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MEMORANDUM

Date: February 16, 2015

To: Federal Highway Administration

From: Wisconsin Department of Transportation

Subject: I-94 East-West Corridor (70th Street to 16th Street) Preferred Alternative Identification Technical Memorandum

Purpose

This memorandum identifies WisDOT's preferred alternative for improvements to the I-94 East-West corridor between 70th Street and 16th Street and provides supporting documentation establishing the basis for this recommendation. WisDOT seeks FHWA agreement on its preferred alternative.

After evaluating project purpose and need, cost, impacts to the human/natural environment, and public and agency comments received throughout the NEPA process and in direct response to the DEIS, **WisDOT has identified the At-grade alternative with the half interchange at Hawley Road in the west segment and the On-alignment alternative in the east segment as the preferred alternative**.

This memorandum compares key project metrics and elements of the alternatives retained for detailed study in the Draft EIS[1]. The build alternatives retained for detailed study in the Draft EIS were:

- West segment (70th Street to Stadium Interchange)
  - At-grade alternative
    - No interchange at Hawley Road
    - Half interchange at Hawley Road (access to and from the west)[2]
  - Double Deck alternative (all up or partially down with full access at Hawley Road)
- East segment (Stadium Interchange to 16th Street)
  - On-alignment alternative
  - Off-alignment alternative

Appendix A of this memorandum includes the plan views of the alternatives retained for detailed study in the Draft EIS. Following the comparison of the alternatives, this memorandum summarizes why the At-grade alternative with the half interchange at Hawley Road in the west segment and the On-alignment alternative in the east segment were identified as the preferred alternative.

[1] For greater detail on the project alternatives and impacts of each alternative, please refer to the I-94 East-West Corridor Draft EIS (approved on 11/4/2014).

[2] Developed in response to feedback from the public and local governments in response to the At-grade alternative with no access at Hawley Road. Under the At-grade alternative, full access at Hawley road cannot be provided without impacts to the cemeteries or numerous residential relocations.

Alternatives Comparison

The technical analyses of each alternative outlined herein include the following:

- **Purpose and Need Performance**—Sufficiently address the four purpose and need factors concurred upon by the project's Participating and Cooperating Agencies: (1) address the obsolete design of I-94 to improve safety and decrease crashes, (2) replace deteriorating pavement, (3) accommodate existing and future traffic demand at an acceptable level of service (LOS), and (4) maintain a key link in the local, state, and national transportation network.
- **Geometrics**—Determine the extent to which each alternative meets key geometric design criteria, including elements related to the typical section, horizontal and vertical alignment, and structural elements.
- **Traffic Operations**—Assess each alternative's ability to serve build year (2022, which is the first year I-94 is open after construction) and design-year (2040) traffic elements (as measured by level of service) for mainline, ramps, ramp terminals, weaves, and C-D roads. Assess the impacts of traffic diversion to arterials or local streets based on freeway performance and design elements.
- **Safety**—Assess the overall safety performance on mainline I-94 and local roadways for each alternative.
- **Environmental/Social Impacts**—Compare the alternatives' social, economic, and environmental impacts, including Section 4(f) and Section 106.
- **Project Costs**—Summarize the financial commitments required to design, construct, and maintain each alternative.
- **Public/Stakeholder Feedback**—Summarize key comments from stakeholders received throughout the study process.

Purpose and Need Performance

Section 1 of the Draft EIS describes the purpose of and need for the I-94 East-West Corridor project. The alternatives retained for detailed study in the Draft EIS were evaluated in great detail regarding their ability to meet the project's purpose and need by satisfying the following factors:

- Replace deteriorating pavement.
- Address the obsolete design of I-94 to improve safety and decrease crashes.
- Accommodate existing and future traffic volumes at an acceptable LOS.
- Maintain a key link in the local, state, and national transportation network.

Table 1 summarizes how the alternatives meet the project's purpose and need. Section 2 of the Draft EIS provides greater detail as to how the alternatives meet purpose and need. All of the alternatives retained for detailed study would replace the deteriorating pavement on I-94.

The At-grade alternative, although only partially meeting the purpose and need, was retained for detailed study in the Draft EIS because of the need to analyze a Section 4(f) avoidance alternative. Additional design and analysis since the Draft EIS has led to a determination that, when considering all factors, the At-grade alternative with half interchange at Hawley Road, sufficiently meets the project purpose and need.

TABLE 1

Alternatives Retained for Detailed Evaluation against Purpose and Need

Purpose and Need Element	West Segment		East Segment	
	Double Deck (both options)	At Grade* (both options)	Off alignment	On alignment
Design Deficiencies *Does the alternative upgrade I-94 to current design criteria, where appropriate, allowing for a minimal number of design exceptions due to environmental constraints?*	**Yes** Would upgrade I-94 to current design criteria in most locations. Westbound (lower level) inside and outside shoulder widths would be 10 feet in the Double Deck portion. Would meet purpose and need goal of meeting current design standards.	**Partially** Would upgrade I-94 to current design criteria in most locations. Would result in 11-foot lanes and minimum 2-foot shoulders between the cemeteries, not meeting design criteria. Would partially meet purpose and need goal of meeting current design criteria.	**Yes** Would upgrade I-94 to current design criteria, meeting purpose and need goal.	**Yes** Would upgrade I-94 to current design criteria, meeting purpose and need goal.
Safety *Does the alternative address safety on I-94?*	**Yes** Would reduce crashes on I-94 due to improved design and improved traffic operations, meeting purpose and need goal.	**Partially** Would reduce crashes on I-94 due to improved design and improved traffic operations but would introduce new safety issues with narrow lanes and shoulders, thus partially meeting purpose and need goal.	**Yes** Would reduce crashes on I-94 due to improved design and improved traffic operations, meeting purpose and need goal.	**Yes** Would reduce crashes on I-94 due to improved design and improved traffic operations, meeting purpose and need goal.
Traffic Volume and Operations *Does the alternative improve I-94 operational efficiency and provide more predictable travel time?*	**Yes** In 2040, I-94 would operate at LOS C to D in the morning and evening peak periods. Thus, the Double Deck alternative would meet the project's purpose and need goal of improving traffic operations.	**Yes (half interchange at Hawley Rd)** **Partially (no interchange at Hawley Rd)** In 2040, I-94 would operate at LOS C to D in the morning peak period for both options while operating at LOS C to D for the half interchange option and LOS C to E for the no interchange option in the afternoon peak period. The area that would operate at LOS E for the no interchange option in the afternoon peak period is eastbound from the 68th Street entrance ramp to the exit ramp for northbound US 41 and southbound Miller Park Way traffic. The half interchange option would meet the purpose and need goal of improving traffic operations while the no interchange option would partially meet the purpose and need goal of improving traffic operations.	**Yes** In 2040, I-94 would operate at LOS C to D in the morning and evening peak periods. Thus, the off-alignment alternative would meet the project's purpose and need goal of improving traffic operations.	**Yes** In 2040, I-94 would operate at LOS C to D in the morning and evening peak periods. Thus, the on-alignment alternative would meet the project's purpose and need goal of improving traffic operations.

TABLE 1
Alternatives Retained for Detailed Evaluation against Purpose and Need

Purpose and Need Element	West Segment		East Segment	
	Double Deck (both options)	At Grade* (both options)	Off alignment	On alignment
System Linkage and Route Importance *Does the alternative provide system continuity and maintain function as an important commuter route, a link in the National Highway System, a WisDOT Connections 2030 "backbone" route, and a federal and state "long truck route"?*	**Yes** Maintains I-94 as a continuous 8-lane roadway, an important commuter route, a link in the National Highway System, a WisDOT Connections 2030 "backbone" route, and a state and federal "long truck route." Would meet this element of purpose and need.	**Partially** Maintains I-94 as a continuous 8-lane roadway, an important commuter route, a link in the National Highway System, a WisDOT Connections 2030 "backbone" route. Does not meet requirements for a federally designated truck route due to the 11-foot lanes. Would partially meet this element of purpose and need.	**Yes** Maintains I-94 as a continuous 8-lane roadway, an important commuter route, a link in the National Highway System, a WisDOT Connections 2030 "backbone" route, and a state and federal "long truck route." 27th Street interchange reconfigured to connect all ramps directly to 27th Street. Would meet this element of purpose and need.	**Yes** Maintains I-94 as a continuous 8-lane roadway, an important commuter route, a link in the National Highway System, a WisDOT Connections 2030 "backbone" route, and a state and federal "long truck route." The alignment of the 25th/26th/28th Street interchange would be the same as today. Would meet this element of purpose and need.

* The At-grade alternative, although only partially meeting the purpose and need, was retained for detailed study in the Draft EIS because of the need to analyze a Section 4(f) avoidance alternative.

Geometrics

New and reconstructed freeways must meet minimum values for 13 controlling design criteria, such as alignments, lane and shoulder widths, and sight distance. Design criteria developed for the controlling elements are specified in WisDOT's *Facilities Development Manual* and based on the American Association of State Highway and Transportation Officials' (AASHTO's) *A Policy on Geometric Design of Highways and Streets, 6th Edition* and AASHTO's *A Policy on Design Standards – Interstate System* (2005). The documents are the basis for evaluating the study area freeway system for acceptability, function, and safety. Design guidelines in WisDOT's *Facilities Development Manual* govern design of the alternatives. The Facilities Development Manual guidelines generally meet or exceed AASHTO criteria. However, where the Facilities Development Manual does not address AASHTO criteria, the AASHTO criteria govern. **Table 2** compares the geometry of the alternatives retained for detailed study in the Draft EIS.

WisDOT and FHWA's position is that alternatives will meet design criteria, unless meeting the criteria would incur a high level of impact that cannot be reasonably mitigated, or results in compromising another purpose and need factor. If a portion of the alternative does not meet existing design criteria, a design exception will be required[3]. The project's draft *Exceptions to Standards Memorandum* provides detailed explanations of where design exceptions would be required. This memo will be finalized as part of the formal *Exceptions to Standards Report* during the design phase.

All alternatives retained for detailed study in the Draft EIS would substantially improve the geometric conditions along I-94 as compared to the existing conditions.

West Segment

The west segment of the I-94 East-West Corridor project runs from 70th Street on the west to Yount Drive, just west of the Stadium Interchange, on the east. Currently, the west segment includes service interchanges at 68th/70th Street, Hawley Road, and Mitchell Boulevard. Under all of the alternatives retained for detailed study,

[3] At this early stage of the project development process, FHWA and WisDOT cannot guarantee the design exceptions will be approved. FHWA has a process in place to handle requests for exceptions to freeway design standards and it includes WisDOT preparing an Exceptions to Standards Report, which is reviewed by FHWA's Wisconsin Division. The design exceptions that would be required under the At-grade alternative are substantial and unprecedented for an interstate reconstruction project in Wisconsin (the 2013 resurfacing of I-94 from 16th to 35th Streets resulted in 11-foot lanes and narrow shoulders, but that project was approved because it would be in place only a few years until I-94 is reconstructed as part of this project).

the 68th/70th Street interchange would remain and the Mitchell Boulevard interchange would be removed and replaced by an embedded service interchange within the Stadium Interchange. The Hawley Road interchange would be treated differently by each alternative that remained under consideration. The At-grade alternative with the no Hawley Road interchange option would completely remove the Hawley Road interchange. The At-grade alternative with a half interchange at Hawley Road option would provide a half interchange at Hawley Road with access to and from the west, an entrance ramp to westbound I-94 and an exit ramp from eastbound I-94 to Hawley Road. The Double Deck alternative would provide a full interchange at Hawley Road.

In the west segment, the existing cross sections vary between the area where I-94 travels between the cemeteries and beyond. Because of Wood National Cemetery, part of the Soldiers' Home National Historic Landmark (NHL) and Historic District, and two private cemeteries adjacent to it, I-94 through the cemetery area currently consists of six 12-foot lanes, 1.5-foot inside shoulders in both directions, a 4-foot eastbound outside shoulder, and a 10-foot westbound outside shoulder. There is a barrier/wall outside the eastbound shoulder and a fence along the outside westbound shoulder. WisDOT and FHWA committed early in the study that no graves in any of the cemeteries would be disturbed as a result of the project.

West of the cemetery area (70th Street to Hawley Road), I-94 consists of six 12-foot lanes, inside shoulders which vary between 2-4 feet in both directions, and outside shoulders that are 10 feet wide in each direction. East of the cemetery area (Mitchell Boulevard to the Stadium Interchange) I-94 consists of six 12-foot lanes, inside shoulders which vary between 1.5-9 feet in both directions, and outside shoulders that are 10 feet wide in each direction.

FHWA and WisDOT have adopted AASTHTO's A Policy on Design Standards – Interstate Systems (2005) standard freeway lane widths of 12 feet and consideration of 12 foot paved shoulders where truck traffic exceeds 250 design hourly volume (DHV) in the design year. At its narrowest point, roughly 110 feet is available for the construction footprint of I-94 between the cemeteries. A 6-foot width for roadway curvature and constructability is included in each option listed below. This leaves 104 feet for an at-grade typical cross section.

The At-grade alternative typical section for both Hawley Road interchange options consists of eight 11-foot lanes and 2-foot inside and outside shoulders through the cemetery area, transitioning to 12-foot lanes and 12-foot shoulders outside of the cemetery area. This condition would require a design exception. Westbound traffic would travel in 11-foot lanes for roughly 50 feet and eastbound traffic would travel 120 feet in 11-foot lanes. The adjacent transitions from 12 to 11 foot lanes would be roughly 400 feet to the west and 850 feet to the east for both eastbound and westbound traffic. There would be 2-foot inside shoulders for roughly 110 feet eastbound and 75 feet westbound, before reaching the 800 to 900-foot transitions in both directions to 12-foot shoulders. The outside shoulders are at 2 feet for roughly 750 feet westbound and 900 feet eastbound, with 120 to 260 feet of transition length to 12-foot shoulders in each direction.

To summarize, for eastbound traffic there would be less than 12-foot lanes for about 1,385 feet, less than 12-foot inside shoulder for 1,780-feet, and less than 12-foot outside shoulder for 1,270-feet. For west bound traffic there would be less than 12-foot lanes for about 1,290-feet, less than 12-foot inside shoulders for 1,740-feet, and less than 12-foot outside shoulders for 1,190-feet. Please refer to **Appendix B** for the At-grade alternative substandard lane and shoulder width locations.

Along with the lane and shoulder widths described previously, the At-grade alternative (both Hawley Road interchange options) would require design exceptions for the following controlling and acceptance of the following non-controlling criteria:

- **Stopping sight distance** for eastbound I-94 for a 400-foot length east of Hawley Road and westbound I-94 for a 600-foot length west of Zablocki Drive. (**controlling**)
- Eastbound entrance ramp from 68th Street does not meet the recommended minimum **peak hour volume storage value** for a metered ramp. (**non-controlling**, *half interchange at Hawley Road option only)*
- **The weaving distance** between the westbound Hawley Road entrance ramp and westbound exit ramp to 68th Street is 75 feet short of the 1,000 foot minimum weaving distance on a freeway between exit and entrance

ramps with an auxiliary lane as set forth by NCHRP Report 687. (**non-controlling**, *half interchange at Hawley Road option only)*

For the Double Deck alternative eastbound traffic is located on the upper level while westbound traffic is located on the lower level. The upper level (eastbound traffic) consists of four 12-foot freeway lanes, one 12-foot auxiliary lane and 12-foot inside and outside shoulders. The eastbound auxiliary lane would serve vehicles entering and exiting I-94 between the 68th/70th Street interchange and the Stadium Interchange. The lower level (westbound traffic) consists of four 12-foot freeway lanes, one 12-foot auxiliary lane and 10-foot inside and outside shoulders. The westbound auxiliary lane would serve vehicles entering and exiting I-94 between the Stadium Interchange and the Hawley Road and 68th/70th Street interchanges. The eastbound Hawley Road entrance ramp would be located at ground level, running counter-directional to the westbound traffic. Outside of the cemetery area the Double Deck alternative would contain 12-foot lanes and 12-foot shoulders.

Along with the shoulder width for westbound traffic through the cemetery area described previously, the Double Deck alternative would require design exceptions for the following controlling and acceptance of the following non-controlling criteria:

- **Horizontal alignment** westbound exit ramp to Hawley Road around the loop part of the ramp. (**controlling**)
- **Width of the travel lane** for the eastbound entrance ramp from Hawley Road. (**controlling**)
- **Right and left shoulder width** for the eastbound entrance ramp from Hawley Road. (**controlling**)
- **Stopping sight distance** for the westbound exit and entrance ramps to/from Hawley Road. (**controlling**)
- **Acceleration distance** on the eastbound collector-distributor road entrance from 68th Street and westbound collector-distributor road entrance from Hawley Road. (**non-controlling**)
- **Ramp meter storage** on eastbound entrance ramp from 68th Street, eastbound entrance ramp from Hawley road, and westbound entrance ramp from Hawley Road. **(non-controlling**)

East Segment

The east segment of the I-94 East-West Corridor project runs from Yount Drive on the west to 16th Street on the east and includes the Stadium Interchange. Both the On-alignment and Off-alignment alternatives would have eight 12-foot lanes (four in each direction), and service interchanges at 35th Street, at or near 27th Street, and a new embedded service interchange within the Stadium Interchange, along with the reconstructed Stadium Interchange that would be a hybrid between a system interchange and a service interchange. As the function of the existing Stadium Interchange would be downgraded to a service interchange, it would not be required to meet the system interchange recommendations outlined in **Table 2**.

The On-alignment alternative would require design exceptions for the following controlling and acceptance of the following non-controlling criteria:

- **Stopping sight distance** on the eastbound exit ramp to 26th Street and westbound entrance ramp from 28th Street. (**controlling**)
- **Weave distance** between 28th Street westbound entrance ramp and ramp to US 41 northbound/Miller Park Way southbound. (**non-controlling**)
- **Ramp meter storage** on 28th Street westbound entrance ramp and 25th Street eastbound entrance ramp. (**non-controlling**)

The Off-alignment alternative would require design exceptions for the following controlling and non-controlling criteria:

- **Stopping sight distance** on the eastbound exit ramp to 35th Street and westbound entrance ramp from 27th Street. (**controlling**)
- **Ramp meter storage** on 27th Street westbound and eastbound entrance ramps. (**non-controlling**)

TABLE 2

Geometric Comparison between Alternatives (Includes Controlling and Key Non-Controlling Criteria)

West Segment			
	Geometrics	**At-grade (both half Hawley Road and no Hawley Road interchange options, except where noted)**	**Double Deck (All up and Partial Down)**
Mainline	Lane Width (12 ft standard)	11-12 ft between Hawley Road and Zablocki Drive 12 ft outside of cemetery area	12 ft
	Shoulder Width (12 ft Standard)	2-12 ft within the cemetery area 12 ft east and west of cemetery area	10 ft within the cemetery area for WB traffic; 12 ft for EB traffic
	Stopping Sight Distance (570 ft required for 60 mph)	492 ft (eastbound)—Roadway barrier sight obstruction at Hawley Road 444 ft (westbound)—Roadway barrier sight obstruction at Zablocki Drive	Meets Stopping Sight Distance
	WB Stadium Entrance Ramp	tapered entrance into 11 ft lanes on a curve with a 2 ft shoulder at merge	entrance into a 12 ft aux lane on a curve
	Weave between 68th and Hawley (eastbound) (1,000 ft recommended min between freeway exits and entrances with aux lane (At-grade) and 700 ft recommended min between entrance and exit ramps on a C-D road with aux lane (Double Deck) per NCHRP report 687)	1,000 ft (for half interchange at Hawley Road option)	835 ft
	Weave between 68th and Hawley (westbound) (1,000 ft recommended min between freeway exits and entrances with aux lane (At-grade) and 700 ft recommended min between entrance and exit ramps on a C-D road with aux lane (Double Deck) per NCHRP report 687)	925 ft (for half interchange at Hawley Road option)	850 ft
C-D Road	Shoulder Width (10 ft Outside)	N/A	10 ft outside shoulder widths
Ramps	Single Lane Ramp Width (15 ft Standard)	No EB Hawley entrance ramp	12 ft at EB Hawley entrance ramp
	Service Interchange Ramp Shoulder Width (8 ft Outside, 4 ft Inside)	No EB Hawley entrance ramp	4 ft and 2 ft at EB Hawley entrance ramp
	Service Interchange Ramps Design Speed (30 mph at termini)	No WB Hawley exit ramp	25 mph at WB Hawley exit ramp
	Stopping Sight Distance (155 ft required for 25 mph)	No WB Hawley exit ramp or EB Hawley entrance ramp	138 ft—Barrier sight obstruction along inside curve of WB Hawley exit ramp and WB Hawley entrance ramp
	EB 68th Street Entrance Ramp	Parallel entrance ramp lane	Entrance into an auxiliary lane to Stadium Interchange

TABLE 2

Geometric Comparison between Alternatives (Includes Controlling and Key Non-Controlling Criteria)

East Segment			
	Geometrics	**On-alignment**	**Off-alignment**
Mainline	S-Curve coming out of the Marquette Interchange (minimum radius for 60 mph curve with a superelevation of 6% is 1,330 ft))	1,660 ft outside edge of pavement into a 2,000 ft radius; tighter curve provides less sight distance than Off-alignment	3,094 ft outside edge of pavement to 2,722 ft radius
	Interchange Configuration	Split interchange at 28th, 26th, and 25th	Consolidate interchange at 27th Street
	Weave between EB 44th/46th entrance and 27th/25th exit ramp (1,600 ft min)	1,620 ft	1,870 ft
	Weave between EB 25th/27th entrance and 13th exit ramp (1,600 ft min)	1,755 ft	2,080 ft
	Weave between WB 27th/28th entrance Stadium Interchange exit ramp (2,000 ft min)	1,560 ft	2,030 ft
Ramps	2-Lane System Ramp Shoulder Width (12 ft Standard)	10 ft for 2-lane system W-S, W-N, E-N, E-S, S-E, and N-W 8 ft for right shoulder S-W and N-E	10 ft for 2-lane system W-S, W-N, E-N, E-S, S-E, and N-W 8 ft for right shoulder S-W and N-E
	System Ramps Design Speed (50 mph)	30 mph for W-N, W-S, E-N and E-S 25mph for N-W, N-E, S-E and S-W Stop Condition for N-E, S-W, and US 41 NB and SB/Miller Park Way	30 mph for W-N, W-S, E-N and E-S 25mph for N-W, N-E, S-E and S-W Stop Condition for N-E, S-W, and US 41 NB and SB/Miller Park Way
	Stopping Sight Distance (425 ft required for 50 mph, 200 ft for 30 mph, and 155 ft for 25 mph)	Bridge Parapet Sight Obstruction along inside shoulder of Ramps W-S, W-N, E-S, E-N, N-E, S-E, N-W, S-W	Bridge Parapet Sight Obstruction along inside shoulder of Ramps W-S, W-N, E-S, E-N, N-E, S-E, N-W, S-W,

Traffic Operations

The following discussion focuses on traffic operations in the morning and afternoon peak hours in the project's build year (2022) and the design year (2040).

Freeway

Table 3 and **Table 3A** list the level of service (LOS), a measure of a roadway's congestion, for each alternative for the years 2022 (build year) and 2040 (design year)**.** The numeric LOS value indicates where a particular density falls within the applicable LOS ranges. The closer the number is to the next higher integer, the higher the density is within the applicable range. FHWA guidance generally calls for LOS C for new construction and reconstruction projects on the National Highway System (NHS) in order to meet FHWA requirements to adequately serve the existing and planned future traffic (23 CFR 625.2(a)(1). LOS D may be considered acceptable in urban areas like Milwaukee County, where potential impacts resulting from achieving LOS C would be extensive and costly. FHWA agreed that LOS D is appropriate for this project. In consideration of the tight urban corridor in which the project is located and significant occurrences of major event traffic (e.g., baseball games), WisDOT and FHWA agreed to

analyze LOS calculations on the 200th highest hour of traffic in a year, rather than the required 30th highest hour of traffic in a year. The level of service and design hour volume guidance for this project was documented in the *DHV*[4] *and LOS for the I-94 East-West Stadium Interchange Study* technical memorandum from September 2012.

The alternatives retained for detailed study in the Draft EIS would operate at a LOS D or better in the design year (2040) peak hour with the exception of the At-grade alternative with no Hawley Road intersection. I-94 eastbound during the afternoon peak period would operate at LOS E (5.01) in the design year between the 68th Street entrance ramp and the exit ramp to US 41/Miller Park Way under the At-grade alternative with no Hawley Road intersection. This area includes the narrow segment between the cemeteries with 11-foot lanes and 2-foot shoulders. The At-grade alternative with the half interchange at Hawley Road would operate at the upper end of LOS D in the same location because the number of vehicles exiting I-94 at Hawley Road (100 – 150 vehicles during the design year peak hours) would be enough to reduce traffic density to just below the threshold for LOS E.

TABLE 3
I-94 Level of Service Ratings by Alternative—Build Year 2022

Segment	Alternative	Freeway		Exit/Entrance Ramps	
		AM	PM	AM	PM
West	Double Deck[a]	C to D 3.07 to 4.01	B to D 2.94 to 4.09	B to C 2.72 to 3.76	B to C 2.93 to 3.94
	At-grade (both no Hawley and half Hawley options)	C 3.04 to 3.95	C to D 3.09 to 4.29	B to C 2.05 to 3.80	B to C 2.42 to 3.84
East	Off-alignment	B to C 2.89 to 3.69	C 3.00 to 3.70	B to D 2.81 to 4.03	B to C 2.92 to 3.86
	On-alignment	B to C 2.77 to 3.92	B to C 2.91 to 4.00	B to D 2.56 to 4.11	B to C 2.61 to 3.89

[a] LOS is the same for "All Up" and "Partially Down" options.

TABLE 3A
I-94 Level of Service Ratings by Alternative—Design Year 2040

Segment	Alternative	Freeway		Exit/Entrance Ramps	
		AM	PM	AM	PM
West	Double Deck[a]	C to D 3.39 to 4.50	C to D 3.24 to 4.66	B to C 2.91 to 3.94	C to D 3.22 to 4.21
	At-grade (No Hawley Road Interchange)	D 4.09 to 4.54	C to E 3.86 to 5.01	B to D 2.65 to 4.51	C to D 3.20 to 4.75
	At-grade (half interchange at Hawley Road)	D 4.19 to 4.74	D 4.12 to 4.88	B to D 2.55 to 4.40	C to D 3.04 to 4.34
East	Off-alignment	C to D 3.16 to 4.77	C to D 3.31 to 4.67	C to D 3.62 to 4.21	C to D 3.58 to 4.34
	On-alignment	C to D 3.01 to 4.47	C to D 3.17 to 4.50	C to D 3.33 to 4.28	C to D 3.19 to 4.38

[a] LOS is the same for "All Up" and "Partially Down" options.
The numeric LOS thresholds are as follows:

LOS A	= 1.01–2.00	LOS D	= 4.01–5.00
LOS B	= 2.01–3.00	LOS E	= 5.01–6.00
LOS C	= 3.01–4.00	LOS F	= 6.01+

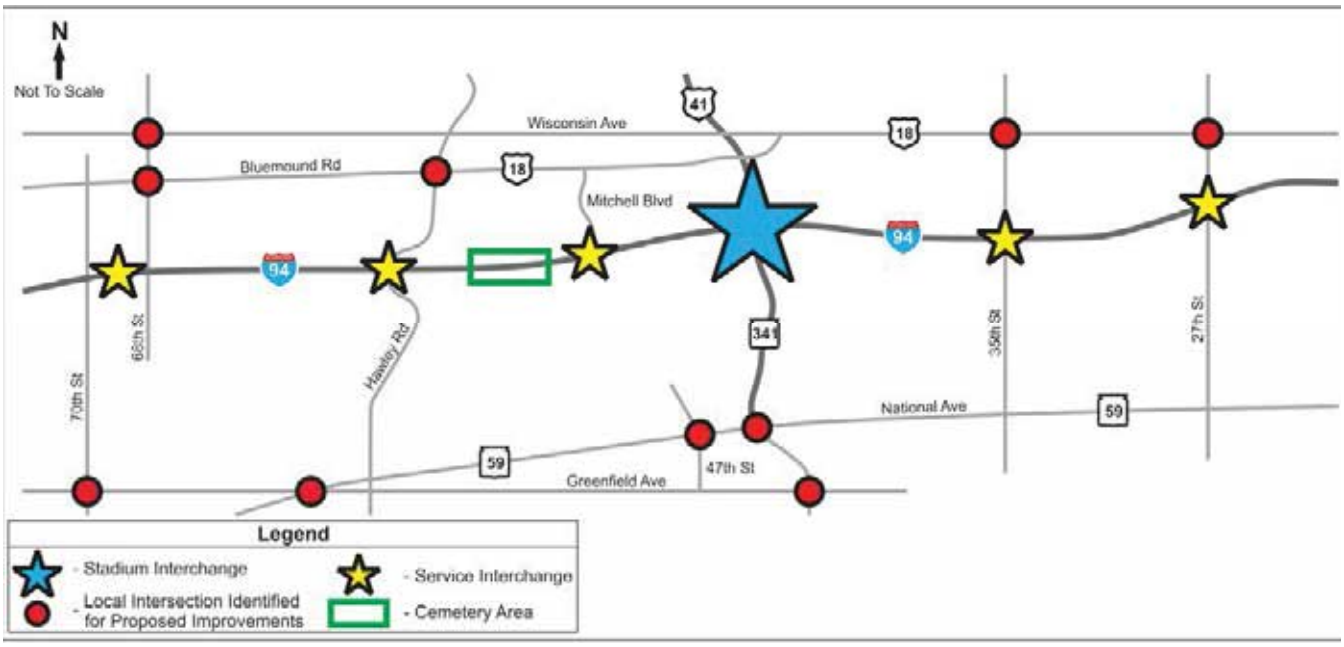
4 DHV = design hour volume

Local Roads Diversion

West Segment

To reach LOS D on I-94 under the At-grade alternative with no Hawley Road interchange, at least 4,400 vehicles per day, including 350 cars in the afternoon peak hour, would divert off the freeway and on to adjacent roads to obtain a LOS D that would provide acceptable operations. Most of, if not all, the diverted traffic would likely reroute to I-894, Greenfield Avenue, Bluemound Road, Wisconsin Avenue, National Avenue, and other parallel east-west arterials. This would increase congestion and have impacts to adjacent residents and businesses along these routes. Under the At-grade alternative with no Hawley Road interchange, it is possible that enough additional capacity could be provided on the arterials by expanding 68th Street to four lanes between I-94 and Wisconsin Avenue and implementing signal timing improvements, including freeway traffic management system and "smart-signal" technologies. To reach LOS D on I-94 under the At-grade alternative with half Hawley Road interchange, you would also need about 2,500 vehicles per day to divert off I-94 and on to adjacent roadways to obtain a LOS D that would provide acceptable operations.

With the At-grade alternative (either Hawley Road interchange option), six intersections have been identified for potential improvements to improve traffic operations. Four other intersections have been identified for potential improvements due to other access modifications associated with the remaining alternatives. It is likely that some of the possible improvements needed to address local road diversion would also be warranted to address traffic needs during the construction of the proposed project. The intersection at National Avenue and Hawley Road (60th Street) has recently been reconstructed and is unlikely to need further improvement. **Table 4** lists the intersections, the recommended improvements and the implications to meet the minimum proposed improvement for the At-grade alternative without access to Hawley Road. It is anticipated there will be less modifications to the local road intersections with the half interchange at Hawley Road option, in which I-94 will operate at LOS D in the design year. **Appendix C** includes plan views of the proposed intersection improvements. Additionally, Washington Street, south of I-94, between 70th Street and Hawley Road could be constructed to provide easier access to I-94 from Hawley Road under the At-grade alternative.



Local Road Intersection Analysis Locations

TABLE 4

At-grade Alternative - No Hawley Rd Interchange Proposed Intersection Improvements

Intersection	Proposed Improvement	
	Minimum	Implications
West Segment		
Bluemound Rd/Hawley Rd (H)	- Provide SBR turn lane (100 ft)	ROW required
Bluemound Rd/68th St (H)	- Provide two NB/SB thru lanes** - Extend EBL turn lane (250 ft) - Extend WBL turn lane (350 ft)	ROW required Eliminates terrace, trees and parking on 68th Street
Wisconsin Ave/68th St	- Provide EBL/T and EBT/R approach (250 ft) - Provide WBL/T and WBT/R approach (250 ft) - Provide NBL/T and NBT/R approach** - Provide SBL/T and SBT/R approach**	ROW required Eliminates terrace, trees and parking on 68th Street
Miller Park Way/National Ave (H)	- Extend NBL turn lane (200 ft) - Extend EBL turn lanes (400 ft) - Extend WBL turn lane (300 ft	ROW required Minor reconstruction of median
National Ave/Hawley Rd (H)	- Provide SBL/T and SBT approach - Provide SBR turn lane (75 ft) - Provide EBL turn lane (250 ft) - Provide EBT and EBT/R approach - Extend WBL turn lane (100 ft) - Provide WBT and WBT/R approach	NONE – Intersection recently reconstructed No plans for improvements to intersection
National Ave/Greenfield Ave (H)	- Provide EBL and EBT/R approach - Provide NBL/T and NBT/R approach (250 ft) - Provide SBL/T and SBR approach - Provide WBL and WBT/R approach (150 ft)	No bike accommodations
Miller Park Way/Greenfield Ave	- Extend NBL turn lane (250 ft) - Provide WBR turn lane (150 ft) - Extend SBL turn lane (300 ft) - Extend EBL turn lane (300 ft)	ROW required Possible restricted turning movements and access points Minor reconstruction of median Eliminates parking on Greenfield Ave
National Ave/47th St	-Provide NBR turn lane (250 ft)	Eliminates parking on 47th Street
Greenfield Ave/70th St (H)	- Extend EBL turn lane (150 ft) - Extend SBL turn lane (250 ft)	No bike accommodations Minor reconstruction of median
Washing Street Extension (H)	New 2-lane raodway	ROW Required
East Segment		
35th St/Wisconsin Ave*	- Provide NBL turn lane (200 ft) - Extend EBL turn lane (150 ft) - Extend WBL turn lane (200 ft)	ROW required Possible restricted turning movements and access points Minor reconstruction of median
27th St/Wisconsin Ave	- Extend NBL turn lane (200 ft)	ROW required

Notes:

*Remove "stem" roadway between 36th St and Wisconsin Ave; move EBL and SBR access to signalized intersection at Wisconsin Ave/36th St; Utilize vacated space to end/allow merge of WB aux lane downstream of 36th St

** Traffic analysis assumes expansion of 68th St to a four-lane roadway between I-94 and Wisconsin Ave

(H) – Intersection improvements due to access change at Hawley Road

East Segment

In the east segment, the Off-alignment alternative would reconstruct the 27th Street interchange so that all ramps connect directly to 27th Street, which is also a state highway (WIS 57). It would change access to the Menomonee Valley via 25th Street because motorists would be required to make a left turn on to 27th Street and then two right turns (St. Paul Avenue and 25th Street) to access the Menomonee Valley. The On-alignment alternative would maintain the existing ramp configuration in the interchange, where no ramps connect to 27th Street. The I-94 westbound exit ramp is at 25th Street, the I-94 westbound entrance ramp is at 28th Street, the I-94 eastbound exit ramp is at 26th Street, and the I-94 eastbound entrance ramp is at 25th Street. Improvements are likely needed to be made to the 27th Street/Wisconsin Avenue and 35th Street/Wisconsin Avenue intersections to improve traffic flow on local roads.

Freeway Access Changes

The alternatives retained for detailed study in the Draft EIS contain a number of options that would change I-94 access. **Table 5** describes the changes.

TABLE 5
Freeway Access Changes

Interchange	Alternative	Change in Access	Impact
68th/70th Street	Double Deck[a]	No change	No impact
	At-grade	No change	No impact
Hawley Road	At-grade	Eliminate Hawley Road interchange	No direct freeway access to businesses and residences via Hawley Road.
	At-grade (with half interchange at Hawley Road)	Eliminates westbound exit and eastbound entrance to/from Hawley Road	No freeway access via Hawley Road to/from the east, eliminating freeway access to businesses and residences along Hawley Road from the east.
	Double Deck[a]	No change	No impact
Mitchell Boulevard	At-grade and Double Deck[a]	Mitchell Blvd interchange moved east to Stadium Interchange	Change in access to Miller Park, VA Campus, and Story Hill from I-94
35th Street	Off-alignment and On-alignment	No access between 35th Street and US 41/Miller Park Way	Access would continue to be provided to 35th Street from I-94. Traffic on US 41/Miller Park Way could access 35th Street from Wisconsin Avenue or National Avenue.
25th/26th/28th Street	Off-alignment	All interchange ramps connect to 27th Street	Less traffic on residential streets (25th, 26th, and 28th streets); Menomonee Valley businesses concerned that access is less direct than it is today.
	On-alignment	Interchange aligned in same configuration as existing condition	Puts more traffic on local residential streets (25th, 26th, and 28th streets)
Wisconsin Avenue (from US 41)[b]	Off-alignment and On-alignment	No access between northbound US 41/Miller Park Way and Wisconsin Avenue	Access would continue to be provided to southbound US 41/Miller Park Way from Wisconsin Avenue, and to/from Wisconsin Avenue and I-94.

[a] Changes to freeway access are the same for "All Up" and "Partially Down" options.
b Access change not indicated in Draft EIS but will be discussed in Final EIS.

Safety

All the alternatives retained for detailed evaluation in the Draft EIS would reduce crashes on I-94 compared to the existing condition. In the west segment this is due in part to improved roadway design, improved traffic operations on I-94, and eliminating the Hawley Road and Mitchell Boulevard interchanges for the At-grade alternative (the half interchange at Hawley Road option eliminates interchange movements at Hawley Road to/from the east) and Mitchell Boulevard interchange from the Double Deck alternative, eliminating turbulence (traffic entering and exiting I-94) on I-94. For example, the At-grade alternative with the half Hawley Road interchange option would have 23% fewer crashes over a 20-year period (2020 – 2040) than a Replace-in-Kind option that would reconstruct I-94 exactly as it is today. In the east segment, the reduction of crashes is due to improved design and improved traffic operations on I-94. The project's ISATe memo provides the type (fatal, injury, property damage only) of crashes and frequency for each alternative.

To compare the At-grade and Double Deck alternatives in the west segment, crashes on local roads that result from traffic diverted from I-94 to the local street network as a result of the At-grade alternative (both Hawley Road options) must be accounted for. Traffic would be diverted to the local road network under the At-grade alternative because of the geometric constraint on I-94 and the complete or partial elimination of the Hawley Road interchange. As a result, drivers would exit I-94 at adjacent interchanges and use local roads to replace the lost access at Hawley Road. The study team used the diverted traffic volume to predict the number of crashes on the local road network. The number of crashes predicted on I-94 over a 20-year period (2020 - 2040) was added to the number of crashes predicted on the local road network as a result of traffic diversion to obtain a total crash figure for each alternative (**Table 6**).

TABLE 6
Estimated Crashes Over a 20 Year Period (2020 – 2040)

West Segment Alternative	Crashes on Freeways	Crashes on Ramps	Increased Crashes on Local Roadways due to Traffic Diversion	Total crashes
At-grade (no Hawley Road interchange)	1,160	26	860	**2,046**
At-grade (half interchange at Hawley Road)	1,220	58	360	**1,630**
Double Deck[a]	1,124	299	0	**1,423**

[a] Number of crashes is the same for "All Up" and "Partially Down" options.

Using just the crash prediction analysis to measure the number of crashes annually on I-94 from Hawley Road to Mitchell Boulevard and the entrance and exit ramps in that area, the Double Deck alternative would have less crashes on I-94 but more crashes on the ramps to and from I-94. This is because the Double Deck alternative has more capacity and more ramp access than the At-grade alternative, resulting in a greater volume of traffic and, as a result, more overall crashes. When adding the number of crashes that would occur on the local roadway network as a result of geometric constraint on I-94 and access changes at the Hawley Road interchange as a result of the At-grade alternative, the Double Deck alternative has fewer total crashes than the At-grade alternative. The At-grade alternative with no Hawley Road interchange would have 44 percent more crashes over a 20-year period than the Double Deck alternative, and the At-grade alternative with a half interchange at Hawley Road would have 15 percent more crashes over a 20-year period than the Double Deck alternative. The At-grade alternative with a half interchange at Hawley Road would have 23 percent fewer crashes than the replace in kind over the 20-year period.

In the east segment, the Off-alignment alternative would have 2 percent fewer crashes annually than the On-alignment alternative. This is due to a greater improvement in the horizontal alignment under the Off-alignment alternative. The study team believes that the crash differences could be greater because the crash prediction model does not completely capture the full value of the improvements in vertical geometry of the Off-alignment alternative.

Environmental Impacts

Residential Displacements

The alternatives would have varying levels of impact to residences within the project area. The west segment alternatives range from 4 to 10 residential displacements, while 3 residences would be displaced in the east segment by both the On-alignment and Off-alignment alternatives. **Table 7** shows residential displacements by alternative.

TABLE 7

Residential Displacements by Alternative

Segment	Alternative	Displacements
West	At-grade (no Hawley Road interchange)	4
	At-grade (half interchange at Hawley Road)	5
	Double Deck[a]	10
East	On-alignment	3
	Off-alignment	3

Note: The number of displacements is based on residences, not individual buildings. A duplex counts as two residential displacements.

[a] Number of residential displacements is the same for "All Up" and "Partially Down" options.

In the west segment, the At-grade alternative with no Hawley Road interchange would displace four single-family residences. The half interchange at Hawley road option would displace one additional residence, an apartment above a business. The Double Deck alternative would displace ten residences, consisting of nine single-family residences and one apartment unit above a business.

In the east segment, both the On-alignment and Off-alignment alternatives would displace an apartment unit located above a vacant retail unit and a duplex, a total of three residences.

Commercial Displacements

The alternatives retained for detailed study in the Draft EIS would displace businesses in the west and east segments, ranging from 1 to 2 in the west, and 6 to 8 in the east. **Table 8** shows commercial displacements by alternative.

TABLE 8

Commercial Displacements by Alternative

Segment	Alternative	Displacements
West	At-grade (no Hawley Road interchange)	1
	At-grade (half interchange at Hawley Road)	2
	Double Deck[a]	2
East	On-alignment	8 (2 additional vacant commercial properties/parcels would be acquired)
	Off-alignment	6 (3 additional vacant commercial properties/parcels would be acquired)

[a] Number of commercial displacements is the same for "All Up" and "Partially Down" options.

Tax-Base Impacts

The alternatives retained for detailed study in the Draft EIS would result in an approximate tax-base loss of between $4.9 million and $5.8 million, or 0.02 percent of the total full value tax base for the City of Milwaukee if relocating businesses do not stay within the City of Milwaukee. Using current property tax rates, this would result in a property-tax-revenue loss of between $52,000 and $61,500, or 0.01 percent of property tax revenue for the City of Milwaukee. Of the new right-of-way converted to highway right-of-way for the project, roughly 80 percent will be obtained from ATC, We Energies, or Miller Park (Stadium District) properties. Property tax is not paid on these properties. Thus, of the new right-of-way converted to highway right-of-way for the project, 20 percent of the properties are paying property taxes to the City of Milwaukee. **Table 9** lists the tax-base loss and property-tax-revenue loss for each of the alternatives.

As part of the Off-alignment alternative, I-94 east of 32nd Street would be reconstructed about 400 feet south of its current alignment. I-94 would rejoin its existing alignment near 18th Street. As a result, some land used as highway right-of-way adjacent to I-94 may no longer be needed for right-of-way. WisDOT may declare the land excess right-of-way, and the land could be redeveloped and converted to a different land use which could increase the City of Milwaukee's tax base.

TABLE 9

City of Milwaukee Tax-Base Impacts

Segment	Alternative	Tax Base Loss	Property Tax Revenue Loss at 2011 Rate
West	At-grade (No Hawley Rd interchange)	$425,500	$4,500
	At-grade (half interchange at Hawley Rd)	$864,000	$9,100
	Double Deck	$1,146,000	$12,100
East	On-alignment	$4,453,000	$47,100
	Off-alignment	$4,667,000	$49,400
TOTAL		**$4,878,000 to $5,813,000**	**$51,600 to $61,500**

Source: Milwaukee County Automated Mapping and Land Information System (Milwaukee County 2014)

Environmental Justice

WisDOT and FHWA have not identified any disproportionately high and adverse effects on any minority populations or low-income populations in accordance with the provisions of Executive Order 12898 and FHWA Order 6640.23 as a result of the proposed action, regardless of the alternative implemented. While there have been no disproportionately high and adverse effects on environmental justice populations identified, there are still impacts related to the project.

Historic Resources

FHWA has determined that the Double Deck alternative in the west segment would have an Adverse Effect, as defined by Section 106, on Calvary Cemetery and the Soldiers' Home NHL and Historic District and would have a potential Adverse Effect on Story Hill Residential Historic District 2 and 3, all due to visual impacts. The At-grade alternative could be constructed so that it would result in No Adverse Effect on all historic properties in the study area.

Section 4(f)

Analysis performed for the Draft Section 4(f) Evaluation in the Draft EIS determined that the Double Deck alternative would result in use of a Section 4(f) historic property – the Soldier's Home NHL and Historic District. Per 23 CFR 774.3 FHWA can't approve this use if there is a "feasible and prudent" avoidance alternative. The At-grade alternative (both Hawley Road options) would not use any Section 4(f) properties; as such, a determination must be made as to whether the At-grade alternative is a "feasible and prudent" avoidance alternative as defined in 23 CFR 774.17. The At-grade alternative was assessed based on the feasible and prudent factors in 774.17. Based on this assessment, the At-grade alternative is a feasible and prudent avoidance alternative per 23 CFR 774.17. Appendix D of this memorandum provides the preliminary feasible and prudent analysis of the At-grade alternative.

Stormwater

Under all of the alternatives retained for detailed study in the Draft EIS, there would be more stormwater runoff because I-94 would have more pavement area due to an additional lane, wider shoulders in some locations, and longer on- and off-ramps. However, the alternatives will provide the opportunity for stormwater best management practices (BMPs) to treat the runoff and bring I-94 and the local roadway system in compliance with Wisconsin's stormwater management regulations that limit the amount of pollution in runoff. BMPs have been evaluated to collect and treat runoff not only from the pavement but also from the surrounding green space that is tributary to the pavement. BMPs will be further evaluated and agreed to in the final design and permitting phase. **Table 10** lists the increase in impervious area for the I-94 East-West Corridor study area. The increase in impervious area as a result of this project leads to an increase of less than 0.4 percent in the total Menomonee River Watershed impervious area.

TABLE 10

Increase in Impervious Surface

Segment	Alternative	I 94 Impervious Surface Increase
West	At-grade—No Hawley Road interchange	11%
	At-grade—Half interchange at Hawley Road	19%
	Double Deck[a]	22%
East	On-alignment	67%
	Off-alignment	91%

[a] The increase in impervious surface is the same for "All Up" and "Partially Down" options.

Project Costs

Table 11 lists the project cost for each alternative. The lowest cost build alternative combination is the At-grade alternative with no Hawley Road interchange option with the On-alignment, at $825 million. The highest cost build alternative combination is the Double Deck (partially down option) with the Off-alignment, at $1,115 million. The Double Deck and Off-alignment alternatives have more structures, causing them to be the higher cost alternatives. In the west segment, the Double Deck alternative would cost about $1.2 million more per year to maintain than the At-grade alternative.

TABLE 11

Summary of Project Costs for Alternatives (2014 dollars in millions)

	West Segment			East Segment		Corridor Total
	At grade (no Hawley)	At grade (half Hawley)	Double Deck	On alignment	Off alignment	
Total Cost (2014 dollars in millions)	$115	$125	$295 to $345[a]	$710 to $735[b]	$785 to $810[b]	$825 to $1,155

a The all up option is estimated to cost $295 million and the partially down option $320 to $345 million
b Construction in the Stadium Interchange area of the east segment is about $25 million greater if the Double Deck alternative is selected for the west segment.

Public Stakeholder Feedback

Public input is divided on the At-grade and Double Deck alternatives. In general, those who live near the freeway and have commented on the project support the At-grade alternative. Residents and businesses that use the Hawley Road interchange have expressed concern about the additional time and indirection that would be caused by removing the Hawley Road interchange under the At-grade alternative. The next closest interchange would be the 68th Street/70th Street interchange, about 8 blocks west of Hawley Road. In general, those who do not live near the freeway support the Double Deck alternative because it would reduce traffic congestion and increase safety.

Public Involvement Meetings (PIM) and State Fair

Five public involvement meetings were held during identification and evaluation of project purpose and need factors, development and refinement of the alternatives, and evaluation of impacts. In addition to the public involvement meetings, the study team participated in several neighborhood meetings, Community Advisory Committee and Technical Advisory Committee meetings, Agency Coordination meetings, local officials meetings and several other meetings to discuss the project and gain public feedback. Section 5 of the Draft EIS provides a detailed account of the project's public and agency coordination.

Support for improvements included addressing safety and traffic flow concerns, modernizing the freeway, adding travel lanes, and incorporating transit. Concerns included access changes (specifically at Hawley Road), maintaining full access at 35th Street interchange, property acquisition, adding travel lanes, creating more noise in adjacent neighborhoods, changing views from properties adjacent to I-94, affecting the cemeteries, adding more traffic to the local street network, adding transit as part of the project, socioeconomic issues, and cost.

Public comments received from the public meeting attendees were most often from people living and working along the I-94 East-West corridor. General themes of the comments from the PIM's are listed below.

- The majority of the adjacent neighbors who provided comment oppose the Double Deck alternative. There is strong opposition due to altered views in the neighborhoods, the National Historic Landmark, the cemeteries, and opposition due to the Double Deck alternative resulting in fewer views of the Hunger Task Force billboard.
- The At-grade alternative is preferred by many locals because it does not modify the view or substantially raise the freeway. The lesser order of magnitude of the freeway expansion is also frequently mentioned by those in favor of at-grade.
- Many residents and businesses were opposed to limiting access at Hawley Road. Most did not state a preference for either alternative but voiced strong opposition to changing access at Hawley Road.
- PIM comments from drivers with a daily commute generally prefer the Double Deck alternative for reasons pertaining to safety and congestion.

The I-94 East-West project team staffed a project information booth at the 2013 and 2014 Wisconsin State Fair. The booth included project related exhibits and provided the public with an opportunity to interact with the project team and address any comments or questions. Public comments received from the State Fair were primarily from individuals who drive the corridor but do not live adjacent to the freeway. The comments were overwhelmingly in favor of the Double Deck alternative, primarily due to the greater capacity. Those that supported the At-grade alternative typically mentioned cost considerations.

Few comments were received regarding the east segment alternatives. For those who commented on specific design concepts, there was a preference for the alternative which consolidates the freeway ramps at 27th Street, along with concern over cost of the Off-alignment alternative and the improvements associated with that alternative not being justified given the cost differential between the Off-alignment and On-alignment alternatives.

Public Hearing and Comment Period

Public Hearings for the project were conducted on December 3 and 4, 2014. The public, local officials, and government agencies were encouraged to provide comments regarding the project. The comment period was open until January 27, 2015. This extended 74-day comment period exceeded Federal requirements.

During the comment period, WisDOT received numerous comments from cooperating and participating government agencies, local officials, interest groups, and the public. Comments varied and there was support for all alternatives. The most commonly heard comments were:

- Support of the At-grade alternative (for various reasons but cultural resource groups support this alternative due to the groups' general agreement that the alternative had No Adverse Effect on historic properties, specifically the Soldiers' Home NHL and Historic District, as opposed to the Double Deck alternative)
- Maintain existing interchanges
- Support of a transit-focused alternative
- Supporters of the Hunger Task Force were against the Double Deck alternative but desired full access at the Hawley Road interchange.
- Those with connections to the Beth Hamedrosh Hagodel Cemetery supported WisDOT for developing alternatives that did not impact the cemetery land or any graves
- Story Hill residents are generally against the Double Deck alternative and against a noise barrier near their neighborhood

City of West Allis

The City of West Allis is concerned about the elimination of access to the City, specifically at the Hawley Road and 68th/70th Street interchanges. In June 2013 the City of West Allis adopted a resolution opposing construction of alternatives that do not include access to both 70th/68th Street and Hawley Road. The city also feels that eliminating access at the Hawley Road interchange would hinder economic development opportunities within the City, increase traffic on local City roads, and pose environmental justice implications to minority residents attempting to reach employment elsewhere.

At the Public Hearing, the City of West Allis voiced support for the Double Deck alternative because it was the only alternative that maintained full access at Hawley Road. On December 9, 2014 the City of West Allis passed a resolution in support of the Double Deck alternative if the At-grade alternative cannot accommodate full access at the Hawley Road interchange.

Village of West Milwaukee

On January 5, 2015 the Village of West Milwaukee passed a resolution supporting the Double Deck alternative if the At-grade alternative cannot accommodate full access at the Hawley Road interchange. In addition, the Village opposed any alternative that creates additional traffic on Village roads and does not provide adequate future capacity on I-94.

City of Milwaukee

The City of Milwaukee opposes freeway lane expansion and any double-decking of lanes where the top level or deck is elevated. The City is concerned about substantial changes in existing local access, impacts of new or revised access points, residential impacts, and right-of-way acquisition with the loss of tax base. The City of Milwaukee also supports a consideration of mass transit traffic mitigation options, and retaining the 35th Street interchange. At the Public Hearing the Mayor of Milwaukee provided public testimony in support of the At-grade alternative.

Section 106 Consulting Parties

WisDOT has met with Section 106 consulting parties on a regular basis since July 2013 to discuss the project's impact on historic properties in the project's area of potential effect. The Section 106 consulting parties are concerned with the potential for adverse effects (e.g., visual and noise impacts) under both the At-grade and Double Deck alternatives, and most oppose the Double Deck alternative and support the At-grade alternative. FHWA, in consultation with the consulting parties, has determined that the Double Deck alternative would have an Adverse Effect on Calvary Cemetery and the Soldiers' Home NHL and Historic district and a potential Adverse Effect on Story Hill Residential District 2 and 3. Most consulting parties agree that the At-grade alternative can be designed so that it has No Adverse Effect on any historic properties.

East Segment Stakeholders

Menomonee Valley Partners and other east segment stakeholders are concerned with the Off-alignment alternative's long, skewed crossing of St. Paul Avenue, creating a tunnel effect and therefore making the area less desirable for development. Other east segment stakeholders like how all the ramps to and from I-94 connect to the 27th Street interchange under the Off-alignment alternative. Menomonee Valley Partners, Avenues West, and other east segment stakeholders have not expressed support or opposition to either of the alternatives on the east segment.

Basis for Identification of Preferred Alternative

WisDOT and FHWA developed and evaluated a wide range of alternatives for this project. The alternatives that were retained for detailed study and discussed in this document all improve I-94 over the existing condition. All of the alternatives would address the deteriorated condition of I-94, obsolete roadway and bridge design, existing and future traffic demand, and high crash rates.

Identification of a preferred alternative was based on resource agency input, local government input, public input, cost, and impacts to the human/natural environment and input from the public, state and federal resource agencies, cooperating and participating agencies, and local officials. Identification of a preferred alternative was

also performed in accordance with the Clean Water Act's Section 404 (b)(1), Sections 106 and 110 of the National Historic Preservation Act as amended, and the U.S. DOT's Section 4(f) law. Consultation under Section 106 and Section 110 will be completed before the Record of Decision is approved. WisDOT and FHWA will seek concurrence from Section 404 merger agencies (e.g. USACE, EPA, Wisconsin DNR) on the identification of the preferred alternative/ Least Environmental Damaging Practicable Alternative (LEDPA) prior to the Final EIS.

After evaluating project purpose and need, cost, impacts to the human/natural environment, and public and agency comments received throughout the NEPA process and in direct response to the DEIS, **WisDOT has identified the At-grade alternative with the half interchange at Hawley Road in the west segment and the On-alignment alternative in the east segment as the preferred alternative**.

West Segment

The At-grade alternative with a half interchange at Hawley Road (access to and from the west) was identified as the preferred alternative for the west segment of the I-94 East-West Corridor project.

Reasons for Identifying this Alternative

The basis for identifying the At-grade alternative with a half interchange at Hawley Road is as follows:

- **Addresses existing and future traffic demand**
  - Results in level of service D or better for the entire corridor in the project's design year (2040).
- **Addresses safety on I-94**
  - Reduces crashes on I-94 compared to existing condition due to improved design, traffic operation improvements, and elimination of the Mitchell Boulevard interchange and movements to and from the east at the Hawley Road interchange, reducing turbulence (traffic entering and exiting I-94).
  - Entrance and exit ramps at the 68th/70th Street interchange would be constructed longer than the existing ramps to provide more length and time for traffic entering and exiting I-94, improving safety and traffic operations.
  - Removing the Mitchell Boulevard interchange decreases congestion within the cemetery area and eliminates the left-hand entrances and exits including very short and unsafe merge distances between those ramps on I-94.
  - Although the At-grade alternative would have more crashes overall when taking into account crashes on local roads as a result of some traffic diverting off the freeway, crash prediction analysis predicts this alternative would result in less overall crashes on I-94 and the Hawley Road interchange ramps combined, than the Double Deck alternative. The Double Deck alternative maintains all four ramp movements from the Hawley Road interchange on auxiliary lanes which results in more overall crashes. A large portion of crashes attributed to the Double Deck Alternative is due to these weaving movements as part of the interchange at Hawley Road with full access.
  - Narrow lanes and shoulders generally result in an increase in crashes, however, the 11-foot lane segment is short (120 feet), with transitions to 12-foot lanes on each end. This segment would have narrow shoulders for approximately 1,800 feet. In order to make the narrow lanes and shoulders segment as safe as possible, dynamic traffic management tools to warn drivers of closed lanes in the narrow segment, advance warning signs alerting drivers to the narrow lanes and narrow shoulders, and other tools like reflectors on the center median barrier wall and the outside barrier wall will be investigated in final design and implemented as appropriate.
- **No adverse effect to historic properties**
  - FHWA has determined that this alternative can be constructed to result in a Section 106 No Adverse Effect on all historic properties in the study area. The Double Deck alternative would have an Adverse Effect on

Calvary Cemetery and the Soldiers' Home NHL and Historic District while it would have a potential Adverse Effect on Story Hill Residential Historic District 2 and 3.

  - The Section 106 consulting parties are concerned about the visual impact of the Double Deck alternative.
  - A Programmatic Agreement will be developed between FHWA and the Section 106 Consulting Parties.

- **No use of Section 4(f) properties.**
  - This alternative is a feasible and prudent avoidance alternative.
- **Less residential displacements**
  - Results in 5 residential displacements as opposed to 10 with the Double Deck alternative.
  - Results in a tax base loss that is approximately 25% less than the Double Deck alternative tax base loss.
- **Less cost**
  - Approximately $170 million less than the Double Deck alternative all up option and $195 to $220 million less than the Double Deck alternative partially down option.
- **Constructability**
  - The At-grade alternative results in less impacts to traffic during construction. The Double Deck alternative would take longer to construct, resulting in a longer duration of impacts to I-94 traffic.
  - The Double Deck alternative would cost about $1.2 million more per year to maintain than the At-grade alternative.
- **City of Milwaukee input**
  - The City of Milwaukee opposes any double decking of I-94 where the top level or deck is elevated.
  - The City of Milwaukee is concerned about the increased residential impacts and loss of tax base associated with the Double Deck alternative over the At-grade alternative.
- **Public input**
  - Those who live near I-94 in the project area and have provided comments on the project generally support the At-grade alternative due to less residential impacts, retaining the existing viewshed, and a perceived reduction in noise from the Double Deck alternative.

Measures to Minimize Impacts

Note: Impacts associated with mitigation projects driven by the change in access to I-94 will be included in the project's Final EIS and documented in the Record of Decision. Improvements driven by the temporary need to mitigate construction impacts will be addressed as part of a reevaluation of the Final EIS or will have a separate environmental document.

- **Half-Hawley Road interchange**
  - Provide access to and from the west in response to input that access at Hawley Road is important to businesses and residents that currently use this interchange.
- **Potential local arterial street and intersection improvements to address increased traffic volumes due to traffic diverted from I-94**
  - Increase capacity on arterial roadways such as Greenfield Avenue, Bluemound Road, Wisconsin Avenue, and National Avenue through measures such as adding or increasing the length of turn lanes and implementing signal timing improvements at intersections.
  - Potential local road intersection improvements:
    - Miller Park Way/National Avenue

- National Avenue/Greenfield Avenue
- Miller Park Way/Greenfield Avenue
- National Avenue/47th Street
- Greenfield Avenue/70th Street
- Bluemound Road/Hawley Avenue
- Bluemound Road/68th Street
- Wisconsin Avenue/68th Street

- **Washington Street extension offering an alternative route to 70th Street from Hawley Road.**
- **Lane control/dynamic lane closures to temporarily clear a lane of I-94 for Miller Park event release, incident management, or weather-related factors.**

East Segment

The On-alignment alternative was identified as the preferred alternative for the east segment of the I-94 East-West Corridor project.

Reasons for Identifying this Alternative

The basis for identifying the On-alignment alternative is as follows:

- **Addresses existing and future traffic demand**
  - Results in level of service D or better for the entire corridor in the project's design year (2040).
  - Numerical level of service very similar to Off-alignment alternative.
- **Addresses safety on I-94**
  - Reduces crashes on I-94 compared to existing condition
  - Predicted crash rate in east segment is nearly identical between the alternatives.
  - Braided ramps between the 35th Street interchange and the Stadium Interchange to the west and the 25th/26th/28th interchange to the east will allow the closely spaced interchanges to operate safely by eliminating the weaving movements between them since the traffic will be grade separated from each other instead of weaving across each other.
  - Provides better sight distance compared to existing I-94 through the use of shoulders that are widened beyond the standard 12-feet.
- **Less cost**
  - Approximately $100 million less than the Off-alignment alternative
- **Maintains more direct access to the Menomonee Valley**
  - Maintains existing ramp alignment at the 25th/26th/28th Street interchange. People would access the Menomonee Valley from I-94 the same way they do today. The reconfigured 27th Street interchange under the Off-alignment alternative changes access to the Menomonee Valley as motorists would turn to the north at 27th Street and then be required to make two right turns (St. Paul Avenue and 25th Street).
- **Less employee relocations**
  - The On-alignment alternative avoids relocating INTEC while the Off-alignment alternative would relocate this business. INTEC employs about 40 people.

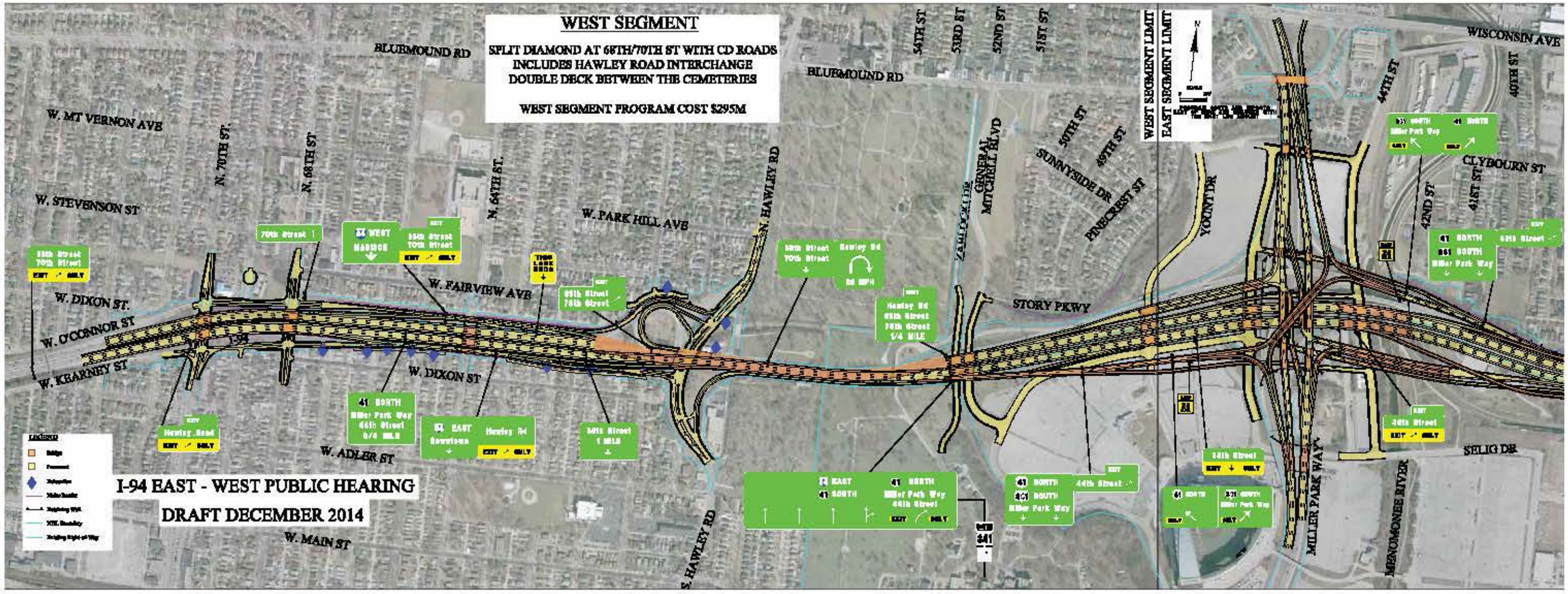
- **Familiar traffic patterns near 25th/26th/28th Street intersection**
  - Traffic patterns would remain the same at this intersection, maintaining access that drivers are familiar with and resulting in less reassignment of travel routes.
- **Responds to public feedback in keeping full access at 35th Street interchange**

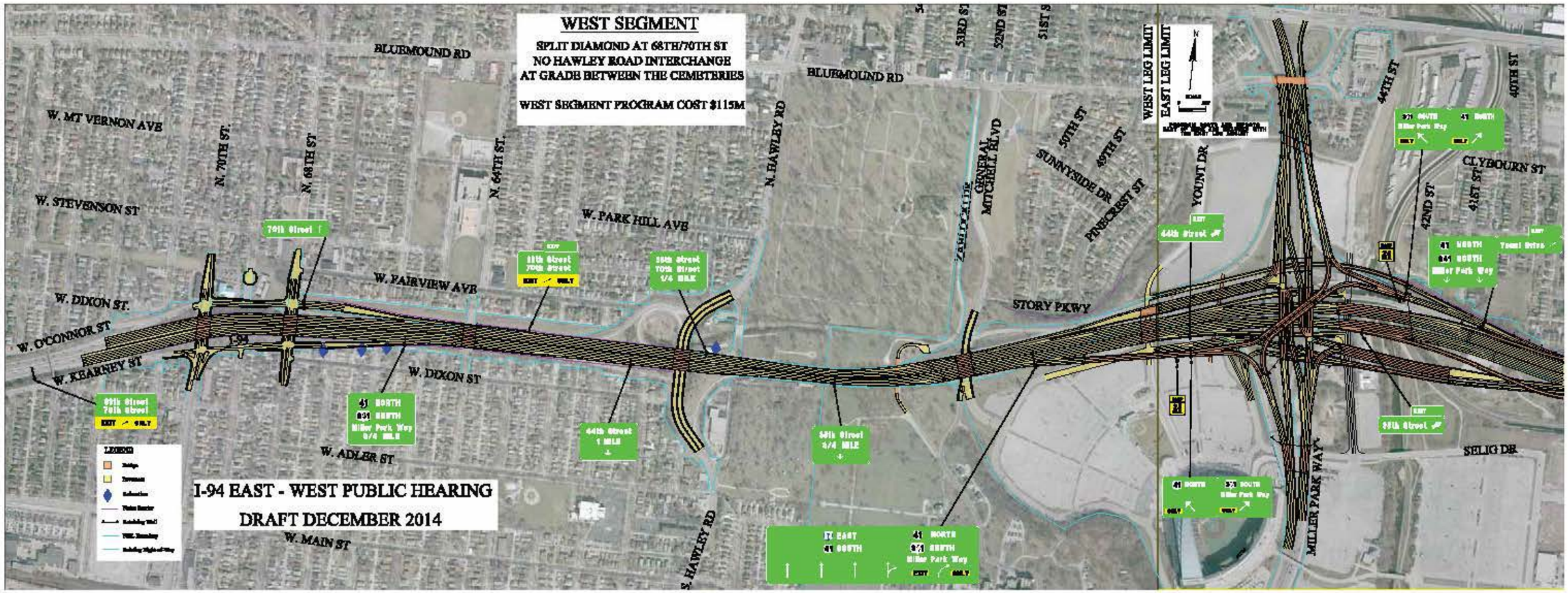
Measures to Minimize Impacts

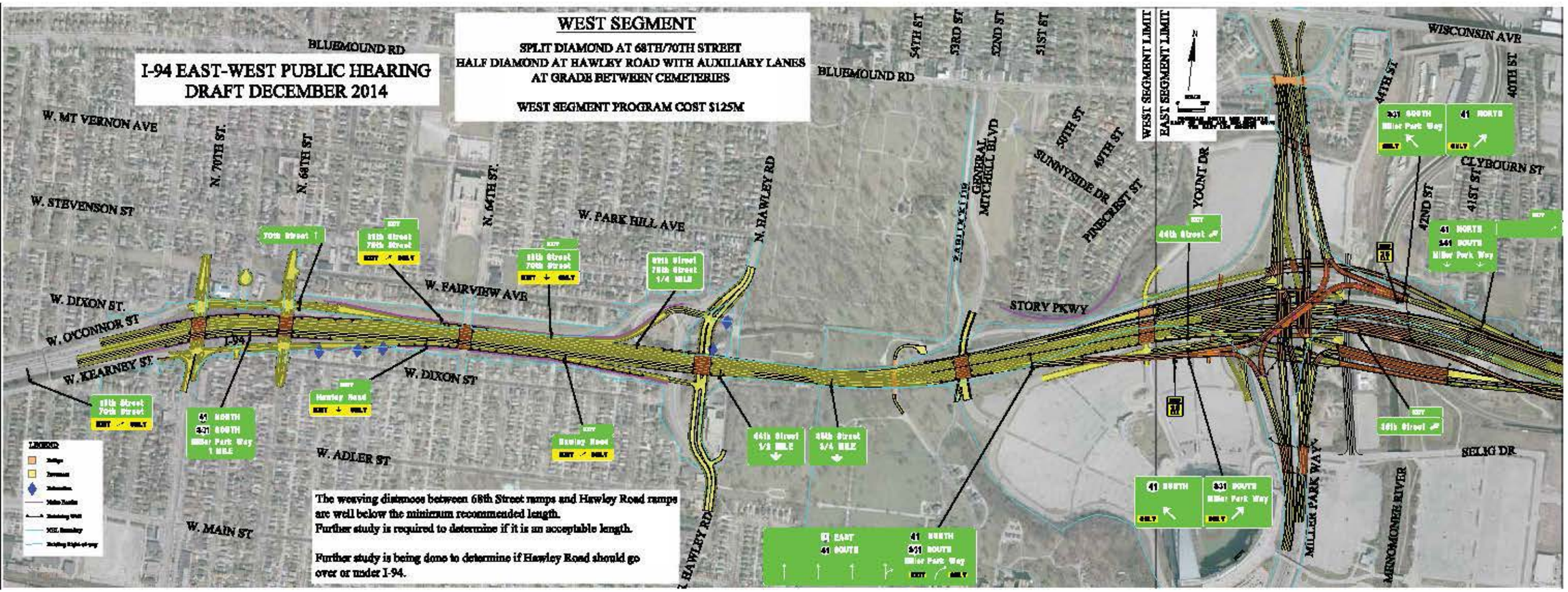
Note: Improvements driven by the temporary need to mitigate construction impacts will be addressed as part of a reevaluation of the Final EIS or will have a separate environmental document.

- **Potential local road intersection improvements:**
  - 35th Street/Wisconsin Avenue
  - 27th Street/Wisconsin Avenue

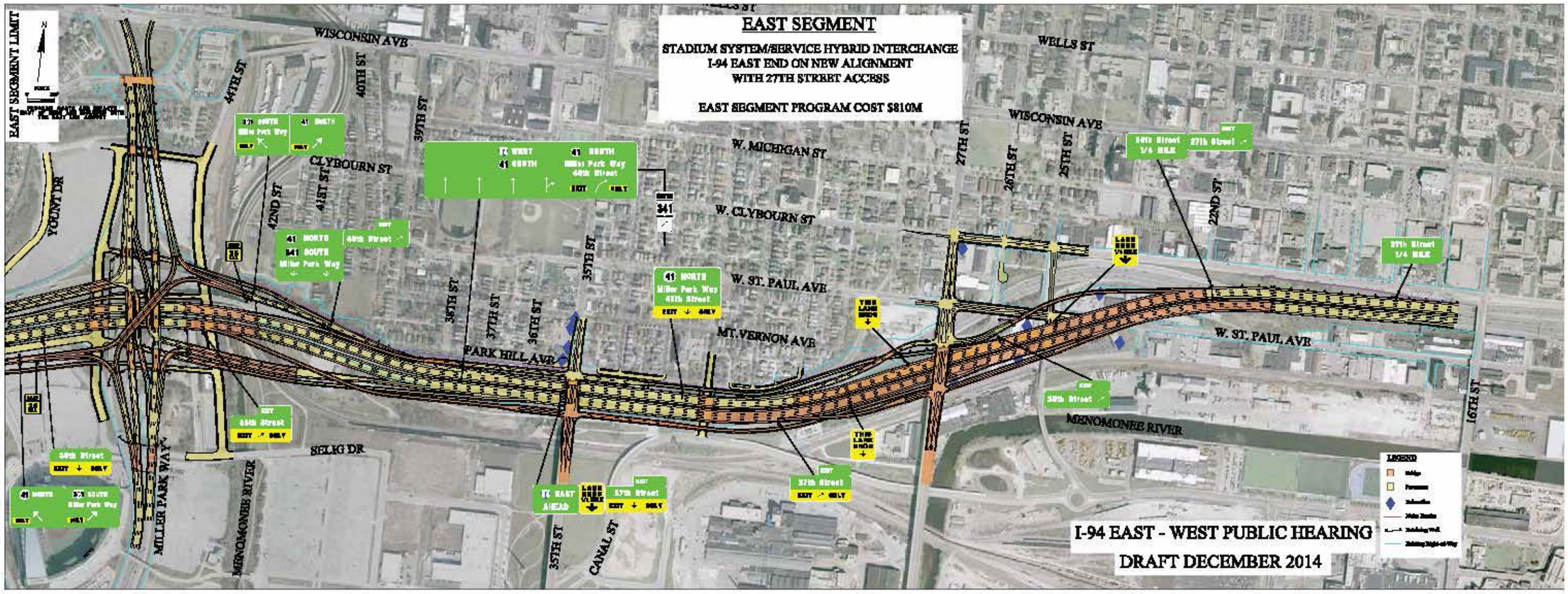
Appendix A: Plan Views of Remaining Alternatives


WEST SEGMENT
SPLIT DIAMOND AT 68TH/70TH ST WITH CD ROADS
INCLUDES HAWLEY ROAD INTERCHANGE
DOUBLE DECK BETWEEN THE CEMETERIES
WEST SEGMENT PROGRAM COST $295M
I-94 EAST - WEST PUBLIC HEARING
DRAFT DECEMBER 2014
BLUEMOUND RD
W. MT VERNON AVE
W. STEVENSON ST
W. DIXON ST.
W. O'CONNOR ST
W. KEARNEY ST
W. ADLER ST
W. MAIN ST
N. 70TH ST.
N. 68TH ST
N. 64TH ST.
W. PARK HILL AVE
W. FAIRVIEW AVE
N. HAWLEY RD
S. HAWLEY RD
54TH ST
53RD ST
52ND ST
51ST ST
50TH ST
49TH ST
GENERAL MITCHELL BLVD
SUNNYSIDE DR
PINECREST ST
YOUNT DR
STORY PKWY
WEST SEGMENT LIMIT
EAST SEGMENT LIMIT
WISCONSIN AVE
44TH ST
40TH ST
CLYBOURN ST
42ND ST
41ST ST
MILLER PARK WAY
MENOMONEE RIVER
SELIG DR
I-94


WEST SEGMENT
SPLIT DIAMOND AT 68TH/70TH ST
NO HAWLEY ROAD INTERCHANGE
AT GRADE BETWEEN THE CEMETERIES
WEST SEGMENT PROGRAM COST $115M
I-94 EAST - WEST PUBLIC HEARING
DRAFT DECEMBER 2014
BLUEMOUND RD
W. MT VERNON AVE
W. STEVENSON ST
W. DIXON ST.
W. O'CONNOR ST
W. KEARNEY ST
W. FAIRVIEW AVE
W. PARK HILL AVE
W. ADLER ST
W. MAIN ST
N. 70TH ST.
N. 68TH ST
N. 64TH ST.
N. HAWLEY RD
S. HAWLEY RD
GENERAL MITCHELL BLVD
SUNNYSIDE DR
PINECREST ST
YOUNT DR
STORY PKWY
MILLER PARK WAY
SELIG DR
CLYBOURN ST
WEST LEG LIMIT
EAST LEG LIMIT
53RD ST
52ND ST
51ST ST
50TH ST
49TH ST
44TH ST
42ND ST
41ST ST
40TH ST
I-94
LEGEND

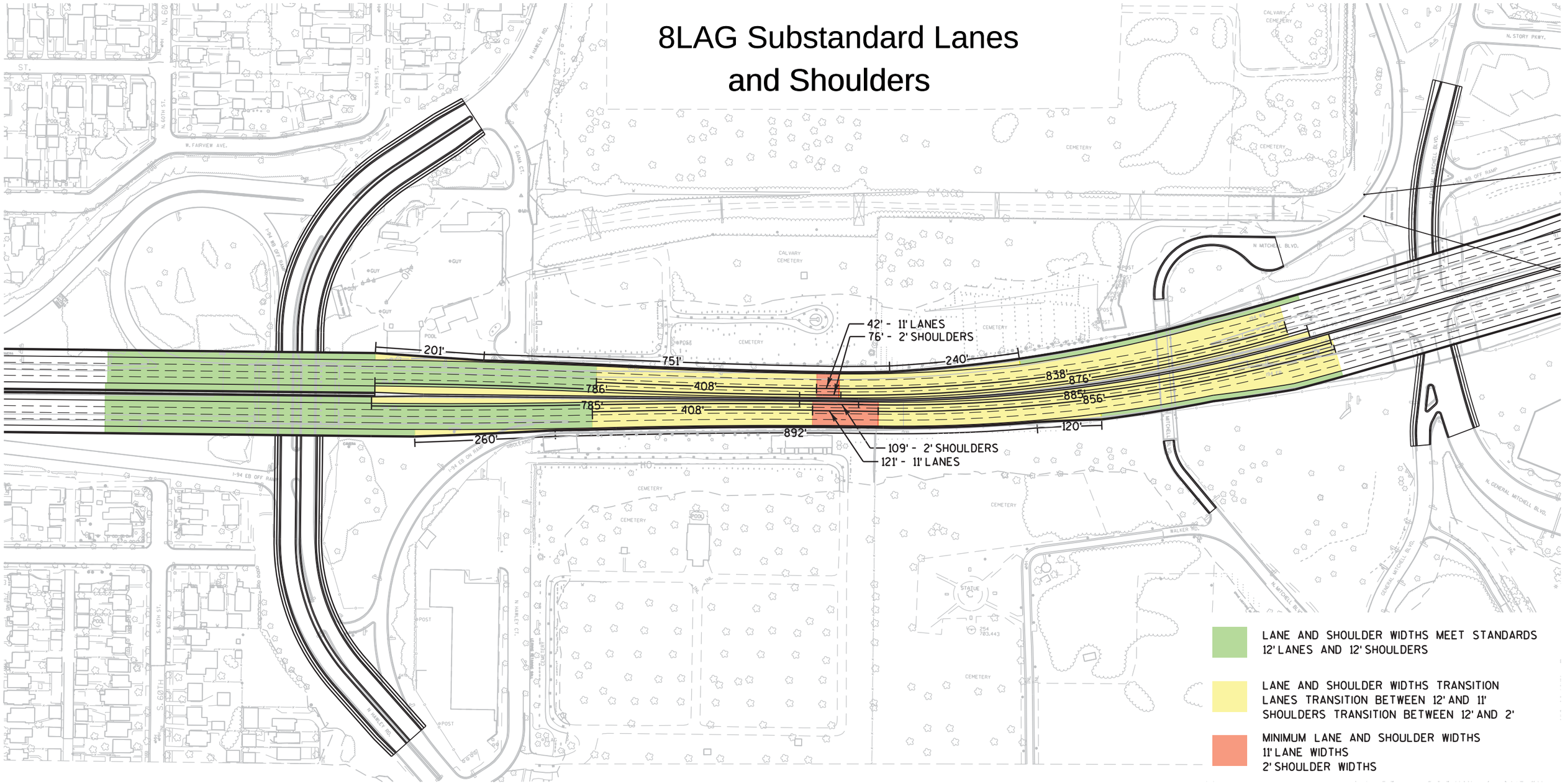

I-94 EAST-WEST PUBLIC HEARING
DRAFT DECEMBER 2014
WEST SEGMENT
SPLIT DIAMOND AT 68TH/70TH STREET
HALF DIAMOND AT HAWLEY ROAD WITH AUXILIARY LANES
AT GRADE BETWEEN CEMETERIES
WEST SEGMENT PROGRAM COST $125M
BLUEMOUND RD
W. MT VERNON AVE
W. STEVENSON ST
N. 70TH ST.
N. 68TH ST
N. 64TH ST.
W. PARK HILL AVE
N. HAWLEY RD
W. FAIRVIEW AVE
W. DIXON ST.
W. O'CONNOR ST
W. KEARNEY ST.
I-94
W. DIXON ST
W. ADLER ST
W. MAIN ST
54TH ST
53RD ST
52ND ST
51ST ST
GENERAL MITCHELL BLVD
50TH ST
49TH ST
SUNNYSIDE DR
PINECREST ST
WEST SEGMENT LIMIT
EAST SEGMENT LIMIT
YOUNT DR
STORY PKWY
WISCONSIN AVE
44TH ST
40TH ST
CLYBOURN ST
42ND ST
41ST ST
MILLER PARK WAY
MENOMONEE RIVER
SELIG DR
70th Street
68th Street 70th Street
68th Street 70th Street
68th Street 70th Street 1/4 MILE
Hawley Road
44th Street
44th Street 1/3 MILE
44th Street 1/4 MILE
41 NORTH
41 SOUTH
Miller Park Way
The weaving distances between 68th Street ramps and Hawley Road ramps are well below the minimum recommended length.
Further study is required to determine if it is an acceptable length.
Further study is being done to determine if Hawley Road should go over or under I-94.

EAST SEGMENT
STADIUM SYSTEM/SERVICE HYBRID INTERCHANGE
I-94 EAST END NEAR EXISTING ALIGNMENT
WITH ST. PAUL ACCESS
EAST SEGMENT PROGRAM COST $710M
EAST LEG LIMIT
WELLS ST
WISCONSIN AVE
W. MICHIGAN ST
W. CLYBOURN ST
CLYBOURN ST
W. ST. PAUL AVE
MT. VERNON AVE
PARK HILL AVE
MENOMONEE RIVER
SELIG DR
MILLER PARK WAY
YOUNT DR
44TH ST
43RD ST
42ND ST
41ST ST
40TH ST
39TH ST
38TH ST
37TH ST
36TH ST
35TH ST
27TH ST
26TH ST
25TH ST
22ND ST
16TH ST
CANAL ST
I-94 EAST - WEST PUBLIC HEARING
DRAFT DECEMBER 2014


EAST SEGMENT
STADIUM SYSTEM/SERVICE HYBRID INTERCHANGE
I-94 EAST END ON NEW ALIGNMENT
WITH 27TH STREET ACCESS
EAST SEGMENT PROGRAM COST $810M
EAST SEGMENT LIMIT
WISCONSIN AVE
WELLS ST
W. MICHIGAN ST
W. CLYBOURN ST
W. ST. PAUL AVE
MT. VERNON AVE
PARK HILL AVE
CLYBOURN ST
SELIG DR
MILLER PARK WAY
MENOMONEE RIVER
CANAL ST
YOUNT DR
44TH ST
40TH ST
39TH ST
42ND ST
41ST ST
38TH ST
37TH ST
36TH ST
35TH ST
27TH ST
26TH ST
25TH ST
22ND ST
16TH ST
I-94 EAST - WEST PUBLIC HEARING
DRAFT DECEMBER 2014

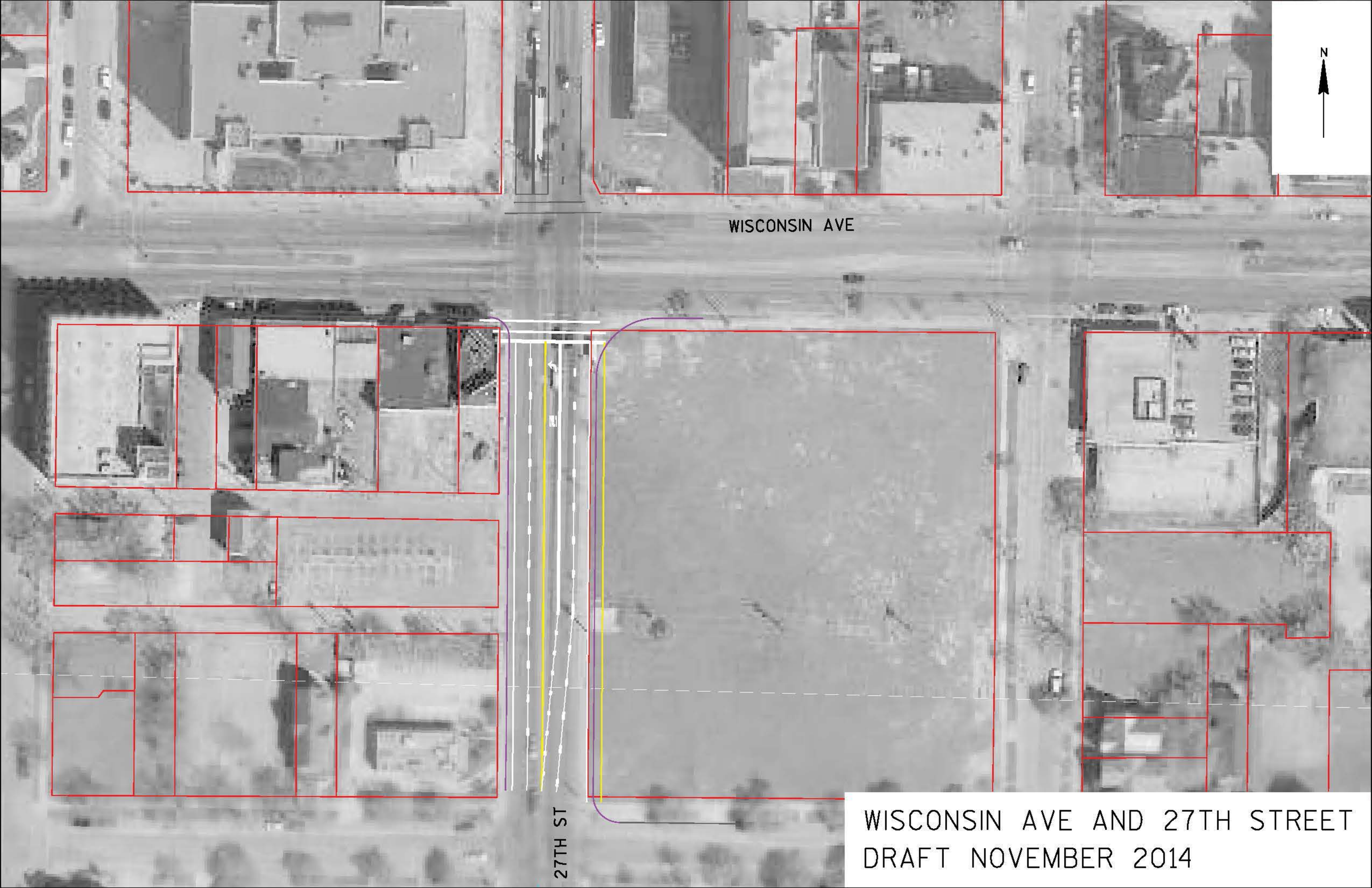
Appendix B: At-grade Alternative Substandard Lanes and Shoulders

8LAG Substandard Lanes and Shoulders



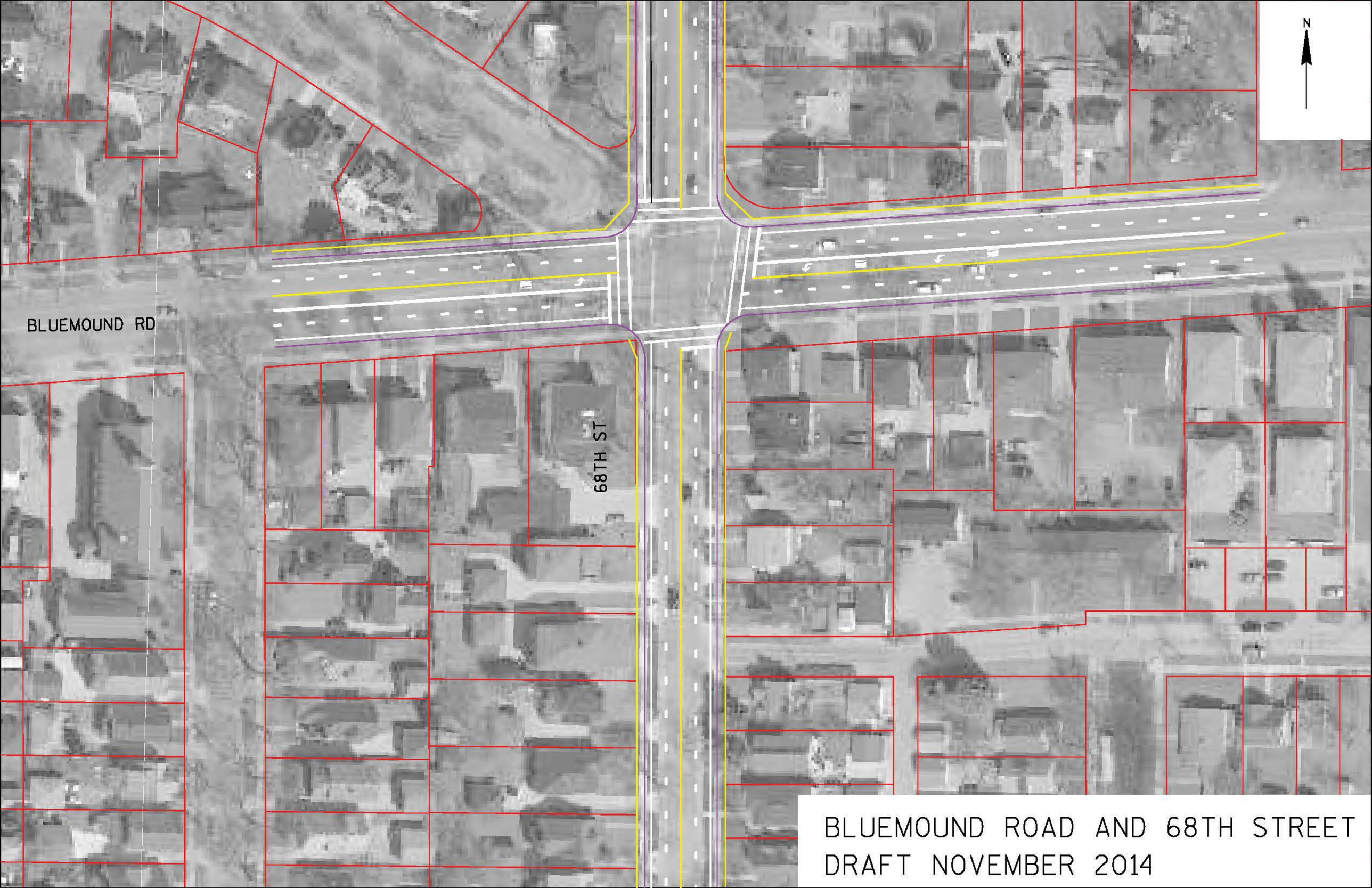
Appendix C: LOCAL ROAD INTERSECTION ANALYSIS LOCATIONS

WISCONSIN AVE AND 35TH STREET
DRAFT NOVEMBER 2014



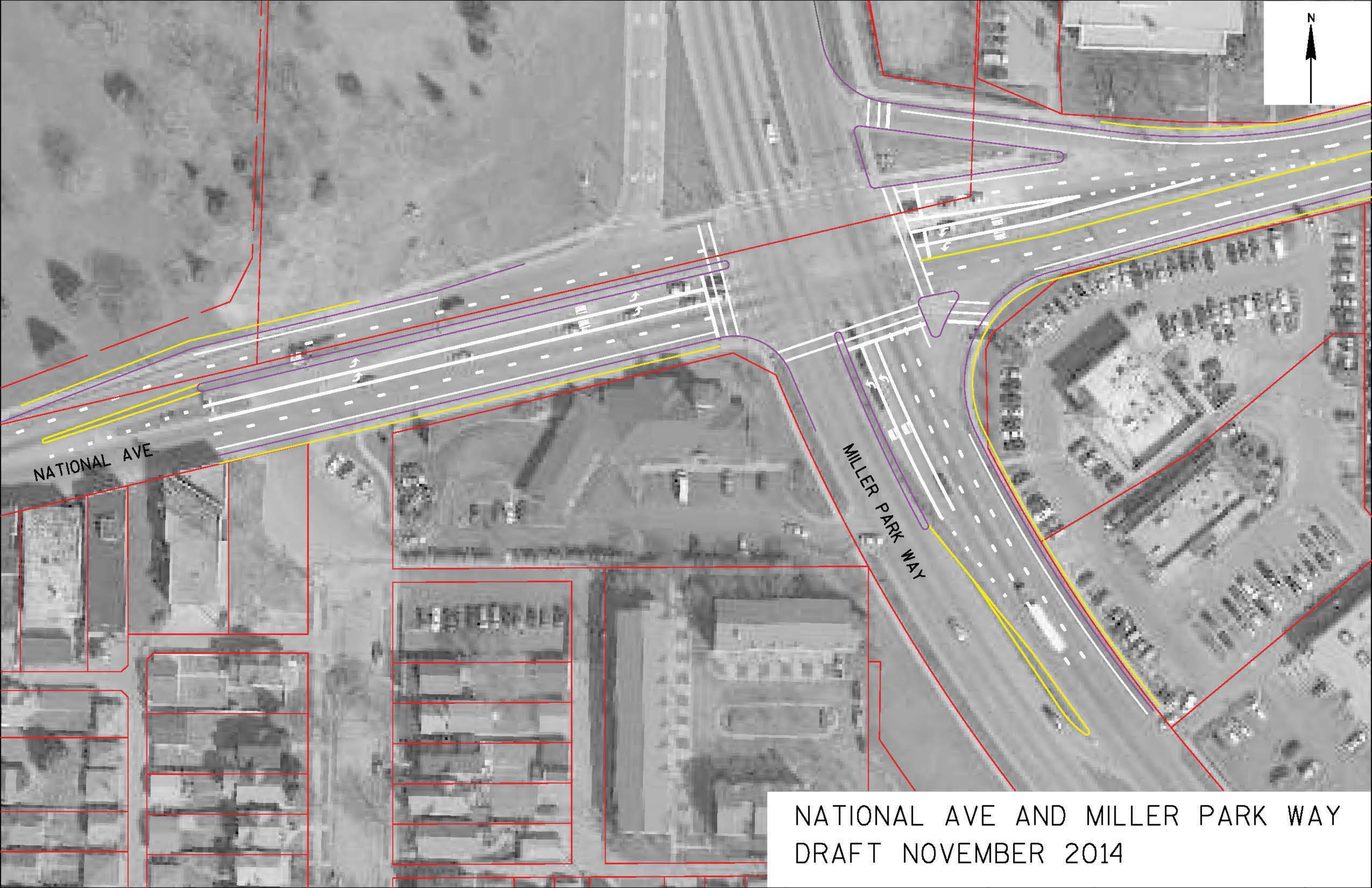
WISCONSIN AVE AND 27TH STREET
DRAFT NOVEMBER 2014

BLUEMOUND ROAD AND HAWLEY ROAD
DRAFT NOVEMBER 2014



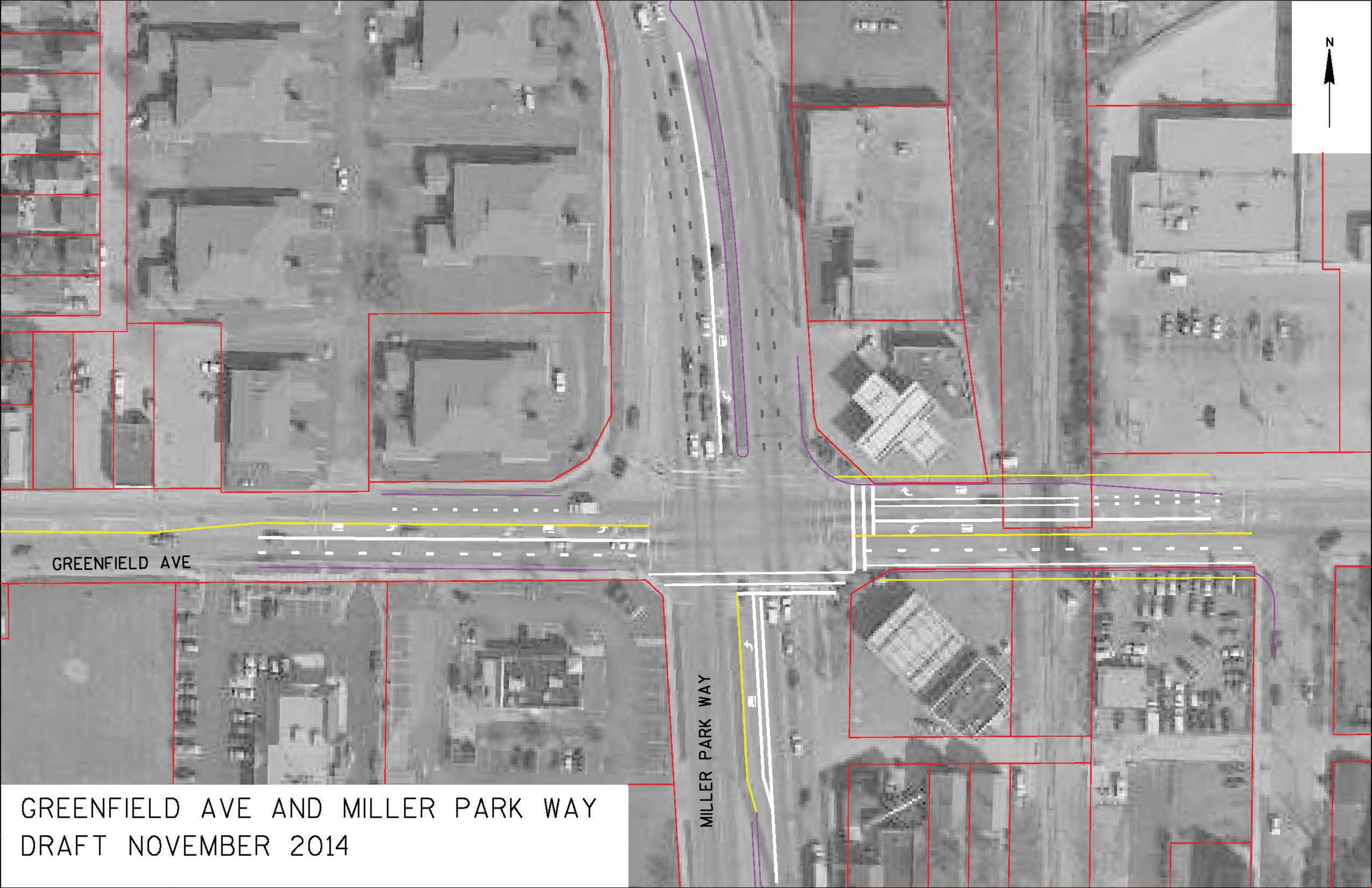
BLUEMOUND ROAD AND 68TH STREET
DRAFT NOVEMBER 2014

WISCONSIN AVE AND 68TH STREET
DRAFT NOVEMBER 2014



NATIONAL AVE AND MILLER PARK WAY
DRAFT NOVEMBER 2014

GREENFIELD AVE AND NATIONAL AVE
DRAFT NOVEMBER 2014



GREENFIELD AVE AND MILLER PARK WAY
DRAFT NOVEMBER 2014

NATIONAL AVE AND 47TH STREET
DRAFT NOVEMBER 2014

GREENFIELD AVE AND 70TH STREET
DRAFT NOVEMBER 2014

Appendix D: Feasible and Prudent Avoidance Alternative Analysis

Feasible and Prudent Avoidance Alternative Analysis

Analysis performed for the Draft Section 4(f) Evaluation determined that the Double Deck alternative in the west segment would result in use of a Section 4(f) historic property – the Soldier's Home National Historic Landmark (NHL). In accordance with 23 CFR 774.3, FHWA may approve the use of a Section 4(f) property if there is no "feasible and prudent" avoidance alternative, as defined in 23 CFR 774.17, and the project includes all possible planning to minimize harm to the property resulting from such use.

The remainder of this section assesses the feasibility and prudency of the At-grade alternative with a half interchange at Hawley Road option (At-grade alternative) through responses to each of the feasible and prudent factors in §774.17. There are no Section 4(f) protected properties in the east segment.

Assessment of Feasibility and Prudence for the At-grade Alternative

(1) A feasible and prudent avoidance alternative avoids using Section 4(f) property and does not cause other severe problems of a magnitude that substantially outweighs the importance of protecting the Section 4(f) property. In assessing the importance of protecting the Section 4(f) property, it is appropriate to consider the relative value of the resource to the preservation purpose of the statute.

(2) An alternative is not feasible if it cannot be built as a matter of sound engineering judgment.

The At-grade alternative was retained for detailed study during following an extensive alternatives development and refinement process because it was deemed feasible from an engineering standpoint based on preliminary engineering efforts performed prior to the Draft EIS phase.

(3) An alternative is not prudent if:

(i) It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need;

(ii) It results in unacceptable safety or operational problems;

Prudency factors (i) and (ii) are addressed together in this response because the project's Purpose and Need statement entails both operational and safety factors; the stated purpose of the project is "*to address the deteriorated condition of I-94, obsolete roadway and bridge design, existing and future traffic demand, and high crash rates.*"

To demonstrate the prudency of the At-grade alternative per factors (i) and (ii), responses are provided here for the following purpose and need factors:

- Replace deteriorating pavement.
- Address the obsolete design of I-94 to improve safety and decrease crashes.
- Accommodate existing and future traffic volumes at an acceptable level of service.
- Maintain a key link in the local, state, and national transportation network.

Replace deteriorating pavement

As part of the At-grade alternative, the existing roadway would be reconstructed, with new subsurface and pavement provided.

Conclusion: The At-grade alternative would replace the existing degraded pavement on I-94 in the project area, thereby satisfying this Need statement; the upgrading of pavement conditions on this segment of I-94 would not result in unacceptable safety or operational problems.

Address the obsolete design of I-94 to improve safety and decrease crashes

The At-grade alternative would upgrade I-94 to current design criteria in most locations. WisDOT and AASHTO criteria call for 12-foot travel lanes and a minimum of 12-foot outside and inside shoulders. In order to fit 8 travel lanes through the cemetery area and not impact the cemeteries, the At-grade alternative would have 11-foot travel lanes and inside and outside shoulders that would be as narrow as 2-feet-wide.[1] The dimensions do not meet WisDOT and AASHTO criteria for the approximately 2,000-foot distance between the cemeteries and would require design exceptions[2]. The At-grade alternative would also require a design exception for inadequate sight distance in the cemetery area. The slight curve on I-94 through the cemeteries, combined with the 2-foot shoulders, would cause the concrete median barrier to reduce sight distance. While design exceptions would be necessary, they do not reach a level that makes it unreasonable to proceed with the project in light of the stated purpose and need, nor do they result in unacceptable safety or operational problems. Lane and shoulder width and sight distance for the section of I-94 outside of the cemetery area in the west segment would meet design criteria.

As part of the At-grade alternative, the Mitchell Boulevard interchange would be removed and two of the four Hawley Road interchange ramps would be removed from I-94. A half interchange at Hawley Road, combined with removing the Mitchell Boulevard interchange, would address the deficient ramp spacing between the Stadium Interchange and Hawley Road interchanges, thus improving safety.

The At-grade alternative is anticipated to reduce crashes on I-94 compared to No Build conditions due to removing two of the four Hawley Road interchange ramps which will eliminate turbulence (traffic entering and exiting) on I-94. Under the At-grade alternative, there would be no place for a disabled vehicle to pull off the freeway in the area between the cemeteries, which could increase congestion during the event, as well as provide potential for additional crashes; there would also be very little room for snow storage. In order to make the narrow lanes and shoulder segments as safe as possible, dynamic traffic management tools to warn drivers of closed lanes in the narrow segment, advance warning signs alerting drivers to the narrow lanes and narrow shoulders, and other tools like reflectors on the center median barrier wall and the outside barrier wall will be investigated in final design and implemented as appropriate.

Conclusion: The At-grade alternative would upgrade I-94 to current design criteria in most locations and is anticipated to reduce crashes on I-94 due to design modifications and traffic operations. Although the At-grade alternative would require the above noted highway design standard exceptions in the 800-foot segment at the narrowest point between the cemeteries, these geometric conditions are not uncommon, especially in dense urban areas, and would not be considered unreasonable with respect to this need statement nor unacceptable from a safety or operational standpoint.

Accommodate existing and future traffic volumes at an acceptable level of service

Under the At-grade alternative, I-94 in the west segment of the I-94 East-West Corridor would operate at a level of service in the morning peak period and level of service C to D in the afternoon peak period in the build year (2022). In the design year (2040), the At-grade alternative with half interchange at Hawley Road would operate at level of service D in both the morning and afternoon peak periods.

Conclusion: FHWA guidance calls for freeways to provide level of service C; however, level of service D is considered acceptable in urban areas like Milwaukee County, where potential impacts to achieve level of service C may not be reasonable. FHWA agreed that level of service D is appropriate for this project. As such

[1] The shoulders would not be 2 feet wide, nor the lanes 11 feet wide, for the entire 2,000-foot section, but rather would taper to this width at the narrowest point between the cemeteries for approximately 800-feet.

[2] At this early stage of the project development process, FHWA and WisDOT cannot guarantee the design exceptions will be approved. FHWA has a process in place to handle requests for exceptions to freeway design standards and it includes WisDOT preparing an Exceptions to Standards Report, which is reviewed by FHWA's Wisconsin Division. The design exceptions that would be required under the At-grade alternative are substantial and unprecedented for an interstate reconstruction project in Wisconsin (the 2013 resurfacing of I-94 from 16th to 35th Streets resulted in 11-foot lanes and narrow shoulders, but that project was approved because it would be in place only a few years until I-94 is reconstructed as part of this project).

the above noted 2040 level of service conditions for I-94 in the project area would not be considered unreasonable with respect to this need statement nor unacceptable from a safety or operational standpoint.

Maintain a key link in the local, state, and national transportation network

The At-grade alternative would maintain I-94 as a continuous 8-lane roadway, an important commuter route, a link in National Highway System, a WisDOT Connections 2030 "backbone" route, and a state and federal "long truck route." It does not meet requirements for a federally designated truck route due to the 11-foot lanes.

Conclusion: The At-grade alternative would partially satisfy this need factor. If oversize/overweight vehicles were permitted to use I-94 through Milwaukee, the vehicles would require the use of two travel lanes through the cemetery area due to the 11-foot lanes and minimal shoulders. Oversize/overweight vehicles would only be permitted to use this portion of I-94 during off-peak travel periods in order to minimize disruption of normal traffic flow.

(iii) After reasonable mitigation, it still causes:

(A) Severe social, economic, or environmental impacts;

An assessment of anticipated social, economic, and environmental impacts for the At-grade alternative is contained in Draft EIS Section 3 and summarized here to address this prudency factor. The At-grade alternative was designed to stay within the existing right-of-way as much as possible to minimize impacts; additional measures to minimize and mitigate impacts are discussed in in the Draft EIS and will be further detailed in the Final EIS and Record of Decision.

- The At-grade alternative would not split any neighborhoods, although the potential access change at the Hawley Road interchange could potentially make access to the neighborhoods and communities that currently use the Hawley Road interchange less convenient.
- The At-grade alternative would result in 5 residential and 2 commercial displacements All acquisitions and relocations will be in compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act.
- The ramps to and from the east would be removed at the Hawley Road interchange. The Hunger Task Force is opposed to losing any freeway access at Hawley Road, because their proximity to the freeway is a key benefit of their location. The VA Medical Center said the half-interchange option at Hawley Road would meet the VA Medical Center's needs, as most of the traffic to and from the medical center that uses the Hawley Road interchange is going to or from the west.
- Under the At-grade alternative, transit routes that use I-94 and their riders would also benefit from reduced congestion. Adding capacity to I-94 will reduce traffic volumes on some local streets near the corridor, which could benefit transit routes that use those streets. Additionally, there is potential for minor improvements to some local intersections to improve traffic flow.
- WisDOT assessed the economic impact of closing the Hawley Road interchange. Hawley Interchange economic analysis assess a complete closure of the interchange, whereas half of the interchange would remain open under the preferred alternative. Therefore the economic impacts would likely be less than documented in the analysis. The analysis found that completely removing the Hawley Road interchange would result in a loss of between up to 7 jobs and reduce the County's $52 billion gross regional product by less than a million dollars. An extension of Washington Street between 70th Street and Hawley Road will provide an alternative route.
- Alternatives were designed to stay within existing right-of-way as much as possible to minimize the impact on surrounding environmental corridors. New freeway bridges across the Menomonee River would cross the 100-year floodplain but, with the exception of new bridge piers, would not place fill into the floodplain. All bridges would be sized to pass a 100-year flood without interruption to traffic due to flood damage to the roadway or structures, and would not increase headwater elevations by more than the permissible 0.01 foot. The floodplain structures would not interrupt or terminate a transportation

route needed for emergency vehicles or routes that serve as an area's only evacuation route. All floodplain crossings would be constructed in accordance with the WisDOT/WDNR Cooperative Agreement and federal requirements. Crossings would be consistent with local floodplain management goals and objectives, which include maintaining the natural and beneficial floodplain values and avoiding support of incompatible floodplain development. Additionally, floodplain crossings would be designed to avoid impacts to existing flood profiles on adjacent landowners' properties.

- The build alternatives are not expected to adversely affect drinking water supply or localized shallow groundwater.
- No wetlands would be affected in the west segment or east of the Stadium Interchange. There would be 0.1 acre of wetland impacted within the Stadium Interchange.
- Under the build alternatives, some small swaths of upland habitat adjacent to I-94 may be impacted. There would be no upland habitat impacts near the cemeteries.

Conclusion: The At-grade alternative would satisfy this need factor; based on the results of the collective environmental resource assessments contained in the Draft EIS and summarized above, it is reasonable to conclude that the At-grade alternative would not result in "severe" social, economic, or environmental impacts.

(B) Severe disruption to established communities;

The At-grade alternative would not result in a severe disruption to established communities, as evidenced by the following findings from the Draft EIS:

- The At-grade alternative would not split any neighborhoods, although the potential access change at the Hawley Road interchange could potentially make access to the neighborhoods and communities that currently use the Hawley Road interchange less convenient.
- Land use on the remaining parcels of land adjacent to I-94 would likely not change as a result of the At-grade alternative.
- Because the At-grade alternative would have essentially the same grade and close to the same width as the existing freeway, its character would not change, nor would the visual quality of views toward it from residences to the north and south.
- As discussed in Draft EIS Section 3.19, post-mitigation, the At-grade alternative is not anticipated to result in adverse noise impacts to the residential communities located adjacent to I-94 in the project area. Based on the noise impact results shown in Draft EIS Tables 3-25 and 3-26, WisDOT would incorporate feasible and reasonable noise barriers into the project.

Conclusion: The At-grade alternative would satisfy this need factor; based on the results of the collective environmental resource assessments contained in the Draft EIS and summarized above, it is reasonable to conclude that the At-grade alternative would not result in a "severe" disruption to established communities.

(C) Severe disproportionate impacts to minority or low income populations;

WisDOT and FHWA have not identified any disproportionately high and adverse effects on any minority populations or low-income populations in accordance with the provisions of Executive Order 12898 and FHWA Order 6640.23 as a result of the proposed action, regardless of the alternative implemented. While there have been no disproportionately high and adverse effects on environmental justice populations identified, there are still impacts related to the project.

Conclusion: Based on the results of the environmental justice assessments contained in the Draft EIS and summarized above, it is reasonable to conclude that the At-grade Alternative would not result in a "severe disproportionate" impact to minority or low-income populations.

(D) Severe impacts to environmental resources protected under other Federal statutes;

Based on analysis presented in Draft EIS Section 3.18, no federally protected threatened or endangered species have been identified in the study area. The At-grade alternative could be designed to have a No Adverse Effect on federally protected historic properties, although coordination will continue during design with consulting parties under Section 106.

Conclusion: Based on the results of Draft EIS analysis, it is reasonable to conclude that the At-grade alternative would not result in "severe" impacts to environmental resources protected under Federal statutes.

(iv) It results in additional construction, maintenance, or operational costs of an extraordinary magnitude;

The At-grade alternative with half interchange at Hawley Road would cost $125 million to construct, with traditional follow-on operation and maintenance costs.

Conclusion: Based on the results of Draft EIS analysis, it is reasonable to conclude that the At-grade alternative would not result in additional construction, maintenance, or operational costs of an "extraordinary" magnitude.

(v) It causes other unique problems or unusual factors; or

No unique problems or unusual factors related to the At-grade alternative have been discovered as a result of project analysis.

(vi) It involves multiple factors in paragraphs (3)(i) through (3)(v) of this definition, that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

No combination of factors from paragraphs (3)(i) through (3)(v) of this definition would result in a conclusion of "unique problems or impacts of an extraordinary magnitude" related to the At-grade alternative.

Conclusion

Based on the analysis in this *Feasible and Prudent Avoidance Alternative Analysis*, it is preliminarily determined that the At-grade alternative with half interchange at Hawley Road, which has been identified as the Preferred Alternative, is a feasible and prudent avoidance alternative per 23 CFR 774.17.

CONCEPTUAL STAGE RELOCATION PLAN

1060-27-00

I94 East West Freeway

70th Street to 16th Street

Milwaukee County

Prepared by:
Wisconsin Department of Transportation
SE Region
Tracey Johnsrud
Relocation Specialist
July 31, 2014

1. Purpose:

The purpose of a relocation plan is to assure that the agency will provide adequate relocation payments and services and to determine whether displaced persons can be satisfactorily relocated. The conceptual stage relocation plan is written in estimate form to determine the following:

a. The approximate number of households, individuals, families, businesses and non-profit organizations to be relocated by the proposed project.
b. The probable availability of decent, safe and sanitary replacement housing within the financial means of the individuals and families affected by the project.
c. The probable availability of businesses, farms and non-profit organizations affected by the project.
d. The estimated total relocation assistance costs.

2. Project Description:

The proposed action is to reconstruct Interstate 94 (I-94) between 70th Street and 16th Street in Milwaukee, Wisconsin. The scope of the proposed action is to rebuild the freeway and bridges, modify interchange access to improve safety and traffic flow, and reconstruct local streets affected by the freeway reconstruction. The proposed action would accomplish the following:

- Address the obsolete design of I-94 East-West Corridor to decrease crashes.
- Accommodate future traffic volumes at an acceptable level of service.
- Maintain a key link in the local, state, and national transportation network.
- Replace deteriorating pavement.

The project would neither require nor foreclose future transportation improvements adjacent to the study area. The proposed action would provide a safe and efficient transportation system while minimizing impacts to the natural and built environment, to the extent feasible and practicable.

The study-area termini are 70th Street on the west and 16th Street on the east, a distance of 3.5 miles. The service interchanges at 68th/70th Streets, Hawley Road, Mitchell Boulevard, and 35th Street are included in the study, as is the Stadium Interchange.

3. Estimated Displacements:

Between 7 and 13 residences and between 7 and 10 business would be displaced. In addition, two vacant commercial buildings/parcels would be acquired. The number of displaced residences and businesses varies based on the alternatives under consideration.

In the west segment a cemetery maintenance business and a gentleman's club may be displaced.

On the east segment the potential displacements are a dog day care, a walk-in health clinic, a veterinarian clinic, a truck dealer, a bar, a towing business, a gas station undergoing reconstruction, and a storage facility.

4. Beneficial and Adverse Effects:

The area will experience short-term adverse effects to existing businesses and residences due to temporary disruptions in access during construction. After construction and over the long term, the beneficial effects will be a safer freeway with less congestion. Local business and property owners feel that access to their property needs to be maintained during construction and access restrictions should be kept as short as possible.

5. Relocation Assistance:

Business and residential acquisitions and relocations will be completed in accordance with the "Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended." In addition to providing for payment of "Just Compensation" for property acquired, additional benefits are available to eligible displaced persons required to relocate from their business or residence. Available benefits for a business include: advisory services, reimbursement of moving expenses, replacement business payment differential and re-establishment expenses. Available benefits for residential include: advisory services, reimbursement of moving expenses, replacement housing payments or down payment assistance. In compliance with State law, no person would be displaced unless a comparable replacement business or comparable replacement swelling would be provided.

Federal law also requires that decent, safe, and sanitary replacement dwelling must be made available before any residential displacement can occur.

Compensation is available to all displaced persons without discrimination. Before initiating property acquisition activities, business owner/tenant or property owners would be contacted and given an explanation of details of the acquisition process and Wisconsin's Eminent Domain Law under Section 32.05, Wisconsin Statutes. Any property to be acquired would be inspected by one or more professional appraisers. The property owner would be invited to accompany the appraiser during the inspection to ensure the appraiser is informed of every aspect of the property. Property owners will be given the opportunity to obtain an appraisal by a qualified appraiser that will be considered by WisDOT in establishing just compensation. Based on the appraisal(s) made, the value of the property would be determined, and that amount offered to the owner.

6. Anticipated number of <u>households</u> that will be relocated:

Total Number of Households to be Relocated: 9

a. **Number by Ownership:**

Number of Households Living in Owner Occupied Building: 6	Number of Households Living in Rented Quarters: 9

b. **Number of Available and Comparable Dwellings by Location:**

Within a 4 Mile radius:	
10 – 2 bedroom homes	2 – 5 bedroom homes
17 – 3 bedroom homes	1 – 6 bedroom home
15 – 4 bedroom homes	

7. **Number of Available and Comparable Residential Dwellings by Type and Price:**

Single Family Dwellings:	Price Range:
5- Single Family	$60,000 – $70,000
2 - Single Family	$70,000 - $80,000
9 - Single Family	$80,000 - $90,000
10 - Single Family	$90,000 - $100,000
12 - Single Family	$100,000 - $130,000
8 - Single Family	$130,000 - $140,000

Apartments for rent:	Price Range:
14 - 1 bedroom	$395 - $890
34 - 2 bedroom	$425 - $930
14 – 3 bedroom	$80,000 - $90,000

Number of 2 family Dwellings in a 4 mile radius :	Price Range:
75 – 2 Family Dwellings	$60,000 - $150,000
Number of multi – family dwellings in a 4 mile radius:	Price Range:
19 – Multi family	$75,000 - $130,000

Number of Dwellings:	Relocation Cost Estimate:
6 Single Family	**$ 156,000.00**
9 Tenant Occupied	**$ 144,000.00**
1 Vacant Single Family	**$ 0.00**

8. **Estimated number of businesses that would be displaced because of the project:**

Business/Job Type	Businesses		
	Displaced Businesses	Value	Relocation Cost Estimate
Retail: Doggie Daycare, Badger Truck	2	$1,541,200.00	$330,000.00
Service – Cemetery Garage, Kennel Club, Vet Clinic, Urgent Care, Daycare	5	$1,304,400.00	$655,000.00
Wholesale			
Manufacturing	3	$1,863,000.00	$505,000.00
Other: Restaurant			
Gas/Convenience Store	1	???-CITGO	$135,000.00
Entertainment	2	$352,700.00	$185,000.00

9. **Number of available and comparable business buildings by type and price:**
   A. 11 - Warehouses for lease in a 7 mile radius: 6,000SF – 142000SF: $0.23 - $.038 per SF
   B. 8 – Warehouses for sale in a 7 mile radius: 21,340SF – 45,320 SF: $635,000 – 1,600,000
   C. 3 – Daycares for sale in a 7 mile radius: 10,000SF – 15,616SF: $330,000 - $795,000
   D. 40+ - Retail(& daycare) for lease in a 7 mile radius: 1,000SF – 29,000SF:$0.25 -$3.65/SF
   E. 3 – Adult Entertainment for lease in a 10 mile radius: 4,600SF – 7,175SF (more SF available) $0.75 - $0.83 / SF
   F. 3 – Gas Stations for sale in Milwaukee County: 880SF – 1,350SF: $300,00 - $650,000
   G. 5 – Medical Offices for sale in 10 Mile radius: 5,496SF – 40,328SF: $299,000 - $1,5000,000

TOTAL RESIDENTIAL RELOCATION COST ESTIMATE: $300,000.00
TOTAL BUSINESS RELOCATION COST ESTIMATE: $1,810,000.00

10. **Data Sources:**
    a. Multiple Listing Service (MLS)
    b. Loopnet
    c. Internet Real Estate Sites

Fine Particulate Matter Hot-Spot Analysis Requirements for the I-94 Project

Date: August 5, 2013

The purpose of this paper is to provide the joint position of the Wisconsin Department of Transportation (WisDOT) and the Wisconsin Department of Natural Resources (WDNR) regarding the need for inclusion of a fine particulate matter ($PM_{2.5}$) hot-spot analysis as part of the Environmental Impact Statement (EIS) for the proposed I-94 transportation project.

Background

WisDOT, in cooperation with the Federal Highway Administration (FHWA), is preparing an EIS for the I-94 East-West Corridor in Milwaukee County. The I-94 study area includes approximately 2.85 miles of the I-94 freeway from 70th Street (west limit) to 25th Street (east limit). See Appendix A – Project Location Map.

Milwaukee County is currently in nonattainment for the 2006 $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS). However, WDNR requested that the U.S. Environmental Protection Agency (EPA) redesignate the area to attainment on June 5, 2012. A discussion regarding the potential for $PM_{2.5}$ impacts is required as part of the EIS for the project. A determination of whether or not a $PM_{2.5}$ hot-spot analysis is required must be made through the interagency air quality consultation process as identified in the appropriate sections of 40 CFR 93.105.

Several project alternatives that would be considered an "expanded highway" for purposes of making a $PM_{2.5}$ hot-spot analysis applicability determination are currently under consideration for detailed analysis in the EIS.

Hot-Spot Analysis Applicability Rules and Guidance

Federal rules and guidance have been established for determining $PM_{2.5}$ hot-spot analysis applicability. Rules and guidance that pertain to the proposed I-94 project include:

- 40 CFR 93.123(b)(1)i – v. indicates the types of projects for which a hot-spot demonstration is required.
- The EPA document: *"Transportation Conformity Guidance for Quantitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas"* issued in December 2010 (hereinafter referred to as the December 2010 guidance).
    - The Executive Summary of the December 2010 guidance which states, "This guidance is to be used by state and local agencies to conduct quantitative 'hot-spot analyses' for new or expanded highway or transit projects with significant increases in diesel traffic."
    - Section 2.2 of the December 2010 guidance which states, "A PM hot-spot analysis is not required for projects that are <u>not</u> of local air quality concern".
    - Section 2.2 of the December 2010 guidance which states, "See Appendix B for examples of projects that are most likely to be of local air quality concern as well as examples of projects that are not."

Basis for the Determination of Hot-Spot Analysis Applicability

On February 20, 2013, WisDOT and WDNR discussed $PM_{2.5}$ analysis for the I-94 project and agreed that:

- 40 CFR 93.123(b)(1)i which states, "New or expanded highway projects that have a significant number of or significant increase in diesel vehicles" is the project-type that applies to the proposed I-94 project for purposes of the $PM_{2.5}$ hot-spot analysis applicability determination;

- The proposed I-94 project meets the definition of an "expanded highway"; and

- The basis for determining whether the project would be of local air quality concern is, "Similar highway projects that involve a significant increase in the number of diesel transit buses and/or diesel trucks" as stated in Appendix B.2 of the December 2010 guidance.

Basis for an Appropriate "Significant Increase" Determination

In order to better define "significant increase", EPA is interested in the difference between the total daily diesel trucks for the No-Build and Build Scenarios, as stated in a 2/21/13 e-mail from WDNR to WisDOT (see Appendix B). WisDOT and WDNR agreed that the difference between the total diesel trucks in the 2040 Southeastern Wisconsin Regional Planning Commission (SEWRPC) forecasted average weekday traffic volumes for the 2040 No-Build and Build Scenarios would be the basis for determining if there is a significant increase in the number of diesel trucks.

Further discussions with EPA and FHWA led to a conclusion that the "open-to-traffic" year should also be included as part of the analysis along with the 2040 scenarios. For purposes of this analysis, it is assumed I-94 construction will be completed and open to traffic in 2025 if an expanded highway alternative is selected. In addition, WisDOT and WDNR originally used average annual weekday traffic (AAWDT) but decided to base the final analysis in this paper on average annual daily traffic (AADT) to be consistent with EPA guidance.

Project-Level Planning Assumptions

The latest planning assumptions must be used for the purposes of air quality conformity and hot-spot determinations per 40 CFR 93.110. The conservative planning assumptions include:

- There is a high probability that the diesel truck percentages in the corridor as a portion of the total vehicle mix will likely decline because the project corridor has little room for additional industrial/commercial development that will lead to additional diesel trucks. However, it will be assumed that the diesel truck percentages of the total vehicle mix will remain essentially the same over the SEWRPC forecast period.

- The percentage of diesel trucks in the vehicle mix in the I-94 corridor between the 70th St. and the Stadium Interchange remains the same for the entire corridor length.

- The percentage of diesel trucks in the vehicle mix in the I-94 corridor between the Stadium Interchange and 25th St. remains the same for the entire corridor length.

- The 2025 and 2040 No-Build forecasts assume that all projects in the SEWRPC Regional Transportation Plan (RTP), other than the I-94 project in this analysis, will proceed to construction. The 2025 and 2040 Build forecasts assume all projects in the SEWRPC RTP will be constructed.

Projected 2025 and 2040 I-94 Project Traffic Information

The current existing condition for the highway study area based on WisDOT highway data is as follows (see Appendix C):

Metric	70th Street to Stadium Interchange Segment (i.e., "West Segment")	Stadium Interchange to 25th Street Segment (i.e., "East Segment")
Average Annual Daily Traffic (AADT)	147,700	150,400
Percentage Diesel Trucks	6.7%	3.7%
Level of Service (LOS)	E – F	E – F

For purposes of the future year traffic projections, it is assumed I-94 construction will be completed and open to traffic in 2025 if an expanded highway alternative is selected. In addition, 2040 traffic projections are included as a horizon planning year.

2025 Traffic Projections

Future Year Scenario	Metric	70th Street to Stadium Interchange Segment (i.e., "West Segment")	Stadium Interchange to 25th Street Segment (i.e., "East Segment")
2025 No-Build Scenario (See Appendix C)	Projected AADT	159,700	165,350
	Projected Percentage Diesel Trucks	6.7%	3.7%
	Projected Number of Diesel Trucks	10,700	6,118
	Level of Service (LOS)	E – F	E – F
2025 Build Scenario (See Appendix C)	Projected AADT	174,800	177,600
	Projected Percentage Diesel Trucks	6.7%	3.7%
	Projected Number of Diesel Trucks	11,712	6,571
	Level of Service (LOS)	D or better	D or better
Comparison Between No-Build and Build Scenarios	Projected AADT Increase	15,100	12,250
	Projected Increase of Diesel Trucks	1,012	453
	Projected Percentage Increase of Diesel Trucks	9.5%	7.4%

2040 Traffic Projections

Future Year Scenario	Metric	70th Street to Stadium Interchange Segment (i.e., "West Segment")	Stadium Interchange to 25th Street Segment (i.e., "East Segment")
2040 No-Build Scenario (See Appendix C)	Projected AADT	166,400	172,000
	Projected Percentage Diesel Trucks	6.7%	3.7%
	Projected Number of Diesel Trucks	11,149	6,364
	Level of Service (LOS)	E – F	E – F
2040 Build Scenario (See Appendix C)	Projected AADT	186,900	193,500
	Projected Percentage Diesel Trucks	6.7%	3.7%
	Projected Number of Diesel Trucks	12,522	7,159
	Level of Service (LOS)	D or better	D or better
Comparison Between No-Build and Build Scenarios	Projected AADT Increase	20,500	21,500
	Projected Increase of Diesel Trucks	1,373	795
	Projected Percentage Increase of Diesel Trucks	12.3%	12.5%

Projected level of service, which provides a measure of congestion, is also provided with the 2025 and 2040 traffic projections. The Highway Capacity Manual (HCM) and American Association of State Highway and Transportation Officials (AASHTO) Geometric Design of Highways and Streets ("Green Book") list the following levels of service:

- LOS A – Free Flow
- LOS B – Reasonably Free Flow
- LOS C – Stable Flow
- LOS D – Approaching Unstable Flow
- LOS E – Unstable Flow
- LOS F – Forced or Breakdown Flow

The HCM is a publication of the Transportation Research Board of the National Academies of Science. Level of service is expected to improve from E – F under a No-Build Scenario to D or better under a Build Scenario in both 2025 and 2040.

Proposed I-94 Project Diesel Truck Increase Significance Determination

There is no guidance provided by EPA for determining when an increase in diesel trucks reaches the level of "significant" for expansion of existing highways. WisDOT and WDNR provide the following examples of why the two agencies have concluded that the numbers cited in the previous discussion are not indicative of a significant diesel truck increase.

1. **The proposed I-94 project should not be considered a project of local air quality concern because it is very unlikely that the Build Scenario will degrade the local air quality more than the No-Build Scenario**.

   Local air quality, including $PM_{2.5}$, is directly related to emission sources, including diesel trucks within the area, not the activity on a single highway. The number of diesel trucks moving through the east-west corridor will remain the same with or without I-94 undergoing a build expansion. This is because the need that generates these trips remains the same, as there is little room for additional development within the corridor. Further, the proposed project does not provide additional new access to I-94.

   The SEWRPC 2025 and 2040 Forecast AADT numbers for the 2025 and 2040 Build Scenarios are based on the assumption that this is not "new" or "induced" traffic, but rather that a substantial proportion of the increased traffic on I-94 is likely local traffic that would otherwise use parallel east-west surface arterials due to increasing congestion levels on I-94 if no additional capacity is provided.

   The year 2025 forecasted average daily traffic diversion under the Build Scenario relative to the No-Build Scenario schematic in Appendix D developed based on the 2035 Regional Transportation System Plan shows the expected traffic diversion related to the No-Build condition ranges from 6,550 to 16,050 AADT and 275 to 650 diesel vehicles throughout the I-94 corridor. A substantial portion of this diversion (1,900 to 4,750 AADT, 40 to 145 diesel vehicles) occurs on parallel roadways within 0.4 miles of I-94. In fact, this increase in diesel truck trips on the surface streets due to a No-Build Scenario will likely generate more emissions than an I-94 Build Scenario as a result of increases in starting, stopping and idling at signalized intersections as congestion on surface streets worsens from additional traffic diversion.

   Under the No-Build Scenario, the current level of congestion on I-94 will likely increase. This will further increase diesel $PM_{2.5}$ emissions in the immediate corridor area as a result of increased starting, stopping and idling on the interstate, as well as lower operating speeds, all resulting in the emission generators remaining in the area for a significantly longer period of time. Conversely, the Build Scenario is projected to increase the level of service from F to D, substantially reducing the amount of starting, stopping and idling on the interstate.

   MOVES2010a Regional Sensitivity Analysis, a document published by the John A. Volpe National Transportation Systems Center, discusses the sensitivity of various input parameter effects on emissions rates using the Motor Vehicle Emissions Simulator (MOVES) computer model. The Executive Summary of the document indicates emissions rates associated with LOS E showed a larger variation than LOS B, C or D, while emissions rates associated with LOS F were significantly higher. See Appendix E – *MOVES2010a Regional Sensitivity Analysis* Executive Summary. Based on this document, it is intuitive that the Build Scenario will improve the local air quality, while the No-Build Scenario will worsen local air quality even though there will be a small percentage of diesel traffic returning to the I-94 corridor from parallel east-west local streets.

2. **Based on declines in $PM_{2.5}$ emission factors, the projected increases in diesel trucks are not significant.**

Based on prior MOVES modeling conducted by WDNR for a highway project in Wisconsin, $PM_{2.5}$ emissions factors decreased on average by 25.9% for gasoline and light-duty diesel vehicles from 2015 through 2030 and by 82.7% for heavy-duty diesel vehicles over the same time period. In addition, emissions factors decreased on average by 24.6% for gasoline and light-duty diesel vehicles from 2015 through 2040 and by 93.1% for heavy-duty diesel vehicles over the same time period. See Appendix F – Motor Vehicle Emissions Simulator (MOVES) Emission Factor Analysis. In light of the projected declines in $PM_{2.5}$ emissions factors, the projected I-94 daily diesel truck increases do not appear to be significant. The number of diesel trucks is projected to increase by 453 – 1,012 and 795 – 1,373 in 2025 and 2040, respectively, for the No-Build vs. Build Scenarios.

The prior modeling assumed no major congestion for the analysis years (2015, 2030, and 2040). Given that the I-94 corridor is currently experiencing major congestion for parts of the day and the level of service of additional segments of I-94 will continue to decrease under the No-Build Scenario, it can be assumed actual emission factor decreases will be even greater when comparing the No-Build to the Build Scenarios for the I-94 project.

3. **Rural – Urban $PM_{2.5}$ differences do not support this project being labeled as a "project of significant air quality concern."**

Average hourly $PM_{2.5}$ ambient concentrations at WDNR's College Avenue monitoring site (*ID: 550790058*) in Milwaukee, an urban condition, are representative of ambient concentrations in the area of the proposed I-94 project. The College Avenue monitoring site is approximately 270 meters from I-94 (see Appendix G). Average hourly $PM_{2.5}$ ambient concentrations at the Horicon monitoring site (*ID: 550270001*) represent a rural condition with no localized traffic impacts. A detailed comparison between the two sites is shown in Appendix H. Upon a request by EPA, wind roses were developed for WDNR's College Avenue monitoring site based on meteorological data from General Mitchell Airport in Milwaukee collected by the National Weather Service (NWS) (see Appendix I). The airport is approximately 1 – 2 miles from WDNR's College Avenue monitoring site.

A comparison of the two monitoring sites, based on 2011 air monitoring data, indicates the average daily $PM_{2.5}$ differences by season are as follows:

	Winter	**Spring**	**Summer**	**Fall**
Daily Average $PM_{2.5}$ Concentration – College Avenue	15.11 µg/m^3	12.45 µg/m^3	15.30 µg/m^3	13.53 µg/m^3
Daily Average $PM_{2.5}$ Concentration – Horicon	11.68 µg/m^3	8.89 µg/m^3	8.76 µg/m^3	7.99 µg/m^3
Difference (College Ave. – Horicon) (i.e., potential traffic culpability)	3.43 µg/m^3	3.56 µg/m^3	6.54 µg/m^3	5.54 µg/m^3

These are small seasonal differences in $PM_{2.5}$ concentrations considering there is a major freeway located near the College Avenue monitoring site (i.e., approximately 270 meters) and Horicon is a rural site. While it would be desirable to use 2011 traffic count data to compare with the $PM_{2.5}$ monitoring data, I-94 (generally between the Marquette Interchange and State Highway 16) was resurfaced in Milwaukee and Waukesha Counties in 2010 and 2011 impacting the traffic counts in those years. The most recent traffic count data without this impact is for the year 2009 and is included in Appendix C. A comparison of forecast year 2025 AADT volumes to year 2009 traffic count data shows a maximum 18.3% increase

from 147,700 to 174,800 AADT along I-94 east of Hawley Road under the Build Scenario and a maximum 9.9% increase from 150,400 to 165,350 AADT along I-94 east of the Stadium Interchange under the No-Build Scenario.

If it is assumed that the **entire** difference between the rural and urban $PM_{2.5}$ concentrations is from local traffic impacts, which is an unrealistic, but worst-case assumption, the average difference in daily $PM_{2.5}$ concentrations between College Avenue and Horicon, which would be indicative of potential traffic culpability, may be as follows in 2025:

Scenario	Potential Traffic Culpability (*Average Difference in Daily $PM_{2.5}$ Between College Avenue and Horicon*) - 2025			
	Winter	Spring	Summer	Fall
Build Scenario (*18.3% Increase*)	4.06 µg/m^3	4.21 µg/m^3	7.74 µg/m^3	6.55 µg/m^3
No-Build Scenario (*9.9% Increase*)	3.77 µg/m^3	3.91 µg/m^3	7.19 µg/m^3	6.09 µg/m^3
Difference	0.29 µg/m^3	0.30 µg/m^3	0.55 µg/m^3	0.46 µg/m^3

For 2040, the comparison of forecast year 2040 AADT volumes to year 2009 traffic count data shows a maximum 26.5% increase from 147,700 to 186,900 AADT along I-94 east of Hawley Road under the Build Scenario and a maximum 14.4% increase from 150,400 to 172,000 AADT along I-94 east of the Stadium Interchange under the No-Build Scenario.

If it is assumed that the **entire** difference between the rural and urban $PM_{2.5}$ concentrations is from local traffic impacts, which is am unrealistic, but worst-case assumption, the average difference in daily $PM_{2.5}$ concentrations between College Avenue and Horicon, which would be indicative of potential traffic culpability, may be as follows in 2040:

Scenario	Potential Traffic Culpability (*Average Difference in Daily $PM_{2.5}$ Between College Avenue and Horicon*) - 2040			
	Winter	Spring	Summer	Fall
Build Scenario (*26.5% Increase*)	4.34 µg/m^3	4.50 µg/m^3	8.27 µg/m^3	7.01 µg/m^3
No-Build Scenario (*14.4% Increase*)	3.92 µg/m^3	4.07 µg/m^3	7.48 µg/m^3	6.34 µg/m^3
Difference	0.42 µg/m^3	0.43 µg/m^3	0.79 µg/m^3	0.67 µg/m^3

These small seasonal increases in traffic culpability between the Build and No-Build Scenarios lead to the conclusion that the forecasted change in traffic for the I-94 corridor project is not significant as it relates to future $PM_{2.5}$ concentrations.

The latest design value, based on 2010 – 2012 data, for the Horicon site is 25.5 µg/m^3 and for the College Avenue site is 30.3 µg/m^3, both well below the 2006 $PM_{2.5}$ NAAQS of 35 µg/m^3. This is a design value difference of only 4.8 µg/m^3 between the two sites. If the introduction of a major freeway, with 147,700 AADT results in worst-case a 4.8 µg/m^3 difference, then an increase of traffic to 177,600 AADT in 2025 and 193,500 AADT in 2040 may result in approximately a 5.8 µg/m^3 and 6.3 µg/m^3 difference, respectively, with a predicted design value of 31.3 µg/m^3 and 31.8 µg/m^3 in 2025 and 2040, respectively. Again, this is "worst-case" because it assumes the entire difference in design values between Horicon and College Avenue is solely from the freeway. The projected 2025 design value of 31.3 µg/m^3 and projected 2040 design value of 31.8 µg/m^3 is still below the $PM_{2.5}$ NAAQS of 35 µg/m^3. Again, we know that

traffic is not the sole contributor to the rural – urban difference. In addition, $PM_{2.5}$ concentrations have been trending downwards in Milwaukee, as discussed later in the paper

4. Regional improvements in air quality in the Milwaukee area should be considered.

In addition to the joint-agency position that the projected increase in diesel truck traffic is not significant, WisDOT and WDNR stress that there are numerous transportation-related mitigation measures currently being implemented to improve air quality in southeast Wisconsin. These mitigation measures are summarized in Appendix J. These WisDOT-sponsored measures, along with other WDNR and EPA initiatives, have resulted in measurable improvements in the air quality of southeastern Wisconsin as evidenced by the last seven $PM_{2.5}$ design values for the Milwaukee-Racine Nonattainment Area shown in the following table.

Years	Milwaukee-Racine Nonattainment Area
2004 – 2006	41 $\mu g/m^3$
2005 – 2007	41 $\mu g/m^3$
2006 – 2008	37 $\mu g/m^3$
2007 – 2009	37 $\mu g/m^3$
2008 – 2010	33 $\mu g/m^3$
2009 – 2011	32 $\mu g/m^3$
2010 – 2012	30 $\mu g/m^3$

The NAAQS for 24-hour $PM_{2.5}$ is 35 $\mu g/m^3$. The design values shown in the table are the highest recorded concentrations from various monitors in the three-county nonattainment area.

5. Comparison to the Zoo Interchange Project

A qualitative $PM_{2.5}$ hot spot analysis was conducted for the Zoo Interchange project in Milwaukee County, utilizing the "Transportation Conformity Guidance for Qualitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas" issued March 2006. Traffic data used for that analysis is shown below.

Project Segment	Existing 2011 AADT	Projected Year 2035 AADT
North Leg	144,000	197,000
East Leg	143,000	173,000
South Leg	127,000	222,000
West Leg	125,000	179,000
Percentage of Diesel Trucks – West	8.1%*	8.1%
Percentage of Diesel Trucks – South	9.3%*	9.3%

* HDDV Truck Percentages are not expected to change.
* Information taken from $PM_{2.5}$ Qualitative Hot-Spot Analysis for Interstate I-94, and U.S. Highway 45 (Zoo Interchange) Milwaukee County, WI.

Interagency consultation for the Zoo Interchange project began in May 2011. The Interagency Consultation Team determined that based on available traffic data, the Zoo Interchange project was a "project of air quality concern" since it met the definition in 40 CFR 93.123(b)(1)(i) - "New or expanded highway projects that have a significant number or significant increase in diesel vehicles." From the

qualitative analysis it was determined that the Zoo Interchange project met all project level conformity requirements and that the Zoo Interchange project would not cause or contribute to a new violation of the $PM_{2.5}$ NAAQS, or increase the frequency or severity of a NAAQS exceedance.

When compared with the Zoo Interchange project, the proposed I-94 project is different in several key regards:

- The projected AADT for the proposed I-94 project is lower than the projected AADT for the Zoo Interchange (maximum of 177,600 for the east leg of the proposed I-94 project versus 222,000 for the south leg of the Zoo Interchange).

- The percent of diesel traffic is lower on the proposed I-94 project (6.7% and 3.7% versus 9.3% and 8.1% for the Zoo Interchange).

- The increase in diesel vehicles, as a result of the above values, is significantly different. The increase for the Zoo Interchange ranges from 4,374 for the west leg to 8,835 for the south leg. The increase for the proposed I-94 project ranges from 453 to 1,012 for the two legs in 2025 Build Scenario and 795 to 1,373 for the two legs in the 2040 Build Scenario.

- The order of magnitude of this increase from the I-94 project to the Zoo Interchange project is eight to ten times more diesel traffic in 2025 and five to seven times more diesel traffic in 2040.

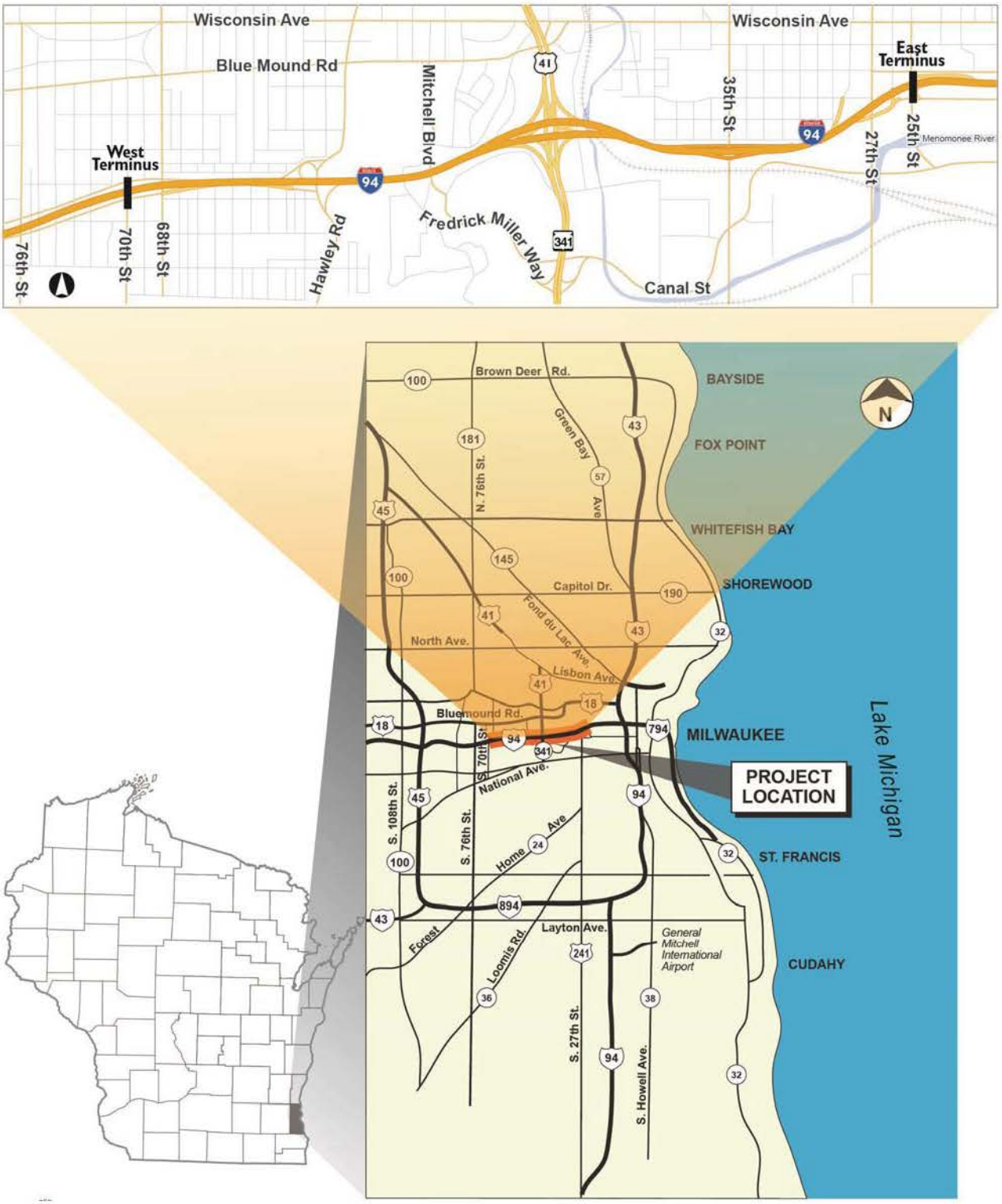
Based on these differences between the two projects, it is evident that the prior determination that the Zoo Interchange was a “project of air quality concern” has no bearing on the determination for the proposed I-94 project.

