary written agreements have been obtained.

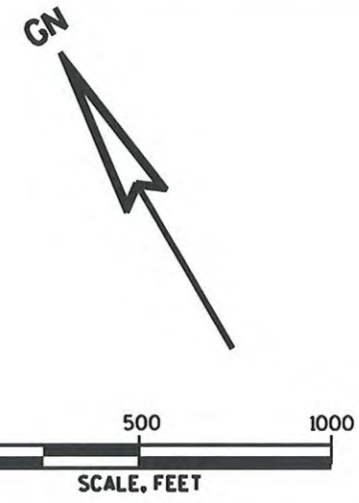
Accordingly, the signature and approval of this FEIS and subsequent Record of Decision (ROD) indicates the FHWA approves the proposed use of the subject 4(f) land as a "De Minimis" impact in accordance with the criteria set forth in 23 USC 138 & 49 USC 303, as amended by Section 6009(a) of the 2005 SAFETEA- LU Act, Pub L. 109-59.

WIS 23, IMPACTS TO ICE AGE TRAIL STATE EQUESTRIAN TRAIL, AND KETTLE MORaine STATE FOREST
 FIGURE 4.60-2

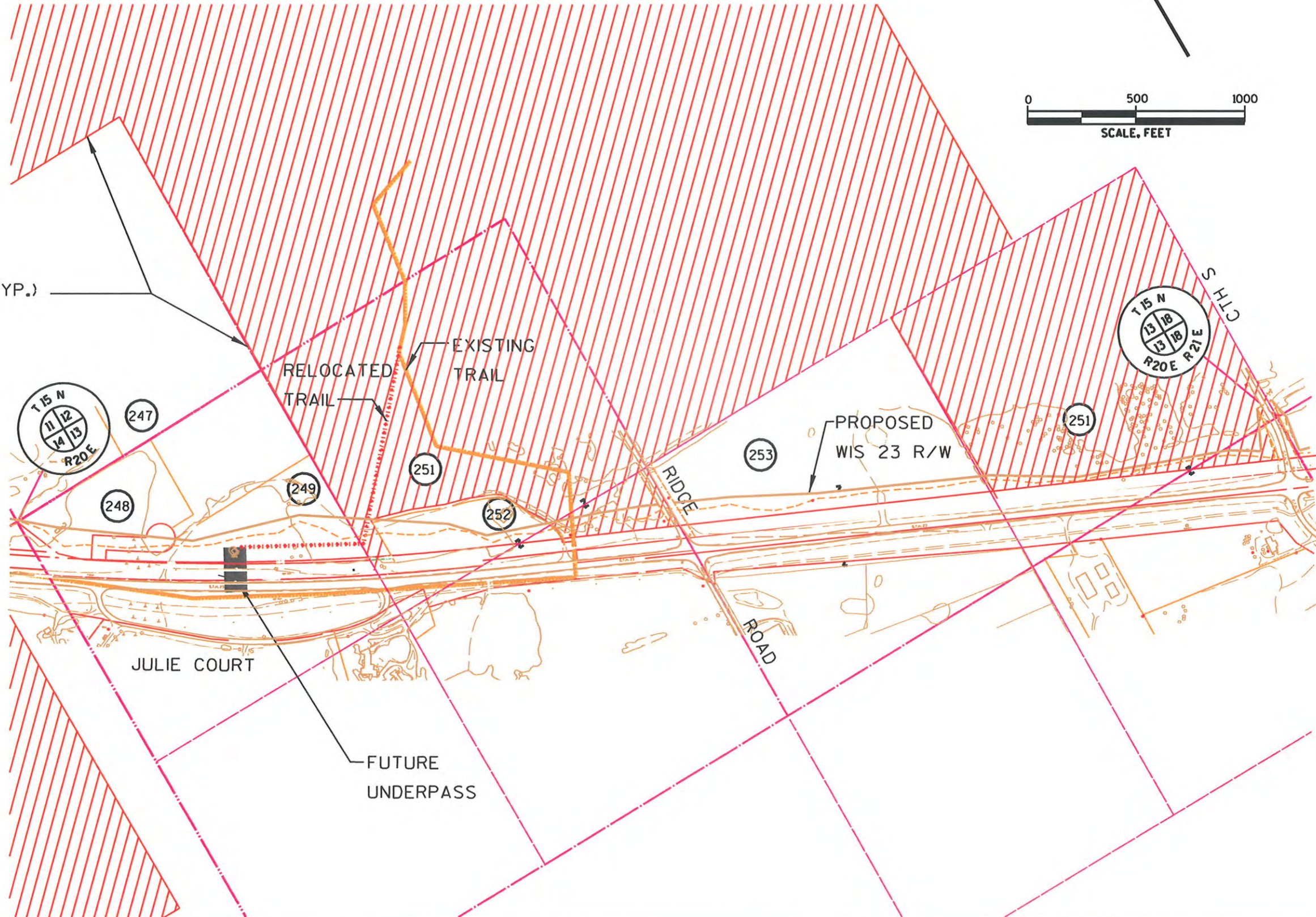


AFFECTED PROPERTIES

PARCEL NUMBER	OWNER(S)
247	SHEBOYGAN COUNTY GRAVEL PIT
248	JOSEPH W. KNEDLE
249	BRUCE GRAF
251	STATE OF WISCONSIN D.N.R.
252	DAVID A. HEIN
253	RIDGE LANDS FARMS, INC.



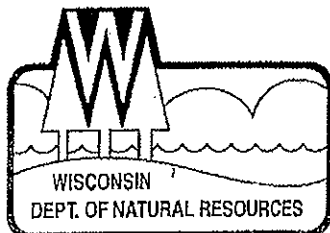
EXISTING
BOUNDARY OF
STATE FOREST (TYP.)



6(f) CONVERSION REQUEST
KETTLE MORRAINE STATE FOREST-NORTHERN UNIT
WIS 23, FOND DU LAC TO PLYMOUTH
WISDOT PROJECT ID 1440-13-00



FIGURE NO. 3
1089-165



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
 Matthew J. Frank, Secretary
 Gloria L. McCutcheon, Regional Director

Kettle Moraine State Forest
 N1765 Highway G
 Campbellsport, Wisconsin 53010
 Telephone 262-626-2116
 FAX 262-626-2117

2007 DEC 19 A 9 38

December 17, 2007

WISCONSIN

Mr. Robert J. Wagner
 WIS 23 Project Manager
 Department of Transportation
 Northeast Regional Office
 944 Vanderperren Way
 PO Box 28080
 Green Bay, WI 54324-00800

Dear Mr. Wagner:

This letter is in reference to the Wisconsin Department of Transportation (WI DOT) Highway 23 Project in Sheboygan County as it relates to the Wisconsin Department of Natural Resources (WI DNR), Kettle Moraine State Forest – Northern Unit Equestrian Trail.

In the WIS 23 Project Area, the State Forest Equestrian Trail crosses WIS 23 near Julie Road. Currently, both the Ice Age National Scenic Trail and the State Forest Equestrian Trail cross WIS 23 via an at-grade crossing. The proposed WIS 23 improvements will include modification of the trail alignments and a new slab-span bridge and underpass will be constructed to allow trail users to safely cross below the highway. The grade separation crossing and trail modifications will enhance the constructive use and safety of both trails.

The trails will be located within WI DOT right-of-way along the north and south sides of WIS 23 and through the crossing, for a distance of about 2,000 feet. As agreed to by the cooperating agencies, WI DOT, WI DNR and National Park Service, the State Forest Equestrian Trail will cross below WIS 23, with a specifically designed bridge with a minimum width and height of twelve feet with a natural bottom. The underpass will be shared by both hikers and horseback riders.

With the construction of the proposed WIS 23 improvements, avoiding impacts to the State Forest Equestrian Trail is not feasible, but we do not think the proposed WIS 23 expansion will have an adverse effect on the activities, features or attributes of the trail system. Consequently, we concur with your conclusions and the de minimis impact finding.

Thank you for your cooperation in this matter. Do not hesitate to contact me if you have further questions in this matter.

Sincerely,


 Jerry Leiterman
 Superintendent

Cc: James Morrissey, Lands Services Team Leader, SER, WI DNR
 Greg Pilarski, Parks and Forests Manager, SER, WI DNR

United States Department of the Interior



NATIONAL PARK SERVICE
Ice Age & North Country
National Scenic Trails
700 Rayovac Drive
Madison, Wisconsin 53711-2468

NOV 23 2007

IN REPLY REFER TO:
L7619 (IATR)

November 21, 2007

Mr. Robert J. Wagner
WIS 23 Project Manager
Department of Transportation
Northeast Regional Office
944 Vanderperren Way
P.O. Box 28080
Green Bay, Wisconsin 54324-0080

Dear Mr. Wagner:

We appreciate very much the initiative and cooperation of the Wisconsin Department of Transportation in providing for the needs of the Ice Age National Scenic Trail (NST) where it interfaces with your Highway 23 project in Sheboygan County.

The design of the project to include slab-span bridges on both the eastbound and westbound lanes, allowing the Ice Age NST, the equestrian trail, and wildlife to pass under the roadway, is an excellent solution for providing safe crossings for these purposes. We agree that this solution, rather than having any adverse effect on the trails, actually enhances them and makes them more attractive to users. Consequently, we concur with your conclusions and your pursuing a de minimis impact finding.

Working with you and the other partners to reach this solution for Highway 23 and the Ice Age NST has been a satisfying experience. We believe it is a model and sets the standard for working together when our respective projects interface.

Thank you for continuing to consult with us. If you have any further questions about this matter, do not hesitate to contact us at 608-441-5610.

Sincerely,

Thomas L. Gilbert
Superintendent

Cc:

Brigit Brown, State Trails Coordinator, Bureau of Parks and Recreation, Department of Natural Resources, Box 7921, Madison, WI 53707

Jerry Leiterman, Superintendent, Kettle Moraine State Forest-Northern Unit, N1765 Highway G Campbellsport, WI 53010

Mike Wollmer, Executive Director, Ice Age Park and Trail Foundation, 306 East Wilson Street, Lower Level, Madison, WI 53703



2010 WIS 23 FEIS VOL 2 Appendices

Division of Transportation
System Development
Northeast Regional Office
944 Vanderperren Way
PO Box 28080
Green Bay, WI 54324-0080

Jim Doyle, Governor
Frank J. Busalacchi, Secretary
Internet web site: www.dot.wisconsin.gov

Telephone: (920)492-5643
Teletypewriter (TTY): (920)492-5673
Facsimile (FAX): (920)492-5640
E-mail: greenbay.dtd@dot.state.wi.us

September 21, 2007

Jerry Leiterman, Superintendent
Wisconsin Department of Natural Resources
Kettle Moraine State Forest
N 1765 Highway G
Campbellsport, WI 53010

Re: De minimus Concurrence, State Equestrian Trail
Highway 23 Improvements

Dear Jerry,

As you know, the Wisconsin Department of Transportation is planning improvements to Highway 23 (WIS 23) under Project I.D. 1440-13-00, from County K in Fond du Lac to County P in Sheboygan County. The preferred alternative is to increase highway capacity by adding two lanes to the highway on the existing alignment. Improvements to State Equestrian Trail crossing at WIS 23 are also planned.

In the WIS 23 project area, the State Equestrian Trail is located within the Northern Unit of the Kettle Moraine State Forest and crosses WIS 23 near Julie Road. Currently, both the Ice Age Trail and the State Equestrian Trail cross WIS 23 via an at-grade crossing. As shown on the attached Figure, the proposed WIS 23 improvements will include modification of the trail alignments and a new slab-span bridge and underpass will be constructed to allow trail users to safely cross below the highway. The grade separated crossing and trail modifications will enhance the constructive use and safety of both trails.

The trails will be located within WisDOT right-of-way along the north and south sides of WIS 23 and through the crossing, for a distance of about 2,000 feet. As agreed to by the cooperating agencies, the State Equestrian Trail will cross below WIS 23, with a specifically designed bridge with a minimum width of twelve feet.

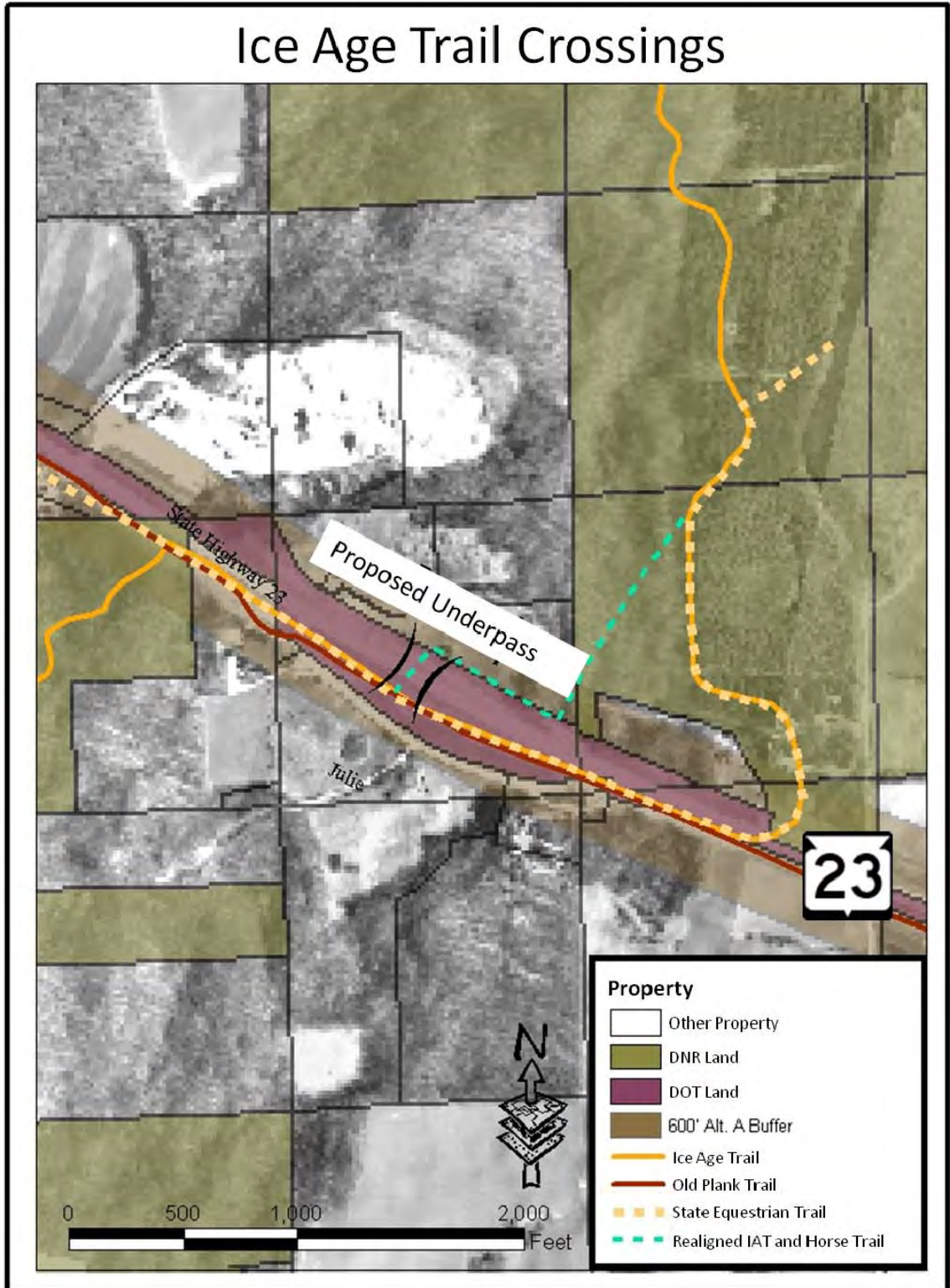
With construction of the proposed WIS 23 improvements, avoiding impacts to State Equestrian Trail is not feasible, but we do not think the proposed WIS 23 expansion will have an adverse effect on the activities, features, or attributes of the State Equestrian Trail. If the Department agrees with this opinion, please respond with a letter stating this opinion and that you understand we will be pursuing a de minimus impact finding. The letter from the DNR is needed as we move forward with the 4(f) and environmental documentation process.

If you have any questions, please call me at 920-492-5983. Thanks very much for your cooperation.

Sincerely,

Robert J. Wagner P.E.
WIS 23 Project Manager

Ice Age Trail Crossings



WISCONSIN DIVISION
FEDERAL HIGHWAY ADMINISTRATION

SECTION 4(f) EVALUATION & DETERMINATION OF
DE MINIMIS IMPACTS TO SECTION 4(f) PROPERTY
 (Revised March 18 2008)

Description/Location of Project:

WisDOT ID: 1440-13-00
 Route: WIS 23, Fond du Lac to Plymouth
 Termini: County K in Fond du Lac County to County P in Sheboygan County
 County: Fond du Lac and Sheboygan
 Name of Resource: Old Wade House State Park

Consult the Section 4(f) evaluation criteria as it relates to the following items. Complete all items. Any response in a shaded box requires additional information prior to approval. This determination will be attached to the applicable Environmental Document.

Applicability Criteria		YES	NO
1.	The proposed transportation project uses a Section 4(f) park, recreation area, wildlife or waterfowl refuge, or historic site.	X	
2.	The proposed project includes all appropriate measures to minimize harm and subsequent mitigation necessary to preserve and enhance those features and values of the property that originally qualified the property for Section 4(f) protection.	X	
3a.	For historic properties, a determination has been made under Section 106 of the National Historic Preservation Act (16 USC 470f) that "No Historic Properties Are Effected" or the project will have "No Adverse Effect" on the characteristics that qualify the property for the National Register of Historic Places (NRHP) such that the property would no longer retain sufficient integrity to be considered eligible for listing. (Consultation as in 36 CFR part 800)	X	
3b.	For archeological properties, the project does not require disturbance or removal of the archaeological resources that have been determined important for preservation in place rather than for the information that can be obtained through data recovery. (Consultation as in 36 CFR part 800)	NA	
4.	For historic & archeological properties, the SHPO or THPO have been informed of FHWA's intent to make a "De Minimis" impact finding based on the Section 106 concurrence. And all measures to mitigate &/or minimize harm that have been agreed upon will be incorporated into the project. (See following section on "Mitigation and Measures to Minimize Harm.")	X	

Alternatives Considered		YES	NO
1.	The "Do Nothing" alternative has been evaluated and is considered not to be prudent because it would neither address nor correct the transportation need that necessitated the project.	X	
2.	An alternative has been evaluated to improve the transportation facility in a manner that addresses the project's purpose and need without use of the Section 4(f) property and is considered not to be prudent.	X	
Mitigation and Measures to Minimize Harm		YES	NO
1.	The proposed action includes all possible planning to minimize harm.	X	
2.	Mitigation measures include one or more of the following: (Check applicable mitigation measures.)		

a.	Replacement of lands used with lands of reasonably equivalent usefulness and location, and of at least comparable value.		X
b.	Replacement of facilities impacted by the project including sidewalks, paths, benches, lights, trees, and other facilities.		X
c.	Restoration and landscaping of disturbed areas.	X	
d.	Special design features. (improvements to and extension of Old Plank Road Trail through the park)	X	
e.	Payment of the fair market value of the land and improvements taken.		X
f.	Improvements to the remaining 4(f) site equal to the fair market value of the lands and improvements taken.	X	
g.	Other measures. (describe briefly)		

Coordination		YES	NO
1.	The proposed project has been coordinated with the Federal, State, and/or local officials having jurisdiction over the 4(f) lands. The officials have agreed in writing with the assessment of impacts; the proposed measures to minimize harm; and that the impacts will not have an adverse impact on the activities, features, or attributes of the 4(f) resource.	X	
2.	If Federal funds have been used in the acquisition or improvements of the 4(f) site, the land conversion/transfer has been coordinated with the appropriate Federal agency, and they are in agreement with the land conversion or transfer. (ie - Land and Water Conservation Fund Act, 16 USC 460/(8)(f)(3), etc). Documentation is attached.	NA	
3.	<i>Public involvement activities have occurred, consistent with the specific requirements of "23 CFR 771.111, Early coordination, public involvement and project development".</i>	X	
4.	For a project where one or more public meetings or hearings were held, information on the proposed use of Section 4 (f) property was communicated at the public meeting(s) or hearings(s). Documentation is attached (see Section 6, Comments and Coordination).	X	

Extension of the Old Plank Road Trail to the west and linking with other trails in the Fond du Lac area is a part of the WIS 23 improvement project and is supported by local officials and agencies. Extension of the trail will require acquisition from the Old Wade House State Park. Park officials are in favor of the trail extension as it will improve the park's amenities and access to the park. Improvements have been design to minimize impacts and enhance the trail system and parks. Effects to the park will be minimized by extending the trail along the northern edge of the park, adjacent to WisDOT R/W. The trail extension will improve the quality of the trail system and the State Park. Concurrence with the de minimis impact finding has been obtained from the Wisconsin Historical Society. Refer to Agency correspondence and figures on the following pages.

Determination and Approval

Description/Location of Project:

WISDOT ID: 1440-13-00

Route: WIS 23, Fond du Lac to Plymouth

Temini: County K in Fond du Lac County to County P in Sheboygan County

County: Fond du Lac and Sheboygan

Name of Resources: Old Wade House State Park

Based on the environmental documentation, the results of public and agency consultation and coordination as evidenced by the attachments to this document, the FHWA has determined that:

The project meets all applicable criteria in Section 4(f) Evaluation for "De Minimis" Impacts.

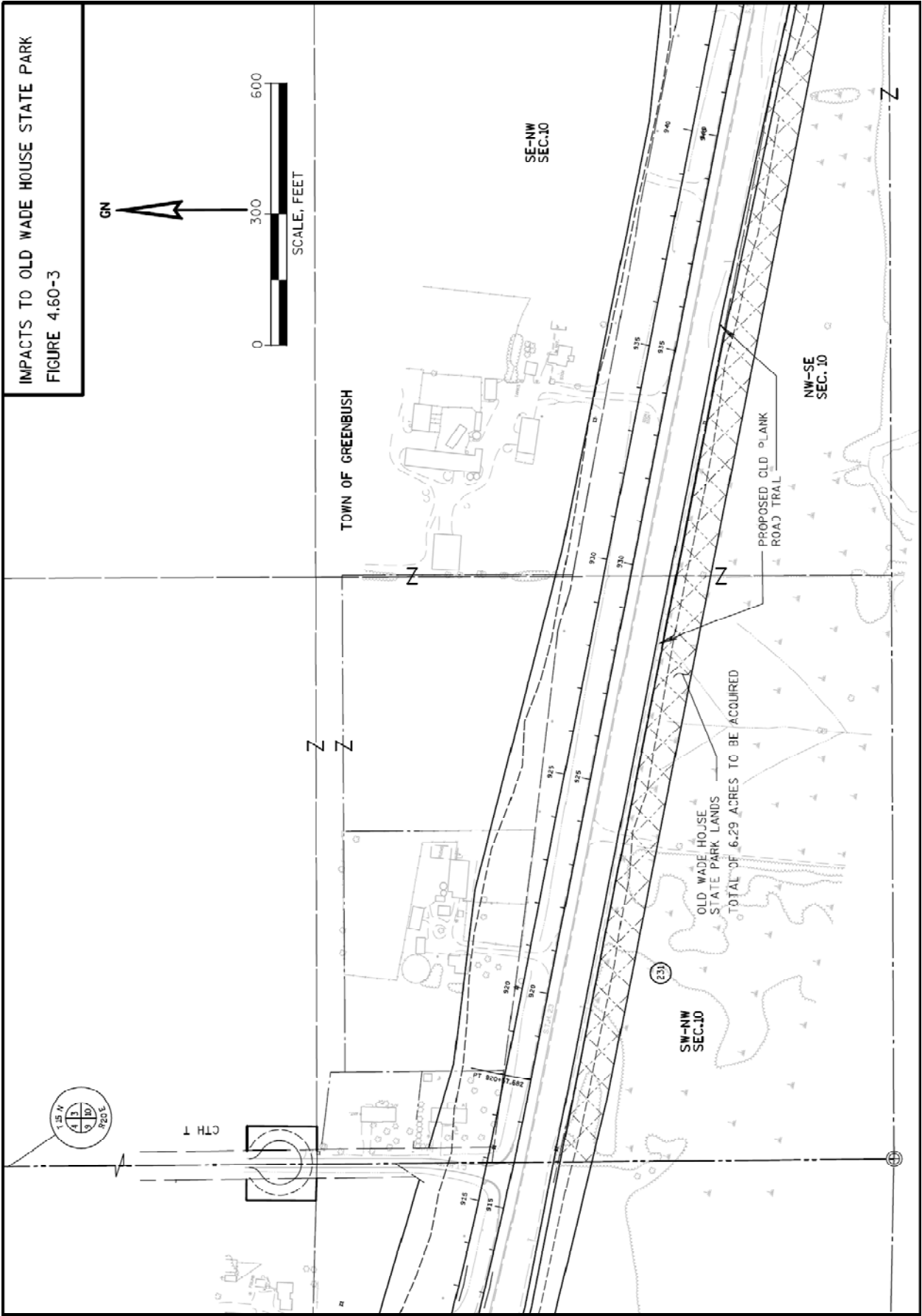
The alternatives set forth in the Alternatives Considered section of the above Section 4(f) Evaluation have been fully evaluated.