Conclusion

Based on the data and conservative evaluation provided in this paper, WisDOT and WDNR have determined the expanded highway alternatives for the proposed I-94 project will not result in a significant increase in diesel vehicles. The proposed project is therefore not considered a project of local air quality concern per 40 CFR 93.123(b). It is the joint WisDOT and WDNR position that a $PM_{2.5}$ hot-spot analysis is not required for the I-94 East-West Corridor EIS.

APPENDIX A

Project Location Map


Wisconsin Ave
Wisconsin Ave
Blue Mound Rd
Mitchell Blvd
35th St
East Terminus
25th St
27th St
Menomonee River
West Terminus
76th St
70th St
68th St
Hawley Rd
Fredrick Miller Way
Canal St
Brown Deer Rd.
BAYSIDE
FOX POINT
WHITEFISH BAY
SHOREWOOD
Capitol Dr.
North Ave.
Lisbon Ave.
Fond du Lac Ave.
Green Bay Ave
N. 76th St.
Bluemound Rd.
MILWAUKEE
PROJECT LOCATION
Lake Michigan
National Ave.
S. 108th St.
S. 76th St.
Home Ave
ST. FRANCIS
Layton Ave.
Forest
Loomis Rd.
General Mitchell International Airport
CUDAHY
S. 27th St.
S. Howell Ave.
N

APPENDIX B

“Significant Increase” E-mail from WDNR to WisDOT

Hoch, Joseph A - DNR

From: Hoch, Joseph A - DNR
Sent: Thursday, February 21, 2013 3:14 PM
To: Waldschmidt, Jay - DOT
Subject: DNR - DOT Meeting Follow-up

Hi Jay,

Nice meeting you at the meeting yesterday.

I had a chance to speak with EPA Region V yesterday regarding the requirements of 40 CFR 93.123 (b)(1)(i), which reads as follows:

(1) The hot-spot demonstration required by § 93.116 must be based on quantitative analysis methods for the following types of projects:
(i) New highway projects that have a significant number of diesel vehicles, and expanded highway projects that have a significant increase in the number of diesel vehicles;

Basically, regardless if the fleet mix (i.e., percentage) of diesel vehicles stays the same, EPA would be interested in the difference in traffic counts between the build and no-build scenarios. For example, if the percentage of diesel vehicles stayed constant at 6.8%, but traffic increased (i.e., capacity expanded) by 20,000, as a hypothetical example, from the non-build to the build scenario, that would be an increase of 1,360 diesel vehicles due to the project.

From the meeting yesterday, a map of 2040 estimated traffic counts was provided for the no-build scenario with numbers ranging from 175,000 – 186,000 AADT. Can you or SEWRPC produce something similar under the build scenario? Also, can you do it for multiple years besides just the 2040 year?

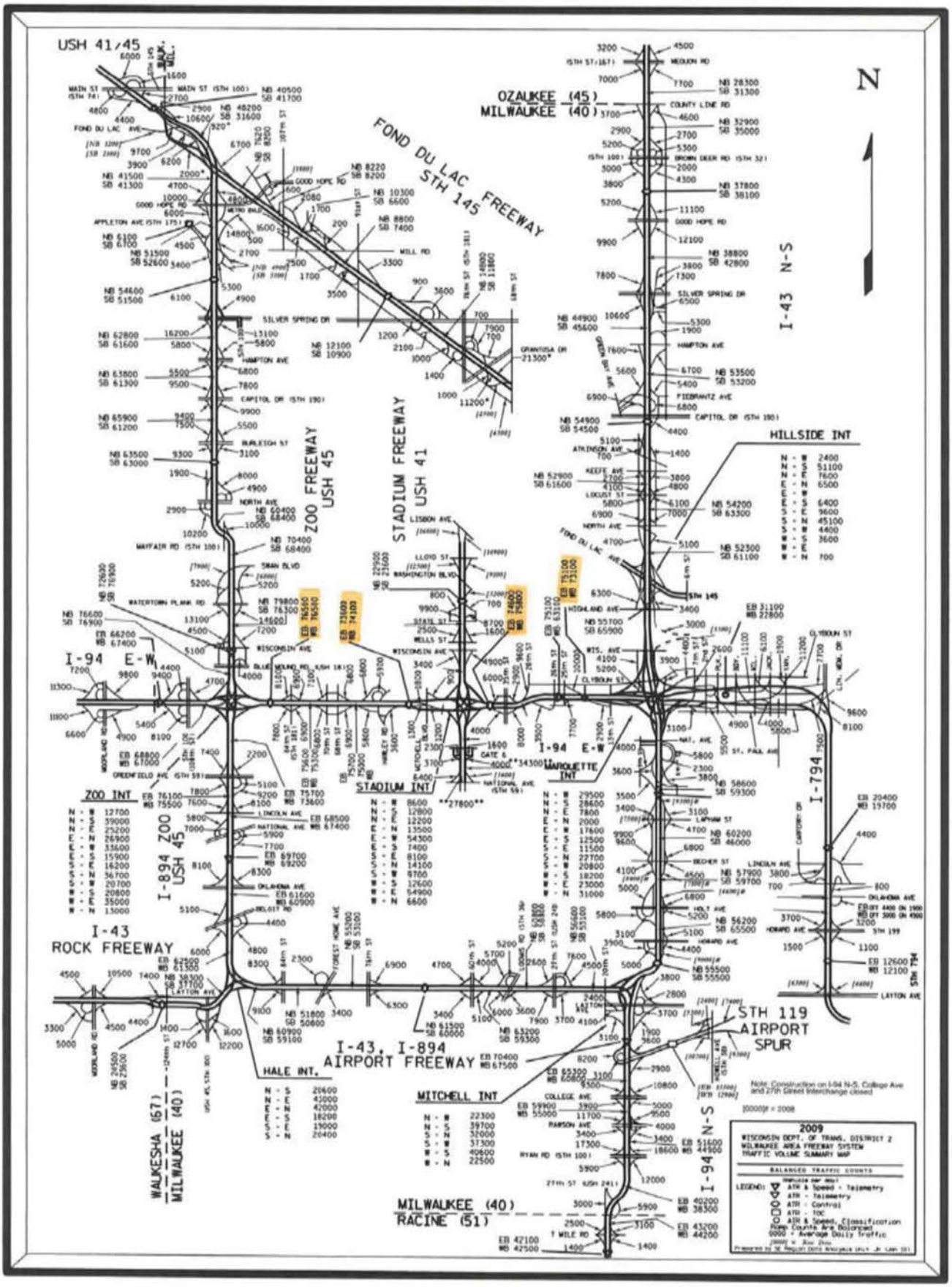
Please feel free to give me a call or setup a meeting if you would like to discuss things further before our scheduled March 1st meeting.

Thanks,
Joe

Joseph Hoch
Regional Pollutants and Mobile Source Section Chief
Wisconsin Department of Natural Resources
(608) 267 - 7543
Joseph.Hoch@wisconsin.gov

APPENDIX C

Existing Condition Traffic Data & 2025 and 2040 No-Build and Build Condition Forecast Volumes



USH 41/45
OZAUKEE (45)
MILWAUKEE (40)
FOND DU LAC FREEWAY
STH 145
ZOO FREEWAY
USH 45
STADIUM FREEWAY
USH 41
I-43 N-S
HILLSIDE INT
I-94 E-W
ZOO INT
STADIUM INT
MARQUETTE INT
I-894 ZOO
USH 45
I-43
ROCK FREEWAY
I-43, I-894
AIRPORT FREEWAY
STH 119
AIRPORT
SPUR
HALE INT.
MITCHELL INT
WAUKESHA (67)
MILWAUKEE (40)
MILWAUKEE (40)
RACINE (51)
I-94 N-S
I-794
N
Note: Construction on I-94 N-S, College Ave and 27th Street Interchange closed
2009
WISCONSIN DEPT. OF TRANS. DISTRICT 2
MILWAUKEE AREA FREEWAY SYSTEM
TRAFFIC VOLUME SUMMARY MAP
BALANCED TRAFFIC COUNTS
LEGEND:
ATR & Speed - Telemetry
ATR - Telemetry
ATR - Control
ATR - TOC
ATR & Speed, Classification
Ramp Counts Are Balanced
0000 - Average Daily Traffic

The truck percentage was collected by Wavetronix count equipment (length base)

I-94 Between 84th Street and70th Street (Site# 401919)

		Average
EB	7.43%	6.69%
WB	6.00%	

Date	VOLUME	CLASS COUNT (BIN LENGTHS IN FEET)					Total Percent Trucks	Light Trucks	Heavy Trucks	Day of Week	Direction
		C1 9	C2 24	C3 40	C4 75	C5 255					
1/30/2013	66,828	668	59,579	4,179	1,760	642	9.85%	6.25%	3.59%	Wednesday, January 30, 2013	EB
	71,648	3,491	63,200	3,048	1,484	425	6.92%	4.25%	2.66%		WB
	138,476	4,159	122,779	7,227	3,244	1,067	8.33%	5.22%	3.11%		
1/31/2013	74,135	1,487	66,527	3,609	1,877	635	8.26%	4.87%	3.39%	Thursday, January 31, 2013	EB
	79,984	3,838	70,582	3,445	1,653	466	6.96%	4.31%	2.65%		WB
	154,119	5,325	137,109	7,054	3,530	1,101	7.58%	4.58%	3.00%		
2/1/2013	78,365	924	70,426	4,035	2,199	781	8.95%	5.15%	3.80%	Friday, February 01, 2013	EB
	80,277	4,437	70,253	3,483	1,704	400	6.96%	4.34%	2.62%		WB
	158,642	5,361	140,679	7,518	3,903	1,181	7.94%	4.74%	3.20%		
2/2/2013	62,921	795	59,312	1,906	706	202	4.47%	3.03%	1.44%	Saturday, February 02, 2013	EB
	66,438	2,633	61,474	1,636	578	117	3.51%	2.46%	1.05%		WB
	129,359	3,428	120,786	3,542	1,284	319	3.98%	2.74%	1.24%		
2/3/2013	45,268	445	43,549	843	289	142	2.81%	1.86%	0.95%	Sunday, February 03, 2013	EB
	48,132	1,883	44,828	976	317	128	2.95%	2.03%	0.92%		WB
	93,400	2,328	88,377	1,819	606	270	2.89%	1.95%	0.94%		
2/4/2013	63,359	1,849	55,722	3,457	1,711	620	9.14%	5.46%	3.68%	Monday, February 04, 2013	EB
	69,505	3,384	60,778	3,366	1,540	437	7.69%	4.84%	2.84%		WB
	132,864	5,233	116,500	6,823	3,251	1,057	8.38%	5.14%	3.24%		
2/5/2013	71,288	957	64,252	3,641	1,855	583	8.53%	5.11%	3.42%	Tuesday, February 05, 2013	EB
	77,177	3,952	67,790	3,371	1,661	403	7.04%	4.37%	2.67%		WB
	148,465	4,909	132,042	7,012	3,516	986	7.76%	4.72%	3.03%		
AADT	136,475	4,392	122,610	5,856	2,762	854	6.94%	4.29%	2.65%		
AWDT	143,481	4,907	127,108	7,029	3,385	1,053	7.99%	4.90%	3.09%		

Wisconsin Department of Transportation

Annual % Length Distribution for 2011

Site Names: 400003, 1787, SE
County: Milwaukee
Funct. Class: U Principal Arterial - Interstate
Location: I-94 - AT 26TH ST MILWAUKEE

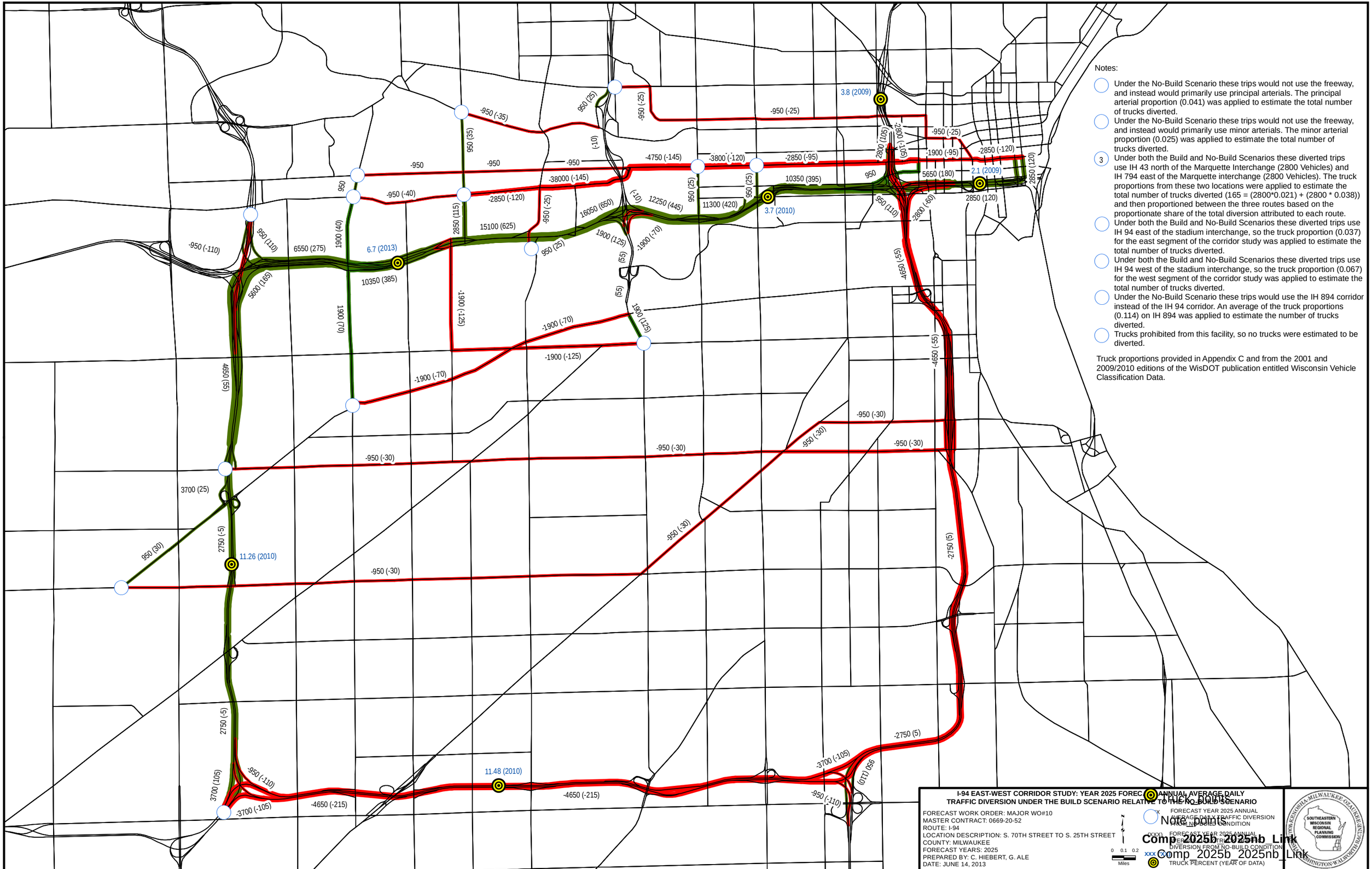
	Roadway	Neg DIR	Pos DIR	Neg1	Neg2	Neg3	Pos3	Pos2	Pos1
0 - 9	8.7	17.8	1.5	22.6	25.6	2.9	1.4	1.7	1.5
9 - 24	87.6	80.1	93.6	75.7	71.8	95.3	96.7	92.1	92.7
24 - 40	2.1	1.1	2.9	1.0	1.2	1.0	1.4	3.5	3.2
40 - 75	1.1	0.9	1.2	0.6	1.3	0.7	0.4	1.4	1.7
> 75	0.5	0.1	0.8	0.1	0.1	0.1	0.1	1.2	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	100.0

I-94 EAST-WEST CORRIDOR STUDY
FUTURE YEAR FORECAST ANNUAL AVERAGE DAILY TRAFFIC UNDER BUILD AND NO-BUILD SCENARIOS ALONG I-94 SEGMENTS FROM 70TH STREET TO 25TH STREET

	N 76th St	N 68th St	N Hawley Rd	N Gen Mitc Blvd	US 41	N 35th St	N 27th St	N 25th St	
2025 BUILD	**169,100**	**174,800**	**174,800**	**173,800**	**177,600**	**173,800**	**153,300**	**170,000**	**FORECASTS**
2040 BUILD	**186,000**	**186,900**	**186,000**	**185,000**	**193,500**	**188,800**	**168,200**	**186,900**	**FORECASTS**
I-94									I-94
2025 NO BUILD	**158,750**	**159,700**	**158,750**	**157,750**	**165,350**	**162,500**	**142,950**	**159,650**	**FORECASTS**
2040 NO BUILD	**162,600**	**166,400**	**162,600**	**159,800**	**172,000**	**166,400**	**143,900**	**161,700**	**FORECASTS**
	S 76th St	S 70th St	N Hawley Rd	Fred Miller Way	US 341	S 35th St	N 27th St	N 25th St	

APPENDIX D

Year 2025 Forecast Average Daily Traffic Diversion Under The Year 2035 Regional Transportation System Plan



Notes:

- Under the No-Build Scenario these trips would not use the freeway, and instead would primarily use principal arterials. The principal arterial proportion (0.041) was applied to estimate the total number of trucks diverted.
- Under the No-Build Scenario these trips would not use the freeway, and instead would primarily use minor arterials. The minor arterial proportion (0.025) was applied to estimate the total number of trucks diverted.
- 3 Under both the Build and No-Build Scenarios these diverted trips use IH 43 north of the Marquette Interchange (2800 Vehicles) and IH 794 east of the Marquette interchange (2800 Vehicles). The truck proportions from these two locations were applied to estimate the total number of trucks diverted (165 = (2800*0.021) + (2800 * 0.038)) and then proportioned between the three routes based on the proportionate share of the total diversion attributed to each route.
- Under both the Build and No-Build Scenarios these diverted trips use IH 94 east of the stadium interchange, so the truck proportion (0.037) for the east segment of the corridor study was applied to estimate the total number of trucks diverted.
- Under both the Build and No-Build Scenarios these diverted trips use IH 94 west of the stadium interchange, so the truck proportion (0.067) for the west segment of the corridor study was applied to estimate the total number of trucks diverted.
- Under the No-Build Scenario these trips would use the IH 894 corridor instead of the IH 94 corridor. An average of the truck proportions (0.114) on IH 894 was applied to estimate the number of trucks diverted.
- Trucks prohibited from this facility, so no trucks were estimated to be diverted.

Truck proportions provided in Appendix C and from the 2001 and 2009/2010 editions of the WisDOT publication entitled Wisconsin Vehicle Classification Data.

I-94 EAST-WEST CORRIDOR STUDY: YEAR 2025 FORECAST ANNUAL AVERAGE DAILY TRAFFIC DIVERSION UNDER THE BUILD SCENARIO RELATIVE TO THE NO-BUILD SCENARIO

FORECAST WORK ORDER: MAJOR WO#10
MASTER CONTRACT: 0669-20-52
ROUTE: I-94
LOCATION DESCRIPTION: S. 70TH STREET TO S. 25TH STREET
COUNTY: MILWAUKEE
FORECAST YEARS: 2025
PREPARED BY: C. HIEBERT, G. ALE
DATE: JUNE 14, 2013

Truck points
Note points
Comp_2025b_2025nb_Link
Comp_2025b_2025nb_Link

X FORECAST YEAR 2025 ANNUAL AVERAGE DAILY TRAFFIC DIVERSION FROM NO-BUILD CONDITION
(XXX) FORECAST YEAR 2025 ANNUAL AVERAGE DAILY TRAFFIC DIVERSION FROM NO-BUILD CONDITION
XXX.XX TRUCK PERCENT (YEAR OF DATA)

0 0.1 0.2 Miles

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

06/18/2013
V:\Forecasts\WisDOT\IH 94\EIS_NoBuild\forecast_analysis\I94_EW_y2025_Build_Diversions.mxd

APPENDIX E

MOVES2010a Regional Sensitivity Analysis Executive Summary

Research and Innovation
- Center for Transportation Policy and Planning
- Center for Safety Management Systems
- Center for Environmental and Energy Systems
  - Featured Work
  - *Corporate Average Fuel Economy (CAFE)*
  - *Environmental Measurement and Modeling*
  - *Energy Analysis and Sustainability*
  - *Environmental Science and Engineering*
- Center for Transportation Logistics and Security
- Center for Infrastructure Systems and Engineering
- Center for Air Traffic Systems and Operations
- Center for Human Factors Research and System Applications
- Center for Advanced Transportation Technologies

Strategic Initiatives for Research and Innovation

Sponsors

Principal Technical Advisors

Technology Transfer

Publications and Papers

Introduction | Executive Summary

MOVES2010a Regional Sensitivity Analysis

Executive Summary

This document discusses the sensitivity of various input parameter effects on emission rates using the US Environmental Protection Agency's (EPA's) MOVES2010a1 model (20100830 database) at the regional level. Pollutants included in the study are carbon monoxide (CO), Oxides of Nitrogen (NOX), Particulate Matter of less than 2.5 micrometers (PM2.5), and Volatile Organic Compounds (VOCs). Similar trends for PM10 as reported for PM2.5 and Nitrogen Dioxide (NO2) as NOX exist, and inferences to these pollutants may also be made. Results are presented using the predicted emission rates (grams/mile) for running exhaust and starts across multiple Motor Vehicle Emission Simulator (MOVES) source types.

The input parameters varied in this analysis are: Temperature, Humidity, Ramp Fraction, Age Distribution, Analysis Year, and Average Speed Distribution. The input parameters of Road Type Distribution, Source Type Population, Age Distribution, Fuel, and Inspection and Maintenance (I/M) Programs were held constant utilizing the national default values from the MOVES 20100830 default database for the 2010 Analysis Year. MOVES is a complex model with many input parameters that can influence the emission rates across multiple vehicle types. The overall modeling process may include many variations and is not covered by this report. A separate project level analysis will delve more into the overall modeling process.

The results of the model sensitivity are presented for various vehicle types utilizing particular fuel types to provide an understanding of the input sensitivity independent of fleet mixture. The emission rate values are included in the results tables located in Appendices allowing the user to review the magnitude of the emissions rates across vehicle types. These data are specific for this sensitivity analysis and are not meant as absolute values for use in regional emissions analyses.

The methodology of the analysis used a local sensitivity analysis approach where a single input parameter was varied while all the other input parameters were held constant. The output emissions rates were analyzed across all MOVES vehicle types. To allow a comparison of these emission rates, a 'Baseline Case' was established. The Baseline Case used the default data from a National Scale MOVES run allowing national defaults for road type distribution, age distribution, average speed distribution, fuel, ramp fraction, and I/M programs. In order to run MOVES in a time efficient manner, a surrogate model approach was utilized to represent a county level analysis while executing MOVES for a single hour of the day. The surrogate approach utilizes a less computationally expensive method of running MOVES to obtain the overall sensitivities. A single hour was sufficient to establish the trends associated with the various model sensitivities as input parameters were varied.

While described in detail within the report, the basic findings for each evaluated parameter are presented:

- Temperature is a very sensitive parameter across all pollutants and vehicle types. The results from this analysis showed similar trends to the temperature and humidity sensitivity analysis conducted by EPA.
- Analysis Year is a very sensitive parameter especially between the years 2010 and 2020 where emission rates are seen to decrease most significantly. Emission rates further decline until the year 2040 and remain relatively unchanged thereafter. Given the analysis year requirements, prescribed for regional conformity determinations, users may not have a lot of flexibility in varying this input parameter.
- Age Distribution of the vehicle fleet is important. A proportional increase of 10 percent in the distribution of vehicles less than 10 years old caused a reduction in vehicle emission rates by approximately 16 percent for CO, 12 percent for NOX, and 11 percent for PM2.5. As expected, an older fleet with a 10 percent greater distribution of vehicles between 11 and 20 years old resulted in an increase in emission rates across all pollutants. This trend continued when increasing the proportion of the oldest set of vehicles between 21 and 30 years old as well. It is desirable for the users to obtain local vehicle age distribution data instead of relying on default information. This is especially true if the area's fleet consists of newer vehicles or if vehicle replacement programs are in effect.
- Ramp Fraction can be a sensitive input parameter dependent on vehicle and fuel type. A common observation for almost all vehicle types across all pollutants was that emission rates and ramp fraction change in a linear manner. As the ramp fraction increases, so do emissions rates. Diesel emissions of CO remained relatively flat showing a dependence on fuel type within the model. Alternatively, the emissions rate for PM2.5 showed an increase for diesel fueled vehicles with increased ramp fraction while gasoline emissions remaining somewhat constant. This parameter will be greatly controlled by the highway geometric design.
- Emission rates for NOX and CO were the most sensitive pollutants due to changes in humidity. In the case of CO, gasoline fueled vehicles showed increased emissions as humidity increased, while for NOX, diesel fueled vehicles were most affected. All other vehicle types remained relatively insensitive to changes in humidity.
- The emission rates associated with Average Speed Distributions representing Level-of-Service (LOS) B, C, and D generally varied by only a few percentage points across all pollutants and vehicle types. Results for CO varied for all vehicle types and should be examined individually by the reader in the full report. The emissions rates associated with LOS E showed a larger variation than LOS B, C or D, while emission rates associated with LOS F were significantly higher. The 'Baseline case' exhibited an emission rate between LOS E and F. Use of default values results in a LOS E+ speed to volume relationship, which in turn indicates a conservative bias for the MOVES default values. This is an indication that local data should be obtained and used when possible. The functional classification for arterials show a much greater change in emission rates for varying LOS than all other facility types.

The analyst should be aware of how all of these variables affect a regional analysis and the information of this report should inform in that regard. This provides an awareness of the importance of inputs during the design phase of projects and could result in a better analytical design in regards to air quality. Default data or assumptions should not be used if it is possible to obtain local data. This is especially true for vehicle age distribution and average speed distribution with related drive schedules. For example, defaulting to the MOVES average speed distribution would result in a LOS E+ being used during analysis. This heavy congestion may not exist or may not be the outcome of a final design and if used could result in higher emission rates than would occur if the actual speed distribution were used. Temperature and humidity are location specific. The analysis year will be defined by conformity guidelines. Omitting these two input parameters, the order of impact for including actual data would be:

- Average speed distribution for arterials
- Vehicle age distribution
- Ramp fraction
- Average speed distribution for interstates
- Average speed distribution for freeways.

Use of local data inputs is generally considered to provide the most accurate on-road mobile source emissions estimates.

APPENDIX F

Motor Vehicle Emissions Simulator (MOVES) Emission Factor Analysis

Motor Vehicle Emissions Simulator (MOVES) Emission Factor Analysis

Based on prior MOVES modeling conducted by WDNR for a highway project in Wisconsin, fine particulate matter emission factors decreased from 2015 through 2030 as follows:

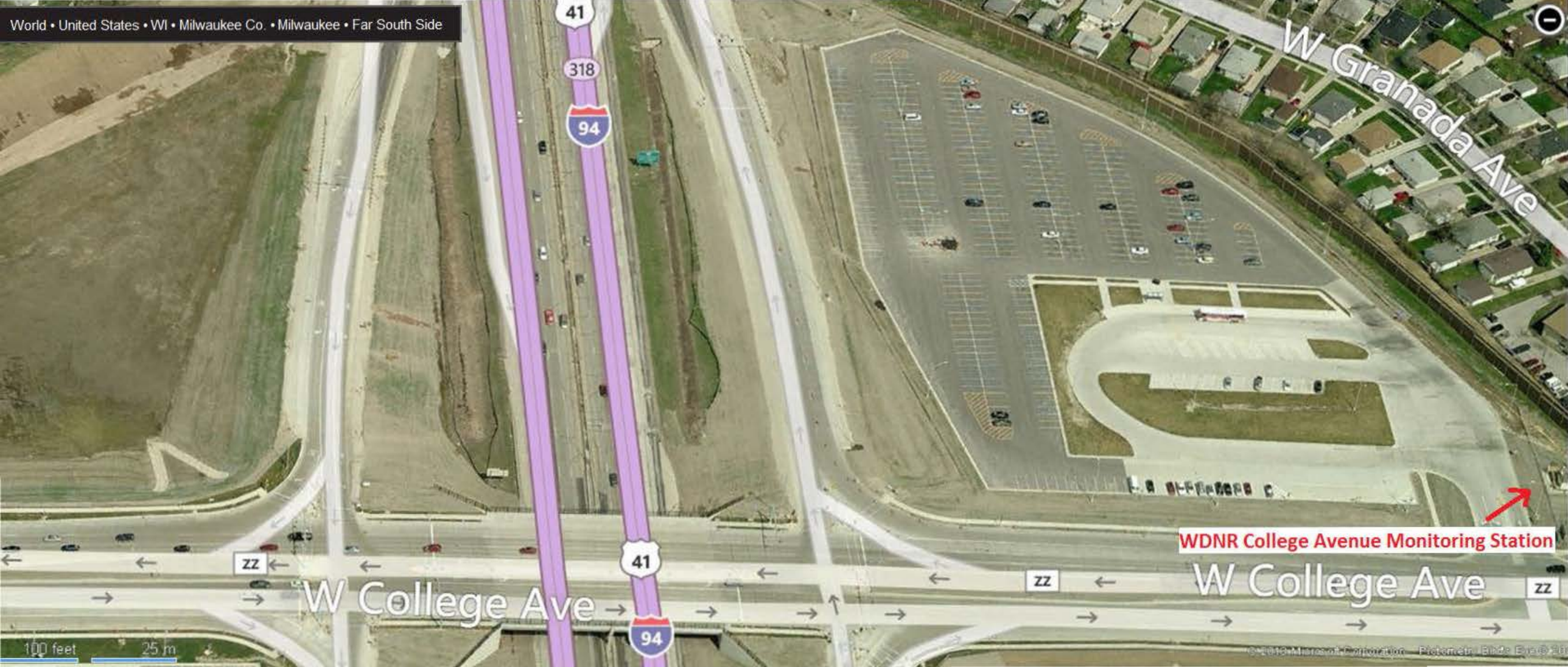
Year	Vehicle Type	$PM_{2.5}$ Emission Factor (grams per vehicle-mile)		
		January	July	Average
2015	All Gasoline and Light-Duty Diesel	0.0353	0.0105	0.0229
	Heavy-Duty Diesel	0.4059	0.4059	0.4059
	All Vehicles	0.0668	0.0441	0.0555
2030	All Gasoline and Light-Duty Diesel	0.0265	0.0074	0.0170
	Heavy-Duty Diesel	0.0701	0.0701	0.0701
	All Vehicles	0.0307	0.0134	0.0221
2040	All Gasoline and Light-Duty Diesel	0.0269	0.0076	0.0173
	Heavy-Duty Diesel	0.0281	0.0281	0.0281
	All Vehicles	0.0271	0.0097	0.0184

Vehicle Type	Percent Decrease (2015 - 2030)		
	January	July	Average
All Gasoline and Light-Duty Diesel	-24.8%	-29.6%	-25.9%
Heavy-Duty Diesel	-82.7%	-82.7%	-82.7%
All Vehicles	-54.0%	-69.6%	-60.2%

Vehicle Type	Percent Decrease (2015 - 2040)		
	January	July	Average
All Gasoline and Light-Duty Diesel	-23.7%	-27.7%	-24.6%
Heavy-Duty Diesel	-93.1%	-93.1%	-93.1%
All Vehicles	-59.4%	-78.0%	-66.8%

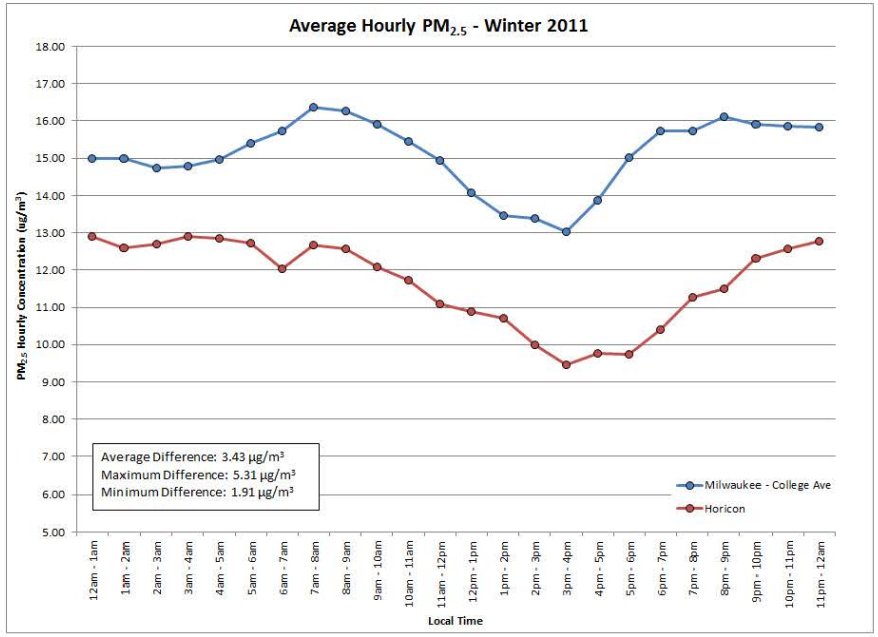
APPENDIX G

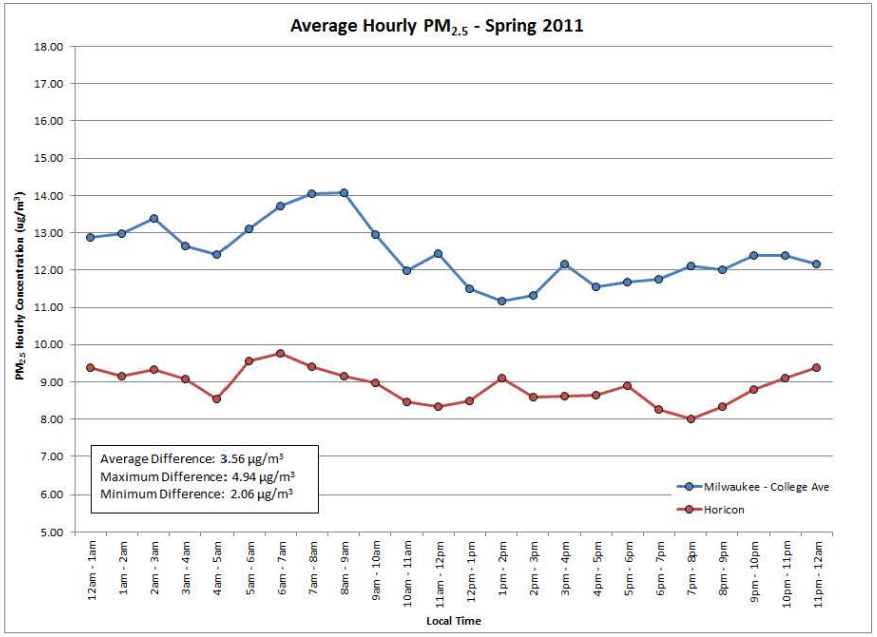
College Avenue WDNR Monitoring Station Location

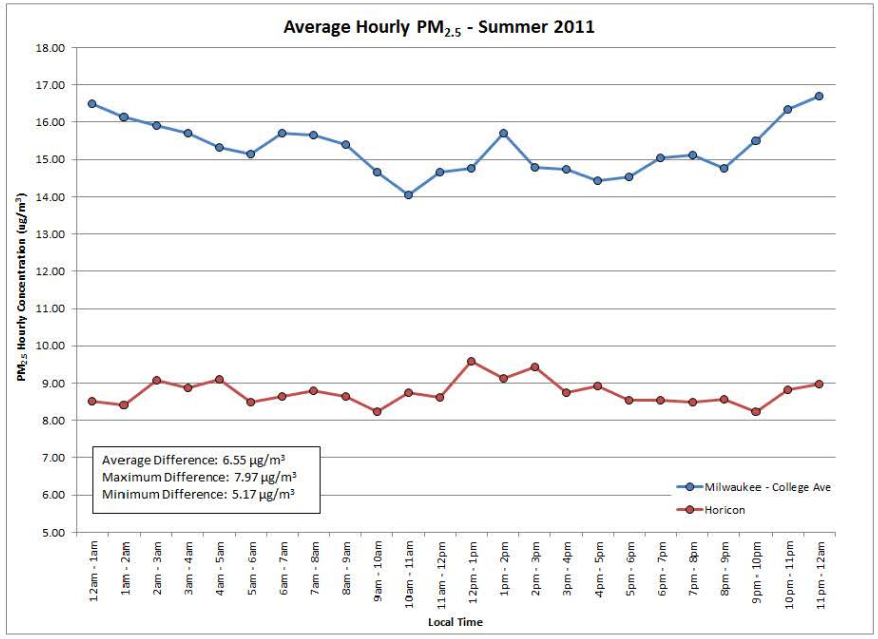

World • United States • WI • Milwaukee Co. • Milwaukee • Far South Side
41
318
94
W Granada Ave
WDNR College Avenue Monitoring Station
ZZ
W College Ave
100 feet
25 m

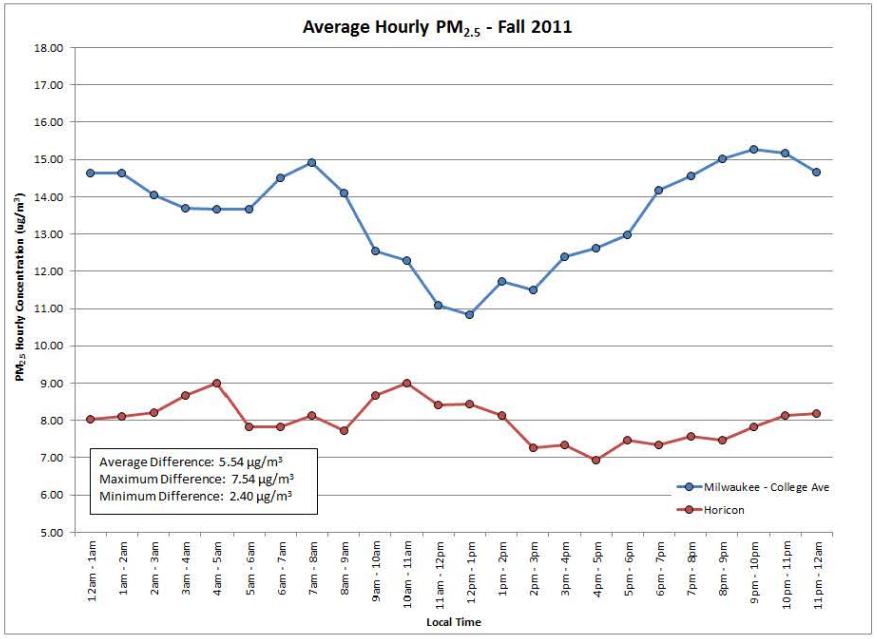
APPENDIX H

Comparison of Average Hourly $PM_{2.5}$ Concentrations at the College Avenue (Milwaukee) and Horicon Monitoring Sites


Average Hourly PM2.5 - Winter 2011
PM2.5 Hourly Concentration (ug/m³)
Local Time
Average Difference: 3.43 µg/m³
Maximum Difference: 5.31 µg/m³
Minimum Difference: 1.91 µg/m³
Milwaukee - College Ave
Horicon

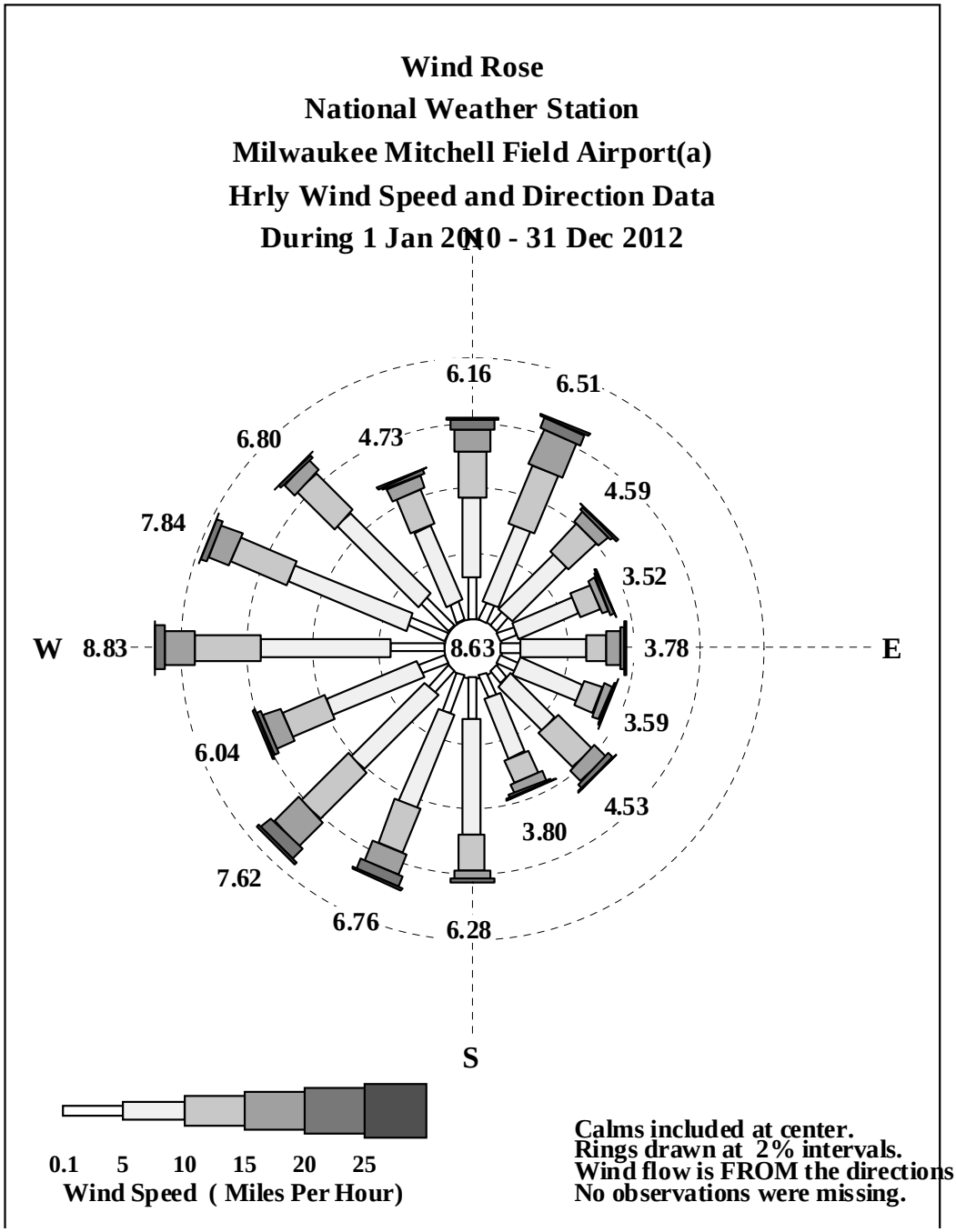

Average Hourly PM2.5 - Spring 2011
PM2.5 Hourly Concentration (ug/m³)
Local Time
Average Difference: 3.56 µg/m³
Maximum Difference: 4.94 µg/m³
Minimum Difference: 2.06 µg/m³
Milwaukee - College Ave
Horicon


Average Hourly PM2.5 - Summer 2011
PM2.5 Hourly Concentration (ug/m³)
Local Time
Average Difference: 6.55 µg/m³
Maximum Difference: 7.97 µg/m³
Minimum Difference: 5.17 µg/m³
Milwaukee - College Ave
Horicon


Average Hourly PM2.5 - Fall 2011
PM2.5 Hourly Concentration (ug/m³)
Local Time
Average Difference: 5.54 µg/m³
Maximum Difference: 7.54 µg/m³
Minimum Difference: 2.40 µg/m³
Milwaukee - College Ave
Horicon

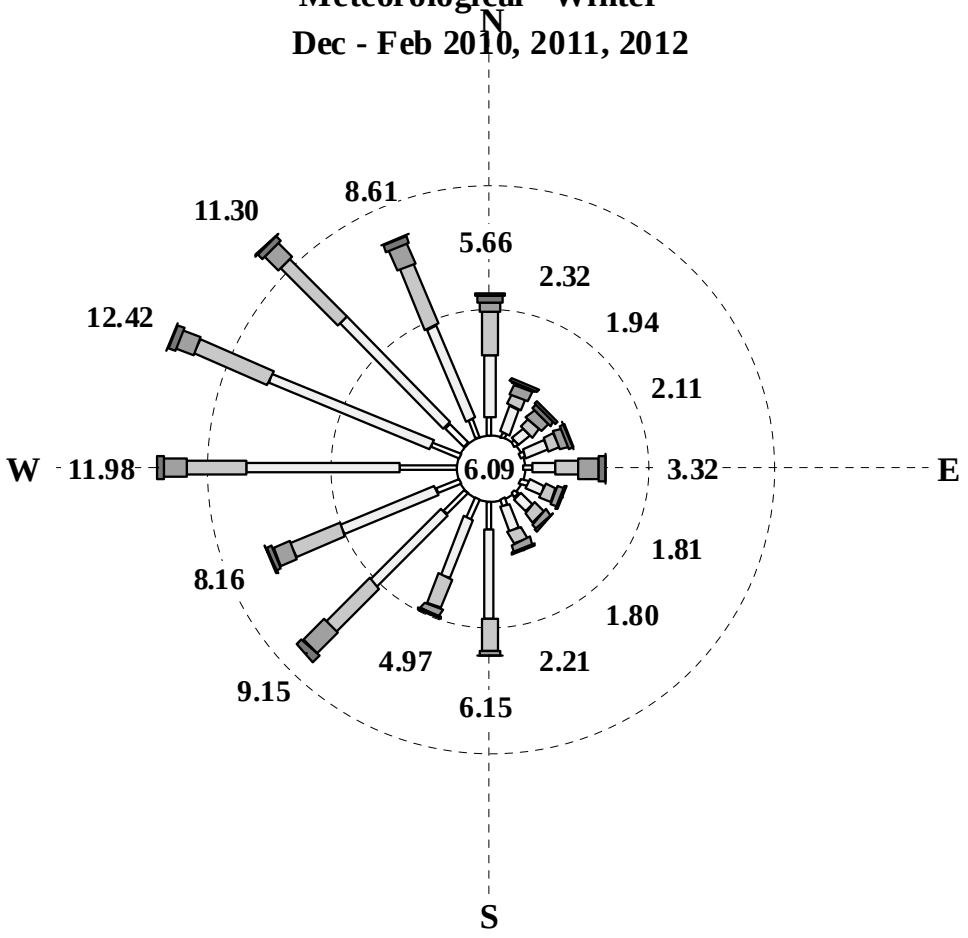
APPENDIX I

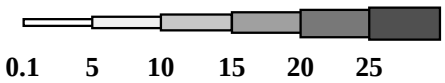
Wind Roses for the College Avenue WDNR Monitoring Station



(a) The National Weather Service (NWS) meteorological monitoring station at the Milwaukee Mitchell Airport ("MKE", 42.96 N Lat, 87.90 W. Lon.) is located approx. 2.1 km (1.3 miles) NNE of the WDNR monitoring site at the College Ave. Park and Ride Lot (42.92 N Lat, 87.91 W. Lon.). This relatively close distance makes the MKE meteorological data highly representative of the weather that the WDNR College Ave site witnesses. There are no wind measurements collected at the College Ave. site.

Wind Rose
National Weather Service
Milwaukee Mitchell Field Airport
Hrly Wind Speed and Direction Data
Meteorological "Winter"
Dec - Feb 2010, 2011, 2012

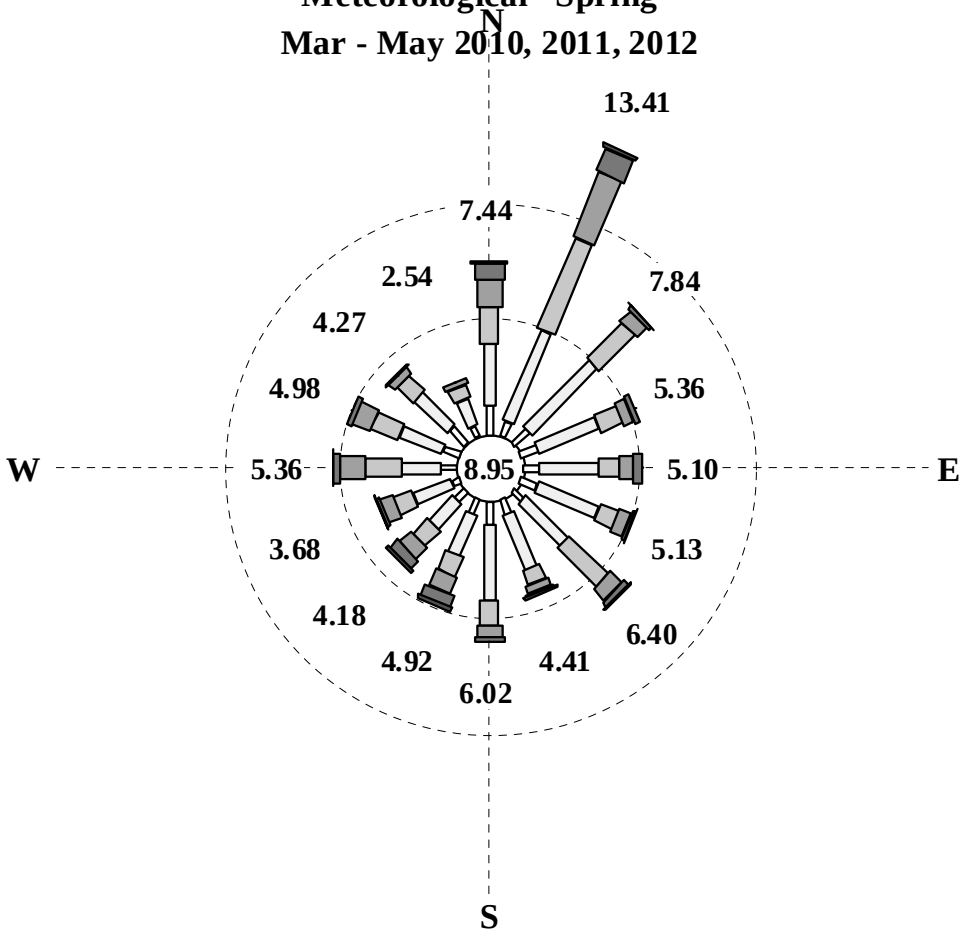


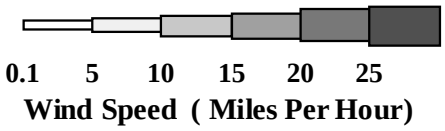


Wind Speed (Miles Per Hour)

Calms included at center.
Rings drawn at 5% intervals.
Wind flow is FROM the directions shown.
No observations were missing.

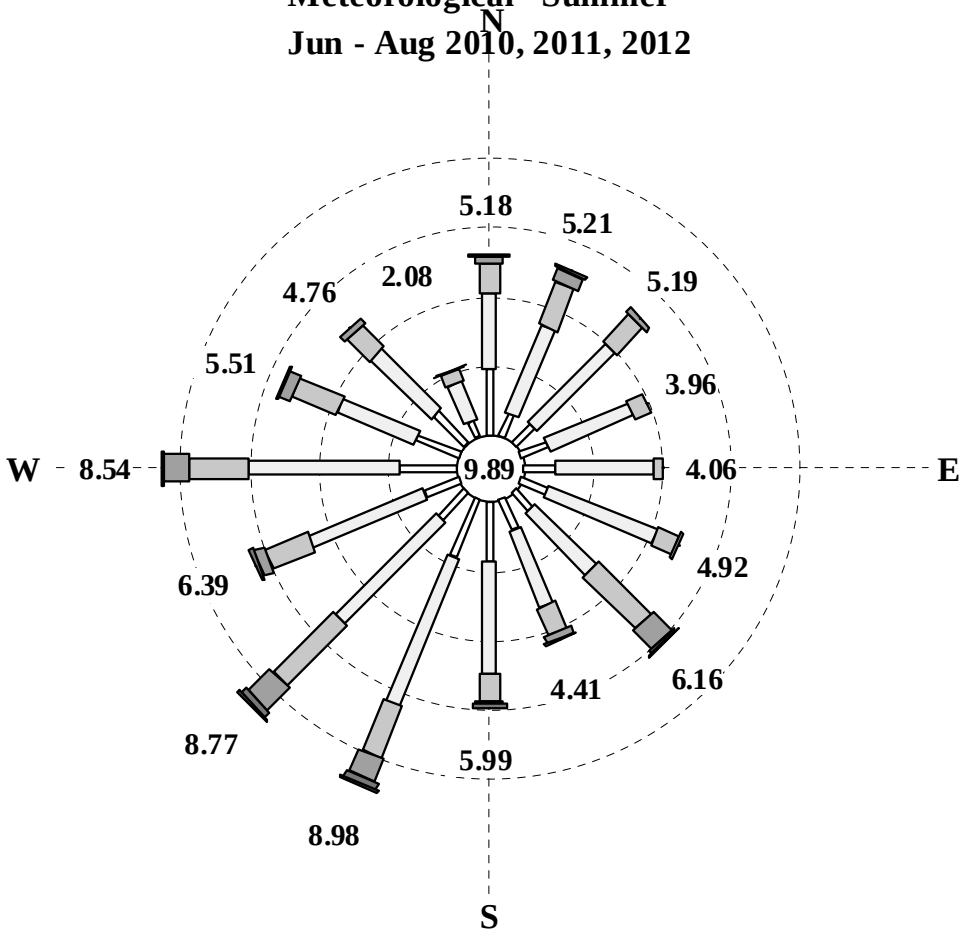
Wind Rose
National Weather Service
Milwaukee Mitchell Field Airport
Hrly Wind Speed and Direction Data
Meteorological "Spring"
Mar - May 2010, 2011, 2012

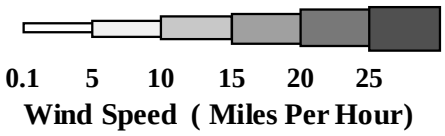




Calms included at center.
Rings drawn at 5% intervals.
Wind flow is FROM the directions shown.
No observations were missing.

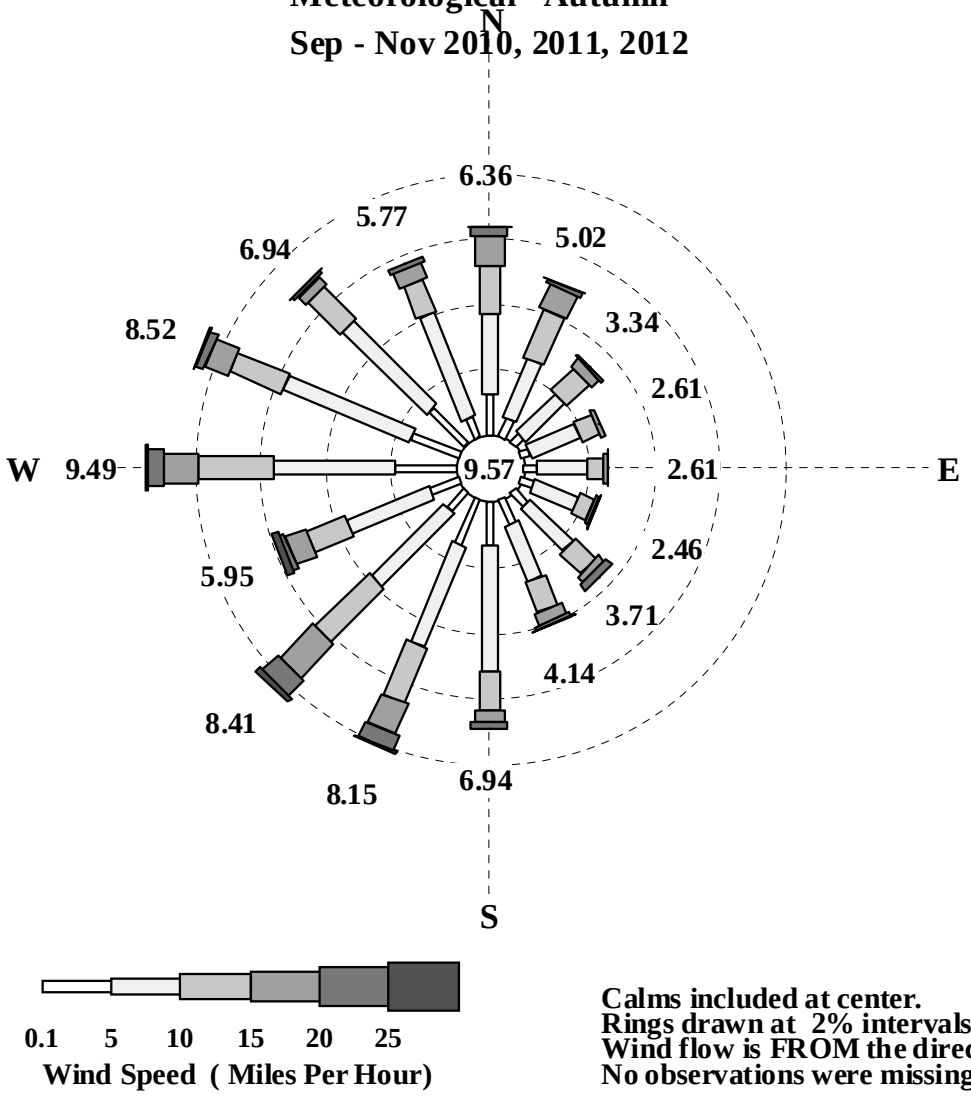
Wind Rose
National Weather Service
Milwaukee Mitchell Field Airport
Hrly Wind Speed and Direction Data
Meteorological "Summer"
Jun - Aug 2010, 2011, 2012





Calms included at center.
Rings drawn at 2% intervals.
Wind flow is FROM the directions shown.
No observations were missing.

Wind Rose
National Weather Service
Milwaukee Mitchell Field Airport
Hrly Wind Speed and Direction Data
Meteorological "Autumn"
Sep - Nov 2010, 2011, 2012



Calms included at center.
Rings drawn at 2% intervals.
Wind flow is FROM the directions shown.
No observations were missing.

APPENDIX J

WisDOT Activities That Positively Impact Wisconsin's Air Quality

WisDOT's Inspection and Maintenance (I/M) Program

- Insures that emissions are minimized as vehicles age in SE Wisconsin. Now includes inspection of diesel vehicles.

Engine retrofit programs – DERA and CMAQ Grants

- WisDOT administered a $750K EPA Diesel Emissions Reduction Act (DERA) grant that replaced older diesel engines with cleaner technologies in construction vehicles (44 vehicles). Significant portions of the money were secured by contractors who frequently work on WisDOT-SE projects (i.e. Lunda, Michels, Zenith Tech, etc.).
- WisDOT's Congestion Mitigation and Air Quality (CMAQ) Program also funded the installation of exhaust retrofit devices for school bus and municipal fleets in SE Wisconsin (up to 549 vehicles retrofitted).

New Idling Restrictions On Trucks

- WisDOT construction specifications often include recommended idling restrictions on contractor vehicles.

Congestion / Traffic Mitigation Efforts

- WisDOT STOC synchronized and adaptive traffic signals, and trailblazing signs.
- 511 Real-Time Traffic System.
- Increased efficiency to incident management and response (WisDOT funded).

Multi-Modal Development

- WisDOT administered $15M of CMAQ funds during the past 3 years to support operation of express bus routes and the replacement of older buses in SE Wisconsin.
- WisDOT CMAQ funds are supporting Amtrak platform reconstruction in SE Wisconsin. The platform expansion is expected to increase commuter ridership through greater accessibility.
- WisDOT is evaluating increased Milwaukee-Chicago intercity passenger rail ridership on Amtrak Hiawatha through expanding schedules.
- WisDOT CMAQ funds will be applied to the acquisition of lands to complete the Ozaukee to Downtown Milwaukee Connector Bike Path.
- WisDOT's SE Region successfully facilitates employee telework and rideshare programs.

Community Outreach and Air Quality Awareness

- The WisDOT is a participating member of the Wisconsin Partners for Clean Air and the Wisconsin Clean Diesel Coalition (>300 government, public, and private stakeholders).
- WisDOT is committed to the improvement of SE Wisconsin's air quality through educational outreach and the development of a variety of funding mechanisms.

Reformulated Gasoline (RFG) and Alternative Fuel Sales

- RFG is sold in SE Wisconsin's nonattainment area to reduce smog-forming and toxic pollutants in the air.
- Cleaner-burning fuels such as compressed natural gas (CNG) are now sold at many filling stations.

Municipal Fleets Converting to Cleaner Technologies

- Many local utility, school, and transit vehicles are switching to alternative fuel, hybrid, and electric technologies.

Truck Idle Reduction Grant Program

- EPA's SmartWay Transport Program is promoting the installation of auxiliary power units and auto engine shutdown systems, as well as truck stop electrification, to reduce excessive freight truck idling.

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From: Brad Heimlich, Rob Beuthling, Joe Ulatowski
I-94 East-West Consultant Team

Subject: I-94 Access Options at Hawley Road

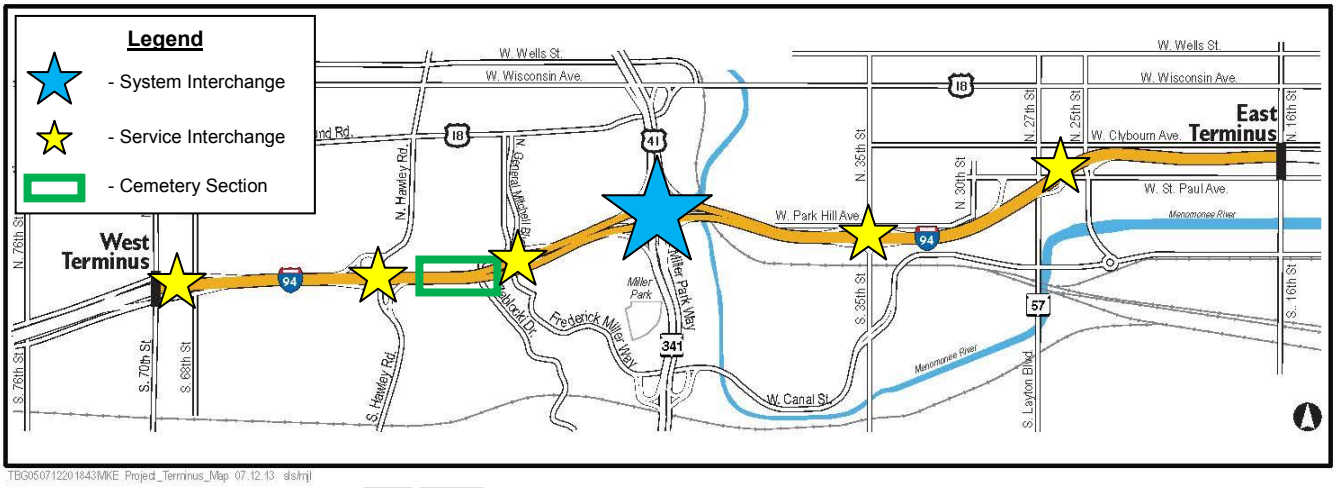
Date: May 20, 2014

1.0 EXECUTIVE SUMMARY

Overview

The Interstate 94 (I-94) Corridor study area is located in the City of Milwaukee, Wisconsin and includes three and one half miles of the I-94 freeway from approximately 70th Street (west terminus) to 16th Street (east terminus). This section of I-94 is one of the busiest in the southeast region and contains six closely spaced interchanges, as shown in **Figure 1** below. The purpose of the I-94 Corridor Study is to address deteriorated infrastructure, sub-standard geometrics, safety issues, and poor traffic operations that are characteristics of the existing freeway corridor.

Figure 1: I-94 Corridor Study Area



8LAG Alternative

The 8-Lane at Grade (8LAG) Alternative is one of two full corridor modernization alternatives developed by the study team to address the purpose and need for a reconstruction project. The design alternatives are complicated by numerous constraints, chief among them the location of the Wood National Cemetery and two Jewish cemeteries, which bound the existing I-94 corridor referred to as the "cemetery section". Both the Wisconsin Department of Transportation (WisDOT) and the Federal Highway Administration (FHWA) have committed early on in the study to avoid impacts to the cemeteries with any design alternative.

Cemetery Section Constraint

At its narrowest point, there is approximately 110 feet of available width through the cemetery section of I-94 between Hawley Road and Mitchell Boulevard, considering the requirements of all geometric elements. Due to the horizontal alignment of I-94 through this area, six feet is needed in order to accommodate the roadway curvature, construction, and westbound (WB) outside barrier, which leaves approximately 104 feet of available width for the roadway cross-section.

WisDOT and American Association of State Highway and Transportation Officials (AASHTO) design standards specify 12-foot lanes and 12-foot shoulders for freeway reconstruction projects. However, the total cross-section width required by the use of standard lane and shoulder widths results in a total typical section width far greater than the 104 feet that is available. Therefore, the study team examined lane, median, and shoulder width combinations that utilized less than standard widths in order to fit a typical section through the cemetery section.

Cross-Section Selection

The study team developed a matrix of cross-section alternatives, which analyzed the geometric, safety, and traffic impacts associated with different lane, shoulder, and barrier widths in order to aid the determination of an optimal cross-section for the 8LAG Alternative through the cemetery section. Since the forecasted design year traffic demand for the corridor necessitated an additional freeway lane (four lanes in each direction), all six-lane cross-section alternatives were dropped from consideration.

Of the remaining cross-section alternatives with sub-standard lane and shoulder widths analyzed by the study team, one was chosen as the optimal configuration in order to maximize safety considerations and traffic operations through the cemetery section as part of the 8LAG Alternative. The optimal cross-section includes eight, 11-foot lanes (four in each direction), a two-foot eastbound (EB) outside shoulder, a slightly less than 4-foot WB outside shoulder, and a 10-foot median (including barrier spacing and widths), which results in a typical section that is slightly less than the 104-foot width available.

Hawley Road Interchange

As noted previously, one of the main characteristics of the 8LAG Alternative is the proposed addition of a fourth freeway lane in each direction. Operations through the cemetery section are further complicated by the locations of the Stadium Interchange and Hawley Road Interchange, which are adjacent to the cemetery section. As a result of the geometric constraints of the cemetery section and the proximity of the Hawley Road Interchange to the cemetery section (approximately two-tenths of a mile east), it was determined that the interchange could not be accommodated under the 8LAG Alternative.

The removal of the Hawley Road Interchange under the 8LAG Alternative has been shown at various stakeholder and agency meetings since its inception. However, the study team has found that the removal of freeway access at the Hawley Road Interchange is a contentious topic that has generated significant stakeholder opposition, which is discussed further in the following section.

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As a result, the study team has been asked to re-examine various access scenarios at the Hawley Road Interchange under the 8LAG Alternative, which includes a “half diamond” service interchange to provide freeway access to and from the west only, and a full access service interchange. The “half interchange” alternative is also not without its issues, as FHWA policy requires full access at freeway service interchanges absent significant constraints or major impacts associated with the construction of a full interchange.

Access Scenarios

Three freeway access scenarios were analyzed for the Hawley Road Interchange in conjunction with the 8LAG Alternative, which are described in further detail below.

Full Access Scenario

The Full Access Scenario preserves full freeway access via a partial cloverleaf interchange on the west side of Hawley Road. Freeway access to the east and from the west would utilize loop ramps in the southwest and northwest quadrants, respectively. The I-94 EB exit and I-94 WB entrance ramps would be shifted outside of these loop ramps for full access. The ramps to and from the west would enter and exit the freeway via auxiliary lanes between Hawley Road and the 68th/70th Street Interchanges. The footprint to provide the partial cloverleaf loop ramps would introduce approximately 50 residential relocations.

It should be noted that the Full Access Scenario was eliminated from consideration early in the alternative development process due to the extensive level of impacts related to such a design. As a result of these impacts, WisDOT does not consider full access a reasonable or environmentally acceptable alternative for the Hawley Road Interchange under the 8LAG Alternative. However, this access scenario is retained as a comparative measure with the other remaining two access scenarios for the purposes of this memo.

While retaining full freeway access at Hawley Road has been generally supported by stakeholders and the general public, WisDOT and the study team has not shown a full access alternative at Hawley Road associated with the 8LAG Alternative.

Partial Access Scenario

The Partial Access Scenario provides I-94 access at Hawley Road to and from the west. The I-94 EB exit ramp would remain in a similar alignment as the existing configuration. The location of the north ramp terminal (I-94 WB entrance ramp) would be shifted south to create a more traditional diamond-style service interchange. Freeway access at Hawley Road under the Partial Access Scenario is eliminated to and from the east.

A partial freeway access alternative at Hawley Road under the 8LAG Alternative has not been shared with any project stakeholders to date.

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No Access Scenario

The No Access Scenario completely removes freeway access at Hawley Road. Hawley Road would continue to pass under I-94 and be re-aligned slightly to the east to reduce the existing horizontal curvature. All vacated land previously utilized for the existing service ramps would be available for redevelopment, as the proposed alignment of I-94 would remain similar to the current alignment under the 8LAG Alternative.

As noted previously, the removal of freeway access at the Hawley Road Interchange has been shown to corridor stakeholders and the general public by WisDOT and the study team as a part of the 8LAG Alternative due to the constraints through the cemetery section. However, there has been significant opposition to the removal of freeway access from the local municipalities and corridor stakeholders. For example, one of the most visible corridor stakeholders, the Clement J. Zablocki Veterans Administration (VA) Medical Center, has written to WisDOT specifically to reference the magnitude of potential impacts to the VA Medical Center's employees (4,500+) and veterans (700,000 annual visits) due removal of freeway access at Hawley Road. Other stakeholders have indicated similar concerns regarding a lack of mobility and direct freeway access at Hawley Road.

Operations

The freeway mainline, service interchanges, and key local road intersections have been analyzed during the design year (2040) for all three access scenarios using the 2010 Highway Capacity Manual and Synchro, which have been summarized below.

Full Access Scenario

Local street operations under the Full Access Scenario operate better in comparison to the subsequent two access scenarios, as the traffic demand that would be forced to use the local streets and adjacent service interchanges can now fully utilize Hawley Road. As a result, there is a noticeable improvement in operations, as all key intersections range between level of service (LOS) C and LOS D, with only a few movements at LOS E or LOS F.

The freeway mainline operational range is similar to the other scenarios (operations range from LOS C to LOS E). However, the average operational speed of the freeway by direction is less than either the No Access or Partial Access Scenarios, as there are more turbulent segments included as part of the Full Access Scenario (ramps and weaves) that naturally introduce additional friction onto the freeway.

Partial Access Scenario

The Partial Access Scenario results in some significant impacts to the local street network, as only approximately one-third of the potential traffic demand at Hawley Road can utilize the "half interchange" to and from the west. However, these impacts have been minimized in comparison to the Full Access Scenario.

Design year mainline freeway operations for the Partial Access Scenario fall between LOS C and LOS E between 68th/70th Street and the Stadium Interchanges. Operations are generally improved in comparison to the Full Access Scenario, as there is less freeway access (and therefore less turbulence) associated with this access scenario. Key local intersections along Bluemound Road,

National Avenue, and Greenfield Avenue operate between LOS B and LOS D, with some turning movements operating at LOS E or LOS F.

No Access Scenario

Similar to the Partial Access Scenario, the No Access Scenario pushes a majority of traffic that would have previously utilized the Hawley Road Interchange to the local road network and the adjacent interchanges (68th/70th Street and the Stadium Interchange). As such, this access scenario exhibits the most extensive local road impacts of the three access scenarios.

Mainline freeway 2040 peak hour operations range between LOS C and LOS E between 68th/70th Street and the Stadium Interchanges. Similar to the Partial Access Scenario, local intersections operate between LOS B and LOS D, with some specific turning movements operating at LOS E or LOS F during either peak hour.

It should be noted that the design year forecasted volumes for all access scenarios includes some freeway diversion to the local street network that is directly related to the mainline capacity constraint on I-94 through the cemetery section. This traffic primarily diverts to parallel local routes to avoid delays on the freeway mainline in this area associated with the constraint. Poor freeway mainline operations (LOS E) reported across all access scenarios are at least partially related to the capacity constraint due to the narrower lane and shoulder widths discussed previously as part of the 8LAG Alternative design.

A comparison between the access scenarios of the number of freeway segments operating between LOS C and LOS F, in addition to the number of key intersection turning movements operating at LOS E and LOS F, is presented in **Table 1** below.

Table 1: Access Scenarios - LOS Comparison

Scenario	AM Peak Hour - LOS						PM Peak Hour - LOS					
	Number of Freeway Segments				Number of Int Turning Mvmts		Number of Freeway Segments				Number of Int Turning Mvmts	
	C	D	E	F	E	F	C	D	E	F	E	F
Full	2	10	0	0	3	1	2	9	1	0	2	0
Partial	2	6	0	0	3	2	2	5	1	0	5	0
No	4	4	0	0	7*	1*	4	3	1	0	7	1*

* - Includes a turning movement that has a volume/capacity ratio equal to or greater than 1.0

As shown in **Table 1** and summarized in the previous section, the Full Access Scenario operates with the least amount of unacceptable operations of the three access scenarios on the local street network. This is a direct result of the lowest degree of demand on the local street network with the additional freeway access provided at the Hawley Road Interchange. However, the consequence of the improved freeway access worsens traffic operations on I-94. Conversely, the No Access Scenario operates with the most number of unacceptable movements of the three access scenarios on the local street network, as there is inherently more demand on the parallel local roadways due to the loss of freeway access at the Hawley Road Interchange. However, the result is less demand on I-94 and better freeway operations in comparison to the Full Access Scenario.

The trade-off in operations between the local street network and freeway corridor is an important distinction between all three access scenarios.

Conclusion

This memo intends to provide documentation of impacts and operations of the various freeway access scenarios associated with the 8LAG Alternative at Hawley Road. The 8LAG Alternative is restricted through the cemetery section to four mainline lanes in each direction, with less than standard lane and shoulder widths to fit within the available ROW and avoid impacts to the adjacent cemeteries. All three access scenarios have some degree of impacts or issues associated with them, whether they are associated with the local street network or the freeway. In general, eliminating access entirely at Hawley Road has been deemed undesirable based on stakeholder feedback. However, additional consideration should be made in light of the impacts associated even with a partial access alternative.

Table 2 below shows a comparison of important characteristics for the consideration of each access scenario.

Table 2: Access Scenarios Comparison

Scenario	Characteristics				
	Freeway Access	ROW Impacts	Level of Service	Average Operating Speed (mph)[2]	Hawley Rd Int Local/Adj Int Diversion
Full	To/from east and west	50 properties	LOS D-E[1]	N/A	0%
Partial	To/from west only	None	LOS D-E[1]	47	66%
No	None	None	LOS C-E[1]	51	100%

1 – Freeway capacity constraint through the cemetery section results in LOS E for all scenarios
2 – Average speeds reported based on Paramics results

As shown in **Table 2** above, the Full Access Scenario at Hawley Road provides full freeway access, which lessens the demand on adjacent service interchanges and the local street network. In addition, full freeway access has been supported by stakeholders. However, the full service interchange would not operate as well as the other two scenarios overall and has the most significant environmental impacts. In comparison, the No Access Scenario has had little public support, mainly due to the loss in direct freeway access at Hawley Road. However, the removal of the Hawley Road Interchange would possibly free up land for redevelopment or storm water retention. The Partial Access Scenario is similar in terms of impacts and the potential for available land. However, providing freeway access to and from the west only would still force approximately two-thirds of the design year demand at Hawley Road to divert to the local street network and adjacent service interchanges to access I-94.

Additionally, unfamiliar drivers that either wish to access I-94 EB from Hawley Road, or exit I-94 WB to Hawley Road, can be directed to adjacent access points at 68th/70th Street, the Stadium Interchange, or 44th/46th Street ("embedded interchange") via local parallel arterials (Bluemound Road, Greenfield Avenue, and National Avenue) through the use of way-finding signs. The parallel arterials are located close enough to I-94 that utilizing these roadways is not a significant inconvenience in terms of re-routing. However, each roadway already carries a significant amount of traffic, and would be stressed further due to the diversion of freeway traffic.

As such, WisDOT and the study team would like to request approval from FHWA to study the Partial Access Scenario at Hawley Road in further detail. Additional analysis of the Partial Access Scenario will help WisDOT and the project team show stakeholders and the general public that all feasible options for Hawley Road under the 8LAG Alternative have been thoroughly investigated.

While the technical merits of the Partial Access Scenario may not significantly outweigh the potential issues, WisDOT and the study team feel that retaining a partial access design at Hawley Road could help to address significant stakeholder concerns regarding freeway access removal. At the very least, the Partial Access Scenario could represent a possible compromise for all parties that satisfy a degree of stakeholder mobility and access concerns, while still avoiding impacts through the cemetery section and lessening the volume/operational impacts to adjacent interchanges and the local street network to the greatest extent possible under the 8LAG Alternative.

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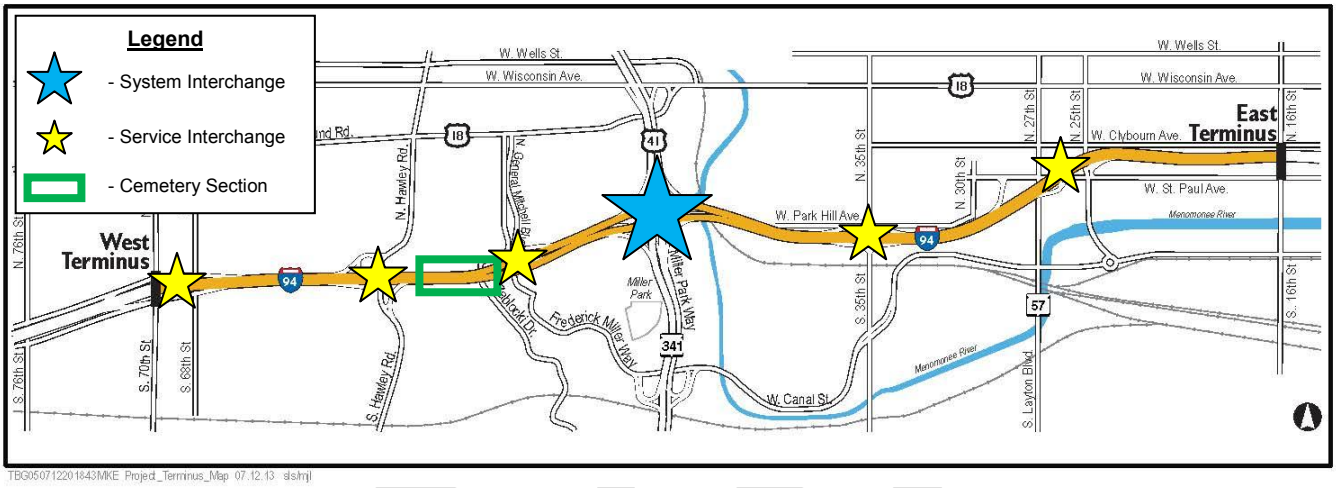
2.0 OVERVIEW

The I-94 Corridor Study area is located in the City of Milwaukee, Wisconsin and includes three and one half miles of the I-94 freeway from approximately 70th Street (west terminus) to 16th Street (east terminus). Bounded by the Marquette Interchange (east) and the Zoo Interchange (west), this section of I-94 is one of the busiest freeway routes in southeast Wisconsin. The I-94 Corridor study area contains six service interchanges, including one system interchange, five of which are located along I-94, as shown in **Figure 2** below. The system interchange (also referred to as the Stadium Interchange) provides access between I-94, United States Highway 41 (US 41) north of I-94, and Wisconsin State Highway 341 (WIS 341) south of I-94.

Figure 2: I-94 Corridor Study Area



TBG0507122018 43MKE_Project_Terminus_Map 07.12.13 sls/mjl

8LAG Alternative

The purpose of the I-94 Corridor Study is to address the deteriorated condition, sub-standard geometrics, high crash rates, and (existing and future) operational issues that are inherent to the existing freeway corridor through a modernized corridor design alternative. Currently, the study team has narrowed the range of alternatives down to two full corridor alternatives. One of the most significant differences between the two alternatives is through the “cemetery section”, located between Hawley Road and Mitchell Boulevard on the west leg of the corridor. This section of I-94 runs through a National Historic Landmark (Wood National Cemetery), which is located on both sides of the roadway and as such, WisDOT and FHWA have committed to avoiding impacts to the cemetery.

Alternative 1, also known as the “8 Lane at Grade” (8LAG) Alternative, provides four lanes in each direction on I-94 through the cemetery section, which utilizes the full extent of available right-of-way (ROW) and reduces lane and shoulder widths in order to avoid impacts to graves. The development of the optimal cross-section through the cemetery section is described further in the following sections.

Cemetery Section Constraint

At its narrowest point, there is approximately 110 feet of available width through the cemetery section of I-94 between Hawley Road and Mitchell Boulevard, considering the requirements of all geometric elements. Due to the horizontal alignment of I-94 through this area, six feet is needed in order to accommodate the roadway curvature, construction, and WB outside barrier, which leaves approximately 104 feet of available width for the roadway cross-section.

WisDOT and AASHTO design standards specify 12-foot lanes and 12-foot shoulders for freeway reconstruction projects. However, the total cross-section width required by the use of standard lane and shoulder widths results in a total typical section width far greater than the 104 feet that is available. Therefore, the study team examined lane, median, and shoulder width combinations that utilized less than standard widths in order to fit a typical section through the cemetery section.

Cross-Section Selection

The study team developed a matrix of cross-section alternatives, which analyzed the geometric, safety, and traffic impacts associated with different lane, shoulder, and barrier widths in order to aid the determination of an optimal cross-section for the 8LAG Alternative through the cemetery section. Since the forecasted design year traffic demand for the corridor necessitated an additional freeway lane (four lanes in each direction), all six-lane cross-section alternatives were dropped from consideration.

Of the remaining cross-section alternatives with sub-standard lane and shoulder widths analyzed by the study team, one was chosen as the optimal configuration in order to maximize safety considerations and traffic operations through the cemetery section as part of the 8LAG Alternative. The optimal cross-section includes eight, 11-foot lanes (four in each direction), a two-foot EB outside shoulder, a slightly less than 4-foot WB outside shoulder, and a 10-foot median (including barrier spacing and widths), which results in a typical section that is slightly less than the 104-foot width available.

Hawley Road Interchange

As noted previously, one of the main characteristics of the 8LAG Alternative is the proposed addition of a fourth freeway lane in each direction. Operations through the cemetery section are further complicated by the locations of the Stadium Interchange and Hawley Road Interchange, which are adjacent to the cemetery section. As a result of the geometric constraints of the cemetery section and the proximity of the Hawley Road Interchange to the cemetery section (approximately two-tenths of a mile east), it was determined that the interchange could not be accommodated under the 8LAG Alternative.

The removal of the Hawley Road Interchange under the 8LAG Alternative has been shown at various stakeholder and agency meetings since its inception. However, the study team has found that the removal of freeway access at the Hawley Road Interchange is a contentious topic that has generated significant stakeholder opposition, which is discussed further in **Section 5**.

As a result, the study team has re-examined various access options at Hawley Road under the 8LAG Alternative, which among other designs includes a “half interchange” (i.e. access is provided to/from one freeway direction). It should be noted that FHWA states that “each interchange shall provide for all traffic movements” as part of the American Association of State Highway and Transportation Officials’ *A Design Policy on Design Standards - Interstate System (5th Edition)*.

Despite this standard, it is the study team's intent to investigate all reasonable alternatives for this interchange, including a partial access interchange that would provide freeway access to and from the west in combination with the 8LAG Alternative, for the following reasons:

- Providing full access at Hawley Road (under the 8LAG Alternative) is highly impactful
- Hawley Road service ramps to and from the west are currently and will remain higher volume ramps
- Traffic to and from the east can be served via the local road network and adjacent interchanges (assuming local road improvements are implemented to adequately handle future demand)

Discussion of these and other points are included in further detail in this memo, which documents the impacts and operations of three access scenarios (full, partial, and no) on the Hawley Road, 68th/70th Street, and Stadium Interchanges, in addition to the key intersections located on the local street network that are impacted under each scenario. Additional discussion is included regarding the usage and travel patterns of the Hawley Road Interchange.

Traffic Analysis

Design year (2040) demands for all three access scenarios have been developed based on forecasts received by the study team from the Southeast Wisconsin Regional Planning Commission (SEWRPC). These forecasts include the capacity expansion of I-94 to four lanes in each direction, in addition to the capacity constraint of the cemetery section, which is related to the less than standard lane and shoulder widths included as part of the 8LAG Alternative.

The proposed service interchange and local road intersection designs for each access scenario have been analyzed using Synchro and results reported based on HCM 2010 signalized intersection methodology. The I-94 freeway mainline has been analyzed for each access scenario using HCM 2010 freeway methodology for basic, ramp, and weave segments.

It is the intent of this memo to provide documentation of the access scenarios considered and analyzed for the Hawley Road Interchange, as part of the 8LAG Alternative, to date and request the approval of further study of the Partial Access Scenario at Hawley Road from FHWA.

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3.0 FULL ACCESS SCENARIO

Description

The Full Access Scenario provides full freeway access at Hawley Road via a partial cloverleaf interchange on the west side of the roadway. Freeway access to the east and from the west would utilize loop ramps in the southwest and northwest quadrants, respectively. The I-94 EB exit and I-94 WB entrance ramps would be shifted outside of the loop ramps to provide the remaining freeway access. The ROW impacts related to this scenario are extensive, as the footprint to provide the Full Access Scenario would introduce approximately 50 residential relocations.

As mentioned previously, the Full Access Scenario has been eliminated from consideration by the study team mainly due to the significant environmental impacts associated with the design. However, it has been retained for the purposes of this memo to use as a baseline comparison against the previous two access scenarios. **Appendix A** includes a plan view of the proposed Full Access Scenario at the Hawley Road Interchange.

Access

There are numerous geometric issues with providing full freeway access at the Hawley Road Interchange under the Full Access Scenario. These issues include taper rates and weave distances, among other design characteristics. The I-94 WB exit ramp taper is at or slightly less than standard for deceleration distance requiring vehicles to slow down significantly on the mainline in advance of the exit ramp, which adds additional congestion and turbulence on the mainline. Additionally, since the I-94 EB exit and I-94 WB entrance ramps are shifted to the outside of the loop ramps, the available weave distance west to the 68th/70th Street Interchange service ramps to/from the east is reduced to approximately 600 feet, which is less than the desirable weave distance (1,600 feet). This issue could possibly be mitigated by braiding the ramps. However, it would introduce additional design complexity, environmental impacts including noise, and increased project costs.

While retaining full freeway access at Hawley Road has been generally supported by corridor stakeholders and the general public, WisDOT and the study team has not shown a full access alternative at Hawley Road associated with the 8LAG Alternative.

Operations

The following local road intersections have been analyzed in further detail due to the forecasted demand that occurs along these roadways as part of the Full Access Scenario. Impacts to the adjacent interchanges at 68th/70th Street and the Stadium are detailed further in **Section 7**.

- Bluemound Road and Hawley Road
- Bluemound Road and 68th Street
- National Avenue and WIS 341 (Miller Park Way)
- National Avenue and Hawley Road
- National Avenue and Greenfield Avenue
- Greenfield Avenue and 70th Street

Appendix B shows the locations of the analyzed local road intersections in conjunction with the service and system interchanges on the west leg of the study area for reference.

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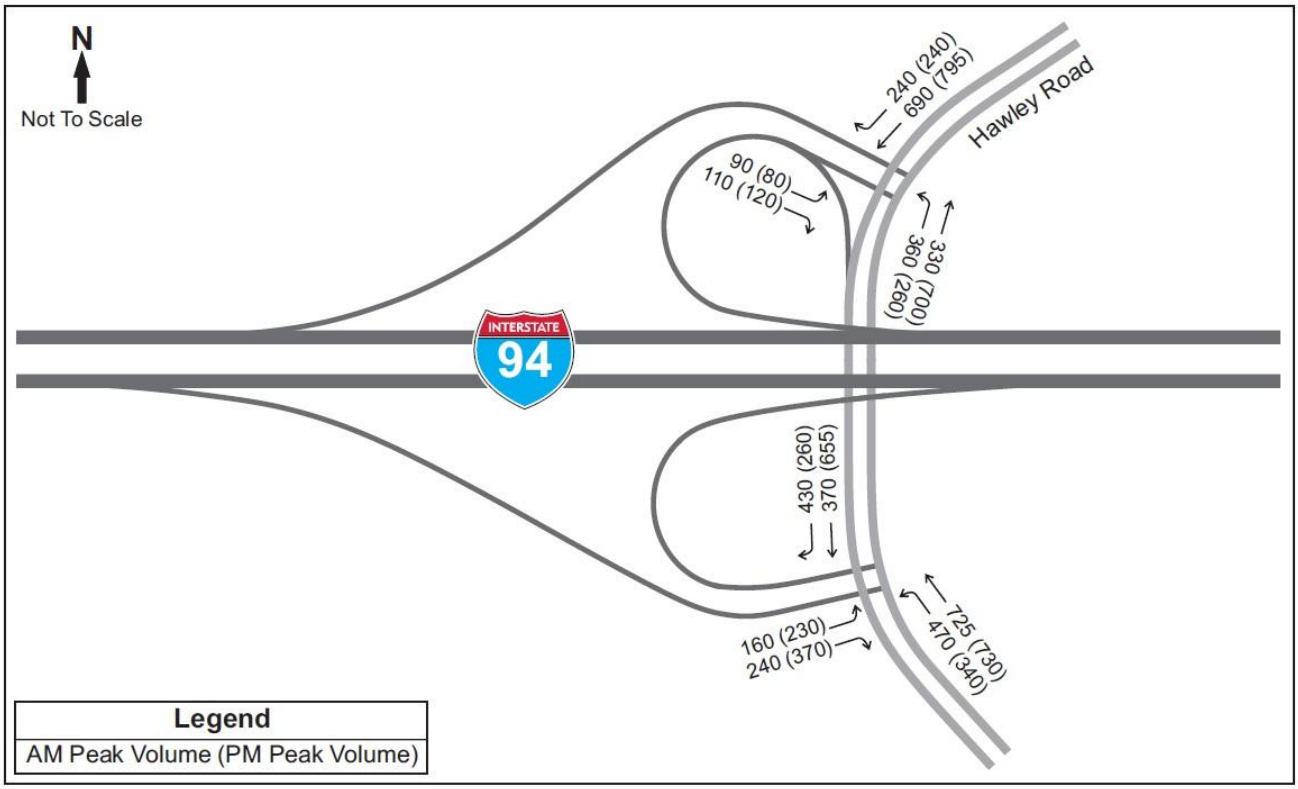
These intersections have been chosen due to their proximity to the Stadium and 68th/70th Street Interchanges, in addition to their functions as major connection points between these service interchanges and major local street parallel routes (Bluemound Road, Greenfield Avenue, and National Avenue). Impacts to the local street network and adjacent service interchanges are mainly limited to the west leg of the study area under the Full Access Scenario.

Design year 2040 peak hour traffic forecasts for the Full Access Scenario at the Hawley Road Interchange are shown in **Figure 3** below.

Figure 3: Full Access Scenario - Year 2040 Peak Hour Forecast at Hawley Road



As noted previously, several local road intersections were analyzed to determine impacts associated with the Full Access Scenario for the Hawley Road Interchange. The proposed local street intersection geometries to accommodate demand and provide minimally acceptable operations (overall intersection LOS D) as part of this scenario are shown in **Table 3** on the following page, with the proposed geometric improvements for each intersection highlighted in orange. The design year peak hour local street volumes were developed based on SEWRPC's design year daily forecast of the corridor associated with the Full Access Scenario.

As there is no additional access-based diversion assumed at these intersections as part of the Full Access Scenario, any recommended changes in geometry can be considered as "base" improvements for the design year demands. It should be noted that none of these intersections are under WisDOT jurisdiction and as such, any recommendations are subject to change based on feedback from the WisDOT Southeast (SE) Region and local municipalities.

Table 3: Full Access Scenario - Proposed Geometry for Local Road Intersections

Intersection	Traffic Control	Number of Lanes per Movement Approach											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Bluemound Road and Hawley Road	Traffic Signal	1	2	1	1	1 T, 1 T/R		1	1 T, 1 T/R		1	2	1
Bluemound Road and 68th Street	Traffic Signal	1	1 T, 1 T/R		1	1 T, 1 T/R		1	1 T, 1 T/R		1	1 T, 1 T/R	
National Avenue and WIS 341 (MPW)	Traffic Signal	2	1 T, 1 T/R		1	2	1	1	3	1	1	3	2
National Avenue and Hawley Road	Traffic Signal	1	1 T/R		1	1 T, 1 T/R		1 L/T, 1 T/R			1 L/T, 1 T/R		
National Avenue and Greenfield Avenue	Traffic Signal	1	1 T/R		1	1 T/R		1 L/T, 1 T/R			1 L/T		1
Greenfield Avenue and 70th Street	Traffic Signal	1 L/T, 1 T/R			1	1 T, 1 T/R		1	2	1	1	1 T, 1 T/R	

As shown in **Table 3** above, the majority of the proposed intersection improvements are capacity-related, where an additional through lane is needed to provide minimally acceptable operations. Most, if not all, of the capacity-related improvements shown can be achieved with minimal ROW impacts by stripping a curb/parking lane and utilizing it as a travel lane. Intersection improvements beyond repurposing the curb/parking lane are limited at these local intersections due to the developed, urban nature of the study area, where businesses and residences are typically located immediately adjacent to roadways.

The proposed Hawley Road Interchange lane configuration for the north (I-94 WB ramps) ramp terminal is similar to the existing configuration. Hawley Road would remain as a four-lane facility with an exclusive, single northbound left (NBL) turn lane at the north ramp terminal. The WB exit loop ramp would provide a single westbound left (WBL) turn lane, which would be controlled by the north ramp terminal traffic signal, and a yield-controlled westbound right (WBR) turn lane.

The south ramp terminal (I-94 EB ramps) would shift south of the existing I-94 EB exit ramp terminal on Hawley Road to accommodate the I-94 EB entrance loop ramp. The I-94 EB exit ramp would provide exclusive eastbound left (EBL) and eastbound right (EBR) turn lanes at the intersection approach. In addition, a single NBL turn lane would be provided to access the I-94 EB entrance ramp from the south. It should be noted that the analysis of the proposed south ramp terminal assumes the installation of a traffic signal. However, a traffic signal warrant analysis has not yet been completed.

Table 4 on the following page shows the design year peak hour operations for the Full Access Scenario at the Hawley Road Interchange and selected local road intersections.

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Table 4: Full Access Scenario - Design Year LOS for Hawley Road and Local Road Intersections

Intersection	Peak Hour	Level of Service (LOS) by Movement												Overall Int LOS
		Eastbound			Westbound			Northbound			Southbound			
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Bluemound Road and Hawley Road	AM	B	C	B	B	C		B	B		B	B	B	B
	PM	B	C	C	B	C		B	B		C	C	C	C
Bluemound Road and 68th Street	AM	B	A		D	D		C	C		B	C		C
	PM	C	B		C	D		C	C		B	A		C
National Avenue and WIS 341 (MPW)	AM	E	D		E	E	B	D	D	A	F	D	B	D
	PM	D	D		E	D	D	E	C	A	D	C	A	D
National Avenue and 60th Street (Hawley Road)	AM	B	C		D	C		B			B			B
	PM	C	C		C	C		A			D			C
National Avenue and Greenfield Avenue	AM	C	B		C	C		B			B		A	C
	PM	D	C		D	C		C			C		A	C
Greenfield Avenue and 70th Street	AM	A			B	C		B	B	A	C	B		B
	PM	C			C	D		D	C	A	C	C		C
Hawley Road and I-94 WB Entrance Ramp	AM	B	-	A	-	-	-	B	A	-	-	B	A	A
	PM	C	-	A	-	-	-	B	A	-	-	B	A	A
Hawley Road and I-94 EB Exit Ramp	AM	C	-	B	-	-	-	A	A	-	-	B	A	A
	PM	C	-	C	-	-	-	A	A	-	-	B	A	B

As shown in **Table 4** above, the majority of intersections analyzed operate at acceptable levels of service (LOS D or better) overall during both design year peak hours under the Full Access Scenario. In fact, only one intersection (National Avenue and WIS 341) has turning movements to operate at LOS E or LOS F. The lack of poor and failing movements at other intersections analyzed is at least partially related to the full access provided at Hawley Road. Traffic demand that under subsequent scenarios (Partial Access and No Access) is forced to adjacent interchanges or local parallel routes is provided more direct freeway access as part of the Full Access Scenario, which results in less traffic on the local street network by comparison.

The intersection of National Avenue and WIS 341 (Miller Park Way) is located in a very constrained area. The northeast, southeast, and southwest quadrants are fully developed with commercial and industrial businesses that are located extremely close to the intersection. In addition, the northwest quadrant of the intersection is part of a National Historical Landmark, which complicates any potential ROW acquisition for intersection improvements. As a result, geometric improvements on all four approaches are mainly limited to short storage lane lengthening, rather than capacity improvements (additional turn and through lanes), as shown in **Table 3**.

Consequently, the intersection provides minimal to poor operations during the design year peak hours under baseline growth conditions. This issue is further complicated by additional diversion that utilizes this intersection under the Partial Access and No Access Scenarios (discussed in the following sections), as traffic attempts to bypass I-94 mainline congestion through the cemetery section via the local street network.

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4.0 PARTIAL ACCESS SCENARIO

Description

The Hawley Road Interchange under the Partial Access Scenario would maintain I-94 access to and from the west. The I-94 EB exit ramp terminal would be close to the existing location of the south ramp terminal. The I-94 WB entrance ramp terminal, north of I-94, would be shifted slightly south to tighten the footprint, taking advantage of the elimination of the I-94 WB exit loop ramp and provide a more traditional diamond configuration for the ramps to and from the west.

As a result, some ROW would be freed up by the Partial Access Scenario in the northwest quadrant, which is currently occupied by the existing I-94 WB entrance and exit ramp configuration, and may be allocated for redevelopment. **Appendix A** includes a plan view of the proposed Partial Access Scenario at the Hawley Road Interchange.

Access

Direct freeway access to and from the east would be re-routed via the local street network. This traffic could use either Bluemound Road or Greenfield Avenue to access I-94 at either the 68th/70th Street Interchange (approximately one half mile west of Hawley Road) or the Stadium Interchange (approximately one mile east of Hawley Road).

Due to the proximity of the cemeteries to Hawley Road, there is no feasible option for replacing the existing I-94 EB entrance ramp from the east side of Hawley Road without impacting the cemeteries. In addition to the added mainline capacity of the 8LAG Alternative (four lanes in each direction), this means that the mainline footprint through the cemetery section cannot accommodate any acceptable acceleration, deceleration, or taper distances for service ramps.

It should be noted that a partial freeway access alternative at Hawley Road under the 8LAG Alternative has not be shared with any project stakeholders to date.

Operations

Design year (2040) peak hour traffic operations of the previously listed key local road intersections were analyzed in further detail due to the forecasted diversion that occurs at these locations as part of the Partial Access Scenario. Impacts to the local street network and adjacent service interchanges at 68th/70th Street and the Stadium Interchange are slightly more extensive on the west leg as compared to the Full Access Scenario. Analysis of the adjacent service interchanges is discussed further in **Section 7**.

Appendix B shows the locations of the analyzed local road intersections in conjunction with the service and system interchanges on the west leg of the study area for reference.

Figure 4 on the following page shows the design year peak hour volumes for the Hawley Road Interchange under the Partial Access Scenario.

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Figure 4: Partial Access Scenario - Year 2040 Peak Hour Forecast at Hawley Road

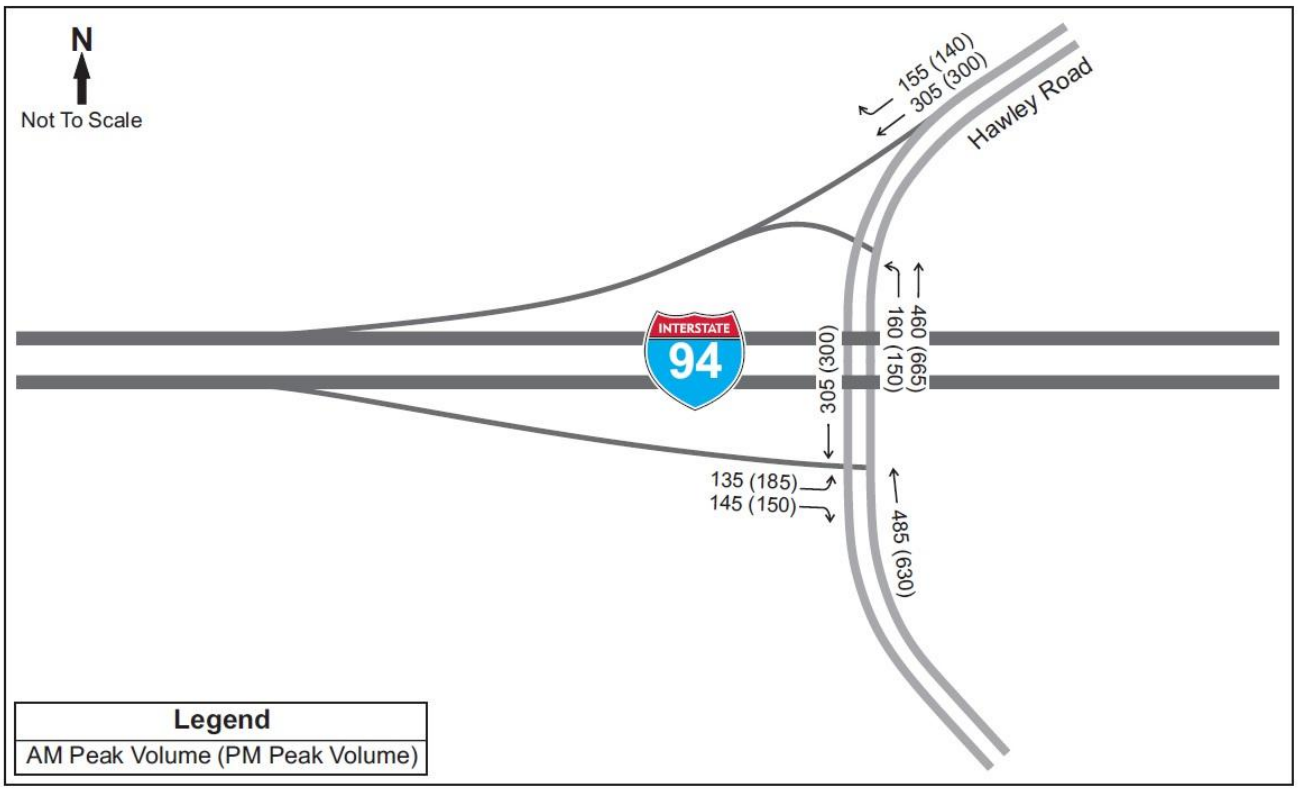

Table 5 below shows the proposed intersection lane configurations and design year traffic operations for the selected local road intersections, including the Hawley Road Interchange ramp terminals. The proposed geometric changes for each intersection, highlighted in orange in **Table 5**, are designed to provide minimally acceptable operations (overall intersection LOS D) based on the forecasted local street demand associated with the Partial Access Scenario. Again, it should be noted that none of these intersections are under WisDOT jurisdiction and as such, any recommendations will be coordinated with the WisDOT SE Region and local municipalities.

Table 5: Partial Access Scenario - Proposed Geometry for Local Road Intersections

Intersection	Traffic Control	Number of Lanes per Movement Approach											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Bluemound Road and Hawley Road	Traffic Signal	1	2	1	1	1 T, 1 T/R		1	1 T, 1 T/R		1	2	1
Bluemound Road and 68th Street	Traffic Signal	1	1 T, 1 T/R		1	1 T, 1 T/R		1	1 T, 1 T/R		1	1 T, 1 T/R	
National Avenue and WIS 341 (MPW)	Traffic Signal	2	1 T, 1 T/R		1	2	1	1	3	1	1	3	2
National Avenue and Hawley Road	Traffic Signal	1	1 T, 1 T/R		1	1 T, 1 T/R		1 L/T, 1 T/R			1 L/T, 1 T		1
National Avenue and Greenfield Avenue	Traffic Signal	1	1 T/R		1	1 T/R		1 L/T, 1 T/R			1 L/T		1
Greenfield Avenue and 70th Street	Traffic Signal	1 L/T, 1 T/R			1	1 T, 1 T/R		1	2	1	1	1 T, 1 T/R	

Similar to the Full Access Scenario, the intersection improvements proposed in **Table 5** are capacity-related, as an additional through lane is needed to provide minimally acceptable operations. Again, most of these improvements can be implemented with the repurposing of curb/parking lanes as travel lanes. It should be noted that the number and degree of improvements is more extensive, as compared to the Full Access Scenario, as traffic that previously was able to access Hawley Road via I-94 to and from the east is now diverted to the local street network and adjacent interchanges. The local road diversion as part of the Partial Access Scenario necessitates additional improvements in order to provide acceptable operations on the local street network.

The proposed lane configurations for the north (I-94 WB entrance ramp) and south (I-94 EB exit ramp) Hawley Road Interchange ramp terminals are similar to the existing configuration. Hawley Road would remain as a four-lane facility with a single NBL turn lane at the north ramp terminal. The EB approach at the south ramp terminal would provide exclusive EBL and EBR turn lanes. It should be noted that the analysis assumes the installation of a traffic signal for the south ramp terminal. However, a traffic signal warrant analysis has not yet been completed.

Table 6 below shows the design year peak hour operations for the Partial Access Scenario at the Hawley Road Interchange ramp terminals and selected local road intersections.

Table 6: Partial Access Scenario - Design Year LOS for Hawley Road and Local Road Intersections

Intersection	Peak Hour	Level of Service (LOS) by Movement												Overall Int LOS
		Eastbound			Westbound			Northbound			Southbound			
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Bluemound Road and Hawley Road	AM	B	C	B	C	D		C	C		C	B	B	C
	PM	C	C	C	B	D		C	B		B	B	B	C
Bluemound Road and 68th Street	AM	C	E		F	C		D	C		B	B		D
	PM	E	D		C	D		C	C		C	A		C
National Avenue and WIS 341 (MPW)	AM	D	C		E	E	D	D	D	A	F	D	B	D
	PM	D	C		E	D	D	E	D	A	D	C	A	D
National Avenue and 60th Street (Hawley Road)	AM	C	B		C	B		A			B		B	B
	PM	C	B		B	B		B			C		B	B
National Avenue and Greenfield Avenue	AM	C	C		C	D		C			B		B	C
	PM	E	D		E	D		C			D		C	D
Greenfield Avenue and 70th Street	AM	B			B	C		C	C	A	C	B		B
	PM	C			B	C		C	C	A	B	C		C
Hawley Road and I-94 WB Entrance Ramp	AM	-	-	-	-	-	-	A	A	-	-	A	A	A
	PM	-	-	-	-	-	-	A	A	-	-	A	A	A
Hawley Road and I-94 EB Exit Ramp	AM	A	-	A	-	-	-	-	A	-	-	A	-	A
	PM	B	-	B	-	-	-	-	A	-	-	A	-	A

As shown in **Table 6** above, overall intersection operations are similar to the Full Access Scenario, where all intersections operate at LOS D or better. However, the additional demand on Bluemound Road and Greenfield Avenue, due to the utilization of these roadways as local access routes as part of the restriction of freeway access at Hawley Road, results in an increase in poor (LOS E) and failing (LOS F) turning movement operations at the intersections with 68th Street (Bluemound Road) and National Avenue (Greenfield Avenue).

Additional turn or through lanes at the intersection of Bluemound Road and 68th Street, beyond the proposed expansion of 68th Street to a four-lane facility, to improve turning movement LOS are unfeasible due to the proximity of residences in all four quadrants. Similarly, the intersection of Greenfield Avenue and National Avenue cannot be improved beyond what is proposed in **Table 6**, as there are several businesses located against the back of sidewalk along both roadways. Operations at this intersection are further complicated by the skew of the intersection and north-south one-way street (62nd Street) that forms the north and south legs, which limits potential geometric and signal phasing improvements.

Similar to the Full Access Scenario, the intersection of National Avenue and WIS 341 (Miller Park Way) continues to be a critical intersection in terms of access-based diversion operations. As noted previously, this intersection is located in a very constrained environment and as a result, ideal capacity-related improvements are unfeasible.

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5.0 NO ACCESS SCENARIO

Description

The No Access Scenario at the Hawley Road Interchange would maintain the four-lane geometry of Hawley Road while removing the existing interchange connections to I-94. The land that is currently utilized for interstate access would potentially become available for redevelopment. Additionally, Hawley Road would be slightly re-aligned to the east under I-94 to reduce the existing horizontal curvature of the roadway. **Appendix A** includes a plan view of the proposed Hawley Road alignment under the No Access Scenario.

Access

Direct freeway access would be completely eliminated to/from Hawley Road under the No Access Scenario, as noted previously. Traffic on Hawley Road that wishes to access I-94 would be forced to use either Bluemound Road or Greenfield Avenue, parallel arterials to I-94, to access the freeway at either the 68th/70th Street Interchange or the Stadium Interchange.

It should be noted that the removal of freeway access at the Hawley Road Interchange has been shown to corridor stakeholders and the general public by WisDOT and the study team as part of the 8LAG Alternative due to the constraints through the cemetery section. However, there has been significant opposition to the removal of freeway access from local officials and stakeholders. In fact, one of the most visible project stakeholders, the Clement J. Zablocki Veterans Administration (VA) Medical Center, has written to WisDOT concerning the importance of the Hawley Road Interchange to their employees (4,500+) and visitors (700,000 annually). Other project stakeholders have shared similar concerns regarding a lack of mobility and direct freeway access at Hawley Road.

Operations

Design year (2040) peak hour traffic operations of the previously listed key local road intersections were analyzed in further detail due to the forecasted diversion that occurs at these locations as part of the No Access Scenario. Impacts to the local street network and adjacent service interchanges at 68th/70th Street and the Stadium Interchange are more extensive on the west leg as compared to the Partial Access Scenario. Analysis of the adjacent service interchanges is discussed further in **Section 7**.

Appendix B shows the locations of the analyzed local road intersections in conjunction with the service and system interchanges on the west leg of the study area for reference.

Tables 7 and 8 on the following page show the proposed intersection improvements and design year traffic operations for these locations, respectively. The proposed geometric changes for each intersection, highlighted in orange in **Table 7**, have been developed to provide minimally acceptable operations (overall intersection LOS D) based on the forecasted local street demand associated with the No Access Scenario. The design year peak hour local street volumes were developed based on SEWRPC's design year daily forecast of the corridor associated with the No Access Scenario.

It should be noted that none of these intersections are under WisDOT jurisdiction and as such, any recommendations are subject to change based on feedback from the WisDOT SE Region and local municipalities.

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Table 7: No Access Scenario - Proposed Geometry for Local Road Intersections

Intersection	Traffic Control	Number of Lanes per Movement Approach											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Bluemound Road and Hawley Road	Traffic Signal	1	2	1	1	1 T, 1 T/R		1	1 T, 1 T/R		1	2	1
Bluemound Road and 68th Street	Traffic Signal	1	1 T, 1 T/R		1	1 T, 1 T/R		1	1 T, 1 T/R		1	1 T, 1 T/R	
National Avenue and WIS 341 (MPW)	Traffic Signal	2	1 T, 1 T/R		1	2	1	1	3	1	1	3	2
National Avenue and Hawley Road	Traffic Signal	1	1 T, 1 T/R		1	1 T, 1 T/R		1 L/T, 1 T/R			1 L/T, 1 T		1
National Avenue and Greenfield Avenue	Traffic Signal	1	1 T/R		1	1 T/R		1 L/T, 1 T/R			1 L/T		1
Greenfield Avenue and 70th Street	Traffic Signal	1 L/T, 1 T/R			1	1 T, 1 T/R		1	2	1	1	1 T, 1 T/R	

The proposed geometry of the local street intersections shown in **Table 7** above for the No Access Scenario are the same as those shown in **Table 5** for the Partial Access Scenario. As noted previously, most, if not all, of the selected local road intersections analyzed have capacity improvements proposed under the Partial Access Scenario that essentially maximize the roadway within the available ROW, mainly due to the developed, urban nature of the study area. As such, despite some changes in demand along these roadways, there are no additional improvements that could likely be implemented at these locations to reasonably accommodate the resulting turning movement volumes. As a result, there is degradation in turning movement LOS at some of these key intersections as part of the No Access Scenario.

Table 8 below shows the design year peak hour operations for the No Access Scenario at key local road intersections.

Table 8: No Access Scenario – Design Year LOS for Local Road Intersections

Intersection	Peak Hour	Level of Service (LOS) by Movement												Overall Int LOS
		Eastbound			Westbound			Northbound			Southbound			
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Bluemound Road and Hawley Road	AM	C	C	B	C	D		C	C		C	C	C	C
	PM	C	C	B	B	D		C	B		B	C	B	C
Bluemound Road and 68th Street	AM	C	E*		F*	C		E	C		C	B		D
	PM	E	D		F*	D		E	D		C	D		D
National Avenue and WIS 341 (MPW)	AM	E	D		E	E	D	D	D	A	E	D	B	D
	PM	D	C		E	D	D	E	D	A	D	C	A	D
National Avenue and 60th Street (Hawley Road)	AM	C	B		C	B		D			E		C	C
	PM	D	B		B	B		B			C		B	C
National Avenue and Greenfield Avenue	AM	D	C		C	C		C			B		B	C
	PM	E	D		E	E		C			D		C	D
Greenfield Avenue and 70th Street	AM	A			B	C		C	C	A	C	B		C
	PM	B			B	D		C	B	A	B	C		C

* - Volume/capacity ratio is equal to or greater than 1.0

As shown in **Table 8** on the previous page, the majority of intersections analyzed operate at acceptable levels of service (LOS D or better) overall during both design year peak hours under the No Access Scenario. The intersections of National Avenue and Hawley Road, and Greenfield Avenue and 70th Street operate no worse than LOS C overall during either peak hour with the proposed intersection improvements.

However, overall there are slightly more turning movements that operate poorly (LOS E) or fail (LOS F) during either design year peak hour in comparison to the Partial Access Scenario. This is likely due to the traffic demand that no longer can access I-94 via Hawley Road, and therefore must use the parallel local roadways to access adjacent service interchanges. As noted previously, there are no additional improvements that can likely be implemented at intersections with poor or failing movements to improve operations due the constrained and urban nature of the study area.

The intersection of National Avenue and WIS 341 (Miller Park Way) continues to be a critical intersection in terms of access-based diversion operations. As discussed under the preceding scenarios, this intersection is located in a very constrained environment and as a result, ideal capacity-related improvements are unfeasible.

Conclusion

A comparison between all access scenarios of the number of peak hour intersection turning movements at three key intersections that operate at LOS E or LOS F, including overall intersection LOS, is presented for convenience in **Table 9** below.

Table 9: Access Scenarios – Local Intersection Poor and Failing Movements Comparison

Intersection		Access Scenario - Local Intersection Operations					
		Full Access		Partial Access		No Access	
		AM	PM	AM	PM	AM	PM
Bluemound Road and 68th Street	Movements	0-E, 0-F	0-E, 0-F	1-E, 1-F	1-E, 0-F	2-E, 1-F	2-E, 1-F
	Overall	C	C	D	C	D	D
National Avenue and WIS 341 (MPW)	Movements	3-E, 1-F	2-E, 0-F	2-E, 1-F	2-E, 0-F	4-E, 0-F	2-E, 0-F
	Overall	D	D	D	D	D	D
National Avenue and Greenfield Avenue	Movements	0-E, 0-F	0-E, 0-F	0-E, 0-F	2-E, 0-F	1-E, 0-F	0-E, 0-F
	Overall	C	C	C	D	C	C
Totals		3-E, 1-F	2-E, 0-F	3-E, 2-F	5-E, 0-F	7-E, 1-F	4-E, 1-F

As shown in **Table 9** above, the Full Access Scenario has the least number of peak hour turning movements at these three key local intersections that operate at LOS E or LOS F. This is mainly a result of the full access provided at the Hawley Road Interchange, which results in less demand on the local road system. Conversely, the No Access Scenario has the greatest number of peak hour turning movements at the three key local intersections that operate at LOS E or LOS F during the peak hours. As a result, it follows that reducing or eliminating access at the Hawley Road Interchange has a negative impact on local road operations due to the increased demand that is forced to use parallel local roadways and adjacent service interchanges.

6.0 VOLUME IMPACTS ON ADJACENT SERVICE INTERCHANGES

The following sections detail the specific volume impacts to the service interchanges adjacent to Hawley Road, 68th/70th Street, and the Stadium, as part of the diversion related to the various access scenarios. Adjacent service interchange operations for each access scenario are discussed further in **Section 7**.

Please note that Stadium Interchange system ramp movements referenced within this and subsequent sections utilize a "from-to" naming convention. For example, the I-94 EB to US 41 NB system ramp is recognized as the movement from the west leg of the Stadium Interchange to the north leg of the Stadium Interchange, and would be referred to as the "west-to-north" (W-N) system ramp.

Full Access Scenario

Under the Full Access Scenario, volumes generally increase in the design year, as compared to existing conditions, at the 68th/70th Street, Hawley Road, and Stadium Interchanges. Under this scenario, all three interchanges retain full access and therefore, forecasted design year volumes are a reflection of improved freeway geometry/operations (removal of left-hand ramps, improved horizontal and vertical curvature, additional capacity, etc.) and accessible/reliable parallel local routes. As noted previously, the forecasted volumes associated with the Full Access Scenario do include a consideration of the freeway capacity constraint through the cemetery section, which results in some diversion to the local street network.

The following sections further detail the volume impacts to each service interchange as part of the Full Access Scenario.

68th/70th Street Interchange

The 68th/70th Street Interchange is located approximately one half mile west of Hawley Road. 68th Street is a two-lane facility that serves as the connecting roadway between the service interchange and Bluemound Road, which runs parallel to I-94 on the north side of the freeway. Similarly, 70th Street is a four-lane facility that connects the interchange to Greenfield Avenue and National Avenue, located south of I-94. All three parallel roadways intersect with Hawley Road at signalized intersections.

Additionally, a percentage of the diversion to the 68th/70th Street Interchange can be attributed to the capacity constraint through the cemetery section, where some traffic avoids this section of freeway and utilizes the parallel local routes as a bypass.

Figure 5 on the following page shows the 2040 peak hour turning movement volumes at the 68th/70th Street Interchange under the Full Access Scenario. As noted previously, the peak hour volumes at this interchange associated with the Full Access Scenario can be considered as a "base" condition of the design year demand.

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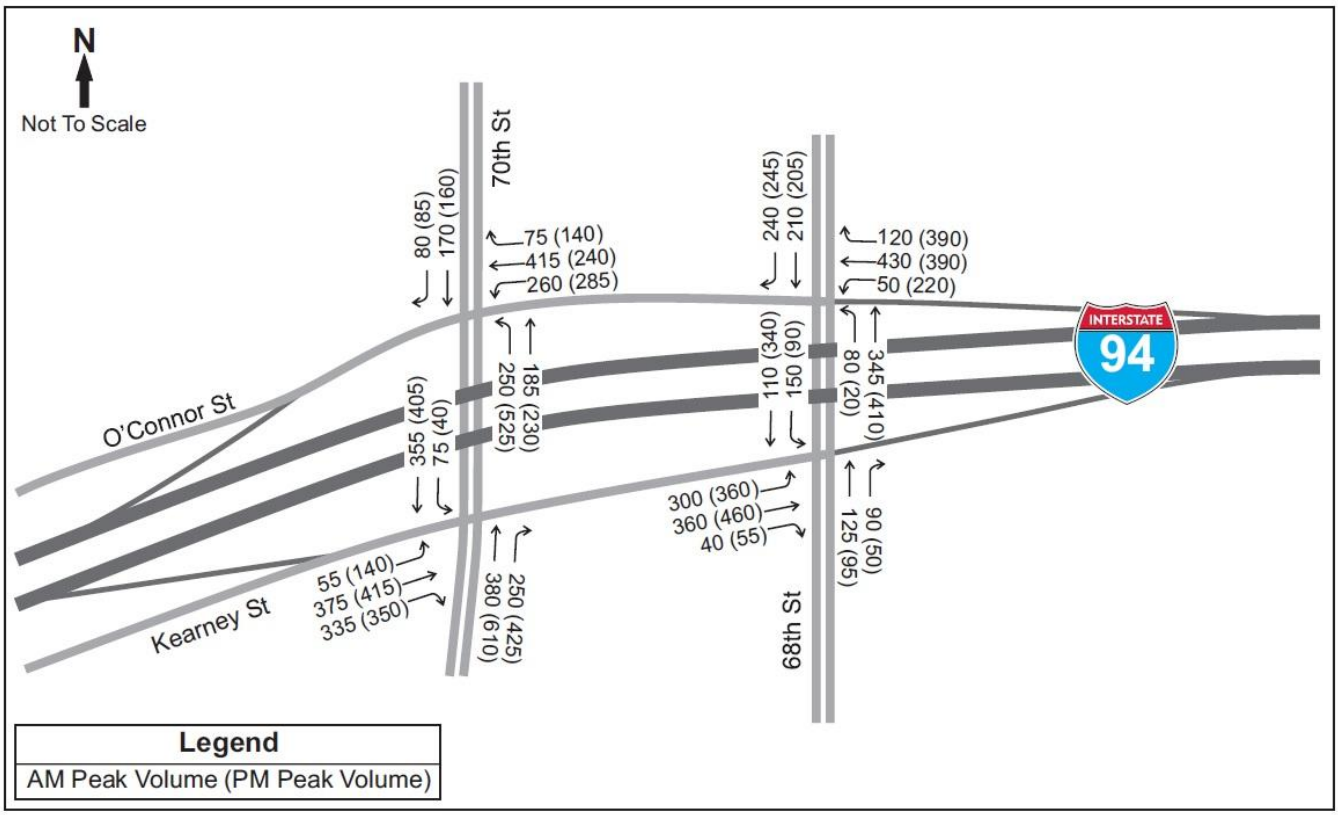
Figure 5: Full Access Scenario – 68th/70th Street Interchange 2040 Peak Hour Volumes

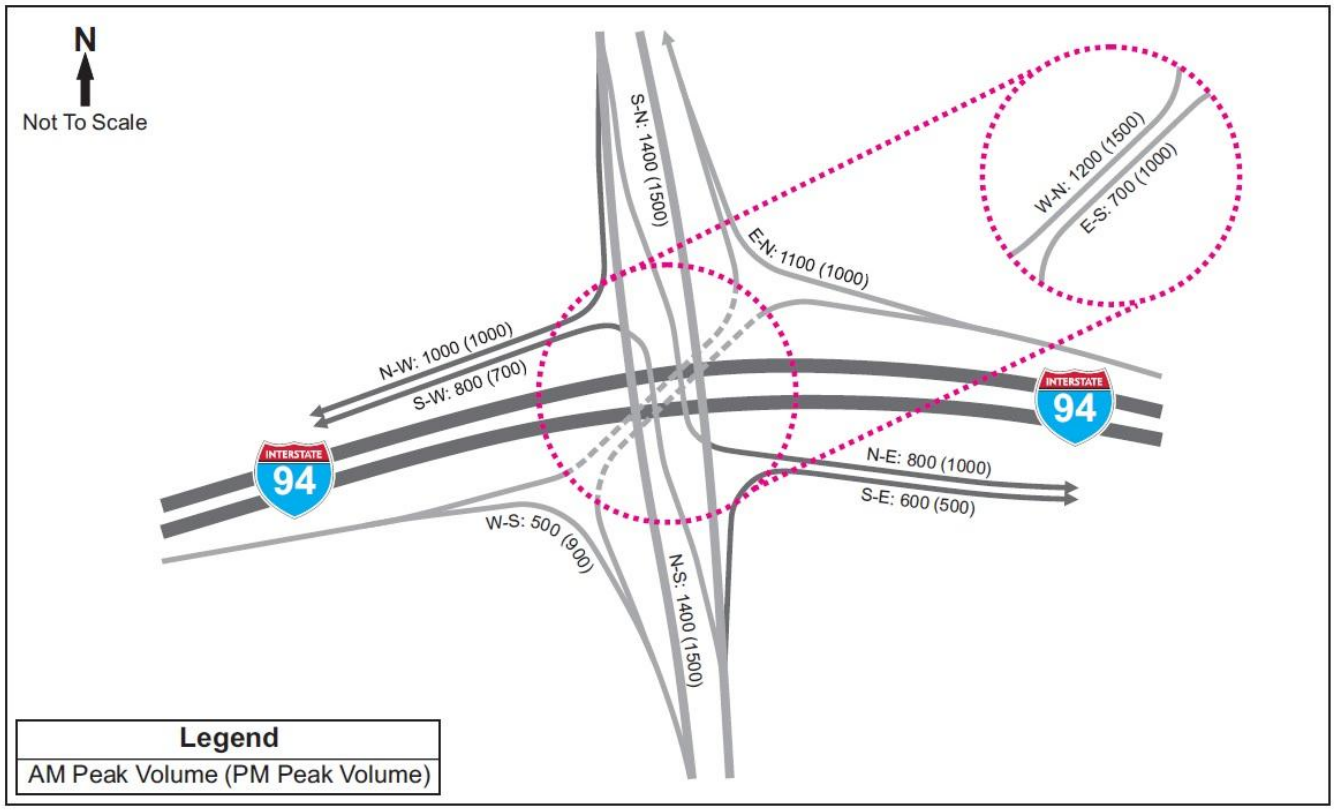


Stadium Interchange

The Stadium Interchange is a system interchange located approximately one mile east of Hawley Road. The Stadium Interchange serves WIS 341 (Miller Park Way) to the south of I-94 and US 41 to the north. WIS 341 is an eight-lane, signalized corridor that connects I-94 to National Avenue and Greenfield Avenue. US 41 is a six-lane, grade-separated roadway that connects US 41 north to Lisbon Avenue, and provides access to a few, major cross-streets (Wisconsin Avenue, Bluemound Road, State Street).

Figure 6 on the following page shows the 2040 peak hour volumes at the Stadium Interchange under the Full Access Scenario. Again, the peak hour volumes at this interchange associated with the Full Access Scenario can be considered as a "base" condition of the design year demand.

Figure 6: Full Access Scenario – Stadium Interchange 2040 Peak Hour Volumes



Partial Access Scenario

In comparison to the Full Access Scenario, peak hour volumes at the 68th/70th Street Interchange increase slightly, as access to and from the east is removed at Hawley Road. Peak hour volumes at the Stadium Interchange are increased more by comparison to the 68th/70th Street Interchange as part of the Full Access Scenario. The heaviest volume changes are concentrated to the system ramp movements to/from the east and south.

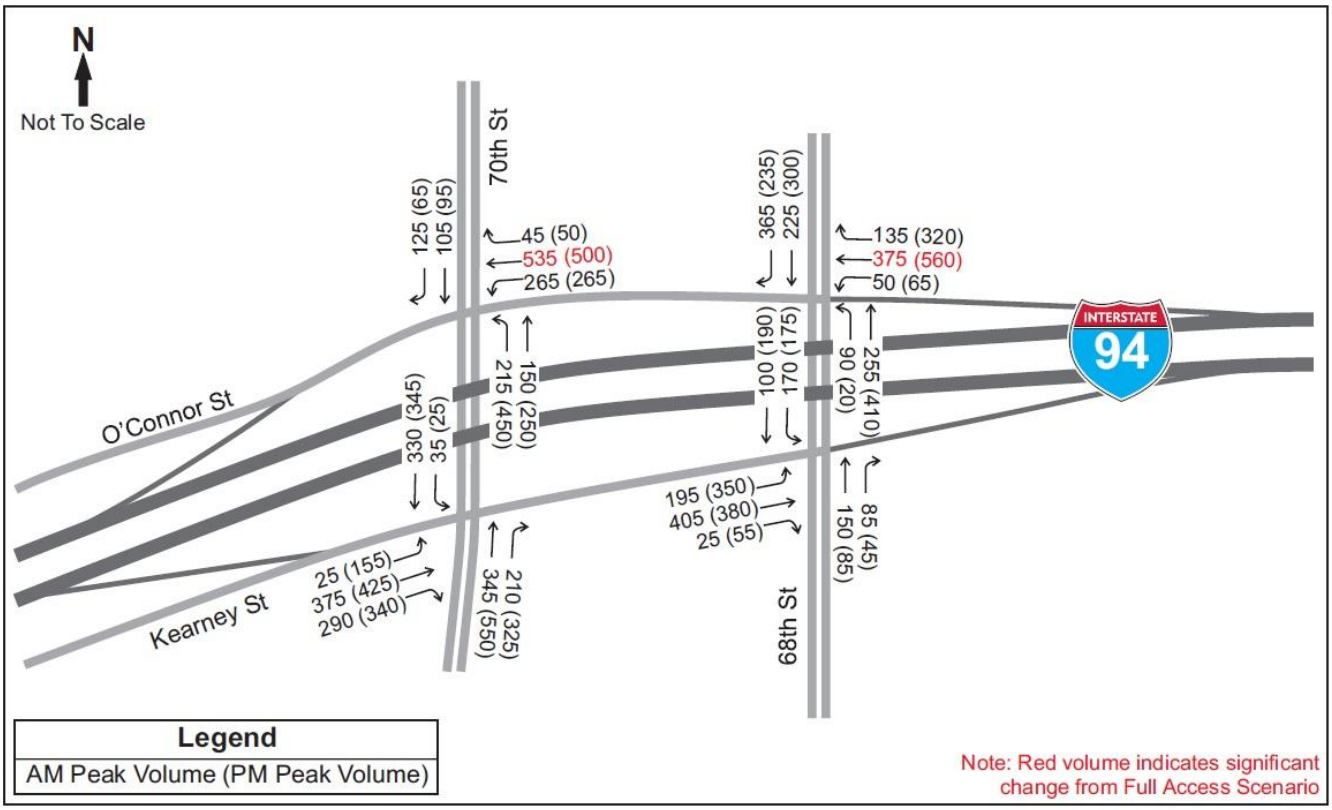
68th/70th Street Interchange

Providing a partial access service interchange at Hawley Road results in a slight volume shift to the related 68th/70th Street service ramps to/from the east (mainly the I-94 WB exit ramp), as traffic is forced to the adjacent interchange for freeway access. As a result, the I-94 WB exit ramp to 68th/70th Street and associated downstream turning movements (westbound through [WBT] at 68th Street, WBT at 70th Street) show slight increases in volume, as that traffic is shifted from the I-94 WB exit ramp to Hawley Road. There is little to no similar increase in traffic volumes of the I-94 EB entrance ramp, as the volumes associated with the Hawley Road EB entrance ramp are mainly shifted to the Stadium Interchange.

Again, it should be noted that there is still some diversion to the 68th/70th Street Interchange that is related to the freeway capacity constraint through the cemetery section.

Figure 7 below shows the design year peak hour turning movement volumes at the 68th/70th Street Interchange under the Partial Access Scenario. Turning movement volumes that are significantly different due to the assumed change in access in comparison to the Full Access Scenario are highlighted in red. Other volume changes not highlighted are considered secondary impacts caused by local traffic adjusting their routes due to the change in freeway-related traffic demand.

Figure 7: Partial Access Scenario – 68th/70th Street Interchange 2040 Peak Hour Volumes

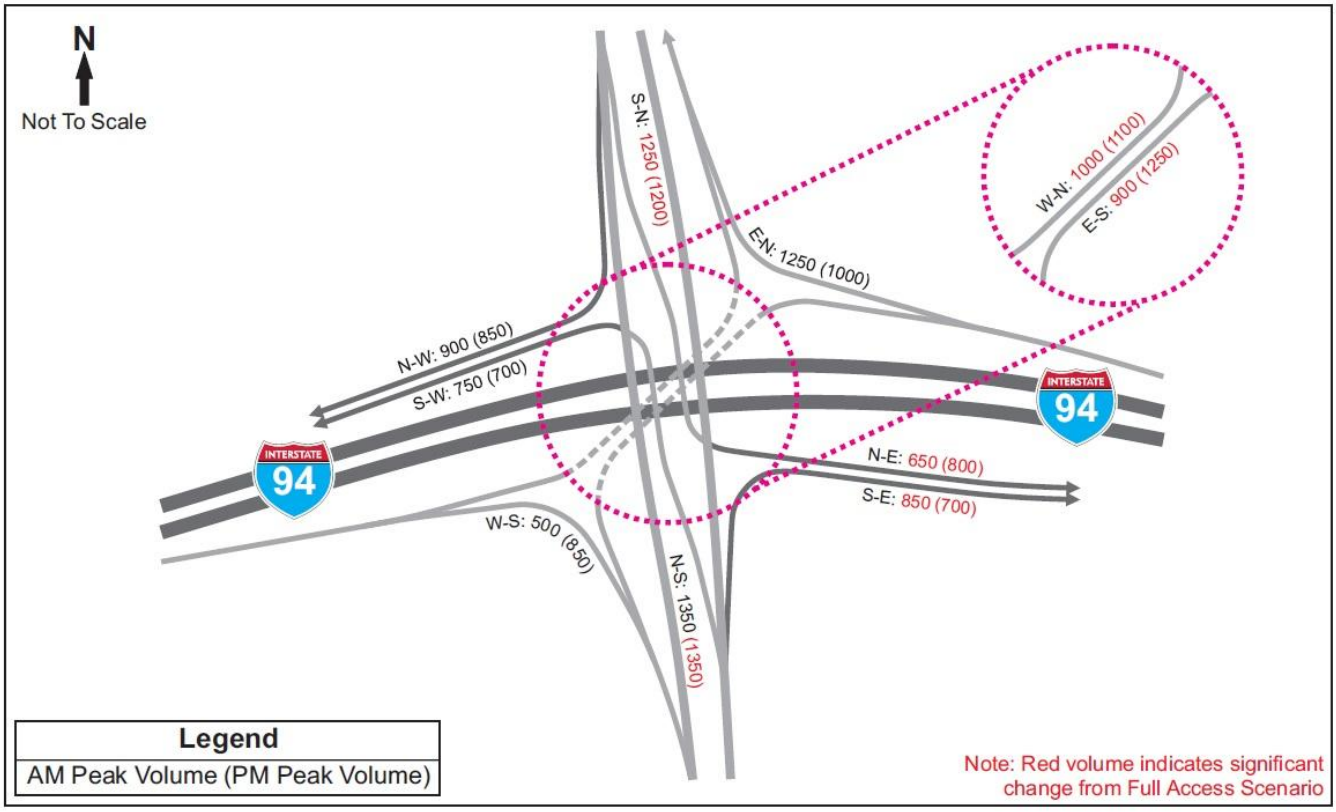


Stadium Interchange

The Partial Access Scenario at the Hawley Road Interchange has a significant impact on the Stadium Interchange in comparison to the Full Access Scenario. This is due to the location of the Stadium Interchange (east) in comparison to Hawley Road and the proposed partial access to/from the west under this scenario. The W-N and north-to-east (N-E) system ramp movements have reduced peak hour volumes during both peak hours in comparison to the Full Access Scenario. The W-N system ramp volume reduction is likely related, at least partially, to the loss of direct freeway access to the east from the Hawley Road Interchange. The increased volumes on the east-to-south (E-S) and south-to-east (S-E) system ramps are also likely related to the access modification at Hawley Road under the Partial Access Scenario, where traffic that would have normally used Hawley Road has shifted to the Stadium Interchange via the parallel local routes to enter and exit the freeway.

Figure 8 below shows the design year peak hour volumes at the Stadium Interchange under the Partial Access Scenario. The red, highlighted volumes designate changes in volume for specific ramps as part of this scenario. All other system ramp movement changes in volume, as compared to the Full Access Scenario, are assumed to be related to secondary impacts of freeway traffic demand adjusting their routes through the corridor due to the change in access at Hawley Road.

Figure 8: Partial Access Scenario – Stadium Interchange 2040 Peak Hour Volumes



No Access Scenario

Under the No Access Scenario at the Hawley Road Interchange, volumes generally increase at the 68th/70th Street and Stadium Interchanges due to a combination of their respective proximities, accessible/reliable parallel local routes, and freeway capacity constraint through the cemetery section. The following sections further detail the volume impacts to each service interchange, due to the removal of freeway access to/from Hawley Road.

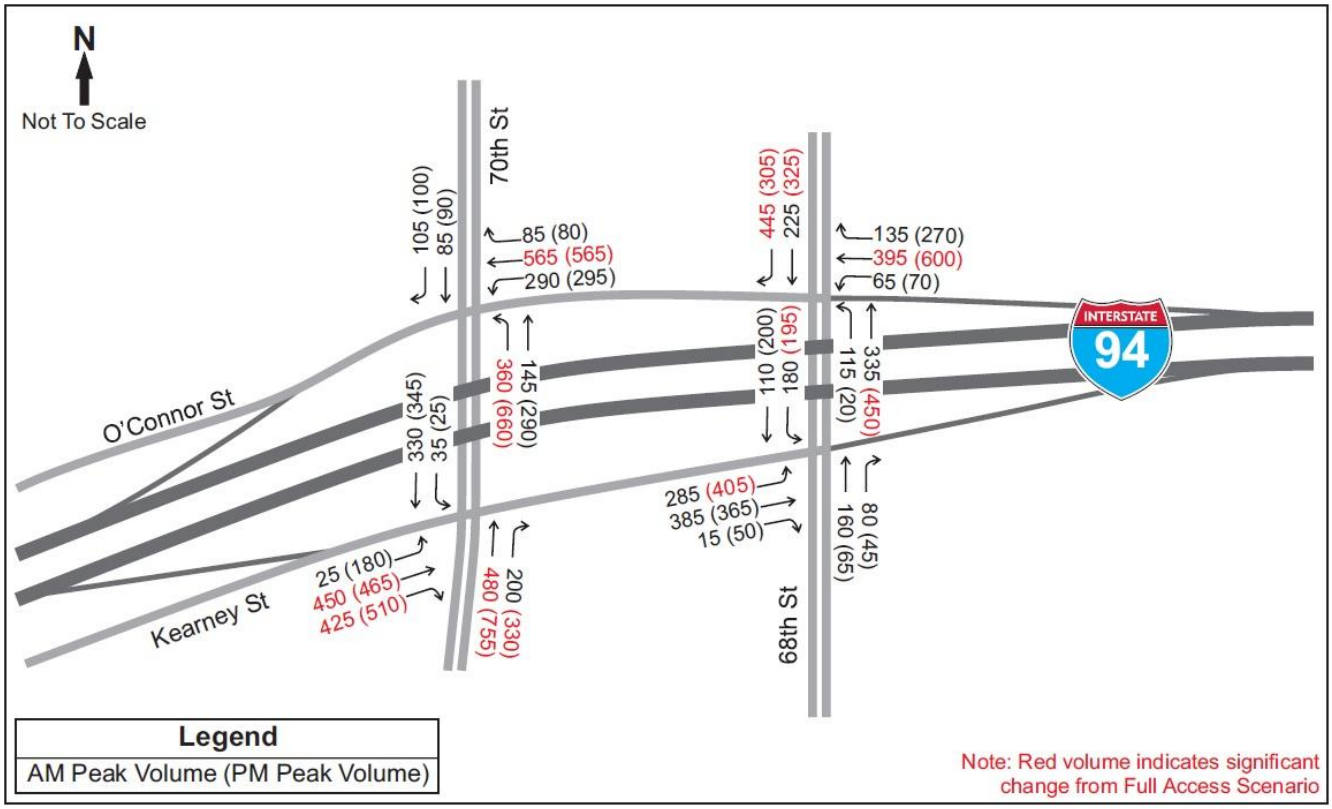
68th/70th Street Interchange

Removal of freeway access to/from the Hawley Road Interchange results in peak hour volume increases to the 68th/70th Street Interchange, specifically the I-94 EB exit and entrance ramps, and I-94 WB entrance ramp, as traffic shifts to the next available interchange. The changes in approach volumes at 68th Street (southbound [SB] approach) and 70th Street (northbound [NB] approach) are related to the diversion volumes on the local street network, as traffic uses the parallel routes to access this interchange.

Additionally, a percentage of the diversion to the 68th/70th Street Interchange can be attributed to the capacity constraint through the cemetery section, where some traffic avoids this section of freeway and utilizes the parallel local routes as a bypass.

Figure 9 below shows the design year peak hour turning movement volumes at the 68th/70th Street Interchange under the No Access Scenario. Turning movement volumes that are significantly different due to the assumed change in access in comparison to the Full Access Scenario are highlighted in red. Other volume changes not highlighted are considered secondary impacts caused by local traffic adjusting their routes due to the change in freeway-related traffic demand.

Figure 9: No Access Scenario – 68th/70th Street Interchange 2040 Peak Hour Volumes

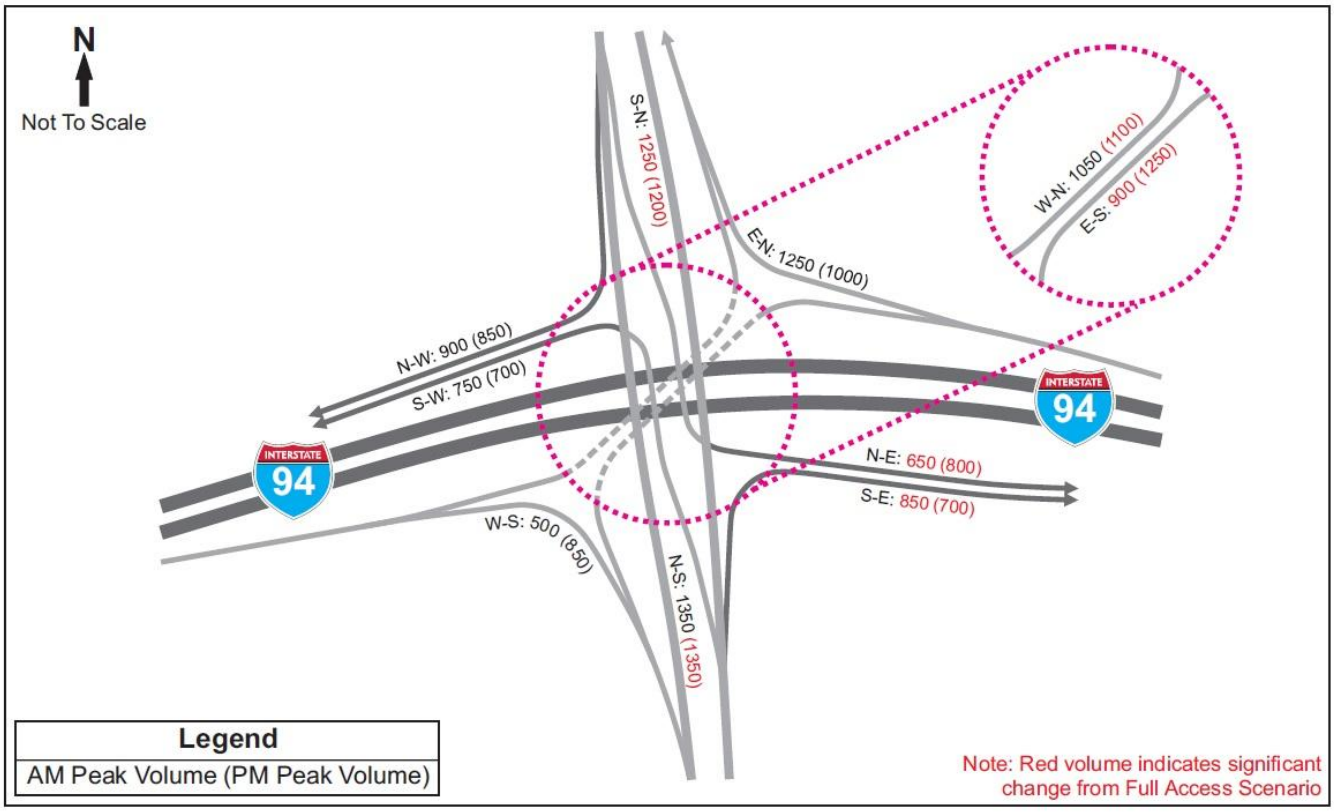


Stadium Interchange

The forecasted peak hour volumes for the Stadium Interchange under the No Access Scenario are very similar to those under the Partial Access Scenario. This is mainly due to the location of the Stadium Interchange (east) in comparison to Hawley Road. As such, the removal of the remaining access to and from the west at the Hawley Road Interchange under this scenario has little to no impact on the Stadium Interchange.

Figure 10 on the following page shows the design year peak hour volumes at the Stadium Interchange under the No Access Scenario. The red, highlighted volumes designate changes in volume for specific ramps as part of this scenario. All other system ramp movement changes in volume, as compared to the Full Access Scenario, are assumed to be related to secondary impacts of freeway traffic demand adjusting their routes through the corridor due to the change in access at Hawley Road.