The findings in the Alternative Considered Section conclude the recommended alternative is the only prudent alternative and results in a "De Minimis" impact to the Section 4(f) property.

The project provides Mitigation and Measures to Minimize Harm to the Section 4(f) resource and there are assurances that the measures to minimize harm will be incorporated into the project.

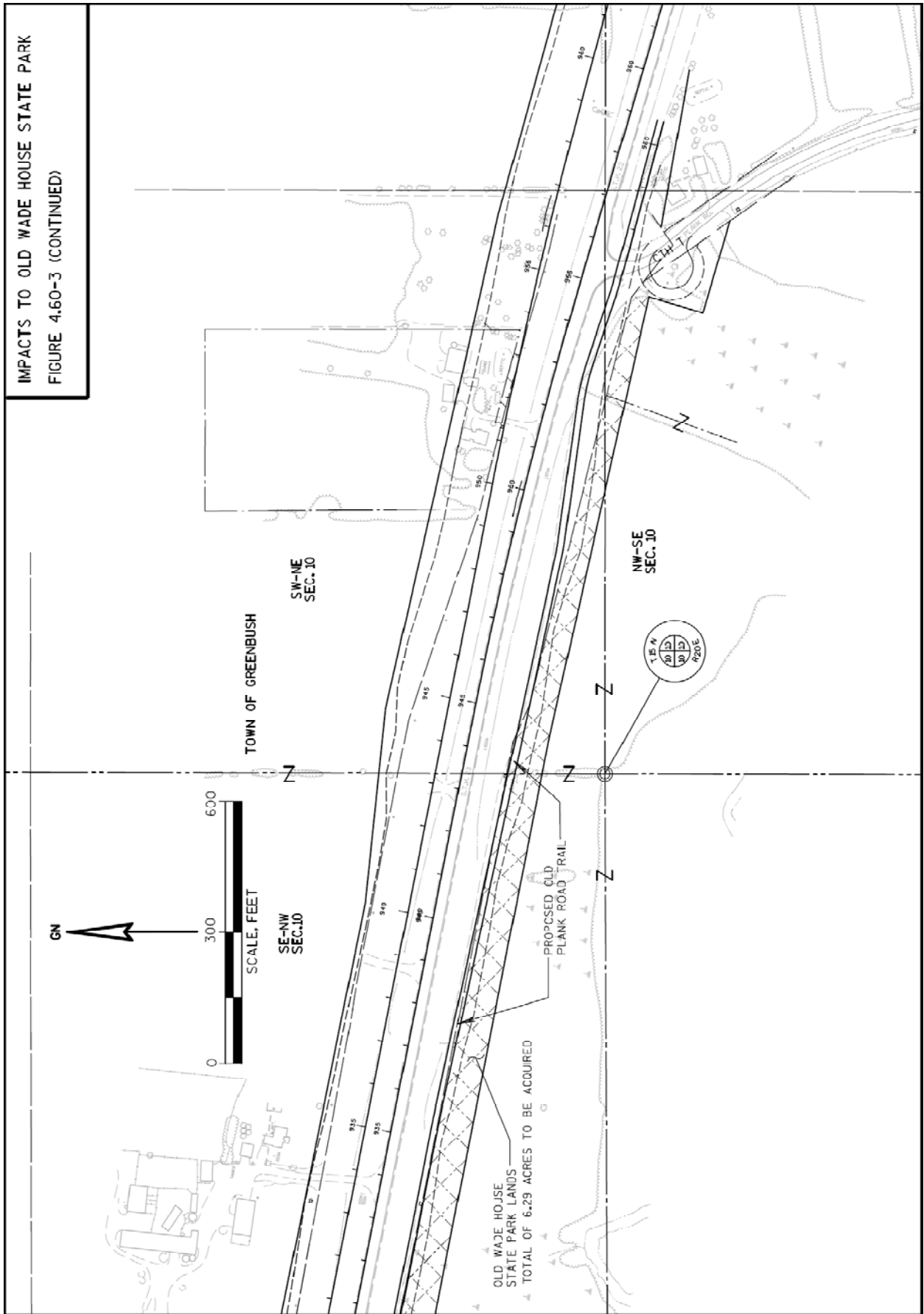
The coordination and public involvement efforts required for a "De Minimis" finding have been successfully completed and necessary written agreements have been obtained.

Accordingly, the signature and approval of this FEIS and subsequent Record of Decision (ROD) indicates the FHWA approves the proposed use of the subject 4(f) land as a "De Minimis" impact in accordance with the criteria set forth in 23 USC 138 & 49 USC 303, as amended by Section 6009(a) of the 2005 SAFETEA- LU Act, Pub L. 109-59.



IMPACTS TO OLD WADE HOUSE STATE PARK
FIGURE 4.60-3

IMPACTS TO OLD WADE HOUSE STATE PARK
FIGURE 4.60-3 (CONTINUED)





WISCONSIN
HISTORICAL
SOCIETY

Headquarters Building
816 State Street
Madison, WI 53706-1482
608-264-6400

Office of the Director
Office: 608-264-6440
Fax: 608-264-6542
Web: www.wisconsinhistory.org

October 17, 2006

Mr. Robert J. Wagner P.E.
WIS 23 Project Manager
Division of Transportation
Northeast Regional Office
P.O. Box 28080
Green Bay, WI 54324-0080

Dear Robert,

Thank you for taking the time to travel to Greenbush on September 13th, 2006 to discuss the Department of Transportation's plans for the expansion of WIS 23 with David Simmons, Site Director of the Wade House Historic Site. David appreciated your sharing both the broad overview as well as detailed access and right-of-way effects of the expansion as it will unfold within the town of Greenbush and on the Wade House Historic Site property fronting WIS 23.

In your follow-up letter of September 15th, 2006, you outlined the plan for the Old Plank Road Trail to be extended along the south side of WIS 23, crossing the Wade House property along a right-of-way approximately 15 to 20 feet in width. These plans have been discussed within the Wisconsin Historical Society's Division of Historic Sites, and staff concurs that as described in the above-mentioned letter, the extension of the Trail would have a de minimis affect on the Wade House Historic Site.

One area of concern is the articulation of the extended Old Plank Road Trail with a new Wade House Interpretive Center planned for construction atop a knoll on the south side of WIS 23 near mark 950 (reference *Plan and Profile, State Hwy 23 Eastbound, Sheet E*). We fully anticipate that the proximity of the Trail with the Interpretive Center will be mutually beneficial but do want to reference the addition of this building which is not now part of the landscape in question.

Please feel free to be in touch with David Simmons (920-526-3271) should you have any questions.

Sincerely,

Ellsworth H. Brown
Director



Division of Transportation
System Development
Northeast Regional Office
944 Vanderperren Way
PO Box 28080
Green Bay, WI 54324-0080

Jim Doyle, Governor
Frank J. Busalacchi, Secretary
Internet web site: www.dot.wisconsin.gov

Telephone: (920)492-5643
Teletypewriter (TTY): (920)492-5673
Facsimile (FAX): (920)492-5640
E-mail: greenbay.dtd@dot.state.wi.us

September 15, 2006

David Simmons
Wade House Site Director
W7824 Center Street
PO BOX 34
Greenbush, WI 53026

David,

As you know from our meeting of Sept. 13, 2006, WisDOT's preliminary plans for the expansion of WIS 23 from Fond du Lac to Plymouth include the extension of the Old Plank Trail. Currently the trail ends very close to the Wade House on Plank Road, south of WIS 23. The trail would be extended along the south side of WIS 23, along the existing property of the Wade House from Plank Road to County T.

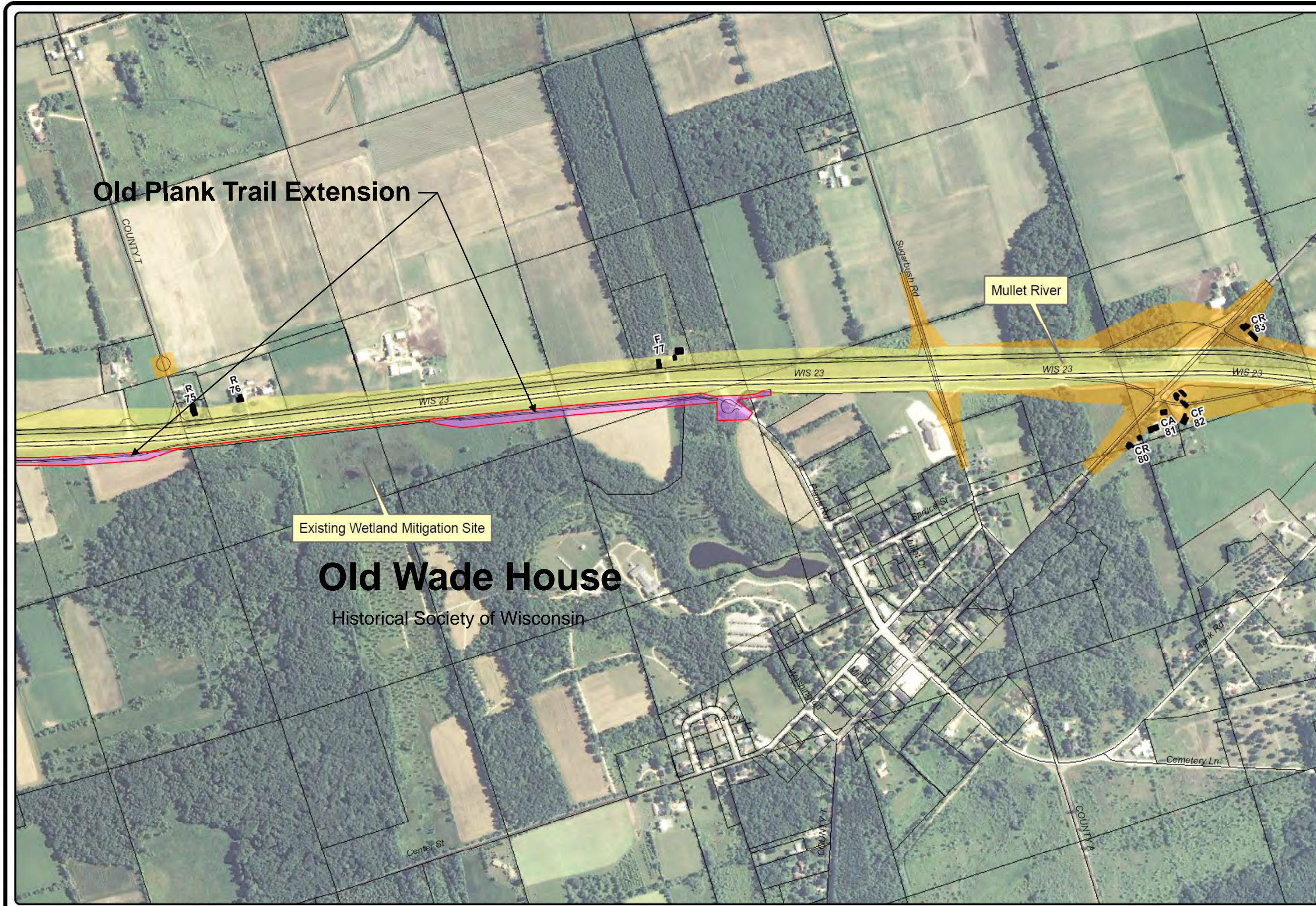
Right-of-way will need to be acquired for this expansion, approximately in the location of the currently marked snowmobile trail. The width of the right-of-way needed would likely average between 15 to 20 feet. As we discussed in that meeting, in order for us to follow through with these plans for the trail extension, we need to gain your concurrence that the trail will have a de minimis affect on the Wade House. A de minimis effect would mean that the impact of the trail and the acquisition of the right-of-way would not affect the integrity or the use of the Wade House State Park.

If you agree that the affect would be de minimis, please respond in writing by Oct 15, 2006. I greatly appreciate you attention to this matter. I have also included a two preliminary plan sheets that show what the future access restrictions must be for the future interchange at County A.

If you have any questions, please call me at 920-492-5983. Thanks very much for your cooperation.

Sincerely,

Robert J. Wagner P.E.
WIS 23 Project Manager



Legend

BUILD ALTERNATIVE

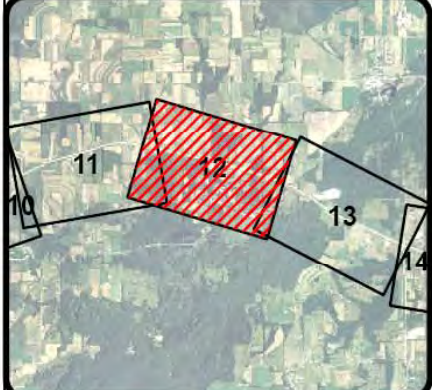
- R/W Needed for Build Alternative 4-Lane Expansion
- R/W Needed for Build Alternative Interchanges/Local Road
- R/W Needed for Build Alternative Old Plank Trail

R = Residential Relocation
 B = Business Relocation
 F = Farm Relocation
 A = Relocation due to Access Removal
 OB = Outbuilding

CORRIDOR PRESERVATION ALTERNATIVE

- Preservation of R/W for Interchanges/Grade Separation/Local Road
- Preservation of R/W for Option 23-1
- Preservation of R/W for Option 23-2

CR = Residential Property within Preservation Area
 CB = Business Property within Preservation Area
 CF = Farm Property within Preservation Area
 CA = Access Removal Associated with Preservation
 COB = Outbuilding



PROJECT ID 1440-13-00
WISCONSIN STATE HIGHWAY 23
FOND DU LAC TO PLYMOUTH
WISCONSIN DEPARTMENT OF TRANSPORTATION
FOND DU LAC AND SHEBOYGAN COUNTIES, WISCONSIN



1089.165

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WISCONSIN DIVISION
FEDERAL HIGHWAY ADMINISTRATION

SECTION 4(f) EVALUATION & DETERMINATION OF
DE MINIMIS IMPACTS TO SECTION 4(f) PROPERTY
 (Revised March 18 2008)

Description/Location of Project:

WisDOT ID: 1440-13-00
 Route: WIS 23, Fond du Lac to Plymouth
 Termini: County K in Fond du Lac County to County P in Sheboygan County
 County: Fond du Lac and Sheboygan
 Name of Resource: St. Mary's Springs Academy

Consult the Section 4(f) evaluation criteria as it relates to the following items. Complete all items. Any response in a shaded box requires additional information prior to approval. This determination will be attached to the applicable Environmental Document.

Applicability Criteria		YES	NO
1.	The proposed transportation project uses a Section 4(f) park, recreation area, wildlife or waterfowl refuge, or historic site.	X	
2.	The proposed project includes all appropriate measures to minimize harm and subsequent mitigation necessary to preserve and enhance those features and values of the property that originally qualified the property for Section 4(f) protection.	X	
3a.	For historic properties, a determination has been made under Section 106 of the National Historic Preservation Act (16 USC 470f) that "No Historic Properties Are Effected" or the project will have "No Adverse Effect" on the characteristics that qualify the property for the National Register of Historic Places (NRHP) such that the property would no longer retain sufficient integrity to be considered eligible for listing. (Consultation as in 36 CFR part 800)	X	
3b.	For archeological properties, the project does not require disturbance or removal of the archaeological resources that have been determined important for preservation in place rather than for the information that can be obtained through data recovery. (Consultation as in 36 CFR part 800)	NA	
4.	For historic and archeological properties, the SHPO or THPO have been informed of FHWA's intent to make a "De Minimis" impact finding based on the Section 106 concurrence. And all measures to mitigate and/or minimize harm that have been agreed upon will be incorporated into the project. (See following section on "Mitigation and Measures to Minimize Harm.")	X	

Alternatives Considered		YES	NO
1.	The "Do Nothing" alternative has been evaluated and is considered not to be prudent because it would neither address nor correct the transportation need that necessitated the project.	X	
2.	An alternative has been evaluated to improve the transportation facility in a manner that addresses the project's purpose and need without use of the Section 4(f) property and is considered not to be prudent.	X	

Mitigation and Measures to Minimize Harm		YES	NO
1.	The proposed action includes all possible planning to minimize harm.	X	
2.	Mitigation measures include one or more of the following: (Check applicable mitigation measures.)		
a.	Replacement of lands used with lands of reasonably equivalent usefulness and location, and of at least comparable value.		X
b.	Replacement of facilities impacted by the project including sidewalks, paths, benches, lights, trees, and other facilities.		X
c.	Restoration and landscaping of disturbed areas.	X	
d.	Special design features. (Contributing site structures, a sign and a statue, will be relocated on site. A grade-separated crossing will be constructed at County K)	X	
e.	Payment of the fair market value of the land and improvements taken.	X	
f.	Improvements to the remaining 4(f) site equal to the fair market value of the lands and improvements taken.		X
g.	Other measures. (describe briefly)		

Coordination		YES	NO
1.	The proposed project has been coordinated with the Federal, State, and/or local officials having jurisdiction over the 4(f) lands. The officials have agreed in writing with the assessment of impacts; the proposed measures to minimize harm; and that the impacts will not have an adverse impact on the activities, features, or attributes of the 4(f) resource.	X	
2.	If Federal funds have been used in the acquisition or improvements of the 4(f) site, the land conversion/transfer has been coordinated with the appropriate Federal agency, and they are in agreement with the land conversion or transfer. (ie - Land and Water Conservation Fund Act, 16 USC 460/(8)(f)(3), etc). Documentation is attached.	NA	
3.	<i>Public involvement activities have occurred, consistent with the specific requirements of "23 CFR 771.111, Early coordination, public involvement and project development".</i>	X	
4.	For a project where one or more public meetings or hearings were held, information on the proposed use of Section 4 (f) property was communicated at the public meeting(s) or hearings(s). Documentation is attached (see Section 6, Comments and Coordination).	X	

Because of the historic significance of structures at this site, the St. Mary's Springs Academy property at the northeast quadrant of the WIS 23 and County K intersection is 4(f). St. Mary's Springs, local residents and local official are in favor of a grade-separated crossing at County K. To facilitate this, approximately 0.9 acres of R/W will be acquired. Coordination with SHPO on the de minimis impact finding is complete and documentation is provided on the following pages. FHWA, SHPO, and St. Mary's Springs officials have signed off on the project's MOA in regard to the historic significance of the St. Mary's Springs Academy property (the MOA is provided in Section 4.6P).

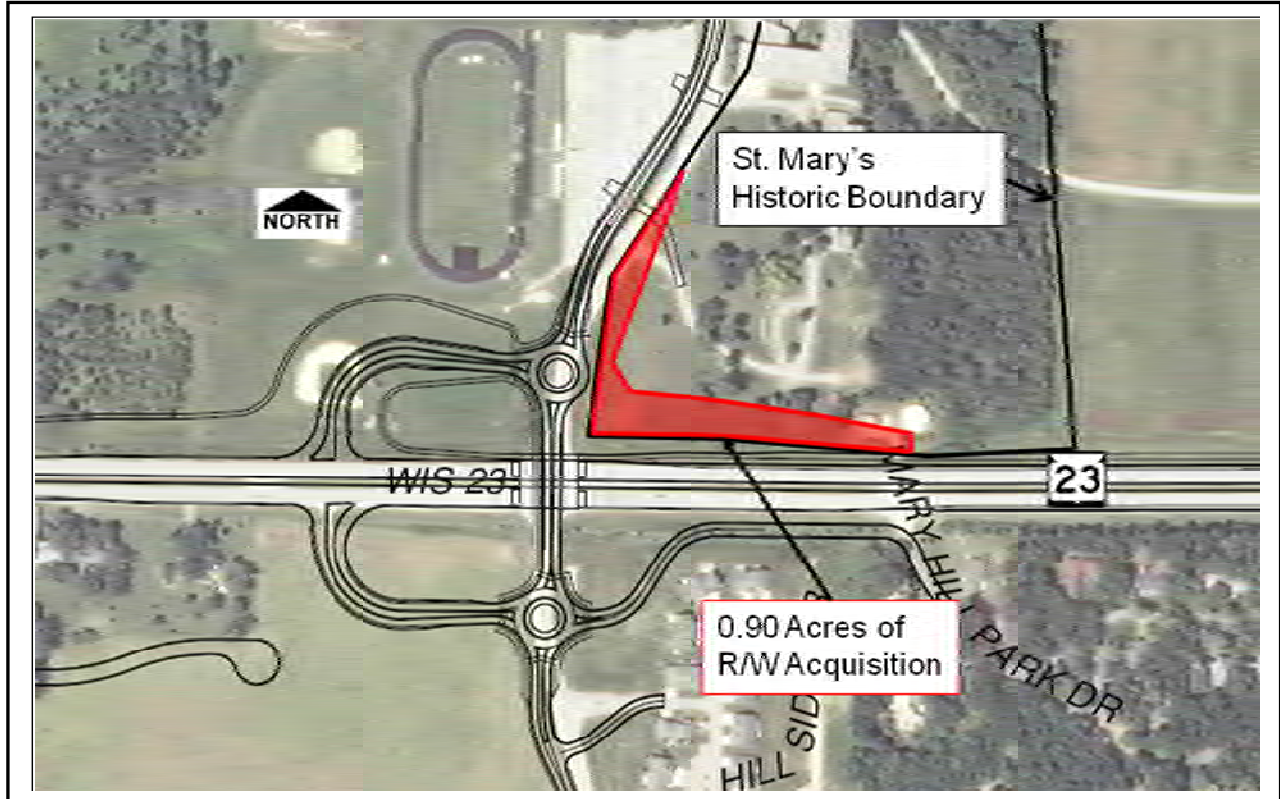


Figure 4.6O-4 St. Mary's Springs at WIS 23/County K Intersection

Determination and Approval

Description/Location of Project:

WISDOT ID: 1440-13-00

Route: WIS 23, Fond du Lac to Plymouth

Temini: County K in Fond du Lac County to County P in Sheboygan County

County: Fond du Lac and Sheboygan

Name of Resources: St. Mary's Springs Academy

Based on the environmental documentation, the results of public and agency consultation and coordination as evidenced by the attachments to this document, the FHWA has determined that:

The project meets all applicable criteria in Section 4(f) Evaluation for "De Minimis" Impacts.

The alternatives set forth in the Alternatives Considered section of the above Section 4(f) Evaluation have been fully evaluated.

The findings in the Alternative Considered Section conclude the recommended alternative is the only prudent alternative and results in a "De Minimis" impact to the Section 4(f) property.

The project provides Mitigation and Measures to Minimize Harm to the Section 4(f) resource and there are assurances that the measures to minimize harm will be incorporated into the project.

The coordination and public involvement efforts required for a "De Minimis" finding have been successfully completed and necessary written agreements have been obtained.

Accordingly, the signature and approval of this FEIS and subsequent Record of Decision (ROD) indicates the FHWA approves the proposed use of the subject 4(f) land as a "De Minimis" impact in accordance with the criteria set forth in 23 USC 138 & 49 USC 303, as amended by Section 6009(a) of the 2005 SAFETEA- LU Act, Pub L. 109-59.