Figure 10: No Access Scenario – Stadium Interchange 2040 Peak Hour Volumes



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7.0 FREEWAY AND ADJACENT SERVICE INTERCHANGE OPERATIONS

Freeway Operations

The I-94 mainline from the Stadium Interchange to the 68th/70th Street Interchange was analyzed for each Hawley Road access scenario using the 2010 Highway Capacity Manual (HCM) freeway methodology. The HCM 2010 peak hour LOS for each freeway segment is shown in **Figures 11** (AM Peak) **and 12** (PM Peak) on **pages 32 and 33**, with the results summarized for each peak hour in **Table 11** on **page 34**. As noted previously, while the Full Access Scenario was eliminated from consideration due to the scale of its impacts, it is retained in this section for comparative purposes. The following sections discuss the mainline operations across all three scenarios for each design year peak hour.

It should be noted that the 2010 HCM is a static analysis and therefore does not take into account adjacent segment conditions when determining an individual segment's operational characteristics. As a result, the reported average basic segment speeds shown in Table 8 are likely higher than what is operationally feasible due to the presence of ramp and weave segments within each access scenario, which will naturally introduce some turbulence and congestion within the corridor.

Table 10 on the following page shows a comparison of reported average speeds between 2010 HCM methodology and Paramics analysis for the Partial Access and No Access Scenarios. Paramics is a microsimulation software that helps model more complex freeway configurations and driver behaviors. The dynamic nature of this tool allows for a better understanding of the interactions between adjacent freeway segments, especially in congested or slower speed conditions. A comparison of resulting speeds under the Full Access Scenario is not available, as the study team has not created a Paramics model that includes full access at Hawley Road under the 8LAG Alternative at this time.

The average speeds reported from the Partial Access Scenario and No Access Scenario Paramics models have been averaged across all lanes for the entirety of each analysis segment to better correspond with the segmentation of the 2010 HCM analysis.

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Table 10: I-94 Mainline Operations – HCM 2010 and Paramics Speed Comparison

Partial Access Scenario

Location	HCM Segment Type	AM Peak Hour Reported Speed (mph)			PM Peak Hour Reported Speed (mph)		
		HCM 2010	Paramics	Difference	HCM 2010	Paramics	Difference
I-94 Eastbound							
70th St Exit to Lane Drop	Basic	65	53	12	65	56	9
Lane Drop to 68th St Entr Ramp	Basic	63	43	20	61	50	11
68th St Entr Ramp to Hawley Rd Exit Ramp	Weave	52	40	12	51	48	3
Hawley Rd Exit Ramp to Stadium Interchange	Basic	62	45	17	59	47	12
I-94 Westbound							
Stadium Interchange to Hawley Rd Entr Ramp	Basic	62	48	14	61	47	14
Hawley Rd Entr Ramp to 68th St Exit Ramp	Weave	51	51	0	50	50	0
68th St Exit Ramp to Lane Add	Basic	63	49	14	64	46	18
Lane Add to 70th St Entr Ramp	Basic	65	43	22	65	42	23

No Access Scenario

Location	HCM Segment Type	AM Peak Hour Reported Speed (mph)			PM Peak Hour Reported Speed (mph)		
		HCM 2010	Paramics	Difference	HCM 2010	Paramics	Difference
I-94 Eastbound							
70th St Exit to Lane Drop	Basic	65	56	9	65	55	10
Lane Drop to 68th St Entr Ramp	Basic	64	51	13	62	48	14
68th St Entr Ramp	Ramp	54	54	0	53	49	4
68th St Entr Ramp to Stadium Interchange	Basic	62	51	11	59	45	14
I-94 Westbound							
Stadium Interchange to 68th St Exit Ramp	Basic	62	49	13	61	48	13
68th St Exit Ramp	Ramp	51	52	1	51	53	2
68th St Exit Ramp to Lane Add	Basic	64	50	14	64	54	10
Lane Add to 70th St Entr Ramp	Basic	65	50	15	65	51	14

As shown in **Table 10** on the previous page, the 2010 HCM and Paramics analysis resulting speeds during the design year peak hours for the ramp and weave segments are fairly close to one another under both access scenarios, with the only exception being the I-94 EB weave during the AM peak hour (Partial Access Scenario). However, where the average speeds of adjacent basic segments under 2010 HCM methodology shows no influence of slower ramp/weave segments, Paramics does show the impact of the more turbulent ramp and weave sections on upstream and downstream basic segments, which is more realistic in comparison to field operations.

AM Peak Hour

In general, all three access scenarios operate similarly on the freeway mainline during the AM peak hour from a pure LOS standpoint. All scenarios operate between LOS C and LOS D between the 68th/70th Street Interchange and the Stadium Interchange, as shown in **Figure 11** on the following page.

However, there are some differences between the scenarios when considering average segment speeds during the AM peak hour. As shown in **Table 10 and 11**, the Partial Access and No Access Scenarios have similar average speeds and profiles in each direction along I-94 under both 2010 HCM and Paramics analyses. The slowest locations are mainline weave between 68th/70th Street and Hawley Road (Partial Access Scenario) and the 68th/70th Street service ramps to/from the east (No Access Scenario).

In comparison, the Full Access Scenario has the worst average resulting speed of all three scenarios during the AM peak hour at approximately 58 mph (2010 HCM), mainly due to a combination of ramp and weave locations that operate slower than the adjacent segments. The resulting increased turbulence due to both segment types in this scenario would likely result in slower speeds in both directions on the west leg, as indicated previously.

PM Peak Hour

Similar to the AM peak hour, there are parallels across all scenarios during the design year PM peak hour in terms of LOS and average speeds. All three scenarios operate between LOS C and LOS E between the 68th/70th Street Interchange and the Stadium Interchange, as shown in **Figure 12** on **page 33**. The LOS E segments occur (roughly) between Hawley Road and the Stadium Interchange, through the cemetery section. As noted previously, this section of I-94 for all 8LAG Alternative access scenarios is over-capacity in the design year and can only provide four, 11-foot wide lanes and less than desirable shoulder widths due to the physical constraints of the cemeteries located on either side of the freeway corridor.

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Figure 11: I-94 Mainline Operations Access Scenario Comparison - 2040 AM Peak Hour HCM 2010 Results

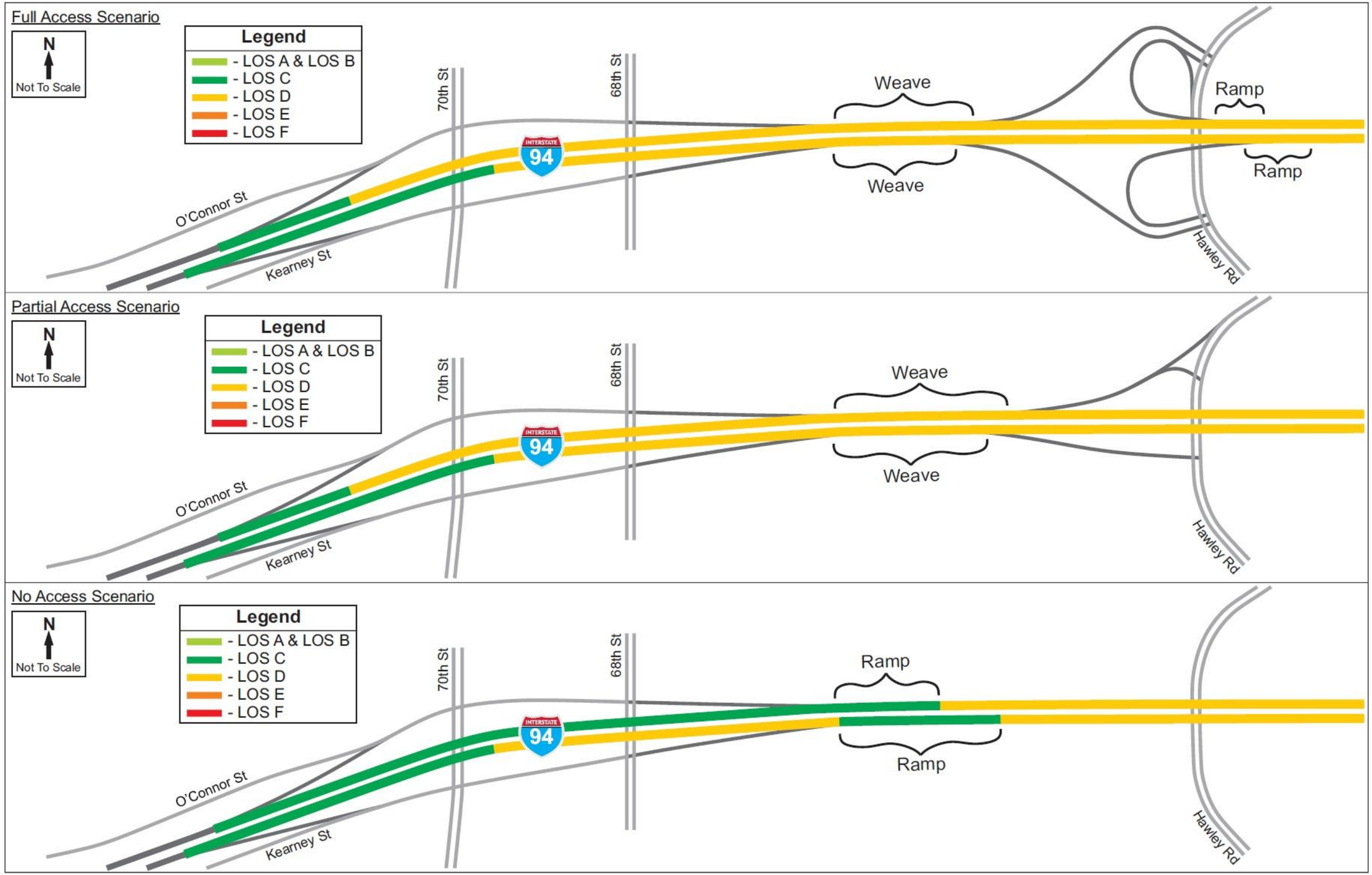

Figure 12: I-94 Mainline Operations Access Scenario Comparison - 2040 PM Peak Hour HCM 2010 Results

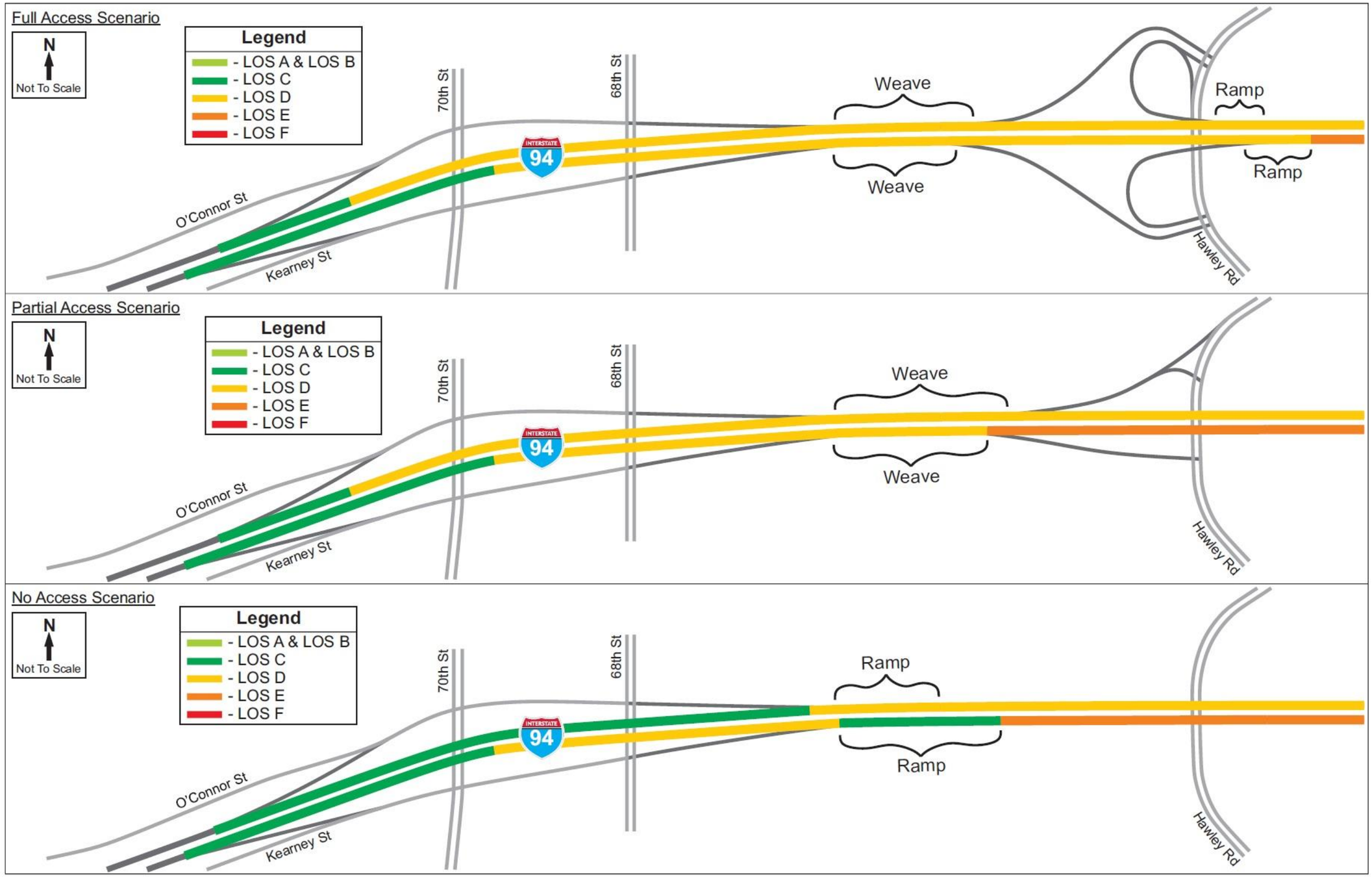

Table 11: I-94 Mainline Operations – HCM 2010 Results Comparison

Full Access Scenario

Location	HCM Segment Type	Number of Lanes	AM Peak Hour			PM Peak Hour		
			LOS	Density (pc/mi/ln)	Speed (mph)	LOS	Density (pc/mi/ln)	Speed (mph)
I-94 Eastbound								
70th St Exit Ramp to Lane Drop	Basic	5	C	21.4	65	C	24.2	65
Lane Drop to 68th St Entr Ramp	Basic	4	D	27.4	63	D	32.2	61
68th St Entr Ramp to Hawley Rd Exit Ramp	Weave	5	D	29.5	52	D	33.7	50
Hawley Rd Exit Ramp to Hawley Rd Entr Ramp	Basic	4	D	28.5	63	D	32.2	61
Hawley Rd Entr Ramp	Ramp	4	D	30.2	49	D	29.8	49
Hawley Rd Entr Ramp to Stadium Interchange	Basic	4	D	34.3	59	E	36.6	58
I-94 Westbound								
Stadium Interchange to Hawley Rd Exit Ramp	Basic	4	D	31.4	61	D	33.0	60
Hawley Rd Exit Ramp	Ramp	4	D	32.5	49	D	33.5	49
Hawley Rd Exit Ramp to Hawley Rd Entr Ramp	Basic	4	D	30.2	62	D	31.7	61
Hawley Rd Entr Ramp to 68th St Exit Ramp	Weave	5	D	32.9	49	D	34.4	48
68th St Exit Ramp to Lane Add	Basic	4	D	34.1	59	D	28.7	63
Lane Add to 70th St Entr Ramp	Basic	5	C	25.2	64	C	22.2	65

Partial Access Scenario

Location	HCM Segment Type	Number of Lanes	AM Peak Hour			PM Peak Hour		
			LOS	Density (pc/mi/ln)	Speed (mph)	LOS	Density (pc/mi/ln)	Speed (mph)
I-94 Eastbound								
70th St Exit Ramp to Lane Drop	Basic	5	C	20.9	65	C	23.1	65
Lane Drop to 68th St Entr Ramp	Basic	4	D	27.7	63	D	32.2	61
68th St Entr Ramp to Hawley Rd Exit Ramp	Weave	5	D	29.7	52	D	33.7	51
Hawley Rd Exit Ramp to Stadium Interchange	Basic	4	D	30.0	62	E	35.0	59
I-94 Westbound								
Stadium Interchange to Hawley Rd Entr Ramp	Basic	4	D	30.5	62	D	31.1	61
Hawley Rd Entr Ramp to 68th St Exit Ramp	Weave	5	D	30.5	51	D	31.7	50
68th St Exit Ramp to Lane Add	Basic	4	D	28.7	63	D	26.9	64
Lane Add to 70th St Entr Ramp	Basic	5	C	21.2	65	C	20.2	65

No Access Scenario

Location	HCM Segment Type	Number of Lanes	AM Peak Hour			PM Peak Hour		
			LOS	Density (pc/mi/ln)	Speed (mph)	LOS	Density (pc/mi/ln)	Speed (mph)
I-94 Eastbound								
70th St Exit Ramp to Lane Drop	Basic	5	C	20.9	65	C	23.1	65
Lane Drop to 68th St Entr Ramp	Basic	4	D	26.6	64	D	30.4	62
68th St Entr Ramp	Ramp	4	C	24.6	54	C	27.1	53
68th St Entr Ramp to Stadium Interchange	Basic	4	D	30.3	62	E	35.0	59
I-94 Westbound								
Stadium Interchange to 68th St Exit Ramp	Basic	4	D	30.5	62	D	31.1	61
68th St Exit Ramp	Ramp	4	C	27.5	51	D	29.8	51
68th St Exit Ramp to Lane Add	Basic	4	D	27.1	64	C	25.6	64
Lane Add to 70th St Entr Ramp	Basic	5	C	21.2	65	C	20.2	65

The differences between the scenarios in terms of average freeway directional operating speeds and profiles on the west leg, as noted in the "AM Peak Hour" discussion previously, again holds true for the PM peak hour. As indicated in **Tables 10 and 11**, the Partial Access and No Access Scenarios have similar average freeway directional speeds through the basic and ramp/weave segments under both the 2010 HCM methodology and Paramics analysis. For the No Access Scenario, the LOS E basic segment through the cemetery section would likely result in some additional turbulence and congestion near the I-94 EB entrance ramp from 68th/70th Street under the 2010 HCM analysis, which consequently would degrade the reported LOS.

Again, the Full Access Scenario shows the worst average freeway operating speeds in each direction as compared to the previous two access scenarios (2010 HCM). As noted previously, the presence of both ramp and weave segments has a detrimental effect on the operations of the corridor as a whole.

Adjacent Service Interchange Operations

The 68th/70th Street Interchange and Stadium Interchange ramp terminals were analyzed for each access scenario using Synchro and results reported from the HCM 2010 signalized intersection methodology. The Synchro-reported HCM 2010 peak hour LOS and delay for each movement and ramp terminal as a whole is shown for each access scenario in **Tables 12-14** (68th/70th Street Interchange) and **Table 15** (Stadium Interchange). Peak hour LOS for the Hawley Road Interchange ramp terminals under the Full Access and Partial Access Scenarios was reported in **Sections 3 and 4**, respectively. The following sections discuss the ramp terminal operations in further detail.

68th/70th Street Interchange

The proposed ramp terminal geometry of the split-diamond design for the 68th/70th Street Interchange remains relatively unchanged for all access scenarios, with some slight intersection modifications to better accommodate specific movements. The three-phase signalization of all four ramp terminals helps to provide acceptable operations across all scenarios and peak hours.

Under the Full Access Scenario, the 68th/70th Street Interchange operates between LOS B and LOS C overall, with some movements operating at LOS D. The intersection of 70th Street and O'Connor Street operates that worse overall of the four ramp terminals, which serves heavy NB and WB movements. **Table 12** on the following page shows the 2040 peak hour operations for the 68th/70th Street Interchange ramp terminals under the Full Access Scenario.

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Table 12: Full Access Scenario - Proposed 68th/70th Street Interchange Peak Hour Operations

Ramp Terminal	Peak Hour	Level of Service (LOS) and Delay (sec) by Movement												Overall Int
		Eastbound			Westbound			Northbound			Southbound			
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
68th Street and I-94 WB Exit Ramp (O'Connor Street)	AM	-	-	-	B 11.4	B 13.7		A 6.9	A 7.3	-	-	B 14.0	B 16.3	B 11.8
	PM	-	-	-	B 11.0	B 13.3		A 9.6	B 12.2	-	-	B 17.5	C 20.6	B 13.7
70th Street and O'Connor Street	AM	-	-	-	C 25.5	C 25.0		A 4.1	A 0.3	-	-	C 27.9	C 27.3	B 18.5
	PM	-	-	-	D 39.1	C 34.9		A 4.0	A 0.2	-	-	C 32.3	C 32.1	C 20.4
70th Street and Kearney Street	AM	B 19.4		B 18.8	-	-	-	-	C 20.2	A 0.0	A 7.1		-	B 15.3
	PM	C 26.9		C 25.7	-	-	-	-	C 24.4	A 0.0	A 1.5		-	B 18.7
68th Street and I-94 EB Entr Ramp (Kearney Street)	AM	B 19.7	B 17.3	B 15.5	-	-	-	-	B 17.7		A 8.5	A 3.4	-	B 15.5
	PM	C 20.3	B 17.7	B 15.3	-	-	-	-	B 18.3		A 8.8	A 4.0	-	B 14.5

Operations of the 68th/70th Street Interchange ramp terminals under the Partial Access Scenario would operate no worse than LOS C during both peak hours. Overall operations, and more specifically at the intersection of 70th Street and Kearney Street, slightly degrade in comparison to the Full Access Scenario where some of the previous scenario's traffic demand the Hawley Road Interchange is shifted to the 68th/70th Street Interchange, as freeway access is provided to and from the west with the half interchange. **Table 13** below shows the design year peak hour operations for the 68th/70th Street Interchange ramp terminals under the Partial Access Scenario.

Table 13: Partial Access Scenario - Proposed 68th/70th Street Interchange Peak Hour Operations

Ramp Terminal	Peak Hour	Level of Service (LOS) and Delay (sec) by Movement												Overall Int
		Eastbound			Westbound			Northbound			Southbound			
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
68th Street and I-94 WB Exit Ramp (O'Connor Street)	AM	-	-	-	B 14.4		B 12.6	A 5.5	A 3.3	-	-	B 12.3	B 16.4	B 11.3
	PM	-	-	-	B 13.7		B 12.2	A 8.4	B 14.5	-	-	B 15.5	B 16.7	B 14.2
70th Street and O'Connor Street	AM	-	-	-	C 22.6	C 22.0	B 18.4	A 4.8	A 1.0	-	-	C 24.3	C 29.8	B 17.5
	PM	-	-	-	D 35.6	C 34.0	C 29.2	A 3.8	A 0.3	-	-	C 30.4	C 30.9	C 20.3
70th Street and Kearney Street	AM	C 33.3		C 32.2	-	-	-	-	B 11.4	A 0.0	B 17.1		-	C 21.0
	PM	D 39.5		D 35.2	-	-	-	-	B 17.2	A 0.0	B 13.0		-	C 24.1
68th Street and I-94 EB Entr Ramp (Kearney Street)	AM	B 18.3	B 18.6		-	-	-	-	B 16.0		A 7.2	A 2.3	-	B 14.8
	PM	C 20.1	B 17.9		-	-	-	-	B 17.2		A 8.8	A 2.4	-	B 14.9

As shown in **Table 14** below, all four 68th/70th Street Interchange ramp terminals operate at LOS C or better during both design year peak hours under the No Access Scenario. The intersection of 70th Street and Kearney Street operates the worst overall of the four ramp terminals, which serves not only traffic that would have exited at Hawley Road downstream, but also diversion associated with the capacity constraint through the cemetery section. As a result, the eastbound approach operates at LOS C and LOS D during the peak hours as traffic utilizes the intersection to access 70th Street SB or 68th Street NB via the downstream intersection.

Table 14: No Access Scenario - Proposed 68th/70th Street Interchange Peak Hour Operations

Ramp Terminal	Peak Hour	Level of Service (LOS) and Delay (sec) by Movement												Overall Int
		Eastbound			Westbound			Northbound			Southbound			
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
68th Street and I-94 WB Exit Ramp (O'Connor Street)	AM	-	-	-	B 15.1		B 13.0	A 6.7	B 10.9	-	-	B 11.8	B 16.4	B 13.0
	PM	-	-	-	B 14.5		B 12.4	A 8.6	B 15.8	-	-	B 15.6	B 17.6	B 15.1
70th Street and O'Connor Street	AM	-	-	-	C 27.4	C 26.3	C 22.3	A 4.5	A 0.4	-	-	C 30.4	D 37.9	B 19.5
	PM	-	-	-	D 36.0	C 34.1	C 29	A 3.3	A 0.2	-	-	D 38.3	D 48.6	B 19.8
70th Street and Kearney Street	AM	C 34.7		C 33.3	-	-	-	-	B 14.2	A 0.0	B 17.6		-	C 22.2
	PM	D 53.8		D 43.8	-	-	-	-	C 24.2	A 0.0	C 21.6		-	C 32.7
68th Street and I-94 EB Entr Ramp (Kearney Street)	AM	B 19.5	B 17.9		-	-	-	-	B 17.6		A 8.4	A 3.2	-	B 15.5
	PM	C 20.8	B 17.5		-	-	-	-	B 18.0		B 11.2	A 7.9	-	B 16.2

Stadium Interchange

The proposed Stadium Interchange design includes two, signalized ramp terminals with flyover ramps for the system interchange movements from I-94 to US 41 (north) and WIS 341 (south). The ramp terminals service the N-E and south-to-west (S-W) system ramp movements that conflict with the corresponding north-south movements through the interchange. Each ramp terminal operates independently as a two-phase signal, which allows for greater flexibility within the signal timings to accommodate changes in demand.

As shown in **Table 15** on the following page, both Stadium Interchange ramp terminals operate at LOS B during the design year peak hours under the No Access and Partial Access Scenarios. These two scenarios are shown with the same operations as the Stadium Interchange demands at the ramp terminals are unaffected by the access at Hawley Road. The Stadium Interchange ramp terminals operate slightly worse under the Full Access Scenario as there is slightly greater demand at this interchange in comparison to the Partial and No Access Scenarios.

Table 15: Access Scenarios - Proposed Stadium Interchange Peak Hour Operations

Ramp Terminal	Peak Hour	Level of Service (LOS) and Delay (sec) by Scenario					
		No Access & Partial Access			Full Access		
		Through	Turning	Int	Through	Turning	Int
S-N (WIS 341 NB) & N-E	AM	C 26.7	A 9.1	B 15.1	C 27.6	B 11.5	B 17.3
	PM	C 24.7	B 11.2	B 16.6	C 29.0	B 14.8	C 20.5
N-S (US 41 SB) & S-W	AM	C 27.5	B 10.6	B 16.6	C 27.6	B 11.5	B 17.3
	PM	C 28.4	A 9.8	B 16.2	C 30.4	B 10.0	B 16.5

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8.0 CONCLUSION

The 8LAG Alternative is restricted through the cemetery section to four mainline lanes in each direction, with less than desirable lane and shoulder widths to fit within the existing ROW available and avoid impacts to the cemeteries on either side of the freeway. As a result, the Hawley Road Interchange has been eliminated (No Access Scenario) from the 8LAG Alternative, due to significant impacts related to ROW and the geometric/physical constraints of the cemetery section.

However, the study team has re-examined all three access scenarios (full, partial, and no) at the Hawley Road Interchange, as the proposed elimination of freeway access under the 8LAG Alternative has received strong opposition from stakeholders, including local governments, adjacent businesses, the VA Medical Center, and others. **Table 16** below shows a comparison of important items for the consideration of each access scenario:

Table 16: Access Scenarios Comparison

Scenario	Characteristics				
	Freeway Access	ROW Impacts	Level of Service	Average Operating Speed (mph)[2]	Hawley Rd Int Local/Adj Int Diversion
Full	To/from east and west	50 properties	LOS D-E[1]	N/A	0%
Partial	To/from west only	None	LOS D-E[1]	47	66%
No	None	None	LOS C-E[1]	51	100%

1 – Freeway capacity constraint through the cemetery section results in LOS E for all scenarios
2 – Average speeds reported based on Paramics results

As demonstrated in **Table 16** above, the Full Access Scenario at Hawley Road provides full freeway access, while lessening the demand on adjacent service interchanges and the local street network. However, the full service interchange would not operate as well as the other two scenarios overall and has by far the most significant environmental impacts. In comparison, the No Access Scenario has had little public support, mainly due to the loss in direct freeway access at Hawley Road. However, the removal of the Hawley Road Interchange would possibly free up land for redevelopment. The Partial Access Scenario is similar in terms of impacts and the potential for available land. However, providing freeway access to and from the west only would still force approximately two-thirds of the design year demand at Hawley Road to divert to the local street network and adjacent service interchanges to access I-94.

Additionally, potential driver unfamiliarity with the area and the No and Partial Access Scenarios (since they do not provide full freeway access), can be mitigated by directing travelers to the adjacent freeway access points at 68th/70th Street (one half mile west), Stadium (one mile east), or the 44th/46th Street ("embedded") via the local parallel arterials through the use of way-finding signage. The parallel arterials are located close enough to I-94 that utilizing these roadways to access I-94 does not significantly inconvenience drivers.

DRAFT

As such, WisDOT and the study team would like to request approval from FHWA to study the Partial Access Scenario at Hawley Road in further detail. Additional investigation of the Partial Access Scenario will allow WisDOT and the project team to explain to the public that all realistic options for Hawley Road under the 8LAG Alternative have been thoroughly analyzed and the associated impacts understood.

It should be noted that while the technical merits of the Partial Access Scenario may not significantly outweigh the potential issues, WisDOT and the study team feel that retaining a partial access interchange at Hawley Road could help to address significant stakeholder concerns regarding the loss of access at the Hawley Road Interchange under the 8LAG Alternative. At the very least, the Partial Access Scenario could represent a possible compromise for all parties involved that satisfies a degree of stakeholder mobility and access concerns, while still avoiding impacts through the cemetery section and lessening the operational impacts to adjacent interchanges and the local street system to the greatest extent possible under the 8LAG design.

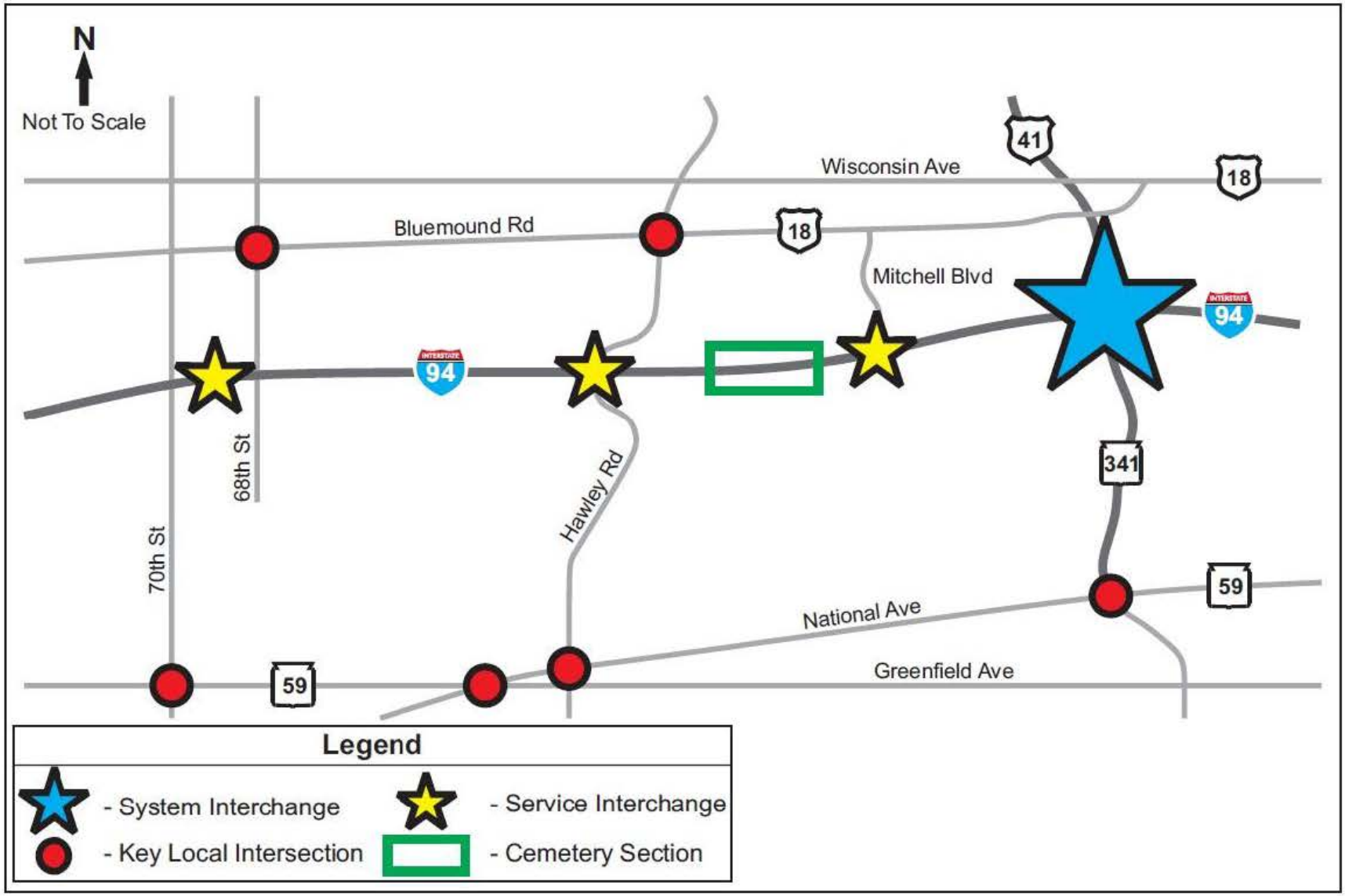
DRAFT

APPENDIX A: HAWLEY ROAD INTERCHANGE: ACCESS SCENARIO DESIGNS

DRAFT

APPENDIX B: LOCAL ROAD INTERSECTION ANALYSIS LOCATIONS

DRAFT


N
Not To Scale
Wisconsin Ave
41
18
Bluemound Rd
18
Mitchell Blvd
94
94
68th St
70th St
Hawley Rd
341
59
National Ave
59
Greenfield Ave
Legend
- System Interchange
- Service Interchange
- Key Local Intersection
- Cemetery Section

I-94 East-West Corridor Study
Indirect and Cumulative Land Use Effects – Influencing Factors

This summary is meant to provide the rationale and background for the land use effects for the indirect and cumulative effects analyses. This summary is relevant to the indirect effects analysis and the cumulative effects land use analysis for Milwaukee and Waukesha counties. It provides the research basis for land use effects and it shows the various factors that influence the magnitude of the effects.

Several research studies have shown that land use effects can result from improved transportation access that enables faster or more reliable travel between destinations, or by new access to destinations. The most recent research on this topic was published in 2012 by the Transportation Research Board (TRB). The report titled *Interactions Between Transportation Capacity, Economic Systems, and Land Use* analyzed 100 transportation case studies that documented the long-term before-and-after economic impacts of a variety of highway capacity investments (Strategic Highway Research Program 2012). According to the report, case studies confirmed the following typical sequence of land use and economic impacts that occur over time as a result of improved transportation accessibility:

- Land becomes more attractive as a place to live, work or recreate.
- Building construction and investment occurs.
- Residential and employment growth occurs.
- Local property tax revenues rise and sales and income taxes increase.

Based on the findings of this study as well as other past studies that have found similar findings, we can assume the I-94 East-West project, and the SE Freeways plan, would have some influence on land use development patterns as a result of capacity expansion that may improve accessibility. However, the TRB study also found that improved transportation accessibility alone is not enough to cause land use change. As documented in the TRB report, supportive local factors such as availability of land; local government development policies and incentives; availability of complimentary infrastructure (i.e. sewer and water); and local economic conditions affect the magnitude of a transportation project's long-term economic impact (Strategic Highway Research Program 2012). The report states that transportation case studies with supportive local factors generated substantially more positive economic development outcomes. Conversely, transportation case studies that lacked local supporting factors or had distressed economies were associated with fewer economic development results.

Another important consideration that influences the magnitude of land use effects is the extent and maturity of existing transportation infrastructure. As discussed in the NCHRP Report 466, the influence of highway projects on land use diminishes with successive improvements because each new improvement brings a successively smaller increase in accessibility (National Cooperative Highway Research Program 2002). This means that new highways have a much larger effect on land use compared with an existing facility that is expanded.

The following table summarizes the presence of these various factors that influence the magnitude of land use effects. Factors that have a high rating increase the probability for a substantial effect and factors with a low rating greatly minimize the likelihood and magnitude of land use effects. Factors with a medium rating fall between high and low ratings.

Rating	**Factors that influence the probability and magnitude of land use effects**					
	Improved accessibility	**Maturity of existing transportation system**	**Available land**	**Favorable local development policies and incentives**	**Complimentary infrastructure (i.e. sewer/water)**	**Local/Regional economic conditions**
High						
Medium/High						
Medium				**X**	**X**	
Medium/Low	**X**		**X**			
Low		**X**				**X**
Rational for rating	Historically, the original construction of the I-94 East-West corridor greatly improved accessibility to Waukesha County	A low rating was given because the region has a very mature transportation system comprised of freeways and local arterials	A medium low rating was given because of the fairly developed nature of the study area. The majority of major developments	A medium rating was given because most urban and suburban communities in the study area utilize development	A medium rating was given because a nearly all of Milwaukee County and a large portion of Waukesha County are served by existing sewer and	A low rating was given because the region and the state are relatively slow growth areas in comparison to other areas of the

	and most likely helped facilitate the spread of development along the freeway corridor and the redistribution of population and employment between the two counties. A medium low rating was given because the subsequent improvements and widening of I-94 in Milwaukee and Waukesha counties are incremental. It will provide some accessibility benefits from reduced congestion and more reliable travel times, but these subsequent access benefits will be much less in comparison to the original construction of the freeway because no new interchanges[1] are being constructed and the travel time savings are not expected to be great enough to substantially alter travel patterns in the region.	that already provide a great deal of transportation accessibility. Even the less developed portions of Waukesha County are accessible by existing transportation infrastructure.	tend to occur on infill sites and within redevelopment districts that are within or adjacent to existing population and employment centers. . The majority of Milwaukee County is developed.[2] Former industrial areas are undergoing redevelopment throughout the county, most notably in Milwaukee, West Allis and Wauwatosa. The eastern portion of Waukesha County is largely developed, but it is also has redevelopment districts. Available infill sites are attractive for development because of their close proximity to the region's exiting population and employment base. The western portion of Waukesha county still has large tracts of undeveloped land and some areas along I-94 like Oconomowoc have experienced recent development. However, the western portion of the county tends to be less attractive to development because it is farther from the region's population and employment base and large tracts of land are protected natural areas. Plus, a substantial amount of land is under low-density zoning regulations further limiting the intensity of development in this portion of the county.	tools such as tax increment districts to grow their tax base and encourage employment growth within former industrial areas. However, the communities have policies and regulations in place to limit the intensity and density of development. They also have policies in place that preserve existing residential areas.	water facilities. However, a substantial portion of land within western and southern Waukesha County is outside an existing or planned sewer service area and lacks access to municipal water. Also, lands to the west of the subcontinental divide, which runs north-south through the eastern portion of Waukesha County are not able to access Lake Michigan water due to an international Great Lakes water compact. And, some of the communities that relay on ground water have high levels of radium including the City of Waukesha.	country such as Florida, Texas and California in the south and west. These areas have very high population and employment growth rates and are more susceptible to rapid changes in land use. Since the SE WI region and the state in general are slower growth areas, the potential for rapid change in response to infrastructure accessibility is much less substantial.

1. The only new interchange recommended within Milwaukee and Waukesha counties in the 2035 SEWRPC regional transportation plan is at Calhoun Road in Brookfield. To date this interchange has not been constructed and there are currently no plans to begin design and construction.
2. Milwaukee County is the state's most urbanized county and most communities are fully developed. Franklin and Oak Creek are the only communities within the county that have substantial land remaining undeveloped.

High – Factor increases probably for land use effects
Medium – Factor has a medium probability for land use effects
Low – Factor lowers probability for land use effects

Conclusions

Based on the range of factors that influence the probability and magnitude of land use effects, the I-94 East-West indirect and cumulative effects study area has a medium-low rating for land use effects. This supports the conclusions in the ICE report that state some induced development in Waukesha County may be present as a result of the preferred alternative (and the build out of the SE freeways in Milwaukee and Waukesha counties), but the effects are not expected to be substantial in comparison to existing trends or the No Build alternative. Due to the region's mature transportation system that already provides a great deal of accessibility and the incremental access benefits afforded from the expansion of I-94, Milwaukee and Waukesha counties will likely continue to develop as planned by local comprehensive plans and the redistribution of population and employment between the two counties would likely continue in accordance with existing trends. It is also possible the modernization of the I-94 East-West corridor could help the primary study area remain competitive within the region by reducing congestion and making safety and operations improvements to the interchanges. However, this effect is not expected to substantially change land use patterns because the primary study area already has a great deal of access to I-94 and the Preferred alternative maintains access in generally the same locations (except for Hawley Road and Mitchell Boulevard).

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TRAVEL FORECASTING METHODOLOGY FOR I-94 EAST-WEST CORRIDOR STUDY

To: Bethaney Bacher-Gresock/FHWA

From: WisDOT I-94 East-West Study Team

Date: January 26, 2016

The purpose of this memo is to summarize the process of developing forecasts of future traffic volumes on the I-94 East-West corridor (between 70th to 16th Streets) in Milwaukee, Wisconsin. WisDOT utilized forecasts developed by the Southeastern Wisconsin Regional Planning Commission (SEWRPC) for a variety of purposes on this project. This memo was prepared to address FHWA Wisconsin Division comments on the preliminary Final Environmental Impact Statement (EIS) for this project.

TRAVEL DEMAND FORECASTING

The I-94 East-West Corridor study is within the Southeastern Wisconsin Regional Planning Commission, or SEWRPC, planning area. SEWRPC serves as the area's regional planning commission and metropolitan planning organization. Part of SEWRPC's regional planning activities includes the development of land use and transportation plans.

To develop its long range plans, SEWRPC begins with the land use planning effort. The transportation plan and long range travel demand forecasting is completed after the land use plan is complete. All future needs for transit, street and highway, and other transportation improvements considered in the regional transportation planning process are derived from the future growth proposed in the regional land use plan. SEWRPC first develops regional population, household, and employment forecasts which identify reasonable and desirable expectations for total growth in the region[1]. In developing the year 2035 land use plan, SEWRPC considered community and county land use plans during the allocation of the forecast population and employment throughout the Region. The land use plan assigned regional population, employment and development growth with the existing (as of 2000-2001) transportation network as the base assumption. Therefore, the I-94 East-West study No-Build Alternative forecast provided by SEWRPC not only represents no-build traffic conditions in this corridor but reflects land use, population and employment projections that are based on the I-94 freeway providing six basic lanes of capacity. In fact, the 2035 regional transportation plan (Planning Report 49, page 365) states that "The final recommended year 2035 regional transportation system plan was designed to serve, and to be consistent with, the year 2035 regional land use plan. Future needs for public transit, street and

[1] The population, household, and employment forecasts used to develop the year 2035 land use and transportation plans are documented in the 4th editions of SEWRPC Technical Reports 10 and 11.

highway, and other transportation improvements considered in the regional transportation planning process were derived from the projected travel based upon the regional land use plan."

To estimate transportation use on the region's facilities, SEWRPC utilizes a regional travel demand model. Like all major travel demand models, the greater Southeast Wisconsin region is subdivided into transportation analysis zones, or TAZs. The SEWRPC model consists of several thousand TAZs. The population, household, and employment data developed in the land use plan are applied to TAZs throughout the region in the initial trip generation step to develop the number of trips to and from a particular zone. Travel demand models used by SEWRPC follow a sequence of four main steps (SEWRPC Planning Report No. 49, p 176):

1. **Trip generation**, in which the total number of trips generated in each TAZ of the planning area for the time period under analysis is determined by using relationships established to exist between land use and travel by analyses of the land use and travel inventory data. The output from this step is the total number of trips entering and leaving each TAZ within the model limits.
2. **Trip distribution**, in which the trips generated in each TAZ are linked with trip ends in other TAZs, thereby defining the universe of trips by point of origin and point of destination. The output from this step is the number of trips made between each TAZ.
3. **Modal choice**, in which the number of trips between each TAZ is divided among the travel modes, primarily public transit and automobile. The output of this step is the number of trips made between each TAZ by each mode, also known as trip tables.
4. **Traffic assignment**, in which the TAZ transit trip tables are assigned to existing or proposed alternative future transit system networks and the TAZ vehicle trip tables are assigned to existing or proposed alternative arterial street and highway facility networks. The output of this step is the number of people utilizing the routes and facilities of the existing or proposed public transit system and the number of vehicles utilizing each segment of the existing or proposed public transit and arterial street and highway systems.

Upon completing the four steps, the model describes the use of the entire regional transportation system, including arterial streets, highways and transit lines. To establish forecast future year traffic volumes, SEWRPC first compares model estimated traffic volumes to current and historic traffic count data. Differences between model's estimated traffic volumes and ground count data are taken into account as SEWRPC develops the future year forecasts based on model estimated future year traffic assignments.

SEWRPC's forecast at the start of the I-94 East-West Corridor study represented 2035 as the horizon year. WisDOT's Facilities Development Manual recommends using a horizon year 20 years after construction as the "design year." At the beginning of the I-94 East-West Study, WisDOT estimated that construction year would be 2020 and the design year would be 2040. To develop a 2040 forecast, which was five years beyond the horizon year of the year 2035 plan, SEWRPC ran the full travel demand model for the year 2030 using the population, household, and employment levels envisioned in the 4th edition of SEWRPC Technical Reports 10 and 11. The vehicle trip tables developed based on the year 2030 socioeconomic conditions were then compared to year 2035 vehicle trip tables to determine a 5 year increment of growth in vehicle trips. This five year increment was then added to the year 2035 vehicle trip table to estimate 2040 vehicle trips and travel patterns. SEWRPC assigned (step 4) the 2040 vehicle trip tables to the highway networks taking into account each alternative being considered. The 2040 vehicle assignments then served as the basis of the year 2040 forecast traffic volumes developed by SEWRPC.

Based on requests from WisDOT and the project team, several alternative model scenarios were developed by SEWRPC to represent proposed alternatives. They included:

- No changes to current design and capacity , commonly known as the No-build[2] alternative
- Eight lanes at-grade with no I-94 access to/from Hawley Road,
- Eight lanes at-grade with partial I-94 access to/from Hawley Road (to/from I-94 west), and
- Eight lanes grade separated with full I-94 access to/from I-94, commonly known as the "double deck" alternative.

SEWRPC's 4th generation travel demand models were estimated and calibrated using new data provided by a major origin and destination travel survey completed within the region in 2001. The models were validated for years 2000–2001 by using U.S. Census data and 2001 transportation network data, and comparing model estimates of trip generation, trip distribution, highway traffic, and transit ridership to estimates derived from travel surveys and actual traffic and transit ridership counts. The validation indicated that the models were able to accurately replicate not only observed trip generation, travel patterns, modal choice, and VMT data, but also model-estimated individual arterial street traffic volumes within 10 percent of the actual average weekday vehicular traffic. The models were validated again in 2011 for the year 2008 using year 2008 estimates of households, population, employment, and transportation network data, and comparing estimates of arterial VMT and transit ridership to model estimates derived from actual traffic and transit ridership and found to be within 10 percent. (http://www.sewrpc.org/SEWRPCFiles/Publications/mr/mr-205-assessment-of-conformity-air-quality-standards.pdf; pages 37-38 and Appendix E).

For more detail on the development and use of the travel demand models, refer to Chapter VI of SEWRPC Planning Report No. 49: A Regional Transportation System Plan for Southeastern Wisconsin: 2035.

WISDOT REVIEW OF TRAVEL DEMAND FORECAST

WisDOT reviews and accepts forecasts developed by the Metropolitan Planning Organization (MPO), in this case SEWRPC, consistent with Chapter 9 of the WisDOT *Transportation Planning Manual* (http://wisconsindot.gov/Pages/projects/data-plan/plan-res/tpm.aspx). Southeast Wisconsin (SEWRPC specifically) is identified (Chapter 9, Section 10, subject 7) as an area where WisDOT does not need to operate the travel demand model application because of SEWRPC's demonstrated expertise in this area. Because of SEWRPC's expertise, the WisDOT Southeast Region Planning unit reviewed the forecast to confirm it was in line with expectations. The review performed by WisDOT's Southeast Region Planning Unit included checking the submitted SEWRPC forecast volumes for consistency with previous SEWRPC forecast volumes for this project, existing traffic count volumes, future year Traffic Analysis Forecasting Information System (TAFIS)[3] volumes (where TAFIS data overlaps with SEWRPC data), and a check of the rate of traffic growth for reasonableness.

Once the Southeast Region Planning Unit completed their review, the forecast and any review findings were forwarded to the project team. The project team reviewed the forecast and findings using project knowledge. Based on these reviews, WisDOT and the project team asked SEWRPC to remove its assumption that capacity expansion will occur on National Avenue and Greenfield Avenue in West Allis. Through coordination with West

[2] Other projects included in the 2035 regional transportation plan are assumed to be implemented and land use assumptions/recommendations in the 2035 land use plan are also assumed to be implemented. The No-Build scenario is just for this segment of I-94.

[3] The Traffic Analysis Forecasting and Information System (TAFIS) is a computerized tool that compiles historical traffic volumes at a specific state trunk highway traffic count site and then performs a statistical regression in order to predict future traffic at that site. TAFIS produces forecasts for 40 years into the future. WisDOT has programmed TAFIS as a series of equations where the best fit equation is selected based on available historical traffic volumes at or surrounding each site. TAFIS does not account for roadway classification data or land use development data.

Allis, the project team ascertained that capacity additions are unlikely to occur on these roadways through elimination of on-street parking. SEWRPC revised their forecasts accordingly.

The forecast was accepted after WisDOT's and the project team's request was resolved by SEWRPC.

PROJECT TEAM'S USE OF SEWRPC TRAVEL DEMAND FORECAST

After review and approval, WisDOT's project team utilizes the design year daily no-build forecast volumes for the Purpose and Need statement. In addition to the daily volume forecasts, WisDOT's project team utilized and applied SEWRPC peak hour forecasts to be used in the various parts of the study for summarization within the EIS. A summary of the process follows.

As noted, the peak hour data from SEWRPC were provided in the form of a trip table that was specific to the study area. The study-specific trip tables are a summary of trips on the network in to and out of the study area. There are trip tables for the morning and evening peak hours for the base year and each alternative in the design year.

For each of the alternatives noted on page 3, WisDOT and the project team assessed the rate of change in traffic volumes between the base year and design year from the respective SEWRPC forecasts. The assessment included both the percent change and relative change in traffic volumes. The design year peak hour, study-specific trip tables were then assigned to the study area roadway using a microsimulation model. Results from the model are used to establish alternative-specific design year peak hour traffic volumes for the study area. These traffic volume forecasts were then used in various analyses for the EIS.

The Build Alternative forecasted volumes for several analyses within the study, including:

- Traffic microsimulation and capacity analysis determines the operational characteristics of the traffic interacting with the alternative networks.
- The Air quality analysis estimates the impacts on air quality of the alternatives in the design year
- The noise impact analysis estimates noise levels in the design year and determines where noise barriers may be justified for installation.
- The safety analysis estimates the change in crashes for each of the alternatives.
- The construction traffic management plans utilize traffic volumes to estimate any necessary improvements to impacted locations due to construction traffic.

More detailed steps on the development of peak hour volumes for microsimulation modeling can be found in the attached memo, *I-94 E-W Corridor Studies Traffic Volume Forecasting Methodology* (January 2013).

I-94 E-W

TRAVEL FORECASTING METHODOLOGY

1: TRAVEL DEMAND FORECASTING

Land Use Plan → Transportation Plan

Travel Demand Model

How many trips are occuring? — Trip Generation (TG)

+

Where are trips going to and coming from? — Trip Distribution (TD)

+

What method of travel? — Modal Choice (MC)

What route are trips taking? — Traffic Assignment (TA)

Trip tables generated

Design Year Forecast Traffic Volumes

What goes into SEWRPC's forecast?

When creating a forecast, WisDOT recommends using a design year 20 years or more after the start of construction.

Base Year	+ ≥20 Years =	Design Year
Construction begins		*At least 20 years after construction begins*
2020	**I-94 E-W Project**	**2040**

For the I-94 E-W project, WisDOT estimated a base year of 2020 and a design year of 2040.

Using trip tables (TT) information from their existing 2035 Plan, SEWRPC was able to create TTs for the I-94 E-W project design year of 2040.

SEWRPC assigned the 2040 trip tables to the highway networks, taking into account each alternative being considered.

No-Build Alternative (TA)	Eight lanes at-grade; no I-94 access (TA)	Eight lanes at-grade; partial I-94 access (TA)	Double deck alternative (TA)
No changes to current design and capacity	*No access to/ from Hawley Rd*	*Access to/from Hawley Rd and I-94 west*	*Eight lanes grade separated with full access to/ from I-94*

SEWRPC → WisDOT → SEWRPC → WisDOT

SEWRPC provides forecast to WisDOT

WisDOT reviews and provides comments to SEWRPC

SEWRPC addresses comments and resubmits forecast to WisDOT

WisDOT accepts forecast

2: WisDOT REVIEW of TRAVEL DEMAND FORECAST

WisDOT reviews and accepts forecasts developed by the Metropolitan Planning Organization (MPO). In the case of the I-94 E-W project, the MPO is SEWRPC.

Accepted Travel Demand Forecast

SEWRPC Growth

The growth between the base year and the design year

Peak hour-based

→

WisDOT Traffic Volumes

Traffic volumes as established by WisDOT

Alternative specific | Peak hour | Design year

Study Analyses

3: PROJECT TEAM'S USE of SEWRPC TRAVEL DEMAND FORECAST

After approval, WisDOT and the project team utilize the accepted travel demand forecast volumes for several analyses within the study.

- Traffic microsimulation and capacity *analysis*
- Safety *analysis*
- Air quality *analysis*
- Noise impact *analysis*
- Construction *analysis*

To: Keegan Dole, I-94 East-West Traffic
Ertan Ornek, Diodos Engineering

From: Rob Beuthling, PE,
Marty Hawley, PE

Subject: I-94 E-W Corridor Studies Traffic Volume Forecasting Methodology

Date: September 28, 2012
Updated January 29, 2013

1. Introduction

Following the establishment of the existing calibrated Paramics models, the next step is to forecast traffic volumes to represent future year conditions. The main objective of the traffic forecasts is to provide insight into the traffic volumes that can be expected on the network as well as the turning movements and operations at the interchange intersections.

The peak hour microsimulation forecasts are based on the growth in travel volumes established by the demand model for each origin-destination pair in the modeled area. The main advantage of this process is to capture traffic increases in specific areas where a general, model-wide rate may under or over-estimate growth.

To forecast traffic for use in evaluation of alternatives, HNTB utilizes Paramics and travel demand models and the underlying trip tables that load traffic on to the roadway network. The first process is to forecast the trip tables for input in the Paramics models that represent future volume conditions. The second process utilizes the output of the future Paramics models, typically in segment and turning movement counts and develops design traffic volumes. The two processes are explained below.

2. Future Year Paramics Trip Table Forecasting Process

In the first process, HNTB utilizes three methodologies to forecast trip tables for input into Paramics. The result of each method is reviewed for each trip pair in the trip table in context of volume and trip ends of the trips being represented. Each method starts with the existing (base), calibrated Paramics trip table.

In Method A, the percent and actual difference between the base and future year travel demand model trips are applied to the calibrated base year Paramics trip table for each individual origin-destination trip pair. The average of the percent difference forecast and the absolute difference forecasts is consider the result of method A.

Method B incorporates any adjustments made during existing Paramics model calibration and applies the adjustments to the future base travel demand model trip tables for the AM and PM peak.

Method C applies the corridor-wide travel demand growth rates to the calibrated base year Paramics trip table. The specific growth rate will be established is established for each peak hour based on the final SEWRPC forecasts.

For each origin-destination trip pair in the entire matrix, the engineer evaluates the result of each method manually and applies a forecast method for each trip pair. The resulting forecasted value for that trip pair (and every other trip pair) is then used as input for the future year Paramics model run.

3. Peak Hour Design Traffic Forecasting Process

After the future input trip tables are complete and accepted, they are input in a "free flow network." A free flow network typically is the no-build network with any intersection control removed and mainline capacity temporarily added. This removal of control and additional capacity allows all traffic to complete their trip within Paramics and therefore be fully assigned to the network. Subsequent analysis of no-build traffic operations with Paramics restores the traffic control and original capacity.

The assigned mainline, ramp and intersection volumes are extracted from the free flow network and used to begin the future design volumes. The volumes are compared with the existing volumes in several checks that incorporate the calibration of the model and associated growth. These include:

- characteristics such as calibrated level (within a GEH[1] 5 of the existing balanced count),
- if the modeled volume is greater than the existing balanced count, and
- if the future volume is greater than the existing Paramics model volume and the balanced count.

Based on the aforementioned parameters, there are essentially four different scenarios used to determine forecast volumes for planning and design purposes for the future horizon year. They are described below. The flowchart shown in **Figure 1** diagrams the process.

<u>Case 1:</u>

In cases where:

- the existing Paramics model assignment matches is within GEH 5 of the existing balanced count, and
- the future modeled volume is greater than the existing modeled volume, and
- both the existing and future modeled volumes are greater than the existing balanced count,

The future Paramics modeled volume is accepted as the future forecast volume.

The future forecast volume is used in this situation because as expected the future Paramics model volume is showing growth over the existing Paramics model volume which was already higher than the balanced count. Thus, a somewhat conservative forecast is attained.

<u>Case 2:</u>

In cases where:

- the existing Paramics model assignment matches is within GEH 5 of the existing balanced count, and

[1] The GEH statistic is calculated using the following equation:

$$\text{GEH} = \sqrt{\frac{(M-C)^2}{(M+C)*0.5}}$$

Where: M = Modeled Flow (vehicles / hour)
C = Target Flow (vehicles / hour)

- the future Paramics modeled volume is greater than the existing Paramics modeled volume,
- but the future Paramics modeled volume and existing Paramics modeled volume are both not greater than the existing balanced count,

The growth rate between the existing and future modeled volumes is applied to the existing balanced count and accepted as the future forecasted volume.

In this case, the Paramics model growth rate is used because even though the future model volume is higher than the existing Paramics model volume, they are not both higher than the balanced count. Therefore, the Paramics model growth rate is applied to the count to attain a more conservative forecast volume.

Case 3:

In cases where:

- the Paramics future modeled volume is not greater than the existing Paramics modeled volume, OR
- the existing Paramics model assignment is not within GEH 5 of the existing balanced count AND the future Paramics modeled volume is not greater than the existing balanced count,

The corridor-wide annual growth rate (specific peak rate) is applied to the existing balanced count.

The Paramics model is verified to ensure no calibration or validation errors are made at these locations. In these cases, the Paramics future model is not showing the volume growth that is expected; therefore the average corridor growth rate is applied instead.

Case 4:

In cases where:

- the existing Paramics model assignment is not within GEH 5 of the existing balanced count, and
- the future Paramics modeled volume is greater than both the existing Paramics modeled volume and the balanced count,

The growth rate between the existing and future Paramics modeled volumes is applied to the existing balanced count and accepted as the future forecasted volume.

The Paramics model growth rate is used and applied in these cases because even though it is not calibrated within GEH 5, the demand model growth is still represented.

Each of the mainline, ramp and turning volumes go through the above process and each are reviewed for consistency. The entire set is then balanced for use in design and analysis purposes. The results are not typically integrated back into the Paramics model.

4. SKYCOMP DATA USE

In the previously approved forecasting methodology for the I-94 East-West project, the processes to calibrate the existing models and forecast future volumes include the use of trip tables from SEWRPC.

For the existing model calibration, the intended use of these trip tables is to provide a “seed” from which to start the volume calibration process. Since the project collected field-based origin-

destination information via Skycomp for the study area, the results of that data collection will replace the SEWRPC trip tables as the seed.

For the forecasting process, the SEWRPC trip tables will still be used to compare the growth for each trip pair within study area. No other changes to the overall calibration and forecasting process are necessary.

It is anticipated that the use of the field based data will provide efficient and accurate delivery of the existing and future conditions in the I-94 East West Corridor Study.

5. CONVERGE TO SEWRPC FORECAST

The approved forecasting methodology created 2040 peak hour ramp, mainline, and turning movement volumes that differed from SEWRPC's approved peak hour forecasts. It is desired that both forecasts complement each other. To converge both forecasts, HNTB enhanced the approved forecasting methodology, to represent SEWRPC's ramp and mainline forecasts, by the following three steps:

- Step 1: SEWRPC's forecasts are based on a design alternative with access options that do not match the current design alternatives. This requires manipulation of SEWRPC's ramp and mainline forecasts to account for access changes in the two design alternatives.
- Step 2: Modify the HNTB forecasted peak hour OD matrices to match the design alternative specific SEWRPC ramp and mainline forecasts developed in step 1.
- Step 3: Forecast peak hour turn movements based on Paramics modeled volume using HNTB's enhanced OD matrices developed in Step 2.

<u>Step 1:</u>

The SEWRPC ramp and mainline forecasts represent a design alternative that does not match the proposed access points of the two design alternatives. SEWRPC's approved forecasts are adjusted to represent each design alternative and considers route changes based on a vehicles ability to travel between study area O-D pairs. The two principals for developing the SEWRPC based design specific forecasts are:

- Trips are created if access increases from SEWRPC's design alternative. The quantity of trips that increase is based on OD pairs from HNTB's original forecast.
- Trips decrease if access decreases. The quantity of trips that decrease for forecasts is based on OD pairs from SEWRPC's balanced OD matrices.

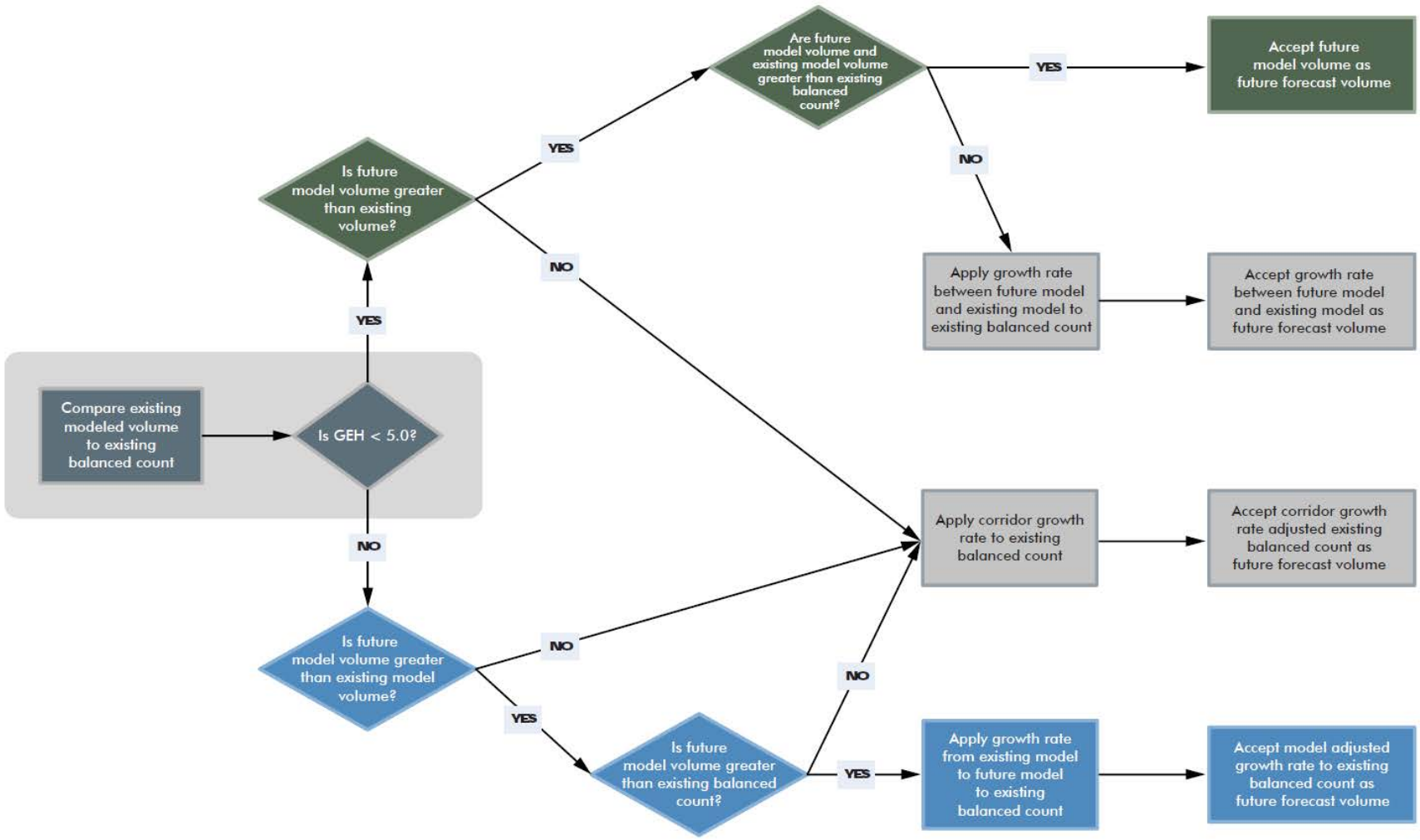
<u>Step 2:</u>

After SEWRPC based forecasts are developed for each design alternative, the O-D matrices forecasted by HNTB's approved methodology were enhanced to represent SEWRPC's adjusted ramp and mainline forecasts (developed in Step 1). The O-D matrices are modified by determining the O-D pairs associated with each mainline access point and iteratively assigning factors to converge the forecasted matrices. Since SEWRPC's forecast volumes are only assigned to the mainline and ramps, any O-D pair that does not enter the freeway system is not adjusted from HNTB's original forecast.

<u>Step 3:</u>

The turning movement forecasts use the Paramics modeled volumes from the enhanced O-D matrices for each design alternative and then are balanced to the ramp forecasts. The process described in section 3 of this document is not used for forecasting turn movements based on the Enhanced OD matrices.

Figure 1: Traffic Forecasting Methodology



To: Keegan Dole, I-94 East-West Traffic
Ertan Ornek, Diodos Engineering

From: Rob Beuthling, PE,
Marty Hawley, PE

Subject: I-94 E-W Corridor Studies Traffic Volume Forecasting Methodology

Date: September 28, 2012
Updated January 29, 2013

1. INTRODUCTION

Following the establishment of the existing calibrated Paramics models, the next step is to forecast traffic volumes to represent future year conditions. The main objective of the traffic forecasts is to provide insight into the traffic volumes that can be expected on the network as well as the turning movements and operations at the interchange intersections.

The peak hour microsimulation forecasts are based on the growth in travel volumes established by the demand model for each origin-destination pair in the modeled area. The main advantage of this process is to capture traffic increases in specific areas where a general, model-wide rate may under or over-estimate growth.

To forecast traffic for use in evaluation of alternatives, HNTB utilizes Paramics and travel demand models and the underlying trip tables that load traffic on to the roadway network. The first process is to forecast the trip tables for input in the Paramics models that represent future volume conditions. The second process utilizes the output of the future Paramics models, typically in segment and turning movement counts and develops design traffic volumes. The two processes are explained below.

2. FUTURE YEAR PARAMICS TRIP TABLE FORECASTING PROCESS

In the first process, HNTB utilizes three methodologies to forecast trip tables for input into Paramics. The result of each method is reviewed for each trip pair in the trip table in context of volume and trip ends of the trips being represented. Each method starts with the existing (base), calibrated Paramics trip table.

In Method A, the percent and actual difference between the base and future year travel demand model trips are applied to the calibrated base year Paramics trip table for each individual origin-destination trip pair. The average of the percent difference forecast and the absolute difference forecasts is consider the result of method A.

Method B incorporates any adjustments made during existing Paramics model calibration and applies the adjustments to the future base travel demand model trip tables for the AM and PM peak.

Method C applies the corridor-wide travel demand growth rates to the calibrated base year Paramics trip table. The specific growth rate will be established is established for each peak hour based on the final SEWRPC forecasts.

For each origin-destination trip pair in the entire matrix, the engineer evaluates the result of each method manually and applies a forecast method for each trip pair. The resulting forecasted value for that trip pair (and every other trip pair) is then used as input for the future year Paramics model run.

3. Peak Hour Design Traffic Forecasting Process

After the future input trip tables are complete and accepted, they are input in a "free flow network." A free flow network typically is the no-build network with any intersection control removed and mainline capacity temporarily added. This removal of control and additional capacity allows all traffic to complete their trip within Paramics and therefore be fully assigned to the network. Subsequent analysis of no-build traffic operations with Paramics restores the traffic control and original capacity.

The assigned mainline, ramp and intersection volumes are extracted from the free flow network and used to begin the future design volumes. The volumes are compared with the existing volumes in several checks that incorporate the calibration of the model and associated growth. These include:

- characteristics such as calibrated level (within a GEH[1] 5 of the existing balanced count),
- if the modeled volume is greater than the existing balanced count, and
- if the future volume is greater than the existing Paramics model volume and the balanced count.

Based on the aforementioned parameters, there are essentially four different scenarios used to determine forecast volumes for planning and design purposes for the future horizon year. They are described below. The flowchart shown in **Figure 1** diagrams the process.

<u>Case 1:</u>

In cases where:

- the existing Paramics model assignment matches is within GEH 5 of the existing balanced count, and
- the future modeled volume is greater than the existing modeled volume, and
- both the existing and future modeled volumes are greater than the existing balanced count,

The future Paramics modeled volume is accepted as the future forecast volume.

The future forecast volume is used in this situation because as expected the future Paramics model volume is showing growth over the existing Paramics model volume which was already higher than the balanced count. Thus, a somewhat conservative forecast is attained.

<u>Case 2:</u>

In cases where:

- the existing Paramics model assignment matches is within GEH 5 of the existing balanced count, and

[1] The GEH statistic is calculated using the following equation:

$$\text{GEH} = \sqrt{\frac{(M-C)^2}{(M+C)*0.5}}$$

Where: M = Modeled Flow (vehicles / hour)
C = Target Flow (vehicles / hour)

- the future Paramics modeled volume is greater than the existing Paramics modeled volume,
- but the future Paramics modeled volume and existing Paramics modeled volume are both not greater than the existing balanced count,

The growth rate between the existing and future modeled volumes is applied to the existing balanced count and accepted as the future forecasted volume.

In this case, the Paramics model growth rate is used because even though the future model volume is higher than the existing Paramics model volume, they are not both higher than the balanced count. Therefore, the Paramics model growth rate is applied to the count to attain a more conservative forecast volume.

Case 3:

In cases where:

- the Paramics future modeled volume is not greater than the existing Paramics modeled volume, OR
- the existing Paramics model assignment is not within GEH 5 of the existing balanced count AND the future Paramics modeled volume is not greater than the existing balanced count,

The corridor-wide annual growth rate (specific peak rate) is applied to the existing balanced count.

The Paramics model is verified to ensure no calibration or validation errors are made at these locations. In these cases, the Paramics future model is not showing the volume growth that is expected; therefore the average corridor growth rate is applied instead.

Case 4:

In cases where:

- the existing Paramics model assignment is not within GEH 5 of the existing balanced count, and
- the future Paramics modeled volume is greater than both the existing Paramics modeled volume and the balanced count,

The growth rate between the existing and future Paramics modeled volumes is applied to the existing balanced count and accepted as the future forecasted volume.

The Paramics model growth rate is used and applied in these cases because even though it is not calibrated within GEH 5, the demand model growth is still represented.

Each of the mainline, ramp and turning volumes go through the above process and each are reviewed for consistency. The entire set is then balanced for use in design and analysis purposes. The results are not typically integrated back into the Paramics model.

4. SKYCOMP DATA USE

In the previously approved forecasting methodology for the I-94 East-West project, the processes to calibrate the existing models and forecast future volumes include the use of trip tables from SEWRPC.

For the existing model calibration, the intended use of these trip tables is to provide a “seed” from which to start the volume calibration process. Since the project collected field-based origin-

destination information via Skycomp for the study area, the results of that data collection will replace the SEWRPC trip tables as the seed.

For the forecasting process, the SEWRPC trip tables will still be used to compare the growth for each trip pair within study area. No other changes to the overall calibration and forecasting process are necessary.

It is anticipated that the use of the field based data will provide efficient and accurate delivery of the existing and future conditions in the I-94 East West Corridor Study.

5. CONVERGE TO SEWRPC FORECAST

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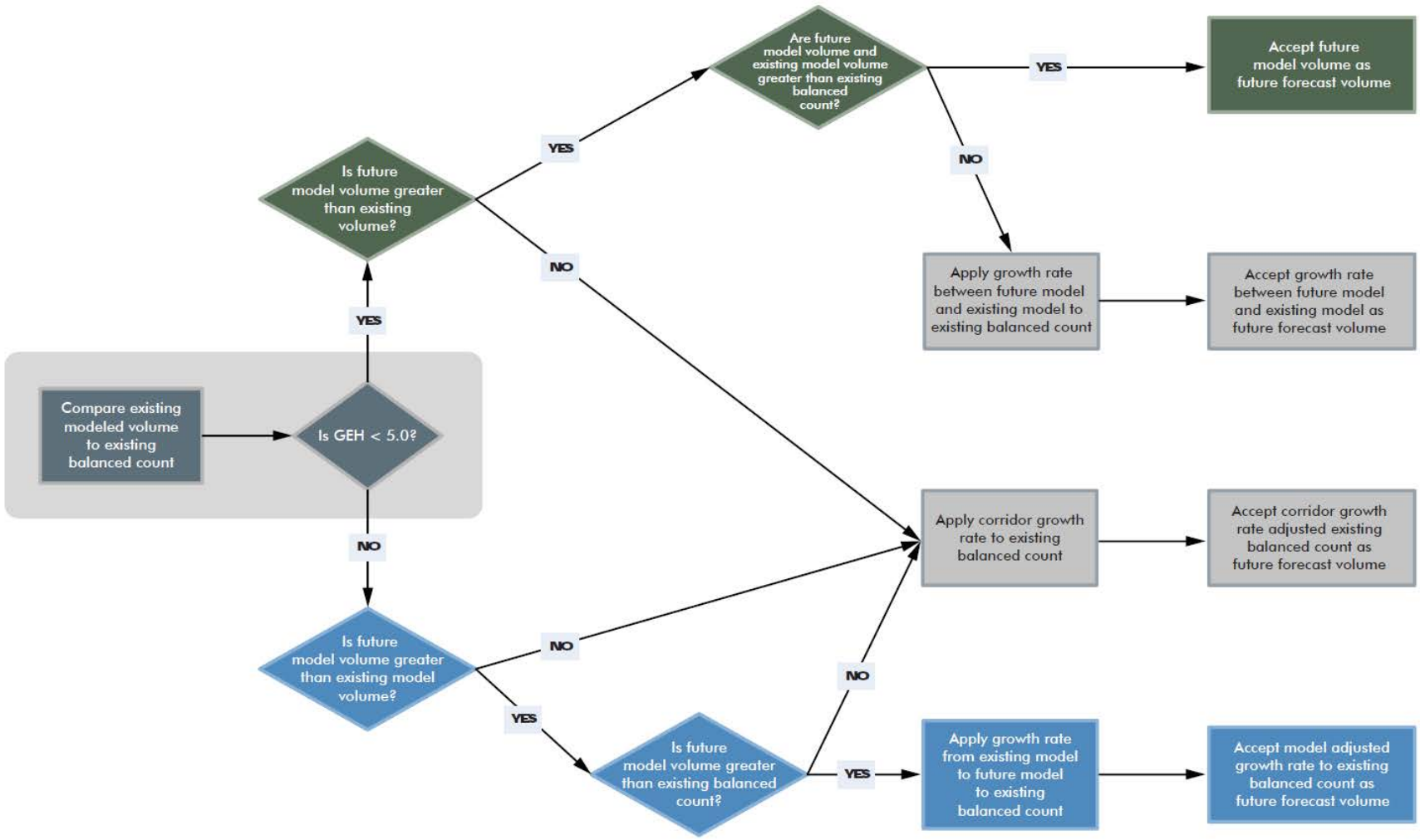

I-94 East-West Corridor Study Visual Impact Assessment

PREPARED BY: Mark Greenig/CH2M HILL, Ben Goldsworthy/CH2M HILL
COPIES: File
DATE: September, 2014

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1 Introduction

This visual impact assessment (VIA) technical memorandum presents the results of an assessment of the visual impacts of the proposed alternatives to the I-94 East-West Corridor Study in Milwaukee County, Wisconsin. The impacts of the alternatives on visual resources noted in the environmental impact statement (EIS) are summarized. The VIA provides a description of the existing visual conditions of the parts of the study area that would be affected by project alternatives and discusses how the project alternatives would change existing visual conditions. The assessment of the changes was prepared using the Federal Highway Administration (FHWA) visual assessment methodology, which has been successfully applied by FHWA and state highway departments, as well as by other visual resource specialists, to evaluate countless transportation and other projects. The methodology provides a way to quantitatively rate and compare changes in visual quality and provides decision makers with a way to compare alternatives. Please see the glossary at the end of this memorandum for definitions of the terms used to assess visual impacts.

2 Project Description

FHWA and the Wisconsin Department of Transportation (WisDOT) are preparing an EIS for the I-94 East-West Corridor Study in Milwaukee County (see Exhibit 1). The study area includes approximately 3.5 miles of I-94 from 70th Street (west limit) to 16th Street (east limit). The study area includes five service interchanges on I-94 (68th/70th Street split diamond, Hawley Road, Mitchell Boulevard, 35th Street, and 25th/26th/28th Street). It also includes the Stadium Interchange at I-94, US 41, and Miller Park Way, and the northbound and southbound approaches to this interchange.

The termini for this study generally match the termini for the following two previously completed studies of the southeast Wisconsin freeway system: the Zoo Interchange study located west of the I-94 East-West Corridor study area and the Marquette Interchange study located to the east. The east terminus of the Zoo Interchange study serves as the west terminus for the I-94 East-West Corridor study (70th Street). The west terminus of the Marquette Interchange study was 25th Street. In June 2013 WisDOT and FHWA determined that the east terminus for the I-94 East-West Corridor study area would be extended further to the east to accommodate alternatives that would tie back into I-94 near 16th Street, rather than 25th Street. The transition area between the reconstructed west segment of the Marquette Interchange and existing I-94 generally included 16th Street to 25th Street.

The freeway system in the study area provides a critical interstate link for commerce, tourism, and commuters in the southeast region of Wisconsin and the Milwaukee Metropolitan area. Due to high traffic volumes and outdated freeway mainline and interchange design, this portion of I-94 has a crash rate that is significantly higher than the statewide average crash rate for similar facilities. Improvements are being proposed to accommodate existing and future traffic demand, improve traffic flow and operations, and to address safety concerns.

The 2035 Regional Transportation System Plan (Planning Report No. 49, Southeastern Wisconsin Regional Planning Commission, June 2006) recommends widening and/or other improvements to provide additional capacity in the I-94 corridor through Milwaukee County. In November 2011, under Wisconsin's legislative process for major highway projects, the Transportation Projects Commission approved moving ahead with the environmental study phase for this project so it can be considered for future funding enumeration.

The I-94 East-West Corridor Study EIS, will discuss project purpose and need, alternatives considered (including a no-build alternative), the affected environment, environmental consequences of the proposed action, mitigation, and the results of coordination with agencies and the public. The EIS will also demonstrate compliance with applicable environmental laws and regulations and will be made available for public review.

3 Methodology

3.1 FHWA Methodology and Guidance

The FHWA visual quality assessment methodology and guidance used in this technical memorandum are documented in the FHWA publication *Visual Impact Assessment for Highway Projects* (FHWA 1988). The method has been successfully applied by the FHWA and state highway departments, as well as by other visual resource specialists, to evaluate the visual impacts of numerous transportation and other projects. FHWA's methodology is the

standard approach for evaluating the aesthetic effects of transportation projects. FHWA developed this assessment method in response to National Environmental Policy Act (NEPA) requirements that project proponents assess the effects of proposed federal actions or projects on the quality of the human environment, including effects on the environment's visual quality. The method was designed to provide a systematic and objective approach to evaluating the visual changes that would potentially result from implementation of proposed projects.

The FHWA visual quality and aesthetics assessment method used in this technical memorandum is based on a set of broad criteria that consider the following factors related to the proposed project:

- The overall visual and aesthetic quality of the area through which the transportation project would pass.
- The visual and aesthetic experience and expectations of viewers (including residents, users of parks and other public spaces, pedestrians, and motorists).
- The scale and contrast between existing and proposed project elements in the area.

The FHWA's assessment method also uses professionally accepted, descriptive terminology that characterizes the physical attributes of the landscape being assessed and viewer sensitivity or concern. This terminology is defined below and in the glossary, and it is used throughout the following sections.

The FHWA visual quality assessment method has six steps:

1. Establish the project's area of visual influence by identifying contiguous "landscape units" and representative viewpoints. A landscape unit is an identifiable segment or area within a project that contains views of a project and that has characteristics that are different than the other landscape units. Representative viewpoints (or key observation points [KOPs]) from around the project area are selected to describe existing conditions (with photographs) and assess project effects (through the use of photo-simulations).
2. Determine who has views "of" and "from," the project ("viewer[s]") and their viewing sensitivity to changes in the viewed landscape.
3. Describe and assess the landscape that exists before project construction ("existing environment").
4. Assess the response of viewers looking both "at" and "from" the project, before and after project construction.
5. Determine and evaluate views of and from the project for before and after project construction using photo-simulations (simulations).
6. Describe the potential visible changes to the project area and its surroundings that would result from the proposed project ("project impacts or effects").

The first three steps were conducted to establish the "baseline" visual condition for the proposed project and are discussed in the Existing Conditions section. The last three steps were then conducted to identify how the proposed project alternatives would have the greatest potential to impact the visible landscape of the assessment area and affect viewers. The last three steps are discussed in the analysis section. The changes were systematically compared to the baseline conditions to determine the nature and degree of the project's potential impacts on visual resources.

An aesthetic and visual quality assessment typically addresses the following three primary questions:

- What are the aesthetic and visual qualities of the existing landscape in the project area?
- What are the potential effects of the project's proposed alternatives on aesthetic and visual quality in the project area?
- Who would see the project, and what is their likely level of concern about or reaction to how the project visually fits into the existing landscape?

Changes to the viewed environment are measured by determining how a proposed project would change the visual quality for selected representative views. Visual quality is an assessment of the composition of the character-defining features for the selected views. The assessment asks the following questions: Is this particular view common or dramatic? Is it a pleasing composition (with a mix of elements that seem to belong together) or not (with a mix of elements that either do not belong together or are eyesores and contrast with the other elements in the

surroundings)? Visual quality is evaluated in terms of vividness, intactness, and unity. The three characteristics are described as follows:

- ***Vividness*** is the degree of drama, memorability, or distinctiveness of the landscape components. Vividness is composed of the following four elements that usually influence the degree of vividness:
  - Landform
  - Vegetation
  - Water-features
  - Human-made elements
- ***Intactness*** is a measure of the visual integrity of the natural and human-built landscape and its freedom from encroaching elements. This factor can be present in well-kept urban and rural landscapes, as well as in natural settings. High intactness means that the landscape is free of eyesores and is not broken up by features that appear to be out of place. Intactness is composed of the following two primary elements that influence the degree of intactness:
  - Development
  - Encroachment
- ***Unity*** is the degree of visual coherence and compositional harmony of the landscape considered as a whole. High unity frequently attests to the careful design of individual components and their relationship in the landscape.

To determine existing visual quality and to assess impacts to viewers, the FHWA methodology uses numeric ratings. The ratings help to establish the existing visual quality of a view from selected viewpoints and to determine how the existing visual quality of the view would change (can be negative or positive) with the project in place. Visual quality is rated between 1 (low) and 7 (high). The visual quality ratings and their descriptors are as follows:

- 1 – Very Low
- 2 – Low
- 3 – Moderately Low
- 4 – Average
- 5 – Moderately High
- 6 – High
- 7 – Very High

To assess project impacts to viewers, changes in the existing visual quality ratings as a result of a proposed project are determined. The FHWA impact assessment methodology can establish varying intensities of impact. This approach is commonly used for NEPA impact assessments. For this VIA, three levels of intensity of impact (substantial, moderate, or negligible) were used. The impact assessment evaluated the degree to which alternatives would change the existing visual quality rating of a viewed landscape and considered the viewer sensitivity (high, moderate, and low) of people who would view the alternative in the landscape. Viewer sensitivity is discussed below in the existing conditions subsection. An impact with substantial intensity is defined as a change in the existing visual quality rating by the following: (1) Two or more ratings (for example, from high to moderate or moderate to low) in an area where people with high or moderate viewing sensitivity would see it, or (2) One rating in an area where people with high viewing sensitivity would see it. An impact with moderate intensity is defined as a change in the existing visual quality rating by one rating (for example, high to moderately high, or moderately low to low) in an area where people with moderate viewer sensitivity would see it. An impact with negligible intensity is defined as follows: (1) A change in the existing visual quality rating by one or more visual quality ratings in an area where people with low viewer sensitivity would see it, or (2) Areas where the proposed project would not change the existing visual quality rating and would be seen by viewers with high, medium, or low viewing sensitivity.

The FHWA methodology uses seven numeric ratings to establish the existing visual quality of a view from selected viewpoints and to determine how the existing visual quality of the view would change (can be negative or positive)

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with the project in place. For this assessment, the elements and characteristics discussed in the previous paragraphs are rated between 1 (low) and 7 (high). The visual quality ratings and their descriptors are as follows:

- 1 – Very Low
- 2 – Low
- 3 – Moderately Low
- 4 – Average
- 5 – Moderately High
- 6 – High
- 7 – Very High

The ratings of the three characteristics (vividness, intactness, and unity) are then averaged to determine a total visual quality rating, which is also between 1 (low) and 7 (high). For example, if a view had a vividness rating of 5, intactness rating of 6, and a unity rating of 4, the three ratings would be added and divided by 3, which would produce an average total visual quality rating of 5.

The method that was used to determine existing visual quality and the visual quality associated with various alternatives involved five CH2M HILL staff with professional expertise in visual impact assessment and/or environmental planning, landscape architecture, and architecture. The staff reviewed existing conditions photographs of the KOPs and discussed and rated them as a team using the FHWA methodology. After the existing visual quality ratings were determined, visual simulations of the alternatives selected to be simulated were also observed and rated in the same manner by the group. Rating forms for the KOPs that were used to assess impacts are contained in Attachment C.

3.2 Developing Simulations

The simulations were prepared through a process that entailed photographic documentation of the views from each of the KOPs using a single-lens-reflex digital camera set to take photographs equivalent to those taken with a 35-millimeter camera using a 50-millimeter focal length, which is the camera lens setting that is commonly used in visual assessment because it closely resembles the viewing angle (or cone) of the human eye. For each view, computer modeling and rendering techniques were used to produce the simulated images. Existing topographic and site data provided the basis for developing an initial digital model. Engineers provided site plans and digital data for the preliminary design of alternatives. They were used to create three-dimensional (3-D) digital models of the alternatives. The models were then combined with the digital site model to produce a complete computer model of the alternatives.

For each KOP, the terrain and project features seen from it were digitized from topographic maps and scaled from aerial photographs using 5 feet as the assumed viewer eye level. Computer “wire frame” perspective plots were then overlaid on the photographs of the views from the KOP to verify scale and location. Digital visual simulation images were produced as a next step based on computer renderings of the 3-D model combined with high-resolution digital versions of the base photographs. The final hardcopy visual simulation images that appear in this document were produced from the digital image files using a color printer.

It should be noted that although the results provide an accurate depiction of how the components associated with alternatives might appear (based on current levels of design), all engineering design work associated with alternatives is preliminary, and many details need to be finalized. The simulations are intended to provide an indication of the form and scale of the alternative being simulated to assist in determining how the alternative would change the visual character and visual quality of the view from the KOP. Final design and design refinements will occur after the project’s environmental assessment process is complete.

4 Existing Conditions

4.1 Overview of the Project Area

The project area follows I-94 from west to east approximately 3.5 miles through the City of Milwaukee. The portion of the I-94 corridor examined in this VIA consists of areas from which changes associated with the alternatives could

potentially be seen. The character of the viewed landscape along the portion of the I-94 corridor in the study area varies considerably by location. The west end of the project area and the area north of I-94 east of the Stadium Interchange are residential. In between the residential areas are visually distinctive areas that include cemeteries, the Miller Park complex, and industrial areas in the Menomonee Valley. The degree of visibility of existing I-94 components along the I-94 corridor and the potential visibility of project alternative components varies greatly by location. Variables that influence visibility include terrain, the presence of trees and buildings that can block views, and the elevation of I-94 (some parts are below adjacent grade, some at grade, and some parts above grade). With the exception of areas near Miller Park, the areas from which I-94 can be seen generally range from areas adjacent to the highway to areas several blocks away.

4.1.1 Landscape Units

To assist in describing existing conditions and potential impacts from the project alternatives, the project area has been divided into six landscape units. Landscape units have unique, identifiable characteristics, and are useful tools for describing existing conditions and assessing potential impacts along linear transportation projects. The six landscape units used in this VIA units are as follows, from west to east:

1. West End
2. Cemeteries
3. Story Hill
4. Miller Park
5. Merrill Park
6. Menomonee Valley

The landscape units are depicted in Exhibit 2 and described below in the existing conditions section. Attachment 1 contains photographs from various locations within each landscape unit that illustrate the visual characteristics of the landscape units and/or views towards the I-94 corridor from within the landscape unit.

4.1.2 Viewers

Viewers within the project area include residents, roadway/highway users, commercial viewers, office viewers, people attending events at Miller Park, and Hank Aaron State Trail users. Sensitivity varies among viewer types, and sensitivity to views affects the viewer response to changes associated with a proposed project. Viewer sensitivity ranges from low to high. Low viewer sensitivity exists when there are few viewers who experience a defined view, or they are not particularly concerned about the view, such as commuters on the freeway. High viewer sensitivity exists when there are many viewers who have a view frequently or for a long duration, as well as viewers (many or few), such as those in a residential neighborhood, who are likely to be very aware of and concerned about the view (FHWA 1988).

The FHWA visual impact assessment system recognizes that most views are seen by a variety of viewer types with different sensitivities to changes in the viewed landscape. The FHWA system uses the most sensitive viewer type as the basis for determining the potential impact of a proposed project on viewers. For this project, the most sensitive viewers are residents, who are considered to have high viewer sensitivity. Many residents in the study area currently have existing views, or partial views, of I-94, and changes to those views may be of concern to them. People visiting the cemeteries are also considered to have high visual sensitivity. Although they likely do not visit or see the study area as often as nearby residents, the setting, or viewed environment, of the cemetery is likely an important part of the experience for many visitors. I-94 can be seen to varying degrees by people visiting the cemeteries adjacent to it and changes associated with the alternatives may be of concern to cemetery visitors; therefore, cemetery visitors are considered to be sensitive viewers in this VIA. Motorists on I-94 or adjacent roads are generally considered to have moderate to low sensitivity due to short viewing duration. People working in the study area are considered to have low viewing sensitivity because it is assumed that their attention is generally directed on their work activities rather than the nearby aesthetic environment. Like workers, people attending events at the Miller Park complex are assumed to be focused on the activity they are involved with or watching and not the surrounding environment. They are considered to have moderate to low viewing sensitivity. The viewing sensitivity of business customers varies by customer type. During the site visit, none of the business types, such as restaurants, that might base part of their

appeal on outward views were observed to have featured views towards I-94. Business customers are assumed to have moderate to low viewing sensitivity

4.2 Illustrative Photographs and Key Observation Points

Attachment 1 contains a series of photographs from within each landscape unit that depicts a range of visual/aesthetic characteristics found within the various landscape units. Exhibits A-1 and A-2 depict the locations of the photographs contained in Attachment 1. The photographs are not used in the impact assessment—they are intended to provide additional information about the visual conditions of the project area. To assist in assessing potential impacts from the proposed project, KOPs were selected within each landscape unit with input from stakeholders. As discussed previously in the methodology section, KOPs are used to establish existing conditions, determine how the proposed project would change the conditions, and determine impacts. Existing condition photographs and photo-simulations of various alternatives for each KOP are included in Attachment 2.

It should be noted that most of the photographs taken for the VIA were taken in January of 2013, during “leaf-off” conditions, when deciduous vegetation was without foliage. This VIA will use the term “leaf-off” and “leaf-on” to described conditions when deciduous vegetation either has, or does not have, foliage.

4.3 Landscape Unit Descriptions

The following subsections describe the six landscape units in the study area.

4.3.1 Landscape Unit 1: West End

Landscape Unit 1 begins at the western terminus of the proposed project near 70th Street and continues east to Hawley Road. Although Landscape Unit 1 is largely residential in land use and visual character, two large-scale features (I-94 and the American Transmission Company 138-kilovolt [kV] electrical transmission line) introduce non-residential visual features into this landscape unit. Both I-94 and the electrical transmission line greatly influence the landscape character of areas near them as well as visual quality. The influences of these features are woven into the descriptions below.

The influence of I-94 on adjacent areas within the landscape unit is different on the north and south sides of I-94. Residential areas containing sensitive viewers, located north of I-94, are separated from the interstate by the cleared right-of-way of the electrical transmission line that passes through the landscape unit north of I-94. The electrical transmission line right-of-way varies between approximately 115 and 150 feet in width and is located on a higher elevation than most of the residences to the north. Two sets of electrical transmission lines pass through the right-of-way, and their support structures tend to be silhouetted against the skyline and can dominate views close to them. An alley separates the edge of the electrical transmission right-of-way from the back property lines (and garages or other outbuildings) of single-family residences that face Fairview Avenue. Views of I-94 from the backs of some of these residences (and from some north-south oriented streets) are blocked in many locations by the sloped banks of the transmission right-of-way that are adjacent to the alley. Visual quality ratings of views to the south from most of the residences is considered to range from moderately low to low, depending on how much of the electrical transmission line and I-94 can be seen.

The visual character and quality of areas south of I-94 in Landscape Unit 1 is much different than areas to the north. I-94 is more visible to residential areas south of the interstate. The visibility of I-94 from areas to the south and I-94’s influence on character and visual quality varies greatly by location. There are a number of residences immediately adjacent to I-94 (or to on/off ramps serving it) along north-south oriented streets that dead-end against I-94. Some of the residences have unobstructed views of I-94, whereas vegetation and fences screen views of the highway from other residences. The visual character of I-94 is typical of that of a major interstate highway, and adjacent areas with unobstructed views of it are influenced by its presence. The visual quality ratings for most of the areas adjacent to I-94 range from moderately low to low.

Attachment 1 contains five photographs from around Landscape Unit 1 that illustrate the character of Landscape Unit 1 and views towards I-94. KOP 1 was selected to represent views in Landscape Unit 1 towards I-94 that would potentially change with the alternatives being considered. It is described in the following subsection, and the existing view of I-94 from the location is included in Attachment 2.

KOP 1: Dixon Street

KOP 1 was selected to represent a residential area south of I-94. It is located where Dixon Street dead-ends west of Hawley Road (southwest quadrant of the Hawley Road interchange). The location has a clear view of I-94. Utilitarian features such as the 138-kV electrical transmission line support structure and conductors, other utility poles and lines, a cellular tower, and the I-94 overpass and chain-link fencing beneath it can be clearly seen from this location. The scale of the electrical transmission line structure makes it somewhat vivid, but the overall memorability of the view is lower than average. The variety of utilitarian elements and their horizontal and vertical presence introduce visual encroachments into this view that result in an intactness rating of low. The visual unity of the scene is moderately low, and the overall visual quality rating is between moderately low and low.

Vividness = 3
Intactness = 2
Unity = 3
Overall Visual Quality Rating = 2.7

4.3.2 Landscape Unit 2: Cemeteries

I-94 passes through the center of Landscape Unit 2. The western edge of Landscape Unit 2 is Hawley Road and its eastern boundary is Mitchell Boulevard. Within the landscape unit are five cemeteries, including Wood National Cemetery. North of I-94 and adjacent to it is the Beth Hamedrosh Hagodel Cemetery and a small parcel of Wood National Cemetery. Calvary Cemetery is north of these cemeteries and continues north to Bluemound Road. The electrical transmission line described in Landscape Unit 1 passes through Landscape Unit 2, north of I-94. It is located between the Beth Hamedrosh Hagodel and Wood National cemeteries and Calvary Cemetery. The transmission line corridor right-of-way is approximately 45 feet wide and, along with its support structures, is a major visual encroachment that diminishes the landscape character and visual quality of the cemeteries and the rest of the landscape unit.

Immediately south of I-94 is the Spring Hill Cemetery, Anshai Lebowitz Cemetery, and the main part of Wood National Cemetery. Farther south are Veterans Affairs (VA) properties, including the Zablocki VA Medical Center. The National Home for Disabled Volunteer Soldiers National Historic Landmark (NHL) is located in the area. Wood National Cemetery is a contributing historic property to the NHL. In addition to the cemeteries and the VA properties, the Hunger Task Force is located in Landscape Unit 2. It is situated at the west end of the landscape unit immediately south of I-94 and across the street (Hawley Court) from Spring Hill and Anshai Lebowitz Cemeteries. It is assumed for this VIA that people visiting the cemeteries described above have a concern for the environment of the cemetery they are visiting, thus they are considered to be sensitive viewers.

Attachment 1 contains six photographs that were taken from within Landscape Unit 2 (Photographs 6 through 12). Five KOPS were selected from within the landscape unit and are described in the following subsections. The existing views from the KOPs are located in Attachment 2.

KOP 2: South Dana Court (adjacent to Beth Hamedrosh Hagodel Cemetery)

This location was chosen to represent views of the cemetery that people visiting the cemetery (who are considered to be sensitive viewers) would have as they approach the cemetery entrance, as well as views by the general public from Dana Court. The view from this location includes the west end of Beth Hamedrosh Hagodel Cemetery, a chain-link fence bordering the cemetery, parts of Spring Hill Cemetery (including a mausoleum building) on the south side of I-94, and glimpses of the main portion of Wood National Cemetery. I-94 is close to the same elevation as KOP 2 and vehicles travelling on I-94 can clearly be seen. I-94 is a prominent visual feature that physically and visually separates the cemeteries on each side of it. The vividness of the view is higher than average due to the visual connection with the cemeteries to the south. The presence of I-94, the mausoleum, and the retaining wall on the south side of Spring Hill Cemetery encroach on this view and diminish its visual and compositional harmony, thus producing intactness and unity ratings of lower than average. The overall visual quality rating of this view is between average and moderately low.

Vividness = 4.5
Intactness = 3.5

Unity = 3.0
Overall Visual Quality Rating = 3.7

KOP 3: Beth Hamedrosh Hagodel Cemetery

KOP 3 also represents views of the I-94 corridor that visitors to Beth Hamedrosh Hagodel Cemetery see. There is a strong visual connection between the main portion of Wood National Cemetery and Beth Hamedrosh Hagodel Cemetery at the east end of the cemetery. Rows of white headstones, a rising grass slope, and a memorial obelisk at the top of the rise create a very vivid image. The vividness of this view is moderately high due to the visual connection with the national cemetery. The fence between Beth Hamedrosh Hagodel Cemetery and I-94 that was installed to block views of I-94 introduces a strong horizontal feature. Its presence is somewhat of an encroachment as is the I-94 signage, resulting in an intactness rating of average. The fence does, however, block most views of I-94 and improves visual unity, as do trees on both sides of I-94. The visual unity of the view is between average and moderately high. The overall visual quality rating is also between average and moderately high. During leaf-on times of year, the overall rating would be slightly higher because views of the I-94 signage would be blocked or partially blocked by trees.

Vividness = 5
Intactness = 4
Unity = 4.5
Overall Visual Quality Rating = 4.5

KOP 4: Wood National Cemetery (North Side of I-94)

This KOP is located in the parcel of Wood National Cemetery on the north side of I-94 and represents views that visitors would have when looking south at the main part of the cemetery. The view south up the grassy slope of the cemetery includes rows of headstones on both sides of I-94, the cemetery's iconic memorial obelisk, and mature trees. This vivid and memorable view occurs despite the presence of I-94, a fence on the south side of I-94 designed to block views, and a low retaining wall along the north side of I-94. These features, along with the I-94 signage, are encroachments into the view, but don't diminish the view as much as they might in other settings, due to the presence of the strong visual elements mentioned previously. The vividness rating of this view is somewhat higher than moderately high, and intactness is between average and moderately high. The horizontal presence of the fence, vehicles travelling on I-94, and the tall retaining wall on the south side of the highway actually provide a degree of visual unity, as does the similar appearance of the two portions of Wood National Cemetery on either side of I-94. Visual unity is moderately high. The overall visual quality rating of this view is high.

Vividness = 5
Intactness = 4.5
Unity = 5.0
Overall Visual Quality Rating = 4.8

KOP 5: Spring Hill Cemetery

KOP 5 is south of I-94 near the eastern edge of Spring Hill Cemetery, next to the western boundary of Wood National Cemetery. The view from this location represents views to the northeast that visitors to these parts of the two cemeteries have. The variety of headstones in Spring Hill Cemetery is an interesting juxtaposition to the regimented rows of headstones across I-94 in the northern parcel of Wood National Cemetery. Glimpses of Calvary Cemetery in the background are possible during leaf-off conditions. The overall vividness of this view is moderately high. Although the presence of I-94 is not as strong as it is at other KOPs, it can be seen, as can the edges of electrical transmission line support structures. The elements do not encroach too much into this view, however, so the intactness rating is between average and moderately high. Unity is also between average and moderately high, as is overall visual quality. During leaf-on conditions, trees would block views of the I-94 sign, and overall visual quality would somewhat improve.

Vividness = 5
Intactness = 4.5
Unity = 4.5

Overall Visual Quality Rating = 4.7

KOP 6: Wood National Cemetery (south side of I-94)

This KOP is located in the main portion of Wood National Cemetery south of I-94, approximately 120 feet northeast of the cemetery's memorial obelisk. This location was selected to represent views that people visiting this part of the cemetery have when looking northeast. The view includes the Zablocki Drive bridge, the electrical transmission line that parallels I-94 in this area, I-94, the northern parcel of Wood National Cemetery, and Calvary Cemetery in the background. The view is memorable due in part to the presence of the rows white headstones that accentuate the rolling topography on both sides of I-94 and the park-like setting created by numerous trees and expanses of lawn. The features result in a vividness rating of between average and moderately high. The presence of I-94 (and fencing paralleling it), vehicles, the Zablocki Drive bridge, and the electrical transmission line can be considered moderate intrusions that diminish the view, thus resulting in an intactness rating of between average and moderately low. The unity rating is between average and moderately above average, and the overall visual quality rating is average.

Vividness = 4.5
Intactness = 3.5
Unity = 4.5
Overall Visual Quality Rating = 4.2

4.3.3 Landscape Unit 3: Story Hill

Landscape Unit 3 includes the Story Hill neighborhood, located immediately north, northwest, and west of I-94, US 41, and the Stadium Interchange (I-94/US 41/Miller Park Way). It also includes two residential area south of Bluemound Road that are on either side of US 41. Areas to the north and west of Story Parkway are single-family residences. The two residential areas south of Bluemound Road, on either side of US 41, consist of multifamily (Story Apartments) and single-family dwellings.

The southern part of Landscape Unit 3 is the portion closest to I-94 and Miller Park parking areas. Residences are as close as approximately 170 feet from the north edge of I-94, but are higher in elevation than the highway so don't see its surface from most locations (they do have views of I-94 signs in some locations). Between the residences and I-94 is Story Parkway and vegetation south of the parkway and adjacent slope. The vegetation blocks most outward views from Story Parkway. Glimpses of Miller Park, parking areas, the electrical transmission line support structures and conductors ("wires"), and hills to the south are possible from several locations. Most areas further to the east and north along Story Parkway have outward views that are similarly screened. Near the intersection with Yount Drive, there are more open areas, so views of Miller Park, parking areas, the Stadium Interchange, and hills beyond are possible, particularly when deciduous trees and shrubs have foliage.

Attachment 1 contains three photographs from Story Parkway. Two additional photographs were taken to illustrate areas within Landscape Unit 3, located at the north and northeast end of the landscape unit near US 41 overpasses. Four KOPs were chosen for Landscape Unit 3 and are described in the following subsections. Existing views from the KOPs are located in Attachment 2.

KOP 7: Story Parkway

This location along Story Parkway is one of the closest points along the parkway to I-94. It was chosen to depict how project alternatives might impact views of locations that, unlike most of Story Parkway, do not contain extensive amounts of vegetation adjacent to the parkway that tends to block views from the parkway. The presence of vegetation, particularly during leaf-on conditions, tends to screen views to the south and southeast from the parkway so that viewers (such as residents) do not have street-level views much beyond the vegetation adjacent to the road. During leaf-off conditions, the view from this location includes Miller Park, I-94 signage, parking areas associated with the stadium, a vegetated hillside in the background behind the parking areas, glimpses of tall buildings in the background, and electrical transmission line conductors. Miller Park is a large, prominent, and visually distinct element when viewed from this location. Elevated views into the valley (containing parking areas) and of the tree-covered hills beyond are somewhat memorable. Due to the presence of the Miller Park, the vividness of this view is moderately high. The presence of the I-94 sign and the expansive light-colored parking areas that cover what is seen of the valley, result in an intactness rating between average and lower than average. The variety of objects and land

uses seen from this location and their varied characteristics result in a unity rating between average and lower than average. The overall visual quality rating of the view is average. During leaf-on conditions most of the objects viewed during leaf-off conditions would not be seen, and visual quality would be slightly higher.

Vividness = 5
Intactness = 3.5
Unity = 3.5
Overall Visual Quality Rating =4

KOP 8: Story Parkway (near Pinecrest Street)

This location is on Story Parkway near its intersection with Pinecrest Street. The view from this KOP is to the south and can be seen by nearby residents and neighborhood residents driving past it. During leaf-off conditions, an I-94 sign can be seen through the branches of deciduous plants that are adjacent to the parkway as can light-colored parking areas in the valley below. The memorability or vividness of the view is moderately low, as is intactness. There is little visual unity in the view, so the unity rating is moderately low. The overall visual quality rating is moderately low. During leaf-on conditions, views of most of the objects seen from this location would be blocked and the view from this area would be more "parkway-like." The view of vegetation alongside the parkway would not be memorable but would be pleasant. The overall visual quality rating during leaf-on conditions would increase to between moderately low and average.

Vividness = 3
Intactness = 3.0
Unity = 3.0
Overall Visual Quality Rating = 3

KOP 9: Story Parkway (near Clarendon Place)

KOP 9 is located on the grass-covered slope east of Story Parkway, overlooking Yount Drive. It was selected to represent an area relatively free of vegetation near Story Parkway that offered an elevated view towards the Stadium Interchange. Observers from this KOP would primarily consist of people walking on an undeveloped trail that follows this side of Story Parkway, and to a lesser degree, residents on the northeast side of Story Parkway. The grass-covered slope in the foreground, and parkway vegetation, can be clearly seen, as can Yount Drive and a large paved parking area associated with Miller Park. I-94, US 41, and structures associated with the interchange can also be seen from this location as can the edge of Miller Park, electrical transmission line structures that silhouette the skyline, and hills in the background. The features that can be seen are not particularly memorable, so the vividness rating is between average and moderately low. Visual elements such as parking lots, roads, on- and off-ramps, elevated sections of US 41, and the electrical transmission line introduce a number of features that encroach on views. In terms of unity, however, this large-scale infrastructure-dominated landscape has a degree of visual coherence and an above-average unity rating. The overall visual quality of this view is lower than average.

Vividness = 3.5
Intactness = 2.5
Unity = 4.5
Overall Visual Quality Rating = 3.1

KOP 10: Yount Drive and Story Parkway

This location near the corner of Yount Drive and Story Parkway is northeast of the Miller Park entry sign. It was selected to represent views that nearby residents and people driving into the Miller Park parking area have when looking to the southeast. The view includes Yount Drive, the overhead entry sign, the parking area, and structures associated with Miller Park Way and US 41 and their adjacent embankments. It also includes the electrical transmission line structures and wooded hillsides in the background. This view is not memorable, and the vividness rating is between low and moderately low, as is the intactness rating. The strong horizontal presence of multiple transportation elements result is a slightly higher unity rating of moderately low. The overall visual quality of the view is between low and moderately low.

Vividness = 2.5

Intactness = 2.5
Unity = 3
Overall Visual Quality Rating = 2.7

4.3.4 Landscape Unit 4: Miller Park

Landscape Unit 4 includes Miller Park (the stadium, parking areas, and other associated facilities), the Stadium Interchange, segments of I-94, US 41, and Miller Park Way, railroad tracks, and a portion of the Hank Aaron State Trail (which is approximately 0.5 mile south of I-94). In much of this landscape unit, I-94, US 41, and Miller Park Way are above grade, as are other transportation features such as on- and off-ramps and arterial roads. Most of the land in this landscape unit is devoted to parking, industry, and transportation, and has a utilitarian character. The vast expanses of pavement in this area and the scarcity of view screening by trees or buildings allows for expansive views. Major visual features include Miller Park, the Stadium Interchange, various overpasses and on-off ramps, and the Menomonee River.

People who are considered to be viewers in Landscape Unit 4 are temporary viewers either passing through the area on transportation infrastructure, or people attending an event at Miller Park. Due to the temporary nature of their visits in this landscape unit and their likely attention to the activities they are watching or participating in, their viewer sensitivity is considered to be low.

Attachment 1 includes photographs from two locations within Landscape Unit 4. Because of the lack of sensitive viewers in this landscape unit and its utilitarian character, no KOP was selected for Landscape Unit 4.

4.3.5 Landscape Unit 5: Merrill Park

The west end of Landscape Unit 5 is adjacent to the Menomonee River. The landscape unit follows the north side of I-94 east through a residential neighborhood (Merrill Park) to the eastern terminus of the proposed project near 16th Street. Much of the area north of I-94 is similar to, or slightly higher in the elevation than, I-94.

Sensitive viewers within Landscape Unit 5 consist of nearby residents north of I-94. Park Hill Avenue parallels the north side of I-94, and a number of north-south oriented streets dead-end against it. Some north-south oriented streets such as 35th Avenue and 32nd Street pass over or under I-94 and link the neighborhood to areas to the south. The fronts of most residences on Park Hill Avenue are oriented south towards I-94, while residences on the north-south oriented streets that connect with it tend to face to the north-south. Vegetation is present within the I-94 right-of-way screens, or partially screened, views of I-94 from some of the residences located on Park Hill Avenue and the north-south oriented streets that connect to it. Where vegetation is not present, views to the south are uninterrupted (see KOP discussions in the following paragraphs). Locations along Park Hill Avenue with enough vegetation to screen views to the south vary considerably.

Attachment 1 contains photographs towards I-94 from two locations along Park Hill Avenue. Two KOPs were chosen to depict how the project alternatives might impact views from this area. The photographs of existing views from these KOPs are in Attachment 2.

KOP 11: 36th Street and Park Hill Avenue

This location was chosen to represent views to the south toward I-94 from a residential north-south oriented street that does not have views screened by vegetation. Viewers include people living along this street and nearby residents driving south of 36th Street. The most memorable object seen in this view is the electrical transmission line structure and the two utility poles that frame it from this location. The vividness rating is between moderately low and low. The intactness rating of low is largely due to the presence of the electrical transmission line structure and conductors. The mixture of objects seen from this view (including rooftops of buildings south of I-94) result in a unity rating of low. The overall visual quality rating of this view is low.

Vividness = 2.5
Intactness = 2
Unity = 2
Overall Visual Quality Rating =2.2

KOP 12: 32nd Street and Park Hill Avenue

This southern view from 32nd Street, north of Park Hill Avenue, includes a view of the I-94 overpass. It was selected to display how changes associated with the alternatives would change views from this location (which is near single-family residences to the east and a nine-story, multifamily building to the west). Viewers include nearby residents and people travelling south under the overpass. The view from this location is not memorable or distinctive, and the vividness rating is moderately low. The overpass and roadway dominate views from this location and contribute to an intactness rating of low. Transportation elements are the main features seen from this view and create a somewhat unified scene that results in a unity rating of average. The overall visual quality of the view is moderately low.

Vividness = 3
Intactness = 2
Unity = 4
Overall Visual Quality Rating =3

4.3.6 Landscape Unit 6: Menomonee Valley

Landscape Unit 6 is located along a part of the Menomonee Valley that is south of I-94. The area is industrial and commercial in land use and character and has few sensitive viewers. I-94 passes to the north above this low-lying landscape unit, and views of it are often interrupted by large-scale features such as industrial/commercial buildings and elevated roads/overpasses.

Two photographs from Landscape Unit 6 are included in Attachment 1 to illustrate views towards I-94 from within the landscape unit. Because of the lack or sensitive viewers in this landscape unit, its utilitarian character, and its low visual quality, no KOP was selected for Landscape Unit 6.

5 Visual Impacts

The following subsections describe the impacts that the alternatives being evaluated would have on the visual quality of views seen by sensitive viewers. As described previously in the methodology section, if an alternative being assessed would produce a change in visual quality of one or more visual quality categories (for example, moderately high to average, or moderately low to low) in an area where people with high viewer sensitivity (residents and cemetery visitors) would see it, the impact would be considered to be of substantial intensity for NEPA determination. If viewers with moderate to low sensitivity observed a change of one visual quality rating, the impact would be considered of negligible or moderate intensity for the NEPA assessment. If there were a change in visual quality rating of two ratings or more (for example, from high to moderate), and the changes were viewed by people with high or moderate viewing sensitivity, the impact would be considered to be substantial for the NEPA determination. Changes in visual quality observed by people with low viewer sensitivity would be assumed to have impacts that would be of negligible or moderate intensity. In many landscape units (and KOPs) the presence of the alternatives would alter visual quality, but not enough to lower the visual quality ratings. These impacts would be considered to be of negligible or moderate intensity.

As part of the visual impact analysis, the potential for noise barriers to influence the visual quality of the viewshed along the project corridor was not analyzed. The reason for this is that the location of noise barriers will not be decided until later in the study process after local residents have a chance to decide if they want the noise barriers. The presence of noise barriers could block or interrupt views beyond I-94 for motorists driving on I-94. However, for most viewers looking towards I-94 from nearby areas, the presence of noise barriers (that would range between 4 and 6 feet in height) would not significantly alter visual quality of views looking towards the alternatives that are discussed in this section

5.1 West Segment Alternatives

Three alternatives were assessed for Landscape Unit 1 (West End): Alternative W1 (Braided Ramps); Alternative W2 (Collector-Distributor Roads); and the At-grade alternative. Alternatives W1 and W2 would replace the existing I-94 with two different configurations. Both Alternatives W1 and W2 would require parallel westbound and eastbound freeway lanes as well as braided ramps or collector-distributor roads (that would be built at different elevations than the freeway lanes). The freeway lanes of both alternatives would begin to gain elevation at approximately 62nd

Street so that they could converge with the Alternative C5 (Double Deck) that would pass through the cemetery segment (Landscape Unit 2). The at-grade alternative would be essentially the same elevation as the existing freeway and would be approximately two feet wider. The additional two feet of width would be not be noticed by most viewers. With this alternative the 68th/70th Street interchange would be rebuilt in its current configuration and freeway entrance and exit ramps at the Hawley Road interchange would be removed in Landscape Unit 1.

5.1.1 Alternative W1: Braided Ramps

Most of Alternative W1 would be constructed at or near-grade, but the part east of 62nd Street would be elevated to connect with the double-deck alternative in the cemetery segment. The discussion of impacts to visual resources associated with Alternative W1 distinguishes between the impacts from the at-grade portion of the alternative and the elevated part. The at-grade portion (and the elevated part) of Alternative W1 would expand the I-94 corridor approximately 100 feet north into the 138-kV electrical transmission line right-of-way. The existing transmission line would be moved north to the edge of the existing right-of-way. No residences would be removed from the north side of I-94. Residential relocations along the south side of I-94 that would be adjacent to the at-grade portion of the alternative would be required beginning just west of South 66th Street and continuing east to approximately South 62nd Street. Approximately 20 residences would be relocated and replaced by Alternative W1 components (local road and ramps). This would result in I-94 components being closer to the remaining residences than is currently the case.

The top of the crash barriers of the elevated portion of Alternative W1 would be as high as 60 feet above adjacent grade, and the elevated ramps would range from 0 to 60 feet (to the top of the crash barriers) above adjacent grade. The elevated westbound ramp and the north side of elevated west- and eastbound freeway lanes of the I-94 structure would be visible from the backs of residences north of the I-94 corridor that face Fairview Avenue (as well as some nearby residences on north-south oriented streets). On the southern side of I-94, an elevated (on columns) eastbound entrance ramp would be constructed as high as 25 feet above the adjacent grade and would be visible from residences near it. Views by people driving on the elevated westbound freeway lanes would be more expansive than current views from I-94. The views of people driving along the eastbound freeway lanes would be similar to existing views in most locations, although the views would include ramps that would be part of Alternative W1.

KOP 1: Dixon Street - Alternative W1 would introduce transportation components into this view just west of Hawley Road that would be seen by nearby residents. The Alternative W1 components would be larger in scale and mass than most of the elements that are current seen from this location (see Exhibit B-3 in Attachment 2 which is a simulation of Alternative W2, which in this location would be very similar in appearance to Alternative W1). The components depicted in the simulation included the two westbound freeway lanes (the upper structure) separating as they depart the double structure alternative, the westbound lane retaining wall/support structure, and the eastbound lane (the lower structure). The freeway lanes (and crash barriers lining them) and the support/retaining wall would slightly increase the vividness rating because of their large-scale, horizontal characteristics. The same characteristics that create a somewhat memorable view would be considered visual intrusions that would reduce the existing low intactness to very low. The visual unity rating would decrease from moderately low to between moderately low and low. The overall visual quality of the view would be reduced from between moderately low and low to low, which would be an impact of negligible intensity.

Vividness = 2.5 (Existing = 3)
Intactness = 1 (Existing = 2)
Unity = 2.5 (Existing = 3)
Overall Visual Quality Rating = 2.0 (Existing = 2.7)

Alternative W1: Braided Ramps Visual Impact Assessment

Alternative W1 would change the visual setting of Landscape Unit 1. The alternative would widen I-94, remove up to 20 residences on the south side of I-94, necessitate the relocation of the 138-KV electrical transmission line to the north of its current alignment, and introduce elevated transportation components into the eastern part of this landscape unit. Due largely to the existing presence of I-94 and the 138-kV electrical transmission line, the visual quality of views towards I-94 from within this landscape unit ranges from moderately low to low. Given the greater width and taller structures associated with Alternative W1 compared to the existing I-94, it would be seen over a greater area than I-94 is currently. However, when viewed from nearby areas, it would be consistent with the large-

scale transportation element character of the existing I-94 corridor. Alternative W1 would lower the visual quality of views towards it from nearby areas. However, the changes would not reduce the existing moderately low to low visual quality of views by residents in one or more categories, which is the criterion used in this VIA to determine a significant impact under NEPA. Alternative W1 would have an impact of negligible intensity on the visual quality of views towards I-94 from nearby areas in Landscape Unit 1.

5.1.2 Alternative W2: Collector-Distributor Roads

Alternative W2 (C-D roads) would require less lateral space on either side of I-94 than Alternative W1. As would be the case with Alternative W1, the western part of Alterative W2 would be constructed at, or near, grade. The eastern portion of Alternative W2 would require elevated structures to access the double deck alternative that would pass through the cemetery segment (Landscape Unit 2). The impacts of the at-grade section of the alignments discussed in the previous section, Alternative W1, would be very similar to this alternative. The main difference would be that Alternative W2 would require less horizontal area than Alternative W1 and would require the removal of fewer residences (approximately 8 with the 70th/68th Street Split Diamond Interchange Alternative and approximately 12 with the 70th Street Diamond Interchange Alternative). The primary differences between Alternatives W1 and W2 would be the elevated parts of their routes. With Alternative W2, the westbound collector-distributor road and westbound lanes of I-94 along the north side of the alignment would be built at, or close to, grade. In addition, Alternative W2 would not require as much space north of the existing I-94 alignment as Alternative W1 would. Some sections of Alternative W2 components on the south side of I-94 such as collector-distributor roads and ramps connecting with freeway lanes would be built on elevated structures, and other sections would be at-grade. The top of the eastbound structure that would cross over Hawley Road would be approximately 35 feet above the adjacent grade. It would be clearly seen from adjacent residences and some nearby residences on north-south oriented streets. Views by people driving on the elevated eastbound freeway lanes, ramps, and collector-distributor roads would be more expansive than current views from I-94. People driving on the essentially at-grade westbound freeway lanes and collector-distributor road would have views that would be similar to existing views in most locations.

KOP 1: Dixon Street - From this location just west of Hawley Road, Alternative W2 would be very similar in appearance to Alternative W1 (see Exhibit B-3 in Attachment 2). The primary difference between the two alternatives would be that with Alternative W2, slightly more of the electrical transmission line structure and trees next to it would be visible between the upper (eastbound) and lower (westbound) structures compared to Alternative W1. There would be slightly more visual connection between this location and the objects north of the Alternative W1 structures, but because of the low visual quality of the viewed objects, there would be little to no improvement in visual quality compared to Alternative W1. Alternative W2 would have an impact of negligible intensity to views towards I-94 from KOP 1.

Vividness = 2.5 (Existing = 3)
Intactness = 2 (Existing = 2)
Unity = 2.5 (Existing = 3)
Overall Visual Quality Rating = 2.0 (Existing = 2.7)

Alternative W2: Collector-Distributor Roads Visual Impact Assessment

Alternative W2 would be similar to, and consistent with, the existing major transportation element character of the portion of the I-94 corridor that passes through Landscape Unit 1. The alternative would not reduce the existing moderately low to low visual quality ratings of views from within this landscape unit towards I-94 one rating or more. Therefore, Alternative W2 would have an impact of negligible intensity.

5.1.3 At-Grade Alternative

The at-grade alternative would essentially retain I-94 at its current elevation as it travels through Landscape Unit 1. I-94 would be expanded to four lanes in each direction and would be slightly wider than it is currently. The 68th/70th Street interchange would be rebuilt in its current configuration and freeway entrance and exit ramps at the Hawley Road and Mitchell Boulevard (east of Landscape Unit 1) interchanges would be removed. The view from KOP 1: Dixon Street would be similar to the existing view in terms of the elevation of the overpass above the adjacent grade.

At-Grade Alternative Visual Impact Assessment

Because the at-grade alternative would have essentially the same grade and close to the same width as the existing freeway, its character would not change, nor would the visual quality of views towards it from residences to the north and south. Views by motorists driving on this part of I-94 would also not change greatly. The reconstruction of the 68th/70th Street interchange (the alignment would be the same as the existing alignment)would not change the character or visual quality of areas near the interchaage. The removal of freeway entrance and exit ramps at the Hawley Road interchange (and the Mitchell Boulevard interchange east of Landscape Unit 1) would not change the character of the freeway corridor or change the visual quality of views towards I-94 from areas near it or from the freeway by passing motorists. Impacts from the at-grade alternative would be of negligible intensity under NEPA.

5.1.4 West Segment Visual Impact Assessment Summary

All three alternatives would be consistent in character with the existing major transportation element character of the I-94 corridor that passes through Landscape Unit 1. Although both Alternatives W1 and W 2 would introduce new, large-scale components into the I-94 corridor, neither alternative would lower existing visual quality enough to have impacts of substantial intensity under NEPA. Differences between the two Alternatives in terms of how they would change the existing visual environment would include the Alternative W2 requiring less horizontal area than Alternative W1, and removing fewer residences. With Alternative W2, the westbound collector-distributor road and westbound freeway lanes of I-94 along the north side of the alignment would be built at, or close to, grade as opposed to much of these components being elevated with Alternative W1. Both alternatives would require elevated structures on the south side of I-94, although the retaining wall along the south side of the I-94 right-of-way associated with much of Alternative W 2 would be more visually prominent from areas to the south than would Alternative W1 structures. The at-grade alternative would essentially maintain the elevation of the existing freeway and slightly increase the width. The presence of the at-grade alternative and the removal of freeway entrance and exit ramps at the Hawley Road interchange (and the Mitchell Boulevard interchange east of Landscape Unit 1) associated with the at-grade alternative would not change the character of I-94 corridor or change the visual quality of views toward it. As a result, impacts from the at-grade alternative would be of negligible intensity under NEPA.

5.2 Cemetery Segment Alternatives

The structures associated with the double deck Cemetery alternatives would begin in Landscape Unit 1 (West End), pass through all of Landscape Unit 2 (Cemeteries), and continue south of Landscape Unit 3 (Story Hill) into Landscape Unit 4 (Miller Park). The footprints of all of the alternatives would stay within the existing 110-foot-wide I-94 right-of-way between the adjacent cemeteries (although temporary construction areas for Alternatives C2 and C5 within the cemeteries would likely be required). Alternative C2 would be at-grade. Alternative C5 would be above grade and would have two options; the All Up and Partial Down. A third option for a double deck alternative, the all down option, was considered, but not evaluated as part of this VIA because it's impact would be very similar to that of the at-grade alternative. The elevation of the at-grade alternative would be very similar to the existing I-94 elevation and would require the removal of exit and entrance ramps associated with interchanges at the west (Hawley Road) and east (Mitchell Boulevard) ends of the cemetery segments.

5.2.1 Alternative C2 (At-grade)

Alternative C2 would remain at-grade through Landscape Unit 2 but would require the removal the Hawley Road and Mitchell Boulevard interchanges. Existing views by sensitive viewers from within the cemeteries towards I-94 and beyond would essentially remain the same as it is today. The removal of the entrance and exit ramps to Hawley Road (which would be located in both Landscape Units 1 and 2) and Mitchell Boulevard would have little to no effect on the visual setting of the areas near them or from the cemeteries.

Mitchell Boulevard would continue to cross I-94, but would have two options related to its connection with the VA property. One option would provide a connection to the VA from Mitchell Boulevard and the other would not provide the connection. This would result in a change in elevation of I-94 in order to allow Mitchell Boulevard to connectwith the VA campus. If Mitchell Boulevard was to connect to the VA campus, I-94's elevation would be slightly higher, as would the new Zablocki Drive bridge.. Exhibit B-8 (Simulations D and E) depict how the Alternative C2 and the Zablocki Drive bridge options would appear from a location within the Wood National Cemetery. The

raising and replacing of the Zablocki Road bridge over I-94 would not change the visual character of areas near it or the visual quality of views towards it from the cemeteries.

KOP 6: Wood National Cemetery (South Side of I-94) - As depicted in Exhibit B8 (Simulations D and E) in Attachment 2, the presence of Alternative C2 would minimally change the existing view from this location. The only real change would be that the existing Zablocki Drive bridge would be replaced with taller structures. The option that would provide a connection to the VA from Mitchell Boulevard (see Exhibit B8) would require a slightly taller replacement structure for Mitchell Boulevard than the option that would not provide access (see Exhibit B8). Differences in the appearance to the two options when viewed from this location would be minimal.

Vividness = 4.5 (existing = 4.5)
Intactness = 3.5 (existing = 3.5)
Unity = 4.5 (existing = 4.5)
Overall Visual Quality Rating = 4.2 (existing = 4.2)

Alternative C2 (At-Grade) Visual Impact Assessment

Alternative C2 would not change the major transportation element character of the I-94 corridor from areas within the cemeteries that would have views of it. It would slightly change the appearance of I-94 (and remove the interchanges—most of which are not be seen by sensitive viewers within the cemeteries). Alternative C2 would have little impact on visual quality and would not reduce current visual quality one rating or more; therefore, its impact would be of negligible intensity under NEPA.

5.2.2 Alternative C5 (Double Deck): All Up and Partial Down Options

Both of the options being considered for Alternative C5 (All Up and Partial Down) would include a double-deck structure with 4 freeway lanes in each direction. The height from the top of the tallest double-deck structure being considered for the Alternative C5 All Up option would range from approximately 30 feet to approximately 10 feet above the adjacent grade. The Partial Down option would be similar to the All Up option, but would be lowered into the existing I-94 corridor. The top of the tallest double-deck structures being considered for the Partial Down option would be up to six to eight feet lower that the All-Up option. The double-deck structures associated with both options would intrude on views by sensitive viewers across I-94 from cemeteries on either side of I-94. Although the elevated structure associated with the Partial Down option would be up to eight feet lower than the All Up option, there would be relatively little differences in view blockage. The KOP evaluations below provide more detail and Exhibits B-4 through B-10 in Attachment 2 contain simulations of both options of Alternative C5 as would be viewed from various locations.

The degree of impact of both the Alternative C5, All Up and Partial Down options would be dependent upon several factors, including how high the top of the double-deck structure would be compared to the adjacent grade, the type of structure used to support the components (solid walls would have slightly greater visual impacts than walls with openings for airflow), the degree of screening (if any) that would be provided to screen views of the double-deck (particularly the support walls), and the type of wall treatments that could be used to make the walls more visually appealing. Views by people driving on the top freeway lanes (the top deck) would be more expansive than current views from I-94, whereas views from the lower deck would essentially be blocked by adjacent structural walls (although some openings in the walls to allow airflow would potentially provide glimpses of adjacent areas).

The simulations that were developed for the KOPs below depict some views of Alternative C5 with a solid double-deck structure and some with openings for airflow. The openings would provide some visual connection between cemetery and areas behind the double-deck structure and would make the double-deck structure somewhat less massive in appearance (see Simulations B and C in Exhibits B-6 and B-8 in Attachment B). Because the All Up option would be taller than the Partial Down option, the air flow openings of the All Up option would be also be taller and would allow more of the area behind the double deck structure to be viewed compared to the Partial Down option. Depending upon the final design of the openings, the openings could introduce interesting architectural elements to the double-deck structure.

KOP 2: South Dana Court (adjacent to Beth Hamedrosh Hagodel Cemetery) - The top of the Alternative C5 All Up option crash barrier on the upper deck would be approximately 23 to 28 feet above grade. The double-deck

structure would block views by sensitive viewers to the south of the visual elements found in Spring Hill and Wood National cemeteries that contribute to vividness (see Exhibit B4 in Attachment 2). The vividness rating of the existing view would be reduced from above average to very low. From this location, the double deck would dominate views to the south and throughout the cemetery. It would be a major encroachment that would lower the existing lower-than-average intactness rating of views to the south to very low. Although not simulated, the top of the Alternative C5 Partial Down option would be approximately six feet lower than the All Up option and would not improve the visual quality rating of the view from this location. The overall visual quality rating of the Alternative C5 All-Up option would be lowered from slightly below average to between very low and low and would have an impact of substantial intensity to views from KOP 2.

Vividness = 1.3 (existing = 4.7)
Intactness = 2.0 (existing = 3.5)
Unity = 2.0 (existing = 3.0)
Overall Visual Quality Rating = 1.8 (existing = 3.7)

KOP 3: Beth Hamedrosh Hagodel Cemetery (East End) - The Alternative C5 All Up option would block existing southeastern and southern views (see Exhibit B-5 in Attachment 2). It would eliminate the visual connection between the cemetery and the main portion of Wood National Cemetery. The elements in the cemeteries that contribute to the vividness of the view would no longer be seen, and the vividness rating would be reduced from between moderately high and high to low. The double-deck would be an encroachment on the view, and the views intactness rating would be lowered from average to between lower than average and low. Views of the trees and cemetery elements on both sides of I-94 that create visual linkage would be lost, and visual unity would be reduced to lower than average. The overall visual quality of the KOP 3 view would change from between average and moderately high to between lower than average and low. The Alternative C5 All Up option would have an impact of substantial intensity to sensitive viewers near KOP 3. The Partial Down option would have similar impacts to sensitive viewers and the visual quality rating of the view from this location.

Vividness = 2.0 (existing = 5)
Intactness = 2.5 (existing = 4.0)
Unity = 3.0 (existing = 4.5)
Overall Visual Quality Rating = 2.5 (existing = 4.5)

KOP 4: Wood National Cemetery (North Side of I-94) - The double deck structure along this portion of the I-94 corridor would block southern views from this location towards the main part of Wood National Cemetery (see Exhibit B-6 in Attachment 2). The double deck structure associated with both the All Up and Partial Down options depicted in Exhibit B6 (solid wall, no visual openings) of Attachment 2 would reduce the vividness rating of the view from between moderately high and high to almost low. The intactness rating would also be lowered by the encroaching presence of the double deck, as would visual unity. The overall high visual quality rating of this view would be reduced to between moderately low and low. Both options of Alternative C5 without air flow openings would have impacts of substantial intensity to views by sensitive viewers from KOP 4.

Vividness = 2.0 (existing = 5.5)
Intactness = 2.5 (existing = 4.5)
Unity = 2.5 (existing = 5.0)
Overall Visual Quality Rating = 2.3 (existing = 5)

Exhibit B-6 of Attachment 2 also contains simulations of both the Alternative C5 All Up and Partial Down options with air flow openings. The openings would provide some visual connection with the main part of the Wood National Cemetery and provide architectural interest compared to a solid wall. The openings would have slightly less of an impact to the visual quality rating of the view from this location compared to double deck structures with no air flow openings.

Vividness = 3.0 (existing = 5.5)
Intactness = 2.5 (existing = 4.5)
Unity = 3.0 (existing = 5.0)

Overall Visual Quality Rating = 2.8 (existing = 5)

KOP 5: Spring Hill Cemetery - The double-deck of the Alternative C5 All Up option would block views to the north of most of the elements of the north parcel of Wood National Cemetery that can be seen from this location (the tops of trees would still be seen) as well as views of I-94 signage. Views of the rows of white headstones in Wood National Cemetery would be blocked by the long, continuous support wall of the double-deck as would other elements that currently create a vivid view (see Exhibit B-7 in Attachment 2). The vividness rating of almost high would be reduced to between moderately low and low. The existing intactness and unity ratings would also be lowered. The overall visual quality ratings of the view would be lowered from between average and high to between low and moderately low. The Alternative C5 All Up option would have an impact of substantial intensity to views to the north from KOP 5.

Vividness = 2.5 (existing = 5)
Intactness = 2.5 (existing = 4.5)
Unity = 3.0 (existing = 4.5)
Overall Visual Quality Rating = 2.7 (existing = 4.7)

KOP 6: Wood National Cemetery (South Side of I-94) - Views to the north of the northern parcel of Wood National Cemetery would be blocked by the double-deck structure (see Exhibit B-8 in Attachment 2) although the tops of trees north of I-94 would be seen. With the Alternative C5 Partial Down option there would be views of the top of elevated part of the Calvary Cemetery that would not be seen with the All Up option. The overall vividness rating and unity of the view from KOP 6 would be reduced from between average and moderately above average to lower than average. The overall visual quality rating would be lowered from average to lower than average. Both Alternative C5 options (no openings) would have impacts of substantial intensity to views from KOP 6.

Vividness = 3.0 (existing = 4.5)
Intactness = 2.5 (existing = 3.5)
Unity = 3.0 (existing = 4.5)
Overall Visual Quality Rating = 2.8 (existing = 4.2)

Exhibit B-8 includes simulations of both the Alternative C5 All Up and Partial Down options. The All Up option is simulated with no air flow openings (Simulation A). The Partial Down option is simulated with air flow openings (Simulation B). From this elevated viewing angle the air flow openings would not provide visual connection areas behind the double-deck structure of either option, but would provide architectural interest (particularly the All Up option) compared to a solid wall. The air flow openings would have slightly less of an impact to the visual quality rating of the view from this location compared to double deck structures with no air flow openings. Both Alternative C5 options would still have impacts of substantial intensity to views from KOP 6 by sensitive viewers.

Vividness = 3.5 (existing = 4.5)
Intactness = 3.0 (existing = 3.5)
Unity = 3.0 (existing = 4.5)
Overall Visual Quality Rating = 3.2 (existing = 4.2)

Alternative C5: All Up and Partial Down Options Visual Impact Assessment

The Alternatives C5 options would introduce large-scale transportation infrastructure into the I-94 corridor. The structures would reflect the existing major transportation infrastructure character that I-94 currently exhibits, but would block views between the cemeteries to varying degrees. Their presence would eliminate the expansive character of the views from the cemeteries. Air flow openings for the double deck structure with both the All Up and Partial Down options would provide some limited visual connection between the cemeteries (depending upon viewing location) and add architectural interest compared to solid walls. The double decks associated with the two Alternative C5 options would reduce the existing visual quality ratings all five KOPs in this landscape unit by one or more visual quality ratings and would have impacts of substantial intensity.

5.2.3 Cemetery Segment Visual Impact Summary

All of the alternatives would reflect the existing major transportation infrastructure character that I-94 currently exhibits. However, they would have different impacts on the character of adjacent cemeteries. Alternative C2 would

allow a visual connection between the cemeteries on both sides of I-94 to be maintained. The visual connection that is now possible (although degraded by the presence of I-94) visually connects the various cemeteries and creates the sense of a much larger and more expansive cemetery area than the individual cemeteries do by themselves.

The Alternative C5 options would block views between the cemeteries to varying degree. Both the All Up or Partial Down options would eliminate the expansive character of views from cemeteries on both sides of I-94 to the other side of I-94. Air flow openings for the double deck structure with both the All Up and Partial Down options would provide some limited visual connection between the cemeteries (depending upon viewing location) and add architectural interest compared to solid walls.

Alternative C2 would not have the degree of impact that the Alternative C5 options would have. Alternative C2 would have an appearance very similar to that of the existing freeway when viewed from the cemeteries and would have an impact of negligible intensity under NEPA, whereas both the Alternative C5 options would have impacts of substantial intensity. The double decks associated with the two Alternative C5 options would reduce the existing visual quality ratings all five KOPs in this landscape unit by one or more visual quality ratings.

5.3 Stadium Interchange Alternatives

The Stadium Interchange alternatives would be centered in Landscape Unit 4 (Miller Park), but would continue into, or be seen in close proximity from, Landscape Units 3 (Story Hill), 5 (Merrill Park), and 6 (Menomonee Valley). Three alternatives are being evaluated for the Stadium Interchange area, the portion of Alternative C5 that would enter this landscape unit, Alternative S2 (system interchange—low-speed, free-flow), and Alternative S3 (single-point interchange with free-flow ramps from I-94). All three would occur north and east of Miller Park in areas with no, or very few, sensitive viewers. The closest part of the Stadium Interchange area to sensitive viewers is the northwest part near the southern and eastern edges of the Story Hill neighborhood. Various combinations of roads and ramps would depart or merge with the main I-94 freeway lanes. The eastern part of the Story Hill neighborhood is not as high above adjacent terrain as the southern-southeastern part, but some areas have expansive existing views that include major transportation infrastructure (I-94, US 41, etc.), parking areas for Miller Park, and parts of Downtown Milwaukee, several miles away.

The east end of Alternative C5 would transition from the Cemetery Segment through the Stadium Interchange Segment past the Story Hill neighborhood. The top of the elevated freeway lanes would be slightly below that of some parts of the Story Hill Neighborhood.

Alternative S2 and S3 would have different combinations of elements (collector-distributor roads, entrance and exit ramps [at-grade and above grade], bridges, etc.) at varying distances from the Story Hill neighborhood. As in the Cemetery Segment alternatives discussion, the potentially most visible alternative component that might be used in the alternatives being considered were used to determine potential visual impacts to the Story Hill neighborhood. The structures that were modeled to determine impacts include continuations of the tallest possible double-deck alternative that would pass through the Cemetery Segment (Landscape Unit 2) and transition to a number of options just east of the southeast corner of the Story Hill neighborhood and elevated ramps. The impacts of alternative structures on the KOPs near them (KOPs 7, 8, 9 and 10) are described in the following subsections.

5.3.1 Alternative C5: All Up and Partial Down Options

If a double deck (Alternative C5) were built through the Cemetery Segment west of the Story Hill neighborhood it would transition eastward through the Stadium Interchange Segment to connect with I-94. Both the Alternative C5 All Up and Partial Down options would be higher than the existing I-94 structure. The following describes impacts associated with the portion of Alternative C-5 in Landscape Unit 4 (Miller Park) that would be near two KOPs in the Story Hill neighborhood.

KOP 7: Story Parkway - The top of the upper freeway lanes of the elevated structure of both the Alternative C5 All Up and Partially Down options as well as vehicles travelling on it would be seen through the shrubs and trees that line the south side of Story Hill Parkway during leaf-off conditions by residents living near this location or passing by (see Exhibit B-9 in Attachment 2). During leaf-off conditions, the All Up option would block slightly more of the hillsides seen in the distance beyond the upper freeway lanes than the Partial Down option would. The upper lanes of

the structure and vehicles travelling on it would slightly lower vividness, but would not interfere with views of the iconic Miller Park or the hillsides beyond. At night during leaf-off conditions, vehicles lights from vehicles on the elevated structure could be seen. During leaf-on conditions, the lights would likely not be seen, nor would much of the structure of either option. The viewed landscape contains a mix of uses, including extensive parking areas, which is why its visual integrity was rated as between average and moderately low. With part of the upper freeway lanes and vehicles added to the view, visual integrity would be reduced to moderately low. The overall visual quality of the view from this location during leaf-off conditions would decrease from average to between average and moderately low. This change would produce an impact of negligible intensity.

Vividness = 3.3 (existing = 5.0)
Intactness = 3.0 (existing = 3.5)
Unity = 3.0 (existing = 3.5)
Overall Visual Quality Rating = 3.1 (existing = 4.0)

KOP 8: Story Parkway and Pinecrest Street - During leaf-off conditions, the upper freeway lanes of the elevated structure associated with the Alternative C5 All Up and Partially Down options and vehicles on it would be seen through branches by residents and people passing by (see the simulation of the All Up option depicted in Exhibit B-10 in Attachment 2). The unremarkable view from this location would not change with the presence of the elevated structure and its moderately low vividness rating would remain the same. The elevated structure would block existing views of the parking areas in the valley below, seen through the bare branches, which would slightly improve visual intactness (as would the removal of the existing I-94 sign depicted in the simulation). The presence of the elevated structure would somewhat lower visual unity during leaf-off conditions. The overall visual quality rating during leaf-off conditions would somewhat decrease compared to existing conditions, but would not change during leaf-on conditions, when the elevated structure and most vehicles travelling on it would be screened by vegetation. During leaf-off conditions, visual quality would decrease from between average and moderately low to moderately low. During leaf-on conditions visual quality would decrease very little, if at all. The Alternative C5: All Up option would produce an impact of negligible intensity.

Vividness = 3.0 (existing = 3.0)
Intactness = 3.0 (existing = 3.0)
Unity = 3.0 (existing = 3.5)
Overall Visual Quality Rating = 3.0 (existing = 3.2)

Alternative C5: All Up and Partial Down Options Visual Impact Assessment

The components of the upper freeway lanes of the elevated structures of both the Alternative C5 All Up and Partially Down options would be taller than the existing I-94 structure. The upper freeway and structures vehicles travelling on them would be seen from some areas of the Story Hill neighborhood during leaf-off conditions. The structures would partially block generally unremarkable views of industrial areas in the Menomonee Valley, but would not greatly decrease visual quality. During leaf-off conditions, Alternative C5 would have an impact of negligible intensity. During leaf-on conditions, view of Alternative C5 components would be generally screened by vegetation. Impacts would be less than those described during leaf-off conditions.

5.3.2 Alternative S2 (System Interchange—Low-Speed, Free-Flow)

The alternative would require several components such as collector-distributor roads and ramps that would be northwest of the center of the Stadium Interchange and be located between the interchange and the edges of the Story Hill Neighborhood. The closest components would be located along the eastern edge of the Miller Park parking area and would be approximately 550 to 600 feet east of Story Parkway. The following describes impacts associated with Alternative S2 that would be seen from two KOPs in the Story Hill neighborhood. A number of structures associated with Alternative S2 would be clearly seen from this location. The structures would be located within part of the Miller Park parking lot that is seen clearly from this location and would block views behind them. The vividness rating of this unremarkable view would not change, nor would it visual unity. Intactness would be slightly reduced from between moderately low and low to low. Overall visual quality would be lowered slightly but would remain between moderately low and low. Alternative S2 would produce an impact of negligible intensity.

Vividness = 2.5 (existing = 2.5)
Intactness = 2 (existing = 2.5)
Unity = 3 (existing = 3)
Overall Visual Quality Rating = 2.5 (existing = 2.7)

Alternative S2 (System Interchange—Low-Speed, Free-Flow) Visual Impact Assessment

Alternative S2 would contain components that would be seen from some locations along the edge of the Story Hill neighborhood. The components would not greatly change the visual quality of outward views from these locations or block views of vivid or memorable elements (views of Miller Park would remain). Views from along most of North Story Parkway are blocked during leaf-on times of the year by trees and shrubs planted north and east of North Story Parkway. Changes associated with Alternative S2 would not reduce the existing moderately low to low visual quality of views by residents in one or more categories. Alternative S2 would result in an impact of negligible intensity to views from the Story Hill Neighborhood.

5.3.3 Alternative S3 (Single Point Interchange Alternative)

Compared to Alternative S2, this alternative would have taller structures adjacent to the southern edge of the neighborhood and fewer components located in the Miller Park parking area east of the Story Hill Neighborhood. The taller structures would include higher elevated freeway lanes and ramps that would be seen to varying degrees as described in the descriptions of the following four KOPs located along the southern and eastern edges of the Story Hill neighborhood.

KOP 7: Story Parkway - An elevated ramp that connects US 41 with the elevated freeway lanes of Alternative S3 would be seen through shrubs that line the south side of Story Hill Parkway during leaf-off conditions (see Exhibit B-9 in Attachment 2). The Alternative S3 components would block views of the Miller Park parking areas, but would also block views of part of Miller Park. This alternative would change views to the south more than Alternative S2 would, particularly during leaf-off conditions. It would reduce vividness and intactness slightly and lower overall visual quality from average to almost moderately low and would result in an impact of negligible intensity.

Vividness = 4.0 (existing =.5.0)
Intactness = 3.0 (existing = 3.5)
Unity = 2.5 (existing = 3.5)
Overall Visual Quality Rating = 3.2 (existing = 4.0)

KOP 8: Story Parkway and Pinecrest Street - During leaf-off conditions an elevated ramp and the freeway lanes of the elevated structure of Alternative S3 would be seen and would block views of parking areas associated with Miller Park (see Exhibit B-10 in Attachment 2 which is a simulation of Alternative C5, but very similar in appearance to Alternative S3). During leaf-on conditions, these components would be more difficult to see. The presence of the Alternative S3 components would somewhat lower the existing visual quality components and overall visual quality during leaf-off conditions, but would produce an impact of negligible intensity. During leaf-on conditions visual quality would decrease very little.

Vividness = 3.2 (existing = 3.2)
Intactness = 3.5 (existing = 3.0)
Unity = 3.0 (existing = 3.5)
Overall Visual Quality Rating = 3.1 (existing = 3.4)

KOP 9: Story Parkway (Northeast West Clarendon Place) - Alternative S3 components would be seen along the eastern edge of the Miller Park parking area or along the I-94 corridor behind it (see Exhibit B-11 in Attachment 2). The components would be seen from some areas along Story Parkway, but would be similar in character to the existing views of the Stadium Interchange area. The overall visual quality rating of between average and moderately low would not change with Alternative S3. Impacts would be of negligible intensity.

Vividness = 3.5 (existing = 3.5)
Intactness = 3.0 (existing =2.5)
Unity = 4.0 (existing = 4.5)

Overall Visual Quality Rating = 3.5 (existing = 3.5)

KOP 10: Yount Drive and Story Parkway - Alternative S3 components would be seen along the eastern edge of the Miller Park parking area and/or along the I-94 corridor behind it (see Exhibit B-12 in Attachment 2). The components of Alternative S3 that would be seen would be similar in character to the elements associated with Stadium Interchange and the portions of each freeway that that can be seen from this location. The overall visual quality would be slightly reduced but would remain between moderately low and low and impacts would be of negligible intensity.

Vividness = 2.5 (existing = 2.5)
Intactness = 2 (existing = 2.5)
Unity = 3 (existing = 3)
Overall Visual Quality Rating = 2.5 (existing = 2.7)

Alternative S3 (Single Point Interchange Alternative) Visual Impact Assessment

Components of Alternative S3 would be seen from the portions of the Story Hill neighborhood described above during leaf-off conditions. The components would not greatly change the visual quality of outward views from these locations, even during leaf-off conditions or block views of vivid or memorable elements such as Miller Park. Views from along much of Story Parkway are blocked during leaf-on times of the year by trees and shrubs planted along Story Parkway. Changes associated with Alternative S3 would not reduce the visual quality ratings of views by one or more categories, which is the criterion used in this VIA to determine a significant impact under NEPA. The impact of Alternative S3 on views from the Story Hill Neighborhood towards the I-94 corridor and the I-94/US 41 interchange area would be of negligible intensity.

5.3.4 Stadium Interchange Segment Visual Impact Summary

Components of the three alternatives would be seen to varying degrees from several locations along the southern and eastern edges of the Story Hill neighborhood. Most views from Story Hill Parkway in the south and eastern parts of the neighborhood are screened, or partially screened, by roadside vegetation. As depicted in the simulations from KOPs 7 and 8, the top of the upper freeway lanes and vehicles on them associated with both the All Up and Partial Down options of Alternative C5 (Double Deck) would be seen during leaf-off conditions. They would be difficult to see during leaf-on conditions. The overall visual quality of the unremarkable views to the south would decrease slightly during leaf-off conditions, and would not decrease appreciably during leaf-on conditions. The impacts from Alternative C5 would be of negligible intensity. The components (a ramp and part of the freeway lanes on the elevated structure) of Alternative C5 that were simulated for KOP 7 and KOP 8 would be slightly lower in elevation than adjacent viewing areas along the south side of Story Hill Parkway. The components would be at least partially screened by roadside vegetation. Where not screened by vegetation, the presence of the components (and vehicles on them) would somewhat lower the existing visual quality of views, but would not reduce the existing visual quality categories by one or more categories. Therefore, the intensity of the impacts of Alternative S2 would be negligible. The elevated components of Alternative S3 would be more visible from KOP 7 and 8 (at least during leaf-off conditions) than the Alternative S2 components would be. Views of Miller Park stadium would remain with both alternatives. Due to the generally unremarkable views to the south, average to between average and moderately low visual quality, neither alternative would have significant impacts to views from the section of Story Hill Parkway adjacent to the Story Hill neighborhood.

Along the east side of the neighborhood, views to the east and southeast are generally more open, and components of the alternatives would be seen from more locations along Story Hill Parkway (or nearby areas). The alternative components would not be out of character with the existing transportation features and large parking lot that are currently part of the views seen from this part of the neighborhood. The alternatives would change some views towards US 41 and the Stadium Interchange, and could somewhat lower visual quality. However, the existing visual quality categories would not be lowered one or more categories with either Alternative S2 or S3. Therefore, the intensity of the impacts of the alternatives would be negligible.

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5.4 East Segment Alternatives

The East Segment Alternatives would pass through and/or be visible from Landscape Units 5 (Merrill Park) and 6 (Menomonee Valley). Landscape Unit 6 is industrial in use and character and, as explained in the Existing Conditions Section, is not considered to contain sensitive viewers. No KOPs were selected or simulations developed for Landscape Unit 6. Because much of the portion of Landscape Unit 5 that the alternatives described in the following subsections pass near is a residential area at the south end of the Merrill Park neighborhood, two KOPs from that area were selected for this landscape unit.

Construction of ramps associated with all of the East Segment Alternatives would require the removal of most, or all, of the existing vegetation that grows on the slope between Park Hill Avenue and I-94. The off-alignment alternative would not remove adjacent vegetation east of 32nd Street East because it would be constructed several hundred feet south of the current alignment I-94 alignment.

5.4.1 Alternative E1: Braided Ramps

East- and westbound lanes would be widened south of the Merrill Park area and braided ramps constructed to the north and south of the east- and westbound lanes. The component of this alternative of most concern to views from the Merrill Park area would be the braided ramps that would be built north of, and higher than, the east and westbound lanes. Parts of the braided ramps would be at-grade and other parts would be elevated. The braided ramps would parallel much of Park Hill Avenue. The new ramps would replace existing ramps that provide connections from Park Hill Avenue (to 35th Street). They would be slightly lower in elevation than Park Avenue (elevation differences would vary by location).

KOP 11: 36th Street and Park Hill Avenue - The elevated braided ramp that would be seen at the end of 36th Street, and vehicles passing on it would be clearly seen from this location by residents in the area (see Exhibit B-13 in Attachment 2). It would not change the vividness rating of between moderately low and low. The elevated braided ramp would partially block views of areas in the valley below (the roofs of buildings, glimpses of roadways, etc.), but would not block enough of the view to change the intactness rating or greatly increase the low unity rating. The overall visual quality rating of between moderately low and low would not change. Alternative E1 would have an impact of negligible intensity.

Vividness = 2.3 (existing = 2.5)
Intactness = 2.0 (existing = 2.0)
Unity = 2.5 (existing = 2)
Overall Visual Quality Rating = 2.3 (existing = 2.2)

KOP 12: 32nd Street and Park Hill Avenue - The appearance of the I-94 overpass over 32nd Street would change with the new overpass (see Exhibit B-14 in Attachment 2). The existing single-structure overpass that contains both east- and westbound lanes would be replaced with four separate elevated structures: the west and eastbound lane structures, and two elevated collector-distributor roads. The four overhead structures would expand the bulk and scale of the overpass structure and would somewhat block views of the industrial area currently seen under the existing overpass. The degree of vividness would be slightly reduced, but would remain between moderately low and low. Intactness would remain the same, and the degree of visual unity would decrease slightly from average to between average and moderately low. The overall visual quality would essentially not change and would remain somewhat below moderately low, thus the impact to views from this location would be of negligible intensity.

Vividness = 2.5 (existing = 2.8)
Intactness = 2.0 (existing = 2.0)
Unity = 3.5 (existing = 4.0)
Overall Visual Quality Rating = 2.7 (existing = 2.8)

Alternative E1: Braided Ramps Visual Impact Assessment

From the Merrill Park neighborhood two aspects of this alternative would be noticeable. The braided ramps would be built north of, and higher than, the current east and westbound lanes and would partially block views of areas in the Menomonee Valley below (the roofs of buildings, glimpses of roadways, etc.), but would not block enough of the view to change the intactness rating or greatly increase the low unity rating. Construction of the ramps would require

the removal of most, or all, of the existing vegetation that grows on the slope between Park Hill Avenue and I-94. The types of views seen by people who would drive on components of Alternative E1 would be similar to existing views from I-94 and its associated components. The most noticeable difference would be along the north side of the alternative, where existing vegetation on slopes would be removed. The presence of the braided ramps would be consistent in character with the existing I-94 corridor. Their presence of the removal of the vegetation on the slope above I-94 would not decrease visual quality enough to have impacts of more than negligible intensity. Both the on- and off-alignment alternatives would have the same impact on these KOPs since the alignment does not begin to change until you get east of 31st Street.

5.4.2 Alternative E3: Split Diamond—Frontage Roads

Alternative E3 would develop a split-diamond interchange at 35th and 24th Streets, along with constructing one-way frontage roads adjacent to I-94 and introducing braided ramps between 35th Street and the Stadium interchange. It would involve different configurations of ramps, frontage roads, and collector-distributor roads than Alternative E1, and some of the components would be elevated at higher elevations than their counterparts in Alternative E1. As with Alternative E1, the construction of many of Alternative E3 ramps, frontage roads, and collector-distributor roads would require the removal of most, or all, adjacent vegetation.

KOP 11: 36th Street and Park Hill Avenue - The Alternative E3 elevated structures (a ramp and part of the westbound freeway lanes) that would be seen from KOP 11 would be very similar in appearance and impact to those of Alternative E1 (see Exhibit B-13 in Attachment 2). The presence of the components would partially block views of areas in the valley below (the roofs of buildings, glimpses of roadways, etc.), but the overall existing visual quality rating of between moderately low and low would not change. Alternative E3 would have an impact of negligible intensity to views from KOP 11.

Vividness = 2.3 (existing = 2.5)
Intactness = 2.0 (existing = 2.0)
Unity = 2.0 (existing = 2)
Overall Visual Quality Rating = 2.1 (existing = 2.2)

KOP 12: 32nd Street and Park Hill Avenue - The appearance of the I-94 overpass over 32nd Street would change with the Alternative E3 overpass. The overpass would be similar in appearance to the Alternative E1 overpass (see Exhibit B-14 in Attachment 2). The overall visual quality would essentially not change and the impact of the overpass would be of negligible intensity.

Vividness = 2.5 (existing = 2.8)
Intactness = 2.0 (existing = 2.0)
Unity = 3.5 (existing = 4.0)
Overall Visual Quality Rating = 2.7 (existing = 2.8)

Alternative E3: Split Diamond—Frontage Roads Visual Impact Assessment

Although some of the components of Alternative E3 would be higher in elevation than their counterparts in Alternative E1, impacts to character and visual quality would be essentially the same. The presence of the Alternative 3 braided ramps would be consistent with the character with the existing I-94 corridor and would not lower visual quality. The removal of the vegetation on the slope above I-94 would also be noticed by some viewers. These changes would not decrease visual quality enough to have impacts of more than negligible intensity.

5.4.3 Off-Alignment and On-Alignment Alternative Description and Impact Assessment

East of 32nd Street I-94 the off-alignment would be reconstructed several hundred feet south of its current alignment. Some of the off-alignment components would be potentially seen from some residences in the Merrill Park neighborhood north of Park Hill Avenue (although east of 32nd Street I-94 the components would be several hundred feet farther away). The presence of the components would not change the character of views to south that is heavily influenced by the existing I-94 and the industrial lands in the Menomonee Valley below or lower the visual quality of the views. Impacts would be on negligible intensity.

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The on-line alternative would be the same as the off-line alternative except that east of 32nd Street I-94 would remain close to it's current alignment and ramps associated with 27th Street would remain as they are. As with the off-line alternative, this alternative would be consistent with the existing character of areas viewed from Merrill Park residences north of Park Hill Avenue that includes the existing I-94 and areas in the Menomonee Valley and would not change the visual quality of the views. The on-line alternative would have impacts that would be of negligible intensity.

5.4.4 East Segment Visual Impact Summary

Parts of all of the braided ramps associated with the east segment alternatives would be higher than current I-94 entrance and exit ramps and would be seen to varying degrees from some residences located at the edge of the Merrill Park neighborhood. In addition, construction of all the east segment alternatives braided ramps would require the removal of most, or all, of the existing vegetation that grows on the slope between Park Hill Avenue and I-94. The removal of vegetation would open up views of I-94 and industrial areas beyond from some areas that are currently screened by vegetation. The mitigation measures that address replanting trees that are identified in Section 7 would be implemented where appropriate. The braided ramps associated with the east segment alternatives would be consistent in character with the character of most of the southern views from this area that include I-94 and industrial areas beyond. The off-line alternative would remove less vegetation and be farther away from Park Hill Avenue because east of 32nd Street I-94 would remain close to it's current alignment and ramps associated with 27th Street would remain as they are. All of the East Segment Alternatives would have impacts of negligible intensity.

6 Summary of Visual Impacts to Landscape Units

The following subsections summarize the impacts of the alternatives being considered on each landscape unit.

6.1 Landscape Unit 1: West End

Alternative W2 (C-D roads)would have fewer impacts to visual character and quality than would Alternative W1 (Braided Ramps) because Alternative W1 would be narrower in width along the portion of route west of where lanes would become elevated to converge with the double deck (Alternative C5) than Alternative W2. Neither alternative would reduce visual quality more than one rating in areas with sensitive viewers. The at-grade alternative would essentially maintain the elevation of the existing freeway and slightly increase the width. Therefore, the visual impacts of all the West Segment alternatives would be of negligible intensity under NEPA.

6.2 Landscape Unit 2: Cemeteries

Alternative C2 would pass at-grade through Landscape Unit 2. It would slightly change the appearance of I-94 when viewed by people visiting adjacent cemeteries (sensitive viewers), but would be similar in character to the existing I-94 corridor. Alternative C2 would not reduce the visual quality of views from the cemeteries greatly and its impact would be of negligible intensity. The double-deck options (All Up, Partially Down) associated with the Alternative C5 would introduce long, linear, large-scale elements into Landscape Unit 2. The double deck would block views between the cemeteries on both sides of I-94, which despite the current presence of I-94, do have visual connections that positively contribute to the visual quality of the cemeteries. The presence of the Alternative C5 options double-deck would reduce the existing visual quality categories of all five KOPs in this landscape unit by one or more visual quality categories. The impact of the double-deck on views from the cemeteries would be of substantial intensity under NEPA.

6.3 Landscape Unit 3: Story Hill

Various improvements and components associated with the Stadium Interchange alternatives would be viewed by sensitive residential viewers from the southeastern and eastern edges of the Story Hill neighborhood. Components of both options of Alternative C5 and Alternatives S2 and S3 would pass near residential areas and would be potentially visible to varying degrees. However, because existing views from the four KOPs used to assess potential impacts are unremarkable and often include utilitarian elements such as parking areas and existing transportation infrastructure, the visual presence of the structures related to these alternatives and options would not significantly change the character of the views or lower the visual quality of views from the four KOPs (which ranges from average to less

than moderately low). Impacts from the Stadium Interchange alternatives would be of negligible intensity under NEPA.

6.4 Landscape Unit 4: Miller Park

Landscape Unit 4 has few, if any, sensitive viewers. The existing visual quality of views within this area ranges from average to low. Changes to the visual character and quality of views from areas near Miller Park as a result of alternatives associated with the Stadium Interchange would be minor and of negligible intensity under NEPA.

6.5 Landscape Unit 5: Merrill Park

The East Segment alternatives would have components that would be near the southern edge of the Merrill Park neighborhood and would be seen to varying degrees by residents. Elevated structures associated with Alternatives E1 and E3 would have the most potential to impact views from this area. However, because many of the views in the area already include views of transportation infrastructure and many are from elevated areas, the introduction of components associated with the East Segment alternatives would be consistent with the character of much of the landscape unit. The alternatives components that could be seen within the landscape unit would not lower the existing average to low visual quality of views in this landscape. The intensity of the impacts of the two East Segment alternatives would be negligible.

Some of the structures associated with Alternatives E1 (off-alignment and on-alignment) and E3 would be seen from some residences in the Merrill Park neighborhood north of Park Hill Avenue. The removal of existing vegetation along I-94 with these alternatives would open up some views to the south that are currently screened by the vegetation. The presence of the structures would be similar to that of the existing freeway that can be seen from areas that are not screened by vegetation and would not greatly lower existing visual quality or change the types of views of the industrial valley seen to the south from this area.

6.6 Landscape Unit 6: Menomonee Valley

Landscape Unit 6 is primarily industrial and commercial in use and character and has few, if any, sensitive viewers. The existing visual quality of views within this landscape unit ranges from moderately low to low. Changes to the visual character and quality of views within this area from alternatives associated with the Stadium Interchange Alternatives or East Segment Alternatives would be of negligible intensity under NEPA.

7 Mitigation Methods to Consider

The following mitigation measures to consider will not be part of the Final VIA (or the Draft VIA submitted for review). The ideas presented in the following subsections are intended to start a discussion of what mitigation measures might be appropriate. If specific measures are approved, they can be added to the simulations and impact assessments (with the measures in place) can be made. If vegetative screening is to be simulated, it is common to simulate what the vegetation will look like in the short term (5 years is often used) and longer term (15+ years).

7.1 West Segment Alternatives

Although neither Alternative W1 nor W2 would lower visual quality enough to have impacts of substantial intensity under NEPA, both alternatives would be seen by nearby residents. Some of the residents would likely be concerned about views of some of the components of the alternatives (particularly elevated structures). The following mitigation measures could be considered to improve views towards the alternatives for residents:

- At the ends of streets that dead-end against I-94, install screening or plant vegetation to screen or block views.
- Where there is room in the right-of-way of the alternative structures near residences, consider installing screening or planting vegetation to screen or block views.
- To reduce the size and contrast of large-scale features such as the structure wall depicted in Exhibit B-3 in Attachment 2, plant trees next to the structures to “soften” views of it, or between the structures and viewers to screen/block views of it.

- Consider encouraging American Transmission Co. to continue to use the same types of support structures they are currently using in the cleared right-of-way.

7.2 Cemetery Segment Alternatives

The taller elements being considered for the Alternative C5 options would have impacts to views from various cemeteries adjacent to I-94 that would be of substantial intensity. The impacts would be greater on the north side of I-94, where the height of structures compared to the adjacent grade would be higher than on the south side. Mitigation measures to consider include the following:

- The use concrete colors, patterns and textures in a way that diminishes the apparent size of double-deck support walls and breaks up the long, horizontal nature of the walls.
- If possible, use a different type of support structure (rather than walls) to support the upper deck to avoid long, horizontal walls.
- Consider the design of air flow openings in walls ("windows") of the double-deck support walls to diminish the double-deck support walls mass and long, horizontal nature and create architectural interest —similar to what is used near the Marquette Interchange.
- Use trees/shrubs where possible to screen; diminish the size of north-facing walls of the double-deck.
- On the lower, south-facing wall on the south side of I-94, consider a combination plants and screens or fences to break up the horizontal nature of the wall and to screen-block views of the elevated structures and vehicles travelling on them. Fences, screens, or art work could be placed along the top edge of the top of the structure. It may be necessary to relocate some graves to get enough room to plant trees, etc.

7.3 Stadium Interchange Alternatives

The two alternatives being considered near Story Hill would not lower visual quality enough to have impacts of substantial intensity under NEPA. They would, however, be potentially seen by nearby residents, at least during leaf-off conditions. The following mitigation measure would alleviate potential views of elevated structures and moving vehicles:

- Plant evergreen shrubs and/or small trees in the area south of Story Parkway to block leaf-off condition views.
- Consider reinforcing a feeling of community by working with community/neighbors to devise a roster of potential plants.

7.4 East Segment Alternatives

Mitigation measures same as West Segment Alternatives.

8 References

Federal Highway Administration. 1988. *Visual Impact Assessment for Highway Projects.* FHWA Publication HI-88-054. Available online: http://www.dot.ca.gov/ser/downloads/visual/FHWAVisualImpactAssmt.pdf.

Southeastern Wisconsin Regional Planning Commission. 2006. *2035 Regional Transportation System Plan (Planning Report No. 49)*.

9 Glossary

Dominant. The degree to which a theme or feature in the viewed landscape commands viewer attention. Size, shape, color, or other characteristics can contribute to the degree of visual dominance that a theme or feature has..

Intactness. See *Visual Quality* definition.

Key observation point (KOP). A specific location within a landscape unit that is selected to represent views within that landscape unit. A viewpoint is also selected so that the effects of a proposed alternative on visual quality can be assessed.

Key view. The specific view from a viewpoint or KOP that is used to describe existing visual conditions (and quality) and is also used to analyze the effects of a proposed action on visual quality. A viewpoint or KOP can have a number of views from it, or even a 360-degree view. The key view is a subset of the views from the viewpoint that is oriented towards a part of the total view that could be affected by a proposed alternative. The photograph used to represent the key view is taken with a 35-millimeter camera using a 50-millimeter focal length, which is the camera lens setting that is commonly used in visual assessment because it closely resembles the viewing angle (or cone) of the human eye.

Leaf-off conditions. Describes conditions or times of year when deciduous vegetation has lost its foliage.

Leaf-on conditions. Describes conditions or times of year when deciduous vegetation has foliage.

Scale. Proportionate size of elements in their landscape as compared with components in their surroundings.

Significant adverse effect. An effect that would lower the total visual quality rating two or more points.

Photo-simulation (simulation). Digitally enhanced images based on photographs taken of selected views. The images illustrate the probable changes due to the project and relative scales of the existing and proposed features.

Silhouetted. Elevated objects that extend above the horizon and "into" the sky from a viewing location are considered to be silhouetted against the sky. Silhouetted objects have the potential to be quite visible because they become part of the horizon and attract more visual attention than if they were located in front of objects (such as trees or hills) that would serve as the background and define the horizon.

Study area. The project area follows I-94 from west to east approximately 2.85 miles through central Milwaukee. The portion of the I-94 corridor that is examined in this VIA as the study area consists of areas from which changes associated with the alternatives could potentially be seen. The distance varies from adjacent to the changes to several blocks away or more.

Total visual quality rating. An average of the rating of the three characteristics (vividness, intactness, and unity) that define visual quality.

Unity. See *Visual Quality* definition.

Viewers. People who have views of or from the project. Viewers are usually discussed in terms of general categories of activities, such as residents, workers, recreationists (for example, park users, boaters, or bicyclists), pedestrians, or motorists (that is, both commuters and leisure travelers), and are referred to as "viewer groups."

Viewer sensitivity. The response of viewers looking at and from the project, both before and after the project. Low viewer sensitivity results when there are few viewers who experience a defined view or they are not particularly concerned about the view. Viewer sensitivity is expressed at low, medium, and high levels. High viewer sensitivity results when there are viewers who are very aware of, and concerned about, changes to the viewed landscape. Views of an area for long periods of time (or duration) and frequency accentuates sensitivity among viewers with high sensitivity. Low viewer sensitivity typically occurs when viewers have little concern or awareness of the viewed landscape and/or when views are short in duration (people pass by an area) and frequency.

Views. With the FHWA methodology, views of concern include views *of* the project from important viewing areas like nearby neighborhoods or bodies of water and views *from* the project (for example views from a new bridge or roadway). Views can be expansive such as from high viewpoints; linear such as along road corridors; or limited such as along a corridor or river channel.

Viewpoint. See *Key Observation Point* definition.

Viewshed. Areas from which a project can be seen and, conversely, areas from which viewers on a transportation project like a bridge or road can see.

Visual character. An impartial description of the viewed landscape. Character consists of, and is defined by, relationships between existing visible natural and built landscape features. The relationships are considered in terms of dominance, scale, diversity, and continuity. Features and resources that contribute to describing visual character may include the following:

- Landforms: types, gradients, and scale
- Vegetation: types, size, maturity, and continuity
- Land uses: height, bulk, scale, and architectural detail of associated buildings and ancillary site uses
- Transportation facilities: types, sizes, scale, and directional orientation
- Overhead utility structures and lighting: types, sizes, and scale
- Open space: type (for example, parks, reserves, greenbelts, and undeveloped land), extent, and continuity
- Water bodies, historic structures, and downtown skylines
- Apparent "grain" or textures, such as the size and distribution of structures and unbuilt properties or open spaces of the landscape
- Apparent upkeep and maintenance

Visual quality. An assessment of the composition of the character-defining features for selected views. This assessment asks: Is this particular view common or dramatic? Is it a pleasing composition (with a mix of elements that seem to belong together) or not (with a mix of elements that either do not belong together or are eyesores and contrast with the other elements in the surroundings)? Visual quality is evaluated in terms of vividness, intactness, and unity. These three characteristics are described as follows:

- ***Vividness*** is the degree of drama, memorability, or distinctiveness of the landscape components. It is composed of the following four elements that usually influence the degree of vividness:
  - Landform
  - Vegetation
  - Water features
  - Human-made elements
- ***Intactness*** is a measure of the visual integrity of the natural and human-built landscape and its freedom from encroaching elements. This factor can be present in well-kept urban and rural landscapes, as well as in natural settings. High intactness means that the landscape is free of eyesores and is not broken up by features that appear to be out of place. Intactness is composed of the following two primary elements that influence the degree of intactness:
  - Development
  - Encroachment
- ***Unity*** is the degree of visual coherence and compositional harmony of the landscape considered as a whole. High unity frequently attests to the careful design of individual components and their relationship in the landscape.

Visual Quality Ratings. For this VIA, the elements and characteristics discussed are rated between 1 (low) and 7 (high). The visual quality ratings and their descriptors are as follows:

- 1 – Very Low
- 2 – Low
- 3 – Moderately Low
- 4 – Average
- 5 – Moderately High
- 6 – High
- 7 – Very High

The ratings of the three characteristics (vividness, intactness, and unity) are then averaged to determine a total visual quality rating, which is also between 1 (low) and 7 (high). For example, if a view had a vividness rating of 6, an intactness rating of 7, and a unity rating of 5, the three ratings would be added and divided by 3, which would produce an average total visual quality rating of 6.

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Vividness. See *Visual Quality* definition.

Exhibits

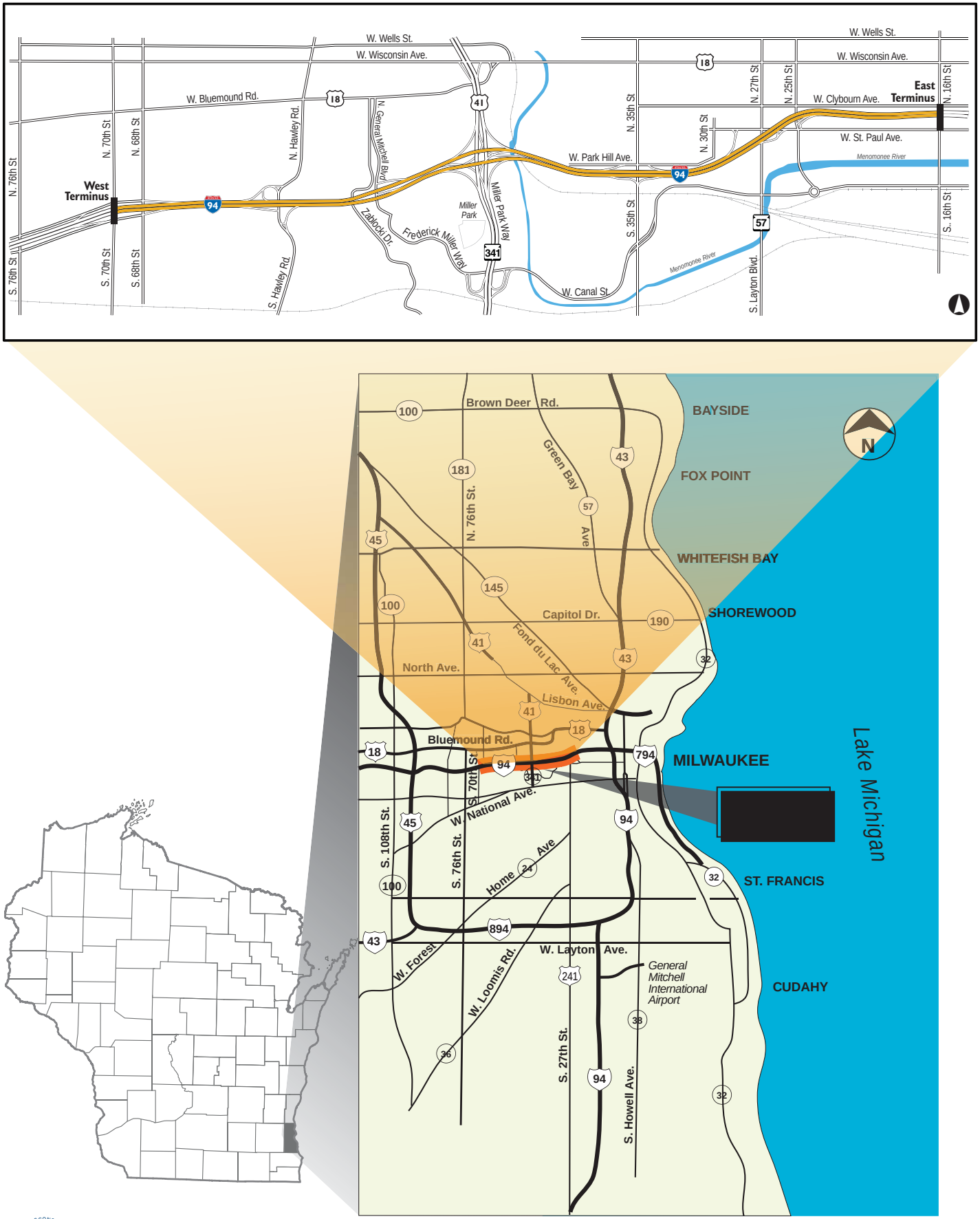

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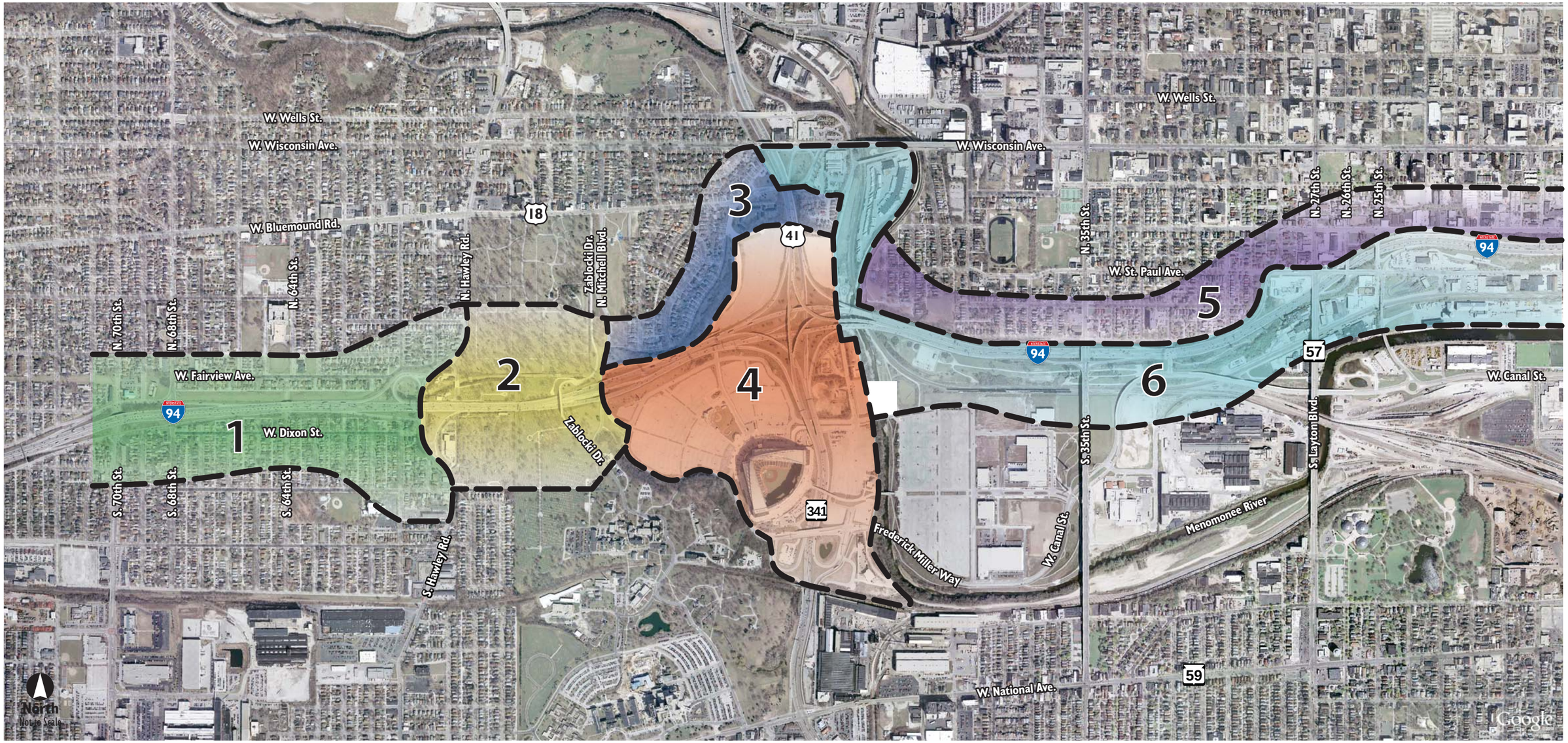
Exhibit 1
Project Location Map



LEGEND

Landscape Units

- 1. West End
- 2. Cemeteries
- 3. Story Hill
- 4. Miller Park
- 5. South Merrill Park
- 6. Menomonee Valley

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Exhibit 2
Landscape Units

TBG030513103341MKE Ex_2_Landscape_Units_v3.ai 06.06.13 mjl/jls

Attachment 1

Existing Conditions Photographs

Viewing

U.S. Department of Transportation
Federal Highway Administration

Exhibit A-1
Location of Photographs (west of interchange)

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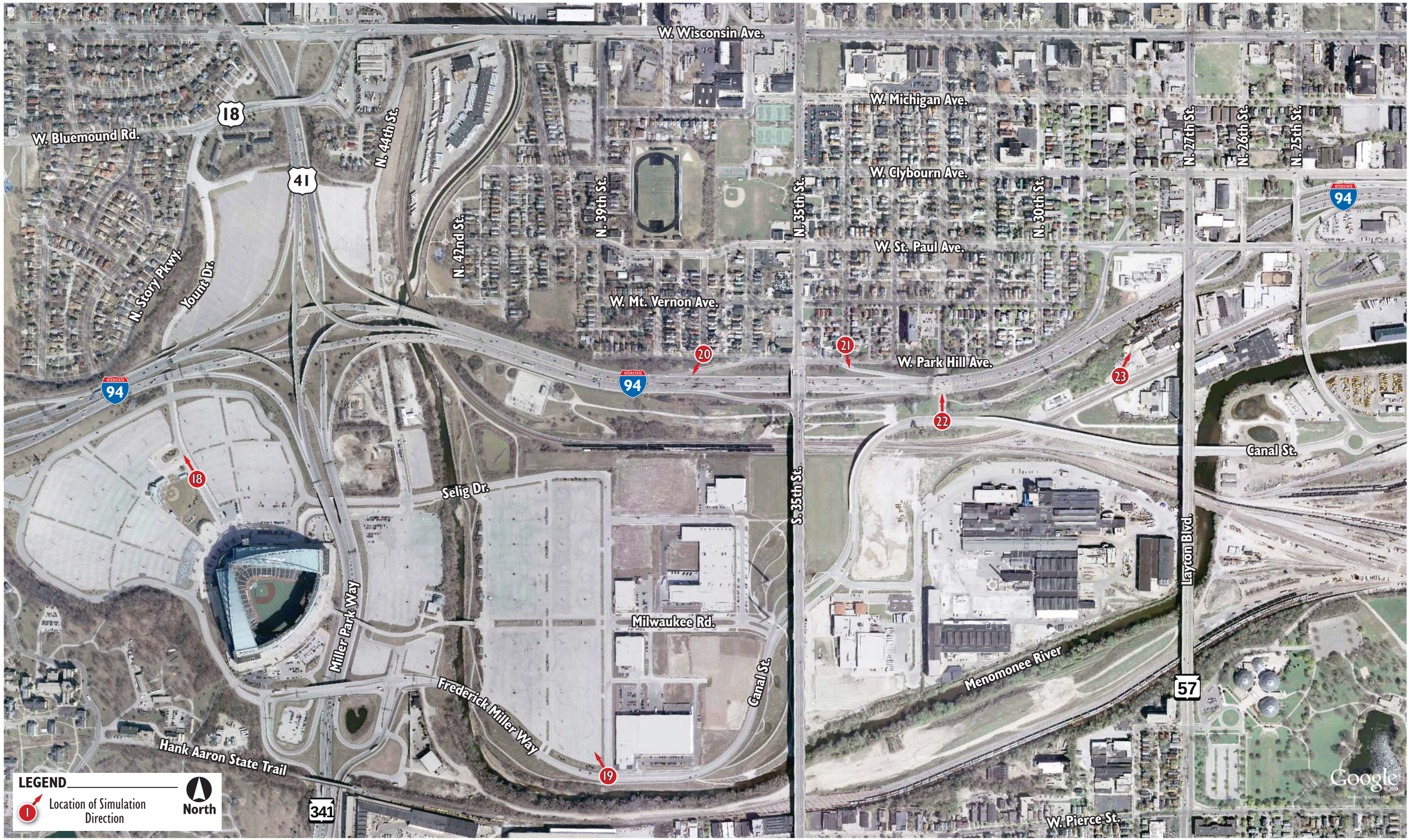

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Exhibit A-2
Location of Photographs (east of interchange)

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Exhibit A-3: Location 1 (Landscape Unit 1) From eastbound W. Kearny Street just west of S. 68th Street looking east at I-94 overpass over S. 68th Street and the east-bound onramp to I-94.

Exhibit A-4: Location 2 (Landscape Unit 1) From eastbound I-94 east of S. 68th Street looking east.

Exhibit A-5: Location 3 (Landscape Unit 1) From S. 65th Street south of W. Fairview Avenue looking south towards the 138 kV electrical transmission line right-of-way embankment.

Exhibit A-6: Location 4 (Landscape Unit 1) From S. 64th Street north of W. Dixon Street looking north at I-94 overpass over 64th Street.

Exhibit A-7: Location 5 (Landscape Unit 1) From S. 61st Street north of W. Dixon Street looking north at the end of the street adjacent to I-94.

Exhibit A-8: Location 6 (Landscape Unit 2) From S. Hawley Court southeast of the Hunger Task Force building looking north at end of street adjacent to I-94.

Exhibit A-9: Location 7 (Landscape Unit 2) From S. Hawley Court northeast of the Hunger Task Force building looking northwest at I-94 . Note vehicles on I-94.

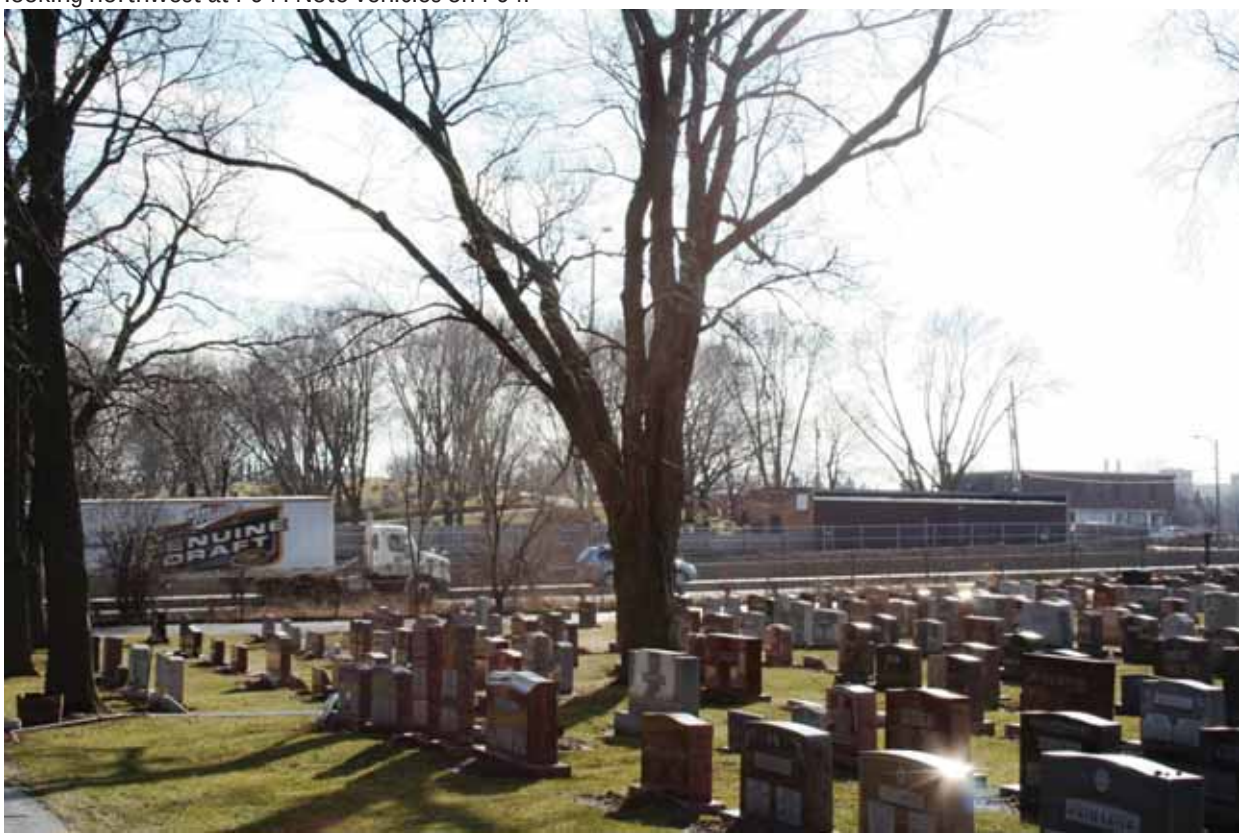

Exhibit A-10: Location 8 (Landscape Unit 2) From Beth Hamedrosh Hagodel Cemetery access road looking southwest at I-94 and the Spring Hill Cemetery mausoleum (the building on the right side of photograph adjacent to I-94). .

Exhibit A-11: Location 9 (Landscape Unit 2) From the north Wood National Cemetery parcel looking south at I-94 and the main part of Wood National Cemetery.

Exhibit A-12: Location 10 (Landscape Unit 2) From the Calvary Cemetery access road north of the _kV electrical transmission line corridor looking southeast.

Exhibit A-13: Location 11 (Landscape Unit 2) From Zablocki Drive bridge over I-94 looking west over I-94. Note the main part of Wood National Cemetery on left (south) side of I-94 and the north parcel on the right (north) side.

Exhibit A-14: Location 12 (Landscape Unit 2) From main part of Wood National Cemetery looking north at I-94 and north parcel of the cemetery.

Exhibit A-15: Location 13 (Landscape Unit 3) From intersection of N. Story Parkway and N. Pinecrest Street looking west along N. Story Parkway. Note the vegetation along the south side of the parkway that provdes varying degrees of screening.

Exhibit A-16: Location 14 (Landscape Unit 3) From N. Story Parkway looking south towards Miller Park.

Exhibit A-17: Location 15 (Landscape Unit 3) From the intersection of N. Story Parkway and Yount Drive looking south at Miller Park and along N. Story Parkway.

Exhibit A-18: Location 16 (Landscape Unit 3) From northwest quadrant of the intersection of N. Story Parkway and W. Bluemound Road looking east along W. Bluemound Road towards it's overpass over WIS 41..

Exhibit A-19: Location 17 (Landscape Unit 3) From southwest quadrant of W. Wisconsin Avenue/US 41 interchange looking east along W. Wisconsin Avenue towards the WIS 41 overpass.

Exhibit A-20: Location 18 (Landscape Unit 4) From Helfaer Field in the Miller Park parking lot south of I-94 looking northwest at I-94 and Story Hill behind it.

Exhibit A-21: Location 19 (Landscape Unit 4): From the intersection of Frederick Miller Way/W. Canal Street and Selig Drive (and the Hank Aaron Trail) looking northwest towards I-94.

Exhibit A-22: Location 20 (Landscape Unit 5) From N. 37th Street north of W. Park Hill Avenue looking south over I-94.

Exhibit A-23: Location 21 (Landscape Unit 5) From N. 34th Street north of W. Park Hill Avenue looking south at W. Park Hill Avenue and exit of off-ramp from I-94.

Exhibit A-24: Location 22 (Landscape Unit 6) From the intersection of N. 32nd Street and W. Canal Street looking north at I-94 overpass over N. 32nd Street.

Exhibit A-25: Location 23 (Landscape Unit 6) From W. Greves Street west of 27th Street looking northeast at I-94 retaining wall and S. 27th Street bridge over I-94.

Attachment 2

Simulations of Alternatives

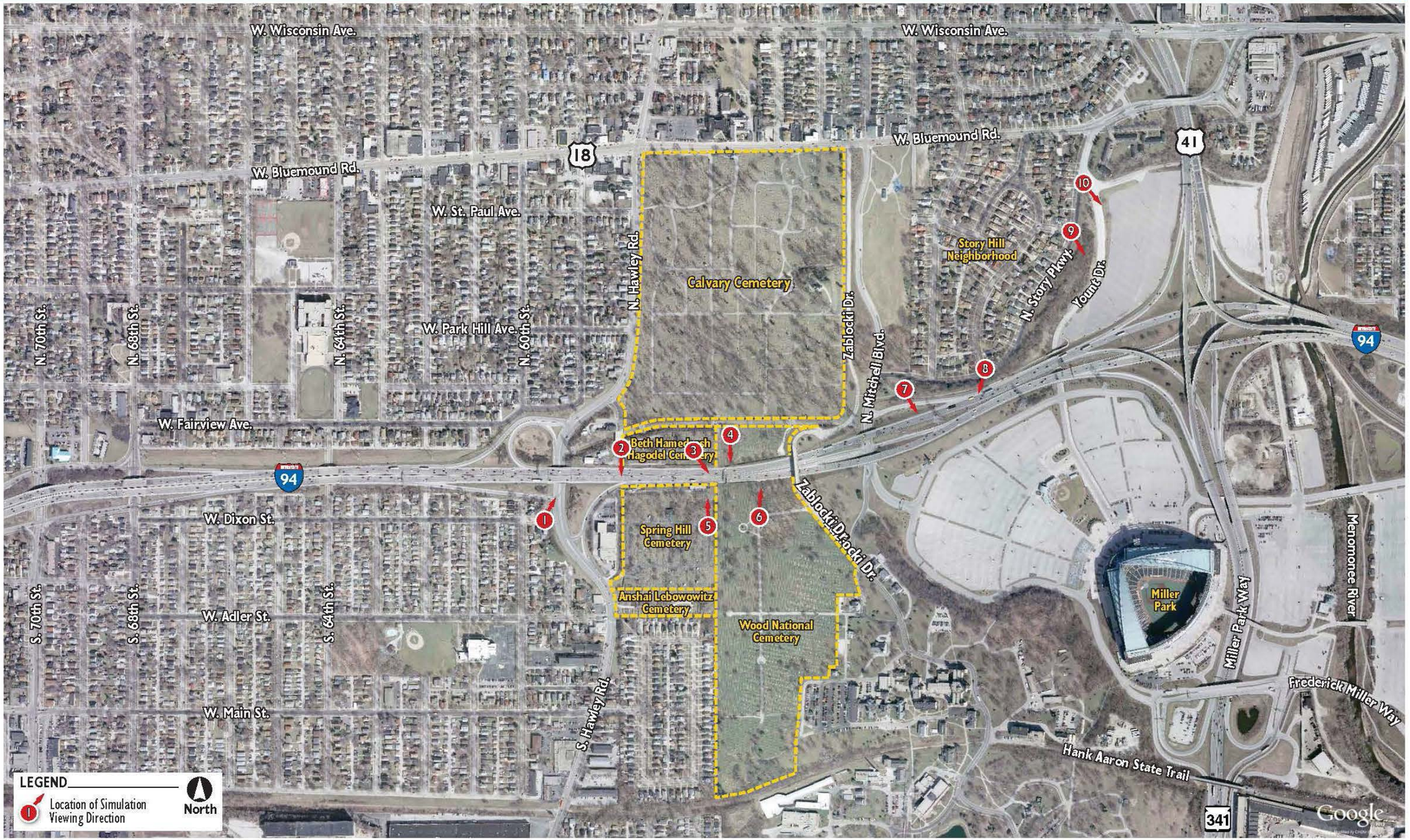

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Exhibit B-1
Location of Simulations (west of interchange)

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U.S. Department of Transportation
Federal Highway Administration

Exhibit B-2
Location of Simulations (east of interchange)

TBG030513103341MKE B-2_Location_of_Simulations_East_v2.ai 05.31.13 mjl

Exhibit B-3. KOP 1

Existing Condition: From Dixon Street west of Hawley Road looking northeast at I-94 overpass.

Simulation: Alternative W2 (C-D Roads).

Exhibit B-4. KOP 2

Existing Condition: From Dana Court adjacent to Beth Hamedrosh Hagodol Cemetery looking south towards I-94 and Spring Hill Cemetery (note: Spring Hill Cemetery mausoleum – building behind white Beth Hamedrosh Hagol Cemetery sign).

Simulation: Modified Alternative C5 (Double-Deck) with the All Up option.

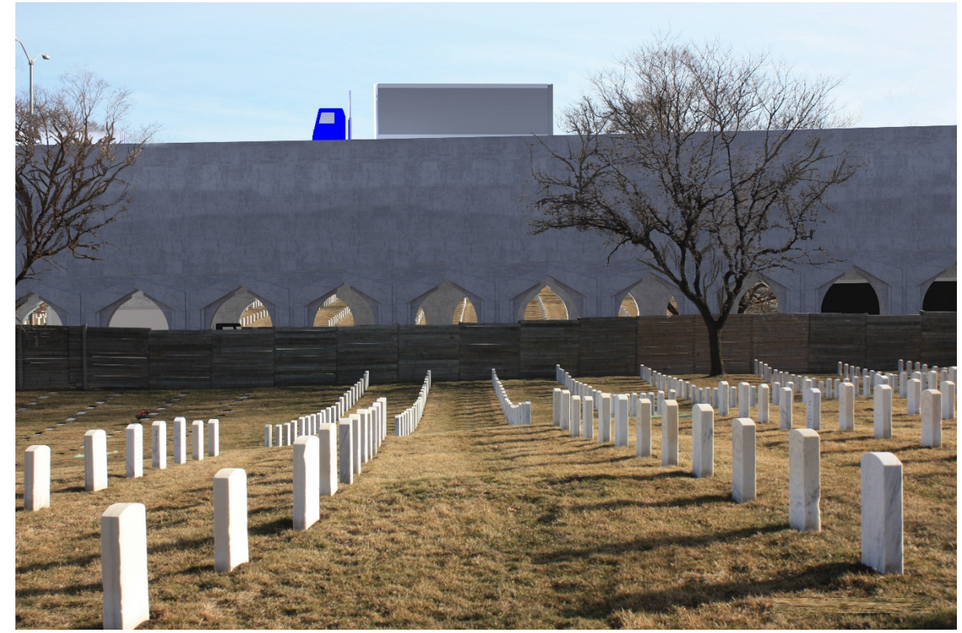
Exhibit B-5. KOP 3

Existing Condition: From east end of Beth Hamedrosh Hagodol Cemetery looking southeast at fence screening view of I-94 freeway lanes and main part of Wood National Cemetery.

Simulation: Modified Alternative C5 (Double-Deck) with the All Up option.

Exhibit B-6. KOP 4

Existing Condition: From Wood National Cemetery (north side of I-94) looking south at I-94 and main part of Wood National Cemetery beyond.



Simulation B: Modified Alternative C5 (Double Deck) with the Partial Down option and openings on the lower deck.

Simulation A: Modified Alternative C5 (Double Deck) with the All Up option.

Simulation B: Modified Alternative C5 (Double Deck) with the All Up option and openings on the lower deck.

Exhibit B-7. KOP 5

Existing Condition: From Spring Hill Cemetery (east end next to Wood National Cemetery) looking north over I-94 at north parcel of Wood National Cemetery.

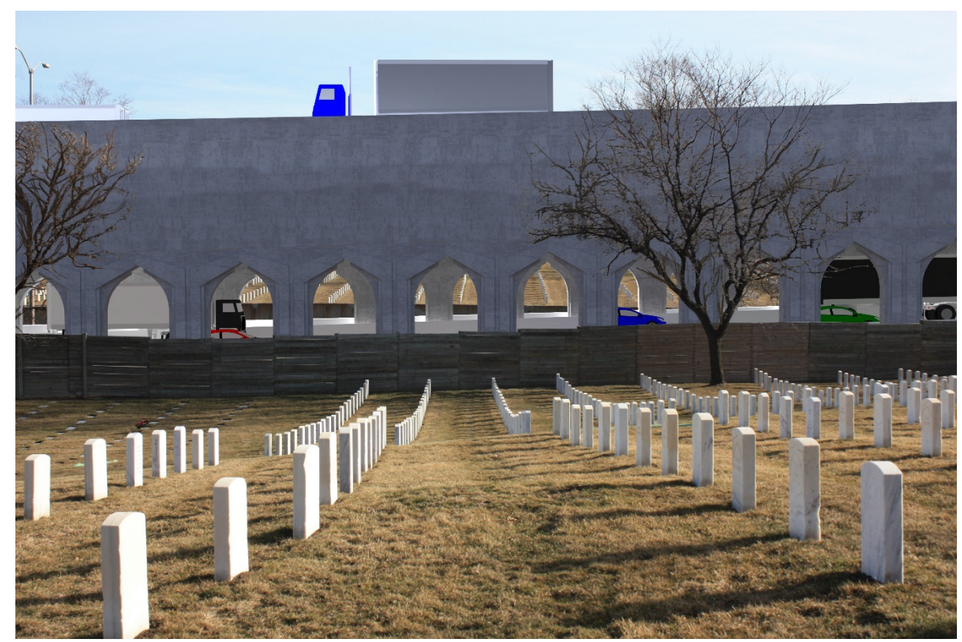
Simulation: Modified Alternative C5 (Double-Deck) with the All Up option.

Exhibit B-8. KOP 6

Existing Condition: From Wood National Cemetery (south side of I-94) looking north at north parcel of Wood National Cemetery.

Simulation B: Modified Alternative C5 (Double-Deck) with the Partial Down option and openings on the lower deck.

Simulation A: Modified Alternative C5 (Double-Deck) with All Up option.



Simulation C: Modified Alternative C5 (Double-Deck) with All Up option and openings on the lower deck.

Exhibit B-8. KOP 6 (continued)

Existing Condition: From Wood National Cemetery (south side of I-94) looking north at north parcel of Wood National Cemetery.

Simulation E: Modified Alternative C2 (At Grade) with connection to VA from Mitchell Boulevard south of I-94.

Simulation D: Modified Alternative C2 (At Grade) with no connection to VA from Mitchell Boulevard south of I-94.

Exhibit B-9. KOP 7

Existing Condition: From Story Parkway looking southeast towards Miller Park and parking areas.

Simulation: Modified Alternative C5 (Double Deck) with the Partial Down option.

Simulation: Modified Alternative C5 (Double Deck) All Up option.

Exhibit B-10. KOP 8

Existing Condition: From Story Parkway and Pinecrest Street looking south at I-94 sign and Miller Park parking areas.

Simulation: Modified Alternative C5 (Double Deck) with All Up option.

Exhibit B-11. KOP 9

Existing Condition: From N. Story Parkway looking southeast over Yount Drive towards the US 41/I-94 interchange, Miller Park parking areas, and the northeastern edge of Miller Park.

Simulation: Modified Alternative S3 (Single Point).

Exhibit B-12. KOP 10

Existing Condition: From Yount Drive (just east of Story Parkway) looking southeast towards entrance to Miller Park, parking areas, and the I-94/US 41 interchange.

Simulation: Modified Alternative S3 (Single Point).

Exhibit B-13. KOP 11

Existing Condition: From 36th Street north of Park Hill Avenue looking south.

Simulation: Alternative E1 (Braided Ramps).

Exhibit B-14. KOP 12

Existing Condition: From 32nd Street north of Park Hill Avenue looking south at I-94 overpass.

Simulation: Alternative E1 (Braided Ramps).

Attachment 3

Key Observation Point Visual Quality Rating Tables

Visual Resource Survey:			Existing Conditions
KOP Location:	West Dixon Avenue	Viewpoint:	KOP 1
Vividness			
Feature	***Score****	***Notes***	
Landform	3	Slight topographic change seen.	
Vegetation	3	Sparse - most are trees on north side of I-94.	
Human-Made	3	The tall vertical 138 kV support structure is somewhat vivid from this location, but in reality is one af a number of structures along the transmission line alignment.	
Overall	**3.0**		
Intactness			
Overall	**2**	Structures seen from this location a utilitarian in use and appearance. 138 kV electrical transmission line structure is a large, vertical visual intrusion as is the overpass (but to a lesser degree becasue it has a horizontal form that is less visually contrasting than the support structure).	
Unity			
Overall	**3**	The long horizontal form of the I-94 overpass provides a bit of visual unity to this view, despite the variety of very different appearing visual elements that detract from the overall visual unity of this view.	
Overall Visual Quality Score	**2.7**		

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:	Alt: B2 (C-D Roads)		With Project
KOP Location:	West Dixon Avenue	Viewpoint:	KOP 1
Vividness			
Feature	***Score****	***Notes***	
Landform	3		
Vegetation	2	Less vegetation is evident.	
Human-Made	2.5	Large scale of new components and their domination of the view are not distinctive and look like other similar freeways at similar distances.	
Overall	**2.5**	The freeway lanes (and crash barriers lining them) and the support/retaining wall would slightly increase the vividness rating because of their large-scale, horizontal characteristics.	
Intactness			
Overall	**1**	New components are large-scale visual intrusions.	
Unity			
Overall	**2.5**	New components block views of areas behind I-94 and their apperance and scale diminish unity when compared to residence (in this residential area).	
Overall Visual Quality Score	**2.0**	The freeway lanes (and crash barriers lining them) and the support/retaining wall would slightly decrease the vividness rating because of their large-scale, horizontal characteristics. These same characteristics that create a somewhat memorable view would be considered visual intrusions that would reduce the existing low intactness to very low. The visual unity rating would decrease from moderately low to between moderately low and low. The overall visual quality of the view would be reduced from between moderately low and low, to low	

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		*Existing Conditions*
KOP Location:	**Dana Ct. - Beth HH Cemetery**	Viewpoint: **KOP 2**
Vividness		
Feature	***Score****	***Notes***
Landform	5	See terrain beyond I-94
Vegetation	5	Trees and lawns memorable.
Human-Made	4	Headstones are memorable. Freeway, vehicles, and chainlink fence detract.
Overall	**4.7**	
Intactness		
Overall	**3.5**	
Unity		
Overall	**3**	Freeway detracts from unity of views to cemetery beyond.
Overall Visual Quality Score	**3.7**	

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		**Modified Alt: C5 - All Up Option - Solid Wall**
KOP Location:	**Dana Ct. - Beth HH Cemetery**	Viewpoint: **KOP 2**
Vividness		
Feature	***Score****	***Notes***
Landform	1	Views blocked.
Vegetation	1	Views blocked.
Human-Made	2	Views blocked.
Overall	**1.3**	
Intactness		
Overall	**2**	Views blocked.
Unity		
Overall	**2**	Views blocked.
Overall Visual Quality Score	**1.8**	**Note that air flow openings in elevated structure would slightly increase visual connection between both sides of freeway and architiectural detailing on openings and shape of openings would improve overall visual quality ratings by slightly increasing vividness and unity ratings.**

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		*Existing Conditions*
KOP Location:	**Beth HH Cemetery**	Viewpoint: **KOP 3**
Vividness		
Feature	***Score****	***Notes***
Landform	5	Hill visible beyond I-94.
Vegetation	5	Trees and lawn are somewhat vivid.
Water Feature	NA	
Human-Made	5	Cemeteries are positive elements, fencing and freeway signs detract.
Overall	**5.0**	
Intactness		
Overall	**4**	Fencing and signs somewhat detract from overall view intactness.
Unity		
Overall	**4.5**	Views over freeway contribute to unity.
Overall Visual Quality Score	**4.5**	

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		**Alt. C5 - All Up Option**
KOP Location:	**Beth HH Cemetery**	Viewpoint: **KOP 3**
Vividness		
Feature	***Score****	***Notes***
Landform	1	Views blocked.
Vegetation	3	Remaining tree somewhat screens elevated structure.
Water Feature	NA	
Human-Made	2	Views blocked and elevated structure is a large scale element. Condition of fencing more apparent.
Overall	**2.0**	
Intactness		
Overall	**2.5**	Elevated structure is a large scale intrusion that blocks views.
Unity		
Overall	**3**	Visual connection lost.
Overall Visual Quality Score	**2.5**	**Note that air flow openings in elevated structure would slightly increase visual connection between both sides of freeway and architectural detailing on openings and shape of openings would improve overall visual quality ratings by slightly increasing vividness and unity ratings.**

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		*Existing Conditions*
KOP Location:	**Wood National Cemetery (North of I-94)**	Viewpoint: **KOP 4**
Landscape Unit:		
Vividness		
Feature	***Score****	***Notes***
Landform	5.5	Slope south of I-94 very apparent.
Vegetation	5.5	Lawn and trees create a uniform appearance, except where I-94 intrudes.
Water Feature	NA	
Human-Made	5.5	Historic features visible on each side of I-94 and vehicles passing by on it.
Overall	**5.5**	
Intactness		
Overall	**4.5**	
Unity		
Overall	**5**	
Overall Visual Quality Score	**5.0**	

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		**Alt. C5 - All Up Option - Solid Wall**
KOP Location:	**Wood National Cemetery (North of I-94)**	Viewpoint: **KOP 4**
Vividness		
Feature	***Score****	***Notes***
Landform	1	View of slope blocked.
Vegetation	2.5	Views of area beyond wall blocked. Still have lawn and trees north of I-94.
Water Feature	NA	
Human-Made	2.5	Views of areas south of I-94 blocked. Headstones of graves still interesting features, but presence of elevated structure detracts.
Overall	**2.0**	
Intactness		
Overall	**2.5**	
Unity		
Overall	**2.5**	
Overall Visual Quality Score	**2.3**	**Note that air flow openings in elevated structure would slightly increase visual connection between both sides of freeway and architiectural detailing on openings and shape of openings would improve overall visual quality ratings by slightly increasing vividness and unity ratings.**

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		*Existing Conditions*
KOP Location:	**Spring Hill Cemetery**	Viewpoint: **KOP 5**
Landscape Unit:		
Vividness		
Feature	***Score****	***Notes***
Landform	5	Rolling terrain is visible on both sides of I-94.
Vegetation	5	Trees and lawns in both cemeteries quite visible.
Water Feature	NA	
Human-Made	5	Headstones in both cemeteries quite evident.
Overall	**5.0**	
Intactness		
Overall	**4.5**	Average to moderately high visual connection and intactness between both sides of I-94. .
Unity		
Overall	**4.5**	
Overall Visual Quality Score	**4.7**	

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		Alt C5 - All Up Option
KOP Location:	**Spring Hill Cemetery**	Viewpoint: **KOP 5**
Vividness		
Feature	***Score****	***Notes***
Landform	1.5	View of terrain beyond I-94 blocked.
Vegetation	3	Tops of trees north of elevated structure can be seen as well as trees and lawn in Spring Hill Cemetery.
Water Feature	NA	
Human-Made	3.5	Although visual connection with Wood National Cemetery lost, headstones are still interesting features. Elevated structure and vehicles passing by detract from view.
Overall	**2.7**	
Intactness		
Overall	**2.5**	Elevated structure intrudes on views.
Unity		
Overall	**3**	Connection with cemeteries north of I-94 lost.
Overall Visual Quality Score	**2.7**	**Note that air flow openings in elevated structure would slightly increase visual connection between both sides of freeway and architectural detailing on openings and shape of openings would improve overall visual quality ratings by slightly increasing vividness and unity ratings.**

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		*Existing Conditions*
KOP Location:	**Wood National Cemetery (south of I-94)**	Viewpoint: **KOP 6**
Vividness		
Feature	***Score****	***Notes***
Landform	4.5	Rolling terrain on both sides of I-94 very apparent.
Vegetation	5	Lawns and heavy presence of trees on both sides of I-94.
Human-Made	4	Cemetery components and I-94, vehicles passing on it, and an overcrossing compete for attention.
Overall	**4.5**	
Intactness		
Overall	**3.5**	Freeway, vehicles, and overpass intrude on this view.
Unity		
Overall	**4.5**	Despite freeway, vehicles and overpass, higher than average unity between cemeteries.
Overall Visual Quality Score	**4.2**	

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		**Alt C5 - All Up Option**
KOP Location:	**Wood National Cemetery (south of I-94)**	Viewpoint: **KOP 6**
Vividness		
Feature	***Score****	***Notes***
Landform	3	Rolling terrain north of I-94 no longer seen.
Vegetation	4	Views of lawns north of the elevated structure blocked but tops of trees can still be seen. Vegetation on south side of I94 still contributes to view and existing trees would somewhat soften presence of elevated structure by somewhat screening it.
Human-Made	2	Elevated structure intrudes on view and vehicles on top deck and ramp are quite apparent.
Overall	**3.0**	
Intactness		
Overall	**2.5**	Elevated structure and ramp would be intrusions closer to viewers from this location.
Unity		
Overall	**3**	Visual connection lost.
Overall Visual Quality Score	**2.8**	**Note that air flow openings in elevated structure would slightly increase visual connection between both sides of freeway and architectural detailing on openings and shape of openings would improve overall visual quality ratings by slightly increasing vividness and unity ratings.**

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		*Existing Conditions*
KOP Location:	**N. Story Hill Parkway (west)**	Viewpoint: **KOP 7**
Vividness		
Feature	***Score****	***Notes***
Landform	4.5	During leaf-off condtions, buidlings I the valley beyond I-94 and hillsides beyond can be seen.
Vegetation	5	Vegetation along side the parkway as well as vegettion on the hillsides to the south south (seen during leaf-off condtions) are important parts of this view.
Water Feature	NA	
Human-Made	5.5	Miller Park is an interesting visual elememnt. Signs associated with I-94 and the roofs of commercial - industrail buildings in the valley below I-94 detract from the view during leaf-off conditions.
Overall	**5.0**	
Intactness		
Overall	**3.5**	The view includes a variety of viewed elements that taken together have lower than average intactness.
Unity		
Overall	**3.5**	
Overall Visual Quality Score	**4.0**	

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		**Alt C5 - All Up Option**
KOP Location:	**N. Story Hill Parkway (west)**	Viewpoint: **KOP 7**
Vividness		
Feature	***Score****	***Notes***
Landform	2.5	The elevated structure will block views of the buildings in the valley below I-94 and the lower slopes of the hillsides beyond, particularly during leaf-off condtions.
Vegetation	4	Vegetation on hillsides to the southeast somewhat blocked by elevated structure during leaf-off conditions.
Water Feature	NA	
Human-Made	3.5	The lower part of Miller Park will be blocked by the elevated structure, as will views of the roofs of commercail-industrial buildings in the valley below I-94.
Overall	**3.3**	
Intactness		
Overall	**3**	Views of the elevated structure would replace views of the roofs of commercail - industrial buildings.
Unity		
Overall	**3**	Overall visual unity would be somewhat lowered due to the presence of the elevated structure.
Overall Visual Quality Score	**3.1**	**Note that the ratings for the C5 - Partial Down Option would be very similar to the ratings for the All-Up option becasue the elevations of the two options would be very similar. The ratings for the Modernization Alternative S2 (system interchange – low-speed, free-flow) and Modernization Alternative S3 (single-point interchange with free-flow ramps from I-94) alternatives would be slighly higher than the All-Up option becasue they would be lower in elevation. The elevated structures associated with the S2 and S3 alternatives and vehicles on them would still be seen (particularly during leaf-off condtions) but would be lower in the view.**

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		*Existing Conditions*
KOP Location:	**N. Story Hill Parkway and N. Pinecrest Street**	Viewpoint: **KOP 8**
Vividness		
Feature	***Score****	***Notes***
Landform	3	Get an indication that there may be a valley beyond I-94.
Vegetation	3.5	Parkway side vegetation most prominent.
Human-Made	3	I-94 signs most visible human-made element.
Overall	**3.2**	
Intactness		
Overall	**3**	A variety of objects seen during leaf-off conditions indluding I-94 sign, tops of commercial - industrail buildigns in valley beyond I-94.
Unity		
Overall	**3.5**	
Overall Visual Quality Score	**3.2**	

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		**Alt 5 - All Up Option**
KOP Location:	**N. Story Hill Parkway and N. Pinecrest Street**	Viewpoint: **KOP 8**
Vividness		
Feature	***Score****	***Notes***
Landform	3	Little to no change.
Vegetation	3.5	Vegetation next to parkway not impacted.
Human-Made	2.5	
Overall	**3.0**	Elevated structure and vehicles travelling on it could be seen, particularly during leaf-off conditions.
Intactness		
Overall	**3**	Little change, I-94 signs no longer seen.
Unity		
Overall	**3**	Visual connection with vally below during leaf-off condtions no longer maintained with elevated structure.
Overall Visual Quality Score	**3.0**	**Note that the ratings for the S5 - Partial Down Option would be very similar to the ratings for the All-Up option becasue the elevations of the two options would be very similar. The ratings for the Modernization Alternative S2 (system interchange – low-speed, free-flow) and Modernization Alternative S3 (single-point interchange with free-flow ramps from I-94) alternatives would be slighly higher than the All-Up option becasue they would be lower in elevation. The elevated structures associated with the S2 and S3 alternatives and vehicles on them would still be seen (particularly during leaf-off condtions) but would be lower in the view.**

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		*Existing Conditions*
KOP Location:	**N. Story Parkway over Yount Drive**	Viewpoint: **KOP 9**
Landscape Unit:		
Vividness		
Feature	***Score****	***Notes***
Landform	4	Some difference in terrain elevation can be seen.
Vegetation	3	Scattering of trees with some lawn areas.
Human-Made	3.5	Utilitarian elements (freeway interchange, paved parking areas, electrical transmission line support structures, etc) seen from this view.
Overall	**3.5**	
Intactness		
Overall	**2.5**	
Unity		
Overall	**4.5**	
Overall Visual Quality Score	**3.5**	

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		**Alt S3 (Single Point)**
KOP Location:	**N. Story Parkway over Yount Drive**	Viewpoint: **KOP 9**
Vividness		
Feature	***Score****	***Notes***
Landform	4	Little to no change.
Vegetation	3	Little to no change.
Human-Made	3.5	Replacing human-made utilitarian structures with new structure.
Overall	**3.5**	
Intactness		
Overall	**3**	Replacing multiple existing interchange elements with the proposed interchange would slightly improve intactness.
Unity		
Overall	**4**	Slight decrease in unity.
Overall Visual Quality Score	**3.5**	

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		*Existing Conditions*
KOP Location:	**Yount Drive**	Viewpoint: **KOP 10**
Vividness		
Feature	***Score****	***Notes***
Landform	3	Can see some topographic relief.
Vegetation	1.5	Little vegetation present.
Human-Made	3	Utilitarian landscape composed of parking areas, freeway components.
Overall	**2.5**	
Intactness		
Overall	**2.5**	View composed of many different elements with paved areas being the most prevalent.
Unity		
Overall	**3**	
Overall Visual Quality Score	**2.7**	

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		**Alt: S3 (Single Point)**
KOP Location:	**Yount Drive**	Viewpoint: **KOP 10**
Vividness		
Feature	***Score****	***Notes***
Landform	3	Little to no change.
Vegetation	1.5	Little to no change.
Human-Made	3	Little to no change.
Overall	**2.5**	Little to no change.
Intactness		
Overall	**2**	
Unity		
Overall	**3**	Little to no change.
Overall Visual Quality Score	**2.5**	

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		*Existing Conditions*
KOP Location:	**N 36nd Street (near W. Park Hill Avenue)**	Viewpoint: **KOP 11**

Vividness		
Feature	***Score****	***Notes***
Landform	2.5	Roofs of industrial - commercial buildings in valley beyond I-94 can be seen to give a sense of topographic change.
Vegetation	2	Except fro nearby trees, vegetation not an important component of this view.
Human-Made	3	Street and electrical transmission line support structure most visible human-made components.
Overall	**2.5**	
Intactness		
Overall	**2**	
Unity		
Overall	**2**	
Overall Visual Quality Score	**2.2**	

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		Alt E1 (Braided Ramps)
KOP Location:	**N 36nd Street (near W. Park Hill Avenue)**	Viewpoint: **KOP 11**

Vividness		
Feature	***Score****	***Notes***
Landform	2	Elevated structure would impinge on views of roofs.
Vegetation	2	Little to no change
Human-Made	3	Top of elevated structure will be seen.
Overall	**2.3**	
Intactness		
Overall	**2**	Little to no difference in intactness with a taller I-94 structure.
Unity		
Overall	**2.5**	By blocking views of the roofs of commercial - industrial buildings, would be slightly more visual unity.
Overall Visual Quality Score	**2.3**	

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		*Existing Conditions*
KOP Location:	N 32nd Street (near W	Viewpoint: **KOP 12**
Vividness		
Feature	***Score****	***Notes***
Landform	3.5	Topographic relief evident.
Vegetation	2	Minor part of view.
Human-Made	3	
Overall	**2.8**	
Intactness		
Overall	**2**	Mix of elements and land uses results in low intactness.
Unity		
Overall	**4**	Has a strong transportation corridor character and sense of unity.
Overall Visual Quality Score	**2.9**	

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

Visual Resource Survey:		**Alternative E1 (Braided Ramps)**
KOP Location:	**N 32nd Street (near W. Park Hill Avenue)**	Viewpoint: **KOP 12**
Vividness		
Feature	***Score****	***Notes***
Landform	3	Banks of overpass would not be visible
Vegetation	1.5	Trees would be removed.
Human-Made	3	Overpass would be more extensive but would allow more light along N. 32nd Street.
Overall	**2.5**	
Intactness		
Overall	**2**	Little to no change in intactness.
Unity		
Overall	**3.5**	Little to no change in unity.
Overall Visual Quality Score	**2.7**	

*Score Key:
1 - Very Low; 2 - Low; 3 - Moderately Low; 4 - Average; 5 - Moderately High; 6 - High; 7 - Very High

I-94 EAST-WEST FREEWAY AND STADIUM INTERCHANGE
70TH STREET – 16TH STREET

Public Involvement Plan

July 2013 – Version 2

MILWAUKEE COUNTY
PROJECT ID 1060-27-00, -01

U.S.Department of Transportation
Federal Highway Administration

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I. INTRODUCTION

This is a first update (July 2013) to the Public Involvement Plan for the I-94 East-West Freeway Corridor Study. The plan provides a framework for both soliciting information from, and disseminating information to, a wide range of stakeholders including residents, businesses, community groups and faith-based organizations, elected officials, and other interested parties.

This is a multi-faceted plan designed to achieve meaningful input via a comprehensive and transparent process.

The Plan will allow for several things: (1) a comprehensive geographical range of community outreach; (2) a substantial number of opportunities for both outreach and feedback; and (3) ultimately, significant interaction between the alternatives development and environmental document processes with stakeholders and interested parties. The Plan will accommodate all of these elements while retaining the opportunity for flexibility and change throughout the Study process.

This Plan is also based on the same concepts that the Wisconsin Department of Transportation (WisDOT) has employed on other Southeast Freeway projects, including:

- Meeting with anyone, anyplace, anytime to create meaningful dialogue;
- Establishing credibility and trust within the community; and
- Being the first and best source of information about the project.

II. PROJECT DESCRIPTION

The I-94 East-West Corridor includes approximately 3.5 miles of I-94 between 70th Street and 16th Street, and WIS 341/US 41 between Frederick Miller Way and State Street (including the Stadium Interchange) in Milwaukee County. This corridor provides a critical interstate link for manufacturers, commuters, sports fans, and tourists within the Milwaukee Metropolitan Area and the Southeast Region of Wisconsin. This section of I-94 carries high traffic volumes, which currently vary between 143,000 and 160,500 AADT (Average Annual Daily Traffic). These traffic volumes are expected to grow to a range from 180,000 to 186,000 along I-94 by 2040. Because of the outdated design, this part of the freeway system has over 450 crashes per year, which translates into a significantly greater crash rate than the statewide average for similar facilities. Beyond the safety problems, the corridor is also displaying significant physical degradation (the corridor was built in the early and mid 1960s), and also features a number of horizontal, vertical, typical section, and vertical clearance design deficiencies.

WisDOT has initiated an environmental and engineering analysis of the I-94 East-West Freeway to examine the Stadium Interchange and service interchanges, determine traffic and infrastructure needs, evaluate alternatives, identify impacts of the alternatives, and develop a preferred reconstruction alternative.

III. GOALS AND OBJECTIVES

The primary objective of the Plan is to provide an open and inclusive informational program to all stakeholders geared toward the goal of the determination of a preferred alternative.

Achieving the goal will require the fulfillment of several objectives:

1. Establish and maintain the legitimacy of the Study.
2. Establish and maintain the legitimacy of the project planning process.
3. Understand and articulate project history.
4. Get to know all the potentially affected interests and see the project through their eyes.
5. Identify all potentially relevant problems and work to generate solutions to those problems, within the requirements and limitations of engineering, environmental, and other controlling factors.
6. Articulate and clarify the key issues.
7. Establish credibility.
8. Ensure that project communication is understandable to all stakeholders.
9. Listen to, and understand, information that is communicated by all stakeholders.

IV. PROJECT SCHEDULE

The Study began on March 28, 2012 and is scheduled to be complete in 29 months (by August 2014). The schedule below (Figure 1) illustrates major milestones and tasks that will be completed over the 29-month study schedule.

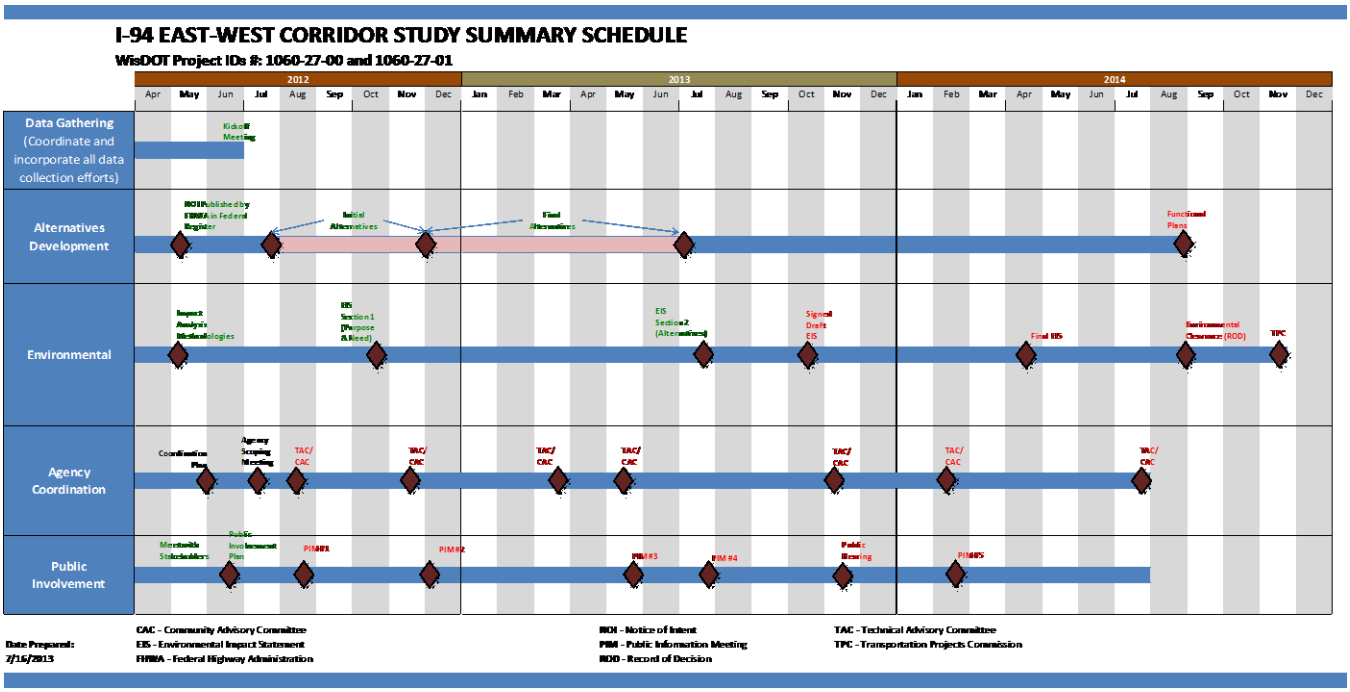


Figure 1 – study schedule

The initial focus of the Study will be to gather data, analyze and quantify existing operations and deficiencies within the existing highway system, develop alternatives, and meet with stakeholders and the public for their input. Later stages of the Study involve the narrowing of alternatives based on public input, cost, engineering and environmental factors.

At the appropriate point in the Study, a single alternative (build or no-build) will be selected for implementation. A separate public involvement plan will be developed for the subsequent preliminary and final design phases, and construction phase, of the project.

V. PROJECT STAFF

WisDOT's major projects study staff, and by extension its study consultant CH2M HILL, will be responsible for the implementation of the overall public involvement plan for the Study and will be referred to as ***"the team"*** throughout this plan. The Public Involvement (PI) team will work closely with the design team to ensure that all staff members are provided opportunities to meet and communicate with the public in both large and small-scale meetings and presentations.

The PI team will also interface with other WisDOT and/or consultant staff involved in the areas of environmental justice and minority economic opportunities outreach.

WISDOT PI STAFF AND ROLES

- David Nguyen — Project Development Chief responsible for all project activities including PI
- Tony Barth — Project Supervisor
- Jason Lynch — Project Manager
- Dobra Payant — Deputy Project Manager
- Emlynn Grisar — Southeast Region Communications Manager responsible for all PI activities
- Mike Pyritz — Southeast Region Communications team member
- Various project staff — Oversight and participation in all elements of this Plan

CH2M HILL PI STAFF AND ROLES

- Brad Heimlich — Project Manager, and Co-Task Lead for PI
- Beth Foy — Co-Task Lead for PI; responsible for day to day PI administration and strategy
- Helen Dixon — Public involvement support
- Nancy Hernandez — Public involvement support
- Various project staff — Responsible for such elements as Advisory Committees, public information meetings, and specific outreach elements listed elsewhere in this Plan

VI. PROJECT STAFF TRAINING

Prior to beginning public outreach, CH2M HILL will share information on the Study with all project staff to familiarize them with the following:

- Project History
- Previous Studies
- FDM/NEPA/WEPA process
- FAQ
- Schedule
- Team Roles and Responsibilities
- Corridor Overview
- PI Plan elements and objectives
- PI tools and documentation protocols and requirements

VII. PUBLIC INVOLVEMENT PLAN ELEMENTS

Outreach Approach

The I-94 East-West Freeway PI Plan communicates activities to the following:

- General public outreach
- Community outreach
  - Affected adjacent residents
  - Unique groups/communities – outreach to low income groups, minorities, disabled and elderly groups
- Business outreach
  - Regional stakeholders
  - Local stakeholders
  - Interchange groups
  - Individual businesses
- Industry stakeholders
  - Freight
  - Statewide and regional business users of the I-94 East-West Freeway
- Native American Tribes
- DBE firms
- Agencies and local officials – outreach to local governments, the Regional Planning Commission, transit providers, emergency providers, ports, harbors and airports
- Elected officials

The project teams anticipate each of these audiences will have key interests in the project corridor related to design and construction activities.

The PI team will bring an array of citizen participation techniques and tools to this initiative including, but not limited to the following:

a. Public Informational Meetings and a Public Hearing

Public Information Meetings

Five rounds of public information meetings (PIM) will be held during the 29-month study process. Each round of PIMs will consist of two evening meetings held atpublicly accessible buildings in the project corridor. Meeting locations may include public schools, parks, or other easily identifiable locations. The meetings will be approximately 3- hours in duration with a start time of either 3 pm or 4 pm depending on input and attendance at the initial public meeting.

Media participation and coverage of the public information meetings will be encouraged via press releases and through coordination with WisDOT's Communications Manager.

The format will be an informal, open house style.

The meetings will be held at various times throughout the project to coincide with major study milestones. Project staff planners, roadway designers, traffic engineers and real estate specialists will be in attendance to listen to community concerns about the Study area and discuss various solutions to specific issues and concerns.

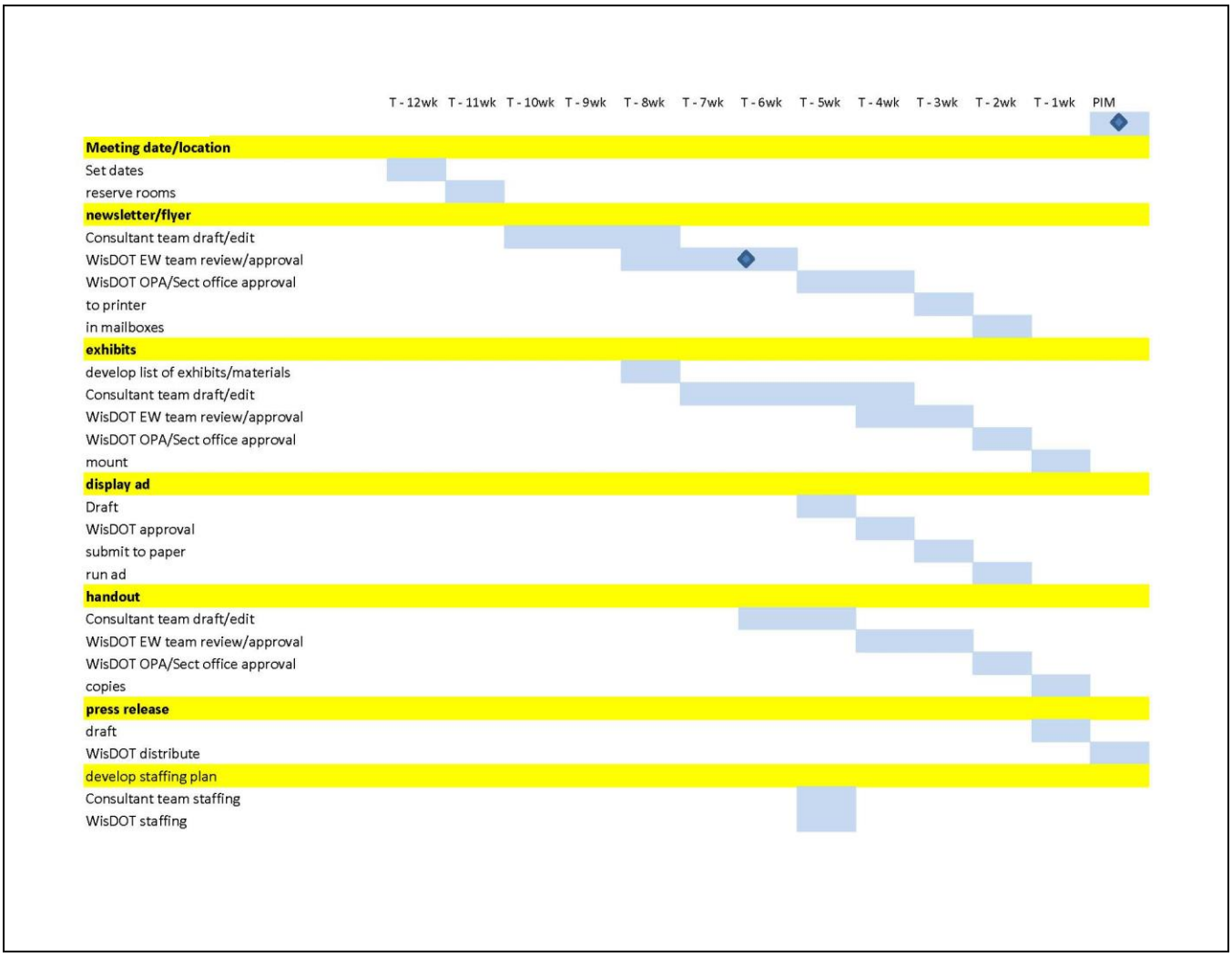


Figure 2 – PIM preparation schedule

PIM 1 is planned for late summer 2012. The goals of the first public information meeting are:

- To establish initial contact with the community at large.
- To engage the community in a more hands-on meeting.
- To provide basic existing corridor engineering, environmental, and operational information.
- To solicit public input regarding the purpose of, and need for, the project.
- To listen to the concerns of individual residents and businesses regarding the project.
- To give the public the opportunity to speak "one-on-one" with members of the project team.
- To provide the public an opportunity to "brainstorm" and present initial replacement and improvement concepts.
- To effectively utilize the information received from the public in developing an initial range of alternatives across a broad spectrum of categories (from replace-in-kind to full modernization).

One round of two open house public information meetings will be conducted. A newsletter/project fact sheet will be sent out to the project mailing list inviting people to attend these meetings.

These meetings will serve as the Public Scoping meetings for the project. People will be given the opportunity to review information collected during the early phase of the study along with basic information about the scope and schedule of the Study.

Most importantly, the public will be given the chance to provide input regarding the Study needs and potential alternatives. They will also be given an opportunity to voice any issues or areas of concern that they may have.

Using large aerial maps, people will be able to locate their homes or areas of interest and write their particular comments on the map, a comment sheet, or add a post-it note. These comments will be entered into the project records and will be used by the team in determining significant public concerns. Comments will be taken into consideration by the engineering staff in determining realistic, cost effective and viable alternatives.

A summary of issues will be developed including a response or disposition of each issue. This summary will be incorporated into materials for the second PIM.

PIM 1 will be announced via a project fact sheet mailing and will be advertised in local newspapers. These meetings will be held on separate nights at publicly accessible building(s) in the project corridor.

PIM 2 is planned for late 2012. The purpose of this meeting is to again share project purpose and need and geometric, environmental, and operational conditions. In addition, this meeting will provide the opportunity to introduce the initial alternatives developed by the project team with input from the public at PIM 1. Existing and forecast future traffic conditions, existing crash data and existing deficiencies will be available to the public for their review and comment. Based on the information received at this PIM, the project team will refine alternatives, eliminating some and adding others based on public input, cost, feasibility, impacts, local government input, business input, traffic operations, and safety.

Comments will be collected. A summary of issues will be developed including a response or disposition of each issue. This summary will be incorporated into material for the third Public Information Meeting.

PIM 3 is planned for the late spring 2013. This meeting will take place after the alternatives (including impacts and costs) have been refined and will give the public the opportunity to comment on the various refined alternatives. The project team will then evaluate the remaining alternatives to determine the alternatives that will be evaluated in more detail in the Environmental Impact Statement.

Comments will be collected. A summary of issues will be developed including a response or disposition of each issue. This summary will be incorporated into materials for the Public Hearing.

PIM 4 is planned for summer 2013. The purpose of this meeting is to provide the narrowed range of alternatives (including possibly dropping to one recommended alternative in one or more project segments), refined impacts, updated Draft EIS sections, and other updated information about the alternatives, including costs.

Comments will be collected. A summary of issues will be developed including a response or disposition of each issue. This summary will be incorporated into materials for the Public Hearing.

PIM 5 is planned for early 2014, after the public hearing. The public will be shown the recommended alternative, impact information and information on remaining project steps and any updated design- and construction-phase schedules for their input and comment as the process moves forward into those subsequent phases.

Comments will be collected. A summary of issues will be developed including a response or disposition of each issue.

Public Hearing on Draft Environmental Impact Statement

After the Draft Environmental Impact Statement is prepared, a public hearing will be held to provide the public the opportunity to officially record their comments on the preferred alternative. The public hearing is expected to be held in November 2013.

A pre-hearing conference will be held prior to the public hearing to brief WisDOT management and other WisDOT staff who attend the hearing but are not on the project team. The project team will make a presentation including project concepts, alternatives and their impacts, schedule information, results of public involvement and agency coordination, public hearing notice, upcoming project milestones, and a review of public hearing informational materials.

The public hearing will be on one night, at a publicly accessible building in the project corridor. Meeting location may be at a public school, Miller Park, or another easily identifiable location. The hearing will be approximately 4 hours in duration with a start time of either 3 pm or 4 pm depending on input and attendance at the public information meetings.

The hearing will be conducted in a hybrid (both an open house where individuals may ask the project team questions one-on-one, and a formal setting where project information will be read into the record and formal public testimony will be taken). Court reporters will be available to take individual testimony and to record testimony given to the hearing panel. Two venues will be provided: one venue will provide the opportunity to provide testimony in a private setting while a second venue will provide individuals an opportunity to present their testimony in a room accessible to other public hearing participants. All public hearing testimony will be included in the public hearing transcripts that will be reviewed by WisDOT and FHWA.

The project team will compile, summarize comments, and prepare responses for review by WisDOT. They will also prepare a public hearing record and provide that information to various appropriate agencies.

b. Small Group Meetings

Individual Meetings with Elected Officials and Local Governments

Initial project meetings will be held with elected officials and local governments to solicit their concerns and information needs, and to learn how and when they would like to be involved in the study process. The purpose of these meetings is also to determine what issues related to the I-94 East-West Freeway Project are of key concern and to lay the ground work for a good working relationship, and later for a sound and comprehensive alternatives development and environmental analysis effort.

Throughout the study process, the project team will meet with city, county, and state elected officials. Because these elected officials represent various residents and businesses as part of their constituency, it is desirable to provide them with an early "heads-up" regarding what is occurring in the study process as well as what work is planned for the near future (for example, when a neighborhood meeting is planned that they may want to attend). These meetings will generally take place on an individual or very small group basis.

State level elected official meetings (and those with local units of government, at their discretion) will be arranged by the WisDOT Office of the Secretary with support from the project team. These will be coordinated with, and many times scheduled to be adjacent to, public information meetings.

Meetings will be documented on the PI meeting calendar.

See Appendix A for a list of Elected Officials.

Meetings with Key Interest Groups and Businesses

Initial project meetings will be held with key Special Interest Groups and Businesses to solicit their concerns and information needs, and to learn how and when they would like to be involved in the Study process. These interviews will generally involve a small group of organization representatives rather than its entire membership. The purpose of these meetings is also to determine what issues related to the Study are of key concern and to lay the ground work for a good working relationship, and later for a sound and comprehensive alternatives development and environmental analysis effort. A concerted effort will be made to identify specific units within appropriate stakeholders with whom to coordinate collectively or individually (e.g., engineering, governmental relations, and/or financial-operational management at a business interest) to maximize communications on pertinent elements of the alternatives and their potential impacts.

The project team will meet with representatives of key community, business, environmental, and metropolitan organizations such as the Milwaukee Metropolitan Association of Commerce. A Power Point presentation will be developed and modified as appropriate during the course of the Study for use with Interest Groups. Regular updates and briefings will be held as the Study progresses.

Meetings will be documented on the PI meeting calendar.

See Appendix B for a list of Special Interest Groups and Businesses.

c. 2013 and 2014 Wisconsin State Fair Outreach

The project team will operate an information booth at the 2013 and 2014 Wisconsin State Fairs. The consultant project team will transport exhibits for set-up and tear-down the day before and the day following the 11-day run of the 2013 and 2014 Wisconsin State Fair. The WisDOT project team will provide staff for the 11 days of each Fair.

d. Grassroots Community Outreach Activities

Community outreach that establishes a presence and reputation of openness and responsiveness for the Study team amongst stakeholders, and that produces tangible and constructive feedback, requires a proactive grassroots interaction effort. Establishing and maintaining trust and credibility with residents, businesses and those publics interested(← reword) in the project Study is important in setting the foundation for informed consent. Providing accurate, timely and understandable information in a variety of formats, including the spoken word at the door, is a key element in establishing trust and credibility.

Property Owner Outreach

The project team will meet with adjacent property owners as requested or as needed, throughout the Study, to discuss property or neighborhood-specific issues, the Study process, and ongoing activities and developments. These meetings will be one-on-one, with neighborhood associations, and in other venues as requested.

Community-Based Organization Outreach

Initial project kick-off interviews will be held with selected community organizations to solicit their concerns and information needs, and to learn how and when they would like to be involved in the Study process. These interviews will generally involve a small group of organization representatives rather than its entire membership. The purpose of these meetings is also to determine what issues related to the I-94 East-West Freeway Project are of key concern and to lay the ground work for a good working relationship, and later for a sound and comprehensive alternatives development and environmental analysis effort.

The PI team will meet with various community organizations located in Milwaukee, West Allis, Wauwatosa, West Milwaukee, and elsewhere as requested, throughout the 29-month study process. A Power Point presentation will be developed and modified as appropriate during the course of the study for use with smaller meetings, such as executive directors and organization boards as well as, for larger groups.

See Appendix B for a list of Community Organizations.

Minority and Low-Income Outreach; Environmental Justice
The PI team will proactively seek out minority and low-income groups in the project area and request opportunities to meet to discuss issues that may be either universal, or unique to their community. Translations will be provided for Spanish-speaking (or any others as identified or necessary) people in newsletters, on the Web page and, if requested, at other events related to the project. The PI team will work with the environmental justice staff to assist in developing or implementing an EJ plan for the Study.

e. Media Outreach

Local media will play a major role in defining and explaining major projects and can spread information effectively and widely. Local television and radio have historically covered PIMs and other meetings. The Study team, in coordination with and at the direction of the WisDOT Communications Manager, will utilize local and community newspapers to facilitate coverage of the Study and public meetings. Press releases will be sent to all local media outlets prior to PIMs and other Study milestones.

The project team contacts for the I-94 East-West Freeway project media requests are the WisDOT SE Region Communications Manager, Emlynn Grisar, Communications Team member Mike Pyritz, and WisDOT Project Development Chief David Nguyen. All requests for information must be referred to them. A member of the public involvement team will be assigned to work with reporters who attend the PIMs to make sure they have the information they need and the opportunity to interview project spokespersons.

Event opportunities for participation by WisDOT's Secretary or other WisDOT high level officials will be evaluated on a regular and ongoing basis, and reviewed with project staff from WisDOT to determine validity and specific elements.

It is the project team's desire to build strong relationships with local media.

See Appendix C for a list of Local Media.

f. Advisory Groups

Technical Advisory Committee (TAC)
Technical Advisory Committee meetings will be held with representatives from WisDOT; FHWA; SEWRPC; Milwaukee County; and Cities of Milwaukee, Wauwatosa, West Allis; and the Village of West Milwaukee. Other Advisory Group members may include Engineers, DPWs, or similar staff. Representatives from MMSD and DNR will be invited as needed. The group's role will be to assist the team in identifying project issues and developing project alternatives. Eight TAC meetings are anticipated, to be conducted before each of 5 PIMs, one between PIM #2 and PIM #3, the public hearing, and at the conclusion of the Study phase.

Community Advisory Committee (CAC)
Community Advisory Committee meetings will be held with representatives from WisDOT, FHWA, residents, community-based organizations, economic development groups, and small business groups within the Study area.

Eight CAC meetings are anticipated, to be conducted before each of 5 PIMs, one between PIM #2 and PIM #3, the public hearing, and at the conclusion of the Study phase

Elected Officials
Meetings with elected officials will be held with representatives from WisDOT and FHWA. Meetings will include officials from Milwaukee County; Cities of Milwaukee, Wauwatosa, West Allis; and the Village of West Milwaukee, State representatives, and U.S. Senate offices.

VIII. Informational Materials

Mailing list and meeting calendars
The project team will obtain, maintain, and update the master mailing list throughout the Study. The project mailing list will also be linked to the public involvement GIS database.

The project team will develop and maintain a public involvement calendar that will include all public meetings for the Study. The calendar will be maintained on the project shared drive and will be accessible to the project team.

Web Page
Project information will be available on WisDOT's web page. The site will include data pertaining to existing facilities and operations, recent study developments, study schedule, maps, alternatives, a summary of the purpose and need for the I-94 East-West Freeway project and links to related web sites. Updated information will be added to the web site on a regular basis and as necessary prior to, and after, key Study milestones.

All information posted on the web site will be reviewed and posted by WisDOT Office of Public Affairs. The web site will also include links for direct E-mail connections with WisDOT project staff. WisDOT project staff will respond to web page and email inquiries as necessary, with assistance from CONSULTANT staff as required.

Newsletters/PIM Flyers
The project team will prepare one newsletter and/or flyer prior to each public informational meeting, and prior to the public hearing. The newsletters will be concise but comprehensive records of project activities to date which will include information on the project development process, schedule milestones, brief reports on meetings that have occurred, continued updates on alternatives, and announcements about upcoming meetings.

A total of six newsletters/flyers will be mailed to those on the project's mailing list, including businesses and organizations within the project area. The newsletters will be mailed within two weeks prior to the public information meetings and public hearing. Translations into Spanish (and other languages, as needed) will be made available upon request and will be posted on the website.

All written pieces including newsletters, presentations, and handouts will be approved through WisDOT's regional and, as needed, central office prior to printing or dissemination.

IX. Presentation of Technical Information

The general public is often times not familiar with technical data and terminology that is used by engineers, designers and planners. In order to achieve effective two-way communication between the Study team and the general public, technical phrases and data must be clearly explained in a format easily understood. It is much easier for people to understand something that they can see as opposed to something that is verbally explained to them. The project team will develop "user-friendly" guiding principles (rates of curvature, right-of-way guidelines, bridge dimensions, etc.) to help the public understand the constraints within which the design and alternatives development process occurs. These tools will be explained and provided during the early PIMs to provide the public with tools to explain concepts and ideas regarding possible alternatives. As alternatives are developed and refined, the Study team will develop computer-generated three-dimensional models of the various alternatives and other tools to assist the general public in their understanding of the project.

To assist the public's understanding of the project, the study team will employ several techniques, including:

- Project technical staff shall work with PI staff in the design of technical exhibits;
- Presenting information to the public that is accurate, timely and consistent;
- Assisting the public by defining, in layman's terms, key engineering and construction terminology, to assist both their understanding of the project as well as facilitate their engagement;
- Using graphics as much as possible to explain complicated analysis or findings; and
- Making no promises, but engaging in active listening and two-way dialogue.

The SE Region Communications Manager and Central Office will approve all exhibits.

X. Public Involvement Team Meetings

The Public Involvement Project Team will meet/teleconference on a regular basis to discuss public involvement issues and status. Additionally, as work progresses, the team will meet to review the public involvement plan and other public involvement opportunities.

XI. Methods for Incorporating Public Input and Measuring Performance

Input from community interviews, meetings with community-based organizations, special interest groups, neighborhood organizations, businesses and local, city and state officials and elected officials will be documented via meeting summaries that will be completed by an attending project team member. These summary reports will be e-mailed to the appropriate staff for review and then kept on file to be a part of the final Project Record. A summary of public involvement activities will be provided in the project's Environmental Impact Statement. A meeting summary template will be developed for use as a tool to document meeting information and key issues of concern. It will be a primary goal and objective of the study team to continually monitor the volume and content of feedback received, to determine trends, key issues, FAQ material, and other information that could/would materially impact the direction of the alternatives development, analysis, and environmental documentation processes.

Information and comments that are gathered from public input throughout the Study process will be given to the Study management team and design teams for their review. Comments or drawings written by the public on maps at PIM 1 will be reviewed and ultimately reflected in the preliminary range of alternatives presented at PIM 2. Subsequent comments and drawings at future PIMs will also be reviewed and may be included in future meetings.

The Community Sensitive Solutions process will be implemented during preliminary design, once a preferred alternative is identified.

XII. GIS Public Involvement Tracking

The I-94 East-West Freeway GIS Project Database will be used to track public comments and public involvement participation. GIS technology will allow the tracking of comments received during the public involvement process as well as tracking attendance at Public Information Meetings and the Public Hearing.

All comments received will be included in the database including comments from one on one meetings, email, written correspondence, telephone calls and/or small group meetings.

XIII. Plan Review

The Project Team will review and update this Public Involvement Plan as needed. This is an update to the original PI Plan, prepared in Summer 2012.

Appendix A – List of Elected Officials

JURISDICTION	OFFICE/POSITION
City of Milwaukee	Mayor
City of Milwaukee Common Council	Aldermen/women, Public Works Committee
Village of West Milwaukee	Village President
Village of West Milwaukee Board of Trustees	Trustees
City of Wauwatosa	Mayor
City of Wauwatosa Common Council	Aldermen/women
City of West Allis	Mayor
City of West Allis Common Council	Aldermen/women
Milwaukee County	County Executive
Milwaukee County Board of Supervisors	County Supervisors, Transportation Committee
State of Wisconsin	Governor
United States House of Representatives--U.S. Congressional District 4 (Wisconsin)	U.S. Representative
United States House of Representatives--U.S. Congressional District 5 (Wisconsin)	U.S. Representative
United States Senate--Wisconsin	U.S. Senator
United States Senate--Wisconsin	U.S. Senator
Waukesha County	County Executive
Waukesha County Board of Supervisors	County Supervisors, Public Works/Transportation
Wisconsin State Assembly District 11	State Assemblyperson
Wisconsin State Assembly District 12	State Assemblyperson
Wisconsin State Assembly District 13	State Assemblyperson
Wisconsin State Assembly District 14	State Assemblyperson
Wisconsin State Assembly District 15	State Assemblyperson
Wisconsin State Assembly District 17	State Assemblyperson
Wisconsin State Assembly District 18	State Assemblyperson
Wisconsin State Assembly District 22	State Assemblyperson
Wisconsin State Assembly District 24	State Assemblyperson
Wisconsin State Assembly District 84	State Assemblyperson
Wisconsin State Assembly District 98	State Assemblyperson
Wisconsin State Senate District 3	State Senator
Wisconsin State Senate District 4	State Senator
Wisconsin State Senate District 5	State Senator
Wisconsin State Senate District 6	State Senator

Wisconsin State Senate District 7	State Senator
Wisconsin State Senate District 8	State Senator
Wisconsin State Senate District 28	State Senator
Wisconsin State Senate District 33	State Senator

Appendix B – List of probable Special Interest Groups, Businesses, Community Organizations

(spell out name with acronym)

- Veterans Affairs
- Zablocki VA Medical Center
- Miller Park
- Menomonee Valley Business Park
- Miller-Coors
- ATC and We-Energies
- Beth Hamedrosh Hagodel Cemetery
- Calvary Cemetery
- Spring Hill Cemetery
- Wood National Cemetery
- Anshai Lebowitz Cemetery
- CP Railroad
- Marquette University
- Neighborhood Associations:
    - Story Hill
    - Merrill Park
    - Valley Park
    - Washington Heights Neighborhood Association
    - Johnson's Woods
    - Charles Jacobus Park Neighborhood Association
    - Westtown
    - Vliet Street
    - Uptown Neighborhood/Business
    - Silver City Main Street District
    - Washington Park
- Milwaukee County
- MMSD
- MMAC
- Potawatomi Bingo Casino
- Girl Scouts
- Hispanic Chamber
- African American Chamber
- Summerfest

Appendix C – List of Local Media

Print Media

1. Milwaukee Journal Sentinel
2. Community NOW Wauwatosa
3. Community NOW West Allis/West Milwaukee
4. Community NOW Brookfield
5. Community NOW Elm Grove
6. El Conquistador
7. Waukesha Freeman
8. The Daily Reporter
9. Milwaukee Community Journal
10. The Milwaukee Times
11. Small Business Times
12. The Business Journal

Television Media

1. WTMJ Channel 4
2. WITI Fox 6
3. WDJT Channel 58
4. WISN Channel 12
5. WCGV Channel 24
6. Milwaukee public television - Channels 10/36

Radio Media

1. WISN AM 1130
2. WTMJ AM 620
3. WUWM FM 88.7
4. WJMR FM 98.3

Online media and bloggers

Introduction

The purpose of this technical memorandum is to summarize and provide an overview of crash rates and statistics as part of the I-94 East-West Stadium Interchange study. Crash data was obtained from the Wisconsin Traffic Operations and Safety Laboratory's (TOPS Lab) geographical information system (GIS) site for freeway mainlines, system and service interchange ramps, and major local roadways located within the study area. The Wisconsin Department of Transportation (WisDOT) provided crash data for six local road intersections within the study area. The I-94 East-West Stadium Interchange study area encompasses the following roadway segments:

- Freeway Mainlines:
  - Interstate Highway 94 (I-94) from 70th Street (west limit) to 25th Street (east limit)
  - United States Highway 41(US 41)/Wisconsin State Highway 341 (WIS 341) from National Avenue (WIS 59 [south limit]) to Lisbon Avenue (north limit)
- Stadium Interchange System Ramps
- Service Interchange Terminals and Ramps:
  - I-94 at 70th Street/68th Street
  - I-94 at Hawley Road
  - I-94 at Mitchell Boulevard
  - I-94 at 35th Street
  - I-94 at 28th Street/St Paul Avenue
  - I-94 at 26th Street/25th Street
  - WIS 341 at Frederick Miller Way/Canal Street
  - US 41 at Wisconsin Avenue (US 18)/Wells Street
  - US 41 at State Street/Martin Drive/Alois Street
  - US 41 at Washington Boulevard
  - US 41 at 47th Street/Lloyd Street
- Major Local Roadways:
  - Wisconsin Avenue (US 18)
  - Bluemound Road (US 18)
  - National Avenue (WIS 59)

  - Layton Boulevard/27th Street (WIS 57)

- Local Road Intersections:
  - Layton Boulevard/27th Street (WIS 57) and St Paul Avenue
  - National Avenue (WIS 59) and WIS 341
  - Bluemound Road (US 18) and 68th Street
  - Bluemound Road (US 18) and Hawley Road
  - Bluemound Road and Wisconsin Avenue (US 18)
  - Bluemound Road (US 18) and Mitchell Boulevard

Exhibit 1 on the following page shows the I-94 East-West Stadium Interchange study area in its entirety.

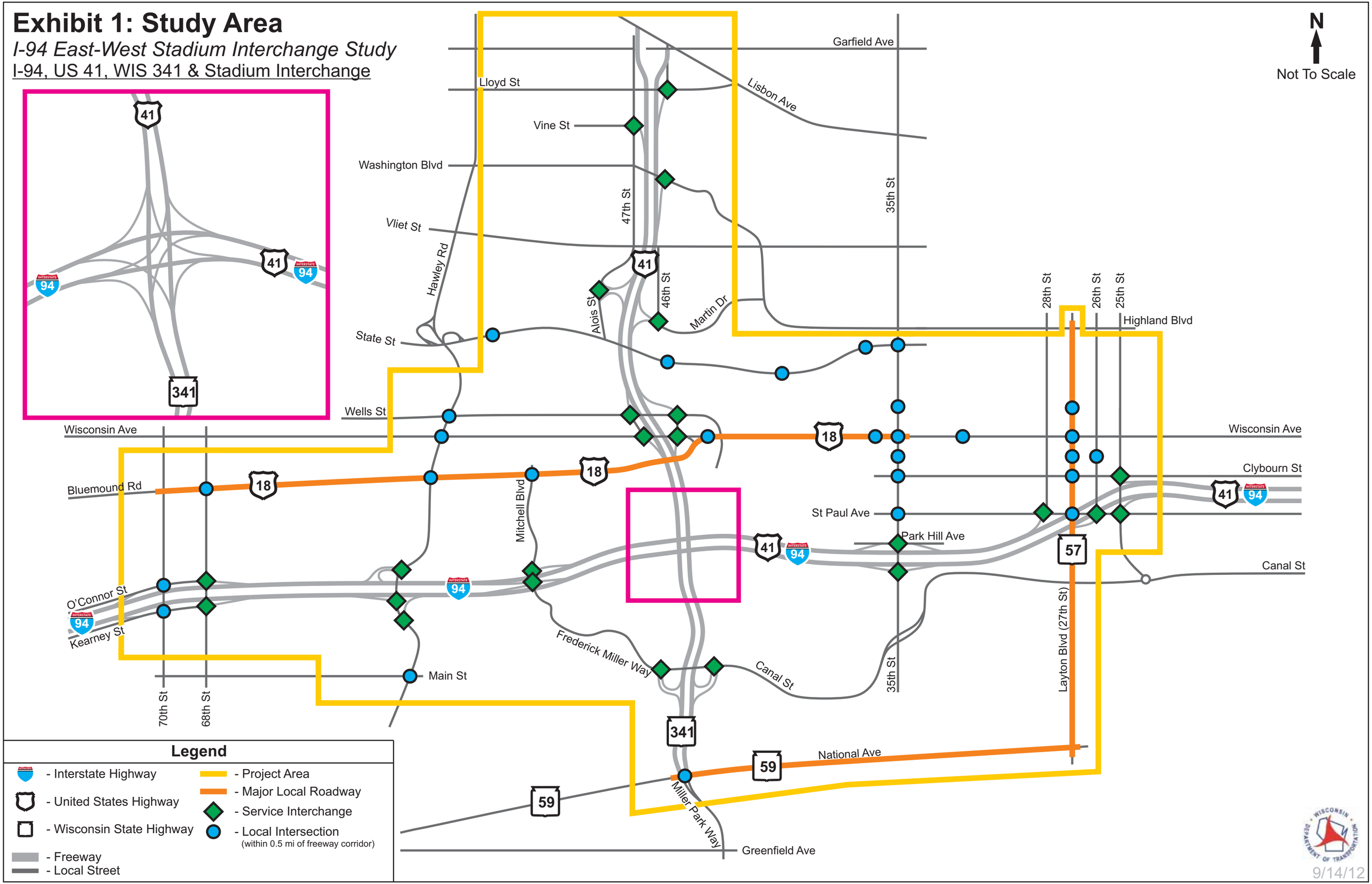
Crash data on freeway mainlines, system and service ramps, and major local roadways within the study area was analyzed over a five-year period, from 2005 through 2009 inclusive. It should be noted that within this analysis period, the Marquette Interchange, located east of the study area, was reconstructed between 2005 and 2008. However, while the I-94 East-West Stadium Interchange study team recognizes the potential for impacts on study area roadways due to this construction, the study team feels that crashes from 2005 to 2009 represents a fair estimate of the crash history on roadways within the study area.

As seen in **Exhibit 2** on page 4, average weekday traffic (AWDT) volumes on I-94 between Hawley Road and Mitchell Boulevard from 2003 to 2010 show no more than a plus or minus 5% difference from the average volume over the same time period (159,000 vehicles). As such, crash frequencies and characteristics over the same time period are unlikely to be impacted due to volume changes from the reconstruction of the Marquette Interchange.

Exhibit 1: Study Area

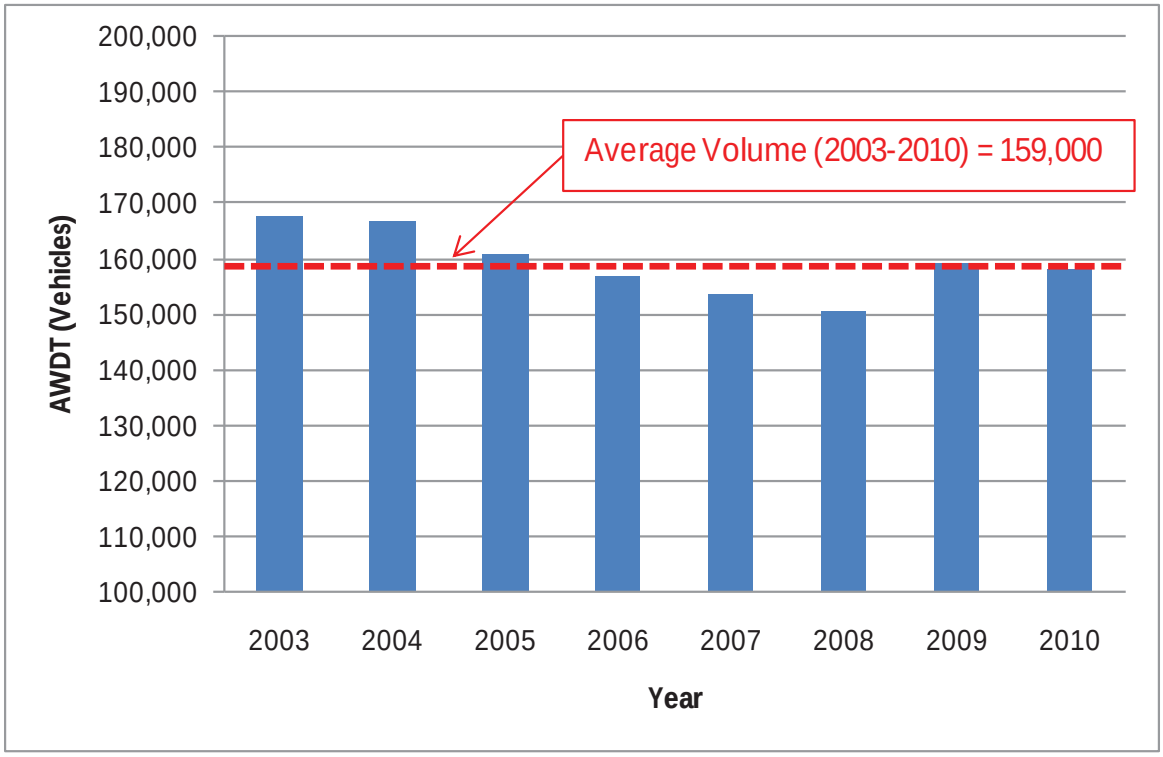
I-94 East-West Stadium Interchange Study

I-94, US 41, WIS 341 & Stadium Interchange



9/14/12

Exhibit 2 - I-94 between Hawley Road and Mitchell Boulevard Historical AWDT Volume Comparison



Crash data on freeway mainlines, system and service ramps, and major local roadways from 2010 is not available on the TOPS lab site at this time, but may be included in future analysis. Crash data for these segments from 2011 and 2012 was not utilized in this analysis due to the I-94 East-West Repaving project within the study area limits. Crash data for critical local road intersections was analyzed over a five-year period from 2007 through early 2012. Other critical local road intersections may be included in future analysis as data becomes available.

Crashes analyzed and presented within this technical memorandum include all reported property damage (considered to be over $1,000 in damages), injury, and fatal crashes. Deer-related and other erroneous crash data was not included. Additionally, this technical memorandum includes a discussion of freeway mainline, system interchange ramp, and service interchange ramp “hot spots”. “Hot spots” are locations with crash rates that are significantly higher than the statewide average over the same time period.

Study Area Crash Analysis

WisDOT collects annual crash data of reportable crashes on Interstates, United States Highways, and State Highway systems within the State of Wisconsin. Crashes are divided into the following three categories for data analysis:

- Property damage – Any crash where there is approximately $1,000 or more in damage "to any one person's property" and no resulting injuries or fatalities to anyone involved.
- Injury – Any crash where an injury is the result of the crash to anyone involved, but there were no fatalities. Injury-related crashes are further broken down into three more sub-categories classified by injury severity, from least to most severe, as defined by the "Law Enforcement Officer's Instruction Manual":
    - Type C – Possible injury: Any injury which is not observable or evident at the scene, but is claimed by the individual or suspected by the law enforcement officer
    - Type B – Non-incapacitating injury: Any injury, other than fatal or incapacitating, which is evident at the scent. Evidence of an injury may include known symptoms of an injury, which are not directly observable
    - Type A – Incapacitating injury: Any injury other than a fatality, which prevents the injured person from walking, driving, or from performing other activities, which they performed before the crash
- Fatality – Any crash where a loss of life is the result, and occurs within 30 days

Table 1 below shows the Wisconsin statewide 5-year average (2005 to 2009) crash rates for urban roadway types (deer-related crashes are excluded from the data).

Table 1 - Wisconsin Statewide Average Urban Crash Rate by Roadway Type (2005-2009)

Roadway Type	Crash Type/Rate (Crashes/100M VMT)					
	Total	Fatal	Injury Crash Type			Property Damage
			A	B	C	
Small Urban Freeways	43	0.3	2.0	5.1	5.5	30.1
Small Urban Expressways	59	0.9	3.4	8.1	8.5	37.7
Large Urban Freeways	85	0.3	1.9	6.9	16.0	59.8
Large Urban Divided Highways	326	0.8	7.5	30.2	80.0	207.1
Large Urban Undivided Highways	335	1.3	9.8	36.3	75.0	212.1
Small Urban State Highways	244	0.6	7.8	30.0	44.5	165.4

For comparison purposes, this technical memorandum compares all freeway mainline segments located on I-94, US 41, and WIS 341 to the statewide average crash rate for "large urban freeways". Stadium Interchange system ramps and service interchange ramps are not compared to a statewide average, as there is no comparative statewide crash rate for system or service ramps. Therefore, system and service ramps within the study area are discussed and compared to each other.

Local roadway crashes are compared to the statewide average total crash rate for an "urban street". The "urban street" crash rate takes into account all crashes on city streets and urban county highways within the state. **Table 2** below shows the Wisconsin statewide average crash rates on an "urban street" from 2005 to 2009 (deer-related crashes are excluded from the data).

Table 2 - Wisconsin Statewide Urban Street Crash Rates (2005-2009)

Year	Crash Type/Rate (Crashes/100M VMT)					
	Total	Fatal	Injury Crash Type			Property Damage
			A	B	C	
2005	314	0.7	7.2	30	63	212
2006	288	0.7	6.6	29	57	195
2007	294	0.7	6.6	28	54	204
2008	308	0.6	6.3	28	51	222
2009	281	0.5	5.9	27	48	200
Average	**297.0**	**0.6**	**6.5**	**28.4**	**54.6**	**206.6**

Exhibit 3 on the following page shows the average total crash rates on freeway mainlines, system ramps, service ramps, and local roadway segments within the study area from 2005 to 2009.

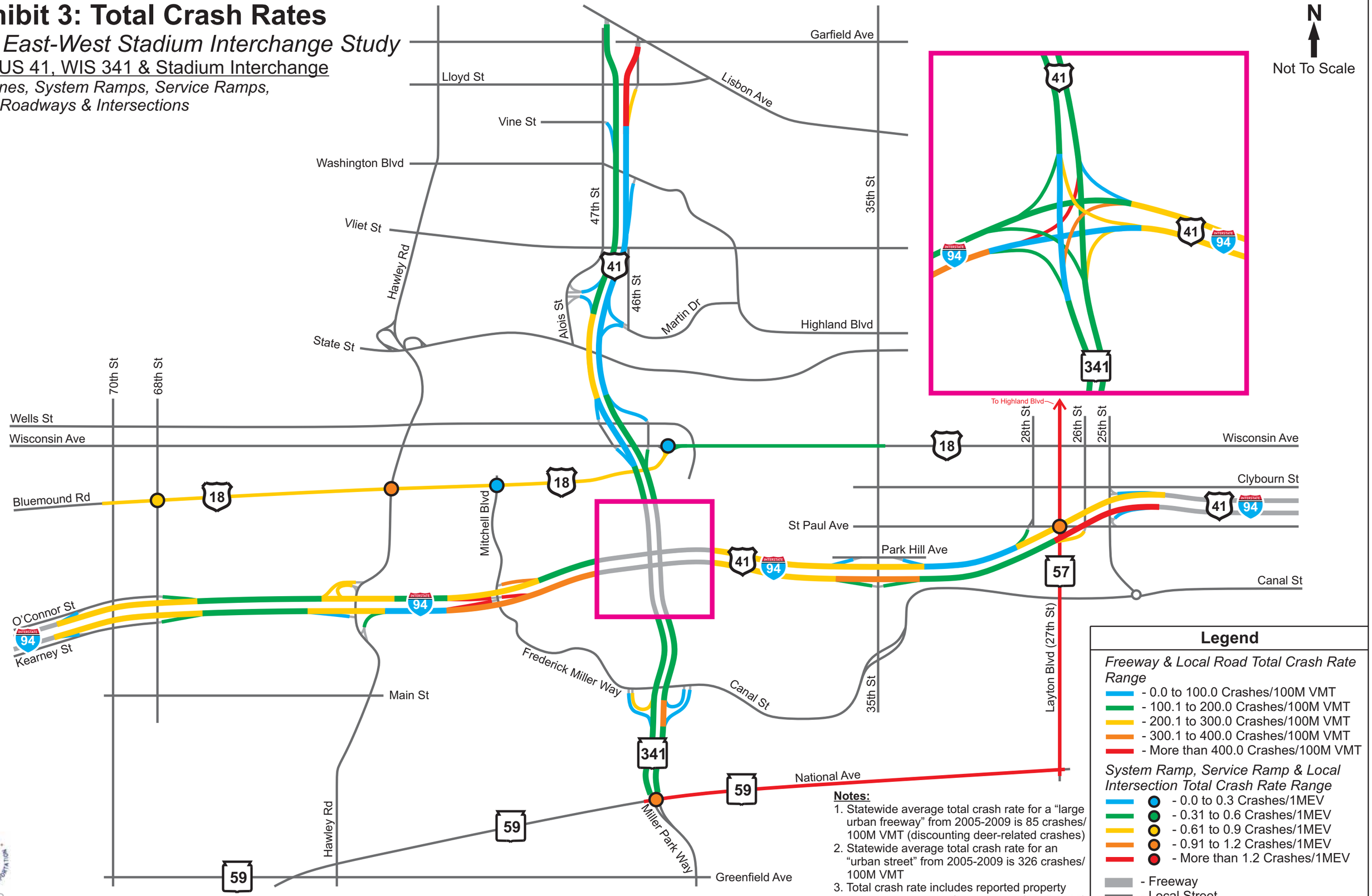
Appendix A includes the "WisDOT 2009 Statewide Crash Rates Memo" where the statewide average crash rates were used for 2005 to 2009 urban roadway segments. **Appendix B** includes I-94 East-West Stadium Interchange study area crash data and calculations used throughout this technical memorandum for freeway mainlines, system ramps, and service ramps. **Appendix C** includes study area crash data and calculations used for local road intersections.

Exhibit 3: Total Crash Rates

I-94 East-West Stadium Interchange Study

I-94, US 41, WIS 341 & Stadium Interchange

Mainlines, System Ramps, Service Ramps, Local Roadways & Intersections



Freeway Mainline Crash Analysis

The average total (i.e. sum of all property damage, injury, and fatal crashes) crash rate on freeway mainlines within the I-94 East-West Stadium Interchange study area is 195.8 crashes per 100 million vehicle miles traveled (crashes/100M VMT) from 2005 to 2009. **Exhibit 3** shows the total average crash rates on study area freeway segments from 2005-2009. The study area total crash rate on freeway mainlines is more than double the average statewide total crash rate for a "large urban freeway" segment of 85 crashes/100M VMT.

The freeway mainline crash rate for the study area considers all crash types and crashes located on I-94, US 41, and WIS 341, outside of the Stadium Interchange system ramps and all service interchange ramps. It is important to note that for analysis purposes as part of this technical memorandum, I-94, US 41, and WIS 341 in each direction through the Stadium Interchange are considered system ramps and are discussed further in the "Stadium Interchange System Ramp Crash Analysis" chapter.

The following sections discuss freeway mainline crash rates and types on I-94, US 41, and WIS 341 in more detail, including the severity and locations of crash "hot spots".

Freeway Mainline Crash Rates and Types

The average total crash rate on I-94 from 70th Street to 25th Street from 2005 to 2009 is 233.7 crashes/100M VMT. This is about 175% greater than the average statewide total crash rate. The average total crash rate on US 41/WIS 341 from National Avenue to Lisbon Avenue is 157.8 crashes/100M VMT, which is approximately 85% greater than the statewide total crash rate. **Table 3** below shows the breakdown of crash types along the freeway mainlines within the study area.

Table 3 – Study Area Freeway Mainline Crash Types

Crash Type	Number of Crashes (2005-2009)	Percentage of Total Crashes			Total
		Property Damage	Injury (A, B & C)	Fatality	
Angle	55	1.7%	0.9%	0.0%	**2.6%**
Rear-End	1245	41.0%	17.9%	0.0%	**58.9%**
Sideswipe	352	13.5%	3.1%	< 0.1%	**16.6%**
Single Vehicle	450	14.8%	6.4%	0.0%	**21.2%**
Other	15	0.5%	0.2%	0.0%	**0.7%**
Total	**2117**	**71.5%**	**28.5%**	**< 0.1%**	**100.0%**

As seen in **Table 3**, rear-end crashes account for almost 60% of all crashes on freeway mainlines (I-94, US 41, and WIS 341) within the study area. High occurrences of rear-end crashes on a freeway segment typically is the result of peak hour congestion, where drivers are stuck in "stop-and-go" traffic and move much slower than the average freeway speed. As a result of congestion, the probability of rear-end crashes is increased, as drivers may be forced to slow and break suddenly based on what traffic ahead of them are doing (i.e. lane changing, letting other drivers merge, etc.). Also, sight and decision distance deficiencies, in addition to unexpected queuing on freeway mainlines, can also contribute to high frequencies of freeway crashes.

Freeway Mainline Crash Severity

The average severe (i.e. the sum of all injury [type A, B and C] and fatal crashes) crash rate from 2005-2009 on the freeway mainlines within the study area is 59.0 crashes/100M VMT. This is approximately 135% greater than the average statewide severe crash rate for a "large urban freeway" segment of 25.1 crashes/100M VMT (sum of fatal and injury crash rates from "Large Urban Freeway" row within **Table 1**).

The average severe crash rate on I-94 from 70th Street to 25th Street for 2005 to 2009 is 64.8 crashes/100M VMT, which is more than two and one half times greater than the average statewide severe crash rate. The average severe crash rate on US 41/WIS 341 from National Avenue to Lisbon Avenue is approximately 53.1 crashes/100M VMT, which is slightly more than double the statewide average severe crash rate.

One fatal crash is included in the previously mentioned average severe crash rate for I-94 within the study area from 2005-2009. **Exhibit 4** on the following page shows the location of fatal crashes on freeway mainlines and Stadium Interchange system ramps. Fatal crashes occurring on Stadium Interchange system ramps are further discussed in the "System Ramp Crash Severity" section.

The fatal crash on the freeway mainline occurred on I-94 eastbound (EB), west of the 26th Street exit ramp in 2008 and involved two vehicles and one fatality. According to TOPS Lab crash data, the crash was flagged for alcohol involvement, within or near a construction zone (any roadway work), and pedestrian involvement.

Freeway Mainline Crash "Hot Spots"

The majority of freeway mainline segments within the study area exhibit total crash rates that are higher than the statewide total crash rate average of 85 crashes/100M VMT.

Analysis of crash data on the freeway mainlines from 2005 to 2009 reveals that the location with the highest total average crash rate in the study area is I-94 EB from the 26th Street exit ramp to the 25th Street entrance ramp. This segment experiences a total average crash rate of 607.8 crashes/100M VMT, which is more than seven times greater than the average statewide total crash rate.

The following sections further highlight and analyze freeway mainline segments within the study area that exhibit significantly higher (i.e. 300% or greater difference) total average crash rates as compared to the statewide average crash rate.

I-94 Eastbound from 26th Street Exit Ramp to 25th Street Entrance Ramp

This segment is located on I-94 EB from east of the diverge of the 26th Street exit ramp to west of the merge of the 25th Street entrance ramp, a distance of more than 1600 feet, as shown in **Exhibit 5** on page 11. This location has three general purpose lanes and less than full-width shoulders on each side of I-94.

Exhibit 4: Fatal Crash Locations

I-94 East-West Stadium Interchange Study

I-94, US 41, WIS 341 & Stadium Interchange

Freeway Mainlines and System Ramps

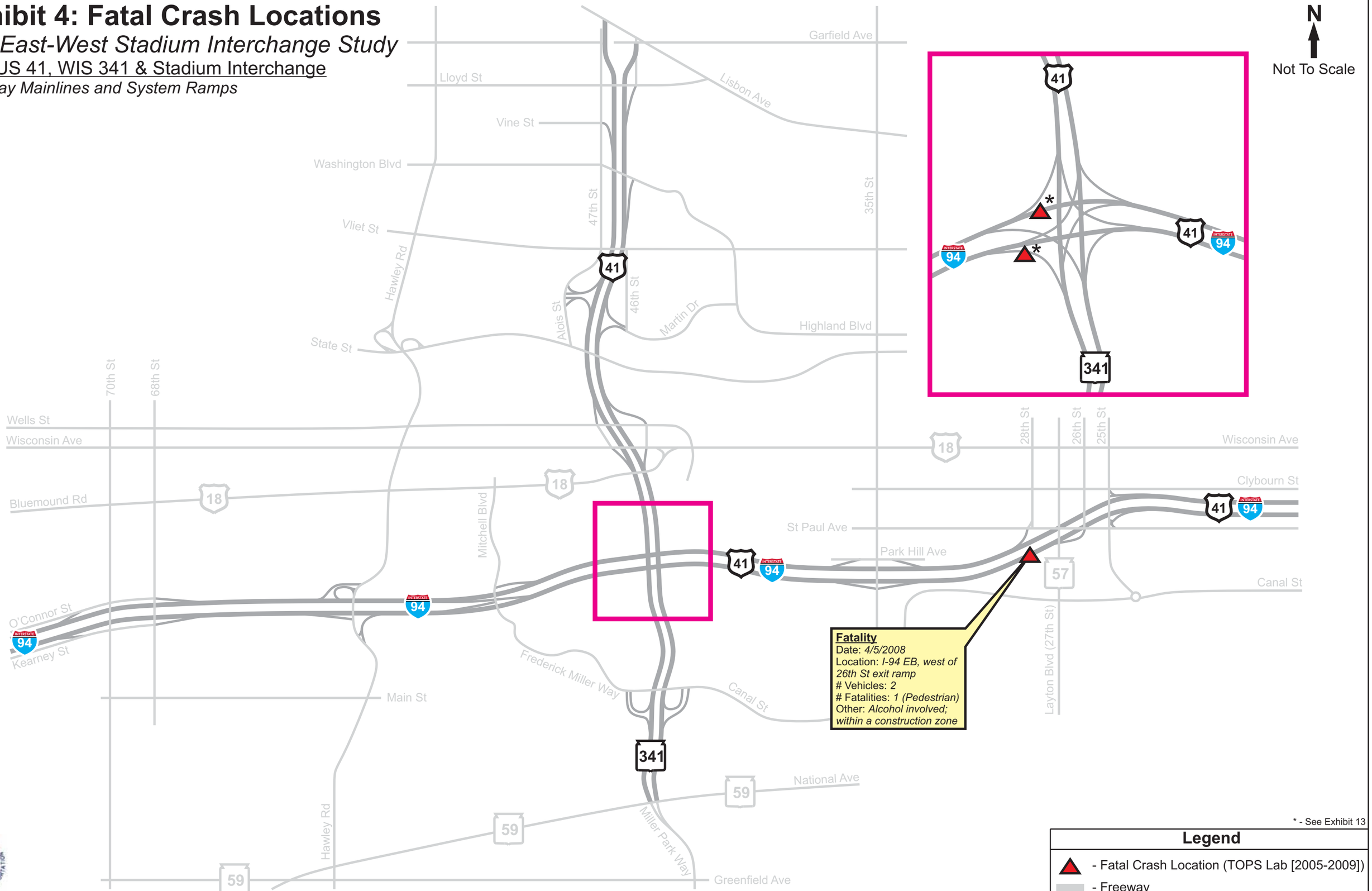


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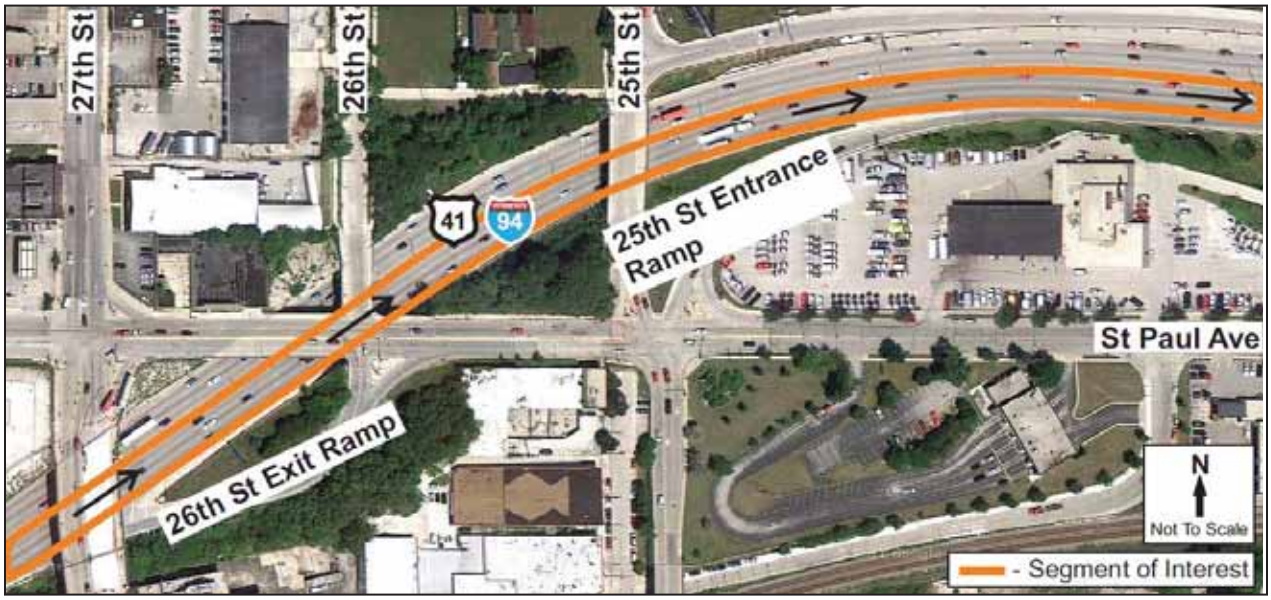
Exhibit 5 - I-94 EB from 26th St Exit Ramp to 25th St Entrance Ramp Overview



The total average crash rate for this segment over 2005 to 2009 is 607.8 crashes/100M VMT, which is 600% greater than the statewide average total crash rate. The total average severe crash rate for this segment over the same period is 178.2 crashes/100M VMT, which is approximately 610% greater than the statewide average severe crash rate (25.1 crashes/100M VMT). **Table 4** below shows the breakdown of crash types along this freeway segment from 2005-2009.

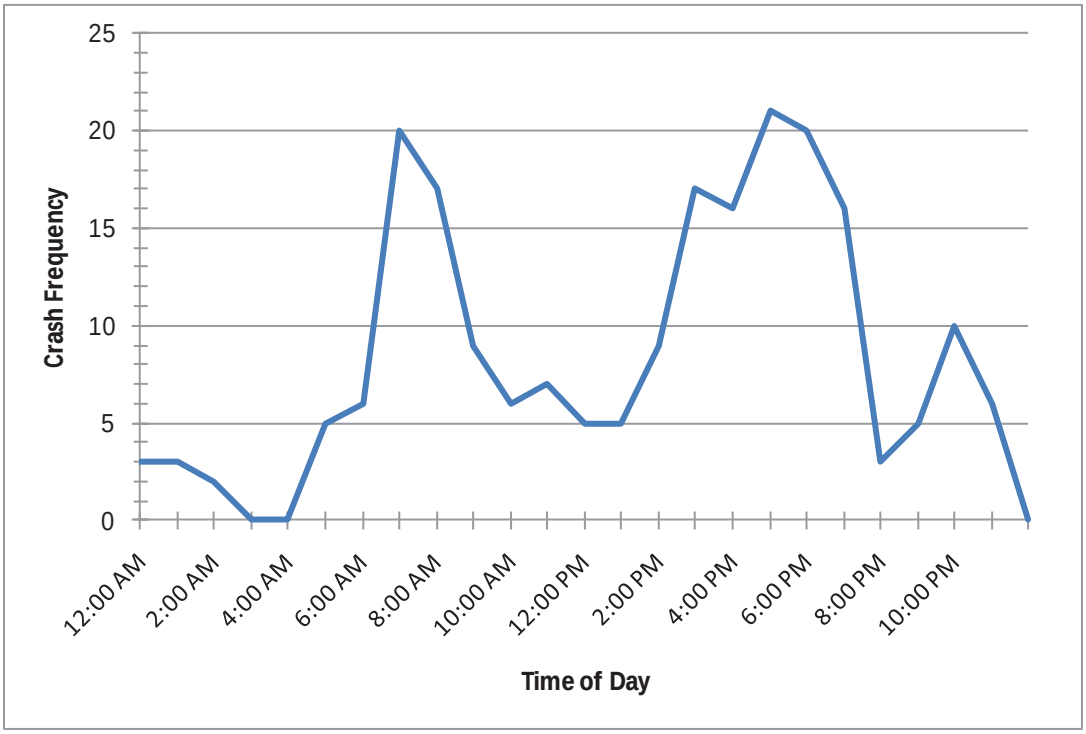
Table 4 - I-94 EB from 26th St Exit Ramp to 25th St Entrance Ramp Crash Types

Crash Type	Number of Crashes (2005-2009)	Percentage of Total Crashes			Total
		Property Damage	Injury (A, B & C)	Fatality	
Angle	3	1.0%	0.5%	0.0%	**1.4%**
Rear-End	153	50.0%	23.6%	0.0%	**73.6%**
Sideswipe	20	9.1%	0.5%	0.0%	**9.6%**
Single Vehicle	30	9.6%	4.8%	0.0%	**14.4%**
Other	2	1.0%	0.0%	0.0%	**1.0%**
Total	**208**	**70.7%**	**29.3%**	**0.0%**	**100.0%**

As seen in **Table 4**, rear-end crashes make up almost 75% of all crashes that occurred on this segment of I-94 EB from 2005 to 2009. Generally, a high occurrence of rear-end crashes on a freeway segment can be at least partially attributed to congestion during peak hours, as traffic moves considerably slower than the average speed and occasionally is stopped entirely. This generality is true for I-94 EB from the 26th Street exit ramp to the 25th Street entrance ramp, due to its proximity to the Marquette Interchange, which is the second largest system interchange in Wisconsin, and downtown Milwaukee, which generates a significant amount of peak hour traffic and ensuing congestion.

Exhibit 6 below shows the frequency of crashes on I-94 EB from the 26th Street exit ramp to the 25th Street entrance ramp. As seen in **Exhibit 6**, the greatest frequency of crashes at this location occurs during the AM peak and PM peak hours, when traffic volumes, and therefore congestion, are highest on the freeway.

Exhibit 6 - Crash Frequency at I-94 EB from 26th St Exit Ramp to 25th St Entrance Ramp



In addition to peak hour congestion, the geometry of I-94 EB at this location could have an effect on the frequency of crashes. I-94 from approximately 28th Street to 25th Street features a horizontal curve passing beneath three roadways (27th Street, 26th Street, and 25th Street). Due to this geometry, driver sight and decision distance through this area is limited. As such, drivers may not be able to see downstream congestion and backups on I-94 EB near the Marquette Interchange and rear-end crashes may result.

US 41 Northbound from Lloyd Street Exit Ramp to Lisbon Avenue

This segment is located on US 41 northbound (NB) from north of the Lloyd Street exit ramp diverge to south of Lisbon Avenue, which is a distance of more than 1500 feet. **Exhibit 7** on the following page shows the location of this freeway segment, which has two general purpose lanes and full shoulders located on both sides of the roadway. These shoulders narrow at the merge of US 41 with the NB local roadway that connects Lisbon Avenue and Lloyd Street on the east side of US 41.

Exhibit 7 – US 41 NB from Lloyd St Exit Ramp to Lisbon Ave Overview

The total average crash rate for this segment from 2005 to 2009 is 543.7 crashes/100M VMT, which is almost 540% greater than the statewide average total crash rate. The total average severe crash rate for this segment over the same period is 106.4 crashes/100M VMT, which is approximately 325% greater than the statewide average severe crash rate. **Table 5** below shows the breakdown of crash types along this freeway segment from 2005-2009.

Table 5 – US 41 NB from Lloyd St Exit Ramp to Lisbon Ave Crash Types

Crash Type	Number of Crashes (2005-2009)	Percentage of Total Crashes			Total
		Property Damage	Injury (A, B & C)	Fatality	
Angle	9	17.4%	2.2%	0.0%	**19.6%**
Rear-End	17	26.1%	10.9%	0.0%	**37.0%**
Sideswipe	11	19.6%	4.3%	0.0%	**23.9%**
Single Vehicle	8	15.2%	2.2%	0.0%	**17.4%**
Other	1	2.2%	0.0%	0.0%	**2.2%**
Total	**46**	**80.4%**	**19.6%**	**0.0%**	**100.0%**

As seen in **Table 5** on the previous page, rear-end and sideswipe crashes account for approximately 60% of all crashes that occurred at this location from 2005 to 2009. The occurrence of rear-end crashes on this segment of US 41 can be attributed to a few different factors. As mentioned previously, a high incidence rate of rear-end crashes is typically the result of peak hour congestion. However, due to the low daily traffic volumes on US 41 NB at this location (approximate average annual daily traffic [AADT] volume of 16,000 vehicles in 2010), congestion is likely to be a minor cause of rear-end crashes here.