Preserving America's Heritage

April 28, 2009

Stephanie J. Hickman
 Environmental Programs Coordinator
 FHWA – Wisconsin Division
 525 Junction Road, Suite 8000
 Madison, WI 53717

Ref: *Proposed Expansion of STH 23*
Project ID: 1440-13-00/1440-15-00, SHSW # 06-0864/FD SB
Sheboygan and Fond du Lac Counties, Wisconsin

Dear Ms. Hickman:

On April 15, 2009, the Advisory Council on Historic Preservation (ACHP) received your notification and supporting documentation regarding the adverse effects of the referenced undertaking on a property or properties listed or eligible for listing in the National Register of Historic Places. Based upon the information you provided, we have concluded that Appendix A, *Criteria for Council Involvement in Reviewing Individual Section 106 Cases*, of our regulations, "Protection of Historic Properties" (36 CFR Part 800), does not apply to this undertaking. Accordingly, we do not believe that our participation in the consultation to resolve adverse effects is needed. However, if we receive a request for participation from the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer, affected Indian tribe, a consulting party, or other party, we may reconsider this decision. Additionally, should circumstances change, and you determine that our participation is needed to conclude the consultation process, please notify us.

Pursuant to 36 CFR §800.6(b)(1)(iv), you will need to file the final Memorandum of Agreement (MOA), developed in consultation with the Wisconsin State Historic Preservation Office (SHPO) and any other consulting parties, and related documentation with the ACHP at the conclusion of the consultation process. The filing of the MOA and supporting documentation with the ACHP is required in order to complete the requirements of Section 106 of the National Historic Preservation Act.

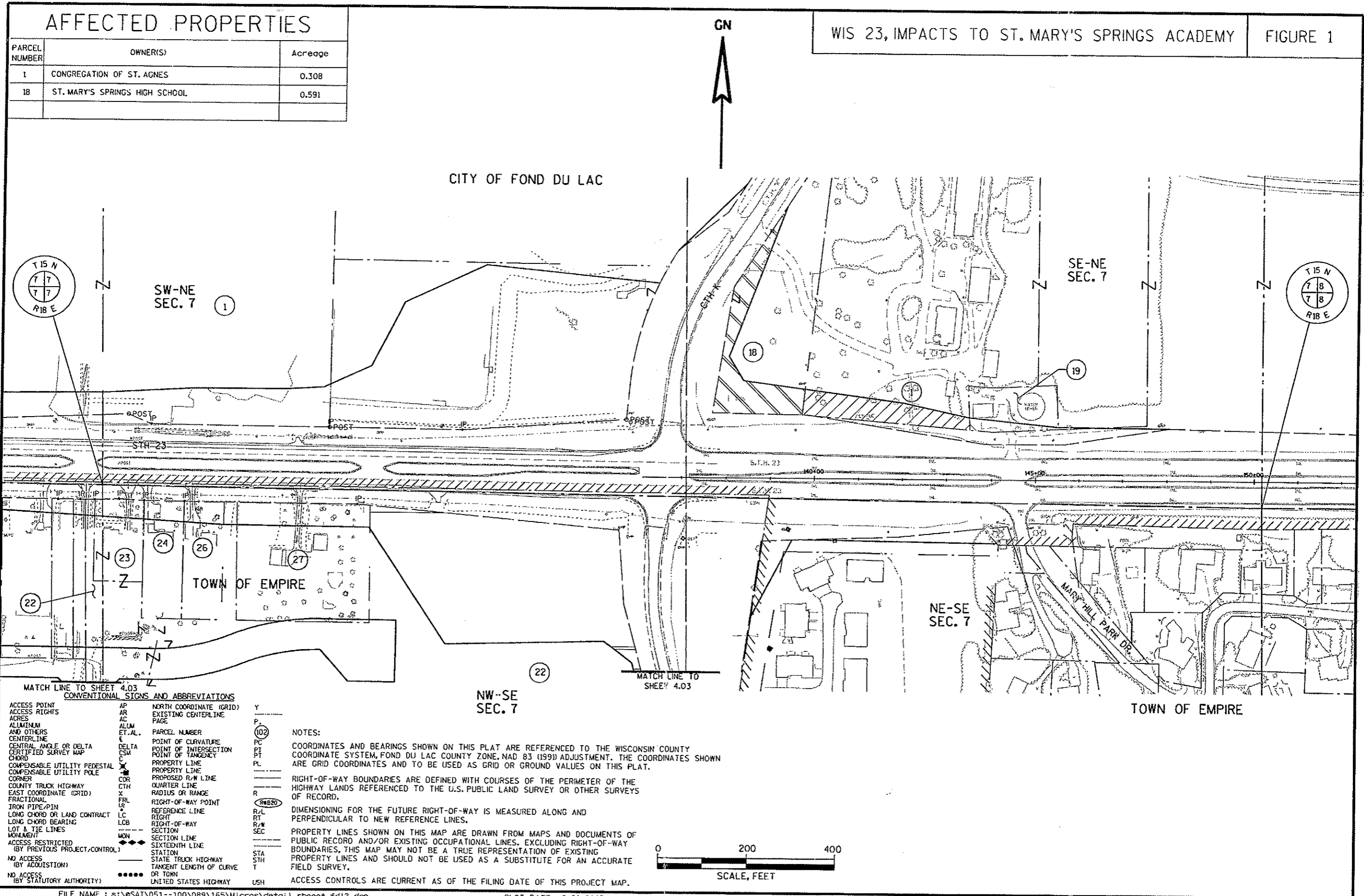
Thank you for providing us with your notification of adverse effect. If you have any questions or require our further assistance, please contact Najah Duvall-Gabriel at 202 606-8585 or via e-mail at ngabriel@achp.gov.

Sincerely,

LaShavio Johnson
 Historic Preservation Technician
 Federal Permitting, Licensing and Assistance Section
 Office of Federal Agency Programs

ADVISORY COUNCIL ON HISTORIC PRESERVATION

1100 Pennsylvania Avenue NW, Suite 803 • Washington, DC 20004
 Phone: 202-606-8503 • Fax: 202-606-8647 • achp@achp.gov • www.achp.gov



AFFECTED PROPERTIES		
PARCEL NUMBER	OWNER(S)	Acreage
1	CONGREGATION OF ST. AGNES	0.308
18	ST. MARY'S SPRINGS HIGH SCHOOL	0.591

WIS 23, IMPACTS TO ST. MARY'S SPRINGS ACADEMY FIGURE 1

- CONVENTIONAL SIGNS AND ABBREVIATIONS**
- | | | | |
|---|--------|-------------------------|-------|
| ACCESS POINT | AP | NORTH COORDINATE (GRID) | Y |
| ACCESS RIGHTS | AR | EXISTING CENTERLINE | P |
| ACRES | AC | PAGE | 102 |
| ALUMINUM AND OTHERS | ALUM | PARCEL NUMBER | 102 |
| CENTERLINE | ET AL. | POINT OF CURVATURE | PC |
| CENTRAL ANGLE OR DELTA | DELTA | POINT OF INTERSECTION | PI |
| CERTIFIED SURVEY MAP | CSM | POINT OF TANGENCY | PT |
| CHORD | C | PROPERTY LINE | PL |
| COMPENSABLE UTILITY PEDESTAL | C | PROPERTY LINE | PL |
| COMPENSABLE UTILITY POLE | C | PROPOSED R/W LINE | R |
| CORNER | COR | QUARTER LINE | R |
| COUNTY TRUCK HIGHWAY | CTH | RADIUS OR RANGE | R |
| EAST COORDINATE (GRID) | X | RIGHT-OF-WAY POINT | RWB20 |
| FRACTIONAL | FRL | REFERENCE LINE | R/L |
| IRON PIPE/PIN | IP | RIGHT | RT |
| LONG CHORD OR LAND CONTRACT | LC | RIGHT-OF-WAY | R/W |
| LONG CHORD BEARING | LCB | SECTION LINE | SEC |
| LOT & TIE LINES | L | SIXTEENTH LINE | STA |
| MONUMENT | MON | STATE TRUCK HIGHWAY | STH |
| ACCESS RESTRICTED (BY PREVIOUS PROJECT/CONTROL) | ◆◆◆◆ | TANGENT LENGTH OF CURVE | T |
| NO ACCESS (BY ACQUISITION) | ----- | OR TOWN | USH |
| NO ACCESS (BY STATUTORY AUTHORITY) | | UNITED STATES HIGHWAY | |

NOTES:

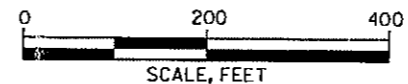
COORDINATES AND BEARINGS SHOWN ON THIS PLAT ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM, FOND DU LAC COUNTY ZONE, NAD 83 (1991) ADJUSTMENT. THE COORDINATES SHOWN ARE GRID COORDINATES AND TO BE USED AS GRID OR GROUND VALUES ON THIS PLAT.

RIGHT-OF-WAY BOUNDARIES ARE DEFINED WITH COURSES OF THE PERIMETER OF THE HIGHWAY LANDS REFERENCED TO THE U.S. PUBLIC LAND SURVEY OR OTHER SURVEYS OF RECORD.

DIMENSIONING FOR THE FUTURE RIGHT-OF-WAY IS MEASURED ALONG AND PERPENDICULAR TO NEW REFERENCE LINES.

PROPERTY LINES SHOWN ON THIS MAP ARE DRAWN FROM MAPS AND DOCUMENTS OF PUBLIC RECORD AND/OR EXISTING OCCUPATIONAL LINES. EXCLUDING RIGHT-OF-WAY BOUNDARIES, THIS MAP MAY NOT BE A TRUE REPRESENTATION OF EXISTING PROPERTY LINES AND SHOULD NOT BE USED AS A SUBSTITUTE FOR AN ACCURATE FIELD SURVEY.

ACCESS CONTROLS ARE CURRENT AS OF THE FILING DATE OF THIS PROJECT MAP.



Hellermann, Luke

From: Newbery, Robert - DOT [robert.newbery@dot.wi.gov]
Sent: Friday, May 08, 2009 2:11 PM
To: Hellermann, Luke
Cc: Wagner, Robert - DOT (Northeast Region); Waldschmidt, Jay - DOT; Scudder, Dan - DOT
Subject: FW: WisDOT: 1440-13-00 SHSW#: 06-0864/FD/SB

Here is how I was able to get closure. 23 CFR 774 requires written notification from us to SHPO and from SHPO back to us that we both understand that we will use their concurrence in a finding of No Adverse Effect in our consideration for making a finding of *de minimis* per Section 4(f). Therefore,

1. The emails below confirm that we have notified SHPO in writing about our intentions vis-a-vis No Adverse Effect and *de minimis*, and this email informs you and Rob that we have documented that we have done that.
2. The emails below also confirm that SHPO has responded in writing and the file for this project shows that they have done that. This email informs you and Rob that we have documented that we have done that.

Yes, I too, believe it would have been easier and less time consuming if SHPO had just signed the double signature letter, but they did not so here is resolution and closure.

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

From: Banker, Sherman J - WHS
Sent: Thursday, April 16, 2009 8:35 AM
To: Newbery, Robert - DOT
Subject: RE: WisDOT: 1440-13-00 SHSW#: 06-0864/FD/SB

Hi,

OK, sounds fine to me. Has the MOA been signed by all of the parties?

Sherman

From: Newbery, Robert - DOT
Sent: Wednesday, April 15, 2009 3:35 PM
To: Banker, Sherman J - WHS
Cc: Kopacz, David; Waldschmidt, Jay - DOT; Cloud, Lynn - DOT; Scudder, Dan - DOT
Subject: RE: WisDOT: 1440-13-00 SHSW#: 06-0864/FD/SB

1. We did not ask you to comment on the *de minimis* finding.
2. We provided you with a simple way to document for the files (and for anyone who might wish to look in the files) that you were aware that FHWA would use your determination of Conditional No Adverse Effect when they considered the issue of 4(f) and could use your finding of Conditional No Adverse Effect in reaching a *de minimis* finding. This project is unique because the determination of Conditional No Adverse Effect on St. Mary's Springs Academy was contained in a Memorandum of Agreement for the entire project. Therefore, to make sure the documentation in the file was absolutely clear, we sent you the letter of March 18, 2009 (copy attached).
3. I believe your email below, in response to your receipt of the March 18, 2009 letter from me, documents that we have met the requirements for coordination with SHPO for *de minimis* of 23 CFR 774.5(b)(1)(ii) as published in the Federal Register March 12, 2008. The email below (and the knowledge that you are responding to my letter to you of March 18, 2009) documents that you are aware that FHWA may use your finding of conditional No Adverse Effect in making a *de minimis* finding under Section 4(f).
4. I believe this provides closure on this issue and no further correspondence is required on this issue for this project.