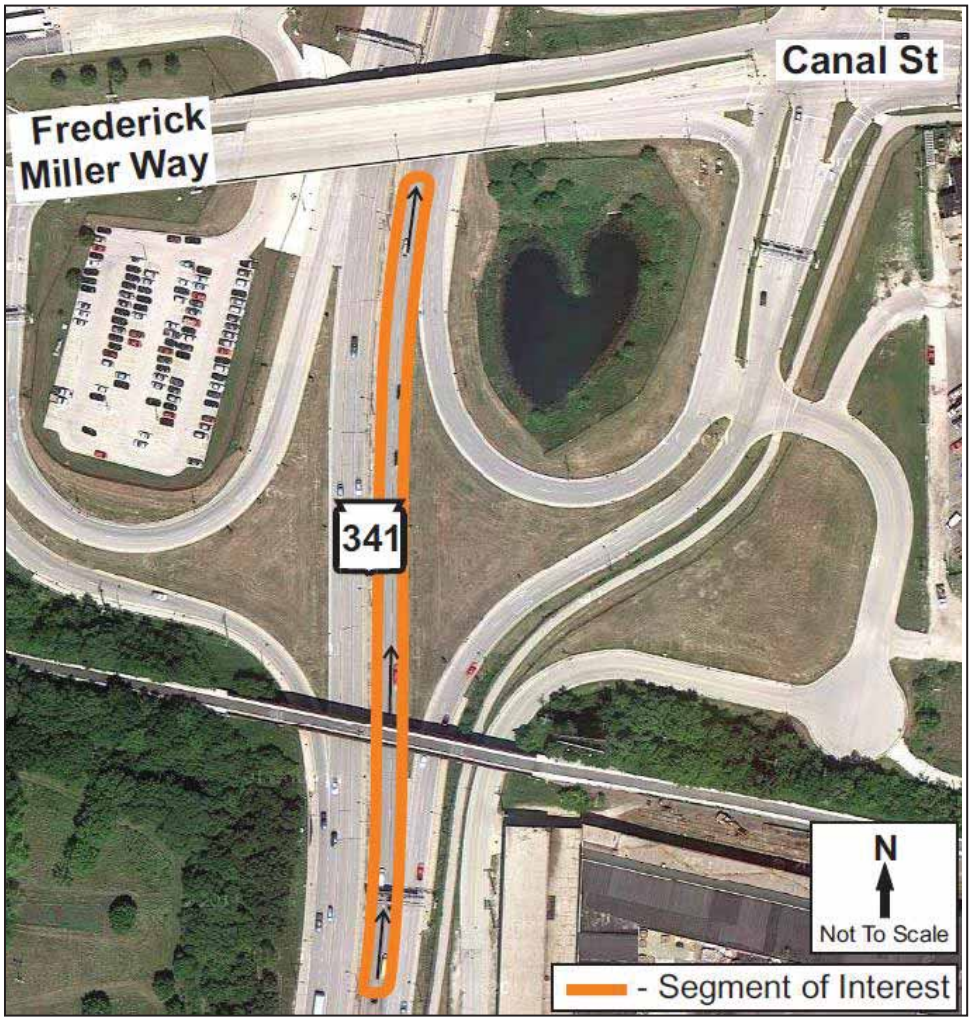
Traffic operations at the intersection of US 41 and Lisbon Avenue have a significant effect on crashes at this location. This intersection is typically overcapacity during peak hours and as a result, long queues develop on US 41 NB. As such, rear-end crashes are likely to occur as drivers approach the intersection and do not expect queues on the US 41 NB mainline.

In addition to traffic operations on US 41 at Lisbon Avenue, crashes that occur on this segment of US 41 can also be attributed to the roadway geometry, as US 41 merges with the NB local roadway south of Lisbon Avenue. A combination of weaving and merging maneuvers at this location is the likely cause of some rear-end and sideswipe crashes. Additionally, sight distance issues caused by the location of the Lloyd Street overpass may be another cause of rear-end and sideswipe crashes at this location.

WIS 341 Northbound between Frederick Miller Way/Canal Street Exit and Entrance Ramps

This segment is located on WIS 341 NB between the Frederick Miller Way/Canal Street exit ramp diverge and entrance ramp merge, which is a distance of less than 600 feet. Frederick Miller Way and Canal Street provide freeway access to and from WIS 341 to Miller Park and the parking lots that surround it. **Exhibit 8** on the following page shows the location of this segment, which has two general purpose lanes and a full left shoulder. The outside (right) shoulder at this location is actually a curb and gutter section, located between the NB exit and entrance ramps. The outside general purpose lane is dropped at the NB exit ramp to Frederick Miller Way/Canal Street from the upstream three lane segment on WIS 341.

Exhibit 8 – WIS 341 NB between Frederick Miller Way/Canal St Ramps Overview



The total average crash rate for this segment from 2005 to 2009 is 361.0 crashes/100M VMT, which is almost 325% greater than the statewide average total crash rate. The total average severe crash rate for this segment over the same period is 169.9 crashes/100M VMT, which is almost seven times greater than the statewide average severe crash rate. **Table 6** below shows the breakdown of crash types along this freeway segment from 2005-2009.

Table 6 – WIS 341 NB between Frederick Miller Way/Canal St Ramps Crash Types

Crash Type	Number of Crashes (2005-2009)	Percentage of Total Crashes			Total
		Property Damage	Injury (A, B & C)	Fatality	
Angle	1	0.0%	5.9%	0.0%	**5.9%**
Rear-End	4	5.9%	17.6%	0.0%	**23.5%**
Sideswipe	4	17.6%	5.9%	0.0%	**23.5%**
Single Vehicle	8	29.4%	17.6%	0.0%	**47.1%**
Other	0	0.0%	0.0%	0.0%	**0.0%**
Total	**17**	**52.9%**	**47.1%**	**0.0%**	**100.0%**

As seen in **Table 6** on the preceding page, single vehicle crashes account for almost half of all crashes on WIS 341 NB between the Frederick Miller Way/Canal Street ramps from 2005-2009. Additionally, rear-end and sideswipe crashes account for an additional 45% of all crashes here between 2005 and 2009. Crashes with the median barrier (approximately 1/3rd) and the outside curb (approximately 1/3rd) account for most of the single vehicle crash types on WIS 341 NB at this location. Single vehicle crashes that involve the median barrier, and similarly a curb section of roadway, typically result from a driver losing control of their vehicle.

In this instance, a loss of vehicle control could be attributed to the transition in roadway geometric attributes. South of this location, WIS 341 changes from a local street, at the intersection with National Avenue, with a posted speed limit of 30 miles per hour (MPH) to a grade separated roadway with a posted speed of 45 MPH through the Stadium Interchange. The change in the geometry and speed limit of WIS 341 north of National Avenue inherently leads to drivers speeding up to match the increased speed limit and speed of other vehicles over a short distance. Consequently, this can result in an increased potential for a loss of vehicle control.

I-94 Eastbound between Mitchell Boulevard Exit and Entrance Ramps

This segment is located on I-94 EB between the Mitchell Boulevard exit ramp diverge and entrance ramp merge, which is a distance of less than 1500 feet. The design of the Mitchell Boulevard service interchange is unique within the study area, as it is the only service interchange that features left-hand exit and entrance service ramps, with the exception of the I-94 WB exit ramp which is a typical right-hand service exit ramp. **Exhibit 9** below shows the location of this segment, which has three general purpose lanes and a full right shoulder between the ramps and over Mitchell Boulevard.

Exhibit 9 – I-94 EB between Mitchell Blvd Ramps Overview

The total average crash rate for this segment over 2005 to 2009 is 387.6 crashes/100M VMT, which is slightly greater than four and one half times the statewide average total crash rate. The total average severe crash rate for this segment over the same period is 104.0 crashes/100M VMT, which is approximately 315% greater than the statewide average severe crash rate. **Table 7** below shows the breakdown of crash types along this freeway segment from 2005-2009.

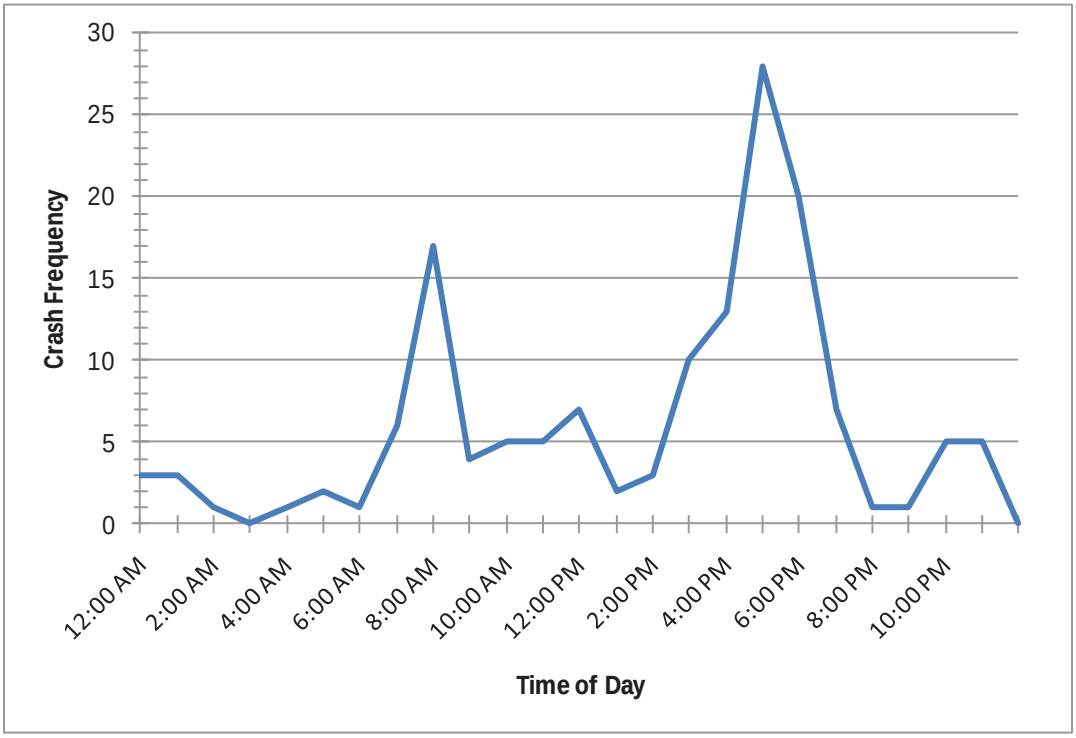
Table 7 – I-94 EB between Mitchell Blvd Ramps Crash Types

Crash Type	Number of Crashes (2005-2009)	Percentage of Total Crashes			Total
		Property Damage	Injury (A, B & C)	Fatality	
Angle	4	1.3%	1.3%	0.0%	**2.7%**
Rear-End	91	44.3%	16.8%	0.0%	**61.1%**
Sideswipe	23	13.4%	2.0%	0.0%	**15.4%**
Single Vehicle	29	13.4%	6.0%	0.0%	**19.5%**
Other	2	0.7%	0.7%	0.0%	**1.3%**
Total	**149**	**73.2%**	**26.8%**	**0.0%**	**100.0%**

As seen in **Table 7** above, rear-end crashes account for slightly more than 60% of all crashes that occurred at this location from 2005 to 2009. The high percentage of rear-end crashes on this segment of I-94 is likely related due to peak hour congestion, as detailed previously, where vehicles are stuck in “stop and go” traffic. This is a logical conclusion to explain the high degree of rear-end crashes at this location as the Stadium Interchange is located just east of this segment and congestion can result in queuing on I-94 EB from the Stadium Interchange to past Mitchell Boulevard.

Exhibit 10 on the following page shows the frequency of crashes on I-94 EB between the Mitchell Boulevard exit and entrance ramps. As seen in **Exhibit 10**, the greatest frequency of crashes at this location occurs during the PM peak hour, when traffic volumes, and therefore congestion, are high. Additionally, the high PM peak crash frequency could be related to Milwaukee Brewers’ home games at Miller Park, where higher volumes on I-94 are expected as drivers attempt to access WIS 341 to reach parking areas.

Exhibit 10 - Crash Frequency on I-94 EB between Mitchell Blvd Ramps



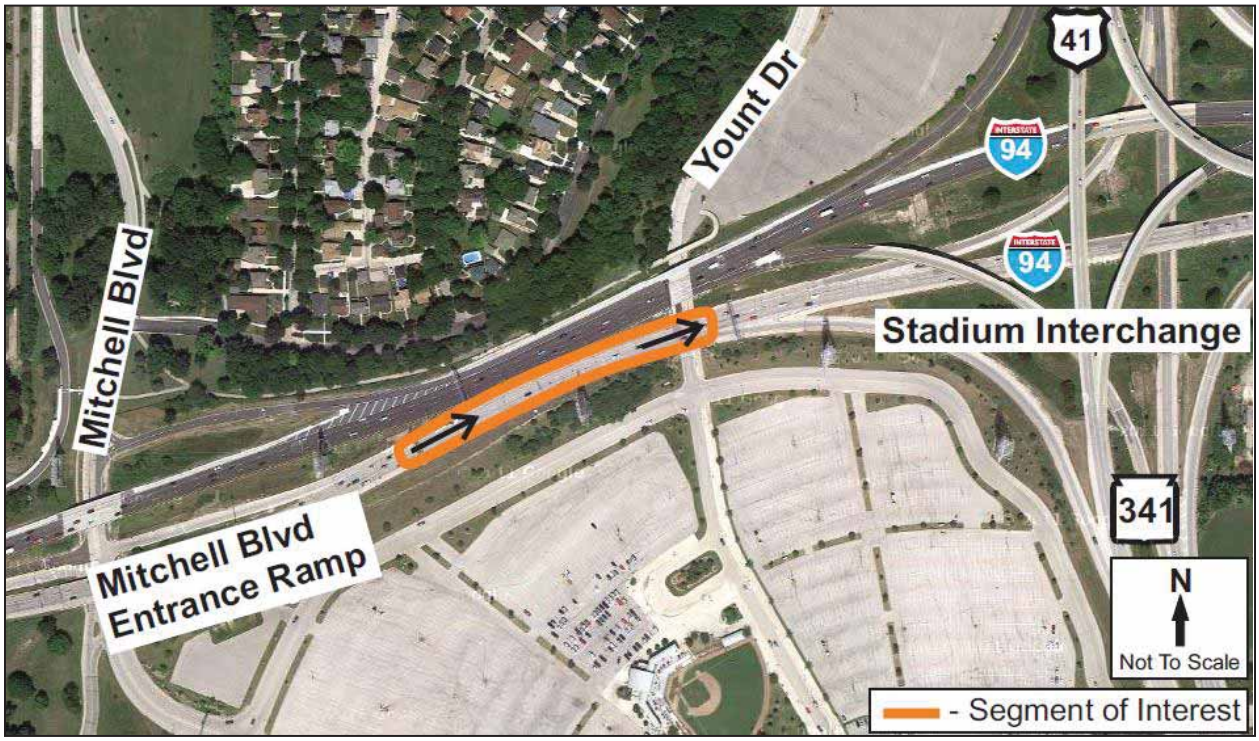
In addition, sideswipe and single vehicle crashes together account for approximately 25% of all crashes that occurred on I-94 EB between the Mitchell Boulevard exit and entrance ramps from 2005 to 2009. Sideswipe crashes at this location can be attributed to the unconventional design of the Mitchell Boulevard service interchange, where the EB exit and entrance ramps are located on the left side of I-94 EB. This configuration violates modern driver expectations, as service ramps are usually located off the right side of the roadway. This design can cause quick and sudden lane changes on I-94, as drivers attempt to reach their desired route, which typically leads to sideswipe crashes. Additionally, single vehicle crashes are usually a result of a loss of vehicle control, which could also be due to the unconventional design of the Mitchell Boulevard service interchange as drivers try to make quick lane changes.

I-94 Eastbound from Mitchell Boulevard Entrance Ramp to Stadium Interchange

This segment is located on I-94 EB from east of the Mitchell Boulevard entrance ramp merge to west of the Stadium Interchange system ramps, which is a distance of less than 700 feet. As previously noted, the Mitchell Boulevard service interchange features a unique design with left-hand exit and entrance service ramps. Similarly, the Stadium Interchange features left-hand and right-hand system ramps.

Exhibit 11 on the following page shows the location of this segment, which has four general purpose lanes and a full right shoulder. The Mitchell Boulevard entrance ramp is merged with I-94 EB at this location via a left-hand lane addition, which is carried downstream to the Stadium Interchange I-94 EB to US 41 NB (W-N) system ramp.

Exhibit 11 – I-94 EB from Mitchell Blvd Entrance Ramp to Stadium Interchange Overview



The total average crash rate for this segment over 2005-2009 is 344.1 crashes/100M VMT, which is slightly more than four times greater than the statewide average total crash rate. The total average severe crash rate for this segment over the same period is 105.0 crashes/100M VMT, which more than four times greater than the statewide average severe crash rate. **Table 8** below shows the breakdown of crash types along this freeway segment from 2005-2009.

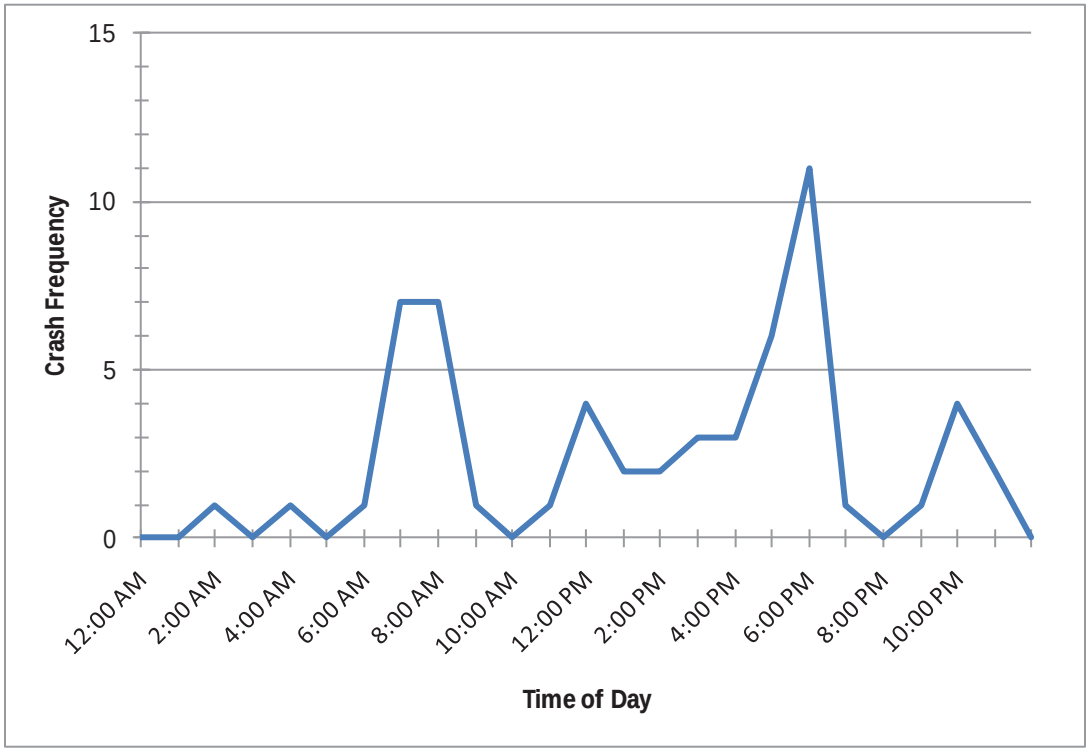
Table 8 – I-94 EB from Mitchell Blvd Entrance Ramp to Stadium Interchange Crash Types

Crash Type	Number of Crashes (2005-2009)	Percentage of Total Crashes			Total
		Property Damage	Injury (A, B & C)	Fatality	
Angle	0	0.0%	0.0%	0.0%	**0.0%**
Rear-End	42	44.1%	27.1%	0.0%	**71.2%**
Sideswipe	7	10.2%	1.7%	0.0%	**11.9%**
Single Vehicle	10	15.3%	1.7%	0.0%	**16.9%**
Other	0	0.0%	0.0%	0.0%	**0.0%**
Total	**59**	**69.5%**	**30.5%**	**0.0%**	**100.0%**

As seen in **Table 8** above, rear-end crashes account for more than 70% of all crashes in this area between 2005 and 2009. As previously outlined, a high occurrence of rear-end crashes on a roadway typically indicates an issue with peak hour congestion, which is certainly the case on I-94 EB from the Mitchell Boulevard entrance ramp to the Stadium Interchange.

Exhibit 12 below shows the frequency of crashes on I-94 EB from the Mitchell Boulevard entrance ramp to the Stadium Interchange. Similar to the crash frequency upstream of this location, the greatest frequency of crashes occurs during the PM peak hour, when congestion is highest. Additionally, the high PM peak crash frequency could be related to Milwaukee Brewers' home games at Miller Park, where higher volumes on I-94 are expected as drivers attempt to access WIS 341 to reach parking areas.

Exhibit 12 - Crash Frequency on I-94 EB from Mitchell Blvd Entrance Ramp to Stadium Interchange



Additionally, rear-end crashes at this location can partially be attributed to the design of both the Mitchell Boulevard service interchange and Stadium system Interchange. The Mitchell Boulevard entrance ramp to I-94 EB is a left-hand entrance ramp at this location that becomes an auxiliary (i.e. "drop") lane to the Stadium Interchange W-N system ramp, which is also a left-hand ramp.

Due to the unconventional design of the Mitchell Boulevard EB entrance ramp, drivers who enter I-94 EB on the left side of the roadway and wish to exit to WIS 341 SB via the Stadium Interchange I-94 EB to WIS 341 SB (W-S) system ramp are required to make three lane changes across I-94 EB to their desired route. This movement, in addition to drivers on I-94 EB who wish to utilize any system ramp from the west, creates a complicated scenario of weaving and lane changing, which could result in quick breaking and maneuvering where rear-end and some sideswipe crashes are the likely result.

Stadium Interchange System Ramp Crash Analysis

The Stadium Interchange services traffic movements in all directions to and from I-94, US 41, and WIS 341. This system interchange features the typical geometry of other

system interchanges constructed during the 1960s and 1970s, with left-hand and right-hand system ramp locations. Miller Park, home of the Milwaukee Brewers', is located in the southwest quadrant of the Stadium Interchange. In addition, parking lots for Miller Park are also located in the northwest and southeast quadrants. Miller Park, and its surrounding parking, is a significant traffic generator within the study area during the baseball season. Additionally, all system ramp movements from either US 41 or WIS 341 to I-94 in either direction are metered.

The average total crash rate on system ramps within the Stadium Interchange is 0.8 crashes per one million entering vehicles (crashes/1MEV) from 2005 to 2009. **Exhibit 3** on page 7 shows total average crash rates in the study area, including the Stadium Interchange system ramps. As mentioned previously, for analysis purposes as part of this technical memorandum, I-94, US 41, and WIS 341 in each direction through the Stadium Interchange are considered system ramp movements (i.e. I-94 EB through the Stadium Interchange is referred to as the W-E system ramp).

The following sections discuss Stadium Interchange system ramp crash rates in more detail, including the severity and system ramp "hot spots".

System Ramp Crash Rates and Types

Table 9 below shows the average total crash rate for each system interchange ramp for 2005-2009. The I-94 EB to US 41 northbound (NB) (W-N) system ramp has the highest average total crash rate from 2005 to 2009 of 3.3 crashes/1MEV. This equates to 49 crashes on the W-N system ramp between 2005 and 2009. The I-94 westbound (WB) to US 41 NB (E-N) and US 41 SB to WIS 341 SB (N-S) system ramps both have the lowest average total crash rate between 2005 and 2009 of 0.2 crashes/1MEV, which equals to four crashes on each system ramp over this period. **Table 10** on the following page shows the breakdown of crash types for the Stadium Interchange system ramps.

Table 9 – Stadium Interchange System Ramp Average Crash Rates (2005-2009)

System Ramp Movement	Crash Rate (Crashes/1MEV)			
	Total	Property Damage	Injury	Fatal
I-94 EB to US 41 NB (W-N)	3.3	2.1	1.2	0.0
I-94 EB through Stadium Int (W-E)	0.3	0.2	< 0.1	0.0
I-94 EB to WIS 341 SB (W-S)	0.6	0.4	0.1	0.1
I-94 WB to US 41 NB (E-N)	0.2	0.1	< 0.1	0.0
I-94 WB through Stadium Int (E-W)	0.4	0.3	0.1	< 0.1
I-94 WB to WIS 341 SB (E-S)	1.0	0.7	0.3	0.0
WIS 341 NB to I-94 WB (S-W)	0.5	0.3	0.2	0.0
WIS 341 NB to US 41 NB (S-N)	0.4	0.2	0.2	0.0
WIS 341 NB to I-94 EB (S-E)	0.8	0.5	0.2	0.0
US 41 SB to I-94 WB (N-W)	0.5	0.4	< 0.1	0.0
US 41 SB to WIS 341 SB (N-S)	0.2	0.1	0.1	0.0
US 41 SB to I-94 EB (N-E)	0.9	0.6	0.3	0.0
Average for Stadium Interchange	**0.8**	**0.5**	**0.2**	**< 0.1**

Table 10 – Study Area Stadium Interchange System Ramp Crash Types

Crash Type	Number of Crashes (2005-2009)	Percentage of Total Crashes			Total
		Property Damage	Injury (A, B & C)	Fatality	
Angle	3	1.5%	0.0%	0.0%	**1.5%**
Rear-End	58	18.9%	9.9%	0.0%	**28.8%**
Sideswipe	19	8.5%	1.0%	0.0%	**9.5%**
Single Vehicle	120	40.8%	17.9%	1.0%	**59.7%**
Other	1	0.5%	0.0%	0.0%	**0.5%**
Total	**201**	**70.2%**	**28.8%**	**1.0%**	**100.0%**

As seen in **Table 10** above, single vehicle crashes on system ramps within the Stadium Interchange account for almost 60% of all crashes. Of the 120 single vehicle crashes, 91 (about 75%) involved a crash with a fixed object (i.e. median barrier, impact attenuator, curb, etc.). In general, a high occurrence of single vehicle crashes on a ramp typically indicates a loss of vehicle control by the driver due to any number of factors, including roadway geometrics, driver overconfidence, driver inattentiveness, speeding, etc.

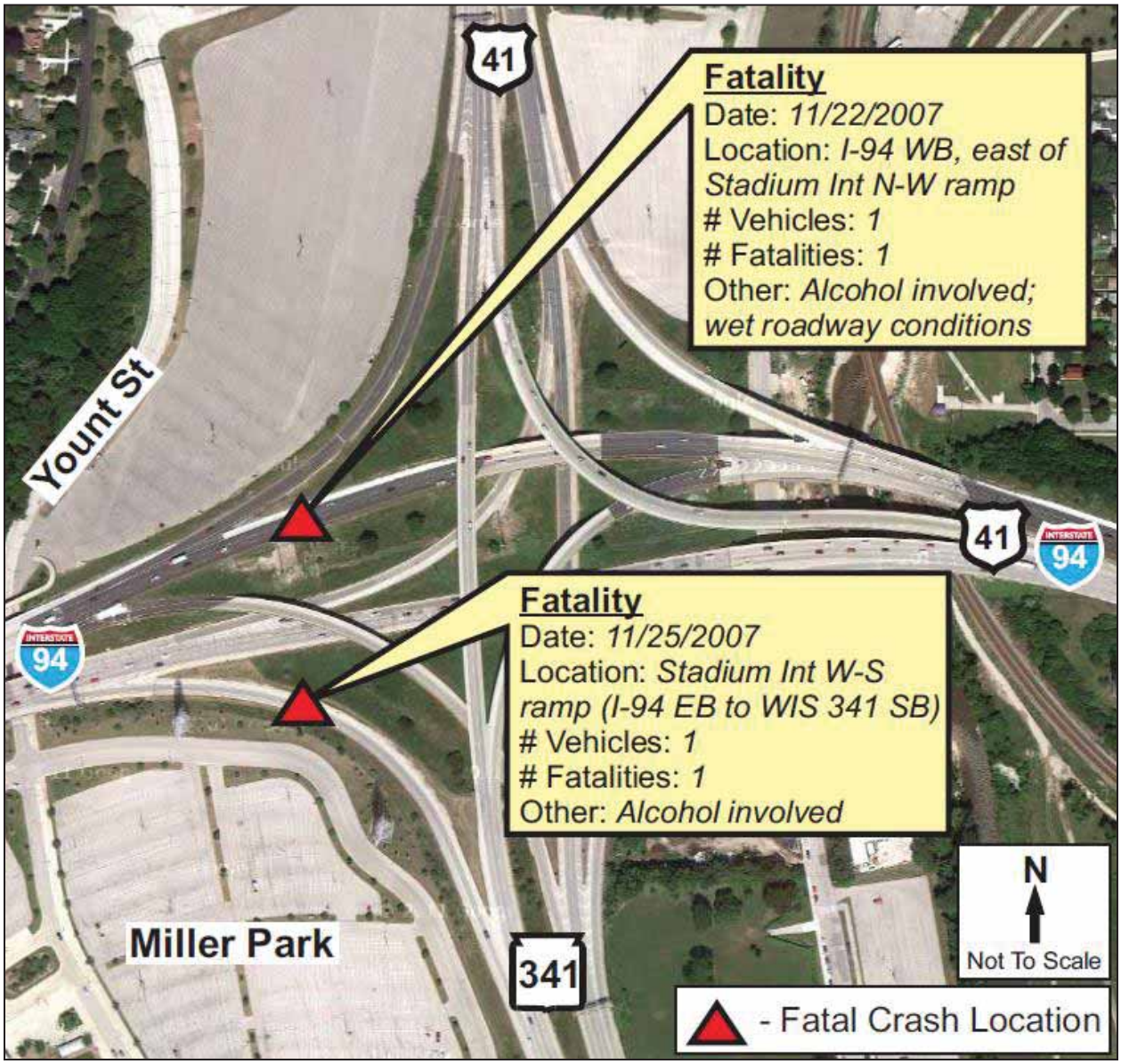
Additionally, rear-end crashes further account for almost 30% of all crashes on Stadium Interchange system ramps. System ramp rear-end crashes typically indicate merging issues, where system ramp traffic must slow to find gaps in mainline traffic to merge. System ramp traffic upstream from the merge location may not have enough sight or decision distance, in order to slow and a rear-end crash may result.

System Ramp Crash Severity

The average severe (injury and fatal) crash rate from 2005-2009 on the Stadium Interchange system ramps is 0.2 crashes/1MEV. The system ramp with the highest average severe crash rate is the W-N system ramp, which exhibits an average severe crash rate of 1.2 crashes/1MEV. The N-W and E-N system ramps, in addition to I-94 EB through the Stadium Interchange (E-W), each have the lowest average severe crash rate of less than 0.1 crashes/1MEV, which equates to one severe crash on each ramp due to rounding.

Included in the previously mentioned average severe crash rates are two fatal crashes that occurred on Stadium Interchange system ramps from 2005-2009. **Exhibit 13** on the following page shows the location of both fatal crashes on Stadium Interchange system ramps between 2005 and 2009.

Exhibit 13 - Stadium Interchange System Ramp Fatal Crash Locations



As seen in **Exhibit 13**, both fatal crashes on Stadium Interchange system ramps occurred during November 2007, and one fatality was the result of each crash. Both crashes involved only a single vehicle. Additionally, data from the TOPS Lab site corresponding to each crash noted that alcohol was a factor, in addition to wet roadway conditions for the crash located on I-94 WB through the Stadium Interchange.

System Ramp Crash "Hot Spots"

As shown in **Table 9** on page 21, only three of the 12 system ramps within the Stadium Interchange exhibit an average total crash rate higher than the average Stadium Interchange system ramp (0.8 crashes/1MEV).

The following sections further highlight and analyze system ramps within the Stadium Interchange that exhibit significantly high total average crash rates, as compared to the average Stadium Interchange system ramp crash rate of 0.8 crashes/1MEV.

I-94 Eastbound to US 41 Northbound (W-N) System Ramp

The W-N system ramp is a left-hand exit to left-hand entrance ramp located on the lowest "level" (i.e. at grade with WIS 341 NB through the Stadium Interchange) of the Stadium Interchange. This system ramp is less than 1100 feet long from the I-94 EB diverge point to the WIS 341 NB merge point. The ramp is formed from an EB auxiliary lane addition from the Mitchell Boulevard entrance ramp to I-94 EB on the left-hand side of the EB roadway. Traffic on the W-N system ramp is then forced to merge with the median lane of WIS 341 NB traffic from the left-hand side of the NB roadway.

Exhibit 14 on the following page shows the location of this system ramp, which has one general purpose lane.

The total average crash rate for this system ramp from 2005 to 2009 is 3.3 crashes/1MEV, which is more than four times greater than the Stadium Interchange average system ramp total crash rate. The total average severe crash rate for the W-N system ramp over the same period is 1.2 crashes/1MEV, which is approximately five times greater than the Stadium Interchange average system ramp severe crash rate. **Table 11** on the following page shows the breakdown of crash types on the W-N system ramp from 2005-2009.

Exhibit 14 – I-94 EB to US 41 NB (W-N) System Ramp Overview

Table 11 – I-94 EB to US 41 NB (W-N) System Ramp Crash Types

Crash Type	Number of Crashes (2005-2009)	Percentage of Total Crashes			Total
		Property Damage	Injury (A, B & C)	Fatality	
Angle	0	0.0%	0.0%	0.0%	**0.0%**
Rear-End	6	10.2%	2.0%	0.0%	**12.2%**
Sideswipe	2	2.0%	2.0%	0.0%	**4.1%**
Single Vehicle	40	49.0%	32.7%	0.0%	**81.6%**
Other	1	2.0%	0.0%	0.0%	**2.0%**
Total	**49**	**63.3%**	**36.7%**	**0.0%**	**100.0%**

As seen in **Table 11** on the previous page, single vehicle crashes account for more than 80% of all crashes on the W-N system ramp from 2005 to 2009. Of the 40 single vehicle crashes on the W-N system ramp, 31 (about 75%) involved crashes with the median barrier. Crash data collected as part of this technical memorandum is not specific to which median barrier each crash involved (i.e. I-94 EB or WIS 341 NB barrier). However, as previously noted, single vehicle crashes that involve a median barrier are typically the result of a loss of vehicle control, either due to roadway geometry or driving characteristics.

On this system ramp, a loss of vehicle control could be attributed to the signed speed limit of the system ramp. The W-N system ramp is signed for 40 MPH, while the I-94 EB mainline has a speed limit of 55 MPH. The system ramp is likely signed for 40 MPH due to the existing geometry of the system ramp, as it is at grade with the WIS 341 NB roadway (lowest "level" of the interchange) and passes beneath the WIS 341 SB and I-94 WB roadways.

Due to the 40 MPH speed limit on the W-N system ramp, drivers must reduce their speed quickly before traveling through the curve of the system ramp to head NB on WIS 341. This speed change between the system ramp and mainline, as well as the probability of drivers traveling in excess of the posted speed limits, could result in a loss of vehicle control and subsequent crash involving a median barrier.

Additionally, rear-end crashes on the W-N system ramp (approximately 12% of all crashes) could be the result of merging difficulties of system ramp traffic with mainline WIS 341 NB traffic. Merging at this location, on the left side of the NB roadway, could cause drivers to slow in order to merge or find gaps in WIS 341 NB traffic. As a result, rear-end crashes can occur if traffic upstream on the W-N system ramp does not see or have adequate time to slow themselves to accommodate the slowed vehicle trying to merge.

I-94 Westbound to WIS 341 Southbound (E-S) System Ramp

The E-S system ramp is a left-hand exit to left-hand entrance ramp located on the second "level" of the Stadium Interchange. This system ramp is about 1000 feet long from the I-94 WB diverge point to the WIS 341 SB merge point. The ramp is formed from a deceleration lane located off the median lane of the I-94 WB roadway. Traffic on the E-S system ramp is then merged with WIS 341 SB traffic as a median lane addition to the SB roadway.

Exhibit 15 on the following page shows the location of this system ramp, which has one general purpose lane.

Exhibit 15 – I-94 WB to WIS 341 SB (E-S) System Ramp Overview

The total average crash rate for this system ramp from 2005 to 2009 is 1.0 crashes/1MEV, which is about 25% greater than the Stadium Interchange average system ramp total crash rate. The total average severe crash rate for the E-S system ramp over the same period is 0.3 crashes/1MEV, which is 50% greater than the Stadium Interchange average system ramp severe crash rate. **Table 12** on the following page shows the breakdown of crash types on the E-S system ramp from 2005-2009.

Table 12 – I-94 WB to WIS 341 SB (E-S) System Ramp Crash Types

Crash Type	Number of Crashes (2005-2009)	Percentage of Total Crashes			Total
		Property Damage	Injury (A, B & C)	Fatality	
Angle	0	0.0%	0.0%	0.0%	**0.0%**
Rear-End	0	0.0%	0.0%	0.0%	**0.0%**
Sideswipe	0	0.0%	0.0%	0.0%	**0.0%**
Single Vehicle	14	71.4%	28.6%	0.0%	**100.0%**
Other	0	0.0%	0.0%	0.0%	**0.0%**
Total	**14**	**71.4%**	**28.6%**	**0.0%**	**100.0%**

As seen in **Table 12** above, single vehicle crashes account for all crashes on the I-94 WB to WIS 341 SB (E-S) system ramp from 2005 to 2009. Of the 14 single vehicle crashes on the E-S system ramp, all but one crash involved the median barrier. As previously noted, the crash data that was collected as part of this technical memorandum is not specific to which median barrier each crash involved. However, as previously discussed, single vehicle crashes that involve a median barrier are typically the result of a loss of vehicle control.

On the E-S system ramp, similar to the discussion of the W-N system ramp, a loss of vehicle control can possibly be attributed to the speed limit of the system ramp itself. However, unlike the W-N system ramp, the E-S system ramp does not have a posted speed limit. Still, despite a lack of a posted speed limit for the E-S system ramp, the same principle of a speed reduction issue between the system ramp and I-94 mainline applies, as discussed with the W-N system ramp previously, due to the curvature of the system ramp.

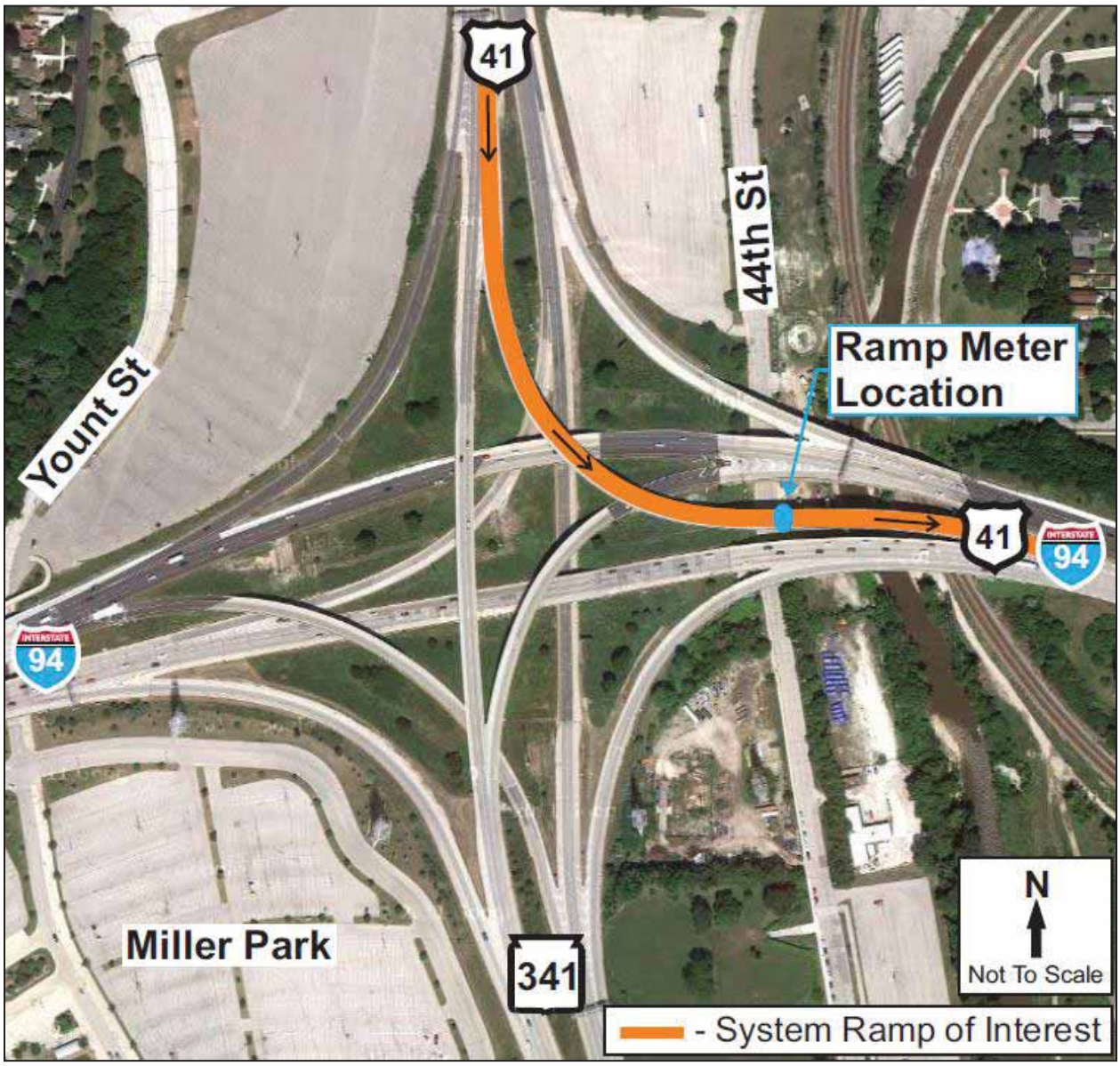
The geometry and horizontal curvature of the E-S system ramp does not allow drivers to travel this ramp at a high rate of speed, similar to mainline I-94 travel speeds, which could result in a loss of vehicle control and ensuing crash involving a median barrier.

US 41 Southbound to I-94 Eastbound (N-E) System Ramp

The N-E system ramp is a left-hand exit to left-hand entrance ramp located on the top “level” of the Stadium Interchange. This system ramp is about 1300 feet long from the US 41 SB diverge point to the I-94 EB merge point. The ramp is formed from the median lane of US 41 SB to the left side of the I-94 EB roadway. Traffic is metered in two lanes on the N-E system ramp approximately 1000 feet downstream of the diverge point of the system ramp with the US 41 SB mainline. After the ramp meter, the single lane of the N-E system ramp is forced to merge with the median lane of I-94 EB.

Exhibit 16 on the following page shows the location of this system ramp, which opens to two lanes at the ramp meter and one general purpose lane with a wide shoulder.

Exhibit 16 – US 41 SB to I-94 EB (N-E) System Ramp Overview



The total average crash rate for this system ramp from 2005 to 2009 is 0.9 crashes/1MEV, which is almost 12.5% greater than the Stadium Interchange average system ramp total crash rate. The total average severe crash rate for the N-E system ramp over the same period is 0.3 crashes/1MEV, which is approximately 50% greater than the Stadium Interchange average system ramp severe crash rate. **Table 13** on the following page shows the breakdown of crash types on the N-E system ramp from 2005-2009.

Table 13 – US 41 SB to I-94 EB (N-E) System Ramp Crash Types

Crash Type	Number of Crashes (2005-2009)	Percentage of Total Crashes			Total
		Property Damage	Injury (A, B & C)	Fatality	
Angle	0	0.0%	0.0%	0.0%	**0.0%**
Rear-End	0	0.0%	0.0%	0.0%	**0.0%**
Sideswipe	2	14.3%	0.0%	0.0%	**14.3%**
Single Vehicle	12	57.1%	28.6%	0.0%	**85.7%**
Other	0	0.0%	0.0%	0.0%	**0.0%**
Total	**14**	**71.4%**	**28.6%**	**0.0%**	**100.0%**

As seen in **Table 13** above, single vehicle crashes account for 85% of all crashes on the US 41 SB to I-94 EB (N-E) system ramp from 2005 to 2009. Of the 12 single vehicle crashes on the N-E system ramp, nine (about 75%) crashes involved the median barrier and one other crash involved an impact attenuator. As previously discussed, the crash data that was collected as part of this technical memorandum is not specific to which median barrier each crash involved. However, as discussed with the W-N and E-S system ramps, single vehicle crashes that involve a median barrier, or similarly an impact attenuator, typically are the result of a loss of vehicle control.

On the N-E system ramp, similar to the discussions of the W-N and E-S system ramps, a loss of vehicle control may be linked to the speed limit of the system ramp itself. Similarly to the W-N system ramp, the N-E system ramp has a posted speed limit, although the posted speed limit for the N-E system ramp is 35 MPH. Therefore, the same principle of a speed reduction issue between the system ramp and US 41 mainline applies due to the curvature of the system ramp.

The geometry and horizontal curvature of the N-E system ramp does not allow drivers to travel this ramp at a high rate of speed, similar to mainline US 41 travel speeds, which could result in a loss of vehicle control and ensuing crash involving a median barrier.

Another factor to consider on this particular system ramp is the use and location of a ramp meter. A ramp meter is used to break up vehicle platoons and control the rate of entry onto an interstate or highway mainline. However, the use of a ramp meter on a system ramp is unconventional, and more than likely unexpected, unless the driver is familiar with the area. Therefore, this may be the cause of some single vehicle (avoidance of a vehicle/potential crash due to a high rate of speed or distraction) crashes on this system ramp.

Service Interchange Ramp Crash Analysis

The I-94 East-West Stadium Interchange study area encompasses the following 11 service interchanges and 33 service ramps to and from I-94, US 41, and WIS 341, as seen in **Exhibit 1** on page 3. These service interchanges and ramps are also listed on the following page.

- 70th Street/68th Street (split full diamond service interchange)
  - EB and WB entrance and exit ramps
- Hawley Road (full service interchange)
  - EB and WB entrance and exit ramps
- Mitchell Boulevard (full service interchange with left-hand service ramps)
  - EB and WB entrance and exit ramps
- 35th Street (full diamond service interchange with north-side CD roadway)
  - EB and WB (via Park Hill Avenue) entrance and exit ramps
- 28th Street (single ramp service interchange)
  - WB entrance ramp
- 26th Street/25th Street (split service interchange)
  - EB exit and entrance ramps
  - WB exit ramp
- Frederick Miller Way/Canal Street (full service interchange)
  - NB and SB entrance and exit ramps
- Wisconsin Avenue (US 18)/Wells Street (split full diamond service interchange with CD roadways)
  - NB and SB entrance and exit ramps
- State Street/Martin Drive/Alois Street (split full service interchange)
  - NB and SB entrance and exit ramps
- Washington Boulevard (single ramp service interchange)
  - NB exit ramp
- 47th Street/Lloyd Street (split partial diamond service interchange)
  - NB exit ramp
  - SB entrance ramp

These service interchanges and ramps provide local road access to and from I-94, US 41, and WIS 341. As listed above, the service interchange designs mostly differ from one another in traffic volume, geometry, and crash experience. For example, service

interchanges and ramps near Miller Park, and the surrounding parking lots, like Mitchell Boulevard and Frederick Miller Way/Canal Street experience high volumes during baseball season, as they feed directly into the Miller Park parking lots, and lower volumes throughout the rest of the year outside of baseball season.

Similarly, the 70th Street/68th Street service interchange and service ramps see an increase in traffic in the summer during events at the Wisconsin State Fair Grounds, including the Wisconsin State Fair in August, and lower volumes throughout the rest of the year when the ramps mostly service residential traffic. Conversely, service interchanges and ramps like 35th Street and 47th Street/Lloyd Street have mostly consistent volumes throughout the year as they service mainly residential traffic.

The average total crash rate on service ramps within the I-94 East-West Stadium Interchange study area is 0.5 crashes/1MEV from 2005 to 2009. **Exhibit 3** on page 6 shows the total average crash rate on the study area freeway system, including service interchange ramps.

The following sections discuss service interchange crash rates in more detail, including the severity and service ramp "hot spots".

Service Ramp Crash Rates and Types

Table 14 below shows the average total, property damage, injury, and fatal crash rates for each service interchange (i.e. all service ramps averaged together) for 2005-2009. The Mitchell Boulevard service interchange has the highest average crash rates across all three categories between 2005 and 2009, which includes an average total crash rate of 2.0 crashes/1MEV during this period. This average total crash rate is four times greater than the average study area service ramp crash rate. The US 41 NB exit ramp to Washington Boulevard had no crashes from 2005-2009. **Table 15** on the following page shows the breakdown of crash types for the service ramps within the I-94 East-West Stadium Interchange study area.

Table 14 – Service Interchange (Service Ramps) Average Crash Rates (2005-2009)

Service Interchange (Includes All Service Ramps)	Crash Rate (Crashes/1MEV)			
	Total	Property Damage	Injury	Fatal
70th Street/68th Street	0.3	0.2	0.2	0.0
Hawley Road	0.5	0.3	0.2	0.0
Mitchell Boulevard	2.0	1.8	0.3	0.0
35th Street	0.4	0.2	0.2	0.0
28th Street	0.6	0.5	0.1	0.0
26th Street/25th Street	0.3	0.2	0.1	0.0
Frederick Miller Way/Canal Street	0.3	0.2	0.1	0.0
Wisconsin Avenue/Wells Street	0.2	0.1	0.1	0.0
State Street/Martin Drive/Alois Street	0.1	0.0	0.0	0.0
Washington Boulevard	0.0	0.0	0.0	0.0
47th Street/Lloyd Street	0.4	0.4	0.1	0.0
Average for All Service Interchange Ramps	**0.5**	**0.4**	**0.1**	**0.0**

Table 15 – Study Area Service Interchange Ramp Crash Types

Crash Type	Number of Crashes (2005-2009)	Percentage of Total Crashes			Total
		Property Damage	Injury (A, B & C)	Fatality	
Angle	3	2.5%	0.0%	0.0%	**2.5%**
Rear-End	55	28.8%	17.9%	0.0%	**46.7%**
Sideswipe	16	11.0%	2.5%	0.0%	**13.5%**
Single Vehicle	44	28.8%	8.5%	0.0%	**37.3%**
Other	0	0.0%	0.0%	0.0%	**0.0%**
Total	**118**	**71.1%**	**28.9%**	**0.0%**	**100.0%**

As seen in **Table 15**, rear-end and single vehicle crashes account for over 80% of all crashes on service ramps within the I-94 East-West Stadium Interchange study area. In general, a large number of rear-end crashes on a ramp indicates peak hour congestion, where queuing from the ramp terminal may back up to such a distance on a ramp such that drivers entering or exiting the ramp may not have enough time to avoid a crash.

Additionally, of the 44 single vehicle crashes on the service ramps within the study area, 19 (about 45%) involved a crash with a fixed object (median barrier, curb, etc.). Similar to the discussion of the causes of system ramp crashes, single vehicle crashes on service ramps that involve fixed objects typically indicates a loss of vehicle control due to ramp geometry or driver attributes.

Service Ramp Crash Severity

As shown in **Table 14** on the previous page, the average severe crash rate on service ramps within the I-94 East-West Stadium Interchange study area from 2005-2009 is 0.1 crashes/1MEV. As mentioned previously, the Mitchell Boulevard service interchange has the highest average severe crash rate of any service interchange within the study area. Of the service ramps within the Mitchell Interchange, the Mitchell Boulevard EB exit and entrance ramps have the highest severe crash rate from 2005-2009 with 0.4 crashes/100M VMT, which is approximately four times greater than the study area average service ramp severe crash rate.

No fatal crashes occurred on any service ramp within the study area from 2005 to 2009.

Service Ramp Crash "Hot Spots"

Of the 33 service ramps within the I-94 East-West Stadium Interchange study area, 11 exhibit an average total crash rate higher than the average study area service ramp (0.5 crashes/1MEV).

The following sections further highlight and analyze service ramps within the I-94 East-West Stadium Interchange study area that exhibit significantly high total average crash rates, as compared to the average study area service ramp crash rate of 0.5 crashes/1MEV.

Mitchell Boulevard Entrance Ramp to I-94 Eastbound

The Mitchell Boulevard entrance ramp to I-94 EB is a left-hand entrance ramp located just west of the Stadium Interchange. This service ramp is less than 500 feet long from outside of the ramp terminal influence area to the I-94 EB merge point. The entrance ramp forms an EB auxiliary lane on the left side of I-94 EB where it meets the mainline. This lane is continued to the Stadium Interchange W-N system ramp, where it becomes the W-N system ramp, creating a weaving segment.

Due to this design, traffic from the service ramp is forced to make a lane change in order to head eastbound on I-94. Similarly, traffic on the Mitchell Boulevard EB entrance ramp that wishes to exit to WIS 341 SB is forced to make three lane changes, across a short distance to the Stadium Interchange, in order to exit on the W-S system ramp.

Exhibit 17 below shows the location of this left-sided entrance ramp to I-94 EB, which has one high-occupancy vehicle (HOV) lane and one general purpose lane at the ramp meter.

Exhibit 17 – Mitchell Blvd Entrance Ramp to I-94 EB Overview

The total average crash rate for this service ramp from 2005 to 2009 is 2.5 crashes/1MEV, which is five times greater than the study area service ramp average total crash rate. The total average severe crash rate for this entrance ramp over the same period is 0.4 crashes/1MEV, which is four times the study area service ramp average total crash rate. **Table 16** on the following page shows the breakdown of crash types on the Mitchell Boulevard entrance ramp to I-94 EB from 2005-2009.

Table 16 – Mitchell Blvd Entrance Ramp to I-94 EB Crash Types

Crash Type	Number of Crashes (2005-2009)	Percentage of Total Crashes			Total
		Property Damage	Injury (A, B & C)	Fatality	
Angle	0	0.0%	0.0%	0.0%	**0.0%**
Rear-End	2	16.7%	16.7%	0.0%	**33.3%**
Sideswipe	0	0.0%	0.0%	0.0%	**0.0%**
Single Vehicle	4	66.7%	0.0%	0.0%	**66.7%**
Other	0	0.0%	0.0%	0.0%	**0.0%**
Total	**6**	**83.3%**	**16.7%**	**0.0%**	**100.0%**

As shown in **Table 16** above, single vehicle and rear-end crashes account for all crashes on this service ramp from 2005 to 2009. Of the four single vehicle crashes, two involved a vehicle striking a bridge pier. Similar to situations previously outlined, single vehicle crashes that involve a fixed object, in this case either I-94 bridge over Mitchell Boulevard, typically occur as a result from a loss of vehicle control.

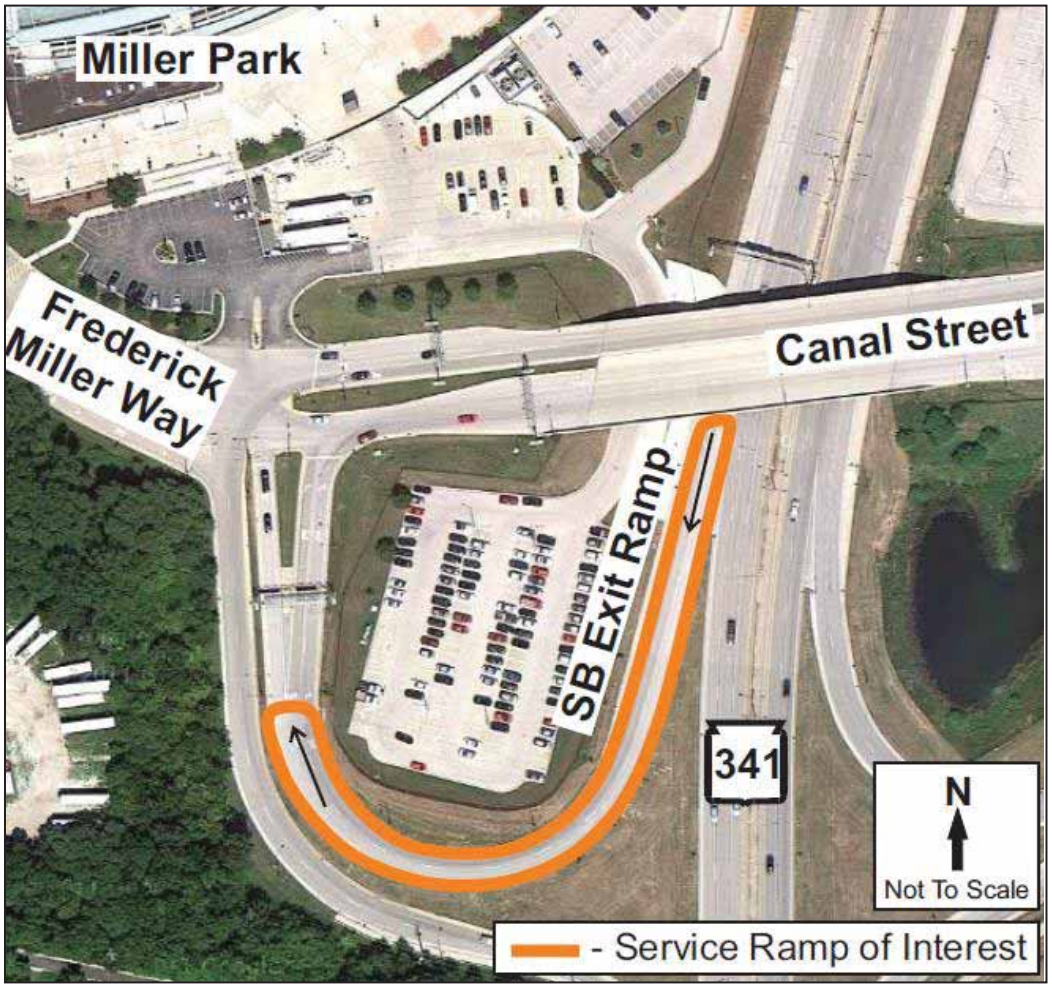
Additionally, the location of the entrance ramp could have an influence on the occurrence of rear-end and single vehicle crashes on this service ramp. Since the Mitchell Boulevard entrance ramp is a left-hand ramp drivers who enter I-94 EB at this location are required to make at least one lane change to continue on I-94 EB though the Stadium Interchange, and three lane changes to continue south on WIS 341. This lane changing across I-94 EB traffic from the entrance ramp creates a situation where drivers are forced to maneuver quickly, which could lead to rear-end and sideswipe crashes.

WIS 341 Southbound Exit Ramp to Frederick Miller Way/Canal Street

The WIS 341 SB exit ramp to Frederick Miller Way/Canal Street is a right hand exit loop ramp located near Miller Park, south of the Stadium Interchange. The service ramp is about 600 feet long from the WIS 341 SB diverge point to outside of the ramp terminal influence area. The exit ramp is formed from a lane drop, from the Stadium Interchange W-S system ramp, and an optional exit-thru lane on WIS 341 SB.

Exhibit 18 on the following page shows the location of this right-hand exit ramp from WIS 341 SB, which has two lanes to the ramp terminal at Frederick Miller Way.

Exhibit 18 – WIS 341 SB Exit Ramp to Frederick Miller Way/Canal St Overview



The total average crash rate for this service ramp from 2005 to 2009 is 0.8 crashes/1MEV, which is 60% greater than the study area service ramp average total crash rate. The total average severe crash rate for this exit ramp over the same period is 0.3 crashes/1MEV, which is triple the study area service ramp average total crash rate. **Table 17** below shows the breakdown of crash types on the WIS 341 SB exit ramp to Frederick Miller Way/Canal Street from 2005-2009.

Table 17 – WIS 341 SB Exit Ramp to Frederick Miller Way/Canal St Crash Types

Crash Type	Number of Crashes (2005-2009)	Percentage of Total Crashes			Total
		Property Damage	Injury (A, B & C)	Fatality	
Angle	0	0.0%	0.0%	0.0%	**0.0%**
Rear-End	0	0.0%	0.0%	0.0%	**0.0%**
Sideswipe	0	0.0%	0.0%	0.0%	**0.0%**
Single Vehicle	3	66.7%	33.3%	0.0%	**100.0%**
Other	0	0.0%	0.0%	0.0%	**0.0%**
Total	**3**	**66.7%**	**33.3%**	**0.0%**	**100.0%**

As seen in **Table 17** on the previous page, single vehicle crashes account for all crashes on this service ramp from 2005 to 2009. Of the three single vehicle crashes, two involved a vehicle striking a curb. Similar to the previous service ramp location, single vehicle crashes that involve a fixed object, in this case curbs located on either side of the SB exit ramp, typically occur as a result from a loss of vehicle control.

Additionally, crashes on this exit ramp could be attributed to its geometry. This service ramp is a half loop ramp, with a posted speed limit on the exit ramp of 25 MPH, where the ramp ties into the west ramp terminal at Frederick Miller Way/Canal Street over WIS 341. WIS 341 has a posted speed limit of 45 MPH and as such, drivers are likely approaching the ramp at a high rate of speed. However, due to the tight curvature of the ramp, drivers must slow rapidly on the exit ramp from 45 MPH to 25 MPH in order to negotiate the exit ramp safely. As a result, a driver could lose control of their vehicle if they approach the ramp curve too fast, possibly due to overconfidence or inattentive driving.

I-94 Eastbound Exit Ramp to 26th Street

The I-94 EB exit ramp to 26th Street is a right-hand exit ramp located near 27th Street at I-94. The service ramp is less than 500 feet long from the I-94 EB diverge point to outside of the ramp terminal influence area. The exit ramp is formed from a tapered deceleration lane on the right side of I-94 EB.

Exhibit 19 on the following page shows the location of this right-hand exit ramp from I-94 EB, which has one lane to the ramp terminal at the intersection of 26th Street and St Paul Avenue.

Exhibit 19 – I-94 EB Exit Ramp to 26th St Overview

The total average crash rate for this service ramp from 2005 to 2009 is 0.7 crashes/1MEV, which is 40% higher than the study area service ramp average total crash rate. The total average severe crash rate for this exit ramp over the same period is 0.1 crashes/1MEV, which is equal to the study area service ramp average total crash rate. **Table 18** below shows the breakdown of crash types on the I-94 EB exit ramp to 26th Street from 2005-2009.

Table 18 – I-94 EB Exit Ramp to 26th St Crash Types

Crash Type	Number of Crashes (2005-2009)	Percentage of Total Crashes			Total
		Property Damage	Injury (A, B & C)	Fatality	
Angle	0	0.0%	0.0%	0.0%	**0.0%**
Rear-End	6	55.6%	11.1%	0.0%	**66.7%**
Sideswipe	1	11.1%	0.0%	0.0%	**11.1%**
Single Vehicle	2	11.1%	11.1%	0.0%	**22.2%**
Other	0	0.0%	0.0%	0.0%	**0.0%**
Total	**9**	**77.8%**	**22.2%**	**0.0%**	**100.0%**

As seen in **Table 18** on the previous page, rear-end crashes account for almost 70% of all crashes on this service ramp from 2005 to 2009. Similar to the I-94 EB mainline at this location, rear-end crashes can generally be attributed to peak hour congestion. If there is queuing on the exit ramp, drivers may not be able to stop in time to avoid a collision on the ramp and a rear-end collision may result.

Additionally, the geometry of the exit ramp may influence crashes at this location. Queuing on the ramp may not be seen from the I-94 EB roadway, as the ramp has a horizontal and vertical profile change uphill, which could also result in rear-end, or single vehicle crashes from an attempt to avoid a crash.

Local Roadway Crash Analysis

Local road crash data on the TOPS lab site is limited to reported crashes that occur on United States or State Trunk Highways. As such, local roadway crash analysis and discussion, as part of this technical memorandum, includes the following roadways:

- Wisconsin Avenue (US 18) from 35th Street to Bluemound Road
- Bluemound Road (US 18) from Wisconsin Avenue to 70th Street
- National Avenue (WIS 59) from WIS 341 to Layton Boulevard/27th Street
- Layton Boulevard/27th Street (WIS 57) from National Avenue to Highland Boulevard

Additionally, crash data on the TOPS lab site is only directionally indicated on local roadways that are divided. Therefore, crash rates for local roadways within the study area are not directionally split.

The average total crash rate on the three local roadways within the I-94 East-West Stadium Interchange study area is 477.3 crashes/100M VMT from 2005 to 2009. The average severe crash rate on the same local roadways within the study area is 167.1 crashes/100M VMT. The average crash rates on local roadways within the study area takes into account crashes that occur within intersections on each roadway segment.

The average total, severe, and property damage only crash rates from 2005 to 2009 are shown in **Table 19** on the following page. **Table 20** on the following page shows each crash rate in comparison to the statewide average crash rate for an “urban street” segment.

Table 19 – Study Area Local Roadway Crash Rates

Local Roadway Segment	Crash Rate (Crashes/100M VMT)*			
	Total	Property Damage	Injury	Fatal
Wisconsin Avenue (US 18)	196.3	94.5	94.5	7.3
Bluemound Road (US 18)	296.2	200.6	95.6	0.0
National Avenue (WIS 59)	714.5	505.7	208.8	0.0
Layton Boulevard/27th Street (WIS 57)	702.1	440.1	260.2	1.8
Average for Local Roadway Segments	**477.3**	**310.2**	**164.8**	**2.3**

* - crash data is not directionally split

Table 20 – Study Area Local Roadway Crash Rate Comparison to Statewide "Urban Street" Average

Local Roadway Segment	% Difference to Statewide "Urban Street' Crash Rate			
	Total	Property Damage	Injury	Fatal
Wisconsin Avenue (US 18)	-33.9%	-54.3%	4.9%	1111.8%
Bluemound Road (US 18)	-0.3%	-2.9%	6.1%	-100.0%
National Avenue (WIS 59)	140.6%	144.8%	131.8%	-100.0%
Layton Boulevard/27th Street (WIS 57)	136.4%	113.0%	188.7%	197.0%
Average for Local Roadway Segments	**60.7%**	**50.2%**	**82.9%**	**277.2%**

* - crash data is not directionally split

As seen in **Table 20** above, the average total crash rate on a local roadway segment within the study area is more than 60% greater than the statewide average total crash rate for an "urban street" (297.0 crashes/100M VMT). National Avenue (WIS 59) from WIS 341 to Layton Boulevard/27th Street (WIS 57) has the highest total average crash rate from 2005 to 2009 with 714.5 crashes/100M VMT, which is almost two and one half times greater than the statewide average. National Avenue is a four-lane roadway between Layton Boulevard/27th Street and WIS 341, with parking lanes on each side of the roadway.

Included in the previously mentioned average severe crash rate are two fatal crashes that occurred on local roadway segments within the study area from 2005-2009. Both local roadway fatalities occurred on Wisconsin Avenue, involved one fatality, and both were flagged for driver impairment. Additionally, the 2007 fatal crash at the intersection of Wisconsin Avenue and Layton Boulevard/27th Street involved a pedestrian.

It is important to note that both fatal crashes occurred at signalized intersections that were not covered by WisDOT-supplied crash data.

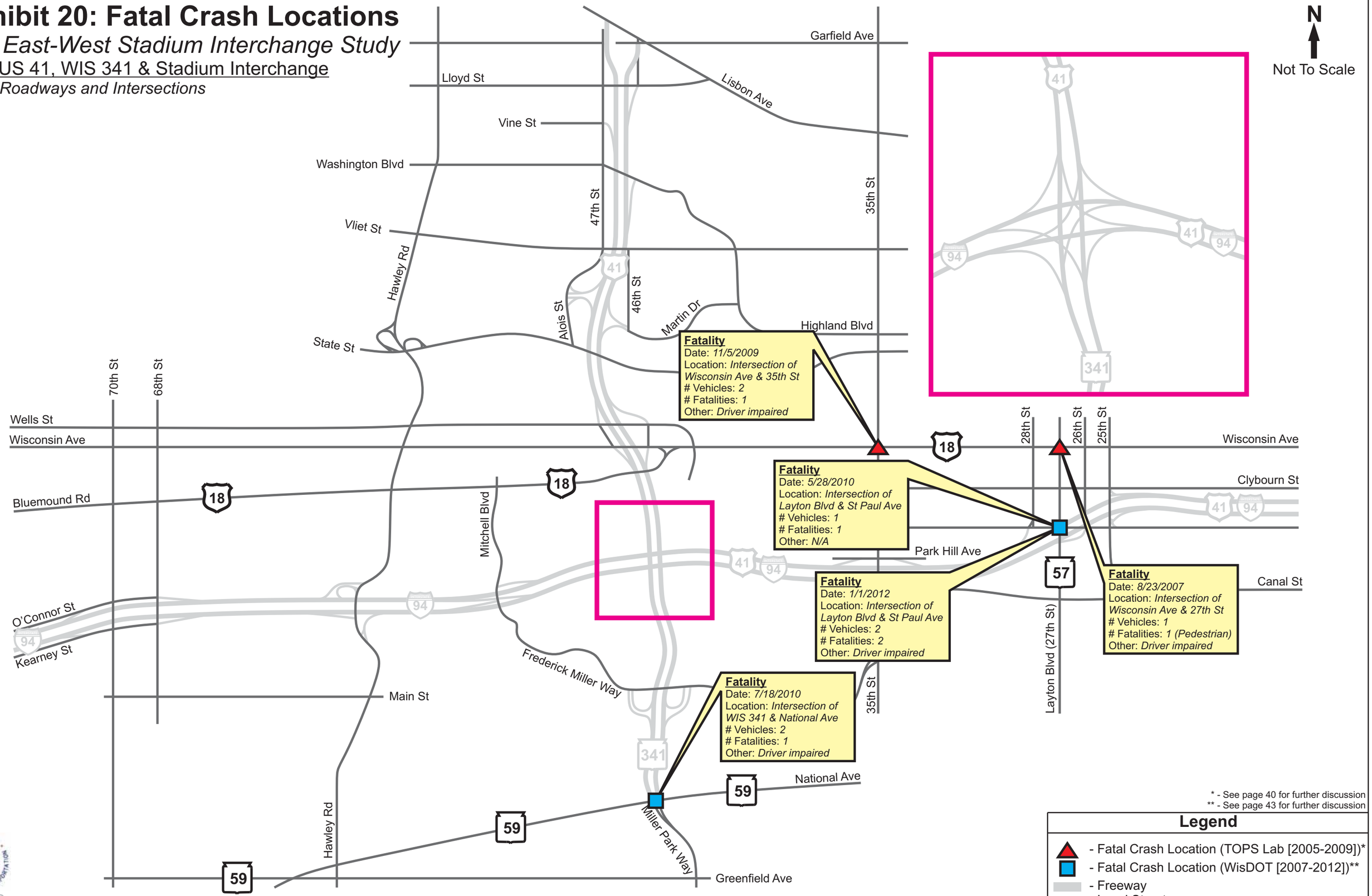
Exhibit 20 on the following page shows the locations of all fatal crashes on local roadways from 2005 to 2009 (via the TOPS Lab site), and local intersections from 2007 to early 2012 (via WisDOT crash data). The two fatal crashes covered by WisDOT crash data, as indicated in **Exhibit 20**, are discussed further in the following section.

Exhibit 20: Fatal Crash Locations

I-94 East-West Stadium Interchange Study

I-94, US 41, WIS 341 & Stadium Interchange

Local Roadways and Intersections



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Local Road Intersection Crash Analysis

As noted previously, local road intersection crash analysis and discussion, included as part of this technical memorandum, is currently limited to six critical intersections located within one half mile from the freeway corridor. These six local road intersections include the following:

- Layton Boulevard/27th Street (WIS 57) and St Paul Avenue
- Bluemound Road (US 18) and 68th Street
- Bluemound Road (US 18) and Hawley Road
- Bluemound Road (US 18) and Mitchell Boulevard
- Bluemound Road and Wisconsin Avenue (US 18)
- National Avenue (WIS 59) and WIS 341

Crash data for these intersections was analyzed over a five-year period, from 2007 through early 2012. For the purposes of this technical memorandum, the intersection influence area is defined as the physical intersection including the upstream and downstream roadway segments within 250 feet from the physical intersection. As such, crashes discussed in the following sections are limited to those that occurred within the confines of the individual intersection influence area.

Table 21 below shows the average total, property damage, injury, and fatal crash rates for each local road intersection from 2007 through early 2012. The intersection of Layton Boulevard/27th Street (WIS 57) and St Paul Avenue has the highest average total crash rate amongst the six local road intersections analyzed, and is about 70% greater than the average study area local road total crash rate.

Table 21 – Local Road Intersection Average Crash Rates (2007-2012)

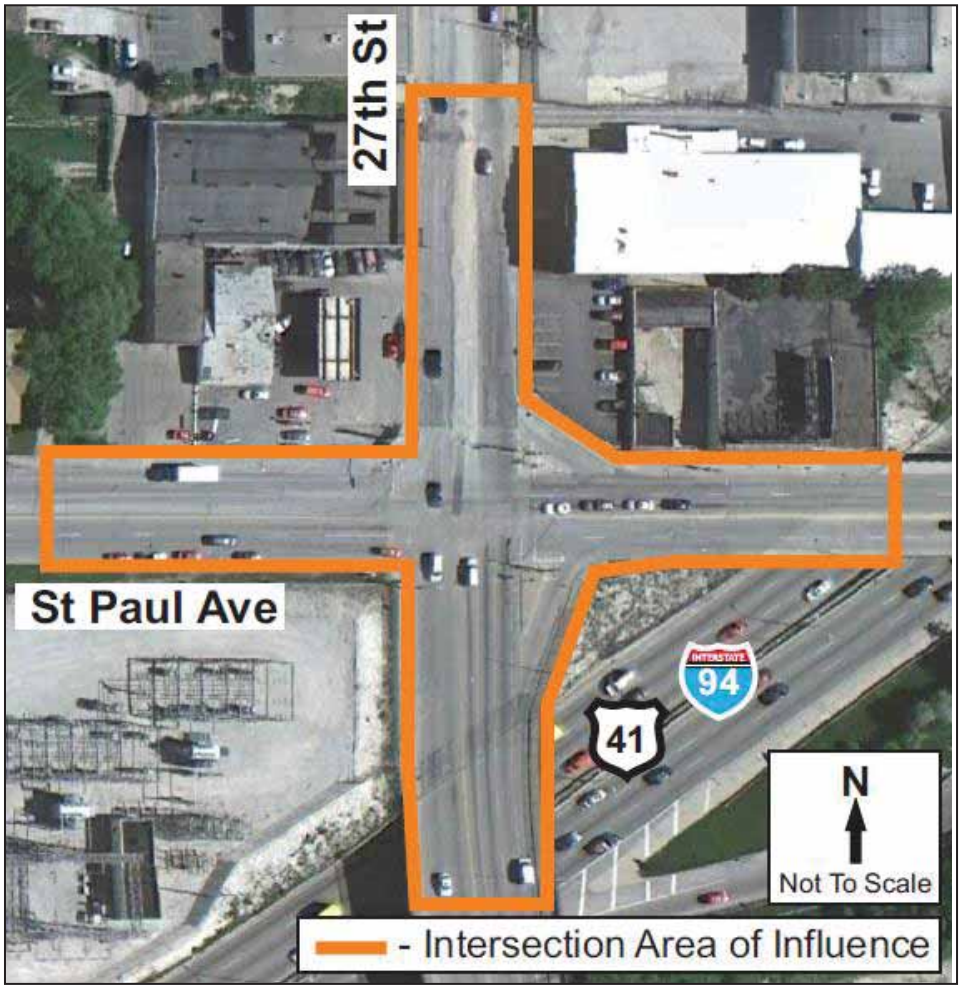
Local Road Intersection	Crash Rate (Crashes/1MEV)			
	Total	Property Damage	Injury	Fatal
Layton Boulevard/27th Street (WIS 57) & St Paul Avenue	1.2	0.7	0.4	< 0.1
National Avenue (WIS 59) & WIS 341	1.1	0.5	0.6	< 0.1
Bluemound Road (US 18) & 68th Street	0.9	0.4	0.5	0.0
Bluemound Road (US 18) & Hawley Road	0.9	0.6	0.3	0.0
Bluemound Road & Wisconsin Avenue (US 18)	0.2	0.2	0.0	0.0
Bluemound Road (US 18) & Mitchell Boulevard	< 0.1	< 0.1	0.0	0.0
Average for All Local Road Intersections	**0.7**	**0.4**	**0.3**	**< 0.1**

As shown in **Exhibit 20** previously, three fatal crashes have occurred at two of the six local road intersections analyzed between 2007 and early 2012 based on WisDOT crash data. Two fatal crashes have occurred at the intersection of Layton Boulevard/27th Street and St Paul Avenue, one fatal crash has occurred at the intersection of National Avenue (WIS 59) and WIS 341. These fatal crashes are discussed further in the following sections.

Layton Boulevard/27th Street (WIS 57) and St Paul Avenue

The intersection of Layton Boulevard/27th Street (WIS 57) and St Paul Avenue is located west of the 26th Street ramp terminal. The intersection includes two through lanes on each leg and exclusive left turn lanes on the north and south approaches. Furthermore, the NB and WB approaches feature channelized right turns at the intersection. Pedestrian Walk/Don't Walk indicators are provided on each leg of the intersection, in addition to marked bicycle lanes on the south leg. Protected-permissive left turn phasing is provided for all left turn movements at the intersection, except for the EB left turn movement. **Exhibit 21** on the following page shows an overview of the intersection.

Exhibit 21 – Intersection Overview of Layton Blvd/27th St and St Paul Ave



Layton Boulevard/27th Street is a heavily utilized north-south arterial roadway in the City of Milwaukee. St Paul Avenue serves as an alternate east-west roadway to I-94, in addition to providing the main connection to the 28th Street entrance ramp to I-94 WB. This intersection, likely due in part to its proximity to I-94, has the second highest intersection AADT of the six intersections analyzed, with a total volume of 33,300 vehicles. The greatest traffic volume approaches from the south, which serves man local residents and businesses.

The average total crash rate for this intersection from 2007 to early 2012 is 1.2 crashes/1MEV, which is the highest average total crash rate among the six intersections analyzed and about 70% greater than the study area average total crash rate for a local road intersection (0.8 crashes/1MEV). **Table 22** below shows the breakdown of the crashes from 2007 through early 2012 at this intersection.

Table 22 – Intersection of Layton Blvd/27th St and St Paul Ave Crash Types

Crash Type	Number of Crashes (2007-2012)	Percentage of Total Crashes			Total
		Property Damage	Injury (A, B & C)	Fatality	
Angle	34	28.0%	16.0%	1.3%	45.3%
Rear-End	11	10.7%	4.0%	0.0%	14.7%
Head-On	4	2.7%	2.7%	0.0%	5.4%
Sideswipe	17	16.0%	6.7%	0.0%	22.7%
Single Vehicle	9	5.3%	5.3%	1.3%	11.9%
Other	0	0.0%	0.0%	0.0%	0.0%
Total	**75**	**62.7%**	**34.7%**	**2.6%**	**100.0%**

As seen in **Table 22** above, angle and sideswipe crashes account for 68% of all crashes at the intersection from 2007 through early 2012. The high occurrence rate of angle and sideswipe crashes suggests a number of possible causes. Angle crashes at a local road intersection typically is an indication of sight distance problems related to intersection geometry, if left turn lanes are directly opposing one another (i.e. not offset), as drivers who wish to turn left typically cannot see past the opposing left turning vehicle during a permitted left turn phase. As such, drivers often have to anticipate gaps in opposing through traffic or “inch out” as far as possible into the intersection past the opposing left turning vehicle to gain additional sight distance, which presents an opportunity for a crash to occur.

Additionally, sideswipe crashes are generally caused by merging or weaving maneuvers, either within the intersection or between signalized intersections. A sideswipe crash may occur when queues build up from a left turning movement into a through lane and vehicles in the through lane attempt to maneuver around the queue and sideswipe a vehicle in the next lane.

Driver error, as alluded to previously in the discussion of sight distance problems, also can be a major cause of the high number of crashes at this intersection. In addition, crashes at this location may be attributed to the proximity of this intersection to nearby signalized intersections. In this area, there are two other

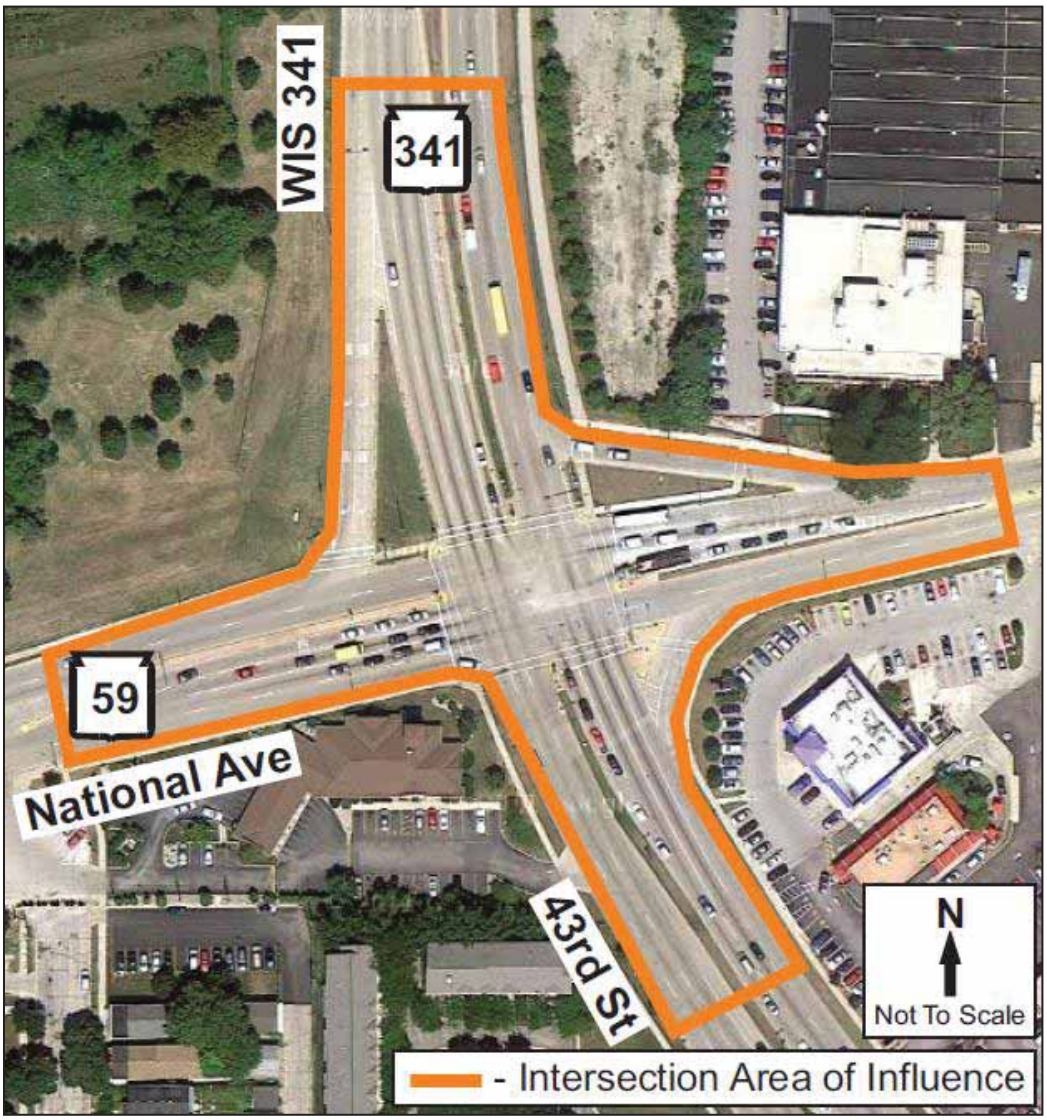
signalized intersections located on St Paul Avenue within 700 feet of each other. A driver may see the traffic signal of a downstream intersection and mistake that signal for theirs. This may lead to drivers slowing down (causing rear-end crashes) or continuing through red lights (causing angle or sideswipe crashes).

Of the 75 total crashes at this intersection between 2007 and early 2012, two crashes resulted in fatalities. The first fatal crash involved a single vehicle in May 2010. This crash resulted in one fatality. The second fatal crash occurred in January 2012 between two vehicles. This crash was flagged for wet and snowy conditions, in addition to alcohol involvement. This crash resulted in two fatalities.

National Avenue (WIS 59) and WIS 341

The intersection of National Avenue (WIS 59) and WIS 341 is located at the south termini of WIS 341. The south leg of this intersection is formed by 43rd Street. The intersection includes three NB and SB through lanes and exclusive left turn lanes on the north and south legs, in addition to dual SB right turn lanes. The east and west legs include two through lanes and exclusive left turns on the west (dual left turn) and east (single left turn) legs. In addition, the west leg features a channelized right turn movement. Pedestrian Walk/Don't Walk indicators are provided on each leg of the intersection. Protected-permissive left turn phasing is provided for the NB and SB left turn movements, while the EB and WB left turn movements utilize protected-only phasing. **Exhibit 22** on the following page shows an overview of the intersection.

Exhibit 22 – Intersection Overview of National Ave and WIS 341



WIS 341 and 43rd Street near National Avenue are heavily utilized north-south roadways to access I-94 from the south. Additionally, both roadways serve as major connecting roadways to Miller Park during Milwaukee Brewers' home games. National Avenue is a heavily utilized east-west arterial roadway in Milwaukee County. This intersection is located close to several businesses, in addition to the Clement J Zablocki Veterans Affairs (VA) Medical Center, which is located west of WIS 341 and north of National Avenue.

Due to the surrounding land uses and importance of the intersecting roadways, this intersection services the highest intersection AADT of the six intersections analyzed, with a volume of 56,400 vehicles. The north and south approaches serve the heaviest daily volumes, mainly due to the connection provided directly to WIS 341 and I-94.

The average total crash rate for this intersection from 2007 to early 2012 is 1.1 crashes/1MEV, which is the second highest average total crash rate among the six intersections analyzed and almost 60% greater than the study area average total crash rate for a local road intersection. **Table 23** below shows the breakdown of the crashes from 2007 through early 2012 at this intersection.

Table 23 – Intersection of National Ave and WIS 341 Crash Types

Crash Type	Number of Crashes (2007-2012)	Percentage of Total Crashes			Total
		Property Damage	Injury (A, B & C)	Fatality	
Angle	49	16.4%	23.0%	0.8%	40.2%
Rear-End	41	16.4%	17.2%	0.0%	33.6%
Head-On	4	1.6%	1.6%	0.0%	3.2%
Sideswipe	20	9.8%	6.6%	0.0%	16.4%
Single Vehicle	8	5.0%	1.6%	0.0%	6.6%
Other	0	0.0%	0.0%	0.0%	0.0%
Total	**122**	**49.2%**	**50.0%**	**0.8%**	**100.0%**

As seen in **Table 23** above, angle and rear-end crashes make up almost 75% of the total number of crashes at the intersection from 2007 to early 2012. As with the previous intersection, a high occurrence of angle crashes suggests a number of possible causes. In the NB and SB directions, sight distance problems related to intersection geometry may pose issues for left turning drivers during a permitted left turn phase. In addition, drivers must cross three opposing through lanes of traffic during a permitted left turn phase, which increases the chance of an angle crash occurring as their “exposure” (i.e. distance/time to cross opposing through lanes) against the conflicting movement is lengthened.

Additionally, the intersection of National Avenue and WIS 341 also exhibits a high occurrence of rear-end crashes. In general, a high occurrence of rear-end crashes at a local road intersection typically indicates congestion related issues. This is true at this location, where the intersection not only serves typical weekday traffic, but also higher traffic volumes during off-peak hours when there are Milwaukee Brewers’ home games at Miller Park. During these off-peak home game hours, the intersection is typically heavily congested and over-capacity. As such, the likelihood of a rear-end crash occurring is greater during these periods.

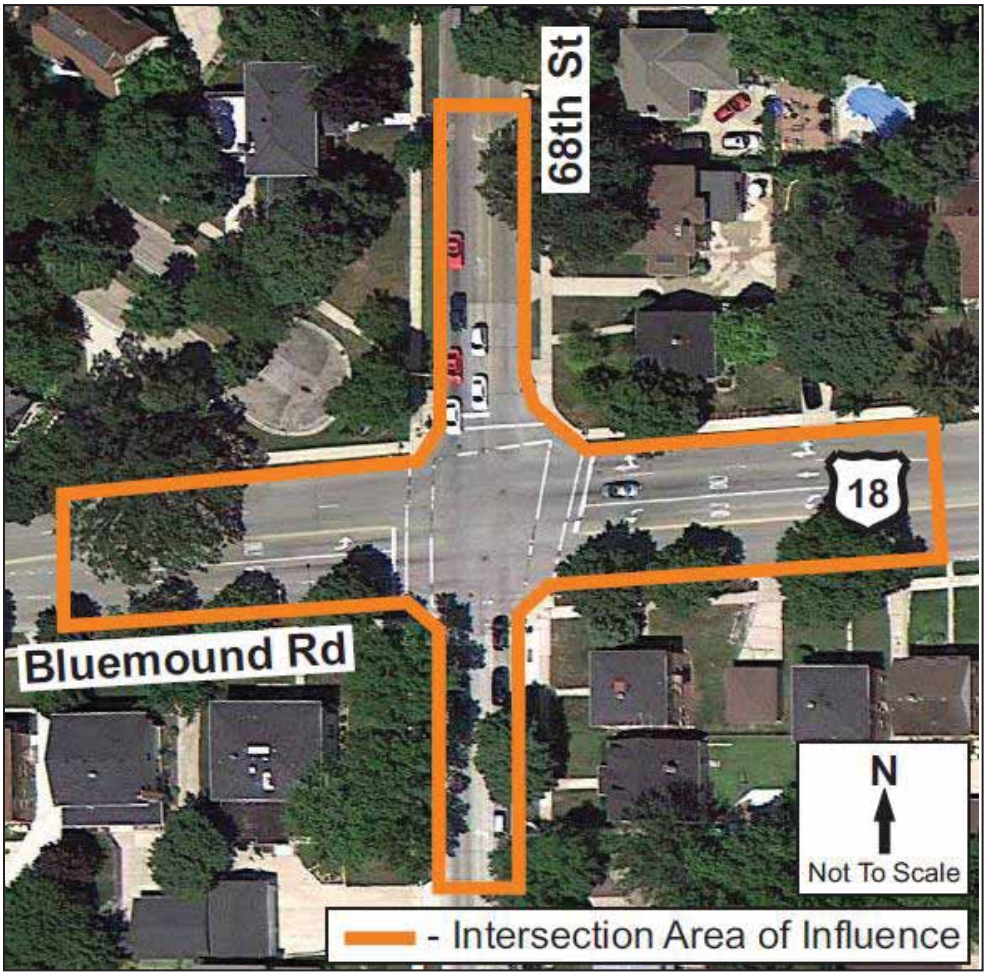
Of the 122 total crashes at this intersection between 2007 and early 2012, one crash resulted in a single fatality. This fatal crash occurred in July 2010 between a vehicle and motorcycle. It should be noted that the crash was flagged for alcohol involvement.

Bluemound Road (US 18) and 68th Street

The intersection of Bluemound Road (US 18) and 68th Street is located north of the I-94 corridor and 68th Street north ramp terminal. The intersection includes two through lanes and exclusive left turn lanes on the east and west approaches. In addition, the north and south legs feature one through lane and exclusive left turn lanes. Pedestrian Walk/Don’t Walk indicators are provided on each leg of the

intersection. Permitted left turn phasing is used on all approaches at the intersection. **Exhibit 23** below shows an overview of the intersection.

Exhibit 23 – Intersection Overview of Bluemound Rd and 68th St



Bluemound Road is an east-west arterial roadway that parallels I-94 from the City of Milwaukee through Waukesha County to the west. The adjacent land characteristics change from the City of Milwaukee, where the adjacent land use is a mix of residential and businesses, in addition to a couple of schools, to this intersection where the adjacent land use is primarily residential. 68th Street mainly serves as a connecting roadway between I-94 and Bluemound Road.

As such, the intersection of Bluemound Road and 68th Street serves the third lowest traffic volume of the six intersections with an AADT of 19,400 vehicles. The east and west approaches of the intersection serve the heaviest daily volumes.

The average total crash rate for this intersection from 2007 to early 2012 is 0.9 crashes/1MEV, which is the third highest average total crash rate among the six intersections analyzed and about 30% greater than the study area average total crash rate for a local road intersection. **Table 24** on the following page shows the breakdown of the crashes from 2007 through early 2012 at this intersection.

Table 24 – Intersection of Bluemound Rd and 68th St Crash Types

Crash Type	Number of Crashes (2007-2012)	Percentage of Total Crashes			Total
		Property Damage	Injury (A, B & C)	Fatality	
Angle	13	15.2%	24.2%	0.0%	39.4%
Rear-End	8	15.1%	9.1%	0.0%	24.2%
Head-On	1	0.0%	3.0%	0.0%	3.0%
Sideswipe	6	12.1%	6.1%	0.0%	18.2%
Single Vehicle	5	6.1%	9.1%	0.0%	15.2%
Other	0	0.0%	0.0%	0.0%	0.0%
Total	**33**	**48.5%**	**51.5%**	**0.0%**	**100.0%**

As seen in **Table 24** above, angle and rear-end crashes account for almost 65% of all crashes at the intersection from 2007 through early 2012. Similar to previous intersections, a high occurrence rate of angle and sideswipe crashes suggests a number of causes. Angle crashes at a local road intersection typically is an indication of sight distance problems related to intersection geometry, due to left turn lanes that are not offset, which hinders the sight distance of left turning drivers during a permitted left turn phase. As such, drivers often compensate by either trying to anticipate gaps in opposing traffic or inching out as far as possible into the intersection to gain additional sight distance. In either case, it presents a situation where an angle crash type may occur.

Additionally, as noted previously, sideswipe crashes are generally caused by merging or weaving maneuvers, either within the intersection or between intersections. In this case, Bluemound Road has a number of driveways and side street intersections where local residents access their home.

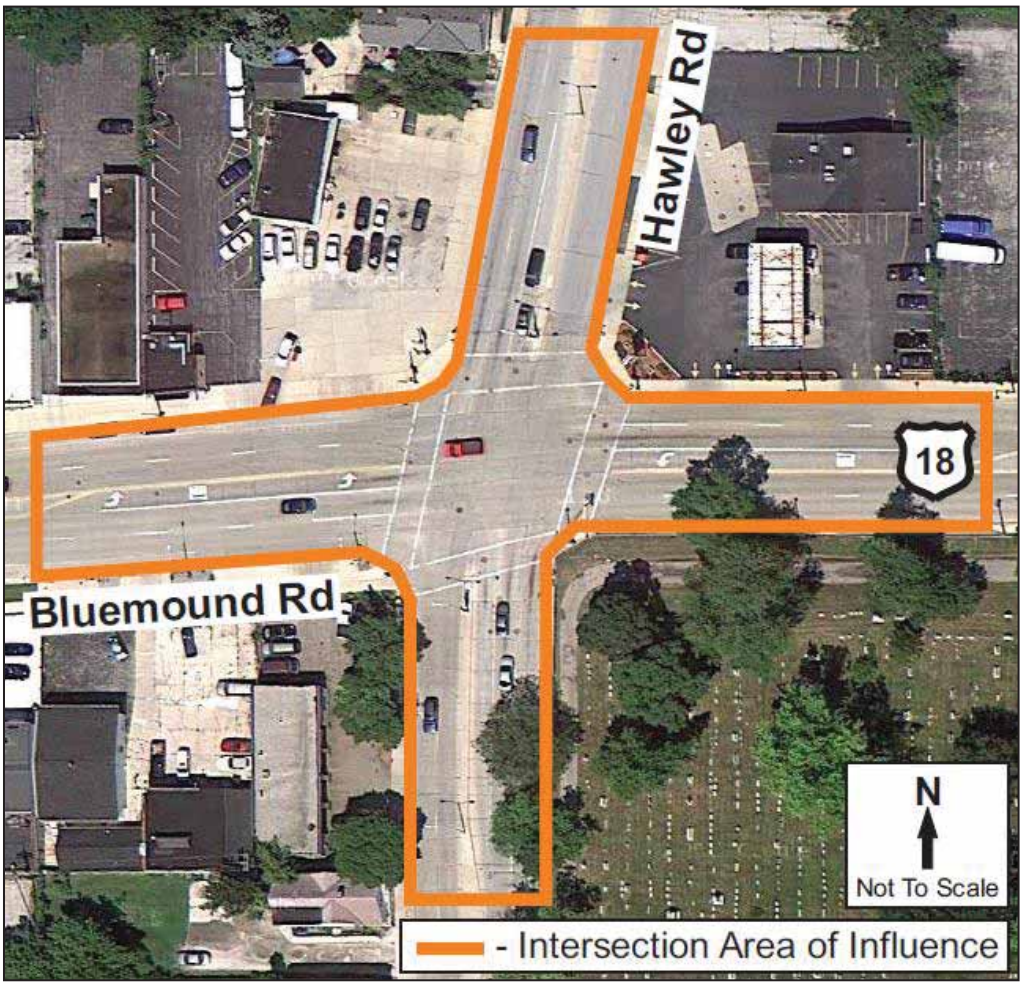
In addition, driver error, as alluded to in the previous discussions of sight distance, also can play a part in the high number of crashes at this intersection.

No fatal crashes have occurred at this intersection between 2007 and early 2012. However, it is important to note that the intersection does exhibit a higher overall percentage of injury-related crashes than property damage crashes over the same analysis period, which is not the case at a typical local road intersection.

Bluemound Road (US 18) and Hawley Road

The intersection of Bluemound Road (US 18) and Hawley Road is located approximately one-quarter mile north of I-94 and the Hawley Road north ramp terminal. The intersection includes two through lanes and exclusive left turn lanes on each approach. The north leg of the intersection is slightly skewed to the east and pedestrian Walk/Don't Walk indicators are provided on each leg of the intersection. Protected-permissive left turn phasing is provided for all left turn movements at the intersection, except for the SB left turn movement. **Exhibit 24** on the following page shows an overview of the intersection.

Exhibit 24 – Intersection Overview of Bluemound Rd and Hawley Rd



As previously noted, Bluemound Road is an east-west arterial roadway that parallels I-94. The adjacent land characteristics vary along the length of Bluemound Road, including at this intersection, which is near several local businesses and a cemetery located in the southeast quadrant. Hawley Road serves as a minor north-south connecting roadway, which has a mixture of businesses and residential homes along the roadway, including a second cemetery located south of I-94.

The intersection of Bluemound Road and Hawley Road serves the third highest traffic volume of the six intersections analyzed with an AADT of 24,850 vehicles. The north and south approaches of the intersection serve the heaviest daily volumes.

The average total crash rate for this intersection from 2007 to early 2012 is 0.9 crashes/1MEV, which is the third highest average total crash rate among the six intersections analyzed and about 30% greater than the study area average total crash rate for a local road intersection. **Table 25** on the following page shows the breakdown of the crashes from 2007 through early 2012 at this intersection.

Table 25 – Intersection of Bluemound Rd and Hawley Road Crash Types

Crash Type	Number of Crashes (2007-2012)	Percentage of Total Crashes			Total
		Property Damage	Injury (A, B & C)	Fatality	
Angle	22	36.4%	13.6%	0.0%	50.0%
Rear-End	12	15.9%	11.4%	0.0%	27.3%
Head-On	2	0.0%	4.5%	0.0%	4.5%
Sideswipe	2	4.5%	0.0%	0.0%	4.5%
Single Vehicle	6	9.1%	4.5%	0.0%	13.6%
Other	0	0.0%	0.0%	0.0%	0.0%
Total	**44**	**65.9%**	**34.1%**	**0.0%**	**100.0%**

As seen in **Table 25** above, angle and rear-end crashes account for more than 75% of all crashes at the intersection from 2007 through early 2012. Similar to previous intersections on Bluemound Road, a high occurrence rate of angle and rear-end crashes have a number of potential causes.

As noted in previous discussions, angle crashes at a local road intersection typically is an indication of sight distance problems related to intersection geometry. This can be attributed to left turn lanes that are not offset, which limits the sight distance of left turning drivers during a permitted left turn phase. Additionally, due to the alignment of the north leg of the intersection, left turning traffic has even less distance downstream to watch as the through movement approaches the intersection. As such, drivers often attempt to anticipate gaps in opposing traffic or inch out as far as possible into the intersection to gain additional sight distance. Under either of these conditions, a situation is created where an angle crash may occur.

Additionally, the intersection of Bluemound Road and Hawley Road also exhibits a high occurrence of rear-end crashes. As discussed previously, a high occurrence of rear-end crashes at a local road intersection typically indicates a problem with congestion.

There have been no fatal crashes at this intersection between 2007 and early 2012.

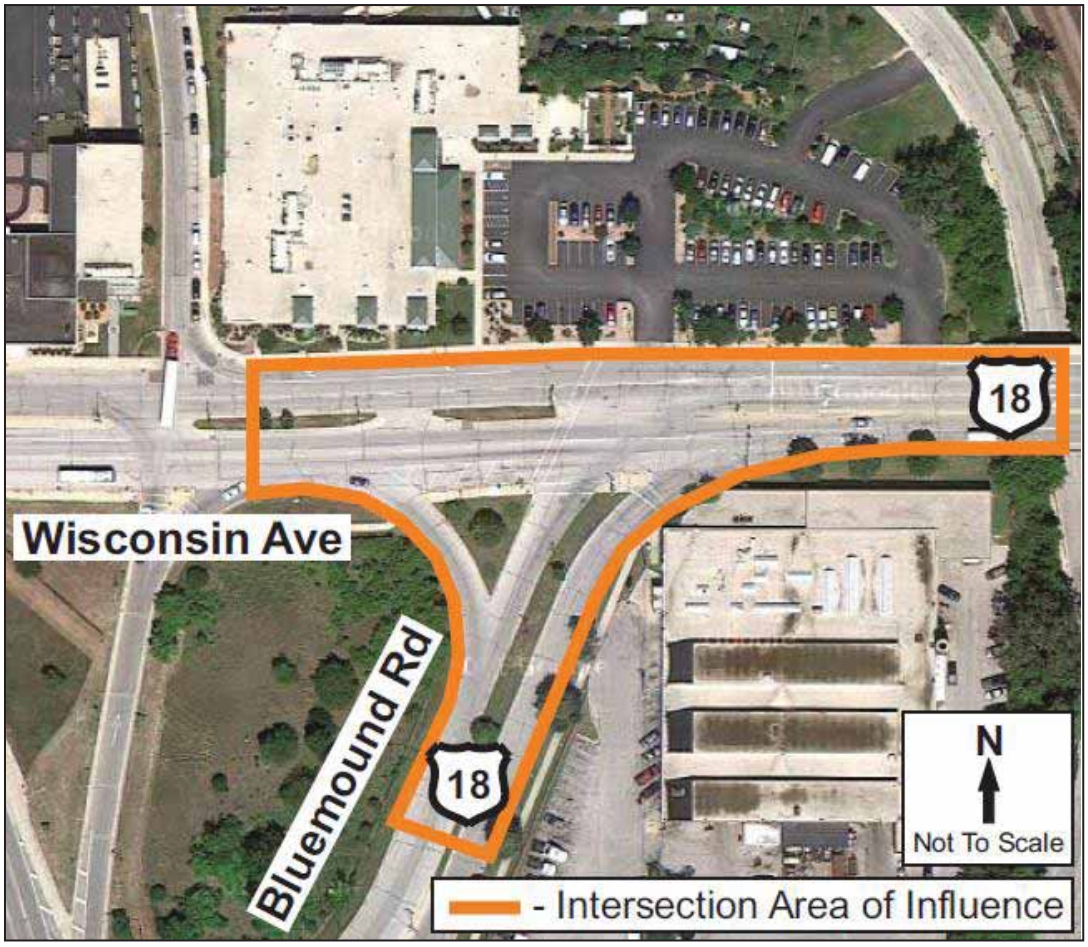
Bluemound Road and Wisconsin Avenue (US 18)

The intersection of Bluemound Road and Wisconsin Avenue (US 18) is located just east of the Wisconsin Avenue east ramp terminal, which is unsignalized. It is important to note that a vehicle traveling on EB Bluemound Road toward the intersection with Wisconsin Avenue cannot make a NB left turn to continue on WB Wisconsin Avenue.

The intersection includes two through lanes on the east and west approaches, in addition to an exclusive left turn lane for the WB left turn movement. The south leg of the intersection is formed from Bluemound Road and the north leg from the driveway to the Humane Society building. Protected left turn phasing is provided for the WB left turn movement and pedestrian Walk/Don't Walk indicators are

provided on each leg of the intersection. **Exhibit 25** below shows an overview of the intersection.

Exhibit 25 – Intersection Overview of Bluemound Rd and Wisconsin Ave



As previously discussed, Bluemound Road is an east-west arterial roadway that parallels I-94. The adjacent land characteristics vary along the length of Bluemound Road, including at this intersection, which is near several local businesses. Wisconsin Avenue is a major east-west roadway that starts in downtown Milwaukee and continues west into the City of Wauwatosa. Similar to Bluemound Road, the adjacent land use characteristics vary from downtown Milwaukee, which is mainly businesses and a couple schools, to Wauwatosa, where it is mainly residential.

The intersection of Bluemound Road and Wisconsin Avenue serves the third lowest traffic volume of the six intersections analyzed with an AADT of 16,100 vehicles. The east and west approaches of the intersection serve the heaviest daily volumes, mainly due to the proximity of access to US 41 just west of this intersection.

The average total crash rate for this intersection from 2007 to early 2012 is 0.2 crashes/1MEV, which is the fifth lowest average total crash rate among the six intersections analyzed. **Table 26** below shows the breakdown of the crashes from 2007 through early 2012 at this intersection.

Table 26 – Intersection of Bluemound Rd and Wisconsin Ave Crash Types

Crash Type	Number of Crashes (2007-2012)	Percentage of Total Crashes			Total
		Property Damage	Injury (A, B & C)	Fatality	
Angle	0	0.0%	0.0%	0.0%	0.0%
Rear-End	2	40.0%	0.0%	0.0%	40.0%
Head-On	0	0.0%	0.0%	0.0%	0.0%
Sideswipe	1	20.0%	0.0%	0.0%	20.0%
Single Vehicle	2	40.0%	0.0%	0.0%	40.0%
Other	0	0.0%	0.0%	0.0%	0.0%
Total	**5**	**100.0%**	**0.0%**	**0.0%**	**100.0%**

As seen in **Table 26** above, only five crashes have occurred at this intersection between 2007 and early 2012. It is important to note that due to the proximity of the Wisconsin Avenue east ramp terminal, crash data at this intersection may be skewed based on law enforcement reporting. As an example, a crash could occur at the Wisconsin Avenue east ramp terminal and be reported as occurring at the Bluemound Road and Wisconsin Avenue local road intersection, or vice versa.

Based on the available data, single vehicle and rear-end crashes make up the majority of all crashes at this intersection from 2007 through early 2012. As discussed previously, most rear-end crashes occur during congested time periods. Both single vehicle crashes occurred as a result of drivers hitting a curb. Single vehicle crashes are generally caused by a driver losing control of their vehicle or being inattentive.

Additionally, any crashes occurring at this intersection could be attributed to the intersection geometry and proximity to the Wisconsin Avenue east ramp terminal. Since the south leg of the intersection is skewed, drivers may misjudge acceptable gaps in EB traffic while making the NB right turn movement, which could result in angle or sideswipe crashes.

Similarly, drivers making the NB right turn movement may attempt to make the turn at speeds that are too fast for conditions due to the curvature of Bluemound Road at the intersection. The geometry may seem to present a NB free-flow movement to EB Wisconsin Avenue for some drivers. As a result, the chance for a single vehicle crash is increased as drivers may lose control of their vehicle through the curve.

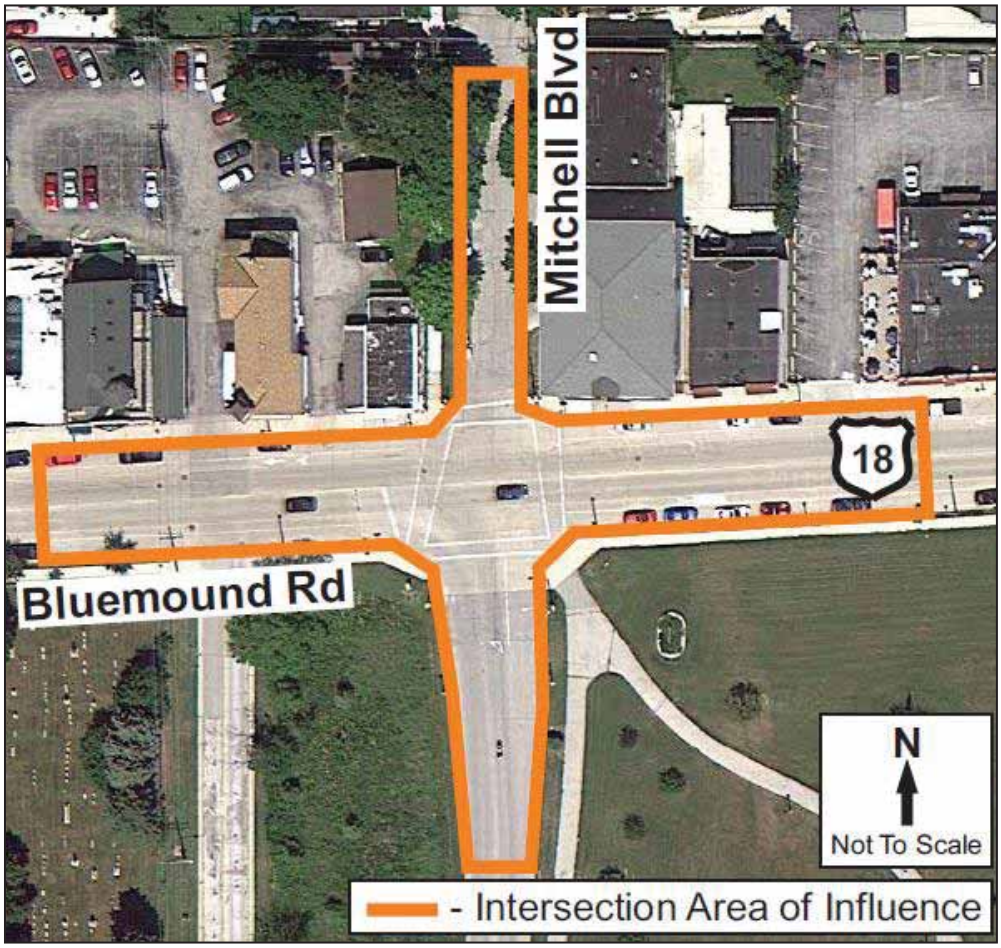
Bluemound Road (US 18) and Mitchell Boulevard

The intersection of Bluemound Road (US 18) and Mitchell Boulevard is located approximately a one-quarter mile east of the intersection of Bluemound Road and Hawley Road. The intersection includes two through lanes with shared left

and right turn movements on the east and west approaches. In addition, the east and west legs of the intersection has marked bicycle lanes and on-street parking.

The north leg of the intersection is has one lane at the intersection, whereas the south leg provides a through lane with an exclusive left turn lane at the intersection. Similar to previous intersections, pedestrian Walk/Don't Walk indicators are provided on each leg of the intersection. Protected-permissive left turn phasing is provided only for the NB left turn movement at the intersection. **Exhibit 26** below shows an overview of the intersection.

Exhibit 26 – Intersection Overview of Bluemound Rd and Mitchell Blvd



As previously discussed, Bluemound Road is an east-west arterial roadway that parallels I-94. The adjacent land characteristics vary along the length of Bluemound Road, including at this intersection, which is near several local businesses, homes, and a cemetery to the west. Mitchell Boulevard is a small north-south roadway that connects Bluemound Road, I-94, and Miller Park together. This roadway serves very little peak hour traffic during a typical week, except for Milwaukee Brewers' home games when it is utilized as an alternate road to access parking.

The intersection of Bluemound Road and Mitchell Boulevard serves the lowest traffic volume of the six intersections analyzed with an AADT of 11,000 vehicles. As expected, the east and west approaches of the intersection serve the heaviest daily volumes.

One property damage crash (rear-end) occurred at this intersection from 2007 to early 2012, which equates to a crash rate of less than 0.1 crashes/1MEV. This crash occurred in March 2012, which means it was not related to traffic on the roadway for a Brewers' home game and as such, likely was caused by sight distance issues or congestion on Bluemound Road.

The average study area total crash rate at six local road intersections from 2007 to early 2012 was approximately 0.7 crashes/1MEV. Four of the six analyzed local road intersections exhibit average total crash rates that were 30% or greater than the average study area crash rate for a local road intersection. In addition, angle and rear-end crashes were the most common crash types between all local road intersections during the study period. In general, a high occurrence of angle crashes suggests geometric issues, such as inadequate sight distance related to the alignment of left turn lanes. A high occurrence of rear-end crashes at a local road intersection typically indicates issues related to congestion.

Also, of the six local road intersections analyzed, three fatal crashes (resulting in four total fatalities) occurred between 2007 and early 2012 at two local road intersections (based on WisDOT crash data).

Conclusion

In conclusion, the I-94 East-West Stadium Interchange study area includes many freeway and local roadway segments that exhibit crash rates greater than the statewide average. Additionally, several service ramps, one system ramp, and a few local road intersections exhibit significantly high crash rates. The average total crash rates from 2005 to 2009 for freeway mainlines, system and service ramps, and local roadways, including local road intersections (from 2007 to early 2012), analyzed in this technical memorandum are as follows:

- Freeway Mainlines = 195.8 crashes/100M VMT (130% greater than the statewide average)
- Stadium Interchange System Ramps = 0.8 crashes/1MEV
    - I-94 EB to US 41 NB (W-N) = 3.3 crashes/1MEV (313% greater than study area system ramp average)
- Service Interchange Ramps = 0.5 crashes/1MEV
    - Mitchell Boulevard Entrance Ramp to I-94 EB = 2.5 crashes/1MEV (400% greater than study area service ramp average)
    - I-94 EB Exit Ramp to Mitchell Boulevard = 2.3 crashes/1MEV (360% greater than study area service ramp average)
    - Mitchell Boulevard Entrance Ramp to I-94 WB = 2.1 crashes/1MEV (320% greater than study area service ramp average)
- Major Local Roadways = 477.3 crashes/100M VMT (61% greater than the statewide average)
- Local Road Intersections = 0.7 crashes/1MEV
    - Layton Boulevard/27th Street (WIS 57) and St Paul Avenue = 1.2 crashes/1MEV (70% greater than the study area local road intersection average)
    - National Avenue (WIS 59) and WIS 341 = 1.1 crashes/1MEV (57% greater than the study area local road intersection average)

Appendix A – WisDOT 2009 Statewide Crash Rates Memo

CORRESPONDENCE/MEMORANDUM State of Wisconsin

Date: November 29, 2010

To: Regional Directors
Attention: Regional System Planning and Operations Sections

From: Rebecca Szymkowski, P.E., PTOE
State Traffic Safety Engineer

Subject: 2009 Statewide Crash Rates

NOTE: The format for statewide average crash rates has changed from previous years.

These changes were made based on recommendations from the safety engineering community. The changes were also made in order to better accommodate the end-users of this data and better align with current WisDOT business practices.

The following changes have been made to the *state system* statewide average crash rates:

1. Crash rates on the state system were divided into three categories and are now divided into 12 functional "peer" groups (i.e. "like" roadways), which are based on the Wisconsin Department of Transportation's Meta-Manager Management System Database. ***Please note that if a roadway is divided, 50% of the average annual daily traffic (AADT) is used when calculating crash rates.***

2. Tables were provided that included crash rates on an annual basis and are now provided on a 5-year running average. The 5-year average takes into account any variances in one particular year and also takes into account trends in traffic volumes.

3. Crash rates for both "with deer" and "without deer" were provided. Based on discussions with end-users of this data, crash rates with deer were seldom used and therefore, crash rates are only included for "without deer."

Meta-manager only includes state routes and therefore, the format of the statewide average crash rates on the local system have not changed. However, the following changes have been made to the *local system* statewide average crash rates:

1. All crashes that occurred on urban city streets, rural city streets, and urban county highways have been combined into a single category called "Urban Streets." In past years, the "Urban Streets" category also included Urban State Trunk Highways. All crash rates in the "Urban Streets" category have been recalculated based on the new definition and do not match the "Urban Streets" crash rates provided in previous years.

2. Similar to the state system, only crash rates for "without deer" have been provided.

The following text has been altered slightly, but in general, has not changed from previous crash rate memorandums:

The definition of a "reportable crash" is based on a reporting threshold of $1000 for property damage only "to any one person's property," $1000 for government-owned vehicles and remains at $200 for all other government-owned property, such as traffic control devices.

The Division of Transportation Investment Management (DTIM) has provided the crash rates for the state system. The University of Wisconsin-Madison Traffic Operations and Safety Laboratory (UW TOPS Lab) prepared the tables for the local system. DTIM has provided the vehicle miles and the Division of Motor Vehicles (DMV) provided the crash data taken from the Accident File.

Table I lists the Wisconsin statewide average crash rates on the ***state system*** for 2005 to 2009. These rates are expressed as crashes per 100 million vehicle miles. These rates do not include non-reportable crashes (<$1000). Table II lists the statewide average crash rates on the ***local system*** and excludes deer crashes.

In addition to the total injury crash rate, the injury crashes have been broken down into three subcategories. Also included is a crash rate for property damage only. This information is included in order to provide the opportunity to conduct a more detailed crash analysis. The following three categories are defined according to the Law Enforcement Officer's Instruction Manual:

- **Type A**: Incapacitating Injury - Any injury other than a fatal injury, which prevents the injured person from walking, driving, or from performing other activities, which he/she performed before the accident.

- **Type B**: Nonincapacitating Injury - Any injury, other than fatal or incapacitating, which is evident at the scene. Evidence of injury may include known symptoms of an injury, which are not directly observable.

- **Type C** :Possible Injury - Any injury which is not observable or evident at the scene but is claimed by the individual or suspected by the law enforcement officer.

Table I
State Trunk Highway Crash Rates*
(Crashes per 100 million vehicle miles)

5-Year Average (2005-2009)
Excludes Deer Crashes

Meta-manager State Trunk Highway Groups		Total	Fatal	A	B	C	Property Damage Only
1	Rural and Small Urban Freeways	43	0.3	2.0	5.1	5.5	30.1
2	Rural and Small Urban Expressways	59	0.9	3.4	8.1	8.5	37.7
3	Rural STN ADT between 3500 and 8700 ADT	76	1.3	5.4	11.2	12.3	45.4
4	Rural STN ADT between 2000 and 3500 ADT	87	1.6	6.2	13.7	13.4	52.1
5	Rural STN ADT between 750 and 2000 ADT	111	2.0	8.1	17.9	16.2	66.8
6	Rural STN ADT less than 750	194	3.6	16.5	36.5	29.9	107.2
7	Large Urban Freeways	85	0.3	1.9	6.9	16.0	59.8
8	Large Urban Divided Highways and One Way	326	0.8	7.5	30.2	80.0	207.1
9	Large Urban Undivided Highways	335	1.3	9.8	36.3	75.0	212.1
10	Small Urban STN (excluding freeways, expressways...1 and 2 above)	244	0.6	7.8	30.0	44.5	165.4
11	Rural STH ADT greater and 8700 ADT	87	1.1	4.9	11.4	15.8	54.2
12	Community of less than 5000 population STN	195	0.9	7.4	19.5	30.6	137.0

* The rates **do not** include non-reportable crashes.

Table II
Local Road Crash Rates: 2005-2009*
(Crashes per 100 million vehicle miles)
Excludes Deer Crashes

URBAN STREETS							
	Total	Fatal	Injury	A	B	C	Property Damage Only
2005	314	0.7	101	7.2	30	63	212
2006	288	0.7	92	6.6	29	57	195
2007	294	0.7	89	6.6	28	54	204
2008	308	0.6	85	6.3	28	51	222
2009	281	0.5	81	5.9	27	48	200

NOTE: All crashes that occurred on urban city streets, rural city streets, and urban county highways have been combined into a single category called "Urban Streets." In past years, the "Urban Streets" category also included Urban State Trunk Highways. All crash rates in the "Urban Streets" category have been recalculated based on the new definition and do not match the "Urban Streets" crash rates provided in previous years.

COUNTY TRUNKS							
	Total	Fatal	Injury	A	B	C	Property Damage Only
2005	151	2.5	63	12.1	24	26	86
2006	140	2.0	58	10.3	24	24	80
2007	148	2.2	60	11.2	23	25	86
2008	160	2.0	58	9.7	24	24	100
2009	142	1.6	53	8.4	23	21	87

* The rates **do not** include non-reportable crashes. The UW TOPS Lab created the 2009 crash rates from the WisTransPortal database. Crash information was provided by WisDOT DMV Traffic Accident Section. VMT estimates were provided by WisDOT DTIM Traffic Forecasting Section.

If there are questions about how VMT estimates are made, please contact Bruce Aunet at 608-266-9990 or check http://dotnet/dtim-bshp/vmt/htm for more details.

Previous crash rate reports can be found at: http://dotnet/dtid-bho/safety/index/htm.

Appendix B – Freeway Mainline, System Ramp, and Service Ramp Crash Tables and Data

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APPENDIX A

EDR Database Search Results Executive Summary
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APPENDIX B

Potential Hazardous Material Site Information

EXECUTIVE SUMMARY

Kapur and Associates, Inc. (Kapur) has completed a Preliminary Phase 1 Hazardous Material Assessment for Interstate Highway (IH) 94 from 70th Street to 16th Street and United States Highway (USH) 41/Miller Park Way from State Street to Canal Street/Frederick Miller Way (hereafter called project corridor). The purpose of this investigation was to identify, to the extent feasible, the potential sources for environmental contamination to the proposed right-of-way (ROW) of the project corridor due to the surrounding area's present or past land use including migration of any potential off-site contaminants from the adjoining areas.

The IH-94 East-West (E-W) Freeway project area includes approximately 3.5 miles of IH 94 freeway corridor from 70th Street (west limit) to 16th Street (east limit), one system interchange (Stadium Interchange: IH-94/Wisconsin 341, USH 41), and five service interchanges (the 68th-70th split diamond, Hawley Road, Mitchell Boulevard, 35th Street, and 6th Street) within those termini. The West/Cemetery Segment of the study area is IH 94 from 70th Street to Yount Drive, just west of the Stadium Interchange. This segment includes the existing 68th/70th Street, Hawley Road and Mitchell Boulevard service interchanges. The East segment of the study area is from Yount Drive, just west of the Stadium Interchange, to 16th Street. This Segment includes the existing 35th Street and 25th/26th/28th Street service interchanges and Stadium Interchange system interchange. At the time of this report, there are two (2) separate alternatives. Various parts of the two (2) alternatives are interchangeable. They are described as follows:

Alternative 1: At-Grade (West/Cemetery), Modified Single Point Interchange (Stadium), and On-Alignment (East)

The at-grade alternative would reconstruct IH 94 to eight (8) travel lanes (4 in each direction) at essentially the same elevation as the existing freeway in the West/Cemetery Segment. The at-grade alternative would be compatible with either alternative in the east segment. To avoid encroachment on the cemeteries, the reconstructed freeway mainline would have 11-foot driving lanes and narrow shoulders in the approximate 2,000-foot segment between the adjacent cemeteries (Hawley Road to Zablocki Drive). The shoulder widths will vary in this segment as the available right-of-way varies (the shoulders would be as narrow as 3 feet). East and west of the cemeteries, the freeway would have standard 12-foot lanes and full shoulders.

The freeway entrance and exit ramps at the Hawley Road and Mitchell Boulevard interchanges would be removed. The Mitchell interchange ramps would be replaced in the Stadium Interchange. The Mitchell Boulevard interchange would be replaced by a new local road interchange under the Stadium Interchange. The $68^{th}/70^{th}$ Street interchange would be reconstructed in its current configuration (a split diamond interchange).

Zablocki Drive would remain at its present location, and its bridge over IH 94 would be replaced and raised, requiring reconstruction of short segments of Zablocki Drive on each side of the new bridge. 64th Street would still pass under the freeway as it does today.

There would be one (1) business displacement and no residential displacements under the at-grade alternative for the West/Cemetery Segment.

Under the on-alignment alternative, the Stadium Interchange would be reconstructed as a hybrid between a service interchange and a system interchange. The reconstructed interchange would have a smaller footprint than the existing interchange.

East of the Stadium Interchange, the 35th Street interchange would be reconstructed. Braided ramps between the Stadium Interchange and the 35th Street interchange will be provided. Braided ramps would also be provided between the 35th and 27th Street interchanges. The difference between the two alternatives is that east of 32nd Street the freeway would remain close to its current alignment and be widened to the south. The on- and off-ramps near 27th Street would remain where they are today at 25th, 26th, and 28th Streets, and Saint Paul Avenue.

Thirteen (13) commercial properties would be acquired. The properties are a mix of vacant, unused, and active businesses.

Alternative 2: Double Deck (all up or partial down) (West/Cemetery), Modified Single Point Interchange (Stadium), and Off-Alignment (East)

The double-deck alternative would reconstruct I-94 to 8 travel lanes (4 in each direction). A double deck (the freeway lanes would be stacked with one set of freeway lanes elevated over the other) would be constructed in the area between the cemeteries to avoid direct impacts to the cemeteries. The transition back to side-by-side freeway lanes would occur at about 64th Street just west of the Hawley Road interchange and Yount Drive just west of the Stadium Interchange.

This alternative would reconstruct the 68th/70th Street and Hawley Road interchanges with Connector-Distributor (C-D) roads connecting the interchanges. The 68th/70th Street and Hawley Road interchanges would be reconstructed with a configuration similar to that of the existing interchanges.

There would be two (2) business displacements and eight (8) residential displacements under the Double-Deck alternative for the West/Cemetery Segment.

Under the off-alignment alternative, the Stadium Interchange would be reconstructed as a hybrid between a service interchange and a system interchange. The reconstructed interchange would have a smaller footprint than the existing interchange.

Underneath the Stadium Interchange, new on- and off-ramps to 44th Street and a new local street (tentatively referred to as 46th Street) would be constructed. The ramps would replace the interchange that would be removed from Mitchell Boulevard.

East of the Stadium Interchange, the 35th Street interchange would be reconstructed. Braided ramps between the Stadium Interchange and the 35th Street interchange will be provided. Braided ramps would also be provided between the 35th and 27th Street interchanges. The 27th Street interchange would be reconstructed so that all ramps directly connect to 27th Street.

East of 32nd Street, IH 94 would be reconstructed several hundred feet south of its current alignment. IH 94 would rejoin its existing alignment near 18th Street.

This alternative would acquire eleven (11) properties that are a mix of vacant, unused, and active businesses on 35th Street, 27th Street, St. Paul Avenue and Greves Street.

This assessment has been performed in general accordance with the Wisconsin Department of Transportation (WisDOT) Facilities Development Manual (FDM) Procedure 21-35-5 Phase 1 Hazardous Material Assessments (revised December 22, 2011).

Findings

Kapur retained Environmental Data Resources (EDR) of Southport, Connecticut Inquiry # 3357792.1s and 3625566.2s to conduct a search of the State and Federal databases for potential sources of environmental contamination in and adjacent to the project corridor (Ref. 5). A record search of State and Federal databases was conducted for the FDM Procedure 21-35-5 requirement of one-quarter mile from the centerline of the project corridor. A second database search was required for the extension of the project from 25th Street to 16th Street on the east segment. Some listings may be duplicated between the two database searches.

The record searches of the state databases revealed: thirty-three (33) Bureau of Remediation and Redevelopment Tracking System (BRRTS) sites, twenty-seven (27) Emergency Repair Program (ERP) sites, six (6) National Pollutant Discharge Elimination System (NPDES), four (4) Waste Disposal Sites (WDS), seventy-four (74) Leaking Underground Storage Tank (LUST) sites, one hundred seventy-three (173) Underground Storage Tank (UST) sites, three (3) Leaking Aboveground Storage Tank (LAST) sites, thirty-five (35) Aboveground Storage Tank (AST) sites, thirty-three (33) Hazardous Waste Manifest Information (MANIFEST) sites, seventy-six (76) Wisconsin Spill (SPILL) sites, twenty-nine (29) Closed Remediation Sites (CRS), thirty-three (33) Deed Restriction at Closeout (AUL) sites, four (4) Voluntary Party Liability Exemption Sites (VCP), twenty-six (26) Wisconsin Remedial Response Site Evaluation Report (WRRSER) sites, eight (8) Brownfield sites, five (5) Air Permit Program Listing (AIRS) sites,

eighteen (18) Tier 2 sites, one-hundred fourteen (114) Solid and Hazardous Waste Information Management System (SHWIMS) sites, forty-eight (48) Lead Inspection Data (LEAD) sites, and eleven (11) Financial Assurance sites.

The record searches of the federal databases indicated: four (4) Comprehensive Environmental Response, Compensation Liability Information System (CERCLIS), one (1) CERCLIS No Further Remedial Action Planned (CERC-NFRAP) sites, two (2) Corrective Action Report (CORRACTS) sites, two (2) Resource Conservation Recovery Act (RCRA) Large Quantity Generator (LQG) sites, two (2) RCRA Small Quantity Generator (SQG) sites, thirty-seven (37) Conditionally Exempt Small Quantity Generator (CESQG) sites, fifty-six (56) RCRA Non Generators (NONGEN), thirty (30) Emergency Response Notification System (ERNS) sites, two (2) US Brownfields sites, seven (7) Toxic Chemical Release Inventory System (TRIS) sites, four (4) Federal Insecticide, Fungicide and Rodenticide Act/Toxic Substances Control Act (FTTS) sites, four (4) FTTS Tracking System Administrative Case Listing (HIST FTTS) sites, five (5) Integrated Compliance Information System (ICIS) sites, one hundred twenty-nine (129) Facility Index System/Facility Registry System (FINDS) sites and two (2) 2020 Corrective Action Program List (2020 COR ACTION) sites.

One (1) Manufactured Gas Plant, ten (10) Historical Auto Stations and four (4) Historical Cleaners were listed within EDR's Proprietary Databases.

Kapur also reviewed the orphan lists for sites within the project search radius, performed a site reconnaissance and reviewed the online BRRTS Map. Additional sites were added to this report based upon location. Fourteen (14) railroad crossings, three (3) stream crossing, and fifty (50) bridges are also included in this hazardous material site assessment.

Conclusions and Recommendations

Table 1 summarizes the properties with potential hazardous material concerns located in and adjacent to the project corridor or have contamination that has or may have migrated into properties in or adjacent to the project corridor, the database they are listed in, and the recommendations in light of the potential presence of contamination.