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

From: Banker, Sherman J - WHS
Sent: Wednesday, April 15, 2009 1:27 PM

To: Cloud, Lynn - DOT; Newbery, Robert - DOT

Subject: WisDOT: 1440-13-00 SHSW#: 06-0864/FD/SB

Hi,

We as the SHPO have no say in 4(f) or the de minimis call and as a result we will not comment.

Thanks you,

Sherman Banker
Wisconsin State Historic Preservation Office

Programmatic Section 4(f) Evaluation Minor Involvements with Historic Sites

Name of Resource: Sipple Archaeological Site

Consult the Nationwide Section 4(f) Evaluation as it relates to the following items. Complete all items. Any response in a shaded box requires additional information prior to approval. This determination will be attached to the applicable environmental document.

Eligibility Criteria		YES	NO
1.	Is the 4(f) site adjacent to the existing highway?	x	
2.	Does the amount and location of the land to be used impair the use of the remaining Section 4(f) lands, in whole or in part, for its intended purpose?		
3.	a. If the total 4(f) site is less than 10 acres, is the land to be acquired/used less than 10% of the total area? b. If the total 4(f) site is from 10-100 acres, is land to be acquired/used less than 1 acre? c. If the total 4(f) site is greater than 100 acres, is the land to be acquired/used less than 1% of the site?		a
4.	Are there any proximity impacts which would impair the use of the 4(f) lands for their intended purpose?		
5.	Have the officials with jurisdiction over the Section 4(f) lands agreed in writing with the assessment of impacts of the proposed project on, and the proposed mitigation for the Section 4(f) lands?	x	
6.	Have Federal funds been used in the acquisition or improvements of the 4(f) site?		x
	If yes, has the land conversion/transfer been coordinated with the appropriate Federal agency, and are they in agreement with the land conversion or transfer?		
7.	Does the project require the preparation of an EIS?	x	
8.	Is the project on a new location?		x
9.	The scope of the project is one of the following: (indicate one in Yes-box) a. Improved Traffic Operations b. Safety Improvements c. 4R d. Bridge Replacement on Essentially the Same Alignment e. Addition of Lanes	e	
10.	Has a Determination of Effect been prepared for the property? Is there an adverse effect?	Yes Yes	
11.	Has Documentation for Consultation been Initiated? Has an MOA been completed?	Yes Yes, provided in Section 4.6P	
12.	Potential measures to minimize or mitigate effect. A Data Recovery Plan has been prepared and data recovery will be completed prior to construction.		Efforts will be made to reduce right-of-way requirements at this site.

2010 WIS 23 FEIS VOL 2 Appendices

Alternatives Considered		YES	NO
1.	The "Do Nothing" alternative has been evaluated and is considered not to be feasible and prudent?	x	
2.	An alternative has been evaluated which improves the highway without the use of the adjacent 4(f) land and it is considered not to be feasible and prudent?	X	
3.	An alternative on new location avoiding the use of the 4(f) land has been evaluated and is considered not to be feasible and prudent?	X	

Measures to Minimize Harm		YES	NO
1.	The proposed action includes all possible planning to minimize harm?	x	
2.	Mitigation measures include one or more of the following: (Check applicable mitigation measures.)		
a.	Replacement of lands used with lands of reasonably equivalent usefulness and location, and of at least comparable value?		x
b.	Replacement of facilities impacted by the project including sidewalks, paths, benches, lights, trees, and other facilities?		x
c.	Restoration and landscaping of disturbed areas?	x	
d.	Special design features?		x
e.	Payment of the fair market value of the land and improvements taken?	x	
f.	Improvements to the remaining 4(f) site equal to the fair market value of the lands and improvements taken?		x
g.	Other measures? (describe briefly) Site evaluations will be completed, the site will be documented and data recovery completed. D for C completed with interested parties and an MOA signed.	x	

Coordination		YES	NO
1.	The proposed project has been coordinated with the Federal, State, and/or local officials having jurisdiction over the 4(f) lands?	x	
2.	In the case of non-Federal 4(f) lands, the official jurisdiction has been asked to identify any Federal encumbrances and there are none?	x	
3.	For bridge projects coordination with the U.S. Coast Guard has been completed (if applicable)? Not Applicable		

Phase 1 and Phase 2 Archaeological reports have been completed. The site has been listed on the NRHP and data recovery will be completed at the site prior to construction. Refer to Agency correspondence and the MOA on the following pages and in Sections 4.6P and 4.6Q.

Determination and Approval

Description/Location of Project:

WISDOT ID: 1440-13-00

Route: WIS 23, Fond du Lac to Plymouth

Temini: County K in Fond du Lac County to County P in Sheboygan County

County: Fond du Lac and Sheboygan

Name of Resources: Sipple Archaeological Site

Based on the environmental documentation, the results of public and agency consultation and coordination as evidenced by the materials in this document, the FHWA has determined that:

The project meets all applicable criteria in Section 4(f) Evaluation and Approval for Federally-Aided Highway Projects with Minor involvements with Historic Sites, Public Parks, Recreation Lands, and Wildlife and Waterfowl Refuges.

The alternatives set forth in the Alternatives Considered section of the above Section 4(f) Evaluation have been fully evaluated.

Based on those Findings, it is determined there is no feasible and prudent alternative to the use of land or non-historic improvements on the subject resource.

The project provides Mitigation and Measures to Minimize Harm to the Section 4(f) resource and there are assurances that the measures to minimize harm will be incorporated into the project.

The coordination and public involvement efforts called for in the Nationwide Section 4(f) Evaluations have been successfully completed and necessary written agreements have been obtained.

Accordingly, the signature and approval of this FEIS and subsequent Record of Decision (ROD) indicates the FHWA approves the proposed use of the subject 4(f) land in accordance with the criteria set forth in 23 USC 138 & 49 USC 303, as amended by Section 6009(a) of the 2005 SAFETEA- LU Act, Pub L. 109-59.

MEMORANDUM

Wisconsin Historical Society

Museum Archaeology Program, Kelly Hamilton, Director

DATE: 23 April 2007

TO: Rob Wagner, Northeast Region project manager

FROM: Kelly Hamilton

RE: WisDOT ID: 1440-13/15-00
Sheboygan and Fond du Lac Counties
STH 23: CTH K to CTH P
MAP project ID: 02-5017

Enclosed please find the following:

- Four (4) copies of a data recovery plan titled, *Data Recovery Plan, The Sippel (47SB394) Site: A Mid Nineteenth Century Yankee Homestead in the Town of Greenbush, Sheboygan County.*

If you need any additional information or copies, please contact me at kelly.hamilton@wisconsinhistory.org or (608) 264-6560.

Enclosures (4)

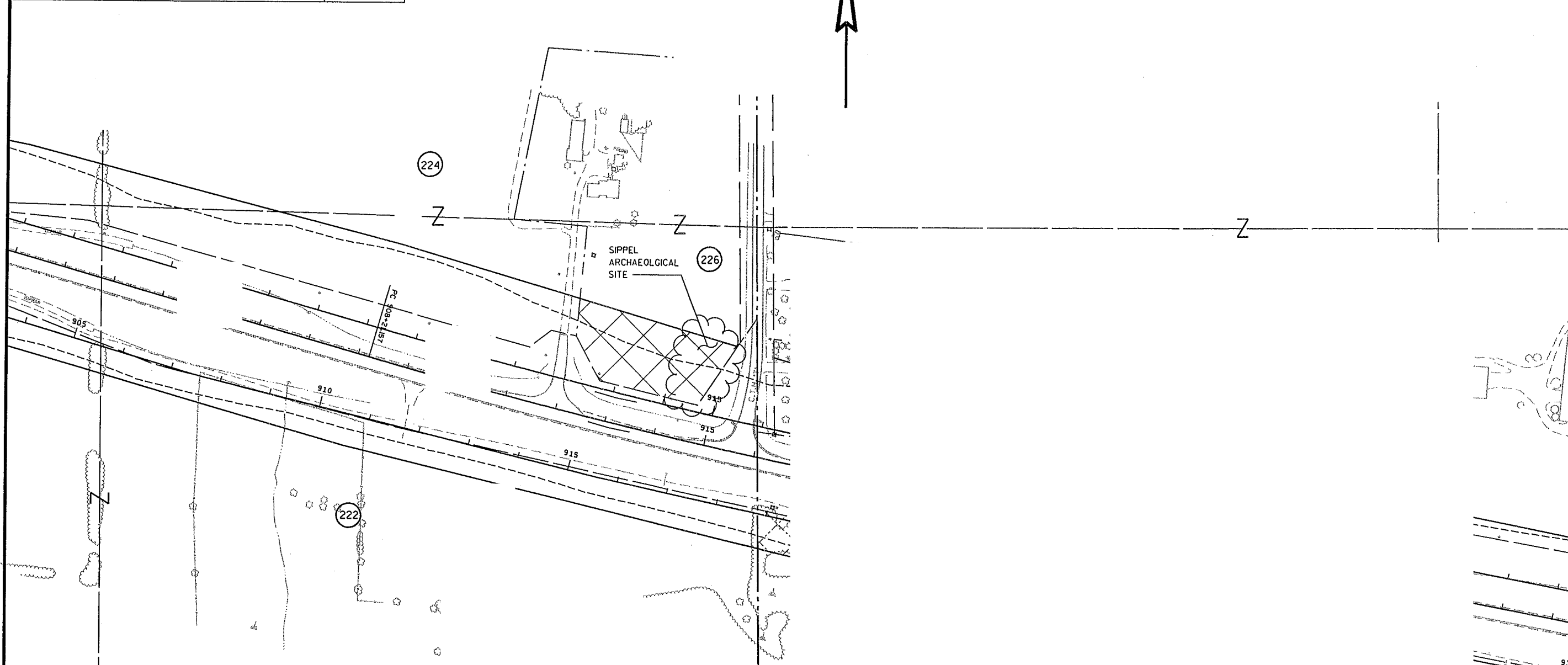
CC: Luke Hellermann, Strand Associates ✓
Jim Becker, WisDOT BEES Archaeology Program Facilitator

AFFECTED PROPERTIES

PARCEL NUMBER	OWNER(S)	ACREAGE
226	DALE G. SIPPEL	0.872
231	HISTORICAL SOCIETY OF WISCONSIN	2.45

WIS 23, IMPACTS TO SIPPEL ARCHAEOLOGICAL SITE

FIGURE 1



CONVENTIONAL SIGNS AND ABBREVIATIONS

ACCESS POINT	AP	NORTH COORDINATE (GRID)	Y
ACCESS RIGHTS	AR	EXISTING CENTERLINE	P
ACRES	AC	PAGE	(102)
ALUMINUM AND OTHERS	ALUM ET. AL.	PARCEL NUMBER	PC
CENTERLINE	E	POINT OF CURVATURE	PI
CENTRAL ANGLE OR DELTA	Δ	POINT OF INTERSECTION	PT
CERTIFIED SURVEY MAP	C	POINT OF TANGENCY	PL
CHORD	CH	PROPERTY LINE	R
COMPENSABLE UTILITY PEDESTAL	CU	PROPOSED R/W LINE	R/L
COMPENSABLE UTILITY POLE	CU	QUARTER LINE	RT
CORNER	COR	RADIUS OR RANGE	R/W
COUNTY TRUCK HIGHWAY	CTH	RIGHT-OF-WAY POINT	SEC
EAST COORDINATE (GRID)	X	REFERENCE LINE	STA
FRACTIONAL	FRL	RIGHT	STH
IRON PIPE/PIN	IP	RIGHT-OF-WAY	T
LONG CHORD OR LAND CONTRACT	LC	SECTION	USH
LONG CHORD BEARING	LCB	SECTION LINE	
LOT & TIE LINES	LOT	SIXTEENTH LINE	
MONUMENT	MON	STATION	
ACCESS RESTRICTED (BY PREVIOUS PROJECT/CONTROL)	AR	STATE TRUCK HIGHWAY	
NO ACCESS (BY ACQUISITION)	NA	TANGENT LENGTH OF CURVE	
NO ACCESS (BY STATUTORY AUTHORITY)	NSA	OR TOWN	
		UNITED STATES HIGHWAY	

NOTES:

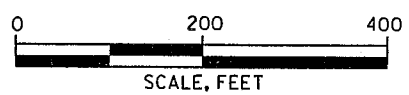
COORDINATES AND BEARINGS SHOWN ON THIS PLAT ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM, SHEBOYGAN COUNTY ZONE, NAD 83 (1991) ADJUSTMENT. THE COORDINATES SHOWN ARE GRID COORDINATES AND TO BE USED AS GRID OR GROUND VALUES ON THIS PLAT.