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
1	1231 N 46TH STREET 1231 N 46TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
2	4624 W JUNEAU AVENUE 4624 W JUNEAU AVENUE, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
3	MILWAUKEE STOVE AND FURNACE 5070 W STATE STREET, MILWAUKEE, WI	LUST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
4	1169 N 50TH PLACE 1169 N 50TH PLACE, MILWAUKEE, WI 53208	FINDS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
5	5050 W STATE STREET 5050 W STATE STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
6	STATE AUTO BODY 5000 W STATE STREET, MILWAUKEE, WI 53208	CESQG, FINDS, MANIFEST, SHWIMS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
7	1140 N 50TH STREET 1140 N 50TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
8	BRAKE, CLUTCH AND DRUM SERVICE 4934 W STATE STREET, MILWAUKEE, WI 53208	CESQG, FINDS, SHWIMS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
9	WISDOT ALOIS STREET FACILITY 1150 N ALOIS STREET, MILWAUKEE, WI 53208	AST, BRRTS, FINDS, LUST, NONGEN, SHWIMS, UST, WDS, WRRSER,	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
10	1165 N 45TH STREET SPILL 1165 N 45TH STREET, MILWAUKEE, WI 53208	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
11	1150 N 46TH STREET 1150 N 46TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
12	1138 N 45TH STREET 1138 N 45TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
13	MILLER BREWERIES EAST 4430 W STATE STREET, MILWAUKEE, WI 53208	AUL, CRS, LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
14	QUAD MED MILLER HEALTH AND FITNESS CENTER 4400 W STATE STREET, MILWAUKEE, WI 53208	SHWIMS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
15	50TH STREET AND STATE STREET SPILL 50TH STREET AND STATE STREET	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
16	46TH AND STATE STREET SPILL 46TH AND STATE STREET	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
17	MILLER BREWING COMPANY VISITOR CENTER 4315 W STATE STREET, MILWAUKEE, WI	AUL, ERP, WDS, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
18	MGIC 5151 W STATE STREET, MILWAUKEE, WI	LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
19	ACME SUPPLY 5101 W STATE STREET, MILWAUKEE, WI	AUL, ERP	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
20	FORMER CLIMATIC CONTROL COMPANY 5061 W STATE STREET, MILWAUKEE, WI 53208	AST, AUL, CRS, LAST, LUST,	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
21	GENUINE PARTS COMPANY / NAPA DISTRIBUTION CENTER 5001 W STATE STREET, MILWAUKEE, WI 53208	CESQG, FINDS, MANIFEST, SHWIMS, TIER 2	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
22	MAGNUS COMPANY INC / AD SCHINNER COMPANY 4901 W STATE STREET, MILWAUKEE, WI 53208	BRRTS, CERCLIS-NFRAP, FINDS, LUST, SHWIMS, UST, WDS, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
23	FORMER VICTORY GRAPHICS 4831 W STATE STREET, MILWAUKEE, WI 53208	CESQG, FINDS, SHWIMS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
24	MMSD FORMER SAILES PROPERTY 4601 W STATE STREET, MILWAUKEE, WI 53208	ERP	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
25	BADGER ALLOYS / OMCO USA INC 980 N 45TH STREET, MILWAUKEE, WI 53208	CESQG, FINDS, NONGEN, SHWIMS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
26	FORMER WR GRACE COMPANY 4301 W STERLING PLACE, MILWAUKEE, WI 53208	AUL, CRS, ERP, LUST, VPLE, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
27	FORMER WR GRACE COMPANY 900 N 43RD STREET, MILWAUKEE, WI 53208	AUL, CRS, ERP, FINDS, LUST, UST, VPLE, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
28	FORMER HAROLD T ILLING 4200 W MONARCH PLACE, MILWAUKEE, WI 53208	AUL, CRS, ERP, FINDS, NONGEN, SHWIMS, SPILLS,	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
29	FORMER 42ND STREET CORPORATION 753 N 42ND STREET, MILWAUKEE, WI	AST, ERP, LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
30	FORMER CENTRAL REDI-MIX 5013 W STATE STREET, MILWAUKEE, WI 53208	BRRTS, ERP, LUST, UST, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
31	MILWAUKEE COUNTY HAWLEY ROAD LANDFILL #426 / DOYNE PARK 942 N HAWLEY ROAD, MILWAUKEE, WI	ERP, LUST, SHWIMS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
32	5040 W WELLS STREET 5040 W WELLS STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
33	NORMS 49TH STREET AUTO BODY 817 N 49TH STREET, MILWAUKEE, WI 53208	CESQG, FINDS, MANIFEST, SHWIMS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
34	SORCE SERVICES LLC 999 N 46TH STREET, MILWAUKEE, WI 53208	SHWIMS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
35	FORMER XEROX CORPORATION 944 N 46TH STREET, MILWAUKEE, WI 53208	AST, BRRTS, ERP, FINDS, LUST, TIER 2, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
36	4552 W WELLS STREET 4552 W WELLS STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
37	726 N 49TH STREET 726 N 49TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
38	5018 W WISCONSIN AVENUE 5018 W WISCONSIN AVENUE, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
39	4910 W WISCONSIN AVENUE 4910 W WISCONSIN AVENUE, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
40	FORMER ELLER MEDIA COMPANY 4550 W WISCONSIN AVENUE, MILWAUKEE, WI 53208	BRRTS, FINDS, NONGEN, SHWIMS, UST,	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
41	FORMER CANTEEN CORPORATION 4422, 4500 W WISCONSIN AVENUE, MILWAUKEE, WI 53208	AUL, CRS, CESQG, FINDS, LUST, NONGEN, SHWIMS, SPILLS, UST, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
42	WISCONSIN AVENUE VIADUCT – PARCEL 7 WISDOT W WISCONSIN AVENUE AT 42ND STREET MILWAUKEE, WI	AUL, ERP	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
43	4821 W WISCONSIN AVENUE 4821 W WISCONSIN AVENUE, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
44	4924 W WOODLAWN COURT 4924 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
45	4918 W WOODLAWN COURT 4918 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
46	4908 W WOODLAWN COURT 4908 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
47	4904 W WOODLAWN COURT 4904 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
48	4828 W WOODLAWN COURT 4828 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
49	4744 W WOODLAWN COURT 4744 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
50	4734 W WOODLAWN COURT 4734 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
51	4927 W WOODLAWN COURT 4927 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
52	4907 W WOODLAWN COURT 4907 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
53	4841 W WOODLAWN COURT 4841 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
54	4827 W WOODLAWN COURT 4827 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
55	4807 W WOODLAWN COURT 4807 W WOODLAWN COURT, MILWAUKEE, WI 53208	LEAD, UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
56	4727 W WOODLAWN COURT 4727 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
57	4723 W WOODLAWN COURT 4723 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
58	4707 W WOODLAWN COURT 4707 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
59	4816 W BLUEMOUND ROAD 4816 W BLUEMOUND ROAD, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
60	4804 W BLUEMOUND ROAD 4804 W BLUEMOUND ROAD, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
61	4702 W BLUEMOUND ROAD 4702 W BLUEMOUND ROAD, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
62	543 N STORY PARKWAY 543 N STORY PARKWAY, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
63	MILWAUKEE MACK SALES INC 4444 W BLUEMOUND ROAD, MILWAUKEE, WI 53208	AST, CESQG, FINDS, LUST, MANIFEST, SHWIMS, TIER 2, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
64	534 N 44TH STREET SPILL 534 N 44TH STREET, MILWAUKEE, WI 53208	BRRTS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
65	4901 W BLUEMOUND ROAD 4901 W BLUEMOUND ROAD, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
66	486 N 49TH STREET 486 N 49TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
67	471 N 49TH STREET 471 N 49TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
68	459 N 49TH STREET 459 N 49TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
69	442 N 49TH STREET 442 N 49TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
70	436 N 49TH STREET 436 N 49TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
71	410 N 49TH STREET 410 N 49TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
72	418 N 50TH STREET 418 N 50TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
73	414 N 50TH STREET 414 N 50TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
74	439 N PINECREST STREET 439 N PINECREST STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
75	361 N PINECREST STREET 361 N PINECREST STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
76	438 N PINECREST STREET 438 N PINECREST STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
77	MENOMONEE RIVER STADIUM PROJECT IH 94 AND USH 41 MILWAUKEE, WI	ERP	Partial Acquisition	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
78	365 N 50TH STREET 365 N 50TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
79	357 N 50TH STREET 357 N 50TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
80	339 N 50TH STREET 339 N 50TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
81	317 N 50TH STREET 317 N 50TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
82	311 N 50TH STREET 311 N 50TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
83	263 N 50TH STREET 263 N 50TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
84	246 N 50TH STREET 246 N 50TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
85	4923 W SUNNYSIDE DRIVE 4923 W SUNNYSIDE DRIVE, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
86	FORMER DRICKEN PROPERTY 4837 SUNNYSIDE DRIVE, MILWAUKEE, WI 53208	LUST, UST, WRRSER	NONE	NONE	No Further Investigation	No Further Investigation
87	4829 W SUNNYSIDE DRIVE 4829 W SUNNYSIDE DRIVE, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
88	4819 W SUNNYSIDE DRIVE 4819 W SUNNYSIDE DRIVE, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
89	303 N PINECREST STREET 303 N PINECREST STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
90	246 N PINECREST STREET 246 N PINECREST STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
91	240 N PINECREST STREET 240 N PINECREST STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
92	228 N PINECREST STREET 228 N PINECREST STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
93	323 N STORY PARKWAY 323 N STORY PARKWAY, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
94	MMSD FIELD OFFICE 164 N 44TH STREET, MILWAUKEE, WI 53208	BRRTS, FINDS, ICIS	Partial Acquisition	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation
95	500 N 41ST STREET SPILL 500 N 41ST STREET, MILWAUKEE, WI	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
96	428 N 41ST STREET 428 N 41ST STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
97	N 42ND STREET AND SAINT PAUL AVENUE SPILL N 42ND STREET AND SAINT PAUL AVENUE	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
98	DOUGLAS LOSEY PROPERTY 204 S 74TH STREET, MILWAUKEE, WI	LUST	NONE	NONE	No Further Investigation	No Further Investigation
99	70TH STREET AND O'CONNOR STREET SPILL 70TH STREET AND O'CONNOR STREET	SPILLS	IN ROW	Anticipated	Removed From Further Assessment	Removed From Further Assessment
100	IH 94 AND 70TH STREET SPILL IH 94 AND 70TH STREET	SPILLS	IN ROW	Anticipated	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
101	DOMINICAN SISTERS OF THE PERPETUAL ROSARY 217 N 68TH STREET, MILWAUKEE, WI 53213	AUL, CRS, LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
102	O'CONNOR SUBSTATION 6800 O'CONNOR STREET, MILWAUKEE, WI	BRRTS	Partial Acquisition – ALT 2 Only	Anticipated	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2 Subsurface Investigation
103	PENN TEN CORPORATION 112 S 68TH STREET, MILWAUKEE, WI	AST, BRRTS, UST	Partial Acquisition – ALT 2 Only	Anticipated	Phase 2 Subsurface Investigation	Phase 2 Subsurface Investigation
104	6704 W STEVENSON STREET 6704 W STEVENSON STREET, MILWAUKEE, WI 53123	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
105	N 67TH STREET AND FAIRVIEW AVENUE SPILL N 67TH STREET AND FAIRVIEW AVENUE	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
106	FAIRVIEW EVANGELICAL LUTHERAN SCHOOL 137 N 66TH STREET, MILWAUKEE, WI 53213	FINDS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
107	6415 W MOUNT VERNON AVENUE 6415 W MOUNT VERNON AVENUE, MILWAUKEE, WI 53208	UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
108	FORMER FAIRVIEW MAUSOLEUM 6316 W FAIRVIEW AVENUE, MILWAUKEE, WI 53213	FINANCIAL ASSURANCE, FINDS, NONGEN, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
109	FORMER REID CONTRACTING INC 205 N 63RD STREET, MILWAUKEE, WI 53213	SHWIMS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
110	6221 W FAIRVIEW AVENUE 6221 W FAIRVIEW AVENUE, MILWAUKEE, WI 53213	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
111	224 N 61ST STREET 224 N 61ST STREET, MILWAUKEE, WI 53213	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
112	MPS FACILITIES AND MAINTENANCE 3841 W SAINT PAUL AVENUE, MILWAUKEE, WI 53208	FINDS, NONGEN, SHWIMS	NONE	NONE	No Further Investigation	No Further Investigation
113	3844 W PARK HILL AVENUE 3844 W PARK HILL AVENUE, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
114	315 N 37TH STREET 315 N 37TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
115	239 N 37TH STREET – ABANDONED CONTAINER 239 N 37TH STREET, MILWAUKEE, WI 53208	BRRTS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
116	225-227 N 36TH STREET 225-227 N 36TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
117	211 N 36TH STREET 211 N 36TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
118	222 N 36TH STREET 222 N 36TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
119	RP MOTORS INC 305 N 35TH STREET, MILWAUKEE, WI 53208	FINDS, ICIS	NONE	Anticipated	Phase 2 Subsurface Investigation	Phase 2 Subsurface Investigation
120	FORMER VICTORY OPTICIANS INC 215 N 35TH STREET, MILWAUKEE, WI 53208	CESQG, FINDS, SHWIMS	Site Acquisition	Anticipated	Phase 2 Subsurface Investigation	Phase 2 Subsurface Investigation

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
121	35TH STREET AND SAINT PAUL AVENUE SPILL 35TH STREET AND SAINT PAUL AVENUE MILWAUKEE, WI	SPILLS	NONE	NONE	No Further Investigation	No Further Investigation
122	418-420 N 35TH STREET 418-420 N 35TH STREET, MILWAUKEE, WI 53208	LEAD, UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
123	SUPER AMERICA #4080 / SPEEDWAY 4080 302 N 35TH STREET, MILWAUKEE, WI 53208	AUL, CESQG, CRS, FINANCIAL ASSURANCE, FINDS, LUST, SHWIMS, UST, WRRSER	NONE	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
124	MER-CAR CORPORATION INC / CITY OF MILWAUKEE 234 N 35TH STREET, MILWAUKEE, WI 53208	CESQG, FINDS, LUST, SHWIMS, UST, WRRSER,	Partial Acquisition – ALT 2 Only	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
125	AMOCO OIL CO 15228 / KAMRAN AMOCO 200 N 35TH STREET, MILWAUKEE, WI 53208	AUL, CRS, FINANCIAL ASSURANCE, FINDS, LUST, NONGEN, SHWIMS, UST, WRRSER	NONE	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
126	406 N 34TH STREET 406 N 34TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
127	302-304 N 34TH STREET 302-304 N 34TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
128	228 N 34TH STREET 228 N 34TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
129	434 N 32ND STREET 434 N 32ND STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
130	3221 W SAINT PAUL AVENUE 3221 W SAINT PAUL AVENUE, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
131	420 N 32ND STREET 420 N 32ND STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
132	MERRILL PARK HOUSING DEVELOPMENT 222 N 33RD STREET, MILWAUKEE, WI 53208	CESQG, FINDS, LUST, SHWIMS, UST	NONE	Anticipated – ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
133	3117-3119 W SAINT PAUL AVENUE, 3117-3119 W SAINT PAUL AVENUE, MILWAUKEE, WI 53208	LEAD, UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
134	437 N 31ST STREET 437 N 31ST STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
135	SAINT ROSE CATHOLIC ACADEMY 514 N 31ST STREET, MILWAUKEE, WI	LUST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
136	413-415 N 30TH STREET 413-415 N 30TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
137	3006 W SAINT PAUL AVENUE 3006 W SAINT PAUL AVENUE, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
138	432 N 30TH STREET 432 N 30TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
139	CITY OF MILWAUKEE ENGINE HOUSE 424 N 30TH STREET, MILWAUKEE, WI 53208	LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
140	308 N 30TH STREET 308 N 30TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
141	236 N 30TH STREET 236 N 30TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
142	226 N 30TH STREET 226 N 30TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
143	313 N 29TH STREET 313 N 29TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
144	MPI PROPERTY MANAGEMENT LLC 2820-2822 W CLYBOURN STREET, MILWAUKEE, WI 53208	FINDS, FTTS, HIST FTTS, LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
145	454 N 28TH STREET SPILL 454 N 28TH STREET, MILWAUKEE, WI	ERNS, SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
146	525 N 27TH STREET SPILL 525 N 27TH STREET, MILWAUKEE, WI 53233	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
147	KENTUCKY FRIED CHICKEN 605 N 27TH STREET, MILWAUKEE, WI 53208	AUL, CRS, LUST, UST, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
148	527 N 27TH STREET 527 N 27TH STREET, MILWAUKEE, WI 53208	EDR HISTORICAL CLEANERS, UST	NONE	Anticipated-ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2 Subsurface Investigation
149	PETERS CLEANERS AND LAUNDRY 509 N 27TH STREET, MILWAUKEE, WI 53208	CESQG, EDR HISTORICAL CLEANERS, FINDS, MANIFEST, SHWIMS	NONE	Anticipated-ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2 Subsurface Investigation
150	505 N 27TH STREET 505 N 27TH STREET, MILWAUKEE, WI 53208	EDR HISTORICAL AUTO STATIONS, UST	NONE	Anticipated-ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2 Subsurface Investigation
151	FORMER MR PS TIRES 2705 W CLYBOURN STREET, MILWAUKEE, WI 53208	SHWIMS	Partial Acquisition – ALT 1 Only	Anticipated	Phase 2 Subsurface Investigation	Phase 2 Subsurface Investigation

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
152	419 N 27TH STREET 419 N 27TH STREET, MILWAUKEE, WI 53208	UST	Site Acquisition – ALT 1 Only	Anticipated	Phase 3 Subsurface Investigation	Phase 2 Subsurface Investigation
153	FORMER B&C CITGO LLC 405 N 27TH STREET, MILWAUKEE, WI 53208	AST, EDR HISTORICAL AUTO STATIONS, FINANCIAL ASSURANCE, FINDS, LUST, UST	Site Acquisition – ALT 1 Only	Anticipated	Phase 3 Subsurface Investigation	Phase 2.5 Subsurface Investigation
154	28TH STREET SUBSTATION 2701 W SAINT PAUL AVENUE, MILWAUKEE, WI	AUL, ERP, FINDS, NONGEN, SHWIMS, TIER 2, UST	Partial Acquisition – ALT 2 Only	Anticipated	Phase 2.5 Subsurface Investigation	Phase 3 Subsurface Investigation
155	FORMER CLARK REFINING AND MARKETING 34 608 N 27TH STREET, MILWAUKEE, WI 53208	AUL, CESQG, CRS, FINDS, LUST, SHWIMS, UST, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
156	FORMER NERO AND SON / PAUL DAMIANO PROPERTY 2634 W CLYBOURN STREET, MILWAUKEE, WI 53233	FINDS, LUST, NONGEN, SHWIMS, UST	NONE	Anticipated – ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2.5 Subsurface Investigation
157	FORMER STI PROPERTIES 2601 W CLYBOURN STREET, MILWAUKEE, WI 53233	AST, FINDS, LUST, NONGEN, SHWIMS, UST	Partial Acquisition	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation
158	FORMER PERLSTEIN PROPERTY 418 N 27TH STREET, MILWAUKEE, WI 53208	AUL, CRS, ERP, LUST, UST	Partial Acquisition	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
159	2620 W SAINT PAUL AVENUE 2620 W SAINT PAUL AVENUE, MILWAUKEE, WI 53208	UST	Site Acquisition – ALT 1 Only	Anticipated	Phase 2 Subsurface Investigation	Phase 2 Subsurface Investigation
160	AMERICAN RED CROSS 2600 W WISCONSIN AVENUE, MILWAUKEE, WI	AUL, CRS, LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
161	533-535 N 26TH STREET 533-535 N 26TH STREET, MILWAUKEE, WI 53233	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
162	606 N 26TH STREET 606 N 26TH STREET, MILWAUKEE, WI 5328	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
163	2524 W MICHIGAN STREET 2524 W MICHIGAN STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
164	2517A W CLYBOURN 2517A W CLYBOURN, MILWAUKEE, WI 53233	UST	NONE	Anticipated – ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2 Subsurface Investigation
165	UNION 76 / CITGO FOOD MARKET / CITGO 2502 W WISCONSIN AVENUE, MILWAUKEE, WI 53208	EDR HISTORICAL AUTO STATIONS, FINANCIAL ASSURANCE, FINDS, LUST, NONGEN, SHWIMS, SPILLS, UST, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
166	605 N 25TH STREET 605 N 25TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
167	507 N 25TH STREET 507 N 25TH STREET, MILWAUKEE, WI 53233	LEAD	NONE	Anticipated – ALT 2 Only	Removed From Further Assessment	Removed From Further Assessment
168	2459 W MICHIGAN STREET 2459 W MICHIGAN STREET, MILWAUKEE, WI	UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
169	2453 W MICHIGAN STREET 2453 W MICHIGAN STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
170	FORMER BADGER REBUILDERS 2455 W CLYBOURN STREET, MILWAUKEE, WI 53233	FINDS, NONGEN	NONE	Anticipated – ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2 Subsurface Investigation

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
171	THE RAVE 2401 W WISCONSIN AVENUE, MILWAUKEE, WI 53233	FINDS, NONGEN, SHWIMS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
172	FORMER BURGESS CAR AND TRUCK 2440 W CLYBOURN STREET, MILWAUKEE, WI 53233	BRRTS, CESQG, EDR HISTORICAL AUTO STATIONS, ERP, FINDS, SHWIMS, UST	NONE	Anticipated – ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2.5 Subsurface Investigation
173	FORMER PRISMA GRAPHICS INC 2422 W CLYBOURN STREET, MILWAUKEE, WI 53208	CESQG, FINDS, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
174	FORMER BOEHCK EQUIPMENT COMPANY 2404 W CLYBOURN STREET, MILWAUKEE, WI 53233	FINDS, LUST, NONGEN, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
175	SCRUB A DUB CAR WASH 2323 W WISCONSIN AVENUE, MILWAUKEE, WI	AUL, CRS, LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
176	624 N 24TH STREET 624 N 24TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
177	FORMER HH WEST 2202-2302 W CLYBOURN STREET, MILWAUKEE, WI 53233	AUL, BROWNFIELDS, CRS, ERNS, ERP, FINDS, LUST, NONGEN, SHWIMS, UST, VPLE	NONE	NONE	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
178	MUELLER PROPERTY / CRAFTMASTERS CONTRACTORS 2123 W MICHIGAN STREET, MILWAUKEE, WI	ERP, FINDS, LUST, NONGEN, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
179	AMERICAN LITHO & PUBLISHING INC 530 N 22ND STREET, MILWAUKEE, WI	CESQG, FINDS, LUST, MANIFEST, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
180	AMERICAN BUILDING 2130 W CLYBOURN STREET, MILWAUKEE, WI	CESQG, FINDS, LUST, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
181	7219 W ADLER STREET SPILL 7219 W ADLER STREET, MILWAUKEE, WI	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
182	LUCKEYS TIRE & SERVICE 401 S 70TH STREET, MILWAUKEE, WI 53214	FINDS, LUST, NONGEN, SHWIMS, UST, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
183	FORMER GUIDAS SERVICE 541 S 70TH STREET, MILWAUKEE, WI 53214	AUL, CRS, FINDS, LUST, NONGEN, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
184	230 S 66TH STREET 230 S 66TH STREET, MILWAUKEE, WI 53214	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
185	6311 W DIXON STREET SPILL 6311 W DIXON STREET, MILWAUKEE, WI 53214	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
186	61ST STREET AND ADLER STREET SPILL 61ST STREET AND ADLER STREET	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
187	BURBANK ELEMENTARY SCHOOL 6035 W ADLER STREET, MILWAUKEE, WI 53208	BRRTS, FINDS, UST	NONE	NONE	No Further Investigation	No Further Investigation

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
188	FORMER BENTLEY WELDING SUPPLY 200 S HAWLEY ROAD, MILWAUKEE, WI 53214	CESQG, FINDS, LUST, SHWIMS, UST, WRRSER	NONE	Anticipated	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
189	MILLER PARK 1 BREWERS WAY, MILWAUKEE, WI 53214	AST, CESQG, FINANCIAL ASSURANCE, FINDS, MANIFEST, SHWIMS, SPILLS, TIER 2, UST	Partial Acquisition	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation
190	FORMER MILWAUKEE COUNTY STADIUM 201 S 46TH STREET, MILWAUKEE, WI	ERP, FINDS, FTTS, HIST FTTS, LUST, MANIFEST, NONGEN, SHWIMS UST	Partial Acquisition	Anticipated	See Site 189	See Site 189
191	WI DOT MILWAUKEE COUNTY STADIUM / IH 94 / USH 41 IH 94 & USH 41 MILWAUKEE, WI	ERP	Partial Acquisition	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
192	FORMER MENOMONEE VALLEY PUMPING STATION 127 S 44TH STREET, MILWAUKEE, WI 53208	FINDS, MANIFEST, NONGEN, SHWIMS	Partial Acquisition	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation
193	SOO LINE RR COMPANY STADIUM PROJECT 400 N 44TH STREET, MILWAUKEE, WI	BRRTS	Partial Acquisition	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation
194	FORMER MILWAUKEE ROAD RR SHOPS / MILWAUKEE SHOPS PROPERTY 400-620 S 44TH STREET, MILWAUKEE, WI 53214	BROWNFIELDS, BRRTS, FINDS, US BROWNFIELDS	Partial Acquisition – ALT 2 Only	Anticipated	Phase 2.5 Subsurface Investigation	Phase 3 Subsurface Investigation
195	NATIONAL SALVAGE 600 S 44TH STREET, MILWAUKEE, WI 53214	ERP, FINDS, NONGEN, NPDES, SHWIMS, TIER 2,	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
196	FORMER LEWINSKY IRON AND METAL COMPANY 620 S 44TH STREET, MILWAUKEE, WI 53214	AST, BROWNFIELDS, BRRTS, ERP, FINDS, LUST, NONGEN, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
197	HARNISCHFEGER CORPORATION / P&H MINING EQUIPMENT 4400 W NATIONAL AVENUE, MILWAUKEE, WI 53204	2020 COR ACTION, AIRS, AST, CORRACTS, ERNS, ERP, FINDS, FTTS, HIST FTTS, ICIS, LQG, LUST, MANIFEST, NPDES, SHWIMS, TIER 2, TRIS, UST, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
198	IH 94 EASTBOUND BETWEEN STADIUM AND 35TH STREET SPILL IH 94 EASTBOUND BETWEEN STADIUM AND 35TH STREET	SPILLS	IN ROW	Anticipated	Removed From Further Assessment	Removed From Further Assessment
199	WEPCO PARK HILL SOUTHWEST SUBSTATION 4000 W CANAL STREET, MILWAUKEE, WI 53208	FINDS, NONGEN, SHWIMS	Partial Acquisition	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation
200	MENOMONEE VALLEY / FORMER CMC 3301 W CANAL STREET, MILWAUKEE, WI	AST, CERCLIS- NFRAP, CESQG, ERP, FINDS, MANIFEST, SHWIMS, SPILLS, US BROWNFIELDS, UST	NONE	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
201	FORMER WI DH&SS STADIUM PROJECT AREAS B & C 554 S 44TH STREET, MILWAUKEE, WI 53208	AST, ERP	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
202	35TH STREET AND CANAL STREET SPILL 35TH STREET AND CANAL STREET	SPILLS	IN ROW	Anticipated	Removed From Further Assessment	Removed From Further Assessment
203	PALERMO VILLA INC 3301 W CANAL STREET, MILWAUKEE, WI 53208	BRRTS, FINDS, TIER 2	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
204	RR TRACKS AT CANAL AND 30TH STREET SPILL RR TRACKS AT CANAL AND 30TH STREET MILWAUKEE, WI	SPILLS	NONE	NONE	No Further Investigation	No Further Investigation
205	REXNORD INDUSTRIES LLC 3001 W CANAL STREET, MILWAUKEE, WI	2020 COR ACTION, AIRS, AST, AUL, BRRTS, CERCLIS-NFRAP, CORRACTS, CRS, ERNS, ERP, FINDS, MANIFEST, NPDES, SHWIMS, SPILLS, SQG, TIER 2,TRIS, UST, WDS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
206	IH 94 EASTBOUND NEAR 28TH STREET SPILL IH 94 EASTBOUND NEAR 28TH STREET	SPILLS	IN ROW	Anticipated	Removed From Further Assessment	Removed From Further Assessment
207	FORMER RED STAR YEAST 2702 W GREVES STREET, MILWAUKEE, WI 53208	AST, ERNS, FINDS, ICIS, LUST, MANIFEST, NONGEN, RMP, SHWIMS, SPILLS, UST	Owned by WisDOT	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
208	THIELE TANNING COMPANY 123 N 27TH STREET, MILWAUKEE, WI 53208	AIRS, ERNS, FINDS, NPDES, SPILLS, TIER 2, TRIS	NONE	Anticipated – ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2 Subsurface Investigation
209	IH 94 ON RAMP AT W SAINT PAUL AND 26TH STREET SPILL IH 94 ON RAMP AT W SAINT PAUL AND 26TH STREET	ERNS	IN ROW	Anticipated	Removed From Further Assessment	Removed From Further Assessment
210	RED STAR YEAST 2612 W GREVES STREET, MILWAUKEE, WI	LUST	Site Acquisition	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation
211	D.R. DIEDRICH & COMPANY 2615 W GREVES STREET, MILWAUKEE, WI 53208	FINDS, NONGEN, NPDES, SHWIMS, SPILLS, TIER 2, TRIS, UST	NONE	Anticipated – ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2 Subsurface Investigation

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
212	25TH STREET AND CANAL STREET BIORETENTION 199 N 25TH STREET, MILWAUKEE, WI	AUL, CRS, ERP, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
213	CANADIAN PACIFIC RAILROAD 504 S LAYTON BOULEVARD, MILWAUKEE, WI	AST, ERP, LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
214	2563 W SAINT PAUL AVENUE SPILL 2563 W SAINT PAUL AVENUE, MILWAUKEE, WI	SPILLS	IN ROW	Anticipated	Removed From Further Assessment	Removed From Further Assessment
215	FORMER FRIEDA CORPORATION 333 N 25TH STREET, MILWAUKEE, WI	LUST, SPILLS, UST, WRRSER	Site Acquisition	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation
216	FORMER BADGER STATE TANNING 305-321 N 25TH STREET, MILWAUKEE, WI 53233	AUL, BROWNFIELDS, BRRTS, CESQG, CRS, FINDS, LUST, MANIFEST, SHWIMS	Partial Acquisition – ALT 1, Site Acquisition – ALT 2	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation
217	FORMER WEST SIDE MGP N 25TH STREET AND MOUNT VERNON AVENUE, MILWAUKEE, WI 53201	EDR MANUFACTURED GAS PLANTS	See Individual Sites			
218	BADGER TRUCK CENTER INC 2326 W SAINT PAUL AVENUE, MILWAUKEE, WI 53201	AUL, CESQG, CRS, ERP, FINDS, LUST, MANIFEST, SHWIMS, UST	Site Acquisition	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation
219	FORMER DMV EMISSIONS STATION 2401 W SAINT PAUL AVENUE, MILWAUKEE, WI 53233	AUL, CRS, ERNS, ERP, SPILLS	Site Acquisition – ALT 2 Only	Anticipated	Phase 2.5 Subsurface Investigation	Phase 3 Subsurface Investigation
220	FORMER WEST SIDE MGP / MALLORY PROPERTIES 200-224 N 25TH STREET, MILWAUKEE, WI 53233	AST, AUL, BRRTS, CESQG, CRS, ERP, FINDS, LUST, MANIFEST, MANUFACTURED GAS PLANTS, NONGEN, SHWIMS, SPILLS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
221	SIVA TRUCK LEASING INC 2301 W SAINT PAUL AVENUE, MILWAUKEE, WI 53201	AST, AUL, BROWNFIELDS, BRRTS, CESQG, CRS, FINANCIAL ASSURANCE, FINDS, LUST, MANIFEST, SHWIMS, TIER 2, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
222	JM BRENNAN INC 2101 W SAINT PAUL AVENUE, MILWAUKEE, WI	AST, FINDS, LUST, MANIFEST, NONGEN, SHWIMS, UST, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
223	MILWAUKEE CITY CENTRAL REPAIR GARAGE 2142 W CANAL STREET, MILWAUKEE, WI	BRRTS, LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
224	MARQUETTE UNIVERSITY SOCCER 1818 W CANAL STREET, MILWAUKEE, WI	BRRTS, ERP	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
225	CITY OF MILWAUKEE MUNICIPAL SERVICE BUILDING 1540 W CANAL STREET, MILWAUKEE, WI	AUL, BRRTS, LUST, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
226	FORMER TEWS GARAGE 1601-1901 AND 2001 W MOUNT VERNON AVENUE, MILWAUKEE, WI	AST, AUL, CESQG, CRS, ERP, FINANCIAL ASSURANCE FINDS, LAST, LUST, SHWIMS, SPILLS, UST,	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
227	CITY OF MILWAUKEE RECYCLING CENTER 1313 W MOUNT VERNON AVENUE, MILWAUKEE, WI	AST, AUL, CRS, FINDS, LUST, NONGEN, SHWIMS, SPILLS, TIER 2, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
228	TYCO INTERNATIONAL / BADGER TRUCK CENTER 1741 W SAINT PAUL AVENUE, MILWAUKEE, WI	CESQG, FINDS, LUST, MANIFEST, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
229	FORMER BRUCH CORPORATION 1701 W SAINT PAUL AVENUE, MILWAUKEE, WI	LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
230	15TH STREET AND W SAINT PAUL AVENUE SPILL 15TH STREET AND W SAINT PAUL AVENUE, MILWAUKEE, WI	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
231	FORMER GEUDER PARSCHKE AND FRYE COMPANY 324 N 15TH STREET, MILWAUKEE, WI	CERCLIS, ERP, FINDS, NONGEN, SHWIMS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
232	FORMER HOSE JOSEPH 1357-1439 W SAINT PAUL AVENUE, MILWAUKEE, WI	FINDS, NONGEN, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
233	FORMER MILWAUKEE PLUMBING 313 N 13TH STREET, MILWAUKEE, WI	AUL, CRS, ERP	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
234	ALLIED INSULATION SUPPLY COMPANY 315 N 12TH STREET, MILWAUKEE, WI	LUST, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
235	PAIN ENTERPRISES INC 1816-1832 W SAINT PAUL AVENUE, MILWAUKEE, WI	TIER 2	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
236	FORMER MONITOR PRESS AND MACHINE COMPANY INC 1610 W SAINT PAUL AVENUE, MILWAUKEE, WI	CESQG, FINDS, SHWIMS	NONE	Anticipated	Phase 2 Subsurface Investigation	Phase 2 Subsurface Investigation
237	GENERAL PRESS AND FABRICATING 1500-1538 W SAINT PAUL AVENUE, MILWAUKEE, WI	FINDS, NONGEN, SHWIMS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
238	MATERION ADVANCED CHEMICALS INC 407 N 14TH STREET, MILWAUKEE, WI	AIRS, AUL, BRRTS, CRS, ERNS, ERP, FINDS, LQG, MANIFEST, NONGEN, SHWIMS, SPILLS, TIER 2, TRIS, TSCA	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
239	MATERION ADVANCED CHEMICALS INC 405 N 12TH STREET, MILWAUKEE, WI	AIRS, AUL, BRRTS, CRS, ERP, FINDS, LQG, LUST, MANIFEST SHWIMS, SPILLS, TRIS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
240	MARQUETTE INTERCHANGE N 13TH STREET AND CLYBOURN STREET, MILWAUKEE, WI	LUST, SPILLS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
241	MARQUETTE UNIVERSITY 530 N 13TH STREET, MILWAUKEE, WI	LUST, SPILLS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
242	MARQUETTE UNIVERSITY 1343 W WISCONSIN AVENUE, MILWAUKEE, WI	ERP, LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
243	MARQUETTE UNIVERSITY 1415 W WISCONSIN AVENUE, MILWAUKEE, WI	AST, BRRTS, ERNS, LUST, MLTS, SPILLS, UST, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
244	MARQUETTE JESUIT RESIDENCE 1404 W WISCONSIN AVENUE, MILWAUKEE, WI	UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
245	MARQUETTE UNIVERSITY 526-604 N 16TH STREET, MILWAUKEE, WI	SHWIMS, SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
246	FORMER JOHNNY'S ENCO GAS 1500 W WISCONSIN AVENUE MILWAUKEE, WI	EDR HISTORICAL AUTO STATIONS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
247	FORMER GAS STATION N 16TH STREET AND W CLYBOURN STREET MILWAUKEE, WI	AUL, LUST	IN ROW	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
248	MARQUETTE UNIVERSITY SERVICE BUILDING #324 1706 W CLYBOURN STREET MILWAUKEE, WI	AST, BRRTS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
249	MARQUETTE UNIVERSITY 525 N 16TH STREET MILWAUKEE, WI	AST, EDR HISTORICAL AUTO STATIONS, ERNS	NONE	NONE	No Further Investigation	No Further Investigation
250	MARQUETTE UNIVERSITY 1621 W WISCONSIN AVENUE MILWAUKEE, WI	AST, EDR HISTORICAL AUTO STATIONS, LUST, SPILLS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
251	FORMER MARQUETTE APARTMENTS 706 N 17TH STREET MILWAUKEE, WI	AUL, CRS, LAST, LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
252	BLOODCENTER OF WISCONSIN 638 N 18TH STREET MILWAUKEE, WI	AST, FINDS, LUST, MANIFEST, SHWIMS, SQG, TIER 2, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
253	MARQUETTE UNIVERSITY 721 N 17TH STREET MILWAUKEE, WI	LUST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
254	FORMER CONCENTRA OCC MEDICAL CENTERS 500 N 19TH STREET MILWAUKEE, WI	FINDS, NONGEN, SHWIMS	NONE	NONE	No Further Investigation	No Further Investigation
255	FORMER GOOD SAMARITAN MEDICAL CENTER 620 N 19TH STREET MILWAUKEE, WI	AIRS, FINDS, SHWIMS	NONE	NONE	No Further Investigation	No Further Investigation
256	SOVEREIGN APARTMENTS LLC 1810-1826 W WISCONSIN AVENUE MILWAUKEE, WI	BRRTS, UST	NONE	NONE	No Further Investigation	No Further Investigation
257	FORMER SINAI SAMARITAN FAMILY CARE CENTER 1834 W WISCONSIN AVENUE MILWAUKEE, WI	SHWIMS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
258	MARQUETTE UNIVERSITY 1926 W WISCONSIN AVENUE MILWAUKEE, WI	UST	NONE	NONE	No Further Investigation	No Further Investigation
259	2001 W WISCONSIN AVENUE 2001 W WISCONSIN AVENUE MILWAUKEE, WI	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
260	ASSATA 2017-2023 W WISCONSIN AVENUE MILWAUKEE, WI	FINDS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
261	2040 W WISCONSIN AVENUE 2040 W WISCONSIN AVENUE MILWAUKEE, WI	AST, MLTS, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
262	2121 W WISCONSIN AVENUE 2121 W WISCONSIN AVENUE MILWAUKEE, WI	SPILLS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
263	FORMER AUTO STATION 2210 W WISCONSIN AVENUE MILWAUKEE, WI	EDR HISTORICAL AUTO STATIONS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
264	DOWNEY INC 2203 W MICHIGAN STREET MILWAUKEE, WI	CESQG, FINDS, MANIFEST, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
265	FORMER CLEANERS 2227 W WISCONSIN AVENUE MILWAUKEE, WI	EDR HISTORICAL CLEANERS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
266	AMBASSADOR HOTEL 2308-2324 W WISCONSIN AVENUE MILWAUKEE, WI	AST, BRRTS, UST	NONE	NONE	No Further Investigation	No Further Investigation
267	GRAND AVENUE SCHOOL 2430 W WISCONSIN AVENUE MILWAUKEE, WI	FINDS, SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
268	2700 W SAINT PAUL AVENUE SPILL 2700 W SAINT PAUL AVENUE MILWAUKEE, WI	SPILLS	IN ROW	Anticipated	Removed From Further Assessment	Removed From Further Assessment
269	SUDS YOUR DUDS 547 N 27TH STREET MILWAUKEE, WI	EDR HISTORICAL CLEANERS	NONE	Anticipated – ALT 2 Only	No Further Investigation	No Further Investigation

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
270	FORMER AUTO STATION 2715 W CLYBOURN STREET MILWAUKEE, WI	EDR HISTORICAL AUTO STATIONS	NONE	Anticipated – ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2 Subsurface Investigation
SANBORN MAP SITES						
SAN-1	FORMER FILLING STATION SOUTH OF WISCONSIN AVENUE BETWEEN USH 41 AND THE NORTHBOUND OFF RAMP		IN ROW	Anticipated	Phase 2 Subsurface Investigation	Phase 2 Subsurface Investigation
SAN-2	FORMER AUTO REPAIR SOUTHWEST OF THE INTERSECTION OF 35TH STREET AND PARK HILL		IN ROW	Anticipated	Phase 2 Subsurface Investigation	Phase 2 Subsurface Investigation
SAN-3	FORMER GAS TANKS USH 41 ROW NORTH OF STATE STREET		NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
SAN-4	FORMER OIL TANK ~2033 W SAINT PAUL AVENUE		NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
SAN-5	FORMER OIL TANKS, FOUNDRY ~1925 TO 2015 W SAINT PAUL AVENUE		NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
SAN-6	WEPCO OIL TANKS WISDOT IH 94 ROW WEST OF 1922 W SAINT PAUL AVENUE		IN ROW	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
SAN-7	HISTORIC FILLING STATION WISDOT IH 94 ROW WEST OF 1922 W SAINT PAUL AVENUE		IN ROW	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
SAN-8	FORMER COMMERCIAL PHOTOGRAPHY AND AUTO REPAIR 2100 W CLYBOURN STREET		NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
SAN-9	FORMER AUTO REPAIR 2030 W CLYBOURN STREET		NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
HISTORIC PLAT MAP SITES						
HP-1	FORMER MILWAUKEE AND SUBURBAN TRANSPORT COMPANY EAST OF 70TH STREET IN IH 94 ROW		IN ROW	Anticipated	Phase 2 Subsurface Investigation	Phase 2 Subsurface Investigation
HP-2	FORMER STANDARD OIL COMPANY SOUTHEAST OF THE INTERSECTION OF PARK HILL AND 35TH STREET		IN ROW	Anticipated	Phase 2 Subsurface Investigation	Phase 2 Subsurface Investigation
HP-3	FORMER FALK CORPORATION USH 41 ROW NORTH OF WELLS STREET		IN ROW	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
RAILROAD SITES						
RR-1	SOO LINE RAILROAD UNDERPASS BETWEEN WEST STATE STREET AND THE MENOMONEE RIVER		NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
RR-2	FORMER INTERURBAN RAILROAD CROSSING IH 94 JUST EAST OF THE 70TH STREET OVERPASS		IN ROW	Anticipated	No Further Investigation	No Further Investigation
RR-3	FORMER INTERURBAN RAILROAD ADJACENT TO IH 94 (NORTH SIDE) BETWEEN 68TH STREET AND HAWLEY ROAD		IN ROW	Anticipated	No Further Investigation	No Further Investigation

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
RR-4	FORMER INTERURBAN RAILROAD WITHIN THE STADIUM INTERCHANGE		IN ROW	Anticipated	No Further Investigation	No Further Investigation
RR-5	FORMER RAILROAD UNDER IH 94 BETWEEN SOUTH 44TH STREET AND THE MENOMONEE RIVER		IN ROW	Anticipated	See Site 94	See Site 94
RR-6	SOO LINE RAILROAD UNDER IH 94 ADJACENT TO THE EAST OF THE MENOMONEE RIVER		IN ROW	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
RR-7	FORMER RAILROAD CROSSING OVER MILLER PARK WAY SOUTH OF FREDERICK MILLER WAY		NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
RR-8	FORMER MILWAUKEE ROAD SHOPS BETWEEN 27TH STREET AND 44TH STREET SOUTH OF IH 94		Partial Acquisition – ALT 2 Only	Anticipated	See Site 194	See Site 194
RR-9	FORMER INTERURBAN RAILROAD ADJACENT TO IH 94 (SOUTH SIDE) BETWEEN RR-6 AND 35TH STREET		IN ROW	Anticipated	No Further Investigation	No Further Investigation
RR-10	FORMER INTERURBAN RAILROAD ADJACENT TO IH 94 (SOUTH SIDE) BETWEEN 35TH STREET AND 27TH STREET		IN ROW	Anticipated	No Further Investigation	No Further Investigation
RR-11	FORMER INTERURBAN RAILROAD ADJACENT TO IH 94 (SOUTH SIDE) FROM 27TH STREET TO 16TH STREET		IN ROW	Anticipated	No Further Investigation	No Further Investigation
RR-12	SOO LINE RAILROAD BETWEEN RR-6 AND 35TH STREET		IN ROW	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
RR-13	SOO LINE RAILROAD BETWEEN 35TH STREET AND 27TH STREET		NONE	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
RR-14	SOO LINE RAILROAD BETWEEN 27TH STREET AND 16TH STREET		NONE	Anticipated	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
STREAM SITES						
S-1	MENOMONEE RIVER UNDERNEATH USH 41 600 FEET SOUTH OF W STATE STREET		NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
S-2	MENOMONEE RIVER UNDERNEATH IH 94 BETWEEN N 42ND STREET (EXTENDED) AND N 44TH STREET		NONE	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
S-3	WOOD CREEK UNDERNEATH MILLER PARK WAY SOUTH OF FREDERICK MILLER WAY		NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

As indicated in Table 1, one hundred and twenty-four (124) sites have been removed from further assessment in this report due to their location in relation to the project, database listing, and overall low potential for impacting the project. No further evaluation of these sites will take place within this report. The sites are numbered as follows: 1, 2, 4, 5, 7, 10, 11, 12, 14, 15, 16, 32, 36, 37, 38, 39, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 78, 79, 80, 81, 82, 83, 84, 85, 87, 88, 89, 90, 91, 92, 93, 95, 96, 97, 99, 100, 104, 105, 106, 109, 110, 111, 113, 114, 115, 116, 117, 118, 122, 126, 127, 128, 129, 130, 131, 133, 134, 136, 137, 138, 140, 141, 142, 143, 144, 145, 146, 161, 162, 163, 166, 167, 169, 176, 181, 184, 185, 186, 198, 202, 206, 209, 214, 230, 235, 245, 257, 259, 260, 267, and 268.

The remaining one hundred and seventy-one (171) sites were assessed due to their close proximity to the project or their potential for impacting the project. Of these, No Further Investigation is recommended at nineteen (19) sites for both alternatives.

No further investigation unless construction or real estate requirements change is recommended at one hundred and thirteen (113) sites for Alternative 1 and one hundred and two (102) sites for Alternative 2.

A Phase 2 Subsurface Investigation (FDM Procedure 21-35-10) is recommended at ten (10) sites for Alternative 1 and twenty (20) sites for Alternative 2.

A Phase 2.5 Subsurface Investigation (FDM Procedure 21-35-12) is recommended at sixteen (16) sites for Alternative 1 and Alternative 2.

A Phase 3 Subsurface Investigation (FDM Procedure 21-35-15) is recommended at thirteen (13) sites for Alternative 1 and fourteen (14) sites for Alternative 2.

Four hundred twenty-nine (429) pole and pad mounted transformers are located adjacent to or within close proximity to the project corridor. No visual indication of leakage of potential polychlorinated bi-phenyls (PCBs) was observed from the transformers during site reconnaissance. Ms. Mesha Johnson of We Energies was contacted regarding PCBs contained within the transformers. Based upon information provided by Ms. Johnson two hundred forty-nine (249) transformer sites are PCB free, twenty-two (22) do not have information regarding the PCB status of the fluids contained within, and the remaining transformers have a probability of containing >50 parts per million (ppm) PCBs as follows: thirty-seven (37) transformers have a 1% probability, forty-nine (49) transformers have a 3% probability, thirteen (13) have a 6% probability, eleven (11) transformers have a 13% probability, one (1) has an 18% probability, and forty-seven (47) transformers have a 42% probability. A transformer with a 50 ppm concentration of PCB would contain less than an ounce of PCBs. Based upon the PCB free status or limited percentage of containing PCBs, and no visual indication of leakage, additional subsurface investigation of the transformers is not recommended. Should final construction requirements include the relocation, removal, and/or disposal of transformers, arrangements should be made with We Energies for proper

handling of the transformers and oil contained within.

A Pre-demolition inspection should be completed at all relocation parcels to determine the presence of asbestos containing materials (ACM) per Wisconsin Administrative Code (WAC) NR 447, lead based paint (LBP), mercury switches, polychlorinated biphenyls (PCBs), fuel oil tanks, and other potentially hazardous materials. A Notification of Demolition and/or Renovation and Application for Permit Exemption (Form 4500-113) must be submitted to the Wisconsin Department of Natural Resources (WDNR) ten (10) days prior to site demolition or abatement activities.

Overpass and bridge structures have been identified as potential asbestos containing and also a source of LBP and therefore, may be a potential concern. An asbestos inspection is recommended for overpass and bridge structures located within the project limits if demolition or reconstruction is required. All paint should be assumed to be lead-based as should be disposed of per state and federal regulations.

At the time of this report the proposed construction plans, ROW acquisitions, Temporary Limited Easements (TLE), and FEE acquisitions have not been finalized. All recommendations should be considered tentative and will be revised in an addendum once the preferred alternative and construction requirements are determined.

1.0 SCOPE OF WORK

The purpose of this investigation was to identify, to the extent feasible, the potential sources for environmental contamination of the project corridor due to the surrounding area's present or past land use including migration of any potential off-site contaminants from the adjoining areas.

This site assessment has been performed in general accordance with the Wisconsin Department of Transportation (WisDOT) Facilities Development Manual (FDM) Procedure 21-35-5 -Phase 1 Hazardous Material Assessments (revised December 22, 2011). The scope of investigation included the following activities:

1. Site Reconnaissance
    - Land use
    - Evidence of the potential for contamination

2. Record Search and File Review: State and Federal
    - State

      Wisconsin Department of Agriculture, Trade & Consumer Protection (DATCP)
        - Underground Storage Tanks (UST) List
        - Aboveground Storage Tanks (AST) List
        - DATCP Spills (AG SPILLS) Database

      Wisconsin Department of Natural Resources (WDNR)
        - Leaking Underground Storage Tanks (LUST) List
        - Leaking Aboveground Storage Tanks (LAST) List
        - Deed Restriction at Closeout Sites (AUL) List
        - State Hazardous Waste Disposal Site (WDS) List
        - Solid Waste Facilities/Landfill Sites (SWF/LF) List
        - Wisconsin Spills (SPILLS) Database
        - Bureau of Remediation & Redevelopment (BRRTS) Database
        - Environmental Repair Program (ERP) Database
        - Wisconsin Remedial Response Site Evaluation Report (WRRSER)

- Federal
  United States Environmental Protection Agency (US EPA)
    - National Priorities List (NPL)
    - Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)
    - Resource Conservation and Recovery Act Information System (RCRA Info)
    - Emergency Response Notification System (ERNS)

3. Review of historical use information
    - Topographic maps
    - Aerial photographs, including WisDOT historical aerial photography
    - Sanborn maps
    - WisDOT Historical Right of Way Plat Maps
    - WisDOT Historical As Builts

2.0 PROJECT CORRIDOR INFORMATION

Kapur and Associates, Inc. (Kapur) has completed a Preliminary Phase 1 Hazardous Material Assessment for Interstate Highway (IH) 94 from 70th Street to 16th Street and United States Highway (USH) 41/Miller Park Way from State Street to Canal Street/Frederick Miller Way (hereafter called project corridor). The purpose of this investigation was to identify, to the extent feasible, the potential sources for environmental contamination to the proposed right-of-way (ROW) of the project corridor due to the surrounding area's present or past land use including migration of any potential off-site contaminants from the adjoining areas.

2.1 Project Description

The IH-94 East-West (E-W) Freeway project area includes approximately 3.5 miles of IH 94 freeway corridor from 70th Street (west limit) to 16th Street (east limit), one system interchange (Stadium Interchange: IH-94/Wisconsin 341, USH 41), and five service interchanges (the 68th-70th split diamond, Hawley Road, Mitchell Boulevard, 35th Street, and 6th Street) within those termini. The West/Cemetery Segment of the study area is IH 94 from 70th Street to Yount Drive, just west of the Stadium Interchange. This segment includes the existing 68th/70th Street, Hawley Road and Mitchell Boulevard service interchanges. The East segment of the study area is from Yount Drive, just west of the Stadium Interchange, to 16th Street. This Segment includes the existing 35th Street and 25th/26th/28th Street service interchanges and Stadium Interchange system interchange. At the time of this report, there are two (2) separate alternatives. Various parts of the two (2) alternatives are interchangeable. They are described as follows:

Alternative 1: At-Grade (West/Cemetery), Modified Single Point Interchange (Stadium), and On-Alignment (East)

The at-grade alternative would reconstruct IH 94 to eight (8) travel lanes (4 in each direction) at essentially the same elevation as the existing freeway in the West/Cemetery Segment. The at-grade alternative would be compatible with either alternative in the east segment. To avoid encroachment on the cemeteries, the reconstructed freeway mainline would have 11-foot driving lanes and narrow shoulders in the approximate 2,000-foot segment between the adjacent cemeteries (Hawley Road to Zablocki Drive). The shoulder widths will vary in this segment as the available right-of-way varies (the shoulders would be as narrow as 3 feet). East and west of the cemeteries, the freeway would have standard 12-foot lanes and full shoulders.

The freeway entrance and exit ramps at the Hawley Road and Mitchell Boulevard interchanges would be removed. The Mitchell interchange ramps would be replaced in the Stadium Interchange. The Mitchell Boulevard interchange would be replaced by a new local road interchange under the Stadium Interchange. The 68th/70th Street interchange would be reconstructed in its current configuration (a split diamond interchange).

Zablocki Drive would remain at its present location, and its bridge over IH 94 would be replaced and raised, requiring reconstruction of short segments of Zablocki Drive on each side of the new bridge. 64th Street would still pass under the freeway as it does today.

There would be one (1) business displacement and no residential displacements under the at-grade alternative for the West/Cemetery Segment.

Under the on-alignment alternative, the Stadium Interchange would be reconstructed as a hybrid between a service interchange and a system interchange. The reconstructed interchange would have a smaller footprint than the existing interchange.

East of the Stadium Interchange, the 35th Street interchange would be reconstructed. Braided ramps between the Stadium Interchange and the 35th Street interchange will be provided. Braided ramps would also be provided between the 35th and 27th Street interchanges. The difference between the two alternatives is that east of 32nd Street the freeway would remain close to its current alignment and be widened to the south. The on- and off-ramps near 27th Street would remain where they are today at 25th, 26th, and 28th Streets, and Saint Paul Avenue.

Thirteen (13) commercial properties would be acquired. The properties are a mix of vacant, unused, and active businesses.

Alternative 2: Double Deck (all up or partial down) (West/Cemetery), Modified Single Point Interchange (Stadium), and Off-Alignment (East)

The double-deck alternative would reconstruct I-94 to 8 travel lanes (4 in each direction). A double deck (the freeway lanes would be stacked with one set of freeway lanes elevated over the other) would be constructed in the area between the cemeteries to avoid direct impacts to the cemeteries. The transition back to side-by-side freeway lanes would occur at about 64th Street just west of the Hawley Road interchange and Yount Drive just west of the Stadium Interchange.

This alternative would reconstruct the 68th/70th Street and Hawley Road interchanges with Connector-Distributor (C-D) roads connecting the interchanges. The 68th/70th Street and Hawley Road interchanges would be reconstructed with a configuration similar to that of the existing interchanges.

There would be two (2) business displacements and eight (8) residential displacements under the Double-Deck alternative for the West/Cemetery Segment.

Under the off-alignment alternative, the Stadium Interchange would be reconstructed as a hybrid between a service interchange and a system interchange. The reconstructed interchange would have a smaller footprint than the existing interchange.

Underneath the Stadium Interchange, new on- and off-ramps to 44th Street and a new local street (tentatively referred to as 46th Street) would be constructed. The ramps would replace the interchange that would be removed from Mitchell Boulevard.

East of the Stadium Interchange, the 35th Street interchange would be reconstructed. Braided ramps between the Stadium Interchange and the 35th Street interchange will be provided. Braided ramps would also be provided between the 35th and 27th Street interchanges. The 27th Street interchange would be reconstructed so that all ramps directly connect to 27th Street.

East of 32nd Street, IH 94 would be reconstructed several hundred feet south of its current alignment. IH 94 would rejoin its existing alignment near 18th Street.

This alternative would acquire eleven (11) properties that are a mix of vacant, unused, and active businesses on 35th Street, 27th Street, St. Paul Avenue and Greves Street.

2.2 Responsible Unit of Government

WisDOT and the Federal Highway Administration (FHWA) are the units of government responsible for the project. The project is located within Milwaukee County, Wisconsin.

2.3 Surficial Geology and Hydrogeology

The topography in the area within the project corridor fluctuates significantly. According to the 1971 USGS topographic map (7.5-minute series, Milwaukee Quadrangle); the ground surface elevation varies from 600 to 700 feet above the mean sea level (MSL) throughout the project corridor (Figure 1, Ref. 2) with low lying areas surrounding the Menomonee River. The groundwater elevation throughout the project corridor is expected between zero (0) and fifty (50) feet below ground surface (bgs) (Ref. 3). Soil types along the project corridor include the Ozaukee-Morley-Mequon Association which are well drained to somewhat poorly drained soils that have a subsoil of silty clay loam to silty clay; formed in thin loess and silty clay loam glacial till, on moraines (Ref. 4). Depth to bedrock is generally expected to be between 0 to 100 feet bgs with shallow bedrock immediately west of the north/south portion of the Menomonee River (Ref. 5).

2.4 Historical Land Use

2.4.1 Topographic Maps

United States Geological Survey (USGS) Historical Topographic maps of the project corridor and vicinity for the Waukesha Quadrangle (15-minute series; 1901 and 1959) and Milwaukee Special Quadrangle (15-minute series; 1906) Milwaukee Quadrangle (15-minute series; 1982, 1906 and 1958) Milwaukee (7.5-minute series; 1958 and 1971) Wauwatosa (7.5-minute series; 1958, 1971, and 1994) were obtained from Environmental Data Resources (EDR) of Southport, Connecticut, Inquiry #3362671.1 and 3625566.4.

The topographical maps were used to review the historic land use in the project corridor and vicinity and any significant features that may have had the potential for hazardous materials concern. Based on the review of the topographic maps, no additional potential hazardous material sites were identified. The topographic maps generally indicate that the project corridor is located within an urban area, and details are not shown. Several observations were made from the historical topographic maps and are listed below.

1. In the 1892, 1901, and 1906 topographic maps the Menomonee River Valley (wetland) is partially filled and the Menomonee River is in its original position with some channels added on the east side of the valley. In the 1958 map the Valley is completely filled and the river has been moved to its current location.
2. A lake was observed on the 1958 Milwaukee topographic map in the IH 94 ROW west of the Stadium Interchange. This may be of geotechnical significance.
3. The Milwaukee Road Shops were observed on the 1906, 1958 and 1971 Milwaukee topographic maps. The railroad engine and railcar manufacturer was located to the east of the Menomonee River and south of IH 94. The Milwaukee Road Shops are associated with site numbers 195, 196, 200, 201, and 203.
4. Railroad tracks associated with the Milwaukee Road Shops were observed on the 1958 and 1971 Milwaukee topographic maps on both the east and west sides of the Menomonee River.
5. A quarry was observed on the 1958 and 1971 Milwaukee topographic maps to the south of the Menomonee River and north of Wells Street, east of 49th Street. The quarry is associated with Site 31.
6. Large circular tanks were observed on the 1958 topographic map just south of IH 94 at the former West Side Manufactured Gas Plant (MGP). The MGP is associated with sites number 218, 219, 220, and 221.
7. Large circular tanks were observed on 1958 and 1971 topographic maps just southeast of the current Stadium Interchange. The tanks were used for water storage and are associated with Site 192.
8. County Stadium was first observed on the 1958 topographic map. County Stadium opened in 1953.
9. IH 94 E/W was first observed on the 1971 topographic map. Construction was completed on this section of IH 94 in 1963.

2.4.2 Aerial Photographs

Historical aerial photographs for the project corridor and vicinity for the years 1937, 1951, 1956, 1963, 1995, 2000, 2005, 2007, 2008, and 2010 were obtained from Milwaukee County Automated Mapping and Land Information System (MCAMLIS) website. The aerials were used to review the historic land use in the project corridor and vicinity and any significant features that may have had the potential for hazardous material concerns. Additional historical aerial photographs were obtained for 1973, 1975 and 1985, from the WisDOT Survey and Mapping Section to supplement the photographs obtained from Milwaukee County. Historical aerial photographs for the extension of the project from 25th Street to 16th Street were obtained from EDR Inquiry # 3625566.5 and include 1937, 1956, 1963, 1969, 1979, 1981, 1985, 1992, 2000, 2005, 2008, and 2010.

Based on the review of the aerial photographs the project area was urban area since 1937. The west section of the project is in a residential area and the north, south, and east sections of the project are in a predominately manufacturing area, with some residential to the north side of the east leg. IH 94 was built between the 1956 and 1963 aerial photographs. Several observations were made from the historical aerials and are listed below.

1. The Milwaukee Road Shops were observed on the 1937 through 1995 aerial photograph. The railroad engine and railcar manufacturer was located to the east of the Menomonee River and south of IH 94. The Milwaukee Road Shops were observed to be partially demolished on the 1995 aerial and completely gone in the 2000 aerial. The Milwaukee Road Shops are associated with site numbers 194, 195, 196, 200, 201, and 203.
2. Railroad tracks associated with the Milwaukee Road Shops were observed on the 1937 through 1975 aerial photograph on both the east and west sides of the Menomonee River. The railroad tracks on the west side were not observed in the 1985 aerial.
3. A quarry was observed on the 1937 aerial photograph. It is located immediately northwest of the current stadium interchange. The quarry is associated with site number 77.
4. Between one (1) and three (3) large ASTs were observed on Site 192 from 1937 to 2008. The tanks were used for water storage and are completely removed in the 2010 aerial photograph.
5. The MGP was observed on the 1937 through 1963 aerial photographs. The gas tanks have been removed in the 1963 aerial. It was located south of IH94 and west of 25th Street. The MGP is associated with sites number 217, 218, 219, 221, and 220.
6. Coal storage was observed on either side of the Menomonee River on the 1937 through 1963 aerial and south of the river until the 1979 aerial photograph. The coal storage is located on what are currently sites 223, 224, 226, and 227,
7. Two quarries were observed on the 1937 aerial photograph to the south of the Menomonee River and north of Wells Street, east of 49th Street. The quarries appear to be filled on the 1951 aerial photograph. The quarries are associated with site number 31.
8. A large disturbed are was observed on the 1951 aerial photograph in the area of the Former

Milwaukee County Stadium and the current Miller Park to the south and west of the current Stadium Interchange. See sites 189, 190, and 191.

9. A second large disturbed area on the 1951 aerial photograph is located in the vicinity of the quarry mentioned in item #3. The area of disturbance is larger and the quarry appears to be filled. See site number 77.
10. A small lake was observed within the IH 94 ROW just west of Mitchell Boulevard on the 1951 aerial photograph. This may be of geotechnical significance.
11. County Stadium was first observed on the 1956 aerial photograph. Miller Park is under construction during the 2000 aerial photograph.
12. IH 94 E/W was first observed on the 1963 aerial photograph. The current configuration of the stadium interchange was observed on the 2000 aerial photograph.
13. Fill was observed on the north side of IH 94 west bound lanes on the 1973 photographs in the vicinity of 64th Street.
14. Three dark circles are present on the 1973 through 2010 aerial photograph to the west of the Substation located south of IH 94 to the east of the Menomonee River. See site 199.
15. Miller Park is being constructed during the 2000 aerial photograph. Parts of the Milwaukee Road Shops to the east of the Menomonee River are now part of the Miller Park parking lot.
16. The majority of the Milwaukee Road Shops property is disturbed in the 2000 to 2008 aerial photographs.

2.4.3 Sanborn Maps

The Sanborn Maps are used to review the historic land use in the project corridor and vicinity and any significant features that may have had the potential for hazardous material concerns. Historical Sanborn Maps of the project corridor and vicinity were searched by EDR, Inquiry # 3364486.1. Several observations were made from the Sanborn Maps and are listed below. Potential hazardous material sites that were identified within the Sanborn Maps are included in Section 2.9.2.

1. Bluetone Oil Company and associated oil holding tanks is shown on the 1968 Sanborn Map in the location of Site 17. Page Oil Company, two filling stations, and Bolene Refining Company (oil) and the associated tanks are shown on the 1927 Sanborn Map in the location of Site 17. A railroad spur is also shown through Site 17 on the 1968, 1927, and 1910 maps.
2. A filling station is located in the USH 41 ROW at the former corner of West Wisconsin Avenue and North Story Parkway on the 1950 and 1927 Sanborn Maps. This site has been added to the Potential Hazardous Materials sites as Site SAN-1.
3. A stone quarry is located in the current USH 41 ROW and the Miller Park parking lot to the northwest of the Stadium Interchange on the 1950 and 1927 Sanborn Maps. This quarry is associated with Site 77.
4. An auto repair facility is located in the IH 94 ROW between North 36th Street and North 35th Street. This site has been added to the Potential Hazardous Material sites as Site SAN-2.

5. Gasoline tanks at a vacant facility are located in the USH 41 ROW to the northwest corner of the intersection of former 47th Street and Watertown Road (State Street). This site has been added to the Potential Hazardous Material sites as Site SAN-3.
6. Three separate filling stations are shown on the 1927 Sanborn Map in the location of Site 41.
7. Gasoline tanks are noted to the east of the building shown on the 1927 Sanborn Map in the location of Site 40.
8. An oil tank is depicted on the 1951 Sanborn Map near the railroad tracks at 2033 W Saint Paul Avenue. This site has been added to the Potential Hazardous Material sites as Site SAN-4.
9. An oil tank in a concrete pit is depicted on the 1951 Sanborn Map near the railroad tracks just east of 1925 W Saint Paul Avenue. This site has been added to the Potential Hazardous Material sites as Site SAN-5. This site was also depicted as Milwaukee Sash Weight Co (Foundry) on the 1894 Sanborn Map.
10. Four (4) WEPCO oil tanks with a 40,000 capacity surrounded by a concrete wall are depicted on the 1951 Sanborn Map north and slightly west of the intersection of W Saint Paul Avenue and 20th Street. This site has been added to the Potential Hazardous Material sites as Site SAN-6.
11. A filling station is depicted on the northwest corner of the intersection of W Saint Paul Avenue and 20th Street on the 1951 Sanborn Map. This site has been added to the Potential Hazardous Material sites as Site SAN-7.
12. Two separate buildings at 2110 and 2100 W Clybourn Street include an electric motor and fixture repair shop and a commercial photo studio, respectively, on the 1951 Sanborn Map. This site has been added to the Potential Hazardous Material sites as Site SAN-8.
13. An automobile repair shop is located at 2032-2036 W Clybourn Street on the 1951 and 1910 Sanborn Maps. This site has been added to the Potential Hazardous Material sites as Site SAN-9.

2.4.4 WisDOT Historical Right of Way Plat Maps

WisDOT Historical Right of Way Plat Maps of the project corridor and surrounding roadways were obtained and reviewed for any significant features that may have had the potential for hazardous material concerns. Several observations were made from the WisDOT Historical Right of Way Plat Maps and are listed below. Potential hazardous material sites that were identified within the Historical Right of Way Plat Maps are included in Section 2.9.3.

1. The gas holders associated with the Former Manufactured Gas Plant are shown Sheet 13 of project I94-4(54)307 and on Sheet 4.1 of project I-94-4(11)307 (1958). The gas holders are associated with site numbers 217, 218, 219, and 221. See Historical ROW Plat Maps Pages 1-3.
2. The Milwaukee & Suburban Transport Company is shown on Sheet number 4.6 of project I-94-4(40)305. This site has been added to the Potential Hazardous Material sites as HP-1. See Historical ROW Plat Maps Page 4.

3. Standard Oil Company is shown as WisDOT parcel 250 and 258 on Sheet 4.2 of project I-94-4(48)307 (1959). This parcel is associated with site number 125. See Historical ROW Plat Maps Page 5.
4. Standard Oil Company is shown as WisDOT parcel 54 on Sheet 4.2 of project I-94-4(48)307 (1959). The former station is located on the southeast corner of the intersection of West Park Hill Avenue and North 35th Street. This site has been added to the Potential Hazardous Material sites as HP-2. See Historical ROW Plat Maps Page 5.
5. The Falk Corporation is shown as WisDOT parcel 23 on Sheet 4.3 of project U03-1(81)4.3-41 (1960). This site has been added to the Potential Hazardous Material sites as HP-3. See Historical ROW Plat Maps Page 6.
6. Contamination within the road ROW near 17th Street is shown on Sheet 11 and 12 of the Excavation Management Plan Overview for Project No: 1060-05-75 (2005). This contamination is associated with site number 247. See Historical ROW Plat Maps Pages 7-8.

2.4.5 WisDOT Historical As-Builts

WisDOT Historical As-Builts of the project corridor and surrounding roadways were obtained and reviewed for any significant features that may have had the potential for hazardous material concerns. No obvious potential hazardous material concerns were observed on the Historical As-Built maps.

2.5 Record Search

Kapur retained Environmental Data Resources (EDR) of Southport, Connecticut Inquiry # 3357792.1s and 3625566.2s to conduct a search of the State and Federal databases for potential sources of environmental contamination in and adjacent to the project corridor (Ref. 5). A record search of State and Federal databases was conducted for the FDM Procedure 21-35-5 requirement of one-quarter mile from the centerline of the project corridor. A second database search was required for the extension of the project from 25th Street to 16th Street on the east segment. Some listings may be duplicated between the two database searches.

The record searches of the state databases revealed: thirty-three (33) Bureau of Remediation and Redevelopment Tracking System (BRRTS) sites, twenty-seven (27) Emergency Repair Program (ERP) sites, six (6) National Pollutant Discharge Elimination System (NPDES), four (4) Waste Disposal Sites (WDS), seventy-four (74) Leaking Underground Storage Tank (LUST) sites, one hundred seventy-three (173) Underground Storage Tank (UST) sites, three (3) Leaking Aboveground Storage Tank (LAST) sites, thirty-five (35) Aboveground Storage Tank (AST) sites, thirty-three (33) Hazardous Waste Manifest Information (MANIFEST) sites, seventy-six (76) Wisconsin Spill (SPILL) sites, twenty-nine (29) Closed Remediation Sites (CRS), thirty-three (33) Deed Restriction at Closeout (AUL) sites, four (4) Voluntary Party Liability Exemption Sites (VCP), twenty-six (26) Wisconsin Remedial Response Site Evaluation Report (WRRSER) sites, eight (8) Brownfield sites, five (5) Air Permit Program Listing (AIRS) sites,

eighteen (18) Tier 2 sites, one-hundred fourteen (114) Solid and Hazardous Waste Information Management System (SHWIMS) sites, forty-eight (48) Lead Inspection Data (LEAD) sites, and eleven (11) Financial Assurance sites.

The record searches of the federal databases indicated: four (4) Comprehensive Environmental Response, Compensation Liability Information System (CERCLIS), one (1) CERCLIS No Further Remedial Action Planned (CERC-NFRAP) sites, two (2) Corrective Action Report (CORRACTS) sites, two (2) Resource Conservation Recovery Act (RCRA) Large Quantity Generator (LQG) sites, two (2) RCRA Small Quantity Generator (SQG) sites, thirty-seven (37) Conditionally Exempt Small Quantity Generator (CESQG) sites, fifty-six (56) RCRA Non Generators (NONGEN), thirty (30) Emergency Response Notification System (ERNS) sites, two (2) US Brownfields sites, seven (7) Toxic Chemical Release Inventory System (TRIS) sites, four (4) Federal Insecticide, Fungicide and Rodenticide Act/Toxic Substances Control Act (FTTS) sites, four (4) FTTS Tracking System Administrative Case Listing (HIST FTTS) sites, five (5) Integrated Compliance Information System (ICIS) sites, one hundred twenty-nine (129) Facility Index System/Facility Registry System (FINDS) sites and two (2) 2020 Corrective Action Program List (2020 COR ACTION) sites.

One (1) Manufactured Gas Plant, ten (10) Historical Auto Stations and four (4) Historical Cleaners were listed within EDR's Proprietary Databases.

Kapur also reviewed the orphan lists for sites within the project search radius, performed a site reconnaissance and reviewed the online BRRTS Map. Additional sites were added to this report based upon location.

2.6 Site Reconnaissance

Kapur personnel performed reconnaissance of the project corridor during the summer of 2013 to identify the properties adjacent to or within close proximity to the proposed ROW that have the potential for the presence of contamination. Visual observations were made for the possible presence of underground storage tanks, septic systems, distressed vegetation, and other indicators of potential environmental concern.

2.7 Transformers

Kapur personnel received Geographical Information System (GIS) data from We Energies identifying pole mounted and pad mounted transformers adjacent to or within close proximity to the proposed ROW that have the potential for the presence of PCBs. Site reconnaissance of the transformers was performed to check for potential leaks.

Four hundred twenty-nine (429) pole and pad mounted transformers are located adjacent to or within close proximity to the project corridor. No visual indication of leakage of potential polychlorinated bi-phenyls (PCBs) was observed from the transformers during site reconnaissance. Ms. Mesha Johnson of We Energies was contacted regarding PCBs contained within the transformers. Based upon information provided by Ms. Johnson two hundred forty-nine (249) transformer sites are PCB free, twenty-two (22) do not have information regarding the PCB status of the fluids contained within, and the remaining transformers have a probability of containing >50 parts per million (ppm) PCBs as follows: thirty-seven (37) transformers have a 1% probability, forty-nine (49) transformers have a 3% probability, thirteen (13) have a 6% probability, eleven (11) transformers have a 13% probability, one (1) has an 18% probability, and forty-seven (47) transformers have a 42% probability. A transformer with a 50 ppm concentration of PCB would contain less than an ounce of PCBs. Based upon the PCB free status or limited percentage of containing PCBs, and no visual indication of leakage, additional subsurface investigation of the transformers is not recommended. Should final construction requirements include the relocation, removal, and/or disposal of transformers, arrangements should be made with We Energies for proper handling of the transformers and oil contained within.

2.8 Site Maps, Figures, and Photographs

Figure 1 is a topographic map showing the location of the project area. Figure 2 is an aerial photograph showing the project corridor and surrounding area. Figure 3 is a map of Potential Hazardous Materials Site Locations including Sanborn Map sites, Historical Plat Sites, Railroads, and Stream Crossings. Figure 4 displays bridge and overpass structures within the project limits. Figure 5 is a map of Potential Relocation Parcels.

2.9 Potential Hazardous Material Sites

2.9.1 Database Search Results

Kapur retained Environmental Data Resources (EDR) of Southport, Connecticut Inquiry # 3357792.1s and 3625566.2s to conduct a search of the State and Federal databases for potential sources of environmental contamination in and adjacent to the project corridor (Ref. 5). A record search of State and Federal databases was conducted for the FDM Procedure 21-35-5 requirement of one-quarter mile from the centerline of the project corridor.

Kapur also reviewed historical topographic maps, aerial photographs, Sanborn Maps, right of way plats and as-builts for potential hazardous material sites within the project search radius. Fourteen (14) railroad crossings, three (3) stream crossing, and fifty (50) bridges are also included in this hazardous material site assessment.

One hundred and twenty-four (124) sites have been removed from further assessment in this report due to their location in relation to the project, database listing, and overall low potential for impacting the project. No further evaluation of these sites will take place within this report. The remaining one hundred and seventy-one (171) sites were assessed due to their close proximity to the project or their potential for impacting the project.

A WisDOT Hazardous Materials Assessment Site Summary (HMASS), site topographic map, aerial photograph, historical aerials (where appropriate), site photographs, and available site information for each site is presented in Appendix B.

Site Number: **3**
Site Name: **MILWAUKEE STOVE AND FURNACE**
Site Address: **5070 W STATE STREET, MILWAUKEE, WI**

Database: LUST
Real Estate Requirements: None
Construction Requirements: None

This site is currently Milwaukee Stove and Furnace Supply / Design Air, a distributor of residential and commercial heating, ventilation, and air conditioning products.

There are no tanks registered to this address.

Review of available LUST files (03-41-001599) indicate a spill or leak from the UST system resulted in soil and groundwater contamination from petroleum. According to the October 7, 1991, Giles Engineering Associates, Inc., *Preliminary Petroleum Hydrocarbon Assessment Study*, sheen on the groundwater was noted during the removal of a 10,000 gallon fuel oil UST. Soil samples taken from the base of the UST excavation indicated TPH below detection limits. Excavated soil was replaced within the excavation. Extended soil sampling indicated low levels of DRO (less than 27 ppm) between 7 and 11 feet bgs. Three monitoring wells were installed onsite to evaluate groundwater contamination. Only toluene was detected in groundwater samples above the detection limit but below WDNR standards. Onsite soils are clayey silts and silty clays. Groundwater was encountered at approximately 8 feet bgs and flows to the east. The LUST site was closed by the WDNR on May 13, 1993.

Based upon the distance from the planned project improvements (more than 2,600 feet northwest), and LUST activity closure, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **6**
Site Name: **STATE AUTO BODY**
Site Address: **5000 W STATE STREET, MILWAUKEE, WI 53208**

Database: CESQG, FINDS, MANIFEST, SHWIMS
Real Estate Requirements: None
Construction Requirements: None

The site is currently State Auto Body. The site has been an auto repair and service station since 1968. The site is listed as auto body repair and painting on the 1968 Sanborn Map.

State Auto Body is listed as a CESQG with no violations. The site was historically listed as a SQG on February 11, 1991. Listed wastes include D001 Ignitable Hazardous Wastes.

State Auto Body is listed on the FINDS database under RCRA and WI-ESR.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site in 2004-2010.

The SHWIMS database lists the site as an active Hazardous Waste Generator – Very Small. There are no listed wastes for this site.

Based upon the distance from the planned project improvements (more than 2,300 feet northwest), and no listed hazardous waste generator violations, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **8**
Site Name: **BRAKE, CLUTCH AND DRUM SERVICE**
Site Address: **4934 W STATE STREET, MILWAUKEE, WI 53208**

Database: CESQG, FINDS, SHWIMS
Real Estate Requirements: None
Construction Requirements: None

The site is currently Brake, Clutch and Drum Service. The site provides parts for factory equipment, heavy, medium, and light duty trucks, and provides services to school bus fleets, truck fleets, and construction equipment. The site is listed as auto repair on the 1968 Sanborn Map.

Brake Clutch and Drum Service is listed as a CESQG with no violations. The site was historically listed as a SQG on September 2, 1986. Listed wastes include D000 Not Defined and D001 Ignitable Hazardous Wastes.

Brake, Clutch, and Drum Service is listed on the FINDS database under AFS, RCRA, and WI-ESR.

The SHWIMS database lists the site as an active Hazardous Waste Generator – Very Small. There are no listed wastes for this site.

An unregistered AST is located next to the back door along with several 55 gallon drums. The parking lot and area near the overhead door have surface staining.

Based upon the distance from the planned project improvements (more than 2,100 feet northwest), and no listed hazardous waste generator violations, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **9**
Site Name: **WISDOT ALOIS STREET FACILITY**
Site Address: **1150 N ALOIS STREET, MILWAUKEE, WI 53208**

Database: AST, BRRTS, FINDS, LUST, NONGEN, SHWIMS, UST, WDS, WRRSER
Real Estate Requirements: None
Construction Requirements: None

This site is currently the WisDOT Bureau of Field Services and Maintenance Facility.

According to the DATCP AST database one (1) 1,000 gallon E85 AST was closed by removal on December 2, 2009.

WisDOT Alois Street Facility is tracked in the BRRTS (09-41-000857) database as No Action Required because the site is a Solid/Hazardous Waste Landfill licensed under DNR Bureau of Waste Management OR a Historic Fill Site that was established before 1970 and never licensed by the DNR.

WisDOT Alois Street Facility is listed on the FINDS database under RCRA.

Review of available LUST files (03-41-002986) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the December 1994 *Subsurface Investigation at the Wisconsin Department of Transportation Office Facility and Former Sign Shop, 1150 Alois Street, Milwaukee, Wisconsin,* by RMT contaminated soils were identified during the removal of a 2,000 gallon gasoline UST in December of 1992. A permit was granted by the WDNR for passive volatilization. Additional investigation at the site indicated the presence of fill (glass, metal fragments, slag, etc.) to a depth of 26 feet where native silty sand was encountered. Lead was found within the fill at concentrations up to 1,700 ppm and in the stockpiled soil at 1.9 ppm for TCLP lead. Soils stockpiled during UST excavation and during the addition to the existing building were moved offsite. Lateral extents of fill material or lead concentrations were not determined. Lead contaminated fill is likely present at the site. The LUST site was closed by the WDNR on August 16, 1995.

WisDOT Alois Street Facility is listed as a NONGEN with no violations. The site is historically listed as a LQG on March 1, 1996 and a SQG on November 18, 1994. Listed wastes include: D000 Not Defined, D001 – Ignitable Hazardous Wastes, and D008 – Lead.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator –Small. Listed wastes include: D000 Non Listed Toxic Wastes and D008 Lead.

According to the DATCP UST database one (1) 1,500 gallon unleaded gasoline UST was closed by removal on December 14, 1992.

WDS is a WDNR database listing of all sites where solid or hazardous wastes may have been deposited. The WisDOT Vehicle Emission Test Station is listed in the WDS database. The site has been archived. According to a December 1994 RMT Report, the site has fill (glass, metal fragments, slag etc.) to a depth of 26 feet where native silty sand was encountered. Lead was found in soil samples ranging from 540 ppm to 7,400 ppm over the 500 ppm soil cleanup standard. TCLP lead was over the 5 ppm hazardous waste definition.

The site is listed on the WI WRRSER as having a MEDIUM priority.

Based upon the distance from the planned project improvements (more than 1,900 feet north/northwest), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **13**
Site Name: **MILLER BREWERIES EAST**
Site Address: **4430 W STATE STREET, MILWAUKEE, WI 53208**

Database: AUL, CRS, LUST, UST
Real Estate Requirements: None
Construction Requirements: None

The site formerly operated as a gasoline station. The site was depicted as a filling station on the 1961 Sanborn Map (See GIS Registry Information). The site is currently a parking lot and truck storage for Miller Breweries.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Miller Breweries East LUST site (03-41-532084 / 53208314030) was added to the WDNR's GIS Registry for residual soil contamination.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The Miller Brewing LUST site is listed on the CRS database.

Review of available LUST files (03-41-532084 / 53208314030) indicate a spill or leak from the UST system resulted in soil and groundwater contamination from gasoline. According to the March 8, 2006, *Site Investigation Report, Former Gasoline Station, 4430 W. State Street, Milwaukee, Wisconsin,* by STS Consultants, LTD., contaminated soils were encountered during the construction of a bioretention swale (rain garden). Approximately 416 tons of impacted soil was removed during bioswale construction. Additional investigation was required by the WDNR north of the bioswale construction area and in the area of the former tank beds. Residual impacted soils are present at a depth of generally 10-12 feet bgs. Residual impacted groundwater remains in the vicinity of MW-2. Onsite soils are silty clay fill, gravel and sand fill within former tank cavities, and native silty sand to clay. Groundwater was encounter at approximately 10 to 16 feet bgs. Flow direction is to the southeast. The LUST site was closed by the WDSPS on September 18, 2006, with inclusion on the WDNR GIS Registry for residual soil contamination.

According to the DATCP UST database two (2) 10,000 gallon diesel USTs, one (1) 8,000 gallon diesel UST, one (1) 6,000 gallon unleaded gasoline UST, one (1) 500 gallon fuel oil UST, and one (1) 500 gallon waste/used motor oil UST were closed by removal on July 1, 1982.

Based upon the distance from the planned project improvements (more than 1,400 feet north), and LUST activity closure with no offsite residual contamination, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **17**
Site Name: **MILLER BREWING COMPANY VISITOR CENTER**
Site Address: **4315 W STATE STREET, MILWAUKEE, WI**

Database: AUL, ERP, WDS, WRRSER
Real Estate Requirements: None
Construction Requirements: None

This site was depicted on the 1910, 1927, and 1968 Sanborn maps. Site features included a former filling station, railroad spurs, and two bulk petroleum storage facilities listed as: Bolene Refining Company, Page Oil Company, and Bluetone Oil Company. The site is currently the Miller Brewery Visitors Center.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Miller Brewing Company Visitor Center ERP site (02-41-543065) was added to the WDNR's GIS Registry for residual soil contamination and engineered barrier or cap.

Review of available ERP files (02-41-543065) indicate a spill or leak resulted in soil and groundwater contamination. According to the January 9, 2006, *Site Investigation Report* by STS Consultants, Ltd. contaminated soils were identified within geotechnical borings for a planned building expansion. GRO, DRO, VOCs/PVOCs and PAHs exceed soil RCLs at the site. The property is underlain by up to 12 feet of fill soil that varies from silty sand to silty clay. Foundry sand, wood, glass, and cinders were encountered in a layer approximately 2 to 5 feet deep. Groundwater flow is to the southeast and is 16 to 22 feet bgs. The ERP site was closed by the WDNR on December 15, 2009, with inclusion on the GIS Registry for residual soil contamination and engineered barrier or cap and a PAL exemption for lead at MW-1 and benzo(a)pyrene, benzo(b)flouranthene, and chrysene at MW-3.

WDS is a WDNR database listing of all sites where solid or hazardous wastes may have been deposited. Miller Brewery is listed in the WDS database. Foundry Sands are located at the site.

The site is listed on the WI WRRSER as having a MEDIUM priority.

Based upon the distance from the planned project improvements (more than 1,200 feet north/northeast), and LUST activity closure with no offsite residual contamination, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **18**
Site Name: **MGIC**
Site Address: **5151 W STATE STREET, MILWAUKEE, WI**

Database: LUST, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently Mortgage Guaranty Insurance Corporation (MGIC), a private mortgage insurer.

Review of available LUST files (03-41-004256) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the July 18, 1994, *Soil Removal and Disposal Activities* Report by Midwest Engineering Services, Inc., contaminated soils were identified during the removal of a 1,000 gallon fuel oil UST. The excavation measured approximately 15 by 39 feet and was approximately 12 to 13 feet deep. Approximately 264 tons of contaminated soils were excavated and disposed of at a licensed facility. Closure samples indicate residual contamination (150 ppm DRO) on the south wall of the excavation adjacent to the onsite structure between 8 and 12 feet bgs. Groundwater was not encountered during excavation activities. The LUST site was closed by the WDNR on November 30, 1994.

According to the DATCP UST database one (1) 1,000 gallon fuel oil UST was closed by removal on June 1, 1994.

Based upon the distance from the planned project improvements (more than 2,500 feet northwest), and LUST activity closure with no offsite residual contamination, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **19**
Site Name: **ACME SUPPLY**
Site Address: **5101 W STATE STREET, MILWAUKEE, WI**

Database: AUL, ERP
Real Estate Requirements: None
Construction Requirements: None

The site is currently ACME Supply, a plumbing distributor. The site includes a kitchen and bath fixtures showroom. The site is J.P. Lindemann Tinware Factory on the 1910 Sanborn Map.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The ACME Supply ERP site (02-41-551629) was added to the WDNR's GIS Registry for residual soil contamination and industrial use restriction.

Review of available ERP files (02-41-246398) indicate a spill or leak resulted in soil and groundwater contamination from chlorinated solvents. According to the Key Engineering Group, Ltd. prepared *GIS Registry Documents;* PAH contaminated soils were identified at the site within mixed fill located underneath the parking lot. PAH contamination concentrations at the site are below RCLs for industrial use. Contamination levels are above non-industrial RCLs. The ERP site was closed by the WDNR on October 21, 2008, with inclusion on the GIS Registry for residual soil contamination and an industrial use restriction.

Based upon the distance from the planned project improvements (more than 2,300 feet northwest), and ERP activity closure with no offsite residual contamination, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **20**
Site Name: **FORMER CLIMATIC CONTROL COMPANY**
Site Address: **5061 W STATE STREET, MILWAUKEE, WI, 53208**

Database: AST, AUL, CRS, LAST, LUST
Real Estate Requirements: None
Construction Requirements: None

The site is currently Industrial Controls, a full service distributor of controls and solutions for commercial HVAC, process control and industrial automation applications. The site is a dwelling with a stable on the 1910 Sanborn Map.

According to the DATCP AST database one (1) 122,000 gallon fuel oil AST, two (2) 25,000 gallon fuel oil ASTs, two (2) 15,000 gallon fuel oil ASTs, and one (1) 80,000 gallon fuel oil AST were closed by removal on January 1, 1951.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Climatic Control Company LUST site (03-41-539367) was added to the WDNR's GIS Registry for residual soil and groundwater contamination, industrial use restriction, and engineered barrier or cap.

The CRS database includes parcels of land at which the soil and groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The Climatic Control Company LUST site is listed on the CRS database.

The LAST listing for this site was investigated and closed under the LUST activity number 03-41-539367.

Review of available LUST files (03-41-539367) indicate a spill or leak from the UST system resulted in soil and groundwater contamination from gasoline, diesel, and chlorinated solvents. According to the August 2006, *Subsurface Investigation Report and Conceptual Remedial Action Plan*, by The Sigma Group, petroleum contaminated soils were identified during a Phase II completed by Key Engineering Group in December of 2004. The site was operated as Texas Oil Company from 1925 to 1951. Onsite soils consist of twelve feet of silty and sandy fill material overlying native silty clay to 15 feet bgs. Groundwater flow is generally to the south and was encountered at approximately 9 to 13 feet bgs. The LUST site was closed by the WDNR on April 2, 2008, with inclusion on the GIS Registry for residual soil and groundwater contamination, industrial use restriction, and engineered barrier or cap.

Based upon the distance from the planned project improvements (more than 2,200 feet northwest), and LUST activity closure with no offsite residual contamination, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **21**
Site Name: **GENUINE PARTS COMPANY / NAPA DISTRIBUTION CENTER**
Site Address: **5001 W STATE STREET, MILWAUKEE, WI 53208**

Database: CESQG, FINDS, MANIFEST, SHWIMS, TIER 2
Real Estate Requirements: None
Construction Requirements: None

This site is currently the Milwaukee Distribution Center for Napa Auto Parts. The site was an unmarked building on the 1968 Sanborn and several dwellings and a stable on the 1910 Sanborn map.

Genuine Parts Company is listed as a CESQG with no violations. Listed wastes include: D001 Ignitable Hazardous Wastes, D003 Reactive Hazardous Wastes, X001 Waste Oils, and X003 Other State Regulated Wastes.

Genuine Parts Company is listed on the FINDS database under RCRA and WI-ESR.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site in 2004 and 2010.

The SHWIMS database lists the site as an active Hazardous Waste Generator – Very Small. Listed wastes include: D001 Non-Listed Ignitable Wastes and D003 Non-Listed Reactive Wastes.

TIER 2 is a database of facilities which store or manufacture hazardous materials that submit a chemical inventory report. According to this database the site has a maximum amount of 23,500 pounds of ethylene glycol, 13,000 pounds of aliphatic petroleum distillates, 165,000 pounds of petroleum lube oil, 53,918 pounds of lead, and 25,000 pounds of toluene onsite.

Based upon the distance from the planned project improvements (more than 2,100 feet northwest), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **22**
Site Name: **MAGNUS COMPANY INC / AD SCHINNER COMPANY**
Site Address: **4901 W STATE STREET, MILWAUKEE, WI 53208**

Database: BRRTS, CERCLIS-NFRAP, FINDS, LUST, SHWIMS, UST, WDS, WRRSER
Real Estate Requirements: None
Construction Requirements: None

This site is currently an unoccupied manufacturing facility. The site was a glass, paper, and woodenware warehouse on the 1968 Sanborn and a dwelling and stable on the 1910 Sanborn.

Magnus Company Inc. is tracked in the BRRTS (09-41-535366) database as No Action Required from the Superfund Database.

The CERCLIS-NFRAP Site Database includes CERCLIS sites that have been removed from CERCLIS. These may be sites where following an initial investigation, no contamination was found, the sites were cleaned up or the contamination was not serious enough to require Federal Superfund Action. Magnus Company Inc. is listed on the CERCLIS-NFRAP database.

AD Schinner Company is listed on the FINDS database under WI-ESR.

Review of available LUST files (03-41-002336 / 53208261201) indicate a spill or leak from the UST system resulted in soil and groundwater contamination from petroleum. According to the March 19, 1997, *Supplemental Site Investigation* by Giles Engineering Associates, contaminated soils were identified during the removal of a 12,000 gallon fuel oil UST. Residual soil contamination remains in the vicinity of MW-2 (DRO 100 ppm, benzene 370 ppb, and ethylbenzene 3,400 ppb in soil, 19 ppb naphthalene in groundwater). Onsite soils consist of fill material (brown to dark brown clayey silt) to two feet bgs underlain by brown silty fine to coarse sand and gravel fill material to nine feet bgs. Native soils generally consisted of brown gray silty clay with some fine sand. Groundwater was encountered at approximately 10 feet bgs. The LUST site was closed by the WDSPS on May 27, 1997.

The SHWIMS database lists the site as an active Hazardous Waste Generator – Temporary – Obsolete Code. There are no listed wastes.

According to the DATCP UST database one (1) 12,000 gallon fuel oil UST was closed by removal on May 7, 1992; and two (2) 9,000 gallon fuel oil USTs were closed by removal on May 20, 1993.

WDS is a WDNR database listing of all sites where solid or hazardous wastes may have been deposited. AD Schinner Company is listed in the WDS database.

The site is listed on the WI WRRSER as having a MEDIUM priority.

Based upon the distance from the planned project improvements (more than 1,600 feet north/northwest), and LUST activity closure with no offsite residual contamination, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **23**
Site Name: **FORMER VICTORY GRAPHICS**
Site Address: **4831 W STATE STREET, MILWAUKEE, WI 53208**

Database: CESQG, FINDS, SHWIMS
Real Estate Requirements: None
Construction Requirements: None

This site is currently Kinnicott Wholesale Florist. The site is a wholesale paper on the 1968 Sanborn map.

Victory Graphics is listed as a CESQG with no violations. Listed wastes include: D000 Not Defined, D001 Ignitable Hazardous Wastes, F003 Spent Non-Halogenated Solvents, and F005 Spent Non Halogenated Solvents.

Victory Graphics is listed on the FINDS database under RCRA and WI-ESR.

The SHWIMS database lists the site as an active Hazardous Waste Generator – Very Small. There are no listed wastes.

Based upon the distance from the planned project improvements (more than 1,600 feet north), and no listed hazardous material violations, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **24**
Site Name: **MMSD FORMER SAILES PROPERTY**
Site Address: **4601 W STATE STREET, MILWAUKEE, WI 53209**

Database: ERP
Real Estate Requirements: None
Construction Requirements: None

This site is currently a grass lot with no buildings. The site was formerly used as a roofing plant (1910), a plywood warehouse with machine tooling capabilities (1949) a transfer and storage warehouse (1968) and for silkscreen printing and warehouse (1988). The site is a transfer and storage warehouse and an unmarked building on the 1968 Sanborn, a vacant warehouse and an unmarked building on the 1927 Sanborn, and a roofing plant on the 1910 Sanborn.

A Phase I ESA conducted by AES in November of 2001 indicated that the surrounding properties were utilized as a landfill facility, salvage yard and industrial facilities.

Review of available ERP files (02-41-548406) indicate a spill or leak resulted in soil contamination. Contaminated soils were identified during site demolition activities. According to the March 2013, Bloom Companies, LLC *Phase II Site Investigation Report*, soil impacts, including PAHs, lead, arsenic, and VOCs are present at the site. Additional site activities are detailed in the January 2007 TN & Associates *Interim Action Report.* An estimated 351 cubic yards of waste consisting of both asbestos containing debris and excavated soils were removed from the site and disposed of at a licensed disposal facility. The site was covered with one foot of topsoil to prevent direct contact with impacted soils. Onsite native soils consist of loam, silty loam, and silty clay loam over gravelly loamy sand. Much of the site is lime and foundry sand fill. Groundwater was encountered between 15 to 18 feet bgs, flow is towards the east with slight southerly component. Bedrock was encountered at 13 feet to greater than 25 feet bgs. The ERP site is listed as open and is under WDNR jurisdiction.

Based upon the distance from the planned project improvements (more than 1,100 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **25**
Site Name: **BADGER ALLOYS / OMCO USA INC**
Site Address: **980 N 45TH STREET, MILWAUKEE, WI 53208**

Database: CESQG, FINDS, NONGEN, SHWIMS
Real Estate Requirements: None
Construction Requirements: None

A large cinderblock building occupies most of the site and looks unoccupied. The site is Central Engineering Company, Inc., a metal truck body factory on the 1968 Sanborn, Monarch Investment Company on the 1927 Sanborn, and Johns Manville Company, a magnesia plant on the 1910 Sanborn map.

OMCO USA Inc. is listed as a CESQG with no violations. Listed wastes include F005 Spent Non-Halogenated Solvents.

Badger Alloys is listed on the FINDS database under RCRA. OMCO USA Inc. is listed on the FINDS database under RCRA and WI-ESR.

Badger Alloys is listed as a NONGEN with no violations. The site is historically listed as a SQG on February 1, 1990. Listed wastes include: D001 – Ignitable Hazardous Wastes.

The SHWIMS database lists Badger Alloys as an inactive Hazardous Waste Generator – Small. There are no listed wastes. The SHWIMS database lists OMCO USA as an active Hazardous Waste Generator – Very Small. Listed wastes include: F005 Spent Non-Halogenated Solvents.

Based upon the distance from the planned project improvements (more than 1,000 feet north), and no listed hazardous material violations, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **26**
Site Name: **FORMER WR GRACE COMPANY**
Site Address: **4301 W STERLING PLACE, MILWAUKEE, WI 53208**

Database: AUL, CRS, ERP, LUST, VPLE, WRRSER
Real Estate Requirements: None
Construction Requirements: None

This site is currently a gravel lot. The site was undeveloped on the 1968 Sanborn, Monarch Investment Company on the 1927 Sanborn, and Johns Manville, a magnesia plant on the 1910 Sanborn Map.

There are no tanks registered to this address.

This site was investigated in conjunction with Site 27. ERP and LUST activities took place on both sites.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The WR Grace LUST site (03-41-002189) and ERP site (02-41-000685) were added to the WDNR's GIS Registry for residual soil and groundwater contamination, and an impervious barrier over the contaminated area.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The WR Grace Co ERP and LUST sites are listed on the CRS database.

Review of available ERP files (02-41-000685) indicate a spill or leak resulted in soil and groundwater contamination from petroleum, asbestos, and PAHs. According to the September 25, 2007, *Case Summary and Close Out Request*, prepared by GeoTrans, contaminated soils were identified during a Phase II ESA prepared by Fox Environmental Services in 1992. Asbestos and petroleum impacts to the soil and groundwater remain at the site. The report states that near surface soils at the site are fill consisting of a mixture of sand, gravel, silt and debris. Underlying the fill material in most areas is a sand and gravel layer. Underlying the sand and gravel is a very stiff to hard gray silty clay. The depth to groundwater is approximately 12 to 15 feet bgs. Groundwater flow is to the east to northeast. The site is capped with 1.5 feet of soil material. The ERP site was closed by the WDNR on April 30, 2008 with residual soil and groundwater contamination and an engineered barrier. This ERP activity was closed by the WDNR on April 30, 2008, in conjunction with the capping of 900 N 43rd Street (Site 27).

Review of available LUST files (03-41-002189) indicate a spill or leak resulted in soil and groundwater contamination from petroleum, asbestos, and PAHs. According to the September 25, 2007, *Case Summary and Close Out Request,* prepared by GeoTrans, contaminated soils were identified during a Phase II ESA prepared by Fox Environmental Services in 1992. Asbestos and petroleum impacts to the soil and groundwater remain at the site. Formerly inaccessible petroleum contaminated soil remains in place beneath where the basement of the building used to be (demolished) and the retaining wall along the Menomonee River. Based upon groundwater sampling results the contamination was left in place and capped. The report states that near surface soils at the site are fill consisting of a mixture of sand, gravel, silt and debris. Underlying the fill material in most areas is a sand and gravel layer. Underlying the sand and gravel is a very stiff to hard gray silty clay. The depth to groundwater is approximately 12 to 15 feet bgs. Groundwater flow is to the east to northeast. The site is capped with 1.5 feet of soil material. The LUST site was closed by the WDNR on April 30, 2008. This LUST activity was closed in conjunction with the capping of 900 N 43rd Street (Site 27).

The site was part of the Voluntary Party Liability Exemption (VPLE) program but requested to be removed due to retainage of ownership by the Milwaukee Metropolitan Sewerage District (MMSD).

The site is listed on the WI WRRSER as having a HIGH priority.

Based upon the distance from the planned project improvements (more than 990 feet northeast), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **27**
Site Name: **FORMER WR GRACE COMPANY**
Site Address: **900 N 43RD STREET, MILWAUKEE, WI 53208**

Database: AUL, CRS, FINDS, ERP, LUST, UST, VCP, WRRSER
Real Estate Requirements: None
Construction Requirements: None

This site is currently covered with several feet of fill. There are no structures onsite. WR Grace Company formerly occupied the site, a chemical company. The site is listed as mineral products on the 1968 Sanborn, fire ruins (walls only) of the Monarch Investment Company on the 1927 Sanborn, and the Johns Manville Company, Asbestos Paper Mill on the 1910 Sanborn map.

This site was investigated in conjunction with Site 26. ERP and LUST activities took place on both sites.

A Conditional Low Hazard Waste Grant of Exemption for Use of Contaminated Soil as Fill was granted for the site. Contaminated soils from the Central Ready Mix site (Site 30) (metals and petroleum hydrocarbons) were moved to the 900 N 43rd Street site.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The WR Grace LUST site (03-41-002189) and ERP site (02-41-000685) were added to the WDNR's GIS Registry for residual soil and groundwater contamination, and an impervious barrier over the contaminated area.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The WR Grace Co ERP and LUST sites are listed on the CRS database.

WR Grace and Company is listed on the FINDS database under AFS.

Review of available ERP files (02-41-000685) indicate a spill or leak resulted in soil and groundwater contamination from petroleum, asbestos, and PAHs. According to the September 25, 2007, *Case Summary and Close Out Request*, prepared by GeoTrans, contaminated soils were identified during a Phase II ESA prepared by Fox Environmental Services in 1992. Asbestos and petroleum impacts to the soil and groundwater remain at the site. The report states that near surface soils at the site are fill consisting of a mixture of sand, gravel, silt and debris. Underlying the fill material in most areas is a sand and gravel layer. Underlying the sand and gravel is a very stiff to hard gray silty clay. The depth to groundwater is approximately 12 to 15 feet bgs. Groundwater flow is to the east to northeast. The site is capped with 1.5 feet of soil material. The ERP site was closed by the WDNR on April 30, 2008 with

residual soil and groundwater contamination and an engineered barrier. This ERP activity was closed by the WDNR on April 30, 2008, in conjunction with the capping of 4301 W Sterling Place (Site 26).

Review of available LUST files (03-41-002189) indicate a spill or leak resulted in soil and groundwater contamination from petroleum, asbestos, and PAHs. According to the September 25, 2007, *Case Summary and Close Out Request*, prepared by GeoTrans, contaminated soils were identified during a Phase II ESA prepared by Fox Environmental Services in 1992. Asbestos and petroleum impacts to the soil and groundwater remain at the site. Formerly inaccessible petroleum contaminated soil remains in place beneath where the basement of the building used to be (demolished) and the retaining wall along the Menomonee River. Based upon groundwater sampling results the contamination was left in place and capped. The report states that near surface soils at the site are fill consisting of a mixture of sand, gravel, silt and debris. Underlying the fill material in most areas is a sand and gravel layer. Underlying the sand and gravel is a very stiff to hard gray silty clay. The depth to groundwater is approximately 12 to 15 feet bgs. Groundwater flow is to the east to northeast. The site is capped with 1.5 feet of soil material. The LUST site was closed by the WDNR on April 30, 2008. This LUST activity was closed in conjunction with the capping of 4301 W Sterling Place (Site 26).

According to the DATCP UST database one (1) 8,000 gallon fuel oil UST was closed by removal on May 7, 1993.

The site was part of the VPLE program but requested to be removed due to retainage of ownership by MMSD.

The site is listed on the WI WRRSER as having no reported priority.

Based upon the distance from the planned project improvements (more than 830 feet northeast), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **28**
Site Name: **FORMER HAROLD T ILLING**
Site Address: **4200 W MONARCH PLACE, MILWAUKEE, WI 53208**

Database: AUL, CRS, ERP, FINDS, NONGEN, SHWIMS, SPILLS
Real Estate Requirements: None
Construction Requirements: None

This site is currently covered with several feet of fill. There are no structures onsite. The site was formerly occupied by the HT Illing Company and included a 22,440 square foot office and warehouse facility with associated parking areas. The site is listed as H.T. Illing Company, warehouse and general storage on the 1968 Sanborn, Martin Tire & Rubber Company, a tire manufacturing facility on the 1927 Sanborn, and the concrete foundation of a former KAG HO burned. Kapur was unable to determine what KAG HO stands for.

A Conditional Low Hazard Waste Grant of Exemption for Use of Contaminated Soil as Fill was granted for the site. Contaminated soils from the Central Ready Mix site (Site 30) (metals and petroleum hydrocarbons) were moved to the 4200 W Monarch Place site.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Harold T Illing ERP site (02-41-107699) was added to the WDNR's GIS Registry for residual groundwater contamination.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The Harold T Illing ERP site is listed on the CRS database.

Review of available ERP files (02-41-548384) indicate a spill or leak resulted in soil and groundwater contamination from PAHs, arsenic and lead. According to the August 2007 TN & Associates *Interim Action Report* contaminated soils were identified during site sampling activities as part of building demolition. Disturbance of the surface and subsurface soil was minimal during demolition activities. An interim action of covering the site with approximately one foot of topsoil to provide a barrier to direct contact was completed. No additional site investigation has been completed. The ERP site is listed as open and is under WDNR jurisdiction.

Review of available ERP files (02-41-107699) indicate a spill or leak resulted in groundwater contamination from p-isopropyltolune. According to the November 1998 Fox Environmental Services *Closure Request Report*, contaminated groundwater impacts were identified during the adjacent site investigation. Residual groundwater contamination is located in the vicinity of the "hotspot" well (MW-1). Natural attenuation is the chosen remedial action. The reports notes that subsurface soils at the site consist of silty to gravelly sand fill material to approximately 16 feet bgs overlying silty clay glacial till. The depth to groundwater ranges from approximately 11.5 to 14.5 feet and flow is to the southeast. The ERP site was closed by the WDNR on June 29, 1999, with inclusion on the GIS registry for residual groundwater contamination.

Harold T Illing is listed on the FINDS database under RCRA.

Harold T Illing is listed as a NONGEN with no violations. The site is historically listed as a SQG on March 14, 1991. Listed wastes include: D001 – Ignitable Hazardous Wastes.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Small. Listed wastes include: D001 Non-Listed Ignitable Wastes.

According to the SPILL listing (04-41-249422) approximately 85 gallons of an unknown substance were spilled due by a WEPCO transformer on February 24, 2000. A cleanup contractor was hired to clean up the spill. The spill was closed by the WDNR on April 10, 2000.

Based upon the distance from the planned project improvements (more than 770 feet northeast), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **29**
Site Name: **FORMER 42ND STREET CORPORATION**
Site Address: **753 N 42ND STREET, MILWAUKEE, WI**

Database: AST, ERP, LUST, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently a created wetland/retention pond with a soil berm. The site was formerly used as a bulk storage and recycling facility for petroleum products.

According to the DATCP AST database four (4) 4,000 gallon other content ASTs, two (2) 6,000 gallon other content ASTs, two (2) 6,000 gallon waste/used motor oil ASTs, and two (2) 10,000 gallon waste/used motor oil ASTs were closed by removal on January 1, 1983.

Review of available LUST (03-41-003926) and ERP (02-41-001101) indicate a spill or leak from the AST/UST system resulted in soil contamination from petroleum and RCRA metals. Contaminated soils were identified during a Phase I Site Assessment conducted by CH2MHill for the City of Milwaukee. According to the S.A.G. Environmental, Inc. *Soil Remediation and Site Closure Report*, approximately 5,197 tons of contaminated soils were treated at the site using thermal desorption. Residual PAH contamination in the treated soil was capped in a berm after wetland creation by the City of Milwaukee. The soil at the site was reported as mixtures of sand, silt, and gravel from the surface to 10 feet bgs, coarse sand and gravel from 10 to 13 feet bgs, and silty clay below 13 feet. Perched groundwater was encountered between 11 and 13 feet bgs. Flow was reported to the southeast and east. The LUST and ERP site were both closed by the WDNR on August 3, 2001, with a PAL Exemption for benzo(a)pyrene at MW-5. A draft deed restriction was submitted but no GIS packet is available.

According to the DATCP UST database one (1) 1,000 gallon leaded gasoline UST, three (3) 3,000 gallon waste/used motor oil USTs, two (2) 8,000 gallon waste/used motor oil USTs, and one (1) 8,000 gallon waste/used motor oil UST were closed by removal on January 1, 1983.

Based upon the distance from the planned project improvements (more than 850 feet west), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **30**
Site Name: **FORMER CENTRAL REDI-MIX**
Site Address: **5013 W STATE STREET, MILWAUKEE, WI 53208**

Database: BRRTS, ERP, LUST, UST, WRRSER
Real Estate Requirements: None
Construction Requirements: None

The site is a 4-acre property that was used as a concrete mix plant prior to being purchased by MMSD. MMSD redeveloped the property as part of the Western Milwaukee Flood Management Project. The redevelopment expanded and lowered the flood plain adjacent to the Menomonee River. The site is Central Ready Mixed Concrete Company – concrete mix plant on the 1968 Sanborn map.

Central Redi-Mix is tracked in the BRRTS (07-41-552160) database as General Property for Approval to build on a Historical Fill Site.

The ERP (02-41-552683) activity relates to residual contamination across the entire site, LUST (03-41-000159) relates to a former 10,000 gallon diesel UST, LUST (03-41-005140) relates to a former 12,000 gallon diesel UST, and LUST (03-41-557682) relates to a 500 gallon UST that was discovered during grading activities during site redevelopment. All activities were addressed during site redevelopment. According to the HNTB *Construction Documentation and Remedial Action Report*, hot spot remediation was conducted and approximately 12,713 tons of soil/fill was disposed of as solid waste. An additional 14,961 cubic yards of special waste was removed from the site and disposed of at 900 North 43rd Street and 4200 West Monarch Place (see sites 27 and 28). Groundwater was reported to be between 604.7 and 613.8 feet MSL with flow to the south-southeast towards the Menomonee River. Residual PAH contamination remains above direct contact RCLs and VOC and PAH groundwater contamination above the ES remains onsite. The site is capped with six inches of compacted backfill and six inches of topsoil cover. All activities at the site are listed as open and are under WDNR jurisdiction.

According to the DATCP UST database two (2) 10,000 gallon diesel USTs were closed by removal on September 20, 1989; one (1) 10,000 gallon unleaded gasoline UST was closed by removal on September 25, 1989; one (1) 12,000 gallon diesel UST was closed by removal on October 3, 1995; and one (1) 550 gallon leaded gasoline UST was closed by removal on September 3, 2009.

The site is listed on the WI WRRSER as having a MEDIUM priority.

Based upon the distance from the planned project improvements (more than 1,200 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **31**
Site Name: **MILWAUKEE COUNTY HAWLEY ROAD LANDFILL #426 / DOYNE PARK**
Site Address: **942 N HAWLEY ROAD, MILWAUKEE, WI**

Database: ERP, LUST, SHWIMS
Real Estate Requirements: None
Construction Requirements: None

This site is currently Doyne Park and includes a 9 hole golf course, a soccer field, park buildings and associated parking areas. The site is built over two former stone quarries.

Review of available ERP files (02-41-246398) indicate a spill or leak resulted in soil and groundwater contamination from the waste mass at the former landfill. According to the August 1996 Rust Environment & Infrastructure *Design Investigation Report Milwaukee County – Doyne Park*, the City of Milwaukee acquired the Schweickhart Quarry in the 1930's and until 1975, used the quarry to dispose of "municipal waste – except garbage"; the Manegold Quarry was filled with construction debris; and the Falk Corporation disposed of foundry sand and debris, and air pollution control scrubber sludge on its property until 1978. The waste was reported to be predominantly soil fill (clay and silt, with gravel and sand), foundry sand, and rubble (brick, concrete, glass, metal, and wood). Petroleum hydrocarbons have been found in downgradient onsite groundwater monitoring wells. Groundwater flow is reported to the north/northeast. The ERP site is listed as open and is under WDNR jurisdiction.

This site also has a LUST activity (03-41-002649) located at the far west end of the property, outside of the quarter mile search radius. The LUST was closed by the WDNR on March 15, 2000.

The SHWIMS database lists the site as an inactive Landfill unclassified. The landfill type is listed as Municipal and is two acres in size.

Based upon the distance from the planned project improvements (more than 650 feet northwest), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **33**
Site Name: **NORMS 49TH STREET AUTO BODY**
Site Address: **817 N 49TH STREET, MILWAUKEE, WI 53208**

Database: CESQG, FINDS, MANIFEST, SHWIMS
Real Estate Requirements: None
Construction Requirements: None

This site is currently Norm's 49th Street Auto Body Services.

Norms 49th Street Auto Body is listed as a CESQG with no violations. Listed wastes include: D001 Ignitable Hazardous Wastes, F003 Spent Non-Halogenated Solvents, and F005 Spent Non-Halogenated Solvents.

Norms 49th Street Auto Body is listed on the FINDS database under RCRA and WI-ESR.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site in 2010.

The SHWIMS database lists the site as an active Hazardous Waste Generator – Very Small. Listed wastes include: D001 Non-Listed Ignitable Wastes, F003 Spent Non-Halogenated Solvents, and F005 Spent Non-Halogenated Solvents.

Based upon the distance from the planned project improvements (more than 1,100 feet northwest), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **34**
Site Name: **SORCE SERVICES LLC**
Site Address: **999 N 46TH STREET, MILWAUKEE, WI 53208**

Database: SHWIMS
Real Estate Requirements: None
Construction Requirements: None

This site is currently Sorce Services LLC. The site is used as a Solid Waste Transfer Facility and contains items such as roll-off bins, piles of rubble, dirt, and other wastes. The site is undeveloped on the 1968 and 1927 Sanborns and has a creek in the 1910 Sanborn Map. The site has a refuse odor, non-petroleum in nature and has disturbed soils with staining, likely caused by runoff from waste or organic materials.

The SHWIMS database lists the site as an active Solid Waste Transfer Facility < 50 Tons/Day. Listed wastes include: W675 Roofing/Shingles.

Based upon the distance from the planned project improvements (more than 760 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **35**
Site Name: **FORMER XEROX CORPORATION**
Site Address: **944 N 46TH STREET, MILWAUKEE, WI 53208**

Database: AST, BRRTS, ERP, FINDS, LUST, TIER 2, UST
Real Estate Requirements: None
Construction Requirements: None

The site is currently the State Street Station House, a multi-unit commercial building. Several building units are for lease. New House Arts (a metal fabricating artist) is located within the building. This site is also listed as the Bruce Company of Wisconsin, Inc., Janelle Prod Inc., Kennedy Raasch Development, and 944 N 45th Street. The site is listed as Ozite Corporations, manufacturers of hair felt on the 1968 Sanborn, and American Hair Felt Company on the 1927 and 1910 Sanborn maps.

According to the DATCP AST database one (1) 1,000 gallon diesel AST was closed by removal on December 18, 2008.

Kennedy Raasch Development is tracked in the BRRTS database (09-41-415806) as No Action Required based on laboratory results indicating no detect to low level contamination from a Phase II Environmental Site Assessment or similar report as well as UST/AST storage tank closures.

Review of available ERP files (02-41-386063) indicate a petroleum spill occurred within a wood frame storage facility. According to the Key engineering Group LTD, February 13, 2003, *Non-Emergency Immediate Action Report*, contaminated soils were identified when the wood structure was removed. Approximately 13 tons of contaminated soils were removed from the site. Minimal residual soil contamination remains in the vicinity of the former wood structure. The ERP was closed by the WDNR on January 14, 2004.

Janelle Prod Inc. is listed on the FINDS database under NCDB.

Review of available LUST files (03-41-000012) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the June 21, 1988, Woodward-Clyde Consultant's letter, *Xerox Site 57, 944 North 46th Street, Milwaukee*, contaminated soils were identified during the removal of a 12,000 gallon gasoline UST on October 27, 1986. Site Assessment samples indicated between 28 and 56 ppm TPH. Groundwater was encountered at approximately 12 feet bgs. The LUST site was closed by the WDNR on October 19, 1989.

TIER 2 is a database of facilities which store or manufacture hazardous materials that submit a chemical inventory report. According to this database the site has a maximum amount of 13,550 pounds of Dimension 0.10% fertilizer, 138,000 pounds of sodium chloride, 27,750 pounds of Lesco granular fertilizer, and 28,600 pounds of chloride salts. Reporting date was 2008.

According to the DATCP UST database one (1) 12,000 gallon unleaded gasoline UST was closed by removal on May 1, 1988, and one (1) 10,000 gallon fuel oil UST was closed by removal on December 13, 2002.

Based upon the distance from the planned project improvements (more than 470 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **40**
Site Name: **FORMER ELLER MEDIA COMPANY**
Site Address: **4550 W WISCONSIN AVENUE, MILWAUKEE, WI 53208**

Database: BRRTS, FINDS, NONGEN, SHWIMS, UST
Real Estate Requirements: None
Construction Requirements: None

The site is currently Appliance Gallery and Granite Gallery. The site is Naegele-Outdoor Advertising Company on the 1968 Sanborn, The General Outdoor Advertising Company Inc on the 1927 Sanborn map. Gasoline tanks are shown to the east of the building (next to the existing onramp to USH 41 Northbound) on the 1927 Sanborn map. No known investigation was conducted for the tanks shown on the 1927 Sanborn map. It has not been determined if the tanks are still onsite.

Eller Media Company is tracked in the BRRTS database (09-41-291977) as No Action Required for UST removal of a 5,000 gallon unleaded gasoline UST and a 550 gallon waste oil UST. According to the March 31, 1992, *A Report of an Underground Storage Tank Closure Assessment at Patrick Media Group, Inc. 4550 West Wisconsin Avenue, Milwaukee, Wisconsin,* by Sigma Environmental Services, Inc. petroleum impacted soils were not identified at the bases or sidewalls of either tank excavation. Site soils consisted of interbedded silts and sands with some gravel. Groundwater was not encountered. The tanks were located on the north side of the existing building. They do not appear to be the tanks shown on the 1927 Sanborn Map.

Eller Media Company is listed on the FINDS database under RCRA.

Eller Media Company is listed as a NONGEN with no violations. The site is historically listed as a SQG on February 13, 1996. Listed wastes include: D001 – Ignitable Hazardous Wastes.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Small and an inactive Hazardous Waste Generator – Very Small. Listed wastes include: D001 Non-Listed Ignitable Wastes.

According to the DATCP UST database one (1) 550 gallon waste/used motor oil UST and one (1) 5,000 gallon unleaded gasoline UST were closed by removal on December 23, 1991.

Based upon the clean closure of the documented onsite USTs, the location of the tanks on the Sanborn map to the east of (and possibly underneath) the onsite building, no real estate requirements and no construction requirements on the north side of Wisconsin Avenue (more than 100 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **41**
Site Name: **FORMER CANTEEN CORPORATION**
Site Address: **4422, 4500 W WISCONSIN AVENUE, MILWAUKEE, WI 53208**

Database: AUL, CRS, CESQG, FINDS, LUST, NONGEN, SHWIMS, SPILLS, UST, WRRSER
Real Estate Requirements: None
Construction Requirements: None

This site is currently the Wisconsin Humane Society. The site was formerly operated as a food service business (Canteen Corporation) and a gasoline station. Three separate filling stations are shown on the 1927 Sanborn map, one at 4502, 4500, and 4531/4430 West Wisconsin Avenue. One filling station is shown on the 1968 Sanborn map at 4422 West Wisconsin Avenue. The addresses of the site have changed over time. This parcel is currently listed as 4520 West Wisconsin Avenue on MCAMLIS and the Wisconsin Humane Society is listed as 4500 West Wisconsin Avenue. This site includes 4502, 4500, 4531, 4430, 4422, and 4421 West Wisconsin Avenue.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Canteen Corporation LUST site (03-41-003039) was added to the WDNR's GIS Registry for residual soil and groundwater contamination and lost monitoring wells.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The Canteen Corporation LUST site is listed on the CRS database.

Canteen Corporation (4500) is listed as a CESQG with no violations. Listed wastes include: D001 Ignitable Hazardous Wastes.

Canteen Corporation is listed on the FINDS database under RCRA and WI-ESR.

Review of available LUST files (03-41-003039) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the Applied Earth Sciences, Inc. *Case Summary*, contaminated soils were identified during the removal of a several USTs. Groundwater monitoring occurred at the site between 1993 and 1997. In 1997, approximately 3,378 tons of contaminated soils were excavated from the 4422 property and disposed of at a licensed facility. Oxygen release compound (ORC) was used in the vicinity of MW-3. Approximately 2,957 tons of soil were removed from 4421 West Wisconsin Avenue along with ten unreported USTs. According to the March 3, 1993, Northern Environmental *Underground Storage Tank Closure Assessment*, onsite soils are sandy and clayey silt fill to a depth of eight feet over native clayey silt with fine to medium sand. Groundwater was encountered below 11 feet. Groundwater flow is generally to the north. The LUST site was closed by the WDNR on

June 1, 2004, with inclusion on the GIS Registry for residual soil and groundwater contamination and lost groundwater monitoring wells.

Canteen Corporation (4422) is listed as a NONGEN with no violations. The site is historically listed as a LQG on February 3, 1993. Listed wastes include: D001 Ignitable Hazardous Wastes.

The SHWIMS database lists the site (4500) as an active Hazardous Waste Generator – Very Small. Listed wastes include: D001 Non-Listed Ignitable Wastes. The SHWIMS database lists the site (4422) as an inactive Hazardous Waste Generator – Large. Listed wastes include: D001 Non-Listed Ignitable Wastes.

According to the SPILL listing (04-41-549517) approximately 1 gallons of gasoline was spilled due to a leaking car gasoline tank on March 26, 2006. The spill occurred on the street at the above address. Absorbents were used to clean up the spill. The spill was closed by the WDNR on April 5, 2006.

According to the DATCP UST database one (1) 500 gallon fuel oil UST were closed by removal on December 9, 1995; and one (1) 4,000 gallon unleaded gasoline UST, one (1) 4,000 gallon leaded gasoline UST, one (1) 1,000 gallon waste/used motor oil UST were removed on January 1, 1993; and one (1) 500 gallon leaded gasoline UST, one (1) 2,500 gallon diesel UST, two (2) 1,000 gallon diesel USTs, six (6) 1,000 gallon leaded gasoline USTs were closed by removal on December 23, 1997.

The site is listed on the WI WRRSER as having a MEDIUM priority.

Based upon the location of residual contamination to the east side of the onsite building, the direction of groundwater flow generally to the north, no real estate requirements and no construction requirements on the north side of Wisconsin Avenue (over 100 feet northeast), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **42**
Site Name: **WISCONSIN AVENUE VIADUCT – PARCEL 7 WISDOT**
Site Address: **W WISCONSIN AVENUE AT 42ND STREET, MILWAUKEE, WI**

Database: AUL, ERP
Real Estate Requirements: None
Construction Requirements: None

The site is underneath the Wisconsin Avenue Viaduct.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Wisconsin Avenue Viaduct – Parcel 7 ERP site (02-41-000091) was added to the WDNR's GIS Registry for residual soil contamination and a direct contact barrier over the contaminated area.

Review of available ERP files (02-41-000091) indicate a spill or leak resulted in soil and groundwater contamination. Contaminated soils were identified by CH2MHill while working under the direction of the WisDOT. Advent Environmental Services conducted site remediation including the removal of a total of 2,550 tons of PAH contaminated soils. The ERP site was closed by the WDNR on October 3, 2006, with inclusion on the GIS Registry for residual soil contamination and a direct contact barrier over the contaminated area.

Based upon the distance from the planned project improvements (more than 790 feet east), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **63**
Site Name: **MILWAUKEE MACK SALES INC**
Site Address: **4444 W BLUEMOUND ROAD, MILWAUKEE, WI 53208**

Database: AST, CESQG, FINDS, LUST, MANIFEST, SHWIMS, TIER 2, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently Milwaukee Truck Sales, a provider of service, body shop, parts, sales, and lease/rental services. The site is United Parcels Service terminal station on the 1950 Sanborn and automobile sales and service on the 1927 Sanborn map. Gasoline tanks are located west of the building on the 1927 Sanborn Map.

According to the DATCP AST database there are two (2) 1,000 gallon waste/used motor oil ASTs, one (1) 275 gallon chemical AST, and one (1) 2,500 gallon diesel AST in-use at the site.

Milwaukee Mack Sales is listed as a CESQG with no violations. Listed wastes include: D000 Not Defined and D001 Ignitable Hazardous Wastes.

Milwaukee Mack Sales is listed on the FINDS database under RCRA and WI-ESR.

Review of available LUST files (03-41-004559) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the November 14, 1995, Moraine Environmental, Inc., *A Report of Soil Remediation at Milwaukee Mack Sales*, contaminated soils were identified during the removal of a 12,000 gallon diesel UST. Approximately 153 tons of contaminated soils were excavated and disposed of at a licensed facility. Closure samples indicate residual contamination on the west base (700 ppm benzene, 5.3 ppm 1,2 dichloroethane) and north wall (160 ppm DRO) of the excavation. The excavation was located at the southeast corner of the onsite building. Onsite soils were reported as fill material from ground surface to approximately four feet bgs, underlain by silty sand and clay with gravel to approximately 12 feet bgs, underlain by silty clay. Groundwater was encountered at approximately 12 feet bgs. Only two (2) wells were installed and groundwater flow direction was not determined. The LUST site was closed by the WDNR on January 16, 1996.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site between 2004 and 2007.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Small and an active Hazardous Waste Generator – Very Small. There are no listed wastes.

TIER 2 is a database of facilities which store or manufacture hazardous materials that submit a chemical inventory report. According to this database the site has a maximum amount of 18,250 pounds of #2 diesel fuel ultra low sulfur onsite.

According to the DATCP UST database one (1) 12,000 gallon diesel UST and one (1) 12,000 gallon unleaded gasoline UST was closed by removal on October 13, 1994; and one (1) 12,000 gallon fuel oil UST was closed by removal on October 15, 1994.

Based upon no real estate or construction requirements within 170 feet of the site and minimal soil contamination under a paved parking lot near the southeast corner of the building, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **77**
Site Name: **MENOMONEE RIVER STADIUM PROJECT**
Site Address: **IH 94 AND USH 41, MILWAUKEE, WI**

Database: ERP
Real Estate Requirements: Partial Acquisition - Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is currently the Stadium Interchange and parking lots for Miller Park. It is part of Site 189-Miller Park A stone quarry was depicted in the current USH 41 ROW and the Miller Park parking lot to the northwest of the Stadium Interchange on the 1950 and 1927 Sanborn Maps. A quarry was observed on the 1937 aerial photograph. A large disturbed area on the 1951 aerial photograph is located in the vicinity of the quarry. The area of disturbance is larger and the quarry appears to be filled. The site is a parking lot and the stadium interchange on the 1968 Sanborn, a stone quarry and several dwellings on the 1950 Sanborn, Story Brothers Stone Quarry & Crusher and several dwellings on the 1927 Sanborn, and Story Brothers Stone Quarry & Crusher on the 1910 Sanborn map.

This site is referred to as Area F5g and F5h in the RMT Phase I Environmental Investigation for the East-West Freeway I-94 and USH 41 Brewers Stadium Infrastructure Project. According to the RMT report, the stone quarry was reportedly used for municipal waste disposal in the 1940's.

The online WDNR RR Sites Map shows the area to the northwest of the Stadium Interchange (part of Site 77) as The Menomonee River Stadium Project, ERP # 02-41-001187. However, review of files at the WDNR did not provide information for this area. ERP # 02-41-001187 refers to the area known as River East which includes the Miller Park Parking Lots located to the southeast side of the Stadium Interchange and the east side of the Menomonee River, see sites 189 and 190.

Review of available ERP files (02-41-001187) indicate a spill or leak resulted in soil and groundwater contamination from heavy metals, PAHs, chlorinated solvents and petroleum. Contaminated soil and groundwater were identified under the former railroad property, in the early 1990s. The planned redevelopment of Miller Park Stadium Complex initiated a long-term monitoring plan that was established in 2002. Reports note that soil underneath the current stadium parking lot to the east of Miller Park Way is generally industrial waste consisting of clay-rich materials with fragments of metal, slag, coal, wood glass, ceramics, rubber and foundry sand, ranging in thickness from 7 to 22 feet, and native interbedded silty clays and sand underneath. Groundwater was encountered at approximately 8 to 17 feet bgs and generally flows east towards the Menomonee River. Free product collection sumps operated for over ten years, and the free product plume has generally decreased over time. Several VOCs and PAHs in groundwater are also above NR 140 groundwater standards. The ERP site is listed as open and is under WDNR jurisdiction.

Himalayan Consultants, LLC (Himalayan) contacted Mike Duckett of the SEWPBPD and conducted an interview related to Site 77. He indicated that the SEWPBPD has owned the property since 1996, which is currently utilized as a parking lot. The property has been used as a parking lot for approximately 60 years and was historically utilized as a quarry and landfill. He was not aware of any tanks located on the site currently or historically.

Based on the open ERP status, limited site information, the use of the site as a former municipal landfill, and real estate and construction requirements in the area of the former quarry, a Phase 3 Subsurface Investigation is recommended for both alternatives.

Site Number: **86**
Site Name: **FORMER DRICKEN PROPERTY**
Site Address: **4837 SUNNYSIDE DRIVE, MILWAUKEE, WI 53208**

Database: LUST, UST, WRRSER
Real Estate Requirements: None
Construction Requirements: None

This site is currently a residence. The site was a dwelling on the 1968 and 1950 Sanborn maps.

Review of available LUST files (03-41-003490) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. Contaminated soils were identified during the removal of a 1,000 gallon fuel oil UST. According to the January 20, 1994, *Site Investigation and Remediation for the Leaking Underground Storage Tank at 4837 West Sunnyside Drive*, approximately 90 tons of contaminated soils were excavated and disposed of at a licensed facility. The former tank was located on the south side of the house. Closure samples indicate residual contamination (19 ppm DRO) on the north wall of the excavation. Groundwater was not encountered during excavation activities. The LUST site was closed by the WDNR on April 26, 1994.

According to the DATCP UST database one (1) 1,000 gallon fuel oil UST was closed by removal on July 20, 1993.

The site is listed on the WI WRRSER as having a MEDIUM priority.

Based upon the historic nature of the LUST activity (1994), concentration of residual contamination (19 ppm DRO), and location in relation to the project requirements (over 820 feet west), no further investigation is recommended for both alternatives.

Site Number: **94**
Site Name: **MMSD FIELD OFFICE**
Site Address: **164 N 44TH STREET, MILWAUKEE, WI 53208**

Database: BRRTS, FINDS, ICIS
Real Estate Requirements: Partial Acquisition - Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site was historically used as railroad ROW that contained multiple tracks that serviced the Milwaukee Road Shops. The site is currently owned by MMSD and is used as a field office. There is a drop structure to the deep tunnel located on the north side of IH 94.

The site is listed on the BRRTS (09-41-001191) for No Action Required. The site is listed as MMSD Conveyance OFC Stadium Project Area F1. Low level detections of petroleum and RCRA metals were reported but no site investigation was required.

Dillingham Healy Grow Dew is listed on the FINDS database under ICIS.

ICIS includes information from the National Enforcement and Compliance Program and the National Pollutant Discharge Elimination System (NPDES) program. Dillingham Healy Grow Dew is listed in the ICIS database.

Himalayan contacted Del Dettman of MMSD and conducted an interview related to Site 94. Mr. Dettman indicated that MMSD has owned the property for over 10 years. The property is currently utilized as a MMSD field office, deep tunnel access, and rooms for parking attendants at Miller Park. He was not aware of any tanks located on the site currently or historically. Mr. Dettman was not aware of any environmental concerns with the property.

Based upon its former use as railroad ROW, a Phase 3 Subsurface Investigation is recommended for both alternatives.

Site Number: **98**
Site Name: **DOUGLAS LOSEY PROPERTY**
Site Address: **204 S 74TH STREET, MILWAUKEE, WI**

Database: LUST
Real Estate Requirements: None
Construction Requirements: None

This site is currently a residence. There are no registered tanks.

Review of available LUST files (03-41-001424) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the *Final Report Remedial Action of Contaminated Soils* by E&K Hazardous Waste Services Inc. a fuel oil spill was caused by the failure of the fuel oil UST in the basement. Approximately seven cubic yards of contaminated soils and concrete were excavated from the basement and disposed of at a licensed facility. The former tank was located on the NE corner of the basement. Closure samples indicate residual contamination (84 ppm TPH) in a composite sample. A new sump was installed and connected to the existing drain tile system and a non-engineered PVC passive ventilation system was constructed. Onsite soils are clays. The LUST site was closed by the WDNR on April 21, 1993.

Based upon the historic nature of the LUST activity (1993), concentration of residual contamination (84 ppm TPH), and location in relation to the project requirements (more than 570 feet west), no further investigation is recommended for both alternatives.

Site Number: **101**
Site Name: **DOMINICAN SISTERS OF THE PERPETUAL ROSARY**
Site Address: **217 N 68TH STREET, MILWAUKEE, WI 53213**

Database: AUL, CRS, LUST, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently the Dominican Sisters of the Perpetual Rosary, a monastery.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Dominican Sisters of the Perpetual Rosary LUST site (03-41-000870 / 53213392817) was added to the WDNR's GIS Registry for residual soil and groundwater contamination.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The Dominican Sisters of the Perpetual Rosary LUST site is listed on the CRS database for soil and groundwater contamination.

Review of available LUST files (03-41-000870 / 53213392817) indicate a spill or leak from the UST system resulted in soil and groundwater contamination from petroleum. According to the *Site Investigation Report and Case Closure Request* by SCS BT Squared, contaminated soils were identified during the removal of a 2,000 gallon fuel oil UST. No excavation of soils was completed. The former tank was located on the northeast corner of the building. Onsite soils are clays. An estimated 160 cubic yards of contaminated soil above RCLs (DRO 1,300 ppm, Naphthalene 7,900 ppb) is located between two and 13 feet bgs. Groundwater was encountered at approximately 15 feet bgs. Groundwater flow was not determined. The LUST site was closed by the WDSPS on March 20, 2012, with inclusion on the GIS Registry for residual soil and groundwater contamination.

According to the DATCP UST database one (1) 8,000 gallon fuel oil UST and one (1) 2,000 gallon fuel oil UST were closed by removal on July 21, 2011.

Based upon the nature of the soils at the site (clays) and location in relation to the project requirements (more than 370 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **102**
Site Name: **O'CONNOR SUBSTATION**
Site Address: **6800 O'CONNOR STREET, MILWAUKEE, WI**

Database: BRRTS
Real Estate Requirements: Partial Acquisition – Alternative 2 Only - Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is currently the We Energies O'Connor Substation. Inspection of historical aerial photographs indicates that the site was used as an electrical substation since 1973.

6800 O'Connor Street is tracked in the BRRTS database (08-41-551123) as Abandoned Container for a abandoned engine waste oil container that was found at the intersection of N 68th and O'Connor Street. Approximately 6 gallons of oil were spilled onto the concrete/asphalt. The activity was closed on March 17, 2008.

Kapur contacted Ms. Mesha Johnson and Mr. Mark Collins of We Energies and conducted an interview related to Site 102. We Energies has owned the property since 1927. The electrical substation was placed in-service in 1969. There are no listed above ground tanks at the site and no records of any spills according to We Energies information.

Based upon no recorded onsite spills of transformer oil and no real estate acquisition requirements, no further investigation unless real estate or construction requirements change is recommended for Alternative 1. Based upon the current and former use as an electrical substation with oil filled transformers, real estate requirements, and the possibility of PCB contamination at the site, a Phase 2 Subsurface Investigation is recommended for Alternative 2.

Site Number: **103**
Site Name: **PENN TEN CORPORATION**
Site Address: **112 S 68TH STREET, MILWAUKEE, WI**

Database: AST, BRRTS, UST
Real Estate Requirements: Partial Acquisition – Alternative 2 Only - Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is currently a Valvoline Instant Oil Change and Soft Touch Car Wash. Several drums were observed on the site near the dumpsters during site reconnaissance. Drum contents is unknown. The site is a filling station, auto repair and dwelling on the 1950 Sanborn and a dwelling on the 1927 Sanborn map. Filling station gasoline tanks are located in the northwest portion of the site.

According to the DATCP AST database two (2) 500 gallon waste/used motor oil ASTs are in-use at the site.

Penn Ten Corp is tracked in the BRRTS database (09-41-296996) as No Action Required for removal of one (1) 2,000 gallon waste oil UST.

According to the DATCP UST database one (1) 1,000 gallon fuel oil UST was closed by removal on November 6, 1998; and one (1) 2,000 gallon waste/used motor oil was closed by removal on March 22, 2000.

Himalayan attempted to interview onsite personnel at Site 103, no response was obtained.

Based upon the real estate and construction requirements, current and former use of the site as a gasoline station and an oil change facility, and no data for the 1,000 gallon fuel oil UST that was removed in 1998, a Phase 2 Subsurface Investigation is recommended for both alternatives.

Site Number: **107**
Site Name: **6415 W MOUNT VERNON AVENUE**
Site Address: **6415 W MOUNT VERNON AVENUE, MILWAUKEE, WI 53208**

Database: UST
Real Estate Requirements: None
Construction Requirements: None

This site is listed as Juneau High School. It is currently MacDowell Montessori School. The site is Solomon Juneau High School on the 1950 Sanborn and a greenhouse on the 1927 Sanborn map.

According to the SPILL listing (04-41-524885) the night shift was treating the swimming pool and complained about stronger than normal odors. The spill was closed by the WDNR on December 6, 2001.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Large and an active Hazardous Waste Generator – Very Small. Listed wastes include: D001 Non-Listed Ignitable Wastes and D002 Non-Listed Corrosive Wastes.

According to the DATCP UST database one (1) 6,000 gallon fuel oil UST was closed by filling with inert material on December 2, 2000.

Based upon the distance from the planned project improvements (more than 230 feet north to the property line and more than 610 to the onsite building), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **108**
Site Name: **FORMER FAIRVIEW MAUSOLEUM**
Site Address: **6316 W FAIRVIEW AVENUE, MILWAUKEE, WI 53213**

Database: FINANCIAL ASSURANCE, FINDS, NONGEN, SHWIMS, UST
Real Estate Requirements: None
Construction Requirements: None

The site is currently 100 N 64th Street and is the Milwaukee Fire Department Engine #35. It is located at the former site of the Fairview Mausoleum. According to the Milwaukee County Online Genealogy and Family History Library, the Fairview Mausoleum is no longer in existence. In 1995 all the dead from Fairview Mausoleum were disinterred because the building was abandoned and collapsing. The remains from the Mausoleum were reinterred at Graceland in 1997. The site is Fairview Mausoleum on the 1950 and 1927 Sanborn maps.

The onsite in-use UST is listed under FINANCIAL ASSURANCE.

Fairview Mausoleum is listed on the FINDS database under RCRA and WI-ESR.

Fairview Mausoleum is listed as a NONGEN with no violations. The site is historically listed as a SQG on August 25, 1997. Listed wastes include: D000 – Not Defined and D008 – Lead.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – One Time UST Removal (obsolete code). Listed wastes include: D000 Non-Listed Toxic Wastes and D008 Lead.

According to the DATCP UST database one (1) 1,000 gallon diesel UST is in-use at the site and was installed in 1998.

Based upon the distance from the planned project improvements (more than 240 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **112**
Site Name: **MPS FACILITIES AND MAINTENANCE**
Site Address: **3841 W SAINT PAUL AVENUE, MILWAUKEE, WI 53208**

Database: FINDS, NONGEN, SHWIMS
Real Estate Requirements: None
Construction Requirements: None

This site is currently MPS Building Operation Service Center. The site is a public playground service building on the 1968 and 1950 Sanborn, undeveloped and part of the Interurban Railroad ROW on the 1927 Sanborn, and undeveloped on the 1910 Sanborn map. A gasoline tank is depicted within the onsite building in the 1968 and 1950 Sanborn maps.

MPS Facilities and Maintenance is listed on the FINDS database under RCRA.

MPS Facilities and Maintenance is listed as a NONGEN with no violations. The site is historically listed as a CESQG on May 20, 1991. Listed wastes include: D001 – Ignitable Hazardous Wastes, D002 Corrosive Hazardous Waste.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Very Small. Listed wastes include: D001 Non-Listed Ignitable Wastes and D002 Non-Listed Corrosive Wastes.

Based upon the NONGEN status with no recorded violations and the location in relation to the planned project improvements (more than 550 feet north), no additional investigation is recommended for both alternatives.

Site Number: **119**
Site Name: **RP MOTORS INC**
Site Address: **305 N 35TH STREET, MILWAUKEE, WI 53208**

Database: FINDS, ICIS
Real Estate Requirements: None - Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is currently RP Motors, a used car dealer. Onsite buildings include service bays. The site is a dwelling and stores on the 1968, 1950 and 1927 Sanborn maps.

RP Motors Incorporated is listed on the FINDS database under AFS and ICIS.

ICIS includes information from the National Enforcement and Compliance Program and the National Pollutant Discharge Elimination System (NPDES) program. RP Motors Incorporated is listed in the ICIS database.

Himalayan attempted to interview onsite personnel at Site 119, no response was obtained.

Based upon the current use of the site as a used car dealer and the required construction requirements adjacent to the site, a Phase 2 Subsurface Investigation is recommended for both alternatives.

Site Number: **120**
Site Name: **FORMER VICTORY OPTICIANS INC.**
Site Address: **215 N 35TH STREET, MILWAUKEE, WI 53208**

Database: CESQG, FINDS, SHWIMS
Real Estate Requirements: Site Acquisition – Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is currently Concentra Urgent Care. The site is an optical lab on the 1968 Sanborn and a dwelling on the 1950, 1927, and 1910 Sanborn maps.

Victory Opticians Inc. is listed as a CESQG with no violations. The site was historically listed as a SQG on June 24, 1992. Listed wastes include D001 Ignitable Hazardous Wastes.

Victory Opticians Inc. is listed on the FINDS database under RCRA and WI-ESR.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Small and an active Hazardous Waste Generator – Very Small. Listed wastes include: D001 Non-Listed Ignitable Wastes.

Himalayan attempted to interview Dr. David Drury M.D.; however, he was not at the property and representatives declined to provide any information.

Based upon the requirement for site acquisition and the former use of RCRA wastes at the site, a Phase 2 Subsurface Investigation is recommended for both alternatives.

Site Number: **121**
Site Name: **35TH STREET AND SAINT PAUL AVENUE SPILL**
Site Address: **35TH STREET AND SAINT PAUL AVENUE, MILWAUKEE, WI**

Database: SPILLS
Real Estate Requirements: None
Construction Requirements: None

This site is currently an intersection.

According to the SPILL listing (04-41-546678) approximately 20 gallons of diesel fuel was spilled due to a leak in a saddle tank on April 14, 2005. The spill was located on concrete/asphalt and contained. Absorbents were to clean up the spill. The spill was closed by the WDNR on July 5, 2005.

According to the SPILL listing (04-41-554681) approximately one quart of acid from a leaking battery was spilled due to a car accident on October 15, 2009. The spill area was limed to clean up the spill. The spill was closed by the WDNR on November 5, 2009.

According to the SPILL listing (04-41-553901) approximately two gallons of gasoline was spilled due a traffic accident on March 13, 2009. The spill was located on concrete/asphalt and the Milwaukee Fire Department used absorbents to clean up the spill. The spill was closed by the WDNR on March 15, 2010.

According to the SPILL listing (04-41-553026) approximately ten gallons of diesel fuel was spilled due a traffic accident on March 13, 2009. The spill was located on concrete/asphalt and the spill was cleaned up using absorbents. The spill was closed by the WDNR on December 11, 2008.

According to the SPILL listing (04-41-041227) a tank on a truck ruptured and caused storm sewer contamination on June 20, 1986. No action was taken to clean up the spill. The spill is listed as historic and is under WDNR jurisdiction.

Based upon the closed and historic nature of the listed spills, the limited amount of spilled material, and the distance from the planned project improvements (more than 190 feet north), no further investigation is recommended for both alternatives.

Site Number: **123**
Site Name: **SUPER AMERICA #4080 / SPEEDWAY 4080**
Site Address: **302 N 35TH STREET, MILWAUKEE, WI 53208**

Database: AUL, CESQG, CRS, FINANCIAL ASSURANCE, FINDS, LUST, SHWIMS, UST, WRRSER
Real Estate Requirements: None - Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is currently a Speedway gasoline station and convenience store.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Super America #4080 LUST site (03-41-001752) was added to the WDNR's GIS Registry for residual soil and groundwater contamination. Contamination is also listed in the North 35th ROW and 3416-3418 West Mount Vernon Avenue on the GIS Registry.

Speedway 4080 is listed as a CESQG with no violations. The site was historically listed as a CESQG on January 5, 1998. Listed wastes include: D001 Ignitable Hazardous Wastes and D018 Benzene.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The Super America #4080 LUST site is listed on the CRS database for residual soil and groundwater contamination.

The three (3) onsite in-use USTs are listed under FINANCIAL ASSURANCE.

Speedway 4080 is listed on the FINDS database under RCRA and WI-ESR.

Review of available LUST files (03-41-001752 / 53208410702) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the Delta Environmental July 23, 2003, *Site Closure Request*, contaminated soils were identified during the upgrade of the product distribution piping in 1991 and during the UST system removal and upgrade in 1996. Approximately 385 tons of contaminated soils were excavated and disposed of at a licensed facility. Onsite soils are clayey silts and silty clays with sand lenses. Groundwater was encountered at approximately 16 feet bgs. Flow direction is reported to the west/northwest. Residual contamination extends to the North 35th Street ROW and to 3416-3418 West Mount Vernon Avenue property. The LUST site was closed by WDSPS on October 21, 2003, with inclusion on the GIS registry for residual soil and groundwater contamination.

The SHWIMS database lists the site as an active Hazardous Waste Generator – Very Small. Listed wastes include: D001 Non-Listed Ignitable Wastes and D018 Benzene.

According to the DATCP UST database two (2) 8,000 gallon unleaded gasoline USTs and one (1) 12,000 gallon unleaded gasoline UST are in-use at the site. Two (2) 12,000 gallon unleaded gasoline USTs and one (1) 4,000 gallon unleaded gasoline UST were closed by removal on June 10, 1996.

The site is listed on the WI WRRSER as having a MEDIUM priority.

Himalayan attempted to interview onsite personnel at Site 123, no response was obtained.

Based upon adjacent construction requirements and the known contamination within the N 35th Street ROW, a Phase 2.5 Subsurface Investigation is recommended for both alternatives.

Site Number: **124**
Site Name: **MER-CAR CORPORATION INC / CITY OF MILWAUKEE**
Site Address: **234 N 35TH STREET, MILWAUKEE, WI 53208**

Database: CESQG, FINDS, LUST, SHWIMS, UST, WRRSER
Real Estate Requirements: Partial Acquisition – Alternative 2 Only - Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is currently an empty lot that is listed for sale. The September 15, 1993, *Phase One Site Assessment Report for Underground Storage Tank Removed at 234 N. 35th Street, Milwaukee, WI*, by Harenda Enterprises lists the following site history. A filling station was constructed at the site in 1950. In 1966 fuel oil heating and four liquid gasoline pumps were installed. In 1969, two (2) 4,000 gallon gasoline tanks were removed and two (2) 7,500 gallon gasoline tanks were installed. In 1979 the two (2) 7,500 gallon gasoline tanks were removed. Magnometer testing in 1992 showed no USTs other than the fuel oil tank, which was removed in 1993.

The Department of City Development is listed as a CESQG with no violations. Listed wastes include: D001 Ignitable Hazardous Wastes, D003 Reactive Hazardous Waste, F001 Spent Halogenated Solvents, and F002 Spent Halogenated Solvents.

City Development Department is listed on the FINDS database under RCRA and WI-ESR.

Review of available LUST files (03-41-003477 / 53208410534) indicate a spill or leak from the UST system resulted in soil contamination from a 550 gallon fuel oil UST. According to the July 9, 2009, correspondence letter to Ms. Carolyn Dukatt, President, Mer Car Corporation, *Re: Responsibility for Cleanup of Petroleum Contamination*, the site was purchased through an auction in 1985 by the Mer Car Corporation. In 1993, the City of Milwaukee razed the onsite building and removed a 550 gallon fuel oil UST. No excavation of contaminated soils took place. Site Assessment samples indicate contamination (1612 ppm DRO) on the northeast corner of the tank cavity. Onsite soils are reported as a clay/sandy base. Groundwater was not encountered during Site Assessment activities. The LUST site is listed as open. As of July 2013, all open WDSPS files were transferred to the WDNR for oversight.

The SHWIMS database lists the site as an active Hazardous Waste Generator – Very Small. Listed wastes include: D001 Non-Listed Ignitable Wastes, D003 Non-Listed Reactive Wastes, F001 Spent Halogenated Solvents, and F002 Spent Halogenated Solvents.

According to the DATCP UST database one (1) 550 gallon fuel oil UST was closed by removal on June 30, 1993.

The site is listed on the WI WRRSER as having a MEDIUM priority.

Himalayan contacted Steve Tukett of Mer-Car Corporation and conducted an interview related to Site 124. Mr. Tukett indicated that the property has been owned by Mer-Car Corporation for approximately 20 years and is currently a vacant lot. He also indicated that the site was a gasoline station historically and the tanks were removed prior to purchase. He was not aware of any additional environmental concerns with the property.

Based upon real estate and construction requirements, no site investigation for the historical tanks located at the site, the open LUST activity, and the concentration of residual contamination (1620 ppm) near the tank cavity, a Phase 2.5 Subsurface Investigation is recommended for both alternatives.

Site Number: **125**
Site Name: **AMOCO OIL CO 15228 / KAMRAN AMOCO**
Site Address: **200 N 35TH STREET, MILWAUKEE, WI 53208**

Database: AUL, CRS, FINANCIAL ASSURANCE, FINDS, LUST, NONGEN, SHWIMS, UST, WRRSER
Real Estate Requirements: None – Not Finalized
Construction Requirements: Anticipated - Not Finalized

The site is currently a Milwaukee Petro Pantry gasoline station and convenience store. The site is several dwellings on the 1910 Sanborn map.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Amoco Station #15228 LUST site (03-41-001274) was added to the WDNR's GIS Registry with residual soil and groundwater contamination, a structural impediment to cleanup, and an engineered cover or soil barrier over the contaminated area.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The Amoco Station #15228 LUST site is listed on the CRS database for soil and groundwater.

The three (3) onsite in-use USTs are listed under FINANCIAL ASSURANCE.

Amoco Oil Co 15288 is listed on the FINDS database under RCRA and WI-ESR. Kamran Amoco is listed on the FINDS database under ICIS.

Review of available LUST files (03-41-001274) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the October 16, 2006, Delta Environmental, *Soil Sampling Report and Closure Request*, contaminated soils were identified in December of 1990. Free product was found at the site. A soil vapor extraction (SVE) system and a groundwater recovery and treatment (GWR/T) system were operated at the site. Approximately 1,000 yards of contaminated soils were excavated and disposed of at a licensed facility. Contaminated soil and groundwater are present in the alley to the east of the site and are likely in the Park Hill Avenue ROW. Onsite soils are silty clays, sand, and sandy silt to silty sand. Groundwater was encountered at approximately 35 feet bgs. Reported groundwater flow is to the southwest. The LUST site was closed by the WDNR on October 23, 2007, with residual soil and groundwater contamination, a structural impediment to cleanup, and an engineered cover or soil barrier over the contaminated area.

Amoco Oil Co 15228 is listed as a NONGEN with no violations. The site is historically listed as a LQG on January 29, 1991. Listed wastes include: D000 Not Defined, D001 – Ignitable Hazardous Wastes, D008 – Lead, and D018 – Benzene.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Small and an inactive Hazardous Waste Generator – Very Small. There are no listed wastes.

According to the DATCP UST database three (3) 12,000 gallon unleaded gasoline USTs are in-use at the site. One (1) 6,000 gallon unleaded gasoline UST was closed by removal on June 26, 1991; one (1) 1,000 gallon fuel oil UST was closed by removal on July 1, 1991; and two (2) 8,000 gallon unleaded gasoline USTs, one (1) 550 gallon fuel oil UST, and one (1) 6,000 gallon unleaded gasoline UST were closed by removal on July 24, 1991.

The site is listed on the WI WRRSER as having a HIGH priority.

Himalayan attempted to interview onsite personnel at Site 125, no response was obtained.

Based upon adjacent construction requirements in N 35th Street and Park Hill Avenue and residual soil and groundwater contamination located at the site, a Phase 2.5 Subsurface Investigation is recommended for both alternatives.

Site Number: **132**
Site Name: **MERRILL PARK HOUSING DEVELOPMENT**
Site Address: **222 N 33RD STREET, MILWAUKEE, WI 53208**

Database: CESQG, FINDS, LUST, SHWIMS, UST
Real Estate Requirements: None
Construction Requirements: Anticipated – Alternative 2 Only - Not Finalized

The site is currently Merrell Park Housing Development. The site is multiple dwellings on the 1910 Sanborn map.

Merrell Park Housing Development is listed as a CESQG with no violations. Listed wastes include: D001 Ignitable Hazardous Wastes.

Merrill Park Housing Development is listed on the FINDS database under RCRA and WI-ESR.

Review of available LUST files (03-41-003707) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the June 3, 1994, Sigma Environmental Services, Inc., *A Report of an Underground Storage Tank Closure Assessment and Soil Remediation,* contaminated soils were identified during the removal of a 10,000 gallon fuel oil UST. Approximately 120 cubic yards of contaminated soils were excavated and disposed of at a licensed facility. The report estimates approximately 20 to 30 cubic yards of residual contamination (1,400 ppm DRO) remain onsite beneath the onsite utilities and five to 10 cubic yards of residual contamination (33 ppm DRO) remain beneath the west end of the former UST system piping runs next to the onsite building. Onsite soils are clay, silt, clayey silt and silty clay. Groundwater was not encountered during onsite activities. The LUST site was closed by the WDNR on June 13, 1996.

The SHWIMS database lists the site as an active Hazardous Waste Generator – Very Small. Listed wastes include: D001 Non-Listed Ignitable Wastes.

According to the DATCP UST database one (1) 10,000 gallon fuel oil UST was closed by removal on October 14, 1993.

Based upon the location of the residual soil contamination next to the onsite building and beneath the onsite utilities (over 130 feet from Alternative 2 construction requirements), no identified groundwater contamination, and clayey type onsite soils, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **135**
Site Name: **SAINT ROSE CATHOLIC ACADEMY**
Site Address: **514 N 31ST STREET, MILWAUKEE, WI**

Database: LUST, UST
Real Estate Requirements: None
Construction Requirements: None

The site is currently Saint Rose and Saint Leo Catholic School. It is part of the Messmer Catholic Schools.

Review of available LUST files (03-41-543525 / 53208405314) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the November 2005, PEP Environmental Service, LLC, *Environmental Site Investigation Report,* contaminated soils were identified during the removal of two fuel oil USTs. No soils were excavated. A Site Investigation including five GeoProbe borings was conducted. Residual contamination (<43 ppm DRO remains in the direct vicinity of the former USTs between eight and 15 feet bgs. Onsite soils are sandy silt and tight clay. Groundwater was not encountered during onsite activities. The LUST site was closed by the WDSPS on January 30, 2006.

According to the DATCP UST database one (1) 2,000 gallon fuel oil UST and one (1) 8,000 gallon fuel oil UST were closed by removal on June 27, 2005.

Based upon the distance from the planned project improvements (more than 670 feet east), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **139**
Site Name: **CITY OF MILWAUKEE ENGINE HOUSE**
Site Address: **424 N 30TH STREET, MILWAUKEE, WI 53208**

Database: LUST, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently The City of Milwaukee Fire Department Engine 28.

Review of available LUST files (03-41-005197 / 53208420924) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the Giles Engineering Associates, Inc., *Petroleum Hydrocarbon Assessment Study and Petroleum Impacted Soil Removal Monitoring Services* report, contaminated soils were identified during the removal of a 550 gallon gasoline UST. Approximately 52 tons of contaminated soils were excavated and disposed of at a licensed facility. Closure samples indicate residual contamination (277 ppm benzene) on the south wall of the excavation near an underground natural gas line. Onsite soils are silty clay to clayey silt with variable sand and gravel. Groundwater was encountered between 8 and 12 feet bgs. The LUST site was closed by the WDSPS on April 3, 1997.

According to the DATCP UST database one (1) 550 gallon unleaded gasoline UST was closed by removal on February 13, 1995.

Based upon the distance from the planned project improvements (more than 610 feet northwest), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **147**
Site Name: **KENTUCKY FRIED CHICKEN**
Site Address: **605 N 27TH STREET, MILWAUKEE, WI 53208**

Database: AUL, CRS, LUST, UST, WRRSER
Real Estate Requirements: None
Construction Requirements: None

The site is currently a vacant building and associated parking. A Kentucky Fried Chicken used to operate at the site. The site was formerly a gasoline station.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Kentucky Fried Chicken LUST site (03-41-000096 / 53208403305) was added to the WDNR's GIS Registry for residual soil and groundwater contamination.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The Kentucky Fried Chicken LUST site is listed on the CRS database.

Review of available LUST files (03-41-000096 / 53208403305) indicate a spill or leak from the former gasoline station resulted in soil contamination from petroleum. A gasoline station occupied the site from 1939 to 1964. According to the Giles Engineering Associates, Inc. June 9, 2004, *Site Investigation Summary and Request for Case Closure*, approximately 450 to 470 cubic yards of contaminated soils exist at the site. No soil excavation was completed. The groundwater plume is likely mingled with the groundwater contamination from Site 155 within the 27th Street ROW. Contamination is potentially present in the adjacent North 27th Street and West Michigan Street ROWs. Onsite soils included fill (silts, clays, sand and gravel, and rubble) to a variable depth between two and 12 feet bgs. Native soils are reported as silty clay, clayey silt, sandy silt with fine sand, silty fine sand, fine sandy silt, and silty fine to coarse sand and gravel. Groundwater was encountered between 7 and 19 feet bgs. Reported groundwater flow is to the south. The LUST site was closed by the WDSPS on November 15, 2004 with inclusion on the GIS registry for residual soil and groundwater contamination.

TRC Environmental Corporation, on behalf of WisDOT, conducted a Phase 2.5 on West Michigan Avenue and North 27th Street to determine waste handling for the reconstruction of North 27th Street in October of 2012. According to TRC's November 2012, *Phase 2.5 Investigation Report*, one ten foot boring was located within the North 27th Street ROW to the east of the site and one ten foot boring was located within the West Michigan Avenue ROW to the south of the site. Petroleum contaminated soil

was found in North 27th Street between 8 and 9 feet bgs and was recommended for removal during road construction. Encountered soils include clayey silt, silt, and clay/silt till. No groundwater was encountered.

According to the DATCP UST database four (4) 1,000 gallon leaded gasoline USTs were closed by removal on March 22, 1989.

The site is listed on the WI WRRSER as having a HIGH priority.

Based upon the distance from the planned project improvements (over 50 feet across Michigan Street to the north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **148**
Site Name: **527 N 27TH STREET**
Site Address: **527 N 27TH STREET, MILWAUKEE, WI 53208**

Database: EDR HISTORICAL CLEANERS, UST
Real Estate Requirements: None - Not Finalized
Construction Requirements: Anticipated – Alternative 2 Only - Not Finalized

This site is currently Ardent Music Studio, Dancing Ground, Pevnick Design, Inc., and Priority Driving School. The site is a photo studio on the 1969 and 1951 Sanborns, Public School No. 2 on the 1910 Sanborn, and a district primary school on the 1894 Sanborn map.

527 N 27th Street is listed on the EDR Historical Cleaners database as Suds Your Duds Coin Laundries in 1999, 2000, 2001, 2002, 2003, and 2010. No dry cleaning took place at this facility.

According to the DATCP UST database one (1) 2,500 gallon fuel oil UST was closed by removal on September 1, 1999.

Himalayan contacted Stephen Pevnick and conducted an interview related to Site 148. Mr. Pevnick indicated that he has owned the property for approximately 14 years and it is currently utilized as a dance and music studio and as a graphic design company office. He stated that the property was used as a photography studio previously. He was not aware of any tanks currently or formerly on site, however, he was aware of former tanks located to the south of the property at a laundry property (Site 149).

Based upon the adjacent construction requirements and no available data for the removal of the 2,500 gallon fuel oil UST, a Phase 2 Subsurface Investigation is recommended for Alternative 2. No further investigation is recommended for Alternative 1 unless real estate or construction requirements change.

Site Number: **149**
Site Name: **PETERS CLEANERS AND LAUNDRY**
Site Address: **509 N 27TH STREET, MILWAUKEE, WI 53208**

Database: CESQG, EDR HISTORICAL CLEANERS, FINDS, MANIFEST, SHWIMS
Real Estate Requirements: None - Not Finalized
Construction Requirements: Anticipated – Alternative 2 Only - Not Finalized

This site is currently Peters Cleaners and Laundry. The site is a store on the 1969 and 1951 Sanborns and a dwelling on the 1910 and 1894 Sanborn maps.

Peters Cleaners and Laundry is listed as a CESQG with no violations. The site was historically listed as a SQG on February 16, 1990. Listed wastes include: D000 Not Defined and F002 Spent Halogenated Solvents.

The site is listed in the EDR Historical Cleaners database as A1 Cleaners and Dyers in 1999 and 2000 and Peters Dry Cleaners in 1999, 2000, 2003, 2005, 2006, 2010, 2011, and 2012.

Peters Cleaners and Laundry is listed on the FINDS database under RCRA and WI-ESR.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site in 2004 through 2010. Waste codes were not reported.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Small and an active Hazardous Waste Generator – Very Small. There are no listed wastes.

Himalayan attempted to interview onsite personnel at Site 149, no response was obtained.

Based upon this use of halogenated solvents at the site and its location adjacent to construction requirements, a Phase 2 Subsurface Investigation is recommended for Alternative 2. No further investigation is recommended for Alternative 1 (over 150 feet north) unless real estate or construction requirements change.

Site Number: **150**
Site Name: **505 N 27TH STREET**
Site Address: **505 N 27TH STREET, MILWAUKEE, WI 53208**

Database: EDR HISTORICAL AUTO STATIONS, UST
Real Estate Requirements: None - Not Finalized
Construction Requirements: Anticipated – Alternative 2 Only - Not Finalized

This site is listed as R I Pachefsky Property. It is currently Two Brothers Automotive Repair and Sales. The site is a filling station on the 1969 and 1951 Sanborns and a dwelling on the 1910 and 1894 Sanborn maps.

505 N 27th Street is listed in EDR Historical Auto Stations database as New Look Auto Body in 1999, 2000, 2001, 2002, and 2003; Claiborne Auto Repair and Auto Sales in 2008; and Clybourn Auto Repair in 2009.

According to the DATCP UST database one (1) 6,000 gallon leaded gasoline UST was closed by filling with inert material on August 24, 1987.

Himalayan contacted Mark Pachefsky and conducted an interview related to Site 150. Mr. Pachefsky indicated that he has owned the property for 35 years and has used the site as an auto repair facility. He stated that the property was previously used as City Oil gasoline station and was not aware of the location of the former tanks.

Based upon the current and former use of the site as an automobile service station, the size (6,000 gallons) and contents (leaded gasoline) of the former UST, and no available Site Assessment Information, a Phase 2 Subsurface Investigation is recommended for Alternative 2. No further investigation is recommended for Alternative 1 (over 75 feet north) unless real estate or construction requirements change.

Site Number: **151**
Site Name: **FORMER MR PS TIRES**
Site Address: **2705 W CLYBOURN STREET, MILWAUKEE, WI 53208**

Database: SHWIMS
Real Estate Requirements: Partial Acquisition – Alternative 1 Only - Not Finalized
Construction Requirements: Anticipated - Not Finalized

The site is currently Select Tire Sales. The site is covered with asphalt and has two bays for automobile service. There are multiple oil stains on the asphalt parking area. A large rectangular asphalt patch is located in the northeast corner of the site. Historical aerial photos show multiple parked vehicles. No canopy was observed and no USTs or ASTs have been registered to the site. The site is a filling station on the 1969 and 1951 Sanborns, undeveloped on the 1910 Sanborn, and a dwelling on the 1894 Sanborn map. The tanks were depicted along West Clybourn Street on the 1969 and 1951 Sanborn maps.

The SHWIMS database lists the site as an inactive Solid Waste Transporter.

Himalayan contacted Mark Pachefsky and conducted an interview related to Site 151. Mr. Pachefsky indicated that he has owned the property for over 30 years and the site is utilized as an oil change and basic automobile repair facility. He stated that the property was previously used as a Standard Oil gasoline station and was not aware of the location of the former tanks.

Based upon the sites historic use as an automotive repair facility and the real estate and construction requirements, a Phase 2 Subsurface Investigation is recommended for both alternatives.

Site Number: **152**
Site Name: **419 N 27TH STREET**
Site Address: **419 N 27TH STREET, MILWAUKEE, WI 53208**

Database: UST
Real Estate Requirements: Site Acquisition – Alternative 1 Only – Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is listed as National Electric Service Inc Property. It is currently owned by Dreamland Petroleum Inc. which also owns the CITGO Station immediately adjacent to the south. As of July 10, 2013, the onsite building has been removed and excavation of onsite soils is occurring. The site is a metal works garage on the 1969 Sanborn, a store on the 1951 Sanborn, and undeveloped on the 1910 and 1894 Sanborn maps.

According to the DATCP UST database one (1) 5,000 gallon unknown content UST was abandoned without product on March 14, 1990.

Himalayan attempted to interview onsite personnel at Site 152, no response was obtained.

Based upon the site acquisition requirement, the size of the tank (5,000 gallons), the type of UST closure (abandonment without product) and no available Site Assessment information, a Phase 3 Subsurface Investigation is recommended for Alternative 1. Based upon adjacent construction requirements, a Phase 2 Subsurface Investigation is recommended for Alternative 2.

Site Number: **153**
Site Name: **FORMER B&C CITGO LLC**
Site Address: **405 N 27TH STREET, MILWAUKEE, WI 53208**

Database: AST, FINANCIAL ASSURANCE, FINDS, EDR HISTORICAL AUTO STATIONS, LUST, UST
Real Estate Requirements: Site Acquisition – Alternative 1 Only – Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is currently a Dawg's Auto Service operating in a vacant CITGO gasoline station and convenience store. This site is planned for redevelopment along with the property to the north (Site 152). The site is undeveloped on the 1969 Sanborn, multiple dwellings on the 1951 and 1910 Sanborns, and one property is undeveloped and another has a single dwelling on the 1894 Sanborn map.

According to the DATCP AST database one (1) 250 gallon waste/used motor oil AST was closed by removal on May 9, 2005.

The three (3) onsite in-use USTs are listed under FINANCIAL ASSURANCE.

B&C CITGO, LLC is listed on the FINDS database under ICIS.

405 N 27TH Street is listed in EDR's Historical Auto Stations database as Her Auto Repair in 1999 and 2003; Discount CITGO Mart in 2000, 2004, and 2007; Certified Auto Repair in 2001 and 2002; Dang Automotive in 2005, 2006, 2008, 2009, 2011, and 2012; and CITGO in 2010.

Review of available LUST files (03-41-002188) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the April 1996, AES Consultants, LTD., *Remedial Action Report*, contaminated soils were identified by the failure of a tank/line test of the onsite UST system. Approximately 2,925 tons of contaminated soils were excavated and disposed of at a licensed facility. 7,000 gallons of surface water (rain and snow melt) was collected and disposed of. Closure samples indicate residual contamination (<70 ppm benzene) on the base of the excavation. Onsite soils are silty clays. Groundwater was not encountered. The LUST site was closed by the WDNR on August 20, 1996.

TRC Environmental Corporation, on behalf of WisDOT, conducted a Phase 2.5 on West Saint Paul Avenue and North 27th Street to determine waste handling for the reconstruction of North 27th Street in October of 2012. According to TRC's November 2012, *Phase 2.5 Investigation Report*, one ten foot boring was located within the North 27th Street ROW to the east of the site and one ten foot boring was located within the West Saint Paul Avenue ROW to the south of the site. Petroleum contaminated soil

was not encountered during Phase 2.5 activities. Encountered soils include clayey silt, silt, and clay/silt till. No groundwater was encountered.

According to the DATCP UST database there are two (2) 10,000 empty USTs and one (1) 8,000 gallon empty UST that were temporarily taken out of service on October 13, 2009. One (1) 500 gallon waste/used motor oil UST, and one 1,000 gallon diesel UST were closed by removal on June 8, 1994; one (1) 500 gallon diesel UST and one (1) 2,000 gallon unleaded gasoline UST were closed by removal on July 1, 1994; and two (2) 10,000 gallon unleaded gasoline USTs and one (1) 8,000 gallon diesel UST were closed by removal on December 1, 1995.

Himalayan attempted to interview onsite personnel at Site 153, no response was obtained.

Based on site acquisition requirements, the former use of the site as a gasoline station and residual contamination (70 ppm benzene) from the closed LUST activity remaining onsite, a Phase 3 Subsurface Investigation is recommended for Alternative 1. Based on adjacent construction requirements, a Phase 2.5 Subsurface Investigation is recommended for Alternative 2.

Site Number: **154**
Site Name: **28TH STREET SUBSTATION**
Site Address: **2701 W SAINT PAUL AVENUE, MILWAUKEE, WI**

Database: AUL, ERP, FINDS, NONGEN, SHWIMS, TIER 2, UST
Real Estate Requirements: Partial Acquisition – Alternative 2 Only - Not Finalized
Construction Requirements: Anticipated - Not Finalized

The site is currently an electrical substation for We Energies. This site is also listed as 2801 and 2701 W Saint Paul Avenue. The site is undeveloped on the 1969, 1951, 1910, and 1894 Sanborn maps.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The 28th Street Substation ERP site (02-41-555487) is missing the required GIS packet for site closure. The ERP site is listed as open and is under WDNR jurisdiction.

Review of available ERP files (02-41-555487) indicate a spill or leak resulted in soil contamination from petroleum. According to the September 22, 2011, TriMedia Environmental & Engineering Services, LLC., *Case Summary and Close Out Request*, contaminated soils were identified during soil characterization sampling for a planned foundation. Approximately 79 tons of contaminated soils were excavated and disposed of at a licensed facility. Reported residual contamination is estimated at 100 cubic meters of arsenic contaminated soils and 100 cubic meters of DRO contaminated soils. Contamination is not fully delineated due to high voltage overhead lines. Onsite soils are clays and clays with gravel. Groundwater was not encountered. The ERP site is listed as open and is under WDNR jurisdiction.

TRC Environmental Corporation, on behalf of WisDOT, conducted a Phase 2.5 on West Saint Paul Avenue to determine waste handling for the reconstruction of North 27th Street in October of 2012. According to TRC's November 2012, *Phase 2.5 Investigation Report*, a ten foot boring was located within the West Saint Paul Avenue ROW to the north of the site. Petroleum contaminated soil was not encountered during Phase 2.5 activities. Encountered soils include clayey silt, silt, and clay/silt till. No groundwater was encountered.

WEPCO 28th Street Substation is listed as a NONGEN with no violations. The site is historically listed as a SQG on November 16, 1999. Listed wastes include: D000 Not Defined, D002 – Corrosive Hazardous Wastes, and D008 – lead.

WEPCO 28th Street Substation is listed on the FINDS database under RCRA.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Small and an inactive Hazardous Waste Transporter - Private. Listed wastes include: D000 Non-Listed Toxic Wastes, D002 Non-listed Corrosive Wastes and D008 Lead.

TIER 2 is a database of facilities which store or manufacture hazardous materials that submit a chemical inventory report. According to this database the site has a maximum amount of 648 pounds of sulfuric acid onsite.

According to the DATCP UST database two (2) 5,200 gallon waste/used motor oil USTs were closed by filling with inert material on January 1, 1961.

Himalayan attempted to interview onsite personnel at Site 154, no response was obtained.

Based upon the open ERP activity at the site, lack of PCB data for current and historic onsite transformers, and the location adjacent to project requirements, a Phase 2.5 Subsurface Investigation is recommended for Alternative 1. Based upon partial acquisition requirements, a Phase 3 Subsurface Investigation is recommended for Alternative 2.

Site Number: **155**
Site Name: **FORMER CLARK REFINING AND MARKETING 34**
Site Address: **608 N 27TH STREET, MILWAUKEE, WI 53208**

Database: AUL, CESQG, CRS, FINDS, LUST, SHWIMS, UST, WRRSER
Real Estate Requirements: None
Construction Requirements: None

This site is currently part of commercial property with an address of 635 N 26th Street. The area of the former gasoline station is covered with an asphalt parking lot.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Clark Oil LUST (03-41-003452) site was added to the WDNR's GIS Registry for residual soil and groundwater contamination, a barrier or cap, and missing groundwater wells.

Clark Refining and Marketing 34 is listed as a CESQG with no violations. Listed wastes include: D001 Ignitable Hazardous Wastes.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The Clark Oil LUST site is listed on the CRS database for soil and groundwater.

Clark Refining and Marketing 34 is listed on the FINDS database under RCRA and WI-ESR.

Review of available LUST files (03-41-003452) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the October 26, 2007, Sigma Environmental Services, Inc., prepared *Case Summary and Close Out Request*, contaminated soils were identified after a vehicle struck and damaged a dispenser unit. No excavation of contaminated soils took place. Free product was found in MW-1 and MW-9 and was removed during several events. Free product persisted in MW-9 as of 2007. Residual soil contamination exists at the site and is estimated at approximately 1,600 cubic yards. Onsite soils are silty clay, clayey silt, silt and sand. Groundwater was encountered between 18 and 34 feet bgs. Flow is generally to the south. Soil and groundwater impacts are located within the North 27th Street and West Michigan Street ROWs. Groundwater impacts are located on the property located to the south at 540 North 27th Street. The LUST site was closed by the WDNR on August 28, 2008, with inclusion on the GIS Registry for residual soil and groundwater contamination, barrier or cap, and missing groundwater wells.

TRC Environmental Corporation, on behalf of WisDOT, conducted a Phase 2.5 on West Michigan Street and North 27th Street to determine waste handling for the reconstruction of North 27th Street in October of 2012. According to TRC's November 2012, *Phase 2.5 Investigation Report*, one ten foot boring was located within the North 27th Street ROW to the west of the site (southbound lanes) and one ten foot boring was located within West Michigan Street to the south of the site. Petroleum contaminated soil was found between 8 and 9 feet bgs within the southbound lanes of North 27th Street and was recommended for removal during road construction. No borings were conducted in the northbound lanes. Encountered soils include clayey silt, silt, and clay/silt till. No groundwater was encountered.

The SHWIMS database lists the site as an active Hazardous Waste Generator – Very Small. Listed wastes include: D001 Non-Listed Ignitable Wastes.

According to the DATCP UST database two (2) 7,500 gallon unleaded gasoline USTs were closed by removal on September 17, 1996.

The site is listed on the WI WRRSER as having a HIGH priority.

Based upon the distance from the planned project improvements (over 50 feet across Michigan Street to the north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **156**
Site Name: **FORMER NERO AND SON / PAUL DAMIANO PROPERTY**
Site Address: **2634 W CLYBOURN STREET, MILWAUKEE, WI 53233**

Database: FINDS, LUST, NONGEN, SHWIMS, UST
Real Estate Requirements: Not Finalized
Construction Requirements: Anticipated – Alternative 2 Only - Not Finalized

The site is currently an vacant lot partially covered with concrete and asphalt. The site was formerly operated as a gasoline station. The site is a filling station on the 1969 and 1951 Sanborn maps and undeveloped on the 1910 and 1894 Sanborn maps. No tanks were depicted on the 1969 and 1951 Sanborn maps.

Nero and Son is listed on the FINDS database under RCRA.

Review of available LUST files (03-41-000044) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. Contaminated soils were identified during the removal of a fuel oil UST. Upon the removal of the fuel oil UST, three additional tanks were found. The onsite remover was not certified and the USTs leaked into the excavation. Work was put on hold and a licensed remover/cleaner was contracted. The LUSTs were removed but no closure samples were obtained. The LUST site was closed by the WDNR on March 7, 1989.

Review of available LUST files (03-41-004788) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to a Fax Transmittal from Moraine Environmental on February 3, 1995, contaminated soils were identified during the removal of a 550 gallon fuel oil UST. No other information is on file. The LUST site was closed by the WDNR on March 7, 1989.

TRC Environmental Corporation, on behalf of WisDOT, conducted a Phase 2.5 on West Clybourn Street and North 27th Street to determine waste handling for the reconstruction of North 27th Street in October of 2012. According to TRC's November 2012, *Phase 2.5 Investigation Report*, a ten foot boring was located within the North 27th Street ROW to the west of the site. Petroleum contaminated soil was found between 7 and 7.5 feet bgs and was recommended for removal during road construction. Encountered soils include clayey silt, silt, and clay/silt till. No groundwater was encountered.

Nero and Son is listed as a NONGEN with no violations. The site is historically listed as a SQG on April 9, 1990. Listed wastes include: D000 Not Defined and D001 – Ignitable Hazardous Wastes.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Small. Listed wastes include: D001 Non-Listed Ignitable Wastes.

According to the DATCP UST database one (1) 4,000 gallon unleaded gasoline UST and one (1) 4,000 gallon leaded gasoline UST were closed by removal on October 1, 1988; one (1) 550 gallon fuel oil UST was closed by removal on February 3, 1995; and one (1) 550 fuel oil UST was closed by removal on March 21, 1995.

Himalayan attempted to interview onsite personnel at Site 156, no response was obtained.

Based upon adjacent construction requirements and known contamination within the N 27th Street ROW, a Phase 2.5 Subsurface Investigation is recommended for Alternative 2. No Further Investigation is recommended for Alternative 1 unless real estate or construction requirements change.

Site Number: **157**
Site Name: **FORMER STI PROPERTIES**
Site Address: **2601 W CLYBOURN STREET, MILWAUKEE, WI 53233**

Database: AST, FINDS, LUST, NONGEN, SHWIMS, UST
Real Estate Requirements: Partial Acquisition - Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is currently the Marquette University Service Garage. The site was formerly Safway Steel Warehouse. The site is a truck sales and service, a dwelling and a flat on the 1969 Sanborn, dwellings, flat, service and filling station on the 1910 Sanborn, and a dwelling and stable on the 1910 and 1894 Sanborn maps. The filling station gasoline tanks are depicted along the 27th Street roadway on the 1951 Sanborn map.

According to the DATCP AST database one (1) 550 gallon unleaded gasoline AST and one (1) 550 gallon diesel AST are in-use at the site.

Former STI Properties is listed on the FINDS database under RCRA.

Review of available LUST files (03-41-254933 / 53233251901A) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the STS Consultants, June 1, 2000, *Phase II Report*, contaminated soils were identified during the removal of a 1,000 gallon waste oil UST and an 8,000 gallon fuel oil UST. An unknown amount of contaminated soils were excavated and disposed of at a licensed facility. Residual soil contamination remains in the area of the former tank cavity. A *Notice of Contamination to Property* is on file with the Register of Deeds. Onsite soils are fill, silty clay/clayey silt, silty fine to medium sand, and clay. Groundwater was encountered at between seven and 10.5 feet bgs. The LUST site was closed by the WDSPS on June 8, 2001.

Review of available LUST files (03-41-255822 / 53233251901B) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the August 2002 Earth Tech, Inc., *Site Investigation/Remedial Action Report*, contaminated soils were identified during a Phase II Investigation based upon the former use of the property as a gasoline station. Three 1,000 gallon USTs were discovered and removed from the site in 2001. Approximately 445 tons of contaminated soils were excavated and disposed of at a licensed facility. Onsite soils are fill materials consisting of gravel, sand, clay and debris including brick and concrete over silty clay and silty sand. Groundwater samples were not affected by petroleum. Groundwater was encountered between six and nine feet bgs. Residual soil contamination exists in the North 27th Street ROW between six and ten feet bgs. The LUST site was closed by the WDSPS on April 30, 2003.

Former STI Properties is listed as a NONGEN with no violations. The site is historically listed as a SQG on June 12, 2002. Listed wastes include: D001 – Ignitable Hazardous Wastes.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Small. Listed wastes include: D001 Non-Listed Ignitable Wastes.

According to the DATCP UST database one (1) 1,111 gallon leaded gasoline UST was closed by removal on August 29, 1989; and three (3) 1,000 gallon leaded gasoline USTs were closed by removal on March 19, 2002.

Himalayan contacted Mike Whittow, Sustainability Officer for Marquette University, and conducted an interview related to Site 157. He indicated that the property has been owned by Marquette University for approximately 2-3 years. He was not aware of the prior uses of the site.

Based upon partial site acquisition, adjacent construction requirements and known contamination in N 27th Street, a Phase 3 Subsurface Investigation is recommended for both alternatives.

Site Number: **158**
Site Name: **FORMER PERLSTEIN PROPERTY**
Site Address: **418 N 27TH STREET, MILWAUKEE, WI 53208**

Database: AUL, CRS, ERP, LUST, UST
Real Estate Requirements: Partial Acquisition - Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is currently Bonded Messenger Service. The site is Derse Advertising Company, a sign factory on the 1969 Sanborn, Wetmore Reamer Company and a filling station on the 1951 Sanborn, and undeveloped on the 1910 and 1894 Sanborn maps. The filling station is located in the southwest corner of the site. No tanks are depicted on the Sanborn map.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Perlstein Property ERP (02-41-306516) site was added to the WDNR's GIS Registry for residual soil contamination and the Bonded Messenger Service LUST (03-41-297751 /53208421818) site was added for residual soil contamination and an engineered barrier or cap.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The Perlstein Property ERP site and the Bonded Messenger Service LUST site is listed on the CRS database for soil contamination.

Review of available ERP files (02-41-306516) indicate a spill or leak resulted in soil and groundwater contamination from chlorinated solvents and petroleum. Contamination was from general site operation and a 1,000 gallon fuel oil UST at the site. The ERP site was closed by the WDNR on February 27, 2004, with inclusion n the GIS Registry for residual soil contamination. Residual petroleum impacts are located within the West Saint Paul Avenue.

Review of available LUST files (03-41-297751 / 53208421818) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the July 24, 2003, Sigma Environmental Services, Inc., *Addendum letter to the January 21, 2003, and June 15, 2003 Case Closure Requests,* contaminated soils were identified during the removal of a 500 gallon fuel oil UST, 2,000 gallon gasoline UST and an 8,000 gallon diesel UST. No contaminated soils were excavated. Soil samples indicate residual contamination (150 ppm GRO) within the former tank bed. Onsite soils are silty clays, silty sand, and clayey sand. Groundwater was encountered at approximately 60 feet bgs. Reported flow direction is to the south. The LUST site was closed by the WDSPS on August 11, 2003, with inclusion on the GIS Registry for residual soil contamination and an engineered barrier or cap.

According to the DATCP UST database one (1) 2,000 gallon fuel oil UST, one (1) 2,000 gallon leaded gasoline UST, and one (1) 8,000 gallon diesel UST were closed by removal on December 28, 1987.

Himalayan attempted to interview onsite personnel at Site 158, no response was obtained.

Based on known contamination located within W Saint Paul Avenue, onsite sandy soils, and residual soil contamination at the site, a Phase 2.5 Subsurface Investigation is recommended for both alternatives.

Site Number: **159**
Site Name: **2620 W SAINT PAUL AVENUE**
Site Address: **2620 W SAINT PAUL AVENUE, MILWAUKEE, WI 53208**

Database: UST
Real Estate Requirements: Site Acquisition – Alternative 1 Only - Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is listed as St. Paul Veterinary Clinic. It is currently vacant. The site was historically Allied Tool and Machining. The site is Derse Advertising Company, a sign factory on the 1969 Sanborn, Wetmore Reamer Company on the 1951 Sanborn, and undeveloped on the 1910 and 1894 Sanborn maps.

According to the DATCP UST database one (1) 1,000 gallon fuel oil UST was closed by filling with inert material on July 11, 1996.

Himalayan attempted to interview onsite personnel at Site 159, no response was obtained.

Based upon the location of the site adjacent to project requirements, the size of the tank (1,000 gallons) and no available Site Assessment Information, a Phase 2 Subsurface Investigation is recommended for both alternatives.

Site Number: **160**
Site Name: **AMERICAN RED CROSS**
Site Address: **2600 W WISCONSIN AVENUE, MILWAUKEE, WI**

Database: AUL, CRS, LUST, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently the American Red Cross. The site formerly operated as a gasoline station.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The American Red Cross LUST (03-41-004476) site was added to the WDNR's GIS Registry for residual soil and groundwater contamination.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The American Red Cross LUST site is listed on the CRS database for groundwater.

Review of available LUST files (03-41-004476) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the January 18, 1999, Envirogen *Closure Request/Case Summary for the American Red Cross Site,* contaminated soils were identified during the removal of an 8,000 gallon fuel oil UST and a 1,000 gallon diesel UST. Approximately 1,140 tons of contaminated soils were excavated and disposed of at a licensed facility. Residual soil and groundwater contamination is located north of the onsite building. Onsite soils are clayey silts and silty clays. Groundwater was encountered between 8 and 13 feet bgs. Reported flow is to the south/southwest. The site formerly operated as a gasoline station. The LUST site was closed by the WDNR on September 25, 2000, with inclusion on the GIS registry for residual soil and groundwater contamination.

According to the DATCP UST database one (1) 1,000 gallon diesel UST and one (1) 8,000 gallon fuel oil UST were closed by removal on September 7, 1994.

Based upon the distance from the planned project improvements (more than 620 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **164**
Site Name: **2517A W CLYBOURN**
Site Address: **2517A W CLYBOURN, MILWAUKEE, WI 53233**

Database: UST
Real Estate Requirements: None - Not Finalized
Construction Requirements: Anticipated – Alternative 2 Only - Not Finalized

This site is listed as James Vanbeek Property. It is currently a multiunit residential structure. The site is a dwelling on the 1969, 1951 and 1910 Sanborn maps.

According to the DATCP UST database one (1) 1,000 gallon fuel oil UST is in-use at the site.

Himalayan attempted to interview onsite personnel at Site 164, no response was obtained.

Based upon the size of the tank (1,000 gallons) and the location adjacent to project requirements, a Phase 2 Subsurface Investigation is recommended for Alternative 2. No Further Investigation is recommended for Alternative 1 (over 80 feet north) unless real estate or construction requirements change.

Site Number: **165**
Site Name: **UNION 76 / CITGO FOOD MARKET / CITGO**
Site Address: **2502 W WISCONSIN AVENUE, MILWAUKEE, WI 53208**

Database: EDR HISTORIC AUTO STATIONS, FINANCIAL ASSURANCE, FINDS, LUST, NONGEN, SHWIMS, SPILLS, UST, WRRSER
Real Estate Requirements: None
Construction Requirements: None

The site is currently a vacant CITGO gasoline station.

The two (2) onsite temporarily out of service USTs are listed under FINANCIAL ASSURANCE.

CITGO is listed on the FINDS database under RCRA and ICIS.

2502 W Wisconsin is listed in the EDR Historic Auto Stations Database as Aldo Standard Service Station Gas Station in 1965 and D&B Petroleum in 2003, 2005, 2006, 2007, 2008, 2009, 2010, 2011, and 2012.

Review of available LUST files (03-41-004817) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the December 1, 1997, Key Environmental Services, Inc. *Remedial Action Report,* contaminated soils were identified during the removal of two 6,000 gallon unleaded gasoline USTs and one 8,000 gallon unleaded gasoline UST in February of 1995. Approximately 1,745 tons of contaminated soils were excavated and disposed of at a licensed facility. Excavation confirmation samples indicated GRO and PVOCs were below the laboratory detection limit. Onsite soils are silty clay with trace amounts of fine to coarse sand and gravel. Groundwater was not encountered and no groundwater sampling was conducted. The LUST site was closed by the WDNR on June 12, 1998.

CITGO Food Market is listed as a NONGEN with no violations. The site is historically listed as a SQG on June 12, 1996. Listed wastes include: D001 – Ignitable Hazardous Wastes.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Small. Listed wastes include: D001 Non-Listed Ignitable Wastes.

According to the SPILL listing (04-41-554326) approximately 5 gallons of gasoline were spilled due to traffic accident on October 29, 2008. The leak was stopped, the gasoline contained, and absorbents were used to clean up the spill by the fire department. The spill was closed by the WDNR on October 30, 2008.

According to the DATCP UST database one (1) 8,000 gallon empty UST was temporarily taken out of service on July 8, 2010; and one (1) 10,000 gallon empty UST was temporarily taken out of service on August 17, 2010. One (1) 550 gallon waste/used motor oil UST, one (1) 550 gallon fuel oil UST, one (1) 6,000 gallon unleaded gasoline UST, one (1) 8,000 gallon unleaded gasoline UST, and one (1) 6,000 gallon leaded gasoline UST were closed by removal on May 21, 1996.

The site is listed on the WI WRRSER as having a MEDIUM priority.

Based upon the distance from the planned project improvements (more than 460 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **168**
Site Name: **2459 W MICHIGAN STREET**
Site Address: **2459 W MICHIGAN STREET, MILWAUKEE, WI**

Database: UST
Real Estate Requirements: None - Not Finalized
Construction Requirements: None - Not Finalized

This site is listed as Peter Methum Property. It is currently a vacant/abandoned multiunit residential building.

According to the DATCP UST database one (1) 1,000 gallon fuel oil UST was closed by removal on June 1, 2000.

Himalayan contacted Dave Misky of the Redevelopment Authority of the City of Milwaukee, and conducted an interview related to Site 168. Mr. Misky indicated that the City of Milwaukee has owned the property for approximately one year and the site was utilized as a multi-family residence.

Based upon the distance from planned project improvements (over 170 feet north), No Further Investigation is recommended for both alternatives.

Site Number: **170**
Site Name: **FORMER BADGER REBUILDERS**
Site Address: **2455 W CLYBOURN STREET, MILWAUKEE, WI 53233**

Database: FINDS, NONGEN
Real Estate Requirements: None - Not Finalized
Construction Requirements: Anticipated – Alternative 2 Only - Not Finalized

A review of historical aerials shows a building on this site from 1937 to 2000. The current billboard structure is apparent on the 2005 aerial photograph. This site is part of the IH 94 Westbound offramp. The site was a store and electric repair shop on the 1969 Sanborn, a store and a machine shop on the 1951 Sanborn, and a store on the 1910 Sanborn map.

Badger Rebuilders is listed on the FINDS database under RCRA.

Badger Rebuilders is listed as a NONGEN with no violations. The site is historically listed as a SQG on April 5, 1993. Listed wastes include: D001 Ignitable Hazardous Wastes, D006 Cadmium, D018 Benzene, D035 Methyl Ethyl Ketone, D039 Tetrachloroethylene, and D040 Trichloroethylene.

Himalayan attempted to interview onsite personnel at Site 170, no response was obtained.

Based upon the former chemicals used at the site and the location adjacent to the project requirements, a Phase 2 Subsurface Investigation is recommended for Alternative 2. No Further Investigation is recommended for Alternative 1 unless real estate or construction requirements change.

Site Number: **171**
Site Name: **THE RAVE**
Site Address: **2401 W WISCONSIN AVENUE, MILWAUKEE, WI 53233**

Database: FINDS, NONGEN, SHWIMS
Real Estate Requirements: None
Construction Requirements: None

The site is currently The Rave / Eagles Club, a concert venue. The site was formerly used as a meeting place for the Eagle Club.

The Rave is listed on the FINDS database under RCRA and WI-ESR.

The Rave is listed as a NONGEN with no violations. Listed wastes include: D002 Corrosive Hazardous Wastes.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Very Small. Listed wastes include: D002 Non-Listed Corrosive Wastes.

Based upon the distance from the planned project improvements (more than 340 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **172**
Site Name: **FORMER BURGESS CAR AND TRUCK**
Site Address: **2440 W CLYBOURN STREET, MILWAUKEE, WI 53233**

Database: BRRTS, CESQG, EDR HISTORIC AUTO STATIONS, ERP, FINDS, SHWIMS, UST
Real Estate Requirements: None - Not Finalized
Construction Requirements: Anticipated – Alternative 2 Only - Not Finalized

The site is currently a vacant brick and sheet metal building. The site is an auto truck sales and service on the 1969 and 1951 Sanborns, and undeveloped on the 1910 and 1894 Sanborn maps.

Burgess Car and Truck is tracked in the BRRTS (07-41-559802) database as General Property for a Lender Environmental Assessment. Review of available WDNR files confirm that on-site soil conditions are contaminated with petroleum and chlorinated solvents. According to the May 31, 2012, DAI Environmental, Inc., Phase I Environmental Site Assessment Report, the potential contaminant sources are spills or leaks associated with an auto sales / repair / maintenance facility at the property (primary land use for over 75 years) and/or a release from the former UST system at the property (10,000 gallon fuel oil, closed/removed on May 10, 1995). This General Property site is listed as open and is under WDNR jurisdiction.

Burgress Car and Truck is listed as a CESQG with no violations. The site was historically listed as a SQG on December 9, 1991. Listed wastes include: D000 Not Defined, D001 Ignitable Hazardous Wastes, D006 Cadmium, and D008 Lead.

Review of available ERP files (02-41-559118) indicate a spill or leak resulted in soil contamination from VOCs, PAHs, and Metals. According to the July 31, 2013, DAI Environmental, Inc., *Site Investigation Report/Remedial Action Options Report/Case Close Out Report*, soil contamination was identified underneath the main building at the site. Three monitoring wells were installed onsite to evaluate groundwater contamination, and no offsite investigation activities were performed. Fill material was encountered at the surface to a depth of 5 feet bgs, which included black to brown sand. Native brown clay was present underneath the fill material and groundwater was encountered at approximately 24 to 35 feet bgs. Groundwater flow direction was not determined. Soil contamination above the applicable WDNR cleanup standards for benzene, tetrachloroethene (PCE), various PAHs, and arsenic were identified above their applicable WDNR cleanup standards. No groundwater impacts were detected. According to the September 10, 2013, DAI Environmental, Inc., *Case Closure - GIS Registry*, no active remediation is proposed and the concrete building pad and paved surfaces on and off-site will be used as a barrier. DAI requested a conditional site closure, which included a groundwater use restriction and barrier maintenance controls. The ERP site is listed as open and is under WDNR jurisdiction.

2440 W Clybourn is listed in EDR's Auto Stations Database as Burgess Inc. RV and Boat Repair in 1999 and 2000; and Burgess Car and Truck Service in 2001.

Burgess Car and Truck is listed on the FINDS database under RCRA and WI-ESR.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Small, and active Hazardous Waste Generator – Very Small, and an active Used Oil Burner. Listed wastes include: D000 Non-Listed Toxic Wastes, D001 Non-Listed Ignitable Wastes, D006 Cadmium, and D008 Lead.

According to the DATCP UST database one (1) 10,000 gallon fuel oil UST was closed by removal on May 10, 1995.

Himalayan attempted to interview onsite personnel at Site 172, no response was obtained.

Based upon the location of the site adjacent to project requirements and onsite contamination above applicable standards, a Phase 2.5 Subsurface Investigation is recommended for Alternative 2. No Further Investigation is recommended for Alternative 1 unless real estate or construction requirements change.

Site Number: **173**
Site Name: **FORMER PRISMA GRAPHICS INC**
Site Address: **2422 W CLYBOURN STREET, MILWAUKEE, WI 53208**

Database: CESQG, FINDS, SHWIMS, UST,
Real Estate Requirements: None
Construction Requirements: None

The site is currently an unoccupied commercial property and available for lease. The site has a metal fabrication and paint spray booth on the 1969 Sanborn and is an electrical supply manufacturer on the 1951 Sanborn map.

Prisma Graphics Inc. is listed as a CESQG with no violations. Listed wastes include: D000 Not Defined and D001 Ignitable Hazardous Wastes.

Prisma Graphics Inc. is listed on the FINDS database under RCRA and WI-ESR.

The SHWIMS database lists the site as an active Hazardous Waste Generator – Very Small. There are no listed wastes.

According to the DATCP UST database one (1) 2,000 gallon fuel oil UST was closed by filling with inert material on October 23, 2000.

Himalayan attempted to interview onsite personnel at Site 173, no response was obtained.

Based upon no real estate or construction requirements within 40 feet of the site, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **174**
Site Name: **FORMER BOEHCK EQUIPMENT COMPANY**
Site Address: **2404 W CLYBOURN STREET, MILWAUKEE, WI 53233**

Database: LUST, UST
Real Estate Requirements: None
Construction Requirements: None

The site is currently Mata Community Media, a public access television channel. The site is a machinery storage and repair on the 1969 and 1951 Sanborn maps.

Review of available LUST files (03-41-000745 / 53233256304) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the February 9, 2001, Drake Environmental, Inc. *Additional Remedial Investigation Information Associated with the Boehck Equipment Property*, contaminated soils were first identified during the removal of six USTs from the site in 1992. Approximately 15 cubic yards of contaminated soils were excavated and disposed of at a licensed facility during 1998. Additional contamination was discovered during a Phase II in 2000. Onsite soils are fill including sandy and clayey silts and silty sand with coal slag, ash, glass, and wood. Groundwater was encountered at approximately 32 feet bgs. Groundwater flow direction was estimated towards the south. The LUST site was closed by the WDSPS on October 15, 1998.

According to the DATCP UST database one (1) 2,500 gallon fuel oil UST, one (1) 500 gallon waste/used motor oil UST, one (1) 500 gallon leaded gasoline UST, one (1) 6,000 gallon fuel oil UST, and two (2) 560 gallon diesel USTs were closed by removal on May 2, 1990; and one (1) 5,000 gallon unleaded gasoline UST, one (1) 500 gallon waste/used motor oil UST, and one (1) 500 gallon diesel UST were closed by removal on July 25, 2003.

Metropolymer Labs Inc. is listed at 2400 W Clybourn Street. There is no address matching this location. Metrolpolymer Labs Inc. is listed under FINDS, NONGEN, and SHWIMS.

Metropolymer Labs Inc. is listed on the FINDS database under RCRA.

Metropolymer Labs Inc. is listed as a NONGEN with no violations. The site was historically listed as a SQG on April 17, 1987. Listed wastes include: D001 Ignitable Hazardous Wastes, F002 Spent Halogenated Solvents, F003 Spent Non-Halogenated Solvents, and F005 Spent Non-Halogenated Solvents.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Small and an inactive Hazardous Waste Generator – Very Small. There are no listed wastes.

Based upon the location of the site in relation to the project requirements (more than 60 feet north across W Clybourn Street) and no encountered offsite contamination during sewer installation, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **175**
Site Name: **SCRUB A DUB CAR WASH**
Site Address: **2323 W WISCONSIN AVENUE, MILWAUKEE, WI**

Database: AUL, CRS, LUST, UST
Real Estate Requirements: None
Construction Requirements: None

The site is currently a Scrub a Dub Car Wash, it has been a Scrub a Dub Car Wash since at least 1997. There are no oil change services available at this location.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Scrub a Dub Car Wash LUST (03-41-152352 / 53233188923) site was added to the WDNR's GIS Registry for residual soil and groundwater contamination. Offsite contamination is located at 2335 West Wisconsin Avenue and 624 North 24th Street.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The Scrub A Dub Car Wash LUST site is listed on the CRS database for soil and groundwater.

Review of available LUST files (03-41-152352 / 53233188923) indicate a spill or leak from the UST system resulted in soil and groundwater contamination from petroleum. According to the February 15, 2011, METCO, *GIS Registry Package*, contaminated soils were identified during the abandonment in place of a 5,000 gallon fuel oil UST. No contaminated soils were excavated. Onsite soils are silt, silty clay to sand. Groundwater was encountered at between 10 and 20 feet bgs. Reported flow is west/northwest to southwest. The LUST site was closed by the WDSPS on March 25, 2011, with inclusion on the GIS Registry for residual soil and groundwater contamination. Offsite contamination is located at 2335 West Wisconsin Avenue and 624 North 24th Street.

According to the DATCP UST database one (1) 5,000 gallon leaded gasoline UST was closed by removal on January 1, 1997. One (1) 5,000 gallon fuel oil UST is listed as abandoned in place in the February 15, 2011, METCO, *GIS Registry Package*.

Based upon the distance from the planned project improvements (more than 650 feet east/northeast), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **177**
Site Name: **FORMER HH WEST**
Site Address: **2202-2302 W CLYBOURN STREET, MILWAUKEE, WI 53233**

Database: AUL, BROWNFIELDS, CRS, ERNS, ERP, FINDS, LUST, NONGEN, SHWIMS, UST, VCP
Real Estate Requirements: None - Not Finalized
Construction Requirements: None - Not Finalized

The site is currently North Pole Distribution and unoccupied buildings for lease. This site also includes 505 N 22nd Street. The site is a machine shop, wholesale gifts, wholesale industrial equipment, Senbrush Self Closing Inkstand Company, casting factory, sheet metal work, and cement mixer assembly on the 1969 Sanborn and a machine shop, factory, wholesale fish, Senbrusch, tin shop, sheet metal work on the 1951 Sanborn map.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The HH West ERP (02-41-306718) site was added to the WDNR's GIS Registry for residual soil and groundwater contamination and the HH West LUST (03-41-113108 / 53233251402) for residual groundwater contamination.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The HH West ERP site is listed on the CRS database for soil and groundwater and the HH West LUST site is listed on the CRS database for groundwater.

ERNS is a national computer database system that is used to store information concerning the sudden and/or accidental release of hazardous substances, including petroleum into the environment. 505 N 22nd Street is listed on the ERNS database. ERNS records indicate that on March 9, 1992, twenty-five gallons of a tar substance was dumped onto the asphalt parking lot. Cleanup was referred to a private contractor.

Review of available ERP files (02-41-306718) indicate a spill or leak resulted in soil and groundwater contamination from chlorinated solvents. According to the September 17, 1998, Key Engineering Group, LTD., *Chlorinated Volatile Organic Compound Site Investigation Report*, petroleum and chlorinated solvent contamination was identified during a limited subsurface investigation. Fill material was found on the site to a depth of 45 feet bgs and included sand, clayey to silty sand, silt, silty, sandy and gravely clay, and peat with cinders, slag, brick and glass fragments and foundry sand. Chloride impacts to the soil and groundwater remain at the site in the vicinity of the 2222 building. Groundwater was encountered between 8.5 and 75.5 feet bgs. Groundwater flow is generally to the south. The ERP site was closed by

the WDNR on June 11, 2002, with inclusion on the GIS Registry for residual soil and groundwater contamination. Residual soil and groundwater contamination is located within the West Clybourn Street ROW.

WI DNR/HH West is listed on the FINDS database under WI-ESR. HH West Company at 505 N 22nd Street is listed on the FINDS database under RCRA. HH West Company at 2342W Clybourn Street is listed on the FINDS database under RCRA and WI-ESR.

Review of available LUST files (03-41-113108 / 53233251402) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. Contaminated soils were identified during the removal of two leaded gasoline USTs. Approximately 500 tons of contaminated soils were excavated and disposed of at a licensed facility. Residual contamination remains on the 2302 and 2322 West Clybourn Street properties. Lead above industrial RCLs remains onsite. Onsite soils are fill with sand, silty to clayey sands, silt, clay, and peat with cinders, slag, brick, concrete, glass fragments, and foundry sand. Groundwater was encountered between 30 and 52 feet bgs. Reported flow is to the south/southwest. The LUST site was closed by the WDSPS on May 20, 2002, with inclusion on the GIS Registry for residual soil and groundwater contamination.

HH West Co. is listed as a NONGEN with no violations. The site is historically listed as a SQG on August 26, 1991. Listed wastes include: D001 – Ignitable Hazardous Wastes.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Small. Listed wastes include: D001 Non-Listed Ignitable Wastes.

According to the DATCP UST database one (1) 1,000 gallon leaded gasoline UST and one (1) 1,500 gallon leaded gasoline UST were closed by removal on May 29, 1998.

The VPLE program, if completed, grants exemption from future environmental liability. This exemption applies to releases of hazardous substances that occurred before the exemption is granted. 2202-2302 W Clybourn Street is listed on the VPLE for two activities (06-41-184459 and 06-41-557566). Activity 06-41-184459 was submitted, then removed and considered closed on May 25, 2001. The 06-41-557566 activity was given a Full Certificate of Completion on April 10, 2013.

Himalayan contacted Peter Ogden and conducted an interview related to Site 177. Mr. Ogden indicated that he has owned the property for approximately 7-10 years. He stated that the property has been utilized as a food storage facility, an IT company, as a tannery, and as an office furniture company. He indicated that any tanks formerly located on the site had been removed and he was unaware of their former locations.

Based upon known residual CVOC groundwater contamination from the ERP activity within the W Clybourn Street and IH 94 ROW, a Phase 2.5 Subsurface Investigation is recommended for both alternatives.

Site Number: **178**
Site Name: **MUELLER PROPERTY / CRAFTMASTERS CONTRACTORS**
Site Address: **2123 W MICHIGAN STREET, MILWAUKEE, WI**

Database: ERP, FINDS, LUST, NONGEN, SHWIMS, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently Craftmaster Contractors, a full service maintenance and construction company. This site is also listed as Ogden and Company, a real estate company.

Review of available ERP files (02-41-111156) indicate a spill or leak resulted in soil contamination. According to the April 5, 1996, K. Singh & Associates, Inc., *Limited Phase Two Environmental Assessment of Property at 2123 West Michigan Street, Milwaukee, WI,* petroleum contamination was identified during a limited subsurface investigation. The discovered soil contamination appears to be from the adjoining site, American Litho, at 530 North 22nd Street (Site 179). No additional investigation was required by the WDNR. The ERP site was closed by the WDNR on November 25, 1996.

Ogden and Company is listed on the FINDS database under RCRA and WI-ESR.

Review of available LUST files (03-41-115121) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the January 26, 2001, Sigma Environmental Services, Inc., *Case Summary and Close Out Request*, contaminated soils were identified during a limited site investigation based upon historical Sanborn Maps that showed an onsite UST. Approximately 260 tons of contaminated soils were excavated and disposed of at a licensed facility. Residual soil contamination remains in the vicinity of the excavation. Onsite soils are sandy clay to clay. Groundwater was encountered between 13 and 17 feet bgs. Reported flow is to the southeast. The LUST site was closed by the WDNR on October 9, 2001.

Ogden and Company is listed as a NONGEN with no violations. The site was historically listed as a SQG on March 26, 1998. Listed wastes include: D001 Not Defined, D001 Ignitable Hazardous Wastes, D008 Lead, and D018 Benzene.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – One Time UST Removal-Obsolete Code. Listed wastes include: D000 Non-Listed Toxic Wastes, D001 Non-Listed Ignitable Wastes, D008 Lead, and D018 Benzene.

According to the DATCP UST database one (1) 1,111 gallon fuel oil UST was closed by removal on August 13, 1997; and one (1) 1,000 gallon leaded gasoline UST was closed by removal on October 1, 1999.

Based upon the distance from the planned project improvements (more than 320 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **179**
Site Name: **AMERICAN LITHO & PUBLISHING INC**
Site Address: **530 N 22ND STREET, MILWAUKEE, WI**

Database: CESQG, FINDS, LUST, MANIFEST, SHWIMS, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently American Litho, a full service printing and binding company. The site is Dustless Brush Company on the 1969 and 1951 Sanborns and undeveloped on the1910 and 1894 Sanborn maps.

American Litho is listed as a CESQG with no violations. Listed wastes include: D000 Not Defined, D001 Ignitable Hazardous Wastes, and D018 Benzene.

American Litho is listed on the FINDS database under RCRA and WI-ESR.

Review of available LUST files (03-41-002787) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the October 21, 1997, Giles Engineering Associates, Inc., *Site Remedial Investigation and Request for Case Closure*, contaminated soils were identified during the removal of an 8,000 gallon diesel UST. Residual soil contamination (2,900 ppm DRO) remains onsite north of the former tank location and on the property adjacent to the north at 2123 West Michigan Avenue (see Site 178). Onsite soils are silty clay fill over clayey silt to silt and silty fine sand. Groundwater was encountered between 11 and 20 feet bgs. The LUST site was closed by the WDNR on June 12, 1998, with a PAL exemption for tetrachloroethene in MW-3.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site in 2004 through 2006. Waste codes were not reported.

The SHWIMS database lists the site as an active Hazardous Waste Generator – Very Small. Listed wastes include: D000 Non-Listed Toxic Wastes, D001 Non-Listed Ignitable Wastes, and D018 Benzene.

According to the DATCP UST database one (1) 8,000 gallon diesel UST was closed by removal on July 22, 1992.

Based upon the distance from the planned project improvements (more than 270 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **180**
Site Name: **CLYBOURN BUSINESS CENTER / AMERICAN BUILDING**
Site Address: **2130 W CLYBOURN STREET, MILWAUKEE, WI**

Database: CESQG, FINDS, LUST, SHWIMS, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently partially leased by TL Reece Corporation, a family of construction and real estate based businesses. This site is also listed as Cingular Wireless LLC – Clybourn (119). The site is a bakery on the 1969 Sanborn, Omar Baking Company on the 1951 Sanborn, and undeveloped on the 1910 Sanborn map.

Clybourn Business Center is listed as a CESQG with no violations. Listed wastes include: D001 Ignitable Hazardous Wastes, D008 Lead, D018 Benzene, and F005 Spent Non-Halogenated Solvents.

Cingular Wireless LLC – Clybourn (119) is listed on the FINDS database under ICIS. Clybourn Business Center is listed on the FINDS database under RCRA and WI-ESR.

Review of available LUST files (03-41-004731) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the October 11, 1995, ATEC Associates, Inc., *Remedial Action/Site Closure Report*, contaminated soils were identified during the removal of three onsite USTs. Approximately 250 cubic yards of contaminated soils were excavated and disposed of at a licensed facility. Residual contamination remains on the west side and northwest corner of the excavation, adjacent to the onsite building. Onsite soils are sandy clay over gravelly sand. Groundwater was encountered between 7 and 11 feet bgs. Reported flow is towards the south. Benzo(a)pyrene above the NR 140 ES is located in upgradient well MW-1 and has been determined to be coming from an offsite source. The LUST site was closed by the WDNR on August 12, 1996.

The SHWIMS database lists the site as an active Hazardous Waste Generator – Very Small. Listed wastes include: D001 Non-Listed Ignitable Wastes, D008 Lead, D018 Benzene and F005 Spent Non-Halogenated Solvents.

According to the DATCP UST database one (1) 2,000 gallon fuel oil UST was closed by removal on June 24, 1995.

Based upon the distance from the planned project improvements (more than 150 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **182**
Site Name: **LUCKEYS TIRE & SERVICE**
Site Address: **401 S 70TH STREET, MILWAUKEE, WI 53214**

Database: FINDS, LUST, NONGEN, SHWIMS, UST, WRRSER
Real Estate Requirements: None
Construction Requirements: None

The site is currently Luckey's Tire & Service. This site was formerly owned by the Amoco Oil Company and was operated as a gas station and car wash.

Luckey's Tire and Service is listed on the FINDS database under RCRA.

Review of available LUST files (03-41-001189) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the *April 1996 Ground-Water Quality Monitoring Update and Request for Closure* by Northern Environmental Technologies, Inc., contaminated soils were identified during the removal of one (1) 550 gallon heating oil UST and one (1) 550 gallon used motor oil UST. Approximately 1,520 tons of contaminated soils were excavated and disposed of at a licensed facility. 168,000 gallons of groundwater were extracted and discharged to the Milwaukee Metropolitan Sewerage District (MMSD). Closure samples indicate residual contamination (480-720 ppm GRO) on the northwest corner of the excavation. Inaccessible soils are located below the Luckey's Tire and Service building and below the sidewalk adjacent to West Adler Street. Onsite soils are silty clays. Groundwater was encountered between six and ten feet bgs. Flow is reported to the north/northwest. The LUST site was closed by the WDNR on June 28, 1996.

Luckey's Tire and Service is listed as a NONGEN with no violations. Listed wastes include: D001 Ignitable Hazardous Wastes.

The SHWIMS database lists the site as an inactive Unclassified. There are no listed wastes.

According to the DATCP UST database one (1) 550 gallon waste/used motor oil UST and one (1) 550 fuel oil UST were closed by removal on November 8, 1990; and one (1) 8,000 gallon leaded gasoline UST, one (1) 6,000 gallon leaded gasoline UST, and one (1) 6,000 gallon unleaded gasoline UST were closed by removal on August 26, 1981.

The site is listed on the WI WRRSER as having a HIGH priority.

Based upon the distance from the planned project improvements (more than 120 feet south), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **183**
Site Name: **FORMER GUIDAS SERVICE**
Site Address: **541 S 70TH STREET, MILWAUKEE, WI 53214**

Database: AUL, CRS, FINDS, LUST, NONGEN, SHWIMS, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently a Jetz Car Wash. The site was formerly Guida's Service.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Guidas Service LUST (03-41-113128 / 53214163041) site was added to the WDNR's GIS Registry for residual soil and groundwater contamination.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The Guidas Service LUST site is listed on the CRS database for soil and groundwater.

Former Guidas Service is listed on the FINDS database under RCRA.

Review of available LUST files (03-41-113128 / 53214163041) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the May 19, 2004, Moraine Environmental, Inc., *Report of Groundwater Monitoring Activity and Request for site Closure*, contaminated soils were identified during the removal of five onsite USTs. Approximately 1,900 tons of contaminated soils were excavated and disposed of at a licensed facility. Onsite soils are clayey silts and silty clays. Groundwater was encountered between 6 and 15 feet bgs. Reported flow is to the south/southwest. The LUST site was closed by the WDSPS on March 11, 2005 with inclusion on the GIS Registry for residual soil and groundwater contamination and a soil barrier or cap. Contamination is present within the South 70th Street and the West Main Street ROWs.

Former Guidas Service is listed as a NONGEN with no violations. The site is historically listed as a SQG on August 29, 1995. Listed wastes include: D000 Not Defined, D001 Ignitable Hazardous Wastes, and D018 Benzene.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – One Time UST Removal – Obsolete Code. There are no listed wastes.

According to the DATCP UST database one (1) 500 gallon fuel oil UST is in-use at the site. Three (3) 500 gallon unleaded gasoline USTs, one (1) 300 gallon waste/used motor oil UST, two (2) 4,000 gallon unleaded gasoline USTs, and one (1) 8,000 gallon unleaded gasoline UST were closed by removal on December 1, 1999.

Based upon the distance from the planned project improvements (more than 820 feet south), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **187**
Site Name: **BURBANK ELEMENTARY SCHOOL**
Site Address: **6035 W ADLER STREET, MILWAUKEE, WI 53208**

Database: BRRTS, FINDS, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently Burbank Elementary School and Burbank Park.

Burbank Elementary is listed on the FINDS database under GNIS and NCES.

Burbank Elementary School is tracked in the BRRTS database as No Action Required for UST removal of a 9,550 gallon fuel oil UST.

According to the DATCP UST database one (1) 10,000 gallon fuel oil UST was closed by removal on June 20, 1996.

Based upon the distance from the planned project improvements (more than 580 feet southwest) and the No Action Required determination from the WDNR on UST removal, no further investigation is recommended for both alternatives.

Site Number: **188**
Site Name: **FORMER BENTLEY WELDING SUPPLY**
Site Address: **200 S HAWLEY ROAD, MILWAUKEE, WI 53214**

Database: CESQG, FINDS, LUST, SHWIMS, UST, WRRSER
Real Estate Requirements: None - Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is currently owned and operated by Hunger Task Force of Milwaukee. The site was formerly Bentley Welding Supply. The site was multiple dwellings and stores on the 1968 Sanborn, multiple flats, two stores, and a restaurant on the 1950 Sanborn and undeveloped on the 1927 Sanborn map.

Gas Tech DBA Bentley Welding is listed as a CESQG with no violations. Listed wastes include: D001 Ignitable Hazardous Wastes.

Gas Tech DBA Bentley Welding is listed on the FINDS database under RCRA and WI-ESR.

Review of available LUST files (03-41-002053) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the March 19, 1993, Sigma Environmental Services, Inc., *A Report of Overexcavation and Disposal of Impacted Soil*, contaminated soils were identified during a subsurface investigation and after the removal of a 10,000 gallon diesel UST. Approximately 440 tons of contaminated soils were excavated and disposed of at a licensed facility. Residual contamination (benzene 17 ppb and benzo(a)pyrene 18 ppb) remains onsite in the vicinity of the excavation. Onsite soils are clayey silts/silty clays with traces of medium sand to fine gravel. Groundwater was not encountered during site activities. The LUST site was closed by the WDNR on June 23, 1994.

The SHWIMS database lists the site as an active Hazardous Waste Generator – Very Small. There are no listed wastes.

According to the DATCP UST database one (1) 1,000 gallon unleaded gasoline UST was closed by removal on September 25, 1991; and one (1) 1,000 gallon diesel UST and one (1) 10,000 gallon diesel UST were closed by removal on September 26, 1991.

The site is listed on the WI WRRSER as having a MEDIUM priority.

Based upon clayey type onsite soils, no encountered groundwater during site remediation and the historical nature of the LUST activity (1994), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **189**
Site Name: **MILLER PARK**
Site Address: **1 BREWERS WAY, MILWAUKEE, WI 53214**

Database: **AST, CESQG, FINANCIAL ASSURANCE, FINDS, MANIFEST, SHWIMS, SPILLS, TIER 2, UST,**
Real Estate Requirements: Partial Acquisition - Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is currently Miller Park Baseball Stadium and associated parking. The former County Stadium (Site 190) was located to the northwest of the existing stadium and the east parking lots are located on the Former Milwaukee Road Shops (Site 194, Site 200, and Site 201). The site is also associated with Site 77. The stadium was built on top of a former landfill. A soil cap and a methane venting system are in place at the site.

According to the DATCP AST database two (2) 1,250 gallon diesel ASTs and one (1) 300 gallon diesel AST are in-use at the site.

Miller Park / Milwaukee Brewers is listed as a CESQG with no violations. The site was historically listed as a LQG on October 15, 1996, and on February 21, 2002. Listed wastes include: D001 Ignitable Hazardous Wastes and D002 Corrosive Hazardous Wastes.

The onsite in-use USTs is listed under FINANCIAL ASSURANCE.

Miller Park is listed on the FINDS database under RCRA and WI-ESR.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site in 2008 and 2009.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Temporary – Obsolete Code, an inactive Hazardous Waste Generator – Large, and an active Hazardous Waste Generator – Very Small. Listed wastes include: D001 Non-Listed Ignitable Wastes and D002 Non-Listed Corrosive Wastes.

According to the SPILL listing (04-41-554455) the storage area of the stadium flooded on June 19, 2009. A clean up contractor was hired to evaluate and clean up the spill. The spill was closed by the WDNR on November 10, 2009

TIER 2 is a database of facilities which store or manufacture hazardous materials that submit a chemical inventory report. According to this database the site has a maximum amount of 4,575 gallons of transformer oil and 2,700 gallons of diesel fuel onsite.

According to the DATCP UST database one (1) 600 gallon unleaded gasoline UST is in-use at the site.

According to the April 1993, RMT, Inc. *Technical Memorandum, Summary of Phase II Investigations,* the unconsolidated deposits on the western side of the Menomonee River consist of up to 20 feet of clayey soil/fill material underlain by clay soils. The fill material consists of soil fill, foundry sand fill, and other materials, including slag, coal, concrete rubble, and wire. No evidence of municipal solid waste was found within the Phase II borings. The clay soils underlying the fill included materials rich in organic matter. These organic soils are likely associated with marsh deposits that existed in the area before filling at the site. According to the Memorandum, silty sand occasionally underlies the fill, followed by a significant thickness of gravel, and then clayey and silty glacial tills, probably of the Oak Creek Formation. The area west of 44th Street includes the presence of petroleum constituents and heavy metals including lead. The former rubbish disposal area and former incinerator ash disposal area are located to the southwest of the existing Miller Park Stadium. The Southern Fill Area is located within Miller Park Way ROW near Frederick Miller Way. All three areas are located south of the proposed project requirements.

Himalayan contacted Mike Duckett of the SEWPBPD and conducted an interview related to Site 189. He indicated that the SEWPBPD has owned the property since 1996, which is currently utilized as a parking lot. The property has been used as a parking lot for approximately 60 years and was historically utilized as a quarry and landfill. He was not aware of any tanks located on the site currently or historically.

Based upon known soil and groundwater contamination at the site, including historic fill, a Phase 3 Subsurface Investigation is recommended for both alternatives.

Site Number: **190**
Site Name: **FORMER MILWAUKEE COUNTY STADIUM**
Site Address: **201 S 46TH STREET, MILWAUKEE, WI**

Database: **ERP, FINDS, FTTS, HIST FTTS, LUST, MANIFEST, NONGEN, SHWIMS, UST,**
Real Estate Requirements: Partial Acquisition - Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is now Miller Park, Helfaer Field and associated parking. See Site 189. The site is Milwaukee County Municipal Stadium on the 1968 Sanborn map.

Review of available ERP files (02-41-001187 (River East)) indicate a spill or leak resulted in soil and groundwater contamination from heavy metals, PAHs, chlorinated solvents and petroleum. Contaminated soil and groundwater were identified under the former railroad property in the early 1990s. The planned redevelopment of Miller Park Stadium Complex initiated a long-term monitoring plan that was established in 2002. Reports note that soil underneath the current stadium parking lot to the east of Miller Park Way is generally industrial waste consisting of clay-rich materials with fragments of metal, slag, coal, wood glass, ceramics, rubber and foundry sand, ranging in thickness from 7 to 22 feet, and native interbedded silty clays and sand underneath. Groundwater was encountered at approximately 8 to 17 feet bgs and generally flows towards the Menomonee River. Free product collection sumps operated for over ten years, and the free product plume has generally decreased over time. Several VOCs and PAHs in groundwater are also above NR 140 groundwater standards. The ERP site is listed as open and is under WDNR jurisdiction.

Review of available ERP files (02-41-001185 (River West)) indicate a spill or leak that resulted in soil and groundwater contamination from metals and municipal waste. Contaminated soil and groundwater were identified under the former landfill property, in the early 1990s, during the planned redevelopment as part of the Miller Park Stadium Complex. Petroleum, lead, and methane impacts to the soil and groundwater remain at the site, underneath the current stadium parking lot to the west of Miller Park Way. Reports note that on-site soils are generally fill materials consisting of sand, gravel, silt, and clay mixed with foundry sand, slag, and coal, ranging in thickness from 6 to 19 feet, and native estuarine silts and gravels underneath. Groundwater was encountered at approximately 6 to 28 feet bgs and generally flows east towards the Menomonee River. Fill material contained generally low-level petroleum-related impacts and elevated or highly variable lead levels. Several VOCs in groundwater are also above NR 140 groundwater standards. A conditional closure with groundwater use restrictions was requested in 2008, but the ERP site remains listed as open and is under WDNR jurisdiction.

Former Milwaukee County Stadium is listed on the FINDS database under NCDB, RCRA, and Hazardous Waste Biennial Reporter.

The FTTS database tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA (Federal Insecticide, Fungicide, and Rodencide Act), TSCA (Toxic Substances Control Act), and EPCRA (Emergency Planning and Community Right-to-Know Act) over the previous five years. The Former Milwaukee County Stadium is listed on the FTTS. The site was inspected on August 29, 1991. No violations were reported.

The HIST FTTS is a complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all then EPA regions. The Former Milwaukee County Stadium is listed on the HIST FTTS.

Review of available LUST files (03-41-261500 / 53214361901) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the Sigma Environmental Service, Inc., *A Site Assessment for Storage Tank Systems*, minimally contaminated soils were identified during the removal of a 550 gallon gasoline UST. No contaminated soils were excavated. Site assessment samples indicate residual contamination (30 ppm GRO) beneath the former dispenser. Onsite soils are silty sandy fill. Groundwater was not encountered during UST removal activities. The LUST site was closed by the WDSPS on April 16, 2001.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site in 2009. The site was closed prior to 2009.

Former Milwaukee County Stadium is listed as a NONGEN with no violations. The site is historically listed as a SQG on December 28, 1992. Listed wastes include: D000 Not Defined, and D008 Lead.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Large, inactive Hazardous Waste Generator – Small, and an inactive Hazardous Waste Generator – Very Small. Listed wastes include: D001 Non-Listed Ignitable Wastes and D002 Non-Listed Corrosive Wastes.

According to the DATCP UST database one (1) 560 gallon unleaded gasoline UST was closed by removal on November 8, 1990; and one (1) 550 gallon unleaded gasoline UST was closed by removal on October 27, 2000.

This site is at the same location as 189. Please see site 189 for recommendations.

Site Number: **191**
Site Name: **WI DOT MILWAUKEE COUNTY STADIUM / IH94 / USH 41**
Site Address: **IH 94 & USH 41, MILWAUKEE WI**

Database: ERP
Real Estate Requirements: Partial Acquisition - Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is currently the Stadium Interchange and the area south of the interchange near Miller Park to past Frederick Miller Way. The site includes portions of sites 77, 189, 190, 192, 193, and 194.

Review of available ERP files (02-41-000252) indicate a spill or leak that resulted in soil and groundwater contamination from municipal waste. Contaminated soil and groundwater were identified under the former landfill property, in the early 1990s. The planned redevelopment of Miller Park Stadium Complex initiated a long-term monitoring plan that was established in 2002. Reports note that soil in-between the current stadium and southbound lane of Miller Park Way are generally fill materials consisting of sand, gravel, silt, and clay mixed with glass fragments, ranging in thickness from 9 to14 feet, and native interbedded silty clays and sand underneath. Groundwater was encountered at approximately 13 to 17 feet bgs and generally flows east towards the Menomonee River. No soil or groundwater samples were collected for lab analyses. Based on the absence of "obvious soil impacts" near the surface and several other adjacent sites being considered for closure, a conditional closure was requested in 2009. The ERP site remains listed as open and is under WDNR jurisdiction.

Himalayan contacted Mike Duckett of the SEWPBPD and conducted an interview related to Site 191. He indicated that the SEWPBPD has owned the property since 1996, which is currently utilized as a parking lot. The property has been used as a parking lot for approximately 60 years and was historically utilized as a quarry and landfill. He was not aware of any tanks located on the site currently or historically.

Based upon the open ERP activities at the site and the presence of impacted fill within and surrounding the Stadium Interchange, a Phase 2.5 Subsurface Investigation is recommended for both alternatives.

Site Number: **192**
Site Name: **FORMER MENOMONEE VALLEY PUMPING STATION**
Site Address: **127 S 44TH STREET, MILWAUKEE, WI 53208**

Database: FINDS, MANIFEST, NONGEN, SHWIMS
Real Estate Requirements: Partial Acquisition - Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is currently a gravel parking area for Miller Park Employees. Several large aboveground water tanks were previously located at the site. The site is City Water Works – booster pumping station on the 1968 and 1950 Sanborn maps. The site was being filled with gravel for parking during site reconnaissance.

Menomonee Valley Pumping Station is listed on the FINDS database under WI-ESR.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site in 2010.

Menomonee Valley Pumping Station is listed as a NONGEN with no violations. The site is historically listed as a NONGEN on November 28, 1988, and as a SQG on May 26, 2010. Listed wastes include: D000 Not Defined, D001 Ignitable Hazardous Wastes, D008 Lead, D030 Tetrachloroethylene, W540, and W600.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Small, inactive Hazardous Waste Generator – Very Small, inactive Hazardous Waste Generator – One Time/Periodic and an inactive Unclassified. Listed wastes include: D008 Lead, D039 Tetrachloroethylene, W540 Oil, and W600 PCB.

Himalayan attempted to interview onsite personnel at Site 192, no response was obtained.

Based upon the required real estate and construction requirements and the known historic fill located in the area, a Phase 3 Subsurface Investigation is recommended for both alternatives.

Site Number: **193**
Site Name: **SOO LINE RR COMPANY STADIUM PROJECT**
Site Address: **400 N 44TH STREET, MILWAUKEE, WI**

Database: BRRTS
Real Estate Requirements: Partial Acquisition - Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is currently owned by Soo Line Railroad and is located adjacent to the railroad ROW. The site is railroad ROW on the 1968, 1950, 1927 and 1910 Sanborn maps.

Soo Line RR CO Stadium Project is tracked in the BRRTS (09-41-001184) database as No Action Required because the site is a Licensed Landfill or a Historic Fill Site.

Himalayan contacted LeeAnn Thomas, Environmental Manager at Canadian Pacific Railway (owners of SOO Line Railroad Company), who declined to answer any questions regarding the property.

Based upon the site listing as a licensed landfill or historic fill site, a Phase 3 Subsurface Investigation is recommended for both alternatives.

Site Number: **194**
Site Name: **FORMER MILWAUKEE ROAD RAILROAD SHOPS / MILWAUKEE SHOPS PROPERTY**
Site Address: **400-620 S 44TH STREET, MILWAUKEE, WI 53214**

Database: BROWNFIELDS, BRRTS, FINDS, US BROWNFIELDS
Real Estate Requirements: Partial Acquisition – Alternative 2 Only - Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site encompasses the following sites: 195, 196, 200, 201, and 203. It is also listed as 3401 W Canal Street. According to the renewthevalley.org, the Milwaukee Road Shops, a railcar manufacturer, was located south of the existing IH 94 between 44th Street and 27th Street from 1879 to 1985. The Shops included carpentry, metal forging, machine assembly, welding, and painting facilities for railroad cars. The valley wetlands were filled and the Menomonee River was moved to create this 160 acre complex. Redevelopment of the Menomonee River Valley has taken place, however, soil and groundwater contamination are known to be present throughout the site.

The Former Milwaukee Road RR Shops is tracked in the BRRTS (07-41-524441) database as General Property for a Green Space and Public Facilities Grant.

The Former Milwaukee Road RR Shops are listed in BROWNFIELDS because the WDNR awarded a grant to a local government for remediation of a property that will be used for green space, public recreation or local government operations.

Milwaukee Shops Property is listed on the FINDS database under ACRES.

The Milwaukee Shops Property is listed in the US BROWNFIELDS database based upon several state and federal brownfield remediation grants/loans that the Milwaukee Department of City Development received for the redevelopment of the site.

Himalayan contacted Kim (last name not provided) at Ingeteam, Inc. and conducted an interview related to Site 194. She indicated that the property has been owned by Ingeteam, a manufacturer of generators and converters for industrial use, for approximately 2 years. The current building on site was constructed in 2011.

Based upon the historic use of the area, a Phase 2.5 Subsurface Investigation is recommended for all areas related to this site for Alternative 1. A Phase 3 Subsurface Investigation is recommended for partial real estate requirements for 44th Street.

Site Number: **195**
Site Name: **NATIONAL SALVAGE**
Site Address: **600 S 44TH STREET, MILWAUKEE, WI 53214**

Database: ERP, FINDS, NONGEN, NPDES, SHWIMS, TIER 2
Real Estate Requirements: None
Construction Requirements: None

This site is currently National Salvage, a recycling facility. This site is also listed as Wasmil, LLC, DBA National Salvage and Stimac Brothers Corporation. The site is railroad tracks on the 1968, 1950, 1927, and 1910 Sanborn maps.

Review of available ERP files (02-41-001188) indicate a spill or leak resulted in soil and groundwater contamination from petroleum, PCBs, VOCs, lead and chromium. According to the January 1993, RMT, Inc., *Technical Memorandum for the Phase II Investigation of Area E1 Stimac Bros. Corporation Property*, contaminated soils were identified during subsurface investigations related to the upgrade of USH 41. Onsite soils are listed as approximately 13 feet of fill over by poorly graded, undisturbed gravel. Groundwater was encountered at approximately 30 feet bgs. Flow direction was not determined. The ERP site is listed as open and is under WDNR jurisdiction.

Stimac Brothers Corporation is listed on the FINDS database under RCRA.

Stimac Brothers Corp is listed as a NONGEN with no violations. The site is historically listed as a SQG on January 12, 1993. Listed wastes include: D000 Not Defined and D008 Lead.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Small. Listed wastes include: D000 Non-Listed Toxic Wastes and D008 Lead.

TIER 2 is a database of facilities which store or manufacture hazardous materials that submit a chemical inventory report. According to this database the site has a maximum amount of 4,000 pounds of battery acid (sulfuric acid) onsite.

Based upon the distance from the planned project improvements (more than 680 feet south), and LUST activity closure, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **196**
Site Name: **FORMER LEWINSKY IRON AND METAL COMPANY**
Site Address: **620 S 44TH STREET, MILWAUKEE, WI 53214**

Database: AST, BROWNFIELDS, BRRTS, ERP, FINDS, LUST, NONGEN, SHWIMS, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently an vacant lot and gravel drive leading to the Hank Aaron State Trail. The site is railroad tracks on the 1968, 1950, 1927, and 1910 Sanborn maps.

According to the DATCP AST database one (1) 275 gallon fuel oil AST, one (1) 550 gallon diesel AST, and one (1) 300 gallon diesel AST were closed by removal on November 18, 2004.

Lewinsky Iron and Metal Co is listed on BROWNFIELDS because the WDNR awarded a Site Assessment Grant to a local government for assessment of contamination, demolition, tank/container removal, or other actions.

Lewinsky Iron and Metal Co. is tracked in the BRRTS (07-41-306073) database as General Property for a Site Assessment Grant.

Review of available ERP files (02-41-251333) indicate a spill or leak resulted in soil and groundwater contamination from metals and PAHs. According to the January 20, 2004, Giles Engineering Associates, Inc., *Supplemental Site Investigation and Remedial Options Report*, contaminated soils were identified during site investigation activities. Onsite soils are reported as fill including fine to medium sand to silty clay with variable amounts of sand and gravel with fragments of metal, glass, rubber, slag, organic matter, brick, and concrete rubble, over native soils including fine sand to clayey silt with lenses of silty clay. Groundwater was encountered between 10 and 19 feet bgs. Groundwater flow is generally to the northwest. The ERP site is listed as open and is under WDNR jurisdiction.

Lewinsky Iron and Metal Company is listed on the FINDS database under RCRA.

Review of available LUST files (03-41-212172) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the December 1999, Envirogen, Inc., *Site Investigation/Closure Assessment Report*, contaminated soils were identified during the removal of a 2,000 gallon unleaded gasoline UST. Site Assessment samples indicated GRO at 100 ppm and 124 ppm under the former tank. Additional site investigation surrounding the former tank cavity indicated no contaminants above their respective RCLs except for vinyl chloride which is part of the ERP activity at the site. Onsite soils are sandy clays. Groundwater was encountered at approximately 11 feet bgs. The LUST site was closed by the WDNR on January 18, 2000.

Lewinsky Iron and Metal Co is listed as a NONGEN with no violations. There are no listed wastes.

The SHWIMS database lists the site as an inactive Unclassified. There are no listed wastes.

According to the DATCP UST database one (1) 1,500 gallon unleaded gasoline UST was closed by removal on March 15, 1993; and one (1) 2,000 gallon unleaded gasoline UST was closed by removal on December 23, 1998.

Based upon the distance from the planned project improvements (more than 1,100 feet south), and LUST activity closure, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **197**
Site Name: **HARNISCHFEGER CORPORATION / P&H MINING EQUIPMENT**
Site Address: **4400 W NATIONAL AVENUE, MILWAUKEE, WI 53204**

Database: 2020 COR ACTION, AIRS, AST, CORRACTS, ERNS, ERP, FINDS, FTTS, HIST FTTS, ICIS, LQG, LUST, MANIFEST, NPDES, SHWIMS, TIER 2, TRIS, UST, WRRSER
Real Estate Requirements: None
Construction Requirements: None

The site is currently P&H Mining Equipment and Joy Global Surface Mining, manufactures of heavy mining equipment.

P&H Mining Equipment is listed in the 2020 COR ACTION database. No actions are reported.

P&H Mining Equipment is listed in the AIRS database. Listed Materials are Natural Gas, Product – Metals, and Other Solvent.

According to the DATCP AST database one (1) 550 gallon diesel AST and one (1) 550 gallon unleaded gasoline UST are in-use at the site. Two (2) 55,000 gallon fuel oil ASTs were closed by removal on May 6, 2005.

P&H Mining Equipment is listed in the CORRACTS database. The facility underwent a RCRA Facility Investigation (RFI) Imposition on August 8, 1991, and was assigned a low corrective action priority on March 31, 1992.

ERNS is a national computer database system that is used to store information concerning the sudden and/or accidental release of hazardous substances, including petroleum into the environment. 4400 W National Avenue is listed on the ERNS database. ERNS records indicate that on July 12, 1991, the Menomonee River flooded the facility due to heavy rains. Vacuum trucks were used to pick up all observable spills.

Review of available ERP files (02-41-000670) indicate a spill or leak is associated with the Cutting Oil Soil Pile. According to the December 28, 2012, SCS Engineers *Cutting Oil Soil Pile* letter report, contaminated soils were identified in shallow surface soils in small areas of the facility along the railroad spur and in the waste petroleum storage area. Approximately 85 tons of petroleum based cutting oil contaminated soils were transported to Payne & Dolan's Sussex asphalt plant and roasted and incorporated into asphaltic mix. Closure samples were not analyzed. Waste holding and transfer processes have changed to avoid releases to the environment. The ERP site was closed by the WDNR on February 14, 2013.

P&H Mining Equipment is listed on the FINDS database under WI-ESR, AFS, NCDB, NEI, TRIS, NPDES, RCRA, Hazardous Waste Biennial Reporter, Criteria and Hazardous Air Pollutant Inventory, ICIS, and PCS.

The FTTS database tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA (Federal Insecticide, Fungicide, and Rodencide Act), TSCA (Toxic Substances Control Act), and EPCRA (Emergency Planning and Community Right-to-Know Act) over the previous five years. Harnischfeger Corp is listed on the FTTS. No violations are listed.

The HIST FTTS is a complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all then EPA regions. Harnischfeger Corp is listed on the HIST FTTS.

ICIS includes information from the National Enforcement and Compliance Program and the National Pollutant Discharge Elimination System (NPDES) program. P&H Mining Equipment is listed in the ICIS database.

P&H Mining Equipment is listed as a LQG with multiple violations. The site is historically listed as a NONGEN on November 19, 1980, and as a LQG on August 18, 1980, March 1, 1994, March 1, 1996, March 1, 2000, March 8, 2002, March 15, 2004, September 27, 2005, March 15, 2006, March 15, 2008, and March 23, 2009. Listed wastes include: D000 Not Defined, D001 Ignitable Hazardous Wastes, D007 Chromium, D039 Tetrachloroethylene, and F017 Not Defined.

Review of available LUST files (03-41-005013) indicates the spill is associated with the Oil House – Building 15. According to the October 6, 1994, Law Engineering and Environmental Services, Inc., *Report of In-Place Closure of Underground Storage Tanks Oil House (Building 15)* contaminated soils were identified during the in-place closure of seven USTs. The USTs are located within the former basement of the Oil House and are enclosed with concrete. Closure samples indicated DRO between 4.8 and 160 ppm. Approximately 40 cubic yards of impacted soil remains onsite. Groundwater was not encountered during closure activities. The LUST site was closed by the WDNR on July 28, 1995.

Review of available LUST files (03-41-004987) indicates the spill is associated with Building 20. According to the July 20, 2012, SCS BT Squared letter *Former 1,000-Gallon Gasoline Leaking Underground Storage Tank Site,* contaminated soils were identified during the removal of a 1,000 gallon gasoline UST in July of 1989. 3.7 feet of free product was found in MW-6 and 2.6 feet of free product in MW-7 during the last sampling event in January of 1996. The July 20th correspondence is a scope for future work activity. According to the May 1996, Law Engineering and Environmental Services, Inc., *Report of 1995 Subsurface Assessment Activities – Building 20/Power House* the onsite soils consist primarily of fill material to about 7 to 10 feet bgs with interbedded sands; clays and silts between 10 and 20 feet bgs; and sand with clay stringers between 20 and 25 feet bgs. Groundwater was reported between 17 and 18 feet bgs. The LUST site is listed as open and is under WDNR jurisdiction.

Review of available LUST files (03-41-001969) indicates the spill is associated with Building 70 and an 8,000 gallon diesel fuel UST and a 10,000 gallon gasoline UST removed in July 1991. According to the October 17, 1994, Law Engineering and Environmental Services, Inc., *Report of Soil Sampling and Excavation Area 3 (Building 70)* contaminated soils were identified during the removal of one 8,000 gallon diesel UST and one 10,000 gallon gasoline UST. Approximately 258 cubic yards (387 tons) of contaminated soils were excavated and disposed of at a licensed facility. Onsite soils are clay over clayey sand over well sorted sand with occasional gravely and silty zones. Groundwater was not encountered. The LUST site was closed by the WDNR on July 28, 1995.

Review of available LUST files (03-41-000433) indicates the spill is associated with Building 37. According to the June 28, 1993, Warzyn *Project Closure – 23,000-Gallon Fuel Oil Tank*, contaminated soils were identified during the removal of a 23,000 gallon fuel oil UST in April 1989. Site Assessment samples indicated contamination (11 ppm DRO) in the middle of the excavation. Onsite soils are silty clays. Groundwater was not encountered during site activities. The LUST site was closed by the WDNR on July 15, 1993.

Review of available LUST files (03-41-000556) indicates the spill is associated with Buildings 62 and 73 and a 40,000 gallon fuel oil UST that was removed in September of 1988. According to the May 13, 1998, Sigma Environmental Services, Inc., *Closure Request for Harnischfeger Corporation*, contaminated soils were identified during the removal of a 40,000 gallon fuel oil UST. Onsite soils are clayey silts and silty clays over sand and silty sand. Groundwater was encountered at approximately 18 feet bgs. Flow direction was reported to the north/northwest. The LUST site was closed by the WDNR on February 25, 2013, with inclusion on the GIS Registry for missing groundwater wells. A PAL exemption was given for tetrachloroethylene at MW-12.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site in 2004-2011.

P & H Mining Equipment is listed on the NPDES. The facility permit number is 241010990.

The SHWIMS database lists the site as an active Hazardous Waste Generator – Large, an active Household Hazardous Waste Temporary Collection Facility, an active Hazardous waste Report Certifier, an active Hazardous Waste Report Preparer, and an inactive Hazardous Waste Transporter - Commercial. Listed wastes include: D001 Non-Listed Ignitable Wastes, D003 Non-Listed Reactive Wastes, and D007 Chromium.

TIER 2 is a database of facilities which store or manufacture hazardous materials that submit a chemical inventory report. According to this database the site has a maximum amount of 562,170 pounds of liquid carbon dioxide, 3,000 pounds of argon, 16,920 pounds of liquid nitrogen, 18,990 pounds of propane, 12,328 pounds of paint, 6,160 pounds of mineral spirits, 9,412 pounds of antifreeze, 142,440 pounds of liquid oxygen, 14,176 pounds of sulfuric acid, and 295,850 gallons of oil onsite.

P&H Mining Equipment is listed on the Toxic Chemical Release Inventory System (TRIS) database. TRIS identifies facilities which release toxic chemicals to the air, water, and land in reportable quantities under SARA Title III Section 313. The following compounds are reported at the site: chromium, manganese, and nickel.

According to the DATCP UST database one (1) 1,111 gallon diesel UST was closed by removal on January 1, 1968; one (1) 18,300 gallon fuel oil UST was closed by removal on January 1, 1977; one (1) 2,000 gallon other content UST was closed by removal on January 1, 1985; one 8,000 gallon diesel UST and one (1) 10,000 gallon unleaded gasoline UST were closed by removal on July 10, 1991; one (1) 500 gallon chemical UST, one (1) 565 gallon waste/used motor oil UST, and five (5) 1,000 gallon chemical USTs were closed by filling with inert material on June 1, 1994; one (1) 25,000 gallon diesel UST was closed by filling with inert material on November 30, 1995; and one (1) 23,000 gallon diesel UST, one (1) 1,000 gallon unleaded gasoline UST, and one (1) 40,000 gallon diesel UST were closed by removal on an unknown date (listed as 09-09-9999 in database).

The site is listed on the WI WRRSER as having a MEDIUM priority on July 10, 1991, and a HIGH priority on August 8, 1989.

Based upon the distance from the planned project improvements (more than 1,200 feet south), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **199**
Site Name: **WEPCO PARK HILL SOUTHWEST SUBSTATION**
Site Address: **4000 W CANAL STREET, MILWAUKEE, WI 53208**

Database: FINDS, NONGEN, SHWIMS
Real Estate Requirements: Partial Acquisition - Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is currently an electrical substation for We Energies. Inspection of historical aerial photographs indicates that the site was used as an electrical substation since 1973. Three dark circles are present on the 1973 through 2010 aerial photographs to the west of the substation. The site is undeveloped on the 1968, 1950, and 1927 Sanborn maps. The site has fill listed on the 1968 Sanborn map.

WEPCO Park Hill Southwest Substation is listed on the FINDS database under RCRA.

WEPCO Park Hill Southwest Substation is listed as a NONGEN with no violations. The site is historically listed as a SQG on November 16, 1999. Listed wastes include: D000 Not Defined and D008 Lead.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Small and an inactive Hazardous Waste Transporter - Private. Listed wastes include: D000 Non-Listed Toxic Wastes and D008 Lead.

Himalayan attempted to interview onsite personnel at Site 199, no response was obtained.

Based upon the partial property acquisition requirements, historic use of PCBs in transformer oil, the presence of three large darkened areas visible on historical aerial photographs, the general location of the site near the Former Milwaukee Road Shops, and historic fill used within the Menomonee River Valley, a Phase 3 Subsurface Investigation is recommended for both alternatives.

Site Number: **200**
Site Name: **MENOMONEE VALLEY / FORMER CMC**
Site Address: **3301 W CANAL STREET, MILWAUKEE, WI**

Database: AST, CERCLIS-NFRAP, CESQG, ERP, FINDS, MANIFEST, SHWIMS, SPILLS, US BROWNFIELDS, UST
Real Estate Requirements: None - Not Finalized
Construction Requirements: Anticipated - Not Finalized

This listing is also associated with the following site numbers: 194, 195, 196, 201, and 203. This site is part of the Former Milwaukee Road Shops. The a portion of this site was identified as Area A, CMC Real Estate Corporation, and included 3601, 3902, and 3909 W Canal Street, in the March 1992, *Preliminary Summary of Phase I Environmental Investigations, Wisconsin DOT ID 1061-08-03 East-West Freeway I-94 and USH 41 Brewers Stadium Infrastructure Milwaukee County* by RMT, Inc. The site is listed in the BRRTS as 3301 W Canal Street and currently includes parts of several parcels owned by several organizations. The site extends from the Menomonee River on the west side to the Falk Corporation (Site 205) on the east. The Miller Park East Parking Lot is included within this site. The site is the Milwaukee Road Shops on the 1968, 1950, 1927, and 1910 Sanborn maps. Site reconnaissance revealed sumps and monitoring wells within the Miller Park parking lot, within Selig Drive and on the properties to the east of the east parking lot. The industrial development park to the east of the Miller Park parking lot is approximately 8 feet above normal grade.

According to the DATCP AST database one (1) 550 gallon waste/used motor oil AST was closed by removal on January 9, 2004.

The CERCLIS-NFRAP Site Database includes CERCLIS sites that have been removed from CERCLIS. These may be sites where following an initial investigation, no contamination was found, the sites were cleaned up or the contamination was not serious enough to require Federal Superfund Action. CMC Waste Water Treatment is listed on the CERCLIS-NFRAP. The site does not qualify for the NPL based on existing information.

CMC Waste Water Treatment is listed as a CESQG with no violations. The site was historically listed as a LQG on August 18, 1980, and March 1, 1992. Listed wastes include: D000 Not Defined, D001 Ignitable Hazardous Wastes, D002 Corrosive Hazardous Wastes, and F001 Spent Halogenated Solvents.

Review of available ERP files (02-41-000228) indicate soil and groundwater contamination resulted from activities located at the former Milwaukee Road Shops. According to the May 1, 1996, STS Consultants Ltd., *Groundwater Monitoring Investigation Report for CMC Shops Site in Milwaukee, Wisconsin,* site redevelopment included demolition of onsite buildings, removal of all railroad trackage and ties and an environmental site investigation. Contamination at the site includes diesel fuel free product, CVOCs,

lead, and PAHs. The site is capped with asphalt or several feet of fill. Groundwater flow direction is generally towards the Menomonee River. Onsite soils include up to 15 feet of fill material including foundry sands. The Menomonee River was diverted from its original path and the river bed was filled. The ERP site is listed as open and is under WDNR jurisdiction.

CMC Waste Water Treatment is listed on the FINDS database under WI-ESR, AFS, and RCRA.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site in 2004.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Small, active Hazardous Waste Generator – Very Small, and an inactive Hazardous Waste Off-Site Wastewater Treatment Unit. There are no listed wastes.

According to the SPILL listing (04-41-037225) an undetermined quantity of chemicals were spilled due to a leaking valve on a tank car on February 24, 1978. The spill occurred on the soil and absorbents were used to clean up the spill. The spill is listed as historic and is under WDNR jurisdiction.

According to the SPILL listing (04-41-037705) an undetermined quantity of chemicals were spilled due to a broken valve on a tank car on June 28, 1979. Surface water was affected and absorbents were used to clean up the spill. The spill is listed as historic and is under WDNR jurisdiction.

Airline Yards is listed in the US BROWNFIELDS database based upon several state and federal brownfield remediation grants/loans that the Milwaukee Department of City Development received for the redevelopment of the site.

According to the DATCP UST database one (1) 6,000 gallon waste/used motor oil UST was closed by removal on September 16, 1988; two (2) 10,000 gallon unknown content UST and one (1) 22,000 gallon waste/used motor oil UST were removed on December 1, 1988; and one (1) 550 gallon chemical UST and one (1) 5,000 gallon fuel oil UST were closed by removal on January 9, 2004.

Himalayan contacted Dave Misky of the Redevelopment Authority of the City of Milwaukee, and conducted an interview related to Site 200. Mr. Misky indicated that the City of Milwaukee has owned the property for approximately eleven years and the site has been a vacant lot for that time. He indicated that the site was formerly part of a rail yard. He was not aware of any environmental concerns related to the site.

Based upon anticipated construction requirements for the 35th Street Bridge within the former Milwaukee Road Shops area, a Phase 2.5 is recommended for both alternatives.

Site Number: **201**
Site Name: **FORMER WI DH&SS STADIUM PROJECT AREAS B & C**
Site Address: **554 S 44TH STREET, MILWAUKEE, WI 53208**

Database: AST, ERP
Real Estate Requirements: None
Construction Requirements: None

This listing is associated with the following site numbers: 194, 195, 196, 200, and 203. This site is part of the Former Milwaukee Road Shops. The site was identified as Area B and C, State of Wisconsin Department of Health and Social Services, and included 554 South 44th Street, in the March 1992, *Preliminary Summary of Phase I Environmental Investigations, Wisconsin DOT ID 1061-08-03 East-West Freeway I-94 and USH 41 Brewers Stadium Infrastructure Milwaukee County* by RMT, Inc. The site is listed in the BRRTS as 554 South 44th Street and currently includes parts of several parcels owned by several organizations. The site includes the entire parcel at 554 S 44th Street (SEWPBPD), 3883 W Milwaukee Road (Caleffi North America Inc.), and 3800 W Canal Street (HSI Industrial I LLC); and a portion of the following parcels: 400 S 44th Street (SEWPBPD), 610 S 35th Street (City of Milwaukee Redevelopment Authority), and 3757 W Milwaukee Road (Ingeteam Inc.). City of Milwaukee ROW (Canal Street) is also included within this area. Approximately half of the site is part of the Miller Park East Parking Lot and is covered with asphalt parking. The site is the Milwaukee Road Shops on the 1968, 1950, 1927, and 1910 Sanborn maps. Site reconnaissance revealed monitoring wells within the Miller Park parking lot.

According to the DATCP AST database one (1) 10,000 gallon diesel AST was closed by removal on September 26, 2008.

Review of available ERP files (02-41-001189) indicate a spill or leak resulted in soil and groundwater contamination resulted from activities located at the former Milwaukee Road Shops. Contamination at the site includes diesel fuel free product, CVOCs, lead, and PAHs. The site is capped with asphalt or several feet of fill. Onsite soils are generally fill materials consisting of sand, silty sand, or clayey sands, ranging in thickness from 5 to 10 feet, and native estuarine silts and gravels underneath. Groundwater was encountered at approximately 5 to 9 feet bgs and generally flows south towards the Menomonee River. The Menomonee River formerly ran through the site and was diverted from its original path and filled prior to the 1937 aerial photograph. The ERP site is listed as conditionally closed and is under WDNR jurisdiction.

Based upon the distance from the planned project improvements (more than 790 feet east), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **203**
Site Name: **PALERMO VILLA INC**
Site Address: **3301 W CANAL STREET, MILWAUKEE, WI 53208**

Database: BRRTS, FINDS, TIER 2
Real Estate Requirements: None
Construction Requirements: None

This listing is associated with the following site numbers: 194, 195, 196, 200, and 201. This site is part of the Former Milwaukee Road Shops. The site is currently a food packaging facility. The site is the Milwaukee Road Shops on the 1968, 1950, 1927, and 1910 Sanborn maps.

Palermo Villa Inc. is tracked in the BRRTS (07-41-543533) database as General Property for approval to build on historic fill. The site is part of the Menomonee Valley/CMC Shops (Site 200). The exemption request details arsenic, methlyene chloride, trichloroethene, benzene, PAH, and lead contamination found at the site within the shallow soils. The site has been capped with 4-8 feet of clean fill.

Palermo Villa, Inc. is listed on the FINDS database under TRIS, ICIS, and RMP.

TIER 2 is a database of facilities which store or manufacture hazardous materials that submit a chemical inventory report. According to this database the site has a maximum amount of 458 pounds of Quorum Yellow, 916 pounds of Quorum Green, 1,374 pounds of Quorum Pink, 1,374 pounds of Quorum Clear, 3,500 pounds of sulfuric acid, 28,000 pounds of lead, and 17,032 pounds of anhydrous ammonia onsite.

Based upon the distance from the planned project improvements (more than 600 feet south), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **204**
Site Name: **RR TRACKS AT CANAL AND 30TH STREET SPILL**
Site Address: **RR TRACKS AT CANAL AND 30TH STREET, MILWAUKEE, WI**

Database: SPILLS
Real Estate Requirements: None
Construction Requirements: None

According to the SPILL listing (04-41-266486) approximately 400 pounds of ammonia were spilled due to train derailment on May 30, 1998. A cleanup contractor was hired to clean up the spill. The spill was closed by the WDNR on August 18, 1998.

According to the SPILL listing (04-41-546465) approximately 400 pounds of ammonium nitrate were spilled due to train derailment on May 30, 1998. Spilled fertilizer was vacuumed up into trucks for transport. The spill was closed by the DATCP on June 4, 1998.

Based upon the historic nature of the spill, the likelihood that the SPILL listings are a duplicate, and recovery of the spill, no further investigation is recommended for both alternatives.

Site Number: **205**
Site Name: **REXNORD INDUSTRIES LLC**
Site Address: **3001 W CANAL STREET, MILWAUKEE, WI**

Database: **2020 COR ACTION, AIRS, AST, AUL, BRRTS, CERCLIS-NFRAP, CORRACTS, CRS, ERNS, ERP, FINDS, MANIFEST, NPDES, SHWIMS, SPILLS, SQG, TIER 2, TRIS, UST, WDS**
Real Estate Requirements: None
Construction Requirements: None

The site is currently Rexnord – Gear Group. The Falk brand is manufactured here. Rexnord manufactures industrial bearings, couplings, gears, modular conveyor belting, and industrial chain. The site is the Falk Corporation, foundry and machine shop on the 1968, 1950, 1927, and 1910 Sanborn maps.

Rexnord Industries LLC is listed in the 2020 COR ACTION database.

Rexnord Industries LLC is listed in the AIRS database. Listed Materials are Natural Gas, Product – Metals, and Other Solvent.

According to the DATCP AST database two (2) 300 gallon waste/used motor oil ASTs, one (1) 1,500 gallon diesel AST and one (1) 500 gallon unleaded gasoline AST are in-use at the site. One (1) 300 gallon diesel AST was closed by removal on February 7, 2007.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Falk Corp No. 6 Fuel Oil AST ERP site (02-41-261132) was added to the WDNR's GIS Registry for residual soil and groundwater contamination, structural impediment, industrial land use restriction, and cap maintenance plan. The Falk Corp ERP site (02-41-526591) was added to the WDNR's GIS Registry for residual soil and groundwater contamination and a cap maintenance plan.

Rexnord Industries LLC is tracked in the BRRTS database as No Action Required. Laboratory results indicate no detect to low level contamination from a Phase II Environmental Site Assessment or similar report as well as UST/AST storage tank closures.

The CERCLIS-NFRAP Site Database includes CERCLIS sites that have been removed from CERCLIS. These may be sites where following an initial investigation, no contamination was found, the sites were cleaned up or the contamination was not serious enough to require Federal Superfund Action. Rexnord Industries LLC is listed on the CERCLIS-NFRAP. The site was discovered on July 24, 1992, the preliminary assessment occurred on March 1, 1993, and the site was archived on December 28, 1995.

Rexnord Industries LLC is listed in the CORRACTS database. The facility underwent a RCRA Facility Investigation (RFI) Imposition on November 28, 2000, and was assigned a low corrective action priority on December 28, 1992.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The Rexnord Industries ERP site (02-41-261132) is listed on the CRS database.

ERNS is a national computer database system that is used to store information concerning the sudden and/or accidental release of hazardous substances, including petroleum into the environment. 3001 West Canal Street is listed on the ERNS database. ERNS records indicate that on December 27, 2004, a sprinkler main broke, flooding a coolant pit and caused a release of 64 ounces of emulsified oil coolant. Responders came to the scene, contained the material and cleaned up the spill.

Review of available ERP files (02-41-261132) indicates the spill or leak is associated with the No. 6 fuel oil AST. According to the September 2004, URS *Former No. 6 Fuel Oil Site Remediation and Post-Remedial Groundwater Monitoring Report,* contaminated soils were identified after oil began seeping to the surface in 1993 near a former AST. Approximately 540 cubic yards of impacted soil and the remainder of the former AST were removed. In December of 2000, the 125,000 AST was removed and a subsurface investigation was completed. Approximately 2,815 tons of contaminated soil and 233 tons of concrete rubble, bricks and other debris was excavated and disposed of at a licensed facility. 14,000 gallons of impacted groundwater was disposed of at a certified facility and 38,100 gallons of lightly impacted groundwater was sent to the Milwaukee Metropolitan Sewerage District. Approximately 170 cubic yards of residual soil contamination (PAHs and DRO) remains in a strip along the south facing wall of the Pattern Shop building. Onsite soils are listed as fine grained sand and silty clay. Groundwater was encountered between four and five feet bgs. Groundwater flow is generally to the east. The ERP site was closed by the WDNR on September 13, 2007, with inclusion on the GIS Registry for residual soil contamination, an engineered barrier or cap maintenance plan, structural impediment to cleanup, and a PAL exemption for benzo(a)pyrene, benzo(b)fluoranthene, chrysene, and naphthalene at MW-1, MW-2, MW-3, MW-4, RS-2, and RS-3.

Review of available ERP files (02-41-526591) indicates the spill or leak is indicates the spill or leak is associated with the Oil Storage Area and a metal chips/turnings storage bin. According to the November 2006 ENSR Corporation *Site Characterization, Remedial Action, & Closure Report,* contaminated soils were identified during a geotechnical investigation to extend a room and walls around the uncovered, bermed oil storage area adjacent to the existing building. The remedial action included the removal of approximately 280 tons of contaminated soils located with a buried concrete containment structure. The structure was then filled with foundry sand and used as a footing for the new onsite building. Onsite soils

are reported as foundry sand to approximately five feet bgs with native clay to 15 feet bgs. Groundwater was encountered between five and six feet bgs. Groundwater flow is generally to the south/southeast. The Oil Storage Area is located in the southwest corner of the property. The ERP site is listed as open and is under WDNR jurisdiction.

Review of available ERP files (02-41-528895) indicates the spill or leak associated with the Keyseater Area. According to the ENSR Corporation prepared *Notification for Hazardous Substance Discharge*, foundation water and quench oil were identified under the building floor in the keyseater area. DRO, PAH, and free product was found during site investigation activities. The ERP site is listed as open and is under WDNR jurisdiction.

Review of available ERP files (02-41-529293) indicates the spill or leak is associated with a utility trench at the site. According to the ENSR Corporation prepared *Notification for Hazardous Substance Discharge*, contaminated soil and groundwater were identified while trenching for a natural gas and fire suppression (water) utility. The ERP site is listed as open and is under WDNR jurisdiction.

Review of available ERP files (02-41-556857) indicates the spill or leak is associated with an excavation at the site. According to the GZA GeoEnvironmental prepared *Notification for Hazardous Substance Discharge*, limited cutting oil impacts were encountered in the building while completing renovation activities. A thin layer of cutting oil was noted floating on groundwater. No other information is located within the file. The ERP site is listed as open and is under WDNR jurisdiction.

Rexnord Industries LLC is listed on the FINDS database under WI-ESR, AFS, NEI, TRIS, RCRA, Criteria and Hazardous Air Pollutant Inventory.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site between 2004 and 2010.

Rexnord Industries LLC is listed on the NPDES. The facility permit number is 241008240.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Very Small, an active Hazardous Waste Generator – Small, an inactive Hazardous Waste Generator – Large, an unknown Landfill Unclassified, an inactive Waste Registry Site, an inactive Hazardous Waste Transporter – Chemical, an active Hazardous Waste Report Certifier, and an active Hazardous Waste Report Preparer. Listed wastes include: D001 Non-Listed Ignitable Wastes, D005 Barium, D006 Cadmium, D035 Methyl Ethyl Ketone, F003 Spent Non-Halogenated Solvents, F005 Spent Non-Halogenated Solvents, and LABP Lab Pack Waste.

According to the SPILL listing (04-41-549983) an explosion of propane due to unknown causes resulted in fire and multiple injuries on December 6, 2006. A cleanup contractor was hired. The spill was closed by the WDNR on April 21, 2008.

According to the SPILL listing (04-41-545183) approximately 60 ounces of machine coolant were spilled due on December 27, 2004. The storm sewer and surface water was affected. The spill was contained. The spill was closed by the WDNR on June 16, 2008.

Rexnord Industries LLC is listed as a SQG with violations. The site is historically listed as a LQG on March 1, 1990, March 1, 1994, May 9, 1996, October 29, 1998, and March 22, 2000, and as a SQG on August 8, 2001, and March 31, 2006; and as a CESQG on March 17, 2003. Listed wastes included D001 Ignitable Hazardous Wastes, D005 Barium, D006 Cadmium, D035 Methyl Ethyl Ketone, F003 Spent Non-Halogenated Solvents, F005 Spent Non-Halogenated Solvents, and Lab Pack.

TIER 2 is a database of facilities which store or manufacture hazardous materials that submit a chemical inventory report. According to this database the site has a maximum amount of 22,000 pounds of d-limonene, 3,064 pounds of sulfuric acid, 25,000 pounds of casibar alloy, 25,550 pounds of 150/200/300 catalyst, 12,370 pounds of DTE 25 lube oil, 72,000 pounds of UNCON E Polymer Quenchant, 60,000 pounds of calcine aluminum, 275,000 pounds of silica sand-incast 50, 40,000 pounds of 178 Koverall Topping Compound, 48,000 pounds of Noxite, 30,000 pounds of 200 Cast-Clean Catalyst, 82,500 pounds of black iron oxide, 30,000 pounds of cereal binder, 62,000 pounds of ferrochromium-low carbon, 15,000 pounds of Kleerkut 215 cutting oil, 51,000 pounds of Rister Topping Compound, 25,000 pounds of Zircon Flour, 50,000 pounds of ferrochrome, 28,000 pounds of propylene carbonate, 312,500 pounds of Quench All 110, 26,000 pounds of western pebble lime, 90,500 pounds of clean cast binder, 476,000 pounds of propane 54,500 pounds of Volclay Western Bentonite, 3,315,000 pounds of carbon and alloy steel, 40,000 pound of nitrogen, 48,000 pound of silica manganese, 42,000 pounds of graphite electrodes, 40,000 pounds of Magnamix 95-Guntapite, 26,000 pounds of Ferrosilicon 50%, 18,000 pounds of Flourspar, 16,000 pounds of Hypercal, 52,000 pounds of Magnamix, 41,500 pounds of oxygen-refrigerated, 84,000 pounds of Hevi Sand – Iron Chromite, 44,000,000 pounds of sand and/or gravel, 13,000 pounds of Mobil DTE Hydraulic Oil, 50,000 pounds of calcium chloride road salt, 18,000 pounds of graphite, and 15,000 pounds of cutting and grinding oils onsite.

Rexnord Industries LLC is listed on the Toxic Chemical Release Inventory System (TRIS) database. TRIS identifies facilities which release toxic chemicals to the air, water, and land in reportable quantities under SARA Title III Section 313. The following compounds are reported at the site: chromium, manganese, and nickel.

According to the DATCP UST database one (1) 1,111 gallon fuel oil UST was closed by removal on January 1, 1980; one (1) 8,000 gallon diesel UST and one (1) 1,000 gallon unleaded gasoline UST were closed by removal on July 7, 2004; and one (1) 6,800 gallon fuel oil UST was closed by filling with inert material on April 4, 2008.

WDS is a WDNR database listing of all sites where solid or hazardous wastes may have been deposited. Rexnord Industries LLC is listed in the WDS database. The site is listed as an unlicensed waste disposal site.

Based upon the distance from the planned project improvements (more than 250 feet south), and direction of groundwater flow to the east or southeast toward the Menomonee River, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **207**
Site Name: **FORMER RED STAR YEAST**
Site Address: **2702 W GREVES STREET, MILWAUKEE, WI 53208**

Database: AST, ERNS, FINDS, ICIS, LUST, MANIFEST, NONGEN, RMP, SHWIMS, SPILLS, UST
Real Estate Requirements: This property is currently owned by WisDOT
Construction Requirements: Anticipated - Not Finalized

This site is currently undeveloped and owned by WisDOT. It is associated with Site 210. The site was formerly Red Star Yeast. It is also listed as Universal Foods and Lesaffre Yeast.

According to the DATCP AST database one (1) 20,000 gallon fuel oil AST is in-use at the site.

ERNS is a national computer database system that is used to store information concerning the sudden and/or accidental release of hazardous substances, including petroleum into the environment. 2702 W Greves Street is listed on the ERNS database. ERNS records indicate that on September 24, 1992, approximately one gallon of anhydrous ammonia leaked from a valve on an ammonia solution line. On December 9, 1994, a leak at a connection to a chlorine cylinder was reported. The fire department was deployed and the leak secured. On December 28, 1998, 19,000 pounds of sodium hydroxide was spilled from and AST where the valve was either left open or failed. The material was piped directly to the sanitary sewer. On January 27, 1999, a supply tank overfilled a smaller tank when the high level fill valve failed and approximately 50 gallons of phosphoric acid was spilled into the sanitary sewer. On December 21, 1999, an O ring on a check valve failed causing the release of approximately 200-300 pounds of anhydrous ammonia, the material was contained and the room vented to atmosphere. On April 23, 2001, an unknown amount of concentrated sulfuric acid was spilled into the sanitary sewer due to a leaking flange or gasket. The tank was pumped out and flushed with water. On May 2, 2001, an unknown amount of anhydrous ammonia was released based on a report of low ammonia in a generator. A contractor was hired to look for leaks in the ammonia system.

Lesaffre Yeast Corp is listed on the FINDS database under WI-ESR, AFS, NEI, TRIS, RCRA, Hazardous Waste Biennial Reporter, RMP, and ICIS.

ICIS includes information from the National Enforcement and Compliance Program and the National Pollutant Discharge Elimination System (NPDES) program. Lesaffre Yeast Corp is listed in the ICIS database.

Review of available LUST files (03-41-001990) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the February 27, 1992, Sigma Environmental Services, Inc., *A Report of Underground Storage Tank Closure Assessments at Universal Foods Corporation*, contaminated soils were identified during the removal of two 40,000 gallon fuel oil USTs and one 550 gallon diesel UST. Closure samples indicated that no release from the former USTs occurred. Onsite soils are reported as silty clays. Groundwater was not encountered. The LUST site was closed by the WDNR on August 1, 1995.

According to the July 2008, RMT, Inc, *Supplemental Phase 1 Hazardous Materials Assessment and Phase 2 Investigation*, a Phase 1 and Phase 2 were conducted prior to purchase of the site by the WisDOT. Native soil at the site includes sand, silt, and clay. Organic material and fill including sand, gravel, and black cinders was encountered in several borings. Bedrock may have been encountered based upon refusal on the northeastern corner of the site at a depth of 6 feet bgs. Low level soil and groundwater contamination was encountered and is likely associated with the industrial waste type material (black cinders) in the fill. The WDNR was notified of the results of the investigation and did not open a new ERP based upon the results and agreed that the low level contamination was associated with the fill and not a release to the environment. Two 12,000 gallon petroleum USTs are suspected to still exist at the site.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site between 2004 and 2006.

Lesaffre Yeast Corp is listed as a NONGEN with no violations. The site is historically listed as a LQG on February 24, 2006, February 26, 2004, March 1, 2000, and October 29, 1998; and as a SQG on March 1, 2001, February 20, 2001, and April 3, 1989. There are no listed wastes.

Red Star Yeast and Products is listed as having a Risk Management Plan (RMP). Lesaffre Yeast Corporation is listed as having a RMP.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Small and an inactive Hazardous Waste Generator – Large. Listed wastes include: D000 Non-Listed Toxic Wastes, D001 Non-Listed Ignitable Wastes D002 Non-Listed Corrosive Wastes, D009 Mercury, D010 Selenium, F001 Spent Halogenated Solvents Used in Degreasing, F003 Spent Non-Halogenated Solvents, and F005 Spent Halogenated Solvents.

According to the SPILL listing (04-41-048403) approximately 50 gallons of acid were spilled due to faulty valve on May 6, 1993. The acid was neutralized with soda ash then flushed down the storm sewer. The spill is listed as historic and is under WDNR jurisdiction.

According to the SPILL listing (04-41-047953) approximately 30 gallons of petroleum were spilled due overfilling of a storage tank on December 17, 1992. The petroleum was contained and recovered using absorbents. The spill is listed as historic and is under WDNR jurisdiction.

According to the SPILL listing (04-41-550303) an unknown amount of ammonia was released into the air due to a leak in the ammonia system on May 2, 2001. The spill was closed by the WDNR on June 1, 2001.

According to the SPILL listing (04-41-550129) an unknown amount of acid was spilled due to a ruptured flange on a storage tank on April 23, 2001. The acid was moved to a different tank. The sanitary sewer was affected. The spill was closed by the WDNR on October 16, 2003.

According to the SPILL listing (04-41-172798) an unknown substance was released on August 11, 1997. The cause is unknown and is under investigation, possibly a sewer leak or faulty turbidity sensor. The spill was closed by the WDNR on December 23, 2008.

According to the SPILL listing (04-41-180091) an unknown amount of waste water spilled due to a potential cooling coil leak into a fermenter on September 9, 1997. The spill was contained. The spill was closed by the WDNR on December 23, 2008.

According to the SPILL listing (04-41-180101) approximately 120 gallons of acid were spilled from a live breach from a bulk storage tank on September 12, 1997. The acid was contained and the sanitary sewer was affected. The spill was closed by the WDNR on December 3, 1997.

According to the SPILL listing (04-41-226560) approximately 48,000 gallons of food product were spilled from an equipment failure on October 1, 1998. No actions were taken to clean the spill. The spill was closed by the WDNR on October 1, 1998.

According to the SPILL listing (04-41-254975) approximately 49 gallons of food product were spilled on November 21, 1999. Absorbents were used to clean the spill. The spill was closed by the WDNR on January 5, 2000.

According to the SPILL listing (04-41-047650) approximately one gallon of ammonia was spilled from a leaking valve on September 24, 1992. No actions were taken to clean the spill. The spill is listed as historic and is under WDNR jurisdiction.

According to the SPILL listing (04-41-049038) approximately 60,000 pounds of food product was spilled from a broken valve on a railroad car on October 21, 1993. The spill was cleaned up using absorbents. The sanitary sewer was affected. The spill is listed as historic and is under WDNR jurisdiction

According to the DATCP UST database two (2) 40,000 gallon fuel oil USTs and one (1) 1,000 gallon diesel UST were closed by removal on December 10, 1991. According to the July 2008, RMT, Inc, *Supplemental Phase 1 Hazardous Materials Assessment and Phase 2 Investigation*, several tanks were found at the Microfilm Records Department of the City of Milwaukee. The report includes two (2) 12,000 gallon oil USTs and one (1) 350,000 gallon molasses AST.

Himalayan attempted to interview onsite personnel at Site 207, no response was obtained.

This site has already been acquired by WisDOT. A Phase 2.5 Subsurface Investigation is recommended for both alternatives to determine specific waste disposal requirements in relation to construction requirements.

Site Number: **208**
Site Name: **THIELE TANNING COMPANY**
Site Address: **123 N 27TH STREET, MILWAUKEE, WI 53208**

Database: AIRS, ERNS, FINDS, NPDES, SPILLS, TIER 2, TRIS
Real Estate Requirements: None - Not Finalized
Construction Requirements: Anticipated – Alternative 2 Only - Not Finalized

The site is currently Thiele Tanning Company, which produces leather used in leather goods.

Thiele Tanning Company is listed in the AIRS database. Listed Materials are Natural Gas and Product – Agriculture.

ERNS is a national computer database system that is used to store information concerning the sudden and/or accidental release of hazardous substances, including petroleum into the environment. 123 North 27th Street is listed on the ERNS database. ERNS records indicate that on February 19, 1993, an overflow pipe was clogged and spilled 500 gallons of wash water containing lime. 150 gallons of wash water was spilled into the Milwaukee River. The material was pumped back into the system. On March 6, 2006, an exhaust stack caught on fire due to an unknown cause and three barrels of motor oil were damaged and one barrel was spilled onto the floor. The fire was put out by the fire department.

Thiele Tanning Company is listed on the FINDS database under WI-ESR, AFS, NEI, TRIS, and Criteria and Hazardous Air Pollutant Inventory.

Thiele Tanning Company LLC is listed on the NPDES. The facility permit number is 241042670.

According to the SPILL listing (04-41-048153) approximately 500 gallons of wastewater was spilled due to a tank overflow on February 19, 1993. The surface water was affected. The spill is listed as historic and is under WDNR jurisdiction.

According to the SPILL listing (04-41-549467) approximately 10 gallons of engine waste oil were spilled due to a fire melting a storage barrel on March 6, 2006. The spill was contained and cleaned up using absorbents. The spill was closed by the WDNR on March 30, 2006.

TIER 2 is a database of facilities which store or manufacture hazardous materials that submit a chemical inventory report. According to this database the site has a maximum amount of 10,000 pounds of propane, 50,000 pounds of sodium sulfydrate, 80,000 gallons of chromium III hydroxide sulfate, 33,500 pounds of sulfuric acid 66’, 10,800 pounds of ferric chloride solution, and 50,000 pounds of lime-calcium hydroxide onsite.

Thiele Tanning Company is listed on the Toxic Chemical Release Inventory System (TRIS) database. TRIS identifies facilities which release toxic chemicals to the air, water, and land in reportable quantities under SARA Title III Section 313. The following compounds are reported at the site: chromium, and formic acid.

Himalayan contacted Jordan Proefrock of Thiele Tanning Company and conducted an interview related to Site 208. Mr. Proefrock indicated that the property has been utilized by Thiele Tanning Company since 1944 and was previously used by Milwaukee Marble Company. Mr. Proefrock stated that hides are completely processes (including chromium application) on site.

Based upon construction requirements for the 27th Street Bridge, a Phase 2 Subsurface Investigation is recommended for Alternative 2. No further investigation is recommended for Alternative 1 (over 115 feet south) unless real estate or construction requirements change.

Site Number: **210**
Site Name: **RED STAR YEAST**
Site Address: **2612 W GREVES STREET, MILWAUKEE, WI 53208**

Database: LUST
Real Estate Requirements: Site Acquisition – Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is currently Red Star Yeast. The site is associated with Site 207. According to the July 2008, RMT, Inc, *Supplemental Phase 1 Hazardous Materials Assessment and Phase 2 Investigation*, the site contains the New Active Dry Yeast Building and the Maintenance Building. The site is listed as unknown building on the 1968 Sanborn, Seamans Motor Company on the 1951 Sanborn, and blacksmith and machine shop on the 1910 Sanborn map.

Review of available LUST files (03-41-001990) indicate a spill or leak from the UST system resulted in soil contamination from petroleum at the Former Red Star Yeast property located at 2702 W Greves Street (Site 207) and not at 2612 W Greves Street, where the BRRTS location marker is set. According to the February 27, 1992, Sigma Environmental Services, Inc., *A Report of Underground Storage Tank Closure Assessments at Universal Foods Corporation*, contaminated soils were identified during the removal of two 40,000 gallon fuel oil USTs and one 550 gallon diesel UST. Closure samples indicated that no release from the former USTs occurred. Onsite soils are reported as silty clays. Groundwater was not encountered. The LUST site was closed by the WDNR on August 1, 1995.

Himalayan attempted to interview onsite personnel at Site 210, no response was obtained.

Based upon the current and former use of the site as a commercial facility with an onsite maintenance building, the likelihood that some spill occurrences that were documented under the 2702 address occurred at this site, and known historical fill at Site 207, a Phase 3 Subsurface Investigation is recommended for both alternatives prior to property acquisition.

Site Number: **211**
Site Name: **D.R. DIEDRICH & COMPANY**
Site Address: **2615 W GREVES STREET, MILWAUKEE, WI 53208**

Database: FINDS, NONGEN, NPDES, SHWIMS, SPILLS, TIER 2, TRIS, UST
Real Estate Requirements: None - Not Finalized
Construction Requirements: Anticipated – Alternative 2 Only - Not Finalized

The site is currently D.R. Diedrich & Company, a manufacturer of tanned leather. The site is also listed as Gebhardt Vogel Leather, and Al Gebhardt Co – W Greves Street.

Gebhardt Vogel Leather is listed on the FINDS database under AFS, WI-ESR, NEI, TRIS, RCRA, and Criteria and Hazardous Air Pollutant Inventory.

Gebhardt Vogel Leather is listed as a NONGEN. The site is historically listed as a LQG on August 18, 1980, March 1, 1990, March 1, 1992, March 1, 1994, March 1, 1996, October 29, 1998, and March 1, 2000. Listed wastes include: D000 Not Defined, D001 Ignitable Hazardous Wastes, F003 Spent Non-Halogenated Solvents, K053 Not Defined, K054 Not Defined, K055 Not Defined, and K058 Not defined.

D.R. Diedrich and Company is listed on the NPDES. The facility permit number is 241038490.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Large. There are no listed wastes.

According to the SPILL listing (04-41-047923) approximately 1,000 gallons of other industrial chemicals were spilled due to an open drain valve on December 10, 1992. The sanitary sewer was affected and absorbents were used to clean up the spill. The spill is listed as historic and is under WDNR jurisdiction.

According to the SPILL listing (04-41-191707) approximately 25 gallons of other industrial chemicals were spilled during bulk unloading due to an overfill on November 15, 1994. The spill was contained and recovered. Absorbents were used to clean up the spill. The spill was closed by the WDNR on November 15, 1994.

TIER 2 is a database of facilities which store or manufacture hazardous materials that submit a chemical inventory report. According to this database the site has a maximum amount of 14,250 pounds of sodium bisulfate, 67,000 pounds of sulfuric acid, 58,000 gallons of manganese sulfate, 125,000 pounds of calcium hydroxide, 59,500 pounds of Erhavit A20 or Hydroassist A, 53,9000 pounds of sodium carbonate, 50,000 pounds of carbon dioxide, 12,200 pounds of glutaraldehyde, 60,000 pounds of nonyl phenol ethoxolate, 340,000 pounds of sodium chloride, 12,000 pounds of sodium hydroxide, 52,800 pounds of Eureka 975-ES, 42,500 pounds of Prinol CRC, 74,000 pounds of sodium hydrosulfide, 75,460

pounds of sodium formate, 337,000 pounds of chromium III hydroxide sulfate, 48,200 pounds of sodium bicarbonate, 67,200 pounds of ammonium sulfate, 2,700 pounds of 2-octyl-4-isothiazolinone, 12,000 pounds of R-chloro-2-methylphenol, sodium salt, 123,000 pounds of magnesium oxide, 58,200 pounds of Prinol CRC, 16,000 pounds of naphthalene sulfonic acid, 31,700 pounds of Tannit VWL-R, 42,000 pounds of basic chromium III sulfate, 8,400 pounds of sodium metabisulfite, 8,000 pounds of 4-chloro-3-methylphenol, sodium salt, and 17,600 pounds of Cromeno VL 2235.

D R Diedrich and Company LTD is listed on the TRIS database. TRIS identifies facilities which release toxic chemicals to the air, water, and land in reportable quantities under SARA Title III Section 313. The following compounds are reported at the site: chromium and ammonia.

According to the DATCP UST database one (1) 500 gallon diesel UST was abandoned without product on May 1, 1982.

Himalayan attempted to interview onsite personnel at Site 211, no response was obtained.

Based upon the anticipated construction requirements for the 27th Street Bridge, a Phase 2 Subsurface Investigation is recommended for Alternative 2. No further investigation is recommended for Alternative 1 (over 110 feet south) unless real estate or construction requirements change.

Site Number: **212**
Site Name: **25TH STREET AND CANAL STREET BIORETENTION**
Site Address: **199 N 25TH STREET, MILWAUKEE WI**

Database: AUL, CRS, ERP, UST
Real Estate Requirements: None
Construction Requirements: None

This site is partially a bioretention pond and part is the City of Milwaukee DPW- Buildings and Fleet Division.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The 25th Street and Canal Street Bioretention Facility ERP (02-41-547332) site was added to the WDNR's GIS Registry for residual soil contamination, industrial land use restriction, and an engineered cover or barrier.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The 25th Street and Canal Street Bioretention Facility ERP (02-41-547332) site is listed on the CRS database.

Review of available ERP files (02-41-547332) indicate a spill or leak is associated with the former use of the site and site fill. According to the June 16, 2006, Sigma Environmental Services, Inc., *Summary of Site Investigation Results and Remedial Action Plan*, contaminated soils were identified during site development activities. The top six feet of soil is reported as non-native industrial type fill materials and has been impacted by PAHs, RCRA Metals, and VOCs. The site has been covered with an engineered barrier or soil cap. Some soil from this site was used at the Milwaukee Shops site. The soil was managed as low hazard exempt fill and covered following final placement. There is no map of placement area. The ERP site was closed by the WDNR on August 14, 2008, with inclusion on the GIS Registry for residual soil contamination, industrial land use restriction, and an engineered cover or barrier.

According to the DATCP UST database two (2) 2,500 gallon unleaded gasoline USTs and one (1) 1,000 gallon diesel UST are in-use at the site.

Based upon the distance from the planned project improvements (more than 200 feet south), and LUST activity closure, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **213**
Site Name: **CANADIAN PACIFIC RAILROAD**
Site Address: **504 S LAYTON BOULEVARD, MILWAUKEE, WI**

Database: AST, ERP, LUST, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently an active rail yard used by Soo Line Railroad and Canadian Pacific Railroad. This site has historically been railroad ROW.

According to the DATCP AST database one (1) 300 gallon unleaded gasoline AST, one (1) 300 gallon waste/used motor oil AST, one (1) 1,000 gallon waste/used motor oil AST, one (1) 1,500 new oil AST, and one (1) 3,000 gallon diesel AST are in-use at the site. Four (4) 275 gallon fuel oil ASTs were closed by removal on April 24, 1997; one, (1) 100,000 gallon diesel AST and one (1) 275 gallon fuel oil AST were closed by removal on August 28, 1997; one (1) 550 gallon fuel oil AST and one (1) 550 gallon unleaded gasoline AST were closed by removal on November 14, 1997; and two (2) 275 gallon new oil ASTs, one (1) 300 gallon new oil AST, and one (1) 275 gallon diesel AST were closed by removal on November 20, 2003.

Review of available ERP files (02-41-515224) indicate a spill or leak is associated with a diesel spill (04-41-260708) near 16th Street. This area is outside of the ¼ mile FDM search radius. The activity was closed with placement on the GIS Registry with residual soil contamination and Industrial Land Use Restrictions.

Review of available ERP files (02-41-183125) indicate a spill or leak is associated with the barrel storage area and resulted in soil and groundwater contamination from diesel fuel. According to the December 15, 2000, Braun Intertec Corporation, *Wisconsin Department of Natural Resources Case Summary and Close Out Form*, contaminated soils were identified when the site was excavated in order to lay the foundation for the new barrel storage facility. Approximately 140 cubic yards of impacted soils were excavated and disposed of at a licensed facility. Onsite soils are reported as sand, silty sand, and silty clay. Groundwater was encountered between 1 to 6 feet bgs. Groundwater flow is generally to the west. The ERP site was closed by the WDNR on March 6, 2001, with a deed restriction for residual soil contamination and a NR 140 exemption for groundwater.

Review of available ERP files (02-41-001100) indicate a spill or leak is associated with the Barrel Storage Area. This site is in the same location as 02-41-183125 and uses the same closeout documentation. The ERP site was closed by the WDNR on August 5, 2004 with inclusion on the GIS Registry for residual soil and groundwater contamination. A PAL exemption was granted for benzene, benzo(b)fluoranthene, benzo(a)pyrene, and chrysene.

Review of available ERP files (02-41-173165) indicate a spill or leak is associated with the Aboveground Storage Tank Area. According to the December 4, 2001, Braun Intertec Corporation, *Wisconsin Department of Natural Resources Case Summary and Close Out Form,* contaminated soils were identified after the removal of a 100,000 gallon diesel AST in August 1997. Approximately 756 tons of impacted soils were excavated and disposed of at a licensed facility. Onsite soils are reported as sand, silty sand, and silty clay. Groundwater was encountered between 6 to 17 feet bgs. Groundwater flow is generally to the northeast. The ERP site was closed by the WDNR on August 5, 2004, as part of 02-41-001100.

Review of available LUST files (03-41-152873 / 53215123604 and 03-41-494911) indicate a spill or leak from the Lunchroom Heating Oil UST system resulted in soil contamination from petroleum. According to the November 3, 2000, Braun Intertec Corporation *Request for Project Closure,* contaminated soils were identified during the removal of a 2,000 gallon fuel oil UST. Approximately 444 cubic yards of unsaturated contaminated soils are present at the site. Onsite soils are silty sands and fine to medium grained sands over silty clay. Groundwater was encountered between four and eight feet bgs. Groundwater flow is generally to the northeast. The LUST site was closed by the WDSPS on June 26, 2002, with a PAL exemption for naphthalene at MW-1. 03-41-152873 was determined to be the same contamination as 03-41-494911 and was moved to No Action Required on February 2, 2009.

According to the DATCP UST database one (1) 1,000 gallon waste/used motor oil UST was closed by removal on June 13, 1996; and one (1) 2,000 gallon fuel oil UST was closed by removal on April 23, 1997.

Based upon the distance from the planned project improvements (more than 380 feet south) no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **215**
Site Name: **FORMER FRIEDA CORPORATION**
Site Address: **333 N 25TH STREET, MILWAUKEE, WI**

Database: LUST, SPILLS, UST, WRRSER
Real Estate Requirements: Site Acquisition – Not Finalized
Construction Requirements: Anticipated - Not Finalized

The site is currently Central Bark Doggy Daycare. This site was formerly Frieda Corporation and the Milwaukee Film Center. The site is a safety film storage and shipping on the 1969 Sanborn, undeveloped on the 1951 Sanborn, and a store and two dwellings on the 1910 Sanborn map.

Review of available LUST files (03-41-001198) indicate a spill or leak from the UST system resulted in soil and groundwater contamination from petroleum. According to the February 17, 1995, Fluid Management, Inc., *Closure Assessment Report*, contaminated soils and groundwater were likely from a release from a former10,000 gallon diesel UST at the site. Approximately 610 tons of contaminated soils were excavated and disposed of at a licensed facility. Closure samples indicate residual contamination (282 ppm DRO) on the sidewall of the excavation near the footing of the building north of former well MW-2. Onsite soils consist of a sandy clay layer approximately 2 feet thick that overlies a clay unit. Bedrock was encountered in MW-5 at a depth of 16 feet bgs. Groundwater was encountered between 8 and 20 feet bgs. Flow is reported to the southeast. The LUST site was closed by the WDNR on June 27, 1995.

According to the SPILL listing (04-41-038065) a box broke on the loading dock on July 15, 1980. Absorbents were used to clean up the spill. The spill is listed as historic and is under WDNR jurisdiction.

According to the SPILL listing (04-41-038113) there was a broken container on August 29, 1980. No actions were taken to clean up the spill. The spill is listed as historic and is under WDNR jurisdiction.

According to the DATCP UST database one (1) 15,000 gallon fuel oil UST and one (1) 550 gallon waste/used motor oil UST was closed by removal on February 28, 1995; and one (1) 9,000 gallon fuel oil UST was closed by removal on March 1, 1995.

The site is listed on the WI WRRSER as having a MEDIUM priority.

Himalayan contacted Mark McCann of the Milwaukee Film Center and conducted an interview related to Site 215. Mr. McCann indicated that the site was purchased in 2006 and has been used as a dog day care facility since 2007. He stated that the site was formerly used by Milwaukee Film Center. He indicated that tanks were removed prior to purchase and their former locations were unknown.

Based upon site acquisition requirements, known residual contamination (282 ppm DRO) near the building foundation, and the potential for additional contamination to be present underneath the existing building foundation, a Phase 3 Subsurface Investigation is recommended for both alternatives.

Site Number: **216**
Site Name: **FORMER BADGER STATE TANNING**
Site Address: **305-321 N 25TH STREET, MILWAUKEE, WI 53233**

Database: AUL, BROWNFIELDS, BRRTS, CESQG, CRS, FINDS, LUST, MANIFEST, SHWIMS
Real Estate Requirements: Partial Acquisition – Alternative 1 Only – Not Finalized
Site Acquisition – Alternative 2 Only – Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is currently Insulation Technologies, Inc. (INTEC), an insulation, window, door, and siding service provider. The site was formerly Badger State Tanning. The site is a wholesale pipe, valves, and fittings facility and Badger State Tanning corporation on the 1969 Sanborn, tractor and road machinery storage and repairing and Seaman Motors Company on the 1951 Sanborn, and undeveloped on the 1910 Sanborn map.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Former Badger State Tanning LUST site (03-41-534052) was added to the WDNR's GIS Registry for residual soil contamination.

Former Badger State Tanning is listed on BROWNFIELDS because the WDNR issued a General Liability Clarification Letter. Lead, arsenic, and PAHs which exceed their respective NR 720 RCLs for industrial properties are located at the site. The contamination is likely associated with the pervasive fill material in the area. The site meets the statutory definition of a landfill. Prior to any redevelopment, the owner will need to apply for an Exemption Application to build on a historic fill site or licensed landfill.

Former Badger State Tanning is tracked in the BRRTS database (07-41-543185) as General Property for a General Liability Clarification Letter and as No Action Required for Licensed Landfill or Historic Fill Site.

The Former Badger State Tanning Corp is listed as a CESQG with no violations. The site was historically listed as a LQG on August 8, 1980. Listed wastes include K053 Not Defined, K054 Not Defined, and K056 Not Defined.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The Former Badger State Tanning LUST site is listed on the CRS database.

Former Badger State Tanning is listed on the FINDS database under WI-ESR, TRIS, RCRA, and PCS.

Review of available LUST files (03-41-534052/53233250121) indicate a spill or leak from a 550 gallon leaded gasoline UST resulted in soil contamination. According to the February 10, 2005, Giles Engineering Associates, Inc., *Site Investigation, Remediation Documentation and Request for Case Closure*, contaminated soils were identified after the removal of a 550 gallon leaded gasoline UST and a 6,000 gallon mineral oil UST. Approximately 47 tons of contaminated soils were excavated from the 550 gallon leaded gasoline UST cavity and disposed of at a licensed facility. Closure samples indicate residual benzene contamination on both the east and west walls of the excavation. Onsite soils are reported as 8 inches of concrete and base course sand and gravel fill material over fill generally consisting of silty clay and fine to coarse sand and gravel to a depth of approximately 14 feet. The fill is underlain by organic silt or peat. Groundwater was estimated at approximately 26 feet bgs. The LUST site was closed by the WDSPS on May 4, 2005, with inclusion on the GIS Registry for residual soil contamination.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site in 2005.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Large and an active Hazardous Waste Generator – Very Small. There are no listed wastes.

Himalayan contacted Jaime Hurtado of Almacen Development LLC and conducted an interview related to Site 216. Mr. Hurtado indicated that he has owned the property since 2003 and the site is currently used as Intec, an insulation manufacturing company. He stated that the site was previously used as a tannery and complete tanning processes (including chromium application) were conducted on site. Mr. Hurtado indicated that two tanks were located near the filtering plant and were removed previously. He stated that he was aware that ash and slag fill was used on the site and that heavy metals were detected on the property.

Based upon known soil and groundwater contamination at the site, pervasive fill material in the area, historical use as a tannery, and acquisition requirements, a Phase 3 Subsurface Investigation is recommended for both alternatives.

Site Number: **217**
Site Name: **FORMER WEST SIDE MANUFACTURED GAS PLANT**
Site Address: **N 25TH STREET AND MOUNT VERNON AVENUE, MILWAUKEE, WI 53201**

Database: EDR MANUFACTURED GAS PLANTS

The site is listed as Hamilton Test Systems W Side MGP and Milwaukee Gas Light Company / Wisconsin Electric Power Company in EDR's Manufactured Gas Plants Database. The site outline represents the entirety of the former Manufactured Gas Plant. Inspection of historical aerial photographs confirms the presence of four manufactured gas ASTs (possibly million gallon capacities) at the site between 1937 and 1956. No tanks are apparent on the 1963 aerial photograph.

The former West Side Manufactured Gas Plant (MGP) site was formerly located in the area south of IH 94, north of the Menomonee River, east of 25th Street, and west of 17th Street in the City of Milwaukee. The former West Side MGP was split into separate BRRTS activities to allow for inclusion of the now separate properties on the GIS Registry. The former West Side MGP includes the following sites: 218, 219, 220, and 221.

According to the Natural Resource Technology prepared *GIS Registry* documents, material contaminated with MGP waste remains in the soil beneath the existing pavement and earthen cover. Material contaminated with MGP waste may include Prussian blue-stained wood chips or soil (cyanide containing), coal tars (BTEX and PAH containing) and MGP structures such as sump crocks and pipes containing residual MGP waste.

Historical fill material is also located at the site. The historical fill is described as soils not impacted by MGP related wastes that are present in the shallow subsurface and may be mixed with foundry sands, coal fines, coal ash, slag, coke, construction and demolition debris and other solid wastes. This historical fill may contain BTEX, PAHs, lead, and arsenic.

Impacted soil may be encountered within the ROW of N. 25th Street, W. Greves Street, W. Saint Paul Avenue and the Canadian Pacific Railroad south of W. Greves Street.

No Further Investigation is recommended for Site 217. Recommendations for further investigation are included with the separate parcels associated with this Site.

Site Number: **218**
Site Name: **BADGER TRUCK CENTER INC**
Site Address: **2326 W SAINT PAUL AVENUE, MILWAUKEE, WI 53201**

Database: AUL, CESQG, CRS ERP, FINDS, LUST, MANIFEST, SHWIMS, UST
Real Estate Requirements: Site Acquisition – Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is part of the former West Side Manufactured Gas Plant. It is associated with the following sites: 217, 219, 220, and 221. The site is currently a truck sales and service facility. Inspection of historical aerial photographs confirms the presence of two ASTs (possibly million gallon capacities) at the site, prior to the late 1950's. These ASTs held manufactured gas and were removed from the site during the construction of IH 94 along the north side of the property. The site is truck sales and service on the 1969 Sanborn and Milwaukee Gas Light Company on the 1951 Sanborn map.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The W Side MGP ERP site (02-41-557829) was added to the WDNR's GIS Registry for residual soil contamination, an impervious barrier or the contaminated area and land use is restricted to commercial/industrial based upon vapor intrusion.

The Badger Truck Center Inc. is listed as a CESQG with no violations. The site was historically listed as a CESQG on May 5, 1998 and January 11, 1999. Listed wastes include D001 Ignitable Hazardous Wastes.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The W Side MGP ERP site is listed on the CRS database.

Review of available ERP files (02-41-557829) indicates soil and groundwater contamination at the site is associated with the former West Side Manufactured Gas Plant. Soil contamination on the property is generally located in the area of the former gas holding tanks. Material contaminated with MPG waste may include Prussian Blue-stained wood chips or soil (cyanide containing), coal tars (BTEX and PAH containing) and MGP structures such as sump crocks and pipes containing residual MGP waste. Impacted soil may be encountered within the ROW of N. 25th Street, W. Greves Street, W. Saint Paul Avenue and the Canadian Pacific Railroad south of W. Greves Street. The ERP site was closed by the WDNR on March 12, 2012, with inclusion on the GIS Registry residual soil contamination, an impervious barrier or the contaminated area and land use is restricted to commercial/industrial based upon vapor intrusion.

Badger Truck Center Inc. is listed on the FINDS database under WI-ESR and RCRA.

Review of available LUST files (03-41-001356) indicate a spill or leak from the UST system resulted in soil contamination from engine waste oil. No file was available at the WDNR for review. The LUST site was closed by the WDNR on September 27, 1991.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site in 2004.

The SHWIMS database lists the site as an active Hazardous Waste Generator – Very Small. There are no listed wastes.

According to the DATCP UST database one (1) 500 gallon waste/used motor oil UST, one (1) 1,000 gallon other content UST, and one (1) 1,000 gallon chemical UST were closed by removal on October 31, 1990.

Himalayan contacted John Schlagenhauf of 2326 LLC and conducted an interview related to Site 218. Mr. Schlagenhauf indicated that he has owned the property since 1965 and it is utilized for auto and truck repair. He stated that the site was previously part of a manufactured gas plant and former tanks and contamination in soils was removed from the site by We Energies.

Based upon site acquisition requirements, known soil contamination from the former MGP, and current use as a truck dealer and service facility, a Phase 3 Subsurface Investigation is recommended for both alternatives.

Site Number: **219**
Site Name: **FORMER DMV EMISSIONS STATION**
Site Address: **2401 W SAINT PAUL AVENUE, MILWAUKEE, WI 53233**

Database: AUL, CRS, ERNS, ERP, SPILLS
Real Estate Requirements: Site Acquisition – Alternative 2 Only – Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is currently unoccupied. It was formerly a Department of Motor Vehicles (DMV) Emission Station. This site is part of the former West Side Manufactured Gas Plant. It is associated with the following sites: 217, 218, 220, and 221. Inspection of historical aerial photographs confirms the presence of two manufactured gas ASTs (possibly million gallon capacities) at the site between 1937 and 1956. No tanks are apparent on the 1963 aerial photograph. The site is truck storage and Milwaukee Gas Light on the 1969 Sanborn and Milwaukee Gas Light Company on the 1951 and 1910 Sanborn maps. There are two manufactured gas ASTs on the 1910 and 1951 maps and no tanks on the 1969 map.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The W Side MGP ERP site (02-41-557819) was added to the WDNR's GIS Registry for residual soil contamination, an impervious barrier or the contaminated area and land use is restricted to Commercial/Industrial based upon Vapor Intrusion.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The W Side MGP ERP site is listed on the CRS database.

ERNS is a national computer database system that is used to store information concerning the sudden and/or accidental release of hazardous substances, including petroleum into the environment. 2401 West Saint Paul Avenue is listed on the ERNS database. ERNS records indicate that on June 7, 2001, a caller stated that dumping has been ongoing and occurs in the evening. The responsible party drains oil from cars, mops the oil into mop buckets and then dumps the oil down the storm sewer.

Review of available ERP files (02-41-557819) indicates soil and groundwater contamination at the site is associated with the former West Side Manufactured Gas Plant. Soil contamination on the property is generally located in the area of the former gas holding tanks. Material contaminated with MPG waste may include Prussian Blue-stained wood chips or soil (cyanide containing), coal tars (BTEX and PAH containing) and MGP structures such as sump crocks and pipes containing residual MGP waste. Impacted soil may be encountered within the ROW of N. 25th Street, W. Greves Street, W. Saint Paul Avenue and the Canadian Pacific Railroad south of W. Greves Street. The ERP site was closed by the WDNR on March 12, 2012, with inclusion on the GIS Registry residual soil contamination, an

impervious barrier or the contaminated area and land use is restricted to commercial/industrial based upon vapor intrusion.

According to the SPILL listing (04-41-518426) that an unknown quantity of antifreeze, transmission fluid, and engine waste oil was drained from cars, mopped into buckets and dumped down the storm sewer on June 7, 2001. No actions were taken to clean up the spill. The spill was closed by the WDNR on November 20, 2003.

Himalayan contacted Raymond Kubacki and conducted an interview related to Site 219. He indicated that he has owned the site for approximately 25 years and the vehicle emissions testing building on site has been unused since 2012. He indicated that the property was previously part of a manufactured gas plant and former tanks were removed from the site. He additionally indicated that environmental testing was conducted by the state approximately 6 months ago.

Based upon site acquisition requirements and known soil and groundwater contamination from MGP waste, a Phase 3 Subsurface Investigation is recommended for Alternative 2. The Phase 3 should include sampling along the eastern border (Greves Street) for offsite contamination from Site 221. Based upon construction requirements in W Saint Paul Avenue and known contamination in the ROW, a Phase 2.5 is recommended for Alternative 1.

Site Number: **220**
Site Name: **FORMER WEST SIDE MGP / MALLORY PROPERTIES**
Site Address: **200-224 N 25TH STREET, MILWAUKEE, WI 53233**

Database: AST, AUL, BRRTS, CESQG, CRS, ERP, FINDS, LUST, MANIFEST, MANUFACTURED GAS PLANTS, NONGEN (Mallory), SHWIMS, SPILLS, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently 4 Seasons Skate Park of Milwaukee County, and a multi-unit office building. This site is part of the former West Side Manufactured Gas Plant. It is associated with the following sites: 217, 218, 219, and 221. Inspection of historical aerial photographs indicates that the site was used for coal storage in 1937. This site is also listed as 2122 W Mount Vernon Avenue. The site is Milwaukee Gas Light Company on the 1969, 1951, and 1910 Sanborn maps.

Superior Environmental Services operated a Solid Waste Recovery Facility (Recycling) formerly at 218 N 25th Street.

According to the DATCP AST database one (1) 500 gallon waste/used motor oil AST, one (1) 4,000 gallon fuel oil AST, and one (1) 10,000 gallon diesel AST were closed by removal on June 2, 1999; and one (1) 10,000 gallon diesel AST was closed by removal on May 3, 2004.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Hamilton Test Systems W Side MGP ERP site (02-41-000579) was added to the WDNR's GIS Registry for residual soil contamination, an impervious barrier or the contaminated area and land use is restricted to Commercial/Industrial based upon Vapor Intrusion.

The Wisconsin Gas Co – West Side MFG Gas Plant is tracked in the BRRTS database (07-41-555299) as General Property for approval to build on a historic fill site.

The Wisconsin Gas Co – West Side MFG Gas Plant is listed as a CESQG. The site was historically listed as a LQG on April 15, 2004, February 27, 2006, May 25, 2007, and April 29, 2008; and a CESQG on October 21, 1991. There are no listed wastes for this site.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The W Side MGP ERP site is listed on the CRS database.

Review of available ERP files (02-41-000579) indicates soil and groundwater contamination at the site is associated with the former West Side Manufactured Gas Plant. The majority of residual soil contamination on the property is generally located in the northwest corner of the site along 25th Street and the Canadian Pacific Railroad. Additional areas of contamination are found throughout the western half of the site. Material contaminated with MPG waste may include Prussian Blue-stained wood chips or soil (cyanide containing), coal tars (BTEX and PAH containing) and MGP structures such as sump crocks and pipes containing residual MGP waste. Impacted soil may be encountered within the ROW of N 25th Street, W Greves Street, and the Canadian Pacific Railroad south of W Greves Street. The ERP site was closed by the WDNR on March 12, 2012, with inclusion on the GIS Registry residual soil contamination, an impervious barrier or the contaminated area and land use is restricted to commercial/industrial based upon vapor intrusion.

Review of available ERP files (02-41-556251) indicate a spill or leak resulted in contaminated river sediments. According to the July 2004, GeoSyntec Consultants *Site Investigation Report for the Former West Side MGP Facility, Milwaukee, Wisconsin,* Sediment in the adjacent Menomonee River was tested for PVOCs, PAHs, RCRA metals, cyanide and pH. PAHs, lead and mercury were detected above their respective levels of concern for sediment. No further information is available. The ERP site is listed as open and is under WDNR jurisdiction.

The Wisconsin Gas Co – West Side MFG Gas Plant is listed on the FINDS database under WI-ESR, RCRA, and Hazardous Waste Biennial Reporter. Wilinski Enterprises is listed on the FINDS database under RCRA and WI-ESR.

Review of available LUST files (03-41-249574 / 53233255900) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the December 15, 1999, Dakota Environmental *An Underground Storage Tank Site Assessment and Excavation Report for 200 North 25th Street, Milwaukee, Wisconsin,* contaminated soils were identified during the removal of a 3,750 gallon gasoline UST. Approximately 60 tons of contaminated soils were excavated along the piping run and disposed of at a licensed facility. Residual VOCs remain in the area of the product line. The residual contamination may be attributed to the MGP waste located at the site. The LUST site is listed as open. As of July 2013, all open WDSPS files were transferred to the WDNR for oversight.

Review of available LUST files (03-41-249587 / 53233255910) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the November 17, 1999, Dakota Environmental *Site Assessment Report for a 20,000 Gallon Diesel UST, 210 North 25th Street, Milwaukee, Wisconsin,* contaminated soils were identified during the removal of a 20,000 gallon diesel UST. Site Assessment samples indicate residual contamination (82 ppm GRO) on the northeast wall of the excavation. The LUST site was closed by the WDSPS on September 25, 2000.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site in 2005.

Wilinski Enterprises Inc./Mallory Properties is listed as a NONGEN with no violations. Listed wastes include: D003 Reactive Hazardous Wastes.

The SHWIMS database lists the site as an inactive Solid Waste Transporter, an inactive Hazardous Waste Generator – Large, and inactive Hazardous Waste Transporter-PCB-Full Service Contractor, an inactive Hazardous Waste Report Certifier, an inactive Hazardous Waste Report Preparer, an active Hazardous Waste Generator – Very Small and an active Solid Waste Materials Recovery Facility (Recycle). Listed wastes include: D001 Non-Listed Ignitable Wastes.

According to the SPILL listing (04-41-546622) approximately one gallon of PAHs were spilled due to careless operation of a backhoe, which resulted in damage to a rolloff box on March 3, 2005. The contractor was hired to clean up the spill. The spill was closed by the WDNR on March 16, 2009.

According to the SPILL listing (04-41-042872) an unknown amount of transformer oil was spilled on June 24, 1988. No actions were taken to clean up the spill. The spill is listed as historic and is under WDNR jurisdiction.

According to the DATCP UST database one (1) 3,167 gallon unleaded gasoline UST was closed by removal on June 2, 1999; one (1) 20,000 gallon diesel UST was closed by removal on June 4, 1999; and one (1) 1,000 gallon unleaded gasoline UST was closed by removal on June 8, 1999.

Based upon no planned real estate or construction requirements (over 300’ south for Alternative 1 and 130’ south for Alternative 2), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **221**
Site Name: **SIVA TRUCK LEASING INC**
Site Address: **2301 W SAINT PAUL AVENUE, MILWAUKEE, WI 53201**

Database: AST, AUL, BROWNFIELDS, BRRTS, CESQG, FINANCIAL ASSURANCE, FINDS, LUST, MANIFEST, SHWIMS, TIER 2, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently Siva Truck Leasing and Rental, a full service commercial leasing, contract maintenance, and vehicle financing center. This site is part of the former West Side Manufactured Gas Plant. It is associated with the following sites: 217, 218, 219, and 220. The site is Milwaukee Gas Light Company on the 1969 and 1951Sanborn maps. There are forty (40) propane tanks shown on the map for 1951.