RIGHT-OF-WAY BOUNDARIES ARE DEFINED WITH COURSES OF THE PERIMETER OF THE HIGHWAY LANDS REFERENCED TO THE U.S. PUBLIC LAND SURVEY OR OTHER SURVEYS OF RECORD.

DIMENSIONING FOR THE FUTURE RIGHT-OF-WAY IS MEASURED ALONG AND PERPENDICULAR TO NEW REFERENCE LINES.

PROPERTY LINES SHOWN ON THIS MAP ARE DRAWN FROM MAPS AND DOCUMENTS OF PUBLIC RECORD AND/OR EXISTING OCCUPATIONAL LINES, EXCLUDING RIGHT-OF-WAY BOUNDARIES. THIS MAP MAY NOT BE A TRUE REPRESENTATION OF EXISTING PROPERTY LINES AND SHOULD NOT BE USED AS A SUBSTITUTE FOR AN ACCURATE FIELD SURVEY.

ACCESS CONTROLS ARE CURRENT AS OF THE FILING DATE OF THIS PROJECT MAP.



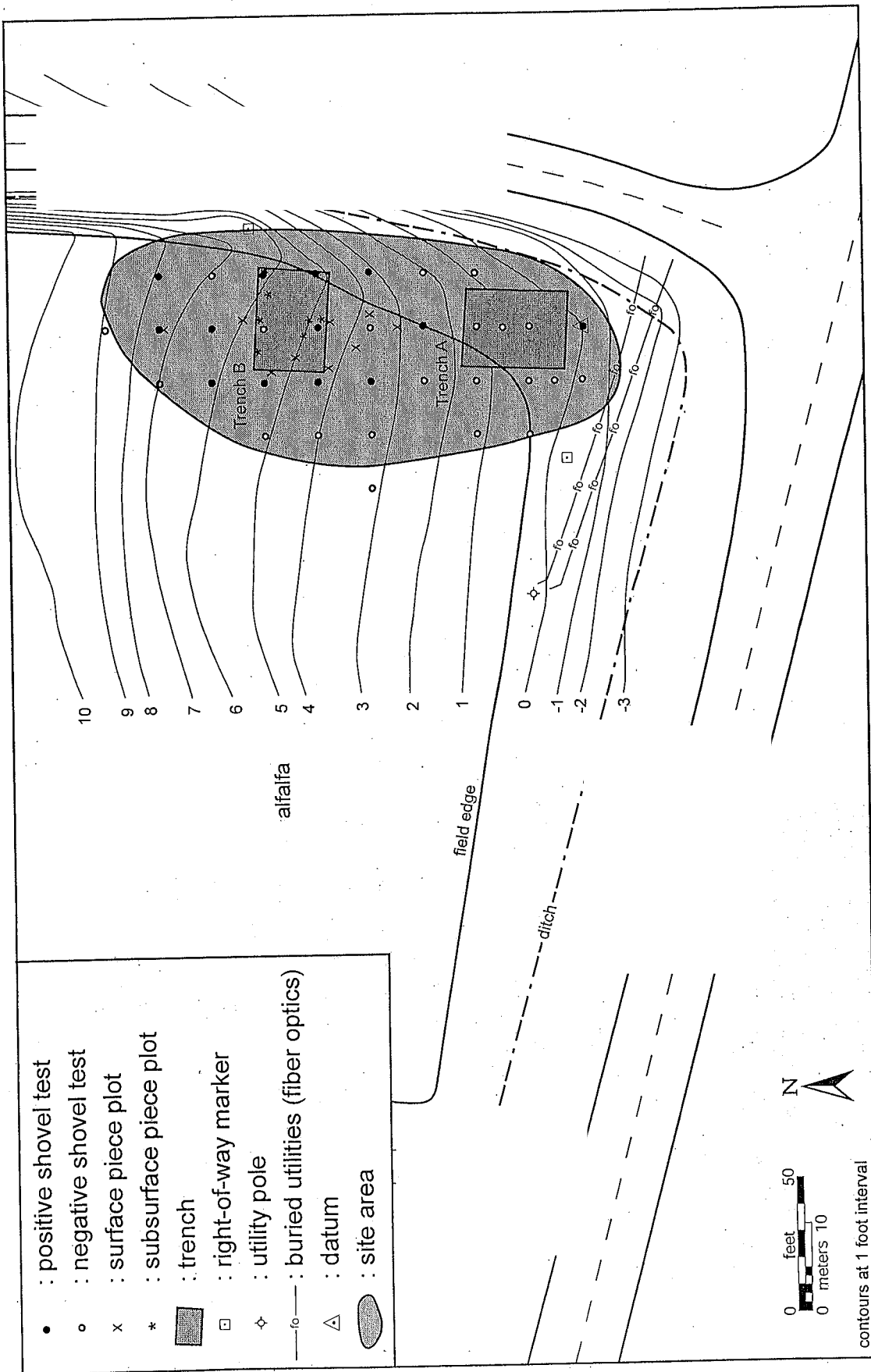


Figure 2. The Sippel (47SB394) Site.



Preserving America's Heritage

April 28, 2009

Stephanie J. Hickman
 Environmental Programs Coordinator
 FHWA – Wisconsin Division
 525 Junction Road, Suite 8000
 Madison, WI 53717

Ref: *Proposed Expansion of STH 23*
Project ID: 1440-13-00/1440-15-00, SHSW # 06-0864/FD SB
Sheboygan and Fond du Lac Counties, Wisconsin

Dear Ms. Hickman:

On April 15, 2009, the Advisory Council on Historic Preservation (ACHP) received your notification and supporting documentation regarding the adverse effects of the referenced undertaking on a property or properties listed or eligible for listing in the National Register of Historic Places. Based upon the information you provided, we have concluded that Appendix A, *Criteria for Council Involvement in Reviewing Individual Section 106 Cases*, of our regulations, "Protection of Historic Properties" (36 CFR Part 800), does not apply to this undertaking. Accordingly, we do not believe that our participation in the consultation to resolve adverse effects is needed. However, if we receive a request for participation from the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer, affected Indian tribe, a consulting party, or other party, we may reconsider this decision. Additionally, should circumstances change, and you determine that our participation is needed to conclude the consultation process, please notify us.

Pursuant to 36 CFR §800.6(b)(1)(iv), you will need to file the final Memorandum of Agreement (MOA), developed in consultation with the Wisconsin State Historic Preservation Office (SHPO) and any other consulting parties, and related documentation with the ACHP at the conclusion of the consultation process. The filing of the MOA and supporting documentation with the ACHP is required in order to complete the requirements of Section 106 of the National Historic Preservation Act.

Thank you for providing us with your notification of adverse effect. If you have any questions or require our further assistance, please contact Najah Duvall-Gabriel at 202 606-8585 or via e-mail at ngabriel@achp.gov.

Sincerely,

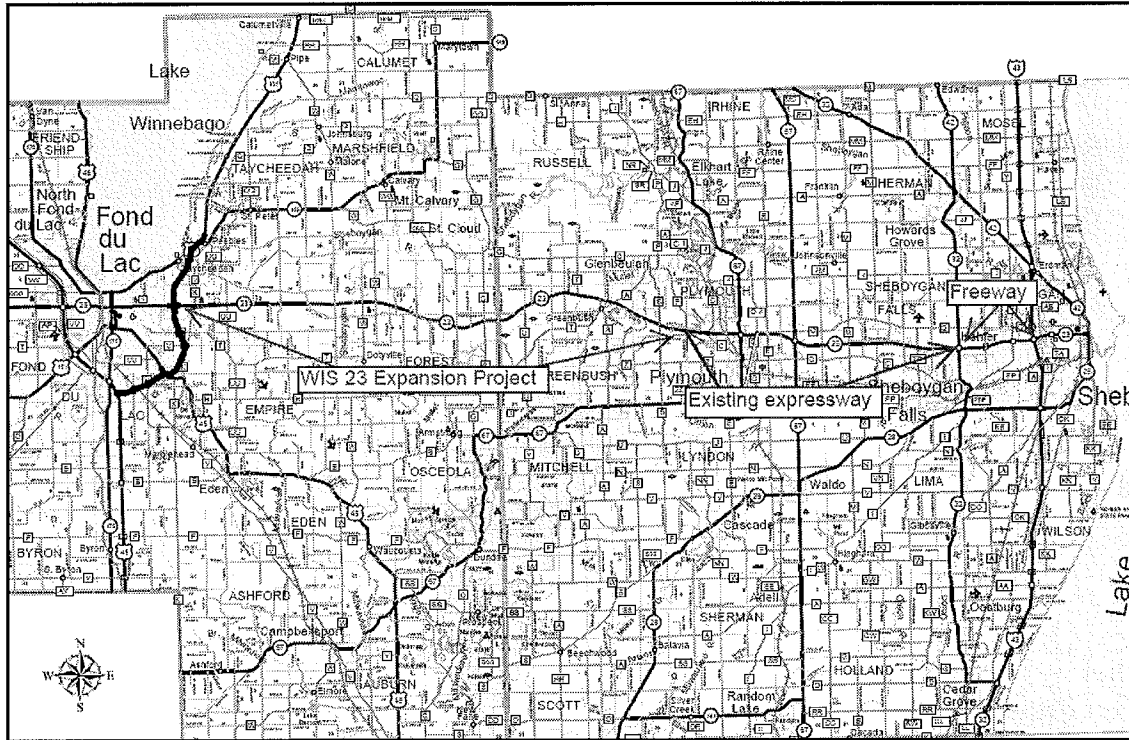
LaShavio Johnson
 Historic Preservation Technician
 Federal Permitting, Licensing and Assistance Section
 Office of Federal Agency Programs

ADVISORY COUNCIL ON HISTORIC PRESERVATION

1100 Pennsylvania Avenue NW, Suite 803 • Washington, DC 20004
 Phone: 202-606-8503 • Fax: 202-606-8647 • achp@achp.gov • www.achp.gov

INTRODUCTION

WIS 23 is an approved major project that expands nearly 20-miles of two-lane highway between Fond du Lac and Plymouth. The four-lane expressway will complete the Wisconsin Corridor 2020 connector between Fond du Lac and Sheboygan. The project has been scoped with a 70 mph expressway design with a preservation plan identifying future interchanges and overpasses. There are approximately 30 intersections between the termini at the USH 151 bypass east of Fond du Lac and CTH P near Plymouth.



SUMMARY OF THE DEVELOPMENT OF SIDE ROAD TREATMENTS

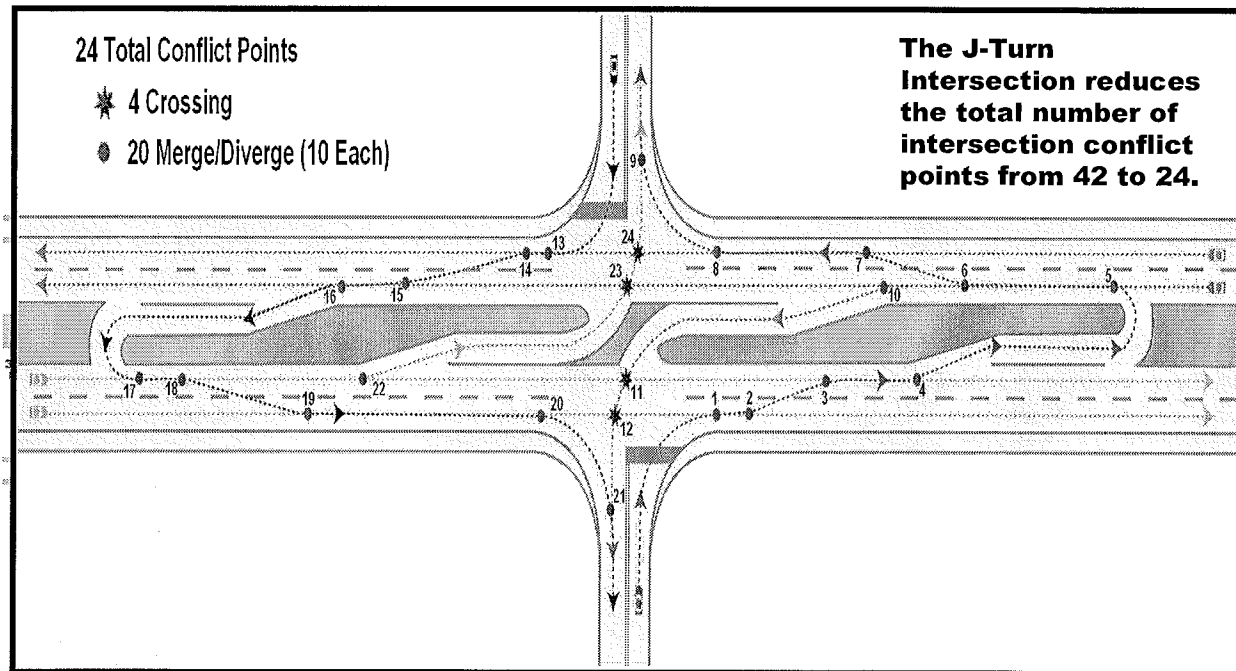
The scope of the WIS 23 Major expansion project, developed through the public involvement process, includes a preservation plan that identifies future interchanges and overpasses. Design year traffic forecasts marginally warrant interchanges, leading the Major Peer Review Committee to recommend officially mapping of these areas.

Several intersections have a history of crashes (CTH G is in HSIP 5% report) that led the NE Region to recommend constructing 120-foot intersections at seven locations along the 20-mile corridor, again approved by the Major Peer Committee in May 2007.

A Road Safety Audit performed in fall 2007 recommended using J-turns at side road intersections along WIS 23. After attending the Upper Midwest Traffic Safety Summit in May 2008 and meeting with the Traffic Safety Engineers Work Group, the NE Region recommended the use of J-turns along WIS 23.

J-Turn Background

Maryland and North Carolina have constructed J-Turn intersections with successful results. Crash numbers in a Maryland case have decreased 92% and in three North Carolina cases, the number of crashes dropped between 43% and 53%. Fatal crashes have dropped over 50% in both states. See attached case study information. Many other states are beginning to implement J-Turn intersections, including Iowa, Michigan and Minnesota.



Most severe conflicts are eliminated at cross street left-turns and direct crossings. Considered an interim measure between direct left-turns and an interchange, J-turns can effectively delay the need for an interchange.

Selection Criteria

The WIS 23 expressway expansion has over 30 intersecting roadways along its nearly 20-mile length. The introduction of the J-turn intersection treatment has hastened the development of objective selection criteria.

Evaluation of intersections strictly using volume data became difficult as each intersection presents its own set of circumstances. A project level decision tree was developed that uses a combination of average daily traffic counts, standard requirements and various conditions that determine the type of intersection treatment to use. Some of the factors that help determine the intersection treatment include:

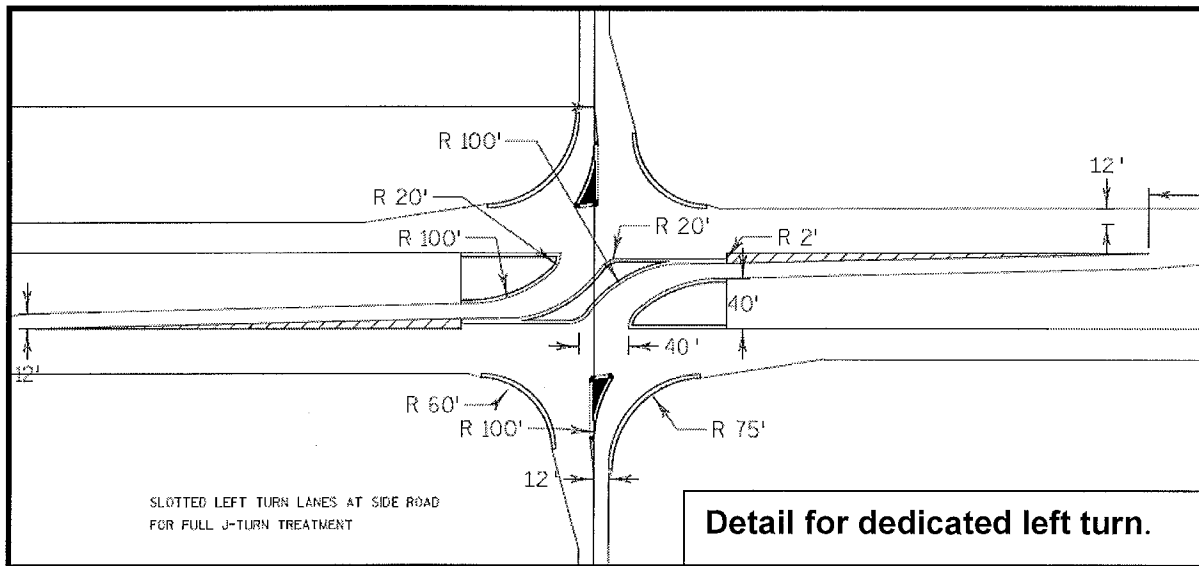
- The side road proximity to the nearest interchange, based on FDM spacing of one half mile.
- Side road continuity with local network.
- Average daily traffic. 200 ADT as minimums for J-turn application.
- Safety issue, poor geometrics.

- Road location
 - What is the round trip distance back to the highway?
 - Does it have short cut potential?
 - Does it overlap another J-turn?
- J-Turns will be used on intersections of future overpasses and interchanges.

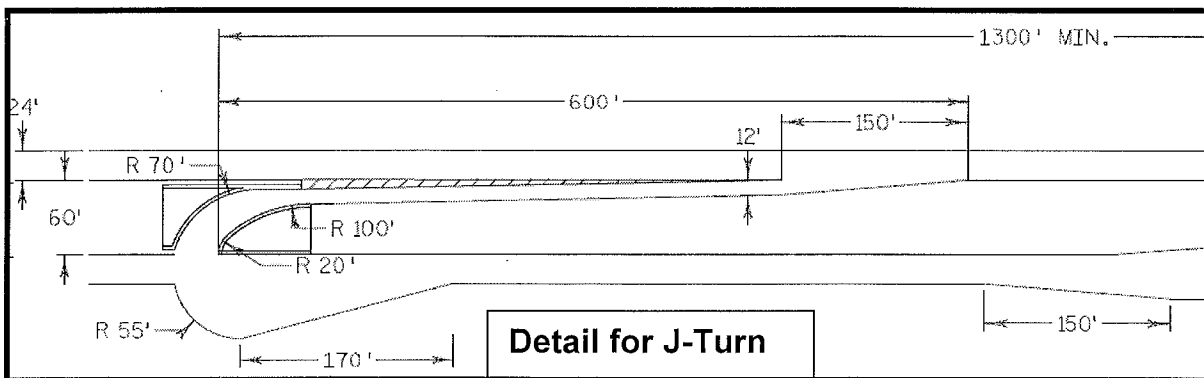
SEE ATTACHED FLOW CHART FOR INTERSECTION TREATMENT SELECTION

Design Details

The J-turn intersection design involves the use of two median U-turns along with two dedicated left turn lanes instead of a direct movement through the intersection. The dedicated left turn lanes have raised channeling to direct the mainline traffic to make the left turn onto the side road. Proper signing for the J-Turn intersection will be critical in making the improvement work properly.



- The location of the J-turn will be a minimum ¼ mile from the side road.
- J-turn lane will have a 600-foot storage/deceleration lane.
- Design vehicle for the J-Turns in this area is the WB-65. The farm equipment in this area will be able to navigate easily through the J-Turns.



Lessons Learned

The nearby USH 151 Fond du Lac bypass opened in 2004 with immediate safety issues. Even new design standards could not prevent the crash history that resulted at several intersections along the new highway. Eventually the intersections were rebuilt, limiting access to dedicated left turns from USH 151 and only right-in/right-out access from the side street.

The table below shows that the number of crashes has drastically decreased on the USH 151 bypass. Data is shown for September 2005 to November 2007, versus the data after the improvements in November 2007.

USH 151 Bypass Crashes

	Fatal	Type A	Type B	Type C	Property Damage
Average/Yr Prior to Improvements	1.4	1.8	6.0	6.9	9.7
Average/Yr After Improvements	0	0	0	0	5.0

WIS 23 near Plymouth is a four-lane expressway, similar to what will be constructed for this major project. Local concern about safety at several intersections in the Plymouth area has prompted the need for a corridor preservation study that will address intersection safety.

These two nearby expressways show that intersection safety will likely be a future issue if it's not properly addressed in the already scheduled expansion of WIS 23.

With an expressway speed limit of 65mph, poor speed judgment by drivers will result in severe crashes. Poor side road profiles or alignments could also factor in poor sight distance, even after the 4-lane reconfiguration.

Expected Issues

- The general public will resist unfamiliar intersection treatments, making public outreach important.
- All turning movements from WIS 23 will still function the same as standard expressway intersections. However, side road driver expectations will initially be altered with a new type of intersection being introduced when approaching WIS 23. Proper signing, especially for side road traffic is necessary.
- Drivers will likely be against the idea of having to travel a further distance to get to their destination. Over time this will dissipate and drivers will become accustomed to the travel distance. Safety governs over travel distance.
- Snow plowing issues were discussed with regional maintenance staff. If the turning lanes (with raised channeling) are wide enough for snowplows, there will not be a problem. Mainline plowing will however take priority over side roads.
- Location of J-turns at certain intersection and not at others may raise questions.

Advantages to using J-Turns on WIS 23

- Will lengthen the service life of the intersection, effectively delaying the need for an interchange even longer than projected.
- Eliminates the need for wider intersections (120') at 7 intersections previously included in the project estimate, reducing R/W needs and costs.
- Total J-Turn treatment costs are approximately \$250,000 more than previous wide intersection estimate. However, J-Turns eliminate the need to realign CTH W until an interchange is constructed, currently estimated at \$4.25 million, decreasing the overall project cost by \$4 million.

Coordination

May 2 2007 – Major Peer Review Committee approves use of 120-foot medians.

Fall 2007 - Road Safety Audit (RSA) recommends use of J-turns.

May 28-29, 2008 – At the Upper Midwest Traffic and Operations Safety Summit many states are planning or implementing J-turns to improve expressway intersection safety.

June 5, 2008 – Regional Traffic Safety Engineers concur with RSA recommendation.

June 17, 2008 – STH 23 Study Group recommends moving forward with J-turns.

July 7, 2008 – Central office standards support the J-turn concept along corridor.

July 14, 2008 – Safety Engineering Executive Group (SEEG) recommends considering J-turns on WIS 23 as a pilot project.

Oct 9, 2008 – NE Region meets with BHO to determine J-turn warrant and spacing criteria.

Nov 5, 2008 - NE Region provides a flow chart to warrant J-turn usage to BHO.

ATTACHMENTS

- Intersection Treatment Flow Chart (Specific to WIS 23)
- WIS 23 Intersections – Data and recommendations Plan View
- WIS 23 Intersect Treatment Table (for 200, 300, and 400 ADT mins)
- Standard J-turn detail
- Example of J-Turn design on a WIS 23 Intersection
- J-turn Case Study