According to the DATCP AST database one (1) 1,000 gallon waste/used motor oil AST was closed by removal on December 1, 1996.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Siva Truck Leasing LUST site (03-41-100709) was added to the WDNR's GIS Registry for residual soil contamination. The LUST site is listed as open and is under WDNR jurisdiction.

Siva Truck Leasing is listed on BROWNFIELDS because the WDNR issued a General Liability Clarification Letter stating that no Manufactured Gas Plant Residuals are on the Siva Truck Leasing Property.

Siva Truck Leasing is tracked in the BRRTS database (07-41-553607) as General Property for a General Liability Clarification Letter.

Siva Truck Leasing is listed as a CESQG with no violations. Listed wastes include D001 Ignitable Hazardous Wastes.

The three onsite in-use USTs are listed under FINANCIAL ASSURANCE.

Silva Truck Leasing Inc. is listed on the FINDS database under WI-ESR and RCRA.

Review of available LUST files (03-41-100709) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the January 19, 2000, Moraine Environmental Inc. *Summarization of Investigation and Remediation Activities, Groundwater Monitoring Results and Closure Request, Siva Truck Rental, 2301 W St. Paul Avenue, Milwaukee, WI 53201,* contaminated soils were identified during the removal of one (1) 10,000 gallon diesel UST and one (1) 10,000 gallon gasoline UST. Foundry said was found in an inconsistent layer between 8 and 10 feet bgs and also found mixed with fill at other depths. Approximately 1,515 tons of contaminated soils were excavated and disposed of at a licensed facility. Approximately 500 tons of inaccessible and offsite impacted soil is located to the west of the excavation to the Greves Street ROW. An additional 750 tons of contaminated soil remain to the south and southwest of the excavation. Residual soil contamination includes lead, GRO, DRO, benzene, and xylenes over RCLs. Onsite soils are listed as sand fill with debris, peat, and clay. Groundwater was encountered between 8 and 11 feet bgs. Flow direction is to the north. The LUST site is listed as open and is under WDNR jurisdiction.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site between 2004 and 2010.

The SHWIMS database lists the site as an active Hazardous Waste Generator – Very Small. There are no listed wastes.

TIER 2 is a database of facilities which store or manufacture hazardous materials that submit a chemical inventory report. According to this database the site has a maximum amount of 62,500 pounds of unleaded gasoline and 73,400 pounds of Diesel Fuel #2.

According to the DATCP UST database one (1) 10,000 gallon unleaded gasoline UST, one (1) 10,000 gallon diesel UST, and one (1) 1,000 gallon waste/used motor oil UST are in-use at the site. One (1) 6,000 gallon unleaded gasoline UST was closed by removal on September 29, 1987; and one (1) 1,000 gallon waste/used motor oil UST, one (1) 10,000 gallon diesel UST, and one (1) 10,000 gallon unleaded gasoline UST were closed by removal on December 2, 1996.

Based upon no planned real estate or construction requirements (over 240 feet south for Alternative 1 and over 75 feet South for Alternative 2), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **222**
Site Name: **JM BRENNAN INC**
Site Address: **2101 W SAINT PAUL AVENUE, MILWAUKEE, WI**

Database: AST, FINDS, LUST, MANIFEST, NONGEN, SHWIMS, UST, WRRSER
Real Estate Requirements: None
Construction Requirements: None

This site is currently JM Brennan Inc., Mechanical Contractors. The site is pipe storage on the 1969 Sanborn Map.

According to the DATCP AST database one (1) 10,000 gallon unleaded gasoline AST was closed by removal on April 1, 2004.

Brennan J M Inc. is listed on the FINDS database under RCRA.

Review of available LUST files (03-41-002926 / 53233256001) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the April 28, 1993, Cooper Environmental Resources Inc., *Remediation and Site Closure Report*, contaminated soils were identified during the removal of a 10,000 gallon gasoline UST along the pipe run and near the dispenser island. Approximately 50 tons of contaminated soils were excavated and disposed of at a licensed facility. Onsite soils are silty clays. Groundwater was not encountered during site activities. The LUST site was closed by the WDSPS on February 7, 1997.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site in 2008.

Brennan J M Inc. is listed as a NONGEN with no violations. The site is historically listed as a SQG on December 23, 1992. Listed wastes include: D001 – ignitable hazardous wastes.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Small. Listed wastes include: D001 Non-Listed Ignitable Wastes.

According to the DATCP UST database one (1) 10,000 gallon unleaded gasoline UST was closed by removal on November 24, 1992.

The site is listed on the WI WRRSER as having a MEDIUM priority.

Based upon no planned real estate or construction requirements (over 260 feet south for Alternative 1 and over 170 feet south for Alternative 2), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **223**
Site Name: **MILWAUKEE CITY CENTRAL REPAIR GARAGE**
Site Address: **2142 W CANAL STREET, MILWAUKEE, WI**

Database: BRRTS, LUST, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently the City of Milwaukee's Central Repair Garage. Inspection of historical aerial photographs indicates that the site was used for coal storage between 1937 and 1973.

The Milwaukee City Central Repair Garage is tracked in the BRRTS (09-41-29515) database as No Action Required for UST closure of three 550 gallon USTs.

The Milwaukee City Central Repair Garage is tracked in the BRRTS (09-41-292484) database as No Action Required for UST closure of one 1,000 gallon waste oil UST.

The Milwaukee City Central Repair Garage is tracked in the BRRTS (09-41-557444) database as No Action Required for no detection or insignificant contamination.

Review of available LUST files (03-41-002033 / 53233250442) indicate a spill or leak from the UST systems that resulted in soil and groundwater contamination from petroleum. According to the January 12, 2000, Giles Engineering Associates, Inc., *Site Investigation, Remedial Action Plan, and Request for Site Closure,* soil and groundwater impacts were identified during the removal of one diesel and two unleaded gasoline USTs in July, 1996. Approximately 1,476 tons of contaminated soil and 180,000 gallons of contaminated groundwater were removed and disposed of at a licensed facility. The former tanks / pump islands were located on the southwest side of the main garage building and the area is covered with concrete and asphalt pavement. Closure samples indicate residual contamination (50 ppb benzene) on the western bottom of the excavation. Onsite soils are fill materials consisting of coarse sands and silty clay, and native materials consisting of silty clays interbedded with fine to coarse grained sands. Groundwater was encountered at approximately 6 to 8 feet bgs, and flows northwest towards the Menomonee River. Periodic groundwater sampling results indicate residual contamination (MTBE above the NR 140 PAL) remains on-site near the three former UST systems. The LUST site was closed by the WDSPS on May 25, 2000.

Review of available LUST files (03-41-198610) indicate a spill or leak from the UST piping system that resulted in soil contamination from petroleum. According to the Giles Engineering Associates, Inc., October 14, 1998, *Underground Storage Tank and Soil Removal Assessment* and the October 29, 1998, *Request for Case Closure,* contaminated soils were identified during the removal of a fuel oil UST system in July, 1998. Prior to installing the new UST, approximately 9.3 tons of contaminated soils were

excavated from below the piping run and were disposed of at a licensed facility. The former tank was located on the southeast side of the garage building and the remaining area is covered with concrete pavement and landscaped areas. Closure samples indicate residual contamination (2.0 to 33 ppm DRO) within the piping trench, at 5 to 6 feet bgs. Onsite soils are silty clays with fine to medium grained sands. Groundwater was encountered at approximately 6 feet bgs, and over 10,000 gallons was pumped out of the excavation during the tank removal, but no obvious groundwater impacts were noted. The LUST site was closed by the WDNR on January 7, 1999.

According to the DATCP UST database two (2) 4,000 gallon waste/used motor oil UST, one (1) 10,000 gallon fuel oil UST, one (1) 20,000 gallon diesel UST, one (1) 10,000 gallon unleaded gasoline UST, and one (1) 10,000 gallon new oil UST are in-use at the site. One (1) 550 gallon diesel UST was closed by removal on September 9, 1991; one (1) 550 gallon leaded gasoline UST and one (1) 550 gallon unleaded gasoline UST were closed by removal on September 18, 1991; one (1) 10,000 gallon diesel UST and two (2) 10,000 gallon unleaded gasoline USTs were closed by removal on July 31, 1996; one (1) 1,000 gallon waste/used motor oil UST was closed by removal on December 10, 1997; one (1) 10,000 gallon fuel oil UST was closed by removal on June 30, 1998; and two (2) 1,000 gallon waste/used motor oil USTs were closed by removal on June 7, 2011.

Based upon the distance from the planned project improvements (more than 540 feet south), and LUST activity closure, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **224**
Site Name: **MARQUETTE UNIVERSITY SOCCER**
Site Address: **1818 W CANAL STREET, MILWAUKEE, WI**

Database: BRRTS, ERP
Real Estate Requirements: None
Construction Requirements: None

This site is currently Marquette University's Valley Fields, a 13.5 acre outdoor recreation and sports complex. The site includes two soccer fields and Shimek Track & Field Facility. Inspection of historical aerial photographs indicates that the site was used for coal storage between 1937 and 1969.

The Marquette University Practice Field is tracked in the BRRTS (07-41-551544 and 07-41-550165) database as General Property for approval to build on historic fill. The past land uses include coal, salt, and fuel storage.

Review of available ERP files (02-41-000009) indicate a spill or leak resulted in soil and groundwater contamination. Approximately 7,866 tons of soil were removed from the site and disposed of at a licensed landfill. Fill material including foundry sand, slag, metal, wood and cinders were observed at varying thickness from 2 to 8 feet bgs. Petroleum related compounds, PAHs, chloride, lead, phenols, mercury, and selenium are contaminates of concern at the site. Groundwater was encountered between 4 and 8 feet bgs. Groundwater flow is to the Menomonee River. The ERP site is listed as conditionally closed as is under WDNR jurisdiction. A groundwater use restriction is required.

Based upon the distance from the planned project improvements (more than 990 feet south), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **225**
Site Name: **CITY OF MILWAUKEE MUNICIPAL SERVICE BUILDING**
Site Address: **1540 W CANAL STREET, MILWAUKEE, WI**

Database: AUL, BRRTS, LUST, SHWIMS, UST
Real Estate Requirements: None
Construction Requirements: None

The site is currently the City of Milwaukee Service Garage.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Milwaukee Municipal Services Building LUST site (03-41-004170 / 53233269640) was added to the WDNR's GIS Registry for residual soil and groundwater contamination.

WisDOT Alois Street Facility is tracked in the BRRTS (09-41-292485 and 09-41-292503) database as No Action Required for UST Closure – No Site Investigation Required for two 4,000 gallon fuel oil USTs.

Review of available LUST files (03-41-004170 / 53233269640) indicate a spill or leak from a 10,000 gallon gasoline UST system resulted in soil and groundwater contamination. According to the November 2002,Sigma Environmental Services, Inc., *Subsurface/Hydrogeologic Investigation Summary Report and Request for Site Closure,* approximately 1,900 cubic yards of low to moderately affected petroleum hydrocarbon impacted soil is located onsite. Onsite soils are fill material containing concrete, concrete blocks, wood, and organic material underlain by a stiff, dark gray silty clay material. Groundwater was encountered between 2 and 8 feet bgs and flows to the east/northeast. The LUST site was closed by the WDSPS on May 27, 2005, with inclusion on the GIS Registry for residual soil and groundwater contamination.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator –Small. There are no listed wastes.

According to the DATCP UST database there is one (1) 4,000 gallon fuel oil UST in-use at the site. One (1) 4,000 gallon fuel oil UST was closed by removal on May 20, 1998, and one 10,000 gallon unleaded gasoline UST was closed by removal on June 28, 1993.

Based upon the distance from the planned project improvements (more than 1,000 feet south), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **226**
Site Name: **FORMER TEWS GARAGE**
Site Address: **1601-1901 AND 2001 W MOUNT VERNON AVENUE, MILWAUKEE, WI**

Database: AST, AUL, CESQG, CRS, ERP, FINANCIAL ASSURANCE, FINDS, LAST, LUST, SHWIMS, SPILLS, UST
Real Estate Requirements: None
Construction Requirements: None

Inspection of historical aerial photographs indicates that the site was used for coal storage between 1937 and 1963.

According to the DATCP AST database one (1) 8,000 gallon other content AST was closed by removal on January 7, 1998, one (1) 10,000 gallon diesel AST was closed by removal on April 3, 1998, two (2) 17,500 gallon diesel ASTs were closed by removal on September 14, 1998, one (1) 10,000 gallon diesel AST was closed by removal on July 2, 2001, and one (1) 10,000 gallon diesel AST was closed by removal on February 2, 2002.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Tews Co Garage ERP site (02-41-171501 / 5323356701-B) was added to the WDNR's GIS Registry for residual soil and groundwater contamination.

Tews Co Garage at 2001 W Mount Vernon is listed as a CESQG with no violations. The site was historically listed as a SQG on March 15, 1996. Listed wastes include D001-Ignitable Hazardous Wastes and F001 Spent Halogenated Solvents.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The Tews Co Garage ERP site is listed on the CRS database for soil and groundwater.

Review of available ERP files (02-41-171501 / 5323356701-B) indicate a spill or leak resulted in soil and groundwater contamination from two (2) 17,500 gallon diesel fuel ASTs. According to the January 26, 1999, *Remedial Action Options Letter for the Tews Company Property in Milwaukee, Wisconsin* by Drake Environmental, Inc. obvious contamination was observed in a soil sample collected in the vicinity of the two (2) 17,500 gallon ASTs (47,000 ppm DRO). Approximately 3,900 cubic yards of contaminated soils are estimated onsite. Approximately 980 cubic yards of this is located beneath the onsite building and is inaccessible. Approximately 1,200 cubic yards is estimated to be located offsite on the adjacent property to the west (Site 220). Groundwater flow is to the west/southwest and is between 2 and 5 feet bgs. The

ERP site was closed by the WDSPS on April 20, 2004, with inclusion on the GIS Registry for residual soil and groundwater contamination.

The onsite temporarily out of service UST is listed under FINANCIAL ASSURANCE.

Tews Co Garage at 2001 W Mount Vernon Avenue is listed on the FINDS database under RCRA and WI-ESR.

The LAST activity at the site was investigated under ERP activity number 02-41-171501.

Review of available LUST files (03-41-115101 / 5323356701-A) indicate a spill or leak from a 2,000 gallon waste oil UST system resulted in soil contamination. According to the February 1997, Sigma Environmental Services, Inc., *A Report of an Underground Storage Tank Closure Assessment,* Site Assessment soil samples underneath the former UST were far below RCLS (4.6 ppm DRO). Approximately 50 tons of excavated soils were disposed of at a licensed landfill. Groundwater was not encountered during site activities. The LUST site was closed by the WDSPS on June 10, 1997.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator –Small, an inactive Hazardous Waste Generator – One-Time UST Removal – Obsolete Code, and an active Hazardous Waste Generator – Very Small. Listed wastes include: D001 Non-Listed Ignitable Wastes and F001 Spent Halogenated Solvents.

According to the SPILL listing (04-41-556710) approximately 100 gallons of diesel fuel were spilled due to an unattended fuel filter on October 6, 2010. A cleanup contractor was hired to clean up the spill. The spill was closed by the WDNR on February 4, 2011.

According to the DATCP UST database one (1) 2,000 gallon empty UST was temporarily taken out of service on February 28, 2004, and one (1) 2,000 gallon waste/used motor oil UST was closed by removal on January 8, 1997.

Based upon the distance from the planned project improvements (more than 520 feet south), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **227**
Site Name: **CITY OF MILWAUKEE RECYCLING CENTER**
Site Address: **1313 W MOUNT VERNON AVENUE, MILWAUKEE, WI**

Database: AST, AUL, CRS, FINDS, LUST, NONGEN, SHWIMS, SPILLS, TIER 2, UST
Real Estate Requirements: None
Construction Requirements: None

The site is currently the City of Milwaukee Environmental Education Resource and Tour Center (east end) and CRINC Recycling Center. This site is listed as the City of Milwaukee Self Help Site, The City of Milwaukee Mount Vernon Transfer Facility, Milwaukee Sanitation, and the Americology Transfer Station. This site also includes 1311 W Mount Vernon Avenue and the Milwaukee Recycling Center.

According to the DATCP AST database there is one (1) 10,000 gallon diesel AST in-use at the site.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Americology Site (Milwaukee CTY) LUST (03-41-002908 / 53233262013) was added to the WDNR's GIS Registry for residual soil and groundwater contamination.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The Americology Site (Milwaukee CTY) LUST site is listed on the CRS database for soil and groundwater.

The City of Milwaukee Self Help Site is listed on the FINDS database under RCRA.

Review of available LUST files (03-41-002908 / 53233262013) indicate a spill or leak from the UST system resulted in soil and groundwater contamination from gasoline. According to the November 8, 1999, Sigma Environmental Services, Inc., *City of Milwaukee – Americology, Request for Site Closure – Second Request,* a remedial investigation began after the failure of the tank tightness tests at the property. One (1) 10,000 gallon diesel UST and one (1) 10,000 gallon gasoline UST were subsequently removed from the site. Benzene was detected in groundwater samples above the ES. Onsite soils consist of approximately 6 to 8 feet of rework sand and silty clay fill with black silty sand material. Groundwater was encountered at approximately 5.5 to 6.5 feet bgs and flows to the southeast. The LUST site was closed by the WDSPS on February 23, 2005, with inclusion on the GIS Registry for residual soil and groundwater contamination.

The City of Milwaukee Self Help Site is listed as a NONGEN with no violations. The site is historically listed as a SQG on October 15, 1992. Listed wastes include: D008 Lead, D018 Benzene, and D039 Tetrachloroethylene.

The SHWIMS database lists the site as an inactive Solid Waste Processing Facility, an inactive Solid Waste Transfer Facility – Small, an inactive Solid Waste Transporter, an active Solid Waste/Recyclables Transporter, and an inactive Hazardous Waste Generator –Small. Listed wastes include: D008 Lead, D018 Benzene, and D039 Tetrachloroethylene.

According to the SPILL listing (04-41-204895) oil runoff was being discharged from parking lot into the drainage system that flows into the Menomonee River on April 6, 2010. The spill was contained and recovered. An absorbent boom was deployed, the storm sewer was cleaned out and a street sweeper was used to clean the spill. The spill was closed by the WDNR on January 11, 2011.

According to the SPILL listing (04-41-556600) approximately 20 gallons of gasoline were on December 13, 1995. The spill was contained and recovered. Absorbents (including oil dry and saw dust) were used to clean the spill. The spill was closed by the WDNR on December 13, 1995.

TIER 2 is a database of facilities which store or manufacture hazardous materials that submit a chemical inventory report. According to this database the site has a maximum amount of 79,135 pounds of diesel fuel onsite.

According to the DATCP UST database one (1) 10,000 gallon leaded gasoline UST and one (1) 10,000 gallon diesel UST were closed by removal on November 11, 1993.

Based upon the distance from the planned project improvements (more than 580 feet south), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **228**
Site Name: **TYCO INTERNATIONAL / BADGER TRUCK CENTER**
Site Address: **1741 W SAINT PAUL AVENUE, MILWAUKEE, WI**

Database: CESQG, FINDS, LUST, MANIFEST, SHWIMS, UST
Real Estate Requirements: None
Construction Requirements: None

The site is currently a multi-unit commercial building that has space for lease. The addresses included are: 1741, 1743, 1815, 1819, 1821, 1823, and 1825 West Saint Paul Avenue. SWP (Summit Wood Products, LLC) is located at 1825 West Saint Paul Avenue, and manufactures wood pallets, skids, crates, and boxes. The site is B. Hoffmann Manufacturing Company on the 1969 Sanborn, KW Jacobs Cooperage Company and B. Hoffmann Manufacturing on the 1951 Sanborn, Kenneth M. Jacobs Cooperage and American Bridge Company on the 1910 Sanborn and BA Jacobs and Sons Cooper Shop and More Manufacturing and Foundry Company on the 1894 Sanborn map.

This site is also listed at 1819 W Saint Paul Avenue. This site is also listed as Grinnel Company.

Badger Truck Center is listed as a CESQG with no violations. The site was historically listed as a SQG on January 2, 1998. Listed wastes include D001 Ignitable Hazardous Wastes.

Badger Truck Center is listed on the FINDS database under RCRA and WI-ESR.

Review of available Tyco International LTD Property LUST files (03-41-005125) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the April 9, 1996, Dames & Moore, Inc., *Underground Storage Tank Closure Assessment and Soil Remediation Report*, contamination was observed during the removal of a 1,000 gallon fuel oil UST. Approximately 27 cubic yards of impacted soil was excavated and disposed of at a licensed facility. Soil samples taken from the south side of the excavation near the building footing indicated residual DRO (670 ppm). Groundwater was not encountered in the excavation. Onsite soils are approximately 9 feet of fill material containing sand, gravel, and debris over native silty clay soils. The LUST site was closed by the WDNR on May 22, 1996.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site in 2004 and 2006.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator –Small and an active Hazardous Waste Generator – Very Small. Listed wastes include: D000 Non-Listed Toxic Wastes, D001 Non-Listed Ignitable Wastes, and D018 Benzene.

According to the DATCP UST database one (1) 1,000 gallon fuel oil UST was closed by removal on January 4, 1995.

Based upon the distance from the planned project improvements (more than 240 feet south), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **229**
Site Name: **FORMER BRUCH CORPORATION**
Site Address: **1701 W SAINT PAUL AVENUE, MILWAUKEE, WI**

Database: LUST, UST
Real Estate Requirements: None
Construction Requirements: None

The site is currently House of Stone Inc., a natural stone fabricator, specializing in residential applications. The site was formerly the Bruch Corporation, a sandblasting and steel painting business. The site is Gender, Paeschke & Frey Company on the 1969 Sanborn, a welding and steel fabrication company on the 1951 Sanborn, part of American Bridge Company on the 1910 Sanborn, and Milwaukee Bridge & Iron Works on the 1894 Sanborn map.

Review of available LUST files (03-41-228535 / 53233263201) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the September 17, 1999, Advent Environmental Services, Inc., *Site Assessment Report for Underground Storage Tank Closure*, minimal DRO contamination (12-70 ppm) was noted during the removal of a 10,000 gallon fuel oil UST. Onsite soils are fill (sand, bricks, and wood) over silty clay. Groundwater was not encountered during excavation activities. The property was an abandoned building that was formerly used as a sandblasting and steel painting business at the time of tank removal. The LUST site was closed by the WDSPS on November 4, 1999.

According to the DATCP UST database one (1) 10,000 gallon fuel oil UST was closed by removal on August 16, 1999.

Based upon the distance from the planned project improvements (more than 260 feet south), and minimal onsite contamination (12-70 ppm DRO), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **231**
Site Name: **FORMER GEUDER PARSCHKE AND FRYE COMPANY**
Site Address: **324 N 15TH STREET, MILWAUKEE, WI**

Database: CERCLIS, ERP, FINDS, NONGEN, SHWIMS
Real Estate Requirements: None
Construction Requirements: None

This site is currently a vacant building. According to tax records it is a commercial property owned by READCO. Geuder Parschke and Frye Company facility is a bankrupt, metal fabricating plant.

This site is also listed as Geuder Paescke and Frey, Gueder Paeschke and Frey, and GPF. Also as the Readco Demolition Property at 324 N 15th Street (1505 W St. Paul Avenue).

The CERCLIS database is a comprehensive listing of known or suspected uncontrolled or abandoned hazardous waste sites. These sites have either been investigated or are currently under investigation by the U.S. EPA for the release or threatened release of hazardous substances. Geuder Parschke and Frye Company is listed on the CERCLIS database.

Review of available ERP files (02-41-531523) indicate a spill or leak resulted in soil and groundwater contamination. According to the March 28, 1985, *Monitor RP Cleanup at GPF,* by Weston Sper, multiple hazardous waste drums were identified at an abandoned GPF facility. Upon court order the drums were removed from the site by CBC AquaSearch of Sheboygan, Wisconsin. The drums contained industrial wastes, caustics, oils, and paint-related materials. Additional information on the site includes a memorandum to Readco Demolition about a WDNR site visit to a partially burned, partially demolished building located at the site. The site visit was due to asbestos concerns and the presence of unidentified 55-gallon drums in the building and the rubble. A follow-up memorandum stated that the drums and asbestos were being managed. No soil or groundwater information is in the WDNR file. The ERP site is listed as open and is under WDNR jurisdiction.

Geuder Paescke and Frey is listed on the FINDS database under RCRA and CERCLIS. GPF is listed on the FINDS database under AFS.

Geuder Paescke and Frey is listed as a NONGEN with no violations. The site is historically listed as a NONGEN on August 18, 1980. Listed wastes include: D000 Not Defined, D001 Ignitable Hazardous Wastes, D008 Lead, D009 Mercury, D010 Selenium, K015 Still Bottoms from the Distillation of Benzyl Chloride, and U159 2-Butanone(I,T).

The SHWIMS database lists the site as an inactive Hazardous Waste Generator –Small. There are no listed wastes.

Based upon the distance from the planned project improvements (more than 620 feet southeast), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **232**
Site Name: **FORMER HOSE JOSEPH**
Site Address: **1357-1439 W SAINT PAUL AVENUE, MILWAUKEE, WI**

Database: FINDS, NONGEN, SHWIMS, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently a vacant lot. According to MCAMLIS records the site is a commercial property owned by 1435 Corporation. This site is listed as 1419 W Saint Paul Avenue and as Josef Hose and Joseph Hose.

Hose Joseph is listed on the FINDS database under RCRA.

Hose Joseph is listed as a NONGEN with no violations. The site is historically listed as a LQG on December 29, 1993. Listed wastes include: D001 – Ignitable Hazardous Wastes.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Large and an inactive Hazardous Waste Fuel. Listed wastes include: D001 Non-Listed Ignitable Wastes.

According to the DATCP UST database there are one (1) 275 gallon fuel oil UST and one (1) 2,000 gallon fuel oil UST in-use at the site.

According to ERP files (02-41-248044) related to Site 233, petroleum related contamination (benzene) is located on the northeast corner of the site where a former oil house was located. See site 233 for more information.

Based upon the distance from the planned project improvements (more than 740 feet southeast), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **233**
Site Name: **FORMER MILWAUKEE PLUMBING**
Site Address: **313 N 13TH STREET, MILWAUKEE, WI**

Database: AUL, CRS, ERP
Real Estate Requirements: None
Construction Requirements: None

This site is currently the Potawatomi Administrative Building and associated parking areas. This site is also listed as 1301-1313 W Saint Paul Avenue and as Anchor Enterprises.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Former Milwaukee Plumbing ERP (02-41-248044) site was added to the WDNR's GIS Registry for residual soil and groundwater contamination and an engineered barrier or cap.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The Former Milwaukee Plumbing ERP site is listed on the CRS database for soil and groundwater.

Review of available ERP files (02-41-248044) indicate a spill or leak resulted in soil and groundwater contamination. According to the August 7, 2003, *Request for Case Closure Site Investigation Report* by Key Engineering Group Ltd., contaminated soils were identified during a limited Phase II Environmental Site Assessment in September of 1999. Approximately 3,228 tons of contaminated soils were excavated and disposed of at a licensed landfill during site redevelopment activities. Onsite soils are 6 to 7 feet of fill over silty clay, silt, sand, and silty sand. Groundwater flow is generally to the south and is 8 to 14 feet bgs. The report states that the Area of Concern (AOC) #3 should not be included as it is located on an adjacent parcel. No further investigation is known to have occurred on the adjacent parcel (Site 232). The "oil house" was located in the northeast corner of the adjacent parcel. The ERP site was closed by the WDNR on May 31, 2005, with inclusion on the GIS Registry for residual soil and groundwater contamination and an engineered barrier or cap.

Based upon the distance from the planned project improvements (more than 1,000 feet southeast), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **234**
Site Name: **ALLIED INSULATION SUPPLY COMPANY**
Site Address: **315 N 12TH STREET, MILWAUKEE, WI**

Database: LUST, SHWIMS, UST
Real Estate Requirements: None
Construction Requirements: None

The site is currently Allied Insulation Supply Company. This site is also listed as Anchor Enterprises.

Review of available LUST files (03-41-004816) indicate a spill or leak from the UST systems resulted in soil contamination from petroleum. According to the February 6, 1997, Northern Environmental, Inc., *Underground Storage Tank Site Assessment*, six fuel oil USTs were abandoned in-place. The former tanks were located underneath and adjacent to the south side of the main building. Soil samples taken from the base of the USTs, prior to filling with inert material, indicated significant petroleum released into the soil. Soil sampling confirmed levels of DRO ranging from 56 ppm to 13,000 ppm. No additional soil or groundwater investigation has been performed at the site. Onsite soils are medium grained sand fill. Potential impacts to groundwater, groundwater depth and flow direction were not determined. The LUST site is listed as open and is under WDNR jurisdiction.

The SHWIMS database lists the site as an active Hazardous Waste Generator – Small and an active Hazardous Waste Report Preparer and an active Hazardous Waste Report Certifier. Listed wastes include: D001 Non-Listed Ignitable Wastes.

According to the DATCP UST database there is one (1) 1,100 gallon fuel oil UST in-use at the site. One (1) 800 gallon fuel oil UST was abandoned without product on April 29, 1986, two (2) 18,000 gallon other content USTs, two (2) 11,000 gallon other content USTs, one (1) 10,000 gallon other content UST, and one (1) 10,000 gallon fuel oil UST were closed by filling with inert material on December 6, 1996.

Based upon the distance from the planned project improvements (more than 1,500 feet east/southeast), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **236**
Site Name: **FORMER MONITOR PRESS AND MACHINE COMPANY INC**
Site Address: **1610 W SAINT PAUL AVENUE, MILWAUKEE, WI**

Database: CESQG, FINDS, SHWIMS
Real Estate Requirements: None - Not Finalized
Construction Requirements: Anticipated - Not Finalized

This site is currently Mitchell Manufacturing and Howell Wakefield Furniture Products. Mitchell Manufacturing specializes in tables and table systems. Howell Wakefield produces commercial furniture for public buildings. This site is also listed as 1700 W Saint Paul Avenue. The site is a stamping department on the 1969 and 1951 Sanborn, National Blowers Works on the 1910 Sanborn, and Milwaukee Bridge & Iron Works and Milwaukee Variety Iron Works on the 1894 Sanborn map. Several additional buildings are shown on the 1937 to 1969 aerial photographs to the west side of the existing building.

Monitor Press and Machine Company Inc. is listed as a CESQG with no violations. Listed wastes include F003 Spent Non-Halogenated Solvents.

Monitor Press and Machine Company Inc. is listed on the FINDS database under RCRA and WI-ESR.

The SHWIMS database lists the site as an active Hazardous Waste Generator – Very Small. There are no listed wastes.

Himalayan attempted to interview onsite personnel at Site 236, no response was obtained.

Based upon the current and former use of the site, and adjacent project requirements, a Phase 2 Subsurface Investigation is recommended for both alternatives.

Site Number: **237**
Site Name: **GENERAL PRESS AND FABRICATING**
Site Address: **1500-1538 W SAINT PAUL AVENUE, MILWAUKEE, WI**

Database: FINDS, NONGEN, SHWIMS
Real Estate Requirements: None
Construction Requirements: None

This site is currently General Press and Fabricating (GPF). GPF purchased Gueder, Paeschke & Frey in the early 1980's. GPF specializes in metal stamping and fabrication. This is listed at 1500 W Saint Paul Avenue. The site is part of a factory – pickling department on the 1969, 1951, and 1910 Sanborn maps.

General Press and Fabricating is listed on the FINDS database under RCRA.

General Press and Fabricating is listed as a NONGEN with no violations. The site is historically listed as a SQG on March 12, 1996. Listed wastes include: D001 Ignitable Hazardous Wastes.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator –Small. Listed wastes include: D001 Non-Listed Ignitable Wastes.

Based upon the distance from the planned project improvements (more than 220 feet east/southeast), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **238**
Site Name: **MATERION ADVANCED CHEMICALS INC**
Site Address: **407 N 14TH STREET, MILWAUKEE, WI**

Database: AIRS, AUL, BRRTS, CRS, ERNS, ERP, FINDS, LQG, MANIFEST, NONGEN, SHWIMS, SPILLS, TIER 2, TRIS, TSCA
Real Estate Requirements: None
Construction Requirements: None

This site is currently Materion Advanced Chemicals. The site was formerly known as Cerac, Inc. The name changed in 2011. The site is a manufacturing facility producing specialty inorganic compounds and physical deposition materials. This site is listed as Cerac, Inc., Materion Advanced Chemicals Inc., Williams Advanced Materials, and Springtime Inc. at 1316 and 1210 W Saint Paul Avenue and 407 N 14th Street.

Cerac, Inc. and Materion Advanced Chemicals Inc. is listed in the AIRS database. Listed Materials are Product – Minerals and Product –Chemical.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Cerac Inc. ERP site (02-41-257298) was closed by the WDNR on August 15, 2005, with inclusion on the GIS Registry for residual soil contamination and engineered barrier or cap

Williams Advanced Materials is tracked in the BRRTS (07-41-528953) database as General Property for an offsite liability exemption. The liability exemption is for offsite contamination from the upgradient property to the north under the IH 94 Ramp (WisDOT Property). The WisDOT property was formerly part of a Culter-Hammer parcel where heat treating and enameling operations that involved oils and solvents took place. TCE is the contaminant of concern.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The Cerac Inc. ERP site is listed on the CRS database for soil and groundwater.

ERNS is a national computer database system that is used to store information concerning the sudden and/or accidental release of hazardous substances, including petroleum into the environment. 407 N 13th Street is listed on the ERNS database. ERNS records indicate that on October 13, 2010, a fire at the manufacturing facility that was extinguished. A release of inorganic compound from the dust collector filters occurred.

Review of available Cerac Inc. ERP files (02-41-257298) indicate a spill or leak resulted in soil and groundwater contamination. According to the April 2005, *Remediation Documentation Report and Request for Case Closure* by ARCADIS, a Phase I Environmental Site Assessment was done by Natural Resources Technology at the site in 1999. Based upon the report, ARCADIS identified 9 areas of interest and performed a site investigation. The primary constituents of concern are lead and TCE. Approximately 3,642 tons of impacted soil was excavated and disposed of at a licensed facility. Onsite soils are silty clay to clayey silt. Groundwater flow is to the south and is 2 to 30 feet bgs. The ERP site was closed by the WDNR on August 15, 2005, with inclusion on the GIS Registry for residual soil contamination and engineered barrier or cap. The ERP activities are also associated with Site 239.

Cerac Inc. is listed on the FINDS database under WI-ESR, AFS, NEI, TRIS, RCRA, Hazardous Waste Biennial Reporter, Criteria and Hazardous Air Pollutant Inventory and ICIS. Springtime Inc. is listed on the FINDS database under RCRA.

Materion Advanced Chemicals Inc./Cerac Inc. is listed as a LQG with ten (10) historic violations. The site is historically listed as a LQG on March 1, 1994, March 1, 1996, October 29, 1998, March 1, 2000, March 1, 2002, July 7, 2003, February 20, 2004, January 13, 2006, February 8, 2006, January 11, 2008, February 11, 2010 and March 17, 2011; and a SQG on July 15, 1980. Listed wastes include: D001 Ignitable Hazardous Wastes, D002 Corrosive Hazardous Wastes, D003 Reactive Hazardous Wastes, D004 Arsenic, D005 Barium, D006 Cadmium, D007 Chromium, D008 Lead, D009 Mercury, D010 Selenium, D011 Silver, D018 Benzene, D022 Chloroform, D039 Tetrachloroethylene, D040 Trichloroethylene, F001 Spent Halogenated Solvents, F002 Spent Halogenated Solvents, F003 Spent Non-Halogenated Solvents, F005 Spent Non-Halogenated Solvents, P022 Carbon Disulfide, P113 Thallic Oxide, P120 Vanadium Oxide, U169 Nitrobenzene, U211 Carbon Tetrachloride, U226 1,1,1-Trichloroethene, and U239 Dimethyl-(I,T)benzene.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site in 2004 through 2011.

Springtime Inc. is listed as a NONGEN with one (1) historic violation. The site is historically listed as a LQG on July 7, 2003. Listed wastes include: D008 Lead, D039 Tetrachloroethylene, D040 Trichloroethylene, F001 Spent Halogenated Solvents and F002 Spent Halogenated Solvents.

The SHWIMS database lists Cerac Inc at 407 N 13th Street as an inactive Hazardous Waste Generator – Large and an inactive Hazardous Waste Generator – Very Small. Listed wastes include: D008 Lead, D039 Tetrachloroethylene, D040 Trichloroethylene, F001 Spent Halogenated Solvents, and F002 Spent Halogenated Solvents.

The SHWIMS database lists Materion Advanced Chemicals Inc. at 1316 and 1210 Saint Paul Avenue as an active Hazardous Waste Generator – Large, an active Hazardous Waste Report Preparer, and an active

Hazardous Waste Report Certifier. Listed wastes include: D004 Arsenic, D005 Barium, D006 Cadmium, D022 Chloroform, D007 Chromium, D008 Lead, D009 Mercury, D002 Non-Listed Corrosive Wastes, D001 Non-Listed Ignitable Wastes, D003 Non-Listed Reactive Wastes, D010 Selenium, D011 Silver, F002 Spent Halogenated Solvents, F001 Spent Halogenated Solvents, F003 Spent Non-Halogenated Solvents, F005 Spent Non-Halogenated Solvents, U211 Tetrachloromethane or Carbon Tetrachloride, D040 Trichloroethylene, P120 Vanadium Pentoxide or Wanadu.

According to the SPILL listing (04-41-558519) a fire in the furnace that contained the product lanthanum hexaboride resulted in the evacuation of the building of Materion on July 12, 2011. The spill was closed by the WDNR on July 13, 2011.

According to the SPILL listing (04-41-556621) approximately 55 pounds of arsenic were spilled due to a fire in the zinc arsenide production area of Cerac Inc. on October 13, 2010. Solid and liquid hazardous waste was removed and repairs were made. The spill was closed by the WDNR on January 13, 2011.

According to the SPILL listing (04-41-554413) a fire in the vent stack of the sulfide preparation area of Cerac Inc. occurred on October 29, 2009. No actions were needed. The spill was closed by the WDNR on November 3, 2009.

According to the SPILL listing (04-41-041395) a flask broke and ignited methanol at Cerac Inc. on August 21, 1986. No actions were taken to remove spilled material. The spill is listed as historic and is under WDNR jurisdiction.

According to the SPILL listing (04-41-037810) an explosion at Cerac Inc. occurred on October 17, 1979. No actions were taken to remove spilled material. The spill is listed as historic and is under WDNR jurisdiction.

According to the SPILL listing (04-41-037451) a fire at Cerac Inc. occurred on October 30, 1978. No actions were taken to remove spilled material. The spill is listed as historic and is under WDNR jurisdiction.

TIER 2 is a database of facilities which store or manufacture hazardous materials that submit a chemical inventory report. According to this database the site has a maximum amount of 59,233 pounds of nitrogen, 52,823 pounds of hydrofluoric acid (49%), 600 pounds of nitric acid 26,602 pounds of cadmium sulfide, 2,492 pounds of vanadium pentoxide, 58,440 pounds of arsenic, 83,932 pounds of zinc arsenide, 60,000 pounds of magnesium carbonate, 83,438 pounds of argon, 17,194 pounds of chromium, 161,240 pounds of magnesium fluoride, 69,403 pounds of zinc, 13,959 pounds of silicon dioxide, 593 pounds of titanium tetrachloride, 225 pounds of cadmium oxide, 119 pound of phosphorus, 300 pounds of chlorine onsite.

Cerac Inc. is listed on the Toxic Chemical Release Inventory System (TRIS) database. TRIS identifies facilities which release toxic chemicals to the air, water, and land in reportable quantities under SARA Title III Section 313. The following compounds are reported at the site: cadmium compounds, arsenic compounds, chromium compounds, hydrogen fluoride, lead compounds, and zinc compounds.

The Toxic Substances Control Act (TSCA) identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site. Zinc Arsenide and Magnesium fluoride are manufactured by Cerac Inc.

Based upon the distance from the planned project improvements (more than 800 feet east/southeast), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **239**
Site Name: **MATERION ADVANCED CHEMICALS INC**
Site Address: **405 N 12TH STREET, MILWAUKEE, WI**

Database: LUST
Real Estate Requirements: None
Construction Requirements: None

This site is currently Materion Advanced Chemicals. The site was formerly known as Cerac, Inc. The name changed in 2011. The site is a manufacturing facility producing specialty inorganic compounds and physical deposition materials. This site is listed as 1224 W Saint Paul Avenue. The address listed on the building is 1210 W Saint Paul Avenue. All listings in Site 238 also apply to Site 239 including the AUL for the ERP activity.

Review of available LUST files (03-41-003206) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the August 1993, Triad Engineering, Inc., *Limited Subsurface Investigation and Remedial Action, Cerac Incorporated, Milwaukee, Wisconsin,* field screening indicated contamination in the area of a former 8,000 gallon gasoline UST. Approximately 570 cubic yards of contaminated soil was excavated and disposed of at a licensed landfill. Onsite soils include up to 18 feet of fill materials including sand, silt, clayey silt, silty clay, and construction debris. The fill is underlain by clayey silt to silty clay. Groundwater was encountered at approximately 30 to 35 feet bgs and flows to the south-southeast. The LUST site was closed by the WDNR on December 13, 1993.

Based upon the distance from the planned project improvements (more than 1,500 feet east), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **240**
Site Name: **MARQUETTE INTERCHANGE**
Site Address: **N 13TH STREET AND CLYBOURN STREET, MILWAUKEE, WI**

Database: LUST
Real Estate Requirements: None
Construction Requirements: None

This site is currently part of the Marquette Interchange. The site was formerly owned by Cutler Hammer, an electrical distribution and control manufacturer.

Review of available LUST files (03-41-542884) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the March 28, 2005, RMT Inc., *Underground Storage Tanks Abandonment, Marquette Interchange-West Leg, Intersection of N. 13th and Clybourn, Milwaukee, Wisconsin,* soil contamination was noted during the removal of two (2) 1,000 gallon USTs encountered during the Marquette Interchange – West Leg construction. Approximately 653 tons of contaminated soils adjacent to the USTs was excavated and disposed of at a licensed landfill. Residual GRO (722 ppm), DRO (182 ppm), and PVOC contamination remains. Groundwater was not encountered during UST removal activities. The site is located underneath the Marquette Interchange. The LUST site was closed by the WDNR on April 5, 2005.

Based upon the distance from the planned project improvements (more than 1,300 feet east), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **241**
Site Name: **MARQUETTE UNIVERSITY**
Site Address: **530 N 13TH STREET, MILWAUKEE, WI**

Database: LUST, SPILLS
Real Estate Requirements: None
Construction Requirements: None

This site is currently part of Marquette University and part of the roadway ROW. This site is listed as WI DOT Marquette Site #4 at 1129 W Michigan Street.

Review of available LUST files (03-41-385737) indicate a spill or leak resulted in soil contamination from petroleum. According to the May 28, 2003, Milwaukee Transportation Partners LLC, *Supplemental Phase 2 Reports*, a Phase 2 indicated DRO, lead and arsenic in the surface soil. Onsite soils are described as silt and clay with seams of silty sand fill. Historical operations include former filling stations. Groundwater was encountered at approximately 8.5 to 18 feet bgs. The LUST site was closed by the WDNR on June 9, 2003.

According to the Karls Propane Exchange SPILL listing (04-41-553276) approximately 400 pounds of liquid propane was spilled due to a fire at the construction site of Eckstein Hall on February 10, 2009. The spill was closed by the WDNR on February 16, 2009.

Based upon the distance from the planned project improvements (more than 1,400 feet east), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **242**
Site Name: **MARQUETTE UNIVERSITY**
Site Address: **1343 W WISCONSIN AVENUE, MILWAUKEE, WI**

Database: ERP, LUST, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently part of Marquette University. This site is listed as Brooks Union (Marquette University) at 620 N 14th Street, 1313 W Wisconsin Avenue and Marquette University at the southeast corner of W Clybourn and E Mall. The 1313 site is the location of the new Mathematics and Computer Services Building.

Review of available ERP files (02-41-552723) indicate a spill or leak resulted in soil and groundwater contamination. According to the December 19, 2008, *Site Investigation Work Plan* by Graef, Anhalt, Schloemer & Associates, Inc., contaminated soils were identified within geotechnical borings for a planned parking garage near the southeast corner of W Clybourn and E Mall. A former Greyhound bus garage was located at the site until 1966. One (1) 8,000 gallon gasoline tank and two (2) 8,000 gallon diesel USTs were located at the Greyhound site. Soil contamination is located in the vicinity of boring B3. DRO, GRO, and PVOCs are above WDNR RCLs. No results of the Site Investigation were included within the WDNR files. The ERP site is listed as open and is under WDNR jurisdiction.

Review of available LUST files (03-41-003555) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the July 1993, Dames & Moore, Inc., *Underground Storage Tank Closure Assessment and Site Restoration Report*, a UST was found during the excavation for a new building footing. Contamination was noted during the removal of a 1,000 gallon UST. Approximately 2,457 tons of impacted soils were excavated and disposed of at a licensed facility during the three phases of remediation. Onsite soils are fill over clayey silts and silty clays. Groundwater was not encountered during excavation activities. The LUST site was closed by the WDNR on August 3, 1993.

According to the DATCP UST database one (1) 12,000 gallon fuel oil UST was closed by removal on August 26, 1988.

Based upon the distance from the planned project improvements (more than 1,200 feet northeast), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **243**
Site Name: **MARQUETTE UNIVERSITY**
Site Address: **1415 W WISCONSIN AVENUE, MILWAUKEE, WI**

Database: AST, BRRTS, ERNS, LUST, MLTS, SPILLS, UST, WRRSER
Real Estate Requirements: None
Construction Requirements: None

This site is currently part of Marquette University. This site is listed as 530 N 15th Street, 540 North 15th Street, 535 N 14th Street (Marquette University Chemistry Department), and 517 N 14th Street (Marquette University Service Building).

According to the DATCP AST database there are one (1) 560 gallon diesel AST and one (1) 2,000 gallon unleaded gasoline AST in-use at the site at the Marquette University Service Building at 517 N 14th Street.

Marquette University (Interchange) is tracked in the BRRTS (09-41-461407) database as No Action Required for no site investigation required. Laboratory results indicate no detect to low level contamination from a Phase II Environmental Site Assessment or similar report as well as UST/AST storage tank closures.

ERNS is a national computer database system that is used to store information concerning the sudden and/or accidental release of hazardous substances, including petroleum into the environment. 535 N 14th Street, Marquette University Chemistry Department is listed on the ERNS database. ERNS records indicate that on March 8, 1988, a hydrogen chloride cylinder accidently opened. The material was absorbed with soda ash, the valve was closed, the room was ventilated, and the material cleaned up. The fire department was on scene.

Review of available LUST files (03-41-002544) indicate a spill or leak from the UST system resulted in soil contamination from gasoline at 517 N 14th Street on the northwest corner of the intersection of Clybourn Street and 14th Street. According to the May 1993, Dames & Moore, Inc., *Underground Storage Tank Closure Assessment and Subsurface Investigation*, a strong petroleum odor and staining was noted in the excavation following the removal of one (1) 1,000 gallon and one (1) 2,000 gallon gasoline USTs. Impacted soils were excavated and disposed of at a licensed facility. Soil excavation was terminated north of the former UST cavity due to an onsite shed and air conditioning unit. Minor residual soils remain in place. Onsite soils are silty clay underlain by sand and gravel to 15 feet. Groundwater was not encountered during excavation activities. The LUST site was closed by the WDNR on August 4, 1993.

The Material Licensing Tracking System (MLTS) is a list maintained by the Nuclear Regulatory Commission and contains sites which possess or use radioactive materials and which are subject to NRC licensing requirements. Marquette University Office of Research Compliance at 530 N 15th Street and Marquette University Physics Department at 540 N 15th Street are listed on the MLTS.

According to the SPILL listing (04-41-262794) a thermometer broke and mercury escaped on April 14, 2000, at 540 N 15th Street. Absorbents were used to clean up the spill. The spill was closed by the WDNR on December 18, 2008.

According to the SPILL listing (04-41-549130) a student dropped a 4 liter bottle of dichloromethane on April 14, 2000, at 535 N 14th Street. Marquette's Environmental and Safety Department cleaned up the spill. The spill was closed by the WDNR on April 26, 2007.

According to the DATCP UST database one (1) 2,000 gallon unleaded gasoline UST and one (1) 1,000 gallon unleaded gasoline UST were closed by removal on August 17, 1992, at The Marquette University Service Building located at 517 N 14th Street. The tanks were approximately 15 years old at the time of removal and were used to fuel university fleet vehicles.

The site is listed on the WI WRRSER as having a MEDIUM priority.

Based upon the distance from the planned project improvements (more than 580 feet east/northeast), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **244**
Site Name: **MARQUETTE JESUIT RESIDENCE**
Site Address: **1404 W WISCONSIN AVENUE, MILWAUKEE, WI**

Database: UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently Marquette Jesuit Residence.

According to the DATCP UST database one (1) 3,000 gallon fuel oil UST was closed by removal on August 29, 1988.

Based upon the distance from the planned project improvements (more than 1,300 feet northeast), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **246**
Site Name: **FORMER JOHNNY'S ENCO GAS**
Site Address: **1500 W WISCONSIN AVENUE, MILWAUKEE, WI**

Database: EDR HISTORIC AUTO STATIONS
Real Estate Requirements: None
Construction Requirements: None

This site is currently part of an open park area within Marquette University.

1500 W Wisconsin Avenue is listed in EDR Historical Auto Stations database as Johnny's Enco Gas ET in 1965.

Based upon the distance from the planned project improvements (more than 1,100 feet northeast), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **247**
Site Name: **FORMER GAS STATION**
Site Address: **N 16TH STREET AND W CLYBOURN STREET, MILWAUKEE, WI**

Database: AUL, LUST
Real Estate Requirements: IN IH 94 ROW
Construction Requirements: Anticipated - Not Finalized

This site is currently part of the W Clybourn Street and IH 94 ROW. There used to be two former gasoline stations at the intersection of 16th and Clybourn. The site is a filling station on the 1951 Sanborn and dwellings on the 1910 and 1894 Sanborn maps.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Former Gas Station LUST site (03-41-533655) was added to the WDNR's GIS Registry for residual soil contamination and an engineered barrier or cap.

Review of available LUST files (03-41-533655) indicate a spill or leak from the UST system resulted in soil and groundwater contamination from petroleum. According to the January 2005, RMT, Inc., *Marquette Interchange – West Clybourn Street Excavation Management Documentation Report*, approximately 2,065 tons of contaminated material was excavated and disposed of at a licensed facility and 15,392 tons of excavation special were disposed of at the CMC site. Groundwater was not encountered during excavation activities. Residual soil contamination is located between Clybourn Street and the retaining wall for IH 94 west bound lanes and beneath IH 94. The LUST site was closed by the WDNR on November 21, 2011, with inclusion on the GIS Registry for residual soil contamination and an engineered barrier or cap.

Himalayan attempted to interview onsite personnel at Site 247, no response was obtained.

Based upon known contamination located beneath IH 94, a Phase 2.5 Subsurface Investigation is recommended to determine the extent of contamination within the ROW for both alternatives.

Site Number: **248**
Site Name: **MARQUETTE UNIVERSITY SERVICE BUILDING #324**
Site Address: **1706 W CLYBOURN STREET, MILWAUKEE, WI**

Database: AST, BRRTS
Real Estate Requirements: None
Construction Requirements: None

The site is currently part of Marquette University. The site was a filling station on the 1969 Sanborn, sheet metal works on the 1951 Sanborn, and a store on the 1910 and 1894 Sanborn maps.

This site appears as a Filling Station on the 1969 Sanborn Map.

According to the DATCP AST database one (1) 560 gallon diesel AST was closed by removal on December 6, 2010, at the Marquette University Service Building #324 at 1706 Clybourn.

N 17th street and W Clybourn Street is tracked in the BRRTS (08-41-556805) database for Abandoned Containers. Two (2) pounds of medical infectious waste were found on February 28, 2011. The site was closed on March 2, 2011.

Himalayan contacted Mike Whittow, Sustainability Officer for Marquette University, and conducted an interview related to Site 248. He indicated that the property has been owned by Marquette University for over 23 years and is used as a service building. He was not sure of any previous uses of the property and not aware of any tanks or environmental concerns on site.

Based upon the location of the site across W Clybourn Street to the north, no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **249**
Site Name: **MARQUETTE UNIVERSITY**
Site Address: **525 N 16TH STREET, MILWAUKEE, WI**

Database: AST, EDR HISTORIC AUTO STATIONS, ERNS
Real Estate Requirements: None
Construction Requirements: None

This site is currently Marquette University Helfaer Recreational Center and Tennis Stadium. This site is listed as 525 N 16th Street and 544 N 17th Street. The site was undeveloped and used for parking (SW corner) on the 1969 Sanborn, multiple dwellings and a firehouse (SW corner), salvage company, stores and a restaurant on the 1951 Sanborn, multiple dwellings, firehouse (SW corner), American Malted Food Company (SE Corner) and stores on the 1910 Sanborn, and multiple dwellings, firehouse (SW corner), and Salisbury Laundry (SE corner) on the 1894 Sanborn map. The current building was constructed between the 1969 and 1979 aerial photographs.

544 N 17th Street is listed in EDR Historical Auto Stations database as Butch Patterson Engines in 2010.

ERNS is a national computer database system that is used to store information concerning the sudden and/or accidental release of hazardous substances, including petroleum into the environment. 525 N 16th Street is listed on the ERNS database. ERNS records indicate that on May 19, 1988, 55 gallons of chlorine spilled when a barrel flipped over during transfer of material. Soda ash was used to clean up the spill.

Based upon the database listing and location in relation to the project requirements, no further investigation is recommended for both alternatives.

Site Number: **250**
Site Name: **MARQUETTE UNIVERSITY**
Site Address: **1621 W WISCONSIN AVENUE, MILWAUKEE, WI**

Database: AST, EDR HISTORIC AUTO STATIONS, LUST, SPILLS, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently Marquette University Engineering Hall. This site is listed as 620 N 17th Street (Marquette University Trebor Hall), 619 N 16th Street (Marquette University Former Monitor Hall), 1603 W Wisconsin Avenue, and 1637 W Wisconsin Avenue (Marquette University College of Engineering).

According to the DATCP AST database two (2) 275 gallon fuel oil ASTs were closed by removal on November 24, 2009, at 620 N 17th Street (Marquette University Trebor Hall).

1603 W Wisconsin Avenue is listed in EDR Historical Auto Stations database as Luderus Super Serve Gas Station in 1965.

Review of available Former Monitor Hall LUST files (03-41-544920) indicate a spill or leak from the UST system resulted in soil contamination from diesel fuel. According to the April 17, 2006, Environmental & Development Solutions, Inc., *Site Investigation, Soil Removal Documentation, and Closure Request for the Former Monitor Hall Property Located at 619 N 16th Street in Milwaukee, Wisconsin,* fuel oil odors within the soils were noted adjacent to a 2,000 gallon fuel oil UST that had been filled in place with inert material. The UST was removed and approximately 383 tons of impacted soils were excavated and disposed of at a licensed landfill. Onsite soils are silts and silty clays. Groundwater was encountered at approximately 6 feet bgs and flows to the southwest. The LUST site was closed by the WDSPS on June 21, 2006.

According to the SPILL listing (04-41-552668) approximately 5 gallons of engine waste oil were spilled due to car accident at the intersection of 16th and Wisconsin on July 21, 2008. The spill occurred on the concrete only. The Fire Department completed the clean up. The spill was closed by the WDNR on October 15, 2008.

According to the DATCP UST database one (1) 2,000 gallon fuel oil UST was closed by removal on October 13, 1988, at 619 N 16th Street (Marquette University Former Monitor Hall) and one (1) 2,000 gallon unknown content UST was closed by removal on May 17, 2010, at 1637 W Wisconsin Avenue (Marquette University College of Engineering).

Based upon the distance from the planned project improvements (more than 580 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **251**
Site Name: **FORMER MARQUETTE APARTMENTS**
Site Address: **706 N 17TH STREET, MILWAUKEE, WI**

Database: AUL, CRS, LAST, LUST, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently Marquette University McCabe Hall. This site is listed as Marquette Apartments at 1628 W Wisconsin Avenue. The site includes an 8 story brick building.

The AUL database is a listing of all deed restrictions recorded at the Register of Deeds office for a property. The Marquette Apartments LUST site (03-41-363890 / 53233218328) was added to the WDNR's GIS Registry for residual soil contamination.

The CRS database includes parcels of land at which the groundwater has become contaminated and which is affected by a particular type of legal restriction. Steps have been taken to stabilize/remediate the contamination, and the state is satisfied that no further efforts are necessary provided that the property is not used for certain purposes. The Marquette Apartments LUST site is listed on the CRS database for soil.

The LAST activity at the site was investigated under LUST activity number 03-41-363890 / 53233218328.

Review of available LUST files (03-41-363890 / 53233218328) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the September 5, 2002, STS Consultants, Ltd., *Phase I & II Environmental Site Assessment of the Property known as the Marquette Apartments and located at 1628 West Wisconsin Avenue in Milwaukee, Wisconsin*, indicated one (1) 1,000 gallon fuel oil UST was abandoned in place in the early 1980s with no closure assessment sampling. Soil samples taken from the base of the UST excavation indicated TPH below detection limits. Extended soil sampling indicated low levels of DRO (less than 27 ppm). Excavated soil was replaced within the excavation. Soil samples indicated soil contamination (328 ppm DRO) remains onsite to the northwest of the former UST. The former UST was located on the north side of the onsite building. Onsite soils are fill material over silty clay with traces of sand. Groundwater was not encountered during site investigation activities. The LUST site was closed by the WDSPS on September 2, 2003, with inclusion on the GIS Registry for residual soil contamination.

According to the DATCP UST database one (1) 1,111 gallon fuel oil UST was abandoned without product on an unknown date.

Based upon the distance from the planned project improvements (more than 1,000 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **252**
Site Name: **BLOODCENTER OF WISCONSIN**
Site Address: **638 N 18TH STREET, MILWAUKEE, WI**

Database: AST, FINDS, LUST, MANIFEST, SHWIMS, SQG, TIER 2, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently the Bloodcenter of Wisconsin. This site is also listed as 1701 W Wisconsin Avenue. The site is multiple dwellings on the 1969, 1951, 1910, and 1894 Sanborn maps.

According to the DATCP AST database there are two (2) 150 gallon diesel ASTs and two (2) 1,000 gallon diesel ASTs in-use at the site.

Bloodcenter of Wisconsin Inc. is listed on the FINDS database under RCRA and WI-ESR.

Review of available LUST files (03-41-003453 / 53223219401) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the June 1996, Advent Environmental Services, Inc., *Soil & Groundwater Investigation Report*, contamination was encountered during the excavation for a building addition. The contamination was associated with a 8,000 gallon UST abandoned in place in 1994. The former UST is located on the north side of the Bloodcenter of Wisconsin building along Wisconsin Avenue. Approximately 70 cubic yards of residual soil contamination is located in the direct vicinity of the former UST. Onsite soils are silty clays over sands. Groundwater was encountered between 15 and 18 feet bgs. The LUST site was closed by the WDNR on August 12, 1996.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site in 2007 and 2011.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Very Small, an active Hazardous Waste Generator – Small, an active Infectious Waste Generator – Other, an active Hazardous Waste Report Preparer, and an active Hazardous Waste Report Certifier. Listed wastes include: D001 Non-Listed Ignitable Wastes, D002 Non-Listed Corrosive Wastes, D003 Non-Listed Reactive Wastes, D004 Arsenic, D022 Chloroform, D009 Mercury, K003 Treat Sludge FM Manu Molybdate or Pigment, P098 Potassium Cyanide, P105 Sodium Azide or Smite, U007 Acrylamide, U122 Formaldehyde, U136 Hydroxydimethyl Arsine Oxide, W423 Infectious Waste - Human Bulk Blood/Fluid, W422 Infectious Waste - Human Tissue, W424 Infectious Waste - Micro Lab, and W421 Infectious Waste – Sharps.

Bloodcenter of Wisconsin Inc. is listed as a SQG with no violations. The site is historically listed as a SQG on November 29, 1985, and a CESQG on May 19, 2003. Listed wastes include: D001 Ignitable Hazardous Wastes, D002 Corrosive Hazardous Waste, D003Reactive Hazardous Waste, D004 Arsenic, D008 Mercury, D018 Benzene, D022 Chloroform, K003 Wastewater Treatment Sludge, P098 Potassium Cyanide, P105 Sodium Azide, U001 Acetaldehyde (I), U002 Acetone (I), U003 Acetonitrile (I,T), U007 Acrylamide, U019 Benzene (I,T), U021 Benzidine, U031 1-Butanol (I), U044 Chloroform, U069 Dibutyl Ester 1,2-Benznedicarboxylic Acid, U102 Dimethyl Ester 1,2-Benzenedicarboxylic Acid, U108 1,2-Diethyleneoxide, U112 Acetic Acid Ethyl Ester (I), U122 Formaldehyde, U134 Hydrofluoric Acid (C,T), U136 Dimethyl-Arsenic Acid, U188 Phenol, U211 Carbon Tetrachloride, U220 Methylbenzene, and U239 Dimethyl(I,T)benzene.

TIER 2 is a database of facilities which store or manufacture hazardous materials that submit a chemical inventory report. According to this database the site has a maximum amount of 13,737 pounds of fuel oil onsite.

According to the DATCP UST database one (1) 1,000 gallon unknown content UST was closed by filling with inert material on February 11, 1983, and one (1) 8,000 gallon fuel oil UST was closed by filling with inert material on July 6, 1994.

Based upon the distance from the planned project improvements (more than 210 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **253**
Site Name: **MARQUETTE UNIVERSITY**
Site Address: **721 N 17TH STREET, MILWAUKEE, WI**

Database: LUST
Real Estate Requirements: None
Construction Requirements: None

This site is currently part of Marquette University and includes the Haelfaer Building, the 18th Street Parking Structure, Humphrey Hall, and the Academic Support Facility. This site is listed as 1700 W Wisconsin Avenue.

Review of available LUST files (03-41-002542) indicate a spill or leak from the UST system resulted in soil contamination from petroleum. According to the May 1993, Dames & Moore, Inc., *Underground Storage Tank Closure Assessment and Subsurface Investigation*, several holes in the UST and a petroleum odor was noted during the removal of a 12,000 gallon fuel oil UST located at 1700 W Wisconsin Avenue. The UST was located adjacent to the north side of the building, under a concrete pad and asphalt alley. The piping associated with the UST system led directly into the north side of the building. An unspecified quantity of impacted soils were excavated and disposed of at a licensed landfill. Onsite soils are silty, clayey, sand to approximately 10 feet followed by silty clay to 12 feet bgs. Groundwater was not encountered within the excavation. The LUST site was closed by the WDNR on August 4, 1993.

Based upon the distance from the planned project improvements (more than 1,000 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **254**
Site Name: **FORMER CONCENTRA OCC MEDICAL CENTERS**
Site Address: **500 N 19TH STREET, MILWAUKEE, WI**

Database: FINDS, NONGEN, SHWIMS
Real Estate Requirements: None
Construction Requirements: None

The site is currently Marquette University Kruger Day Care Center. The site is a private garage and repair and stores on the 1969 Sanborn, multiple dwellings, stores, and a steam laundry on the 1951 Sanborn, and multiple dwellings on the 1910 and 1894 Sanborn maps.

Concentra OCC Medical Centers is listed on the FINDS database under RCRA and WI-ESR.

Concentra OCC Medical Centers is listed as a NONGEN with no violations. Listed wastes include: D001 Ignitable Hazardous Wastes, D002 Corrosive Hazardous Wastes, and D003 Reactive Hazardous Wastes.

The SHWIMS database lists the site as an active Hazardous Waste Generator – Very Small. Listed wastes include: D001Non-Listed Ignitable Wastes, D002 Non-Listed Corrosive Wastes, and D003 Non-Listed Reactive Wastes.

Based upon the database listing and location in relation to the project requirements (more than 100 feet north), no further investigation is recommended for both alternatives.

Site Number: **255**
Site Name: **FORMER GOOD SAMARITAN MEDICAL CENTER**
Site Address: **620 N 19TH STREET, MILWAUKEE, WI**

Database: AIRS, FINDS, SHWIMS
Real Estate Requirements: None
Construction Requirements: None

The site is currently Marquette University School of Dentistry. The site was formerly a medical center. The site was undeveloped on the 1969 Sanborn and multiple dwellings on the 1951, 1910, and 1894 Sanborn maps.

Good Samaritan Medical Center is listed in the AIRS database. Listed emissions include: carbon monoxide, particulates, sulfur dioxide, and VOCs.

Good Samaritan Medical Center is listed on the FINDS database under AFS.

The SHWIMS database lists the site (Deaconess Society of Wisconsin) as an inactive Hazardous Waste Generator –Small. There are no listed wastes.

Based upon the size database listing and location in relation to the project requirements (more than 340 feet north), no further investigation is recommended for both alternatives.

Site Number: **256**
Site Name: **SOVEREIGN APARTMENTS LLC**
Site Address: **1810-1826 W WISCONSIN AVENUE**

Database: BRRTS, UST
Real Estate Requirements: None
Construction Requirements: None

The site is currently Sovereign Apartments. This site is listed as 1810 W Wisconsin Avenue.

WisDOT Alois Street Facility is tracked in the BRRTS (09-41-296824) database as No Action Required for the removal of one (1) 5,000 gallon fuel oil UST.

According to the DATCP UST database one (1) 5,000 gallon fuel oil UST was closed by removal on October 22, 1998.

Based upon the distance from the planned project improvements (more than 1,000 feet north) and No Action Required Determination from the WDNR for the removal of the onsite UST, no further investigation is recommended for both alternatives.

Site Number: **258**
Site Name: **MARQUETTE UNIVERSITY**
Site Address: **1926 W WISCONSIN AVENUE, MILWAUKEE, WI**

Database: UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently Marquette University Mashuda Hall.

According to the DATCP UST database one (1) 6,000 gallon fuel oil UST was closed by removal on August 17, 1992.

According to the May 1993, Dames & Moore, Inc., *Underground Storage Tank Closure Assessment and Subsurface Investigation*, one (1) 6,000 gallon fuel oil UST located under the parking structure was abandoned in place. Site Assessment samples taken from underneath the UST contained no detectable concentrations of DRO.

Based upon the distance from the planned project improvements (more than 1,000 feet north) and no detectable concentrations of DRO during site assessment activities, no further investigation is recommended for both alternatives.

Site Number: **261**
Site Name: **2040 W WISCONSIN AVENUE**
Site Address: **2040 W WISCONSIN AVENUE, MILWAUKEE, WI**

Database: AST, MLTS, SHWIMS, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently 2040 Lofts. Several commercial businesses occupy the first level. This site is listed as the Bockl Building, 2040 Lofts, Diagnostic Imaging, Nuclear Cardiology Associated, and Doctor George Chandy.

According to the DATCP AST database there is one (1) 600 gallon diesel AST in-use at the site.

The MLTS is a list maintained by the Nuclear Regulatory Commission and contains sites which possess or use radioactive materials and which are subject to NRC licensing requirements. Diagnostic Imaging at 2040 W Wisconsin Avenue, Suite 205 and Nuclear Cardiology Associated in Suite 723 are listed on the MLTS.

The SHWIMS database lists the site as an active Infectious Waste Generator – Physician Office/Clinic. Listed wastes include: W421 Infectious Waste – Sharps, W423 Infectious Waste – Human Bulk Blood/Fluid, and W424 Infectious Waste – Micro Lab.

According to the DATCP UST database one (1) 8,000 gallon fuel oil UST was closed by filling with inert material on July 21, 2005.

Based upon the distance from the planned project improvements (more than 1,000 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **262**
Site Name: **2121 W WISCONSIN AVENUE**
Site Address: **2121 W WISCONSIN AVENUE, MILWAUKEE, WI**

Database: SPILLS, UST
Real Estate Requirements: None
Construction Requirements: None

This site is currently Victory Christian Academy and Pentecostals of Wisconsin. This site is listed as the Electrical Workers Local 494.

According to the SPILL listing (04-41-549124) approximately 15 gallons of paints, inks, and dyes were spilled due to an abandoned drum in the alley behind the address location on November 27, 2006. A cleanup contractor was hired and the drum was removed. The spill was closed by the WDNR on April 26, 2007.

According to the DATCP UST database one (1) 2,000 gallon fuel oil UST was closed by removal on June 26, 1987.

Based upon the distance from the planned project improvements (more than 820 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **263**
Site Name: **FORMER AUTO STATION**
Site Address: **2210 W WISCONSIN AVENUE, MILWAUKEE, WI**

Database: EDR HISTORIC AUTO STATION
Real Estate Requirements: None
Construction Requirements: None

This site is currently a Taco Bell.

2210 W Wisconsin Avenue is listed in EDR Historical Auto Stations database as Hills Texaco Service Gas Station in 1965.

Based upon the distance from the planned project improvements (more than 1,000 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **264**
Site Name: **DOWNEY INC.**
Site Address: **2203 W MICHIGAN STREET, MILWAUKEE, WI**

Database: CESQG, FINDS, MANIFEST, SHWIMS, UST
Real Estate Requirements: None
Construction Requirements: None

The site is currently Downey Inc., a mechanical contractor. The site is a factory with a metal paint spray booth on the 1969 Sanborn and a factory on the 1951 Sanborn map.

Downey Inc. is listed as a CESQG with no violations. The site was historically listed as a SQG on March 26, 1984, and as a CESQG on January 10, 2001. Listed wastes include D001 Ignitable Hazardous Wastes and D002 Corrosive Hazardous Wastes.

Downey Inc. is listed on the FINDS database under RCRA and WI-ESR.

The MANIFEST database is a listing of sites that generate hazardous waste manifests. Hazardous waste manifests were generated at the site in 2005.

The SHWIMS database lists the site as an inactive Hazardous Waste Generator – Small and an active Hazardous Waste Generator – Very Small. Listed wastes include: D001 Non-Listed Ignitable Wastes and D002 Non-Listed Corrosive Wastes.

According to the DATCP UST database one (1) 1,111 gallon unknown content UST was closed by filling with inert material on January 1, 1971.

Based upon the distance from the planned project improvements (more than 230 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **265**
Site Name: **FORMER CLEANERS**
Site Address: **2227 W WISCONSIN AVENUE, MILWAUKEE, WI**

Database: EDR HISTORIC CLEANERS
Real Estate Requirements: None
Construction Requirements: None

This site is listed at 2225 W Wisconsin Avenue. 2227 W Wisconsin Avenue is an asphalt parking lot for the Ambassador Inn. 2217 W Wisconsin Avenue (immediately adjacent to the east) is a Campus Community Apartment building.

2225 W Wisconsin Avenue is listed in the EDR Historic Cleaners database as Blue Bird Cleaners and Launderers in 1965.

Based upon the distance from the planned project improvements (more than 770 feet north), no further investigation is recommended for both alternatives unless real estate or construction requirements change.

Site Number: **266**
Site Name: **AMBASSADOR HOTEL**
Site Address: **2308-2324 W WISCONSIN AVENUE, MILWAUKEE, WI**

Database: AST, BRRTS, UST
Real Estate Requirements: None
Construction Requirements: None

The site is currently the Ambassador Hotel. The site is listed as 2308 W Wisconsin Avenue.

According to the DATCP AST database there is one (1) 275 gallon diesel AST in-use at the site.

Property Adjacent to Ambassador Hotel is tracked in the BRRTS (09-41-543002) database as No Action Required for no site investigation required. Laboratory results indicate no detect to low level contamination from a Phase II Environmental Site Assessment or similar report as well as UST/AST storage tank closures.

According to the DATCP UST database two (2) 500 gallon unknown content USTs were closed by removal on October 5, 2004.

Based upon the No Action Required determination by the WDNR and the size of the onsite AST, no further investigation is recommended for both alternatives.

Site Number: **269**
Site Name: **SUDS YOUR DUDS**
Site Address: **547 N 27TH STREET, MILWAUKEE, WI**

Database: EDR HISTORIC CLEANERS
Real Estate Requirements: None - Not Finalized
Construction Requirements: Anticipated – Alternative 2 Only - Not Finalized

The site is currently Suds Your Duds Coin Laundry. No dry cleaning operations are located at this location. The site is offices on the 1969 Sanborn and a dwelling on the 1951 and 1910 Sanborn maps.

547 N 27th Street is listed in the EDR Historic Cleaners database as Suds Your Duds Coin Laundries in 2011 and 2012.

Based upon the former use of the site as a coin operated Laundromat and not a dry cleaning operation, no further investigation is recommended.

Site Number: **270**
Site Name: **FORMER AUTO STATION**
Site Address: **2715 W CLYBOURN STREET, MILWAUKEE, WI**

Database: EDR HISTORIC AUTO STATIONS
Real Estate Requirements: None - Not Finalized
Construction Requirements: Anticipated – Alternative 2 Only - Not Finalized

This site is currently a vacant commercial building. The site was formerly an auto station.

2715 W Clybourn Street is listed in the EDR Historic Auto Stations database as 27th Street Auto Service and Repair in 2001, 2002, 2003, 2004, 2006, 2007, 2008, 2009, 2010, and 2011.

Himalayan attempted to interview onsite personnel at Site 270, no response was obtained.

Based upon the historic land use (auto station) and the location adjacent to construction requirements, a Phase 2 Subsurface Investigation is recommended for Alternative 2. No further investigation is recommended for Alternative 1 unless real estate or construction requirements change.

2.9.2 Sanborn Map Sites

Sanborn Maps were reviewed and areas of concern were noted in Section 2.4.3. The following is a list of Sanborn sites that have been added to the list of Potential Hazardous Material Sites.

SAN-1: A filling station is located in the USH 41 ROW at the former corner of West Wisconsin Avenue and North Story Parkway on the 1950 and 1927 Sanborn Maps. This site is located within the USH 41 ROW and construction is anticipated in this area. A Phase 2 Subsurface Investigation is recommended for both alternatives.

SAN-2: An auto repair facility is located in the IH 94 ROW between North 36th Street and North 35th Street. This site is located within the IH 94 ROW and construction is anticipated in this area. A Phase 2 Subsurface Investigation is recommended for both alternatives.

SAN-3: Gasoline tanks at a vacant facility are located in the USH 41 ROW to the northwest corner of the intersection of former 47th Street and Watertown Road (State Street). No real estate or construction requirements are anticipated near this site. No further investigation is recommended for both alternatives unless real estate or construction requirements change.

SAN-4: An oil tank is depicted on the 1951 Sanborn Map near the railroad tracks at 2033 W Saint Paul Avenue. No further investigation is recommended for both alternatives unless real estate or construction requirements change.

SAN-5: An oil tank in a concrete pit is depicted on the 1951 Sanborn Map near the railroad tracks just east of 1925 W Saint Paul Avenue. This site was also depicted as Milwaukee Sash Weight Co (Foundry) on the 1894 Sanborn Map. No further investigation is recommended for both alternatives unless real estate or construction requirements change.

SAN-6: Four (4) WEPCO oil tanks with a 40,000 capacity surrounded by a concrete wall are depicted on the 1951 Sanborn Map north and slightly west of the intersection of W Saint Paul Avenue and 20th Street. No further investigation is recommended for both alternatives unless real estate or construction requirements change.

SAN-7: A filling station is depicted on the northwest corner of the intersection of W Saint Paul Avenue and 20th Street on the 1951 Sanborn Map. No further investigation is recommended for both alternatives unless real estate or construction requirements change.

SAN-8: Two separate buildings at 2110 and 2100 W Clybourn Street include an electric motor and fixture repair shop and a commercial photo studio, respectively, on the 1951 Sanborn Map. No further investigation is recommended for both alternatives unless real estate or construction requirements change.

SAN-9: An automobile repair shop is located at 2032-2036 W Clybourn Street on the 1951 and 1910 Sanborn Maps. No further investigation is recommended for both alternatives unless real estate or construction requirements change.

2.9.3 Historic Plat Map Sites

Historical Plat Maps were reviewed and areas of concern were noted in Section 2.4.4. The following is a list of Historical Plat sites that have been added to the list of Potential Hazardous Material Sites.

HP-1: The Milwaukee & Suburban Transport Company is shown on Sheet number 4.6 of project I-94-4(40)305. This site is located within the IH 94 ROW and construction is anticipated in this area. A Phase 2 Subsurface Investigation is recommended for both alternatives.

HP-2: Standard Oil Company is shown as WisDOT parcel 54 on Sheet 4.2 of project I-94-4(48)307. The former station is located on the southeast corner of the intersection of West Park Hill Avenue and North 35th Street. This site is located within the IH 94 ROW and construction is anticipated in this area. A Phase 2 Subsurface Investigation is recommended for both alternatives.

HP-3: The Falk Corporation is shown as WisDOT parcel 23 on Sheet 4.3 of project U03-1(81)4.3-41. No real estate or construction requirements are anticipated near this site. No further investigation is recommended for both alternatives unless real estate or construction requirements change.

2.9.4 Relocation Parcels

Multiple relocations are anticipated for this project. Pre-demolition inspections should be completed at each site to determine the presence of ACM per WAC NR 447, LBP, mercury switches, PCBs, fuel oil tanks, and other potential hazardous materials. A Notification of Demolition and/or Renovation and Application for Permit Exemption (Form 4500-113) must be submitted to the WDNR ten (10) days prior to site demolition. A listing of relocation parcels in included in Table 2. Relocation parcels that are also listed as Potential Hazardous Material sites are noted.

2.9.5 Railroad Crossings

Fourteen (14) railroad crossings and areas within the project limits located adjacent to railroad ROW have been identified. Railroads are known potential soil contaminant sources that impact adjacent surface and subsurface soils. All railroad crossings are considered potential hazardous material sites due to their historic use of coal, diesel fuel engines, creosote coatings on railroad ties, use of herbicides, and the potential for chemical spills. All areas within the project limits located adjacent to railroad ROW are considered potential hazardous material sites. The sites associated with the electrically powered Former Inter Urban Railroad is not recommended for further investigation; however, if railroad ties are found

during construction, they should be disposed of appropriately. A Phase 2.5 subsurface investigation is recommended at three (3) sites based upon proximity to the project requirements. Investigations should be combined with database search result recommendations when feasible. All railroad ties generated from the reconstruction project should be disposed of at a licensed solid waste disposal facility.

RR-1: Soo Line Railroad underpass between West State Street and the Menomonee River

RR-2: Former Interurban Railroad crossing IH94 just east of the 70th Street overpass

RR-3: Former Interurban Railroad right of way adjacent to IH 94 (north side) between 68th Street and Hawley Road

RR-4: Former Interurban Railroad right of way located within the Stadium Interchange. Crossing IH 94 near General Mitchell from west to east, USH 41 south of the interchange, and IH 94 to the east of the interchange between 42nd Street (extended) and 41st Street (extended)

RR-5: Former Railroad lines from the Milwaukee Road Shops cross IH 94 between the South 44th Street and the Menomonee River

RR-6: Soo Line Railroad crossing underneath IH 94 adjacent to the east of the Menomonee River

RR-7: Former Railroad Crossing Bridge over Miller Park Way, south of Frederick Miller Way.

RR-8: Former Milwaukee Road Shops between 27th Street and 44th Street south of IH 94

RR-9: Former Interurban right of way adjacent to IH 94 (south side) between RR-6 and 35th Street

RR-10: Former Interurban Railroad adjacent to IH 94 (south side) between 35th Street and 27th Street

RR-11: Former Interurban Railroad adjacent to IH 94 (south side) from 27th Street to 16th Street

RR-12: Soo Line Railroad between RR-6 and 35th Street

RR-13: Soo Line Railroad between 35th Street and 27th Street

RR-14 Soo Line Railroad between 27th Street and 16th Street

2.9.6 Stream Crossings

Three (3) stream crossing areas are located within the project corridor. The Wisconsin Department of Natural Resources Designated Waters website was used to identify the streams. Stream crossing are depicted on Figure 3.

S-1: The Menomonee River crosses underneath USH 41 approximately 600 feet south of West State Street and 700 feet north of West Wells Street.

S-2: The Menomonee River crosses underneath IH 94 E/W between North 42nd Street (extended) and North 44th Street.

S-3: Wood Creek crosses underneath USH 41 approximately 425 feet south of Frederick Miller Way. The stream is located within an underground structure.

Due to the potential for historical industrial discharges and illegal dumping into streams, the stream crossings are considered a potential hazardous material site. If the project requires the removal of sediment within the indicated stream crossings, sediment samples should be taken to determine appropriate disposal methods.

2.9.7 Overpass and Bridge Locations

Fifty (50) overpass and bridge structures are located within the project corridor and are depicted on Figure 4. Overpass and bridge structures have been identified as potential asbestos containing and also a source of LBP. An asbestos inspection is recommended for all overpass and bridge structures located within the project limits if demolition or reconstruction is required. All paint should be assumed to be lead-based as should be disposed of per state and federal regulations. A listing of overpass and bridge structures is located in Table 3.

2.9.8 Storm Water Pond Locations

Storm Water Pond Locations will be addressed in an addendum once construction requirements and property acquisition have been finalized.

3.0 FINDINGS

Kapur retained Environmental Data Resources (EDR) of Southport, Connecticut Inquiry # 3357792.1s and 3625566.2s to conduct a search of the State and Federal databases for potential sources of environmental contamination in and adjacent to the project corridor (Ref. 5). A record search of State and Federal databases was conducted for the FDM Procedure 21-35-5 requirement of one-quarter mile from the centerline of the project corridor. A second database search was required for the extension of the project from 25th Street to 16th Street on the east segment. Some listings may be duplicated between the two database searches.

The record searches of the state databases revealed: thirty-three (33) Bureau of Remediation and Redevelopment Tracking System (BRRTS) sites, twenty-seven (27) Emergency Repair Program (ERP) sites, six (6) National Pollutant Discharge Elimination System (NPDES), four (4) Waste Disposal Sites (WDS), seventy-four (74) Leaking Underground Storage Tank (LUST) sites, one hundred seventy-three (173) Underground Storage Tank (UST) sites, three (3) Leaking Aboveground Storage Tank (LAST) sites, thirty-five (35) Aboveground Storage Tank (AST) sites, thirty-three (33) Hazardous Waste Manifest Information (MANIFEST) sites, seventy-six (76) Wisconsin Spill (SPILL) sites, twenty-nine (29) Closed Remediation Sites (CRS), thirty-three (33) Deed Restriction at Closeout (AUL) sites, four (4) Voluntary Party Liability Exemption Sites (VCP), twenty-six (26) Wisconsin Remedial Response Site Evaluation Report (WRRSER) sites, eight (8) Brownfield sites, five (5) Air Permit Program Listing (AIRS) sites, eighteen (18) Tier 2 sites, one-hundred fourteen (114) Solid and Hazardous Waste Information Management System (SHWIMS) sites, forty-eight (48) Lead Inspection Data (LEAD) sites, and eleven (11) Financial Assurance sites.

The record searches of the federal databases indicated: four (4) Comprehensive Environmental Response, Compensation Liability Information System (CERCLIS), one (1) CERCLIS No Further Remedial Action Planned (CERC-NFRAP) sites, two (2) Corrective Action Report (CORRACTS) sites, two (2) Resource Conservation Recovery Act (RCRA) Large Quantity Generator (LQG) sites, two (2) RCRA Small Quantity Generator (SQG) sites, thirty-seven (37) Conditionally Exempt Small Quantity Generator (CESQG) sites, fifty-six (56) RCRA Non Generators (NONGEN), thirty (30) Emergency Response Notification System (ERNS) sites, two (2) US Brownfields sites, seven (7) Toxic Chemical Release Inventory System (TRIS) sites, four (4) Federal Insecticide, Fungicide and Rodenticide Act/Toxic Substances Control Act (FTTS) sites, four (4) FTTS Tracking System Administrative Case Listing (HIST FTTS) sites, five (5) Integrated Compliance Information System (ICIS) sites, one hundred twenty-nine (129) Facility Index System/Facility Registry System (FINDS) sites and two (2) 2020 Corrective Action Program List (2020 COR ACTION) sites.

One (1) Manufactured Gas Plant, ten (10) Historical Auto Stations and four (4) Historical Cleaners were listed within EDR's Proprietary Databases.

Kapur also reviewed the orphan lists for sites within the project search radius, performed a site reconnaissance and reviewed the online BRRTS Map. Additional sites were added to this report based upon location. Fourteen (14) railroad crossings, three (3) stream crossing, and fifty (50) bridges are also included in this hazardous material site assessment.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Table 1 summarizes the properties with potential hazardous material concerns located in and adjacent to the project corridor or have contamination that has or may have migrated into properties in or adjacent to the project corridor, the database they are listed in, and the recommendations in light of the potential presence of contamination.

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
1	1231 N 46TH STREET 1231 N 46TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
2	4624 W JUNEAU AVENUE 4624 W JUNEAU AVENUE, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
3	MILWAUKEE STOVE AND FURNACE 5070 W STATE STREET, MILWAUKEE, WI	LUST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
4	1169 N 50TH PLACE 1169 N 50TH PLACE, MILWAUKEE, WI 53208	FINDS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
5	5050 W STATE STREET 5050 W STATE STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
6	STATE AUTO BODY 5000 W STATE STREET, MILWAUKEE, WI 53208	CESQG, FINDS, MANIFEST, SHWIMS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
7	1140 N 50TH STREET 1140 N 50TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
8	BRAKE, CLUTCH AND DRUM SERVICE 4934 W STATE STREET, MILWAUKEE, WI 53208	CESQG, FINDS, SHWIMS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
9	WISDOT ALOIS STREET FACILITY 1150 N ALOIS STREET, MILWAUKEE, WI 53208	AST, BRRTS, FINDS, LUST, NONGEN, SHWIMS, UST, WDS, WRRSER,	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
10	1165 N 45TH STREET SPILL 1165 N 45TH STREET, MILWAUKEE, WI 53208	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
11	1150 N 46TH STREET 1150 N 46TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
12	1138 N 45TH STREET 1138 N 45TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
13	MILLER BREWERIES EAST 4430 W STATE STREET, MILWAUKEE, WI 53208	AUL, CRS, LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
14	QUAD MED MILLER HEALTH AND FITNESS CENTER 4400 W STATE STREET, MILWAUKEE, WI 53208	SHWIMS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
15	50TH STREET AND STATE STREET SPILL 50TH STREET AND STATE STREET	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
16	46TH AND STATE STREET SPILL 46TH AND STATE STREET	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
17	MILLER BREWING COMPANY VISITOR CENTER 4315 W STATE STREET, MILWAUKEE, WI	AUL, ERP, WDS, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
18	MGIC 5151 W STATE STREET, MILWAUKEE, WI	LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
19	ACME SUPPLY 5101 W STATE STREET, MILWAUKEE, WI	AUL, ERP	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
20	FORMER CLIMATIC CONTROL COMPANY 5061 W STATE STREET, MILWAUKEE, WI 53208	AST, AUL, CRS, LAST, LUST,	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
21	GENUINE PARTS COMPANY / NAPA DISTRIBUTION CENTER 5001 W STATE STREET, MILWAUKEE, WI 53208	CESQG, FINDS, MANIFEST, SHWIMS, TIER 2	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
22	MAGNUS COMPANY INC / AD SCHINNER COMPANY 4901 W STATE STREET, MILWAUKEE, WI 53208	BRRTS, CERCLIS-NFRAP, FINDS, LUST, SHWIMS, UST, WDS, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
23	FORMER VICTORY GRAPHICS 4831 W STATE STREET, MILWAUKEE, WI 53208	CESQG, FINDS, SHWIMS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
24	MMSD FORMER SAILES PROPERTY 4601 W STATE STREET, MILWAUKEE, WI 53208	ERP	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
25	BADGER ALLOYS / OMCO USA INC 980 N 45TH STREET, MILWAUKEE, WI 53208	CESQG, FINDS, NONGEN, SHWIMS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
26	FORMER WR GRACE COMPANY 4301 W STERLING PLACE, MILWAUKEE, WI 53208	AUL, CRS, ERP, LUST, VPLE, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
27	FORMER WR GRACE COMPANY 900 N 43RD STREET, MILWAUKEE, WI 53208	AUL, CRS, ERP, FINDS, LUST, UST, VPLE, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
28	FORMER HAROLD T ILLING 4200 W MONARCH PLACE, MILWAUKEE, WI 53208	AUL, CRS, ERP, FINDS, NONGEN, SHWIMS, SPILLS,	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
29	FORMER 42ND STREET CORPORATION 753 N 42ND STREET, MILWAUKEE, WI	AST, ERP, LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
30	FORMER CENTRAL REDI-MIX 5013 W STATE STREET, MILWAUKEE, WI 53208	BRRTS, ERP, LUST, UST, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
31	MILWAUKEE COUNTY HAWLEY ROAD LANDFILL #426 / DOYNE PARK 942 N HAWLEY ROAD, MILWAUKEE, WI	ERP, LUST, SHWIMS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
32	5040 W WELLS STREET 5040 W WELLS STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
33	NORMS 49TH STREET AUTO BODY 817 N 49TH STREET, MILWAUKEE, WI 53208	CESQG, FINDS, MANIFEST, SHWIMS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
34	SORCE SERVICES LLC 999 N 46TH STREET, MILWAUKEE, WI 53208	SHWIMS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
35	FORMER XEROX CORPORATION 944 N 46TH STREET, MILWAUKEE, WI 53208	AST, BRRTS, ERP, FINDS, LUST, TIER 2, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
36	4552 W WELLS STREET 4552 W WELLS STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
37	726 N 49TH STREET 726 N 49TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
38	5018 W WISCONSIN AVENUE 5018 W WISCONSIN AVENUE, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
39	4910 W WISCONSIN AVENUE 4910 W WISCONSIN AVENUE, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
40	FORMER ELLER MEDIA COMPANY 4550 W WISCONSIN AVENUE, MILWAUKEE, WI 53208	BRRTS, FINDS, NONGEN, SHWIMS, UST,	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
41	FORMER CANTEEN CORPORATION 4422, 4500 W WISCONSIN AVENUE, MILWAUKEE, WI 53208	AUL, CRS, CESQG, FINDS, LUST, NONGEN, SHWIMS, SPILLS, UST, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
42	WISCONSIN AVENUE VIADUCT – PARCEL 7 WISDOT W WISCONSIN AVENUE AT 42ND STREET MILWAUKEE, WI	AUL, ERP	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
43	4821 W WISCONSIN AVENUE 4821 W WISCONSIN AVENUE, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
44	4924 W WOODLAWN COURT 4924 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
45	4918 W WOODLAWN COURT 4918 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
46	4908 W WOODLAWN COURT 4908 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
47	4904 W WOODLAWN COURT 4904 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
48	4828 W WOODLAWN COURT 4828 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
49	4744 W WOODLAWN COURT 4744 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
50	4734 W WOODLAWN COURT 4734 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
51	4927 W WOODLAWN COURT 4927 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
52	4907 W WOODLAWN COURT 4907 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
53	4841 W WOODLAWN COURT 4841 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
54	4827 W WOODLAWN COURT 4827 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
55	4807 W WOODLAWN COURT 4807 W WOODLAWN COURT, MILWAUKEE, WI 53208	LEAD, UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
56	4727 W WOODLAWN COURT 4727 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
57	4723 W WOODLAWN COURT 4723 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
58	4707 W WOODLAWN COURT 4707 W WOODLAWN COURT, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
59	4816 W BLUEMOUND ROAD 4816 W BLUEMOUND ROAD, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
60	4804 W BLUEMOUND ROAD 4804 W BLUEMOUND ROAD, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
61	4702 W BLUEMOUND ROAD 4702 W BLUEMOUND ROAD, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
62	543 N STORY PARKWAY 543 N STORY PARKWAY, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
63	MILWAUKEE MACK SALES INC 4444 W BLUEMOUND ROAD, MILWAUKEE, WI 53208	AST, CESQG, FINDS, LUST, MANIFEST, SHWIMS, TIER 2, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
64	534 N 44TH STREET SPILL 534 N 44TH STREET, MILWAUKEE, WI 53208	BRRTS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
65	4901 W BLUEMOUND ROAD 4901 W BLUEMOUND ROAD, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
66	486 N 49TH STREET 486 N 49TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
67	471 N 49TH STREET 471 N 49TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
68	459 N 49TH STREET 459 N 49TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
69	442 N 49TH STREET 442 N 49TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
70	436 N 49TH STREET 436 N 49TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
71	410 N 49TH STREET 410 N 49TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
72	418 N 50TH STREET 418 N 50TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
73	414 N 50TH STREET 414 N 50TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
74	439 N PINECREST STREET 439 N PINECREST STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
75	361 N PINECREST STREET 361 N PINECREST STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
76	438 N PINECREST STREET 438 N PINECREST STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
77	MENOMONEE RIVER STADIUM PROJECT IH 94 AND USH 41 MILWAUKEE, WI	ERP	Partial Acquisition	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation
78	365 N 50TH STREET 365 N 50TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
79	357 N 50TH STREET 357 N 50TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
80	339 N 50TH STREET 339 N 50TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
81	317 N 50TH STREET 317 N 50TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
82	311 N 50TH STREET 311 N 50TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
83	263 N 50TH STREET 263 N 50TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
84	246 N 50TH STREET 246 N 50TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
85	4923 W SUNNYSIDE DRIVE 4923 W SUNNYSIDE DRIVE, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
86	FORMER DRICKEN PROPERTY 4837 SUNNYSIDE DRIVE, MILWAUKEE, WI 53208	LUST, UST, WRRSER	NONE	NONE	No Further Investigation	No Further Investigation
87	4829 W SUNNYSIDE DRIVE 4829 W SUNNYSIDE DRIVE, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
88	4819 W SUNNYSIDE DRIVE 4819 W SUNNYSIDE DRIVE, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
89	303 N PINECREST STREET 303 N PINECREST STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
90	246 N PINECREST STREET 246 N PINECREST STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
91	240 N PINECREST STREET 240 N PINECREST STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
92	228 N PINECREST STREET 228 N PINECREST STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
93	323 N STORY PARKWAY 323 N STORY PARKWAY, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
94	MMSD FIELD OFFICE 164 N 44TH STREET, MILWAUKEE, WI 53208	BRRTS, FINDS, ICIS	Partial Acquisition	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation
95	500 N 41ST STREET SPILL 500 N 41ST STREET, MILWAUKEE, WI	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
96	428 N 41ST STREET 428 N 41ST STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
97	N 42ND STREET AND SAINT PAUL AVENUE SPILL N 42ND STREET AND SAINT PAUL AVENUE	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
98	DOUGLAS LOSEY PROPERTY 204 S 74TH STREET, MILWAUKEE, WI	LUST	NONE	NONE	No Further Investigation	No Further Investigation
99	70TH STREET AND O'CONNOR STREET SPILL 70TH STREET AND O'CONNOR STREET	SPILLS	IN ROW	Anticipated	Removed From Further Assessment	Removed From Further Assessment
100	IH 94 AND 70TH STREET SPILL IH 94 AND 70TH STREET	SPILLS	IN ROW	Anticipated	Removed From Further Assessment	Removed From Further Assessment
101	DOMINICAN SISTERS OF THE PERPETUAL ROSARY 217 N 68TH STREET, MILWAUKEE, WI 53213	AUL, CRS, LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
102	O'CONNOR SUBSTATION 6800 O'CONNOR STREET, MILWAUKEE, WI	BRRTS	Partial Acquisition – ALT 2 Only	Anticipated	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2 Subsurface Investigation
103	PENN TEN CORPORATION 112 S 68TH STREET, MILWAUKEE, WI	AST, BRRTS, UST	Partial Acquisition – ALT 2 Only	Anticipated	Phase 2 Subsurface Investigation	Phase 2 Subsurface Investigation
104	6704 W STEVENSON STREET 6704 W STEVENSON STREET, MILWAUKEE, WI 53123	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
105	N 67TH STREET AND FAIRVIEW AVENUE SPILL N 67TH STREET AND FAIRVIEW AVENUE	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
106	FAIRVIEW EVANGELICAL LUTHERAN SCHOOL 137 N 66TH STREET, MILWAUKEE, WI 53213	FINDS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
107	6415 W MOUNT VERNON AVENUE 6415 W MOUNT VERNON AVENUE, MILWAUKEE, WI 53208	UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
108	FORMER FAIRVIEW MAUSOLEUM 6316 W FAIRVIEW AVENUE, MILWAUKEE, WI 53213	FINANCIAL ASSURANCE, FINDS, NONGEN, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
109	FORMER REID CONTRACTING INC 205 N 63RD STREET, MILWAUKEE, WI 53213	SHWIMS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
110	6221 W FAIRVIEW AVENUE 6221 W FAIRVIEW AVENUE, MILWAUKEE, WI 53213	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
111	224 N 61ST STREET 224 N 61ST STREET, MILWAUKEE, WI 53213	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
112	MPS FACILITIES AND MAINTENANCE 3841 W SAINT PAUL AVENUE, MILWAUKEE, WI 53208	FINDS, NONGEN, SHWIMS	NONE	NONE	No Further Investigation	No Further Investigation
113	3844 W PARK HILL AVENUE 3844 W PARK HILL AVENUE, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
114	315 N 37TH STREET 315 N 37TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
115	239 N 37TH STREET – ABANDONED CONTAINER 239 N 37TH STREET, MILWAUKEE, WI 53208	BRRTS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
116	225-227 N 36TH STREET 225-227 N 36TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
117	211 N 36TH STREET 211 N 36TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
118	222 N 36TH STREET 222 N 36TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
119	RP MOTORS INC 305 N 35TH STREET, MILWAUKEE, WI 53208	FINDS, ICIS	NONE	Anticipated	Phase 2 Subsurface Investigation	Phase 2 Subsurface Investigation
120	FORMER VICTORY OPTICIANS INC 215 N 35TH STREET, MILWAUKEE, WI 53208	CESQG, FINDS, SHWIMS	Site Acquisition	Anticipated	Phase 2 Subsurface Investigation	Phase 2 Subsurface Investigation
121	35TH STREET AND SAINT PAUL AVENUE SPILL 35TH STREET AND SAINT PAUL AVENUE MILWAUKEE, WI	SPILLS	NONE	NONE	No Further Investigation	No Further Investigation
122	418-420 N 35TH STREET 418-420 N 35TH STREET, MILWAUKEE, WI 53208	LEAD, UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
123	SUPER AMERICA #4080 / SPEEDWAY 4080 302 N 35TH STREET, MILWAUKEE, WI 53208	AUL, CESQG, CRS, FINANCIAL ASSURANCE, FINDS, LUST, SHWIMS, UST, WRRSER	NONE	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
124	MER-CAR CORPORATION INC / CITY OF MILWAUKEE 234 N 35TH STREET, MILWAUKEE, WI 53208	CESQG, FINDS, LUST, SHWIMS, UST, WRRSER,	Partial Acquisition – ALT 2 Only	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
125	AMOCO OIL CO 15228 / KAMRAN AMOCO 200 N 35TH STREET, MILWAUKEE, WI 53208	AUL, CRS, FINANCIAL ASSURANCE, FINDS, LUST, NONGEN, SHWIMS, UST, WRRSER	NONE	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
126	406 N 34TH STREET 406 N 34TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
127	302-304 N 34TH STREET 302-304 N 34TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
128	228 N 34TH STREET 228 N 34TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
129	434 N 32ND STREET 434 N 32ND STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
130	3221 W SAINT PAUL AVENUE 3221 W SAINT PAUL AVENUE, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
131	420 N 32ND STREET 420 N 32ND STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
132	MERRILL PARK HOUSING DEVELOPMENT 222 N 33RD STREET, MILWAUKEE, WI 53208	CESQG, FINDS, LUST, SHWIMS, UST	NONE	Anticipated – ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
133	3117-3119 W SAINT PAUL AVENUE, 3117-3119 W SAINT PAUL AVENUE, MILWAUKEE, WI 53208	LEAD, UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
134	437 N 31ST STREET 437 N 31ST STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
135	SAINT ROSE CATHOLIC ACADEMY 514 N 31ST STREET, MILWAUKEE, WI	LUST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
136	413-415 N 30TH STREET 413-415 N 30TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
137	3006 W SAINT PAUL AVENUE 3006 W SAINT PAUL AVENUE, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
138	432 N 30TH STREET 432 N 30TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
139	CITY OF MILWAUKEE ENGINE HOUSE 424 N 30TH STREET, MILWAUKEE, WI 53208	LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
140	308 N 30TH STREET 308 N 30TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
141	236 N 30TH STREET 236 N 30TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
142	226 N 30TH STREET 226 N 30TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
143	313 N 29TH STREET 313 N 29TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
144	MPI PROPERTY MANAGEMENT LLC 2820-2822 W CLYBOURN STREET, MILWAUKEE, WI 53208	FINDS, FTTS, HIST FTTS, LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
145	454 N 28TH STREET SPILL 454 N 28TH STREET, MILWAUKEE, WI	ERNS, SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
146	525 N 27TH STREET SPILL 525 N 27TH STREET, MILWAUKEE, WI 53233	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
147	KENTUCKY FRIED CHICKEN 605 N 27TH STREET, MILWAUKEE, WI 53208	AUL, CRS, LUST, UST, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
148	527 N 27TH STREET 527 N 27TH STREET, MILWAUKEE, WI 53208	EDR HISTORICAL CLEANERS, UST	NONE	Anticipated-ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2 Subsurface Investigation
149	PETERS CLEANERS AND LAUNDRY 509 N 27TH STREET, MILWAUKEE, WI 53208	CESQG, EDR HISTORICAL CLEANERS, FINDS, MANIFEST, SHWIMS	NONE	Anticipated-ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2 Subsurface Investigation
150	505 N 27TH STREET 505 N 27TH STREET, MILWAUKEE, WI 53208	EDR HISTORICAL AUTO STATIONS, UST	NONE	Anticipated-ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2 Subsurface Investigation
151	FORMER MR PS TIRES 2705 W CLYBOURN STREET, MILWAUKEE, WI 53208	SHWIMS	Partial Acquisition – ALT 1 Only	Anticipated	Phase 2 Subsurface Investigation	Phase 2 Subsurface Investigation
152	419 N 27TH STREET 419 N 27TH STREET, MILWAUKEE, WI 53208	UST	Site Acquisition – ALT 1 Only	Anticipated	Phase 3 Subsurface Investigation	Phase 2 Subsurface Investigation
153	FORMER B&C CITGO LLC 405 N 27TH STREET, MILWAUKEE, WI 53208	AST, EDR HISTORICAL AUTO STATIONS, FINANCIAL ASSURANCE, FINDS, LUST, UST	Site Acquisition – ALT 1 Only	Anticipated	Phase 3 Subsurface Investigation	Phase 2.5 Subsurface Investigation
154	28TH STREET SUBSTATION 2701 W SAINT PAUL AVENUE, MILWAUKEE, WI	AUL, ERP, FINDS, NONGEN, SHWIMS, TIER 2, UST	Partial Acquisition – ALT 2 Only	Anticipated	Phase 2.5 Subsurface Investigation	Phase 3 Subsurface Investigation

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
155	FORMER CLARK REFINING AND MARKETING 34 608 N 27TH STREET, MILWAUKEE, WI 53208	AUL, CESQG, CRS, FINDS, LUST, SHWIMS, UST, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
156	FORMER NERO AND SON / PAUL DAMIANO PROPERTY 2634 W CLYBOURN STREET, MILWAUKEE, WI 53233	FINDS, LUST, NONGEN, SHWIMS, UST	NONE	Anticipated – ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2.5 Subsurface Investigation
157	FORMER STI PROPERTIES 2601 W CLYBOURN STREET, MILWAUKEE, WI 53233	AST, FINDS, LUST, NONGEN, SHWIMS, UST	Partial Acquisition	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation
158	FORMER PERLSTEIN PROPERTY 418 N 27TH STREET, MILWAUKEE, WI 53208	AUL, CRS, ERP, LUST, UST	Partial Acquisition	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
159	2620 W SAINT PAUL AVENUE 2620 W SAINT PAUL AVENUE, MILWAUKEE, WI 53208	UST	Site Acquisition – ALT 1 Only	Anticipated	Phase 2 Subsurface Investigation	Phase 2 Subsurface Investigation
160	AMERICAN RED CROSS 2600 W WISCONSIN AVENUE, MILWAUKEE, WI	AUL, CRS, LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
161	533-535 N 26TH STREET 533-535 N 26TH STREET, MILWAUKEE, WI 53233	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
162	606 N 26TH STREET 606 N 26TH STREET, MILWAUKEE, WI 5328	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
163	2524 W MICHIGAN STREET 2524 W MICHIGAN STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
164	2517A W CLYBOURN 2517A W CLYBOURN, MILWAUKEE, WI 53233	UST	NONE	Anticipated – ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2 Subsurface Investigation

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
165	UNION 76 / CITGO FOOD MARKET / CITGO 2502 W WISCONSIN AVENUE, MILWAUKEE, WI 53208	EDR HISTORICAL AUTO STATIONS, FINANCIAL ASSURANCE, FINDS, LUST, NONGEN, SHWIMS, SPILLS, UST, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
166	605 N 25TH STREET 605 N 25TH STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
167	507 N 25TH STREET 507 N 25TH STREET, MILWAUKEE, WI 53233	LEAD	NONE	Anticipated – ALT 2 Only	Removed From Further Assessment	Removed From Further Assessment
168	2459 W MICHIGAN STREET 2459 W MICHIGAN STREET, MILWAUKEE, WI	UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
169	2453 W MICHIGAN STREET 2453 W MICHIGAN STREET, MILWAUKEE, WI 53208	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
170	FORMER BADGER REBUILDERS 2455 W CLYBOURN STREET, MILWAUKEE, WI 53233	FINDS, NONGEN	NONE	Anticipated – ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2 Subsurface Investigation
171	THE RAVE 2401 W WISCONSIN AVENUE, MILWAUKEE, WI 53233	FINDS, NONGEN, SHWIMS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
172	FORMER BURGESS CAR AND TRUCK 2440 W CLYBOURN STREET, MILWAUKEE, WI 53233	BRRTS, CESQG, EDR HISTORICAL AUTO STATIONS, ERP, FINDS, SHWIMS, UST	NONE	Anticipated – ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2.5 Subsurface Investigation
173	FORMER PRISMA GRAPHICS INC 2422 W CLYBOURN STREET, MILWAUKEE, WI 53208	CESQG, FINDS, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
174	FORMER BOEHCK EQUIPMENT COMPANY 2404 W CLYBOURN STREET, MILWAUKEE, WI 53233	FINDS, LUST, NONGEN, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
175	SCRUB A DUB CAR WASH 2323 W WISCONSIN AVENUE, MILWAUKEE, WI	AUL, CRS, LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
176	624 N 24TH STREET 624 N 24TH STREET, MILWAUKEE, WI 53208	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
177	FORMER HH WEST 2202-2302 W CLYBOURN STREET, MILWAUKEE, WI 53233	AUL, BROWNFIELDS, CRS, ERNS, ERP, FINDS, LUST, NONGEN, SHWIMS, UST, VPLE	NONE	NONE	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
178	MUELLER PROPERTY / CRAFTMASTERS CONTRACTORS 2123 W MICHIGAN STREET, MILWAUKEE, WI	ERP, FINDS, LUST, NONGEN, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
179	AMERICAN LITHO & PUBLISHING INC 530 N 22ND STREET, MILWAUKEE, WI	CESQG, FINDS, LUST, MANIFEST, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
180	AMERICAN BUILDING 2130 W CLYBOURN STREET, MILWAUKEE, WI	CESQG, FINDS, LUST, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
181	7219 W ADLER STREET SPILL 7219 W ADLER STREET, MILWAUKEE, WI	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
182	LUCKEYS TIRE & SERVICE 401 S 70TH STREET, MILWAUKEE, WI 53214	FINDS, LUST, NONGEN, SHWIMS, UST, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
183	FORMER GUIDAS SERVICE 541 S 70TH STREET, MILWAUKEE, WI 53214	AUL, CRS, FINDS, LUST, NONGEN, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
184	230 S 66TH STREET 230 S 66TH STREET, MILWAUKEE, WI 53214	LEAD	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
185	6311 W DIXON STREET SPILL 6311 W DIXON STREET, MILWAUKEE, WI 53214	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
186	61ST STREET AND ADLER STREET SPILL 61ST STREET AND ADLER STREET	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
187	BURBANK ELEMENTARY SCHOOL 6035 W ADLER STREET, MILWAUKEE, WI 53208	BRRTS, FINDS, UST	NONE	NONE	No Further Investigation	No Further Investigation
188	FORMER BENTLEY WELDING SUPPLY 200 S HAWLEY ROAD, MILWAUKEE, WI 53214	CESQG, FINDS, LUST, SHWIMS, UST, WRRSER	NONE	Anticipated	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
189	MILLER PARK 1 BREWERS WAY, MILWAUKEE, WI 53214	AST, CESQG, FINANCIAL ASSURANCE, FINDS, MANIFEST, SHWIMS, SPILLS, TIER 2, UST	Partial Acquisition	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation
190	FORMER MILWAUKEE COUNTY STADIUM 201 S 46TH STREET, MILWAUKEE, WI	ERP, FINDS, FTTS, HIST FTTS, LUST, MANIFEST, NONGEN, SHWIMS UST	Partial Acquisition	Anticipated	See Site 189	See Site 189

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
191	WI DOT MILWAUKEE COUNTY STADIUM / IH 94 / USH 41 IH 94 & USH 41 MILWAUKEE, WI	ERP	Partial Acquisition	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
192	FORMER MENOMONEE VALLEY PUMPING STATION 127 S 44TH STREET, MILWAUKEE, WI 53208	FINDS, MANIFEST, NONGEN, SHWIMS	Partial Acquisition	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation
193	SOO LINE RR COMPANY STADIUM PROJECT 400 N 44TH STREET, MILWAUKEE, WI	BRRTS	Partial Acquisition	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation
194	FORMER MILWAUKEE ROAD RR SHOPS / MILWAUKEE SHOPS PROPERTY 400-620 S 44TH STREET, MILWAUKEE, WI 53214	BROWNFIELDS, BRRTS, FINDS, US BROWNFIELDS	Partial Acquisition – ALT 2 Only	Anticipated	Phase 2.5 Subsurface Investigation	Phase 3 Subsurface Investigation
195	NATIONAL SALVAGE 600 S 44TH STREET, MILWAUKEE, WI 53214	ERP, FINDS, NONGEN, NPDES, SHWIMS, TIER 2,	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
196	FORMER LEWINSKY IRON AND METAL COMPANY 620 S 44TH STREET, MILWAUKEE, WI 53214	AST, BROWNFIELDS, BRRTS, ERP, FINDS, LUST, NONGEN, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
197	HARNISCHFEGER CORPORATION / P&H MINING EQUIPMENT 4400 W NATIONAL AVENUE, MILWAUKEE, WI 53204	2020 COR ACTION, AIRS, AST, CORRACTS, ERNS, ERP, FINDS, FTTS, HIST FTTS, ICIS, LQG, LUST, MANIFEST, NPDES, SHWIMS, TIER 2, TRIS, UST, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
198	IH 94 EASTBOUND BETWEEN STADIUM AND 35TH STREET SPILL IH 94 EASTBOUND BETWEEN STADIUM AND 35TH STREET	SPILLS	IN ROW	Anticipated	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
199	WEPCO PARK HILL SOUTHWEST SUBSTATION 4000 W CANAL STREET, MILWAUKEE, WI 53208	FINDS, NONGEN, SHWIMS	Partial Acquisition	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation
200	MENOMONEE VALLEY / FORMER CMC 3301 W CANAL STREET, MILWAUKEE, WI	AST, CERCLIS- NFRAP, CESQG, ERP, FINDS, MANIFEST, SHWIMS, SPILLS, US BROWNFIELDS, UST	NONE	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
201	FORMER WI DH&SS STADIUM PROJECT AREAS B & C 554 S 44TH STREET, MILWAUKEE, WI 53208	AST, ERP	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
202	35TH STREET AND CANAL STREET SPILL 35TH STREET AND CANAL STREET	SPILLS	IN ROW	Anticipated	Removed From Further Assessment	Removed From Further Assessment
203	PALERMO VILLA INC 3301 W CANAL STREET, MILWAUKEE, WI 53208	BRRTS, FINDS, TIER 2	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
204	RR TRACKS AT CANAL AND 30TH STREET SPILL RR TRACKS AT CANAL AND 30TH STREET MILWAUKEE, WI	SPILLS	NONE	NONE	No Further Investigation	No Further Investigation
205	REXNORD INDUSTRIES LLC 3001 W CANAL STREET, MILWAUKEE, WI	2020 COR ACTION, AIRS, AST, AUL, BRRTS, CERCLIS-NFRAP, CORRACTS, CRS, ERNS, ERP, FINDS, MANIFEST, NPDES, SHWIMS, SPILLS, SQG, TIER 2,TRIS, UST, WDS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
206	IH 94 EASTBOUND NEAR 28TH STREET SPILL IH 94 EASTBOUND NEAR 28TH STREET	SPILLS	IN ROW	Anticipated	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
207	FORMER RED STAR YEAST 2702 W GREVES STREET, MILWAUKEE, WI 53208	AST, ERNS, FINDS, ICIS, LUST, MANIFEST, NONGEN, RMP, SHWIMS, SPILLS, UST	Owned by WisDOT	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
208	THIELE TANNING COMPANY 123 N 27TH STREET, MILWAUKEE, WI 53208	AIRS, ERNS, FINDS, NPDES, SPILLS, TIER 2, TRIS	NONE	Anticipated – ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2 Subsurface Investigation
209	IH 94 ON RAMP AT W SAINT PAUL AND 26TH STREET SPILL IH 94 ON RAMP AT W SAINT PAUL AND 26TH STREET	ERNS	IN ROW	Anticipated	Removed From Further Assessment	Removed From Further Assessment
210	RED STAR YEAST 2612 W GREVES STREET, MILWAUKEE, WI	LUST	Site Acquisition	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation
211	D.R. DIEDRICH & COMPANY 2615 W GREVES STREET, MILWAUKEE, WI 53208	FINDS, NONGEN, NPDES, SHWIMS, SPILLS, TIER 2, TRIS, UST	NONE	Anticipated – ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2 Subsurface Investigation
212	25TH STREET AND CANAL STREET BIORETENTION 199 N 25TH STREET, MILWAUKEE, WI	AUL, CRS, ERP, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
213	CANADIAN PACIFIC RAILROAD 504 S LAYTON BOULEVARD, MILWAUKEE, WI	AST, ERP, LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
214	2563 W SAINT PAUL AVENUE SPILL 2563 W SAINT PAUL AVENUE, MILWAUKEE, WI	SPILLS	IN ROW	Anticipated	Removed From Further Assessment	Removed From Further Assessment
215	FORMER FRIEDA CORPORATION 333 N 25TH STREET, MILWAUKEE, WI	LUST, SPILLS, UST, WRRSER	Site Acquisition	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
216	FORMER BADGER STATE TANNING 305-321 N 25TH STREET, MILWAUKEE, WI 53233	AUL, BROWNFIELDS, BRRTS, CESQG, CRS, FINDS, LUST, MANIFEST, SHWIMS	Partial Acquisition – ALT 1, Site Acquisition – ALT 2	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation
217	FORMER WEST SIDE MGP N 25TH STREET AND MOUNT VERNON AVENUE, MILWAUKEE, WI 53201	EDR MANUFACTURED GAS PLANTS	See Individual Sites			
218	BADGER TRUCK CENTER INC 2326 W SAINT PAUL AVENUE, MILWAUKEE, WI 53201	AUL, CESQG, CRS, ERP, FINDS, LUST, MANIFEST, SHWIMS, UST	Site Acquisition	Anticipated	Phase 3 Subsurface Investigation	Phase 3 Subsurface Investigation
219	FORMER DMV EMISSIONS STATION 2401 W SAINT PAUL AVENUE, MILWAUKEE, WI 53233	AUL, CRS, ERNS, ERP, SPILLS	Site Acquisition – ALT 2 Only	Anticipated	Phase 2.5 Subsurface Investigation	Phase 3 Subsurface Investigation
220	FORMER WEST SIDE MGP / MALLORY PROPERTIES 200-224 N 25TH STREET, MILWAUKEE, WI 53233	AST, AUL, BRRTS, CESQG, CRS, ERP, FINDS, LUST, MANIFEST, MANUFACTURED GAS PLANTS, NONGEN, SHWIMS, SPILLS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
221	SIVA TRUCK LEASING INC 2301 W SAINT PAUL AVENUE, MILWAUKEE, WI 53201	AST, AUL, BROWNFIELDS, BRRTS, CESQG, CRS, FINANCIAL ASSURANCE, FINDS, LUST, MANIFEST, SHWIMS, TIER 2, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
222	JM BRENNAN INC 2101 W SAINT PAUL AVENUE, MILWAUKEE, WI	AST, FINDS, LUST, MANIFEST, NONGEN, SHWIMS, UST, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
223	MILWAUKEE CITY CENTRAL REPAIR GARAGE 2142 W CANAL STREET, MILWAUKEE, WI	BRRTS, LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
224	MARQUETTE UNIVERSITY SOCCER 1818 W CANAL STREET, MILWAUKEE, WI	BRRTS, ERP	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
225	CITY OF MILWAUKEE MUNICIPAL SERVICE BUILDING 1540 W CANAL STREET, MILWAUKEE, WI	AUL, BRRTS, LUST, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
226	FORMER TEWS GARAGE 1601-1901 AND 2001 W MOUNT VERNON AVENUE, MILWAUKEE, WI	AST, AUL, CESQG, CRS, ERP, FINANCIAL ASSURANCE FINDS, LAST, LUST, SHWIMS, SPILLS, UST,	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
227	CITY OF MILWAUKEE RECYCLING CENTER 1313 W MOUNT VERNON AVENUE, MILWAUKEE, WI	AST, AUL, CRS, FINDS, LUST, NONGEN, SHWIMS, SPILLS, TIER 2, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
228	TYCO INTERNATIONAL / BADGER TRUCK CENTER 1741 W SAINT PAUL AVENUE, MILWAUKEE, WI	CESQG, FINDS, LUST, MANIFEST, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
229	FORMER BRUCH CORPORATION 1701 W SAINT PAUL AVENUE, MILWAUKEE, WI	LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
230	15TH STREET AND W SAINT PAUL AVENUE SPILL 15TH STREET AND W SAINT PAUL AVENUE, MILWAUKEE, WI	SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
231	FORMER GEUDER PARSCHKE AND FRYE COMPANY 324 N 15TH STREET, MILWAUKEE, WI	CERCLIS, ERP, FINDS, NONGEN, SHWIMS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
232	FORMER HOSE JOSEPH 1357-1439 W SAINT PAUL AVENUE, MILWAUKEE, WI	FINDS, NONGEN, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
233	FORMER MILWAUKEE PLUMBING 313 N 13TH STREET, MILWAUKEE, WI	AUL, CRS, ERP	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
234	ALLIED INSULATION SUPPLY COMPANY 315 N 12TH STREET, MILWAUKEE, WI	LUST, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
235	PAIN ENTERPRISES INC 1816-1832 W SAINT PAUL AVENUE, MILWAUKEE, WI	TIER 2	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
236	FORMER MONITOR PRESS AND MACHINE COMPANY INC 1610 W SAINT PAUL AVENUE, MILWAUKEE, WI	CESQG, FINDS, SHWIMS	NONE	Anticipated	Phase 2 Subsurface Investigation	Phase 2 Subsurface Investigation
237	GENERAL PRESS AND FABRICATING 1500-1538 W SAINT PAUL AVENUE, MILWAUKEE, WI	FINDS, NONGEN, SHWIMS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
238	MATERION ADVANCED CHEMICALS INC 407 N 14TH STREET, MILWAUKEE, WI	AIRS, AUL, BRRTS, CRS, ERNS, ERP, FINDS, LQG, MANIFEST, NONGEN, SHWIMS, SPILLS, TIER 2, TRIS, TSCA	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
239	MATERION ADVANCED CHEMICALS INC 405 N 12TH STREET, MILWAUKEE, WI	AIRS, AUL, BRRTS, CRS, ERP, FINDS, LQG, LUST, MANIFEST SHWIMS, SPILLS, TRIS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
240	MARQUETTE INTERCHANGE N 13TH STREET AND CLYBOURN STREET, MILWAUKEE, WI	LUST, SPILLS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
241	MARQUETTE UNIVERSITY 530 N 13TH STREET, MILWAUKEE, WI	LUST, SPILLS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
242	MARQUETTE UNIVERSITY 1343 W WISCONSIN AVENUE, MILWAUKEE, WI	ERP, LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
243	MARQUETTE UNIVERSITY 1415 W WISCONSIN AVENUE, MILWAUKEE, WI	AST, BRRTS, ERNS, LUST, MLTS, SPILLS, UST, WRRSER	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
244	MARQUETTE JESUIT RESIDENCE 1404 W WISCONSIN AVENUE, MILWAUKEE, WI	UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
245	MARQUETTE UNIVERSITY 526-604 N 16TH STREET, MILWAUKEE, WI	SHWIMS, SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
246	FORMER JOHNNY'S ENCO GAS 1500 W WISCONSIN AVENUE MILWAUKEE, WI	EDR HISTORICAL AUTO STATIONS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
247	FORMER GAS STATION N 16TH STREET AND W CLYBOURN STREET MILWAUKEE, WI	AUL, LUST	IN ROW	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
248	MARQUETTE UNIVERSITY SERVICE BUILDING #324 1706 W CLYBOURN STREET MILWAUKEE, WI	AST, BRRTS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
249	MARQUETTE UNIVERSITY 525 N 16TH STREET MILWAUKEE, WI	AST, EDR HISTORICAL AUTO STATIONS, ERNS	NONE	NONE	No Further Investigation	No Further Investigation
250	MARQUETTE UNIVERSITY 1621 W WISCONSIN AVENUE MILWAUKEE, WI	AST, EDR HISTORICAL AUTO STATIONS, LUST, SPILLS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
251	FORMER MARQUETTE APARTMENTS 706 N 17TH STREET MILWAUKEE, WI	AUL, CRS, LAST, LUST, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
252	BLOODCENTER OF WISCONSIN 638 N 18TH STREET MILWAUKEE, WI	AST, FINDS, LUST, MANIFEST, SHWIMS, SQG, TIER 2, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
253	MARQUETTE UNIVERSITY 721 N 17TH STREET MILWAUKEE, WI	LUST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
254	FORMER CONCENTRA OCC MEDICAL CENTERS 500 N 19TH STREET MILWAUKEE, WI	FINDS, NONGEN, SHWIMS	NONE	NONE	No Further Investigation	No Further Investigation

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
255	FORMER GOOD SAMARITAN MEDICAL CENTER 620 N 19TH STREET MILWAUKEE, WI	AIRS, FINDS, SHWIMS	NONE	NONE	No Further Investigation	No Further Investigation
256	SOVEREIGN APARTMENTS LLC 1810-1826 W WISCONSIN AVENUE MILWAUKEE, WI	BRRTS, UST	NONE	NONE	No Further Investigation	No Further Investigation
257	FORMER SINAI SAMARITAN FAMILY CARE CENTER 1834 W WISCONSIN AVENUE MILWAUKEE, WI	SHWIMS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
258	MARQUETTE UNIVERSITY 1926 W WISCONSIN AVENUE MILWAUKEE, WI	UST	NONE	NONE	No Further Investigation	No Further Investigation
259	2001 W WISCONSIN AVENUE 2001 W WISCONSIN AVENUE MILWAUKEE, WI	UST	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
260	ASSATA 2017-2023 W WISCONSIN AVENUE MILWAUKEE, WI	FINDS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
261	2040 W WISCONSIN AVENUE 2040 W WISCONSIN AVENUE MILWAUKEE, WI	AST, MLTS, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
262	2121 W WISCONSIN AVENUE 2121 W WISCONSIN AVENUE MILWAUKEE, WI	SPILLS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
263	FORMER AUTO STATION 2210 W WISCONSIN AVENUE MILWAUKEE, WI	EDR HISTORICAL AUTO STATIONS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
264	DOWNEY INC 2203 W MICHIGAN STREET MILWAUKEE, WI	CESQG, FINDS, MANIFEST, SHWIMS, UST	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
265	FORMER CLEANERS 2227 W WISCONSIN AVENUE MILWAUKEE, WI	EDR HISTORICAL CLEANERS	NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
266	AMBASSADOR HOTEL 2308-2324 W WISCONSIN AVENUE MILWAUKEE, WI	AST, BRRTS, UST	NONE	NONE	No Further Investigation	No Further Investigation
267	GRAND AVENUE SCHOOL 2430 W WISCONSIN AVENUE MILWAUKEE, WI	FINDS, SPILLS	NONE	NONE	Removed From Further Assessment	Removed From Further Assessment
268	2700 W SAINT PAUL AVENUE SPILL 2700 W SAINT PAUL AVENUE MILWAUKEE, WI	SPILLS	IN ROW	Anticipated	Removed From Further Assessment	Removed From Further Assessment
269	SUDS YOUR DUDS 547 N 27TH STREET MILWAUKEE, WI	EDR HISTORICAL CLEANERS	NONE	Anticipated – ALT 2 Only	No Further Investigation	No Further Investigation
270	FORMER AUTO STATION 2715 W CLYBOURN STREET MILWAUKEE, WI	EDR HISTORICAL AUTO STATIONS	NONE	Anticipated – ALT 2 Only	No Further Investigation Unless Real Estate or Construction Requirements Change	Phase 2 Subsurface Investigation
SANBORN MAP SITES						
SAN-1	FORMER FILLING STATION SOUTH OF WISCONSIN AVENUE BETWEEN USH 41 AND THE NORTHBOUND OFF RAMP		IN ROW	Anticipated	Phase 2 Subsurface Investigation	Phase 2 Subsurface Investigation
SAN-2	FORMER AUTO REPAIR SOUTHWEST OF THE INTERSECTION OF 35TH STREET AND PARK HILL		IN ROW	Anticipated	Phase 2 Subsurface Investigation	Phase 2 Subsurface Investigation

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
SAN-3	FORMER GAS TANKS USH 41 ROW NORTH OF STATE STREET		NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
SAN-4	FORMER OIL TANK ~2033 W SAINT PAUL AVENUE		NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
SAN-5	FORMER OIL TANKS, FOUNDRY ~1925 TO 2015 W SAINT PAUL AVENUE		NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
SAN-6	WEPCO OIL TANKS WISDOT IH 94 ROW WEST OF 1922 W SAINT PAUL AVENUE		IN ROW	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
SAN-7	HISTORIC FILLING STATION WISDOT IH 94 ROW WEST OF 1922 W SAINT PAUL AVENUE		IN ROW	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
SAN-8	FORMER COMMERCIAL PHOTOGRAPHY AND AUTO REPAIR 2100 W CLYBOURN STREET		NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
SAN-9	FORMER AUTO REPAIR 2030 W CLYBOURN STREET		NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
HISTORIC PLAT MAP SITES						

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
HP-1	FORMER MILWAUKEE AND SUBURBAN TRANSPORT COMPANY EAST OF 70TH STREET IN IH 94 ROW		IN ROW	Anticipated	Phase 2 Subsurface Investigation	Phase 2 Subsurface Investigation
HP-2	FORMER STANDARD OIL COMPANY SOUTHEAST OF THE INTERSECTION OF PARK HILL AND 35TH STREET		IN ROW	Anticipated	Phase 2 Subsurface Investigation	Phase 2 Subsurface Investigation
HP-3	FORMER FALK CORPORATION USH 41 ROW NORTH OF WELLS STREET		IN ROW	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
RAILROAD SITES						
RR-1	SOO LINE RAILROAD UNDERPASS BETWEEN WEST STATE STREET AND THE MENOMONEE RIVER		NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
RR-2	FORMER INTERURBAN RAILROAD CROSSING IH 94 JUST EAST OF THE 70TH STREET OVERPASS		IN ROW	Anticipated	No Further Investigation	No Further Investigation
RR-3	FORMER INTERURBAN RAILROAD ADJACENT TO IH 94 (NORTH SIDE) BETWEEN 68TH STREET AND HAWLEY ROAD		IN ROW	Anticipated	No Further Investigation	No Further Investigation
RR-4	FORMER INTERURBAN RAILROAD WITHIN THE STADIUM INTERCHANGE		IN ROW	Anticipated	No Further Investigation	No Further Investigation
RR-5	FORMER RAILROAD UNDER IH 94 BETWEEN SOUTH 44TH STREET AND THE MENOMONEE RIVER		IN ROW	Anticipated	See Site 94	See Site 94
RR-6	SOO LINE RAILROAD UNDER IH 94 ADJACENT TO THE EAST OF THE MENOMONEE RIVER		IN ROW	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
RR-7	FORMER RAILROAD CROSSING OVER MILLER PARK WAY SOUTH OF FREDERICK MILLER WAY		NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
RR-8	FORMER MILWAUKEE ROAD SHOPS BETWEEN 27TH STREET AND 44TH STREET SOUTH OF IH 94		Partial Acquisition – ALT 2 Only	Anticipated	See Site 194	See Site 194
RR-9	FORMER INTERURBAN RAILROAD ADJACENT TO IH 94 (SOUTH SIDE) BETWEEN RR-6 AND 35TH STREET		IN ROW	Anticipated	No Further Investigation	No Further Investigation
RR-10	FORMER INTERURBAN RAILROAD ADJACENT TO IH 94 (SOUTH SIDE) BETWEEN 35TH STREET AND 27TH STREET		IN ROW	Anticipated	No Further Investigation	No Further Investigation
RR-11	FORMER INTERURBAN RAILROAD ADJACENT TO IH 94 (SOUTH SIDE) FROM 27TH STREET TO 16TH STREET		IN ROW	Anticipated	No Further Investigation	No Further Investigation
RR-12	SOO LINE RAILROAD BETWEEN RR-6 AND 35TH STREET		IN ROW	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
RR-13	SOO LINE RAILROAD BETWEEN 35TH STREET AND 27TH STREET		NONE	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
RR-14	SOO LINE RAILROAD BETWEEN 27TH STREET AND 16TH STREET		NONE	Anticipated	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change
STREAM SITES						
S-1	MENOMONEE RIVER UNDERNEATH USH 41 600 FEET SOUTH OF W STATE STREET		NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

Table 1. Potential Hazardous Material Sites

Site Number	Site Name and Address	Database	Real Estate Requirements	Construction Requirements	Recommendations for Additional Investigation Alternative 1	Recommendations for Additional Investigation Alternative 2
S-2	MENOMONEE RIVER UNDERNEATH IH 94 BETWEEN N 42ND STREET (EXTENDED) AND N 44TH STREET		NONE	Anticipated	Phase 2.5 Subsurface Investigation	Phase 2.5 Subsurface Investigation
S-3	WOOD CREEK UNDERNEATH MILLER PARK WAY SOUTH OF FREDERICK MILLER WAY		NONE	NONE	No Further Investigation Unless Real Estate or Construction Requirements Change	No Further Investigation Unless Real Estate or Construction Requirements Change

As indicated in Table 1, one hundred and twenty-four (124) sites have been removed from further assessment in this report due to their location in relation to the project, database listing, and overall low potential for impacting the project. No further evaluation of these sites will take place within this report. The sites are numbered as follows: 1, 2, 4, 5, 7, 10, 11, 12, 14, 15, 16, 32, 36, 37, 38, 39, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 78, 79, 80, 81, 82, 83, 84, 85, 87, 88, 89, 90, 91, 92, 93, 95, 96, 97, 99, 100, 104, 105, 106, 109, 110, 111, 113, 114, 115, 116, 117, 118, 122, 126, 127, 128, 129, 130, 131, 133, 134, 136, 137, 138, 140, 141, 142, 143, 144, 145, 146, 161, 162, 163, 166, 167, 169, 176, 181, 184, 185, 186, 198, 202, 206, 209, 214, 230, 235, 245, 257, 259, 260, 267, and 268.

The remaining one hundred and seventy-one (171) sites were assessed due to their close proximity to the project or their potential for impacting the project. Of these, No Further Investigation is recommended at nineteen (19) sites for both alternatives.

No further investigation unless construction or real estate requirements change is recommended at one hundred and thirteen (113) sites for Alternative 1 and one hundred and two (102) sites for Alternative 2.

A Phase 2 Subsurface Investigation (FDM Procedure 21-35-10) is recommended at ten (10) sites for Alternative 1 and twenty (20) sites for Alternative 2.

A Phase 2.5 Subsurface Investigation (FDM Procedure 21-35-12) is recommended at sixteen (16) sites for Alternative 1 and Alternative 2.

A Phase 3 Subsurface Investigation (FDM Procedure 21-35-15) is recommended at thirteen (13) sites for Alternative 1 and fourteen (14) sites for Alternative 2.

Four hundred twenty-nine (429) pole and pad mounted transformers are located adjacent to or within close proximity to the project corridor. No visual indication of leakage of potential polychlorinated bi-phenyls (PCBs) was observed from the transformers during site reconnaissance. Ms. Mesha Johnson of We Energies was contacted regarding PCBs contained within the transformers. Based upon information provided by Ms. Johnson two hundred forty-nine (249) transformer sites are PCB free, twenty-two (22) do not have information regarding the PCB status of the fluids contained within, and the remaining transformers have a probability of containing >50 parts per million (ppm) PCBs as follows: thirty-seven (37) transformers have a 1% probability, forty-nine (49) transformers have a 3% probability, thirteen (13) have a 6% probability, eleven (11) transformers have a 13% probability, one (1) has an 18% probability, and forty-seven (47) transformers have a 42% probability. A transformer with a 50 ppm concentration of

PCB would contain less than an ounce of PCBs. Based upon the PCB free status or limited percentage of containing PCBs, and no visual indication of leakage, additional subsurface investigation of the transformers is not recommended. Should final construction requirements include the relocation, removal, and/or disposal of transformers, arrangements should be made with We Energies for proper handling of the transformers and oil contained within.

A Pre-demolition inspection should be completed at all relocation parcels to determine the presence of asbestos containing materials (ACM) per Wisconsin Administrative Code (WAC) NR 447, lead based paint (LBP), mercury switches, polychlorinated biphenyls (PCBs), fuel oil tanks, and other potentially hazardous materials. A Notification of Demolition and/or Renovation and Application for Permit Exemption (Form 4500-113) must be submitted to the Wisconsin Department of Natural Resources (WDNR) ten (10) days prior to site demolition or abatement activities.

Overpass and bridge structures have been identified as potential asbestos containing and also a source of LBP and therefore, may be a potential concern. An asbestos inspection is recommended for overpass and bridge structures located within the project limits if demolition or reconstruction is required. All paint should be assumed to be lead-based as should be disposed of per state and federal regulations.

At the time of this report the proposed construction plans, ROW acquisitions, Temporary Limited Easements (TLE), and FEE acquisitions have not been finalized. All recommendations should be considered tentative and will be revised in an addendum once the preferred alternative and construction requirements are determined.

5.0 REFERENCES

1. Wisconsin Department of Transportation. Facilities Development Manual. Procedure 21-35-5 Phase 1 Hazardous Material Assessments. Revised December 22, 2011.

2. Environmental Data Resources, Inc. (July 3, 2012). The EDR DataMap Corridor Study, I-94 East/West and Stadium Interchange, Milwaukee, Wisconsin, 53214. Inquiry Number 3357792.1s.

3. USGS Topographic Maps (1971) Milwaukee Quadrangle, 7.5 minute series.

4. SEWRPC Depth to Water Table in the Southeastern Wisconsin Region – Map 20.

5. Soil Survey of Milwaukee and Waukesha Counties, Wisconsin. U.S. Department of Agriculture Soil Conservation Service In Cooperation with University of Wisconsin, Wisconsin Geological and Natural History Survey, Soils Department and Wisconsin Agricultural Experiment Station. 1971.

6. Schmidt, R.R., 1987 Groundwater contamination susceptibility map and evaluation: Wisconsin Department of Natural Resources, Wisconsin's Groundwater Management Plan Report 5, PUBL-WR-177-87, 27p.

7. Environmental Data Resources, Inc. (July 11, 2012). The EDR Historical Topographic Map Report, I-94 East/West and Stadium Interchange, Milwaukee, Wisconsin, 53214. Inquiry Number3362671.1

8. Milwaukee County GIS Internet Mapping Site. http://county.milwaukee.gov/LandInformationProgr23113/LIOInteractiveMapping.htm

9. Environmental Data Resources, Inc. (July 11, 2012). Certified Sanborn Map Report, I-94 East/West and Stadium, 70th Street to 25th Street, Milwaukee, Wisconsin, 53214. Inquiry Number. Inquiry Number 3364486.1.

Disclaimer:
No surface or subsurface investigation and testing was performed. The findings and conclusions of this investigation are solely based on-site visit, interviews, and review of available data from various regulatory agencies. No warranty or guarantee is expressed or implied concerning the findings and/or conclusions of this site assessment. Rather, it is represented that the scope and performance of the professional services rendered are in accordance with the state of practice as conducted within the site region by similar qualified contractors.

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6.0 PARTIAL LIST OF ABBREVIATIONS

ACM	Asbestos Containing Materials
AST	Aboveground Storage Tank
AUL	Deed Restriction at Closeout
BRRTS	Bureau of Remediation and Redevelopment Tracking System
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CESQG	Conditionally Exempt Small Quantity Generator
CORRACTS	Corrective Action Report
CRS	Closed Remediation Site
DATCP	Department of Agriculture, Trade, and Consumer Protection
DRO	Diesel Range Organics
ERNS	Emergency Response Notification System
ERP	Environmental Repair Program
ES	Enforcement Standard
FINDS	Facility Index System/Facility Registry System
FTTS	Federal Insecticide, Fungicide, & Rodenticide Act/Toxic Substances Control Act Tracking System
GEN PROP	General Property
GIS	Geographical Information System
GRO	Gasoline Range Organics
HMIRS	Hazardous Materials Information Reporting System
ICIS	Integrated Compliance Information System
LAST	Leaking Aboveground Storage Tank
LBP	Lead Based Paint
LQG	Large Quantity Generator
LUST	Leaking Underground Storage Tank
MANIFEST	Hazardous Waste Manifest
MLTS	Material Licensing Tracking System
NAR	No Action Required
NFRAP	CERCLIS No Further Remedial Action Planned
NONGEN	Non-Generators
PAL	Preventive Action Limit
PCB	Polychlorinated Biphenyls
RCL	Residual Contaminant Level
RCRA	Resource Conservation Recovery Act
ROW	Right-of-Way
SHWIMS	Solid and Hazardous Waste Information Management System
SPILL	Wisconsin Spill

SQG	Small Quantity Generator
SSTS	Section 7 Tracking Systems
SWF/LF	Solid Waste Facility/Landfill
TRIS	Toxic Chemical Release Inventory System
TSD	Treatment Storage and Disposal Facility
UST	Underground Storage Tank
VOC	Volatile Organic Compounds
WAC	Wisconsin Administrative Code
WDNR	Wisconsin Department of Natural Resources
WDSPS	Wisconsin Department of Safety and Professional Services
WDS	Waste Disposal Site
WI WRRSER	Wisconsin Remedial Response Site Evaluation Report
WI-ESR	Wisconsin Environmental System Registry
WisDOT	Wisconsin Department of Transportation

TABLE 2 - POTENTIAL RELOCATION PARCELS

Alternative 1

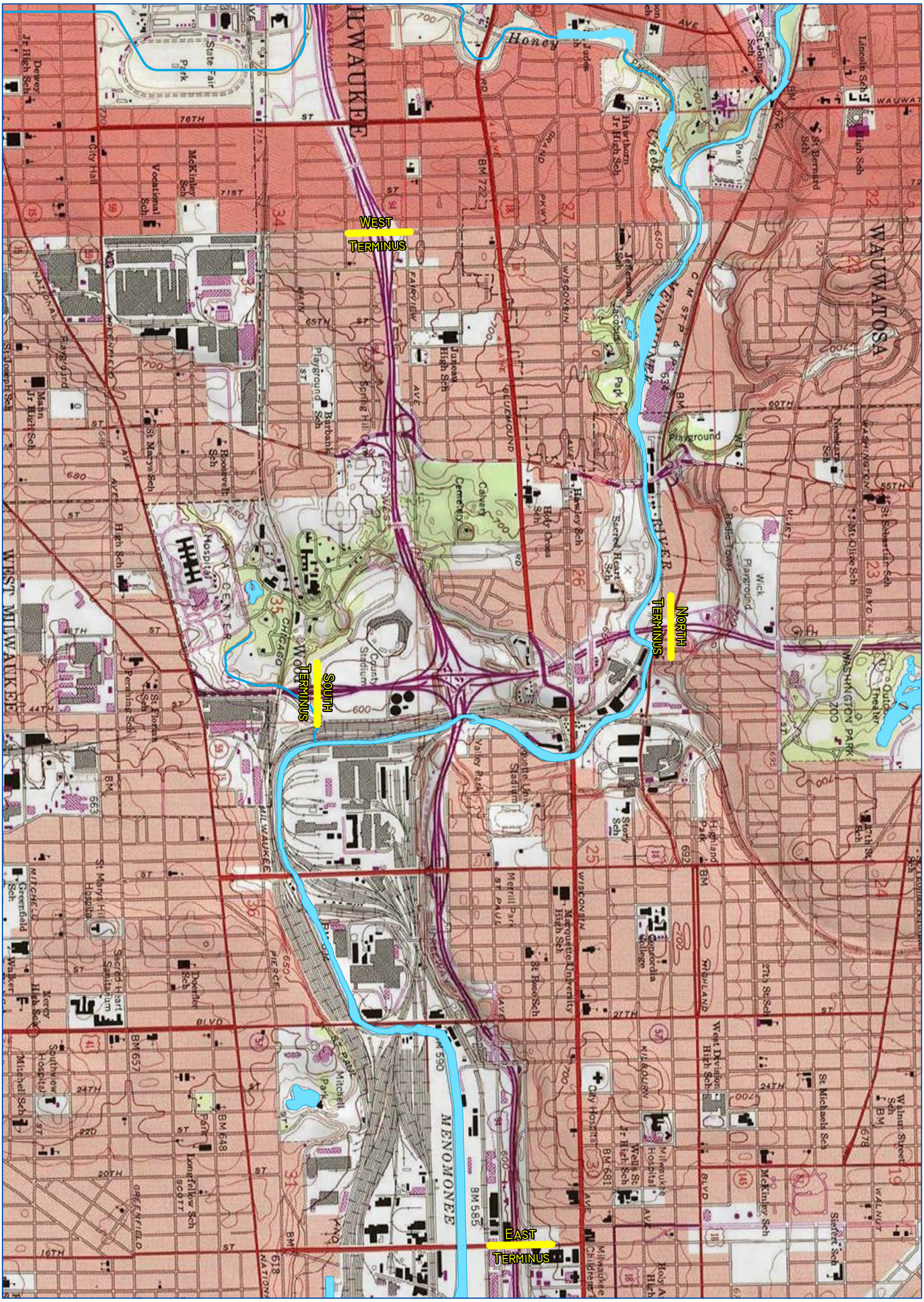
TAXKEY	ADDRESS	ACRES	ASSESSED VALUE	LAND VALUE	IMPROVED VALUE	DESCRIPTION	HAZMAT SITE
4210104211	123 S DANA CT	0.640657	170,200	55,800	114,400	COMMERCIAL	NO
4020010000	241 N 35TH ST	0.030303	72,900	2,000	70,900	RESIDENTIAL	NO
4020009000	237 N 35TH ST	0.041667	69,000	4,500	64,500	COMMERCIAL	NO
4020017110	215 N 35TH ST	0.626722	426,000	68,300	357,700	COMMERCIAL	SITE 120
4020020000	3504 W PARK HILL AVE	0.137741	48,500	15,000	33,500	COMMERCIAL	NO
4011004100	431 N 27TH ST	0.444789	528,000	77,500	450,500	COMMERCIAL	NO
4011009110	419 N 27TH ST	0.44123	171,000	76,900	94,100	COMMERCIAL	SITE 152
4011021110	405 N 27TH ST	0.34045	400,000	300,000	100,000	COMMERCIAL	SITE 153
4000951000	2620 W ST PAUL AVE	0.335583	127,000	51,200	75,800	COMMERCIAL	SITE 159
4000084000	2631 W CLYBOURN ST	0.206612	135,000	31,500	103,500	COMMERCIAL	NO
4009991215	2612 W GREVES ST	2.539991	1,070,000	317,500	752,500	COMMERCIAL	SITE 210
4000401110	2501 W ST PAUL AVE	0.705992	346,800	88,300	258,500	COMMERCIAL	SITE 215
4000774110	2326 W ST PAUL AVE	3.9	1,189,200	487,500	701,700	COMMERCIAL	SITE 218

Alternative 2

TAXKEY	ADDRESS	ACRES	ASSESSED VALUE	LAND VALUE	IMPROVED VALUE	DESCRIPTION	HAZMAT SITE
4200178000	173 S 67TH ST	0.085399	80,800	7,900	72,900	RESIDENTIAL	NO
4200151000	169 S 66TH ST	0.096786	95,300	8,400	86,900	RESIDENTIAL	NO
4200115100	164 S 66TH ST	0.133792	92,500	9,900	82,600	RESIDENTIAL	NO
4200122000	163 S 65TH ST	0.085399	77,000	7,900	69,100	RESIDENTIAL	NO
4200673110	164 S 65TH ST	0.141667	104,600	10,200	94,400	RESIDENTIAL	NO
4200621000	161 S 62ND ST	0.103558	99,100	8,600	90,500	OTHER	NO
4201046000	163 S 61ST ST	0.130165	59,700	9,800	49,900	RESIDENTIAL	NO
4049999000	114 N 60TH ST	0.15427	134,200	11,800	122,400	RESIDENTIAL	NO
4210101110	101 S DANA CT	0.136455	277,000	11,900	265,100	COMMERCIAL	NO
4210104211	123 S DANA CT	0.640657	170,200	55,800	114,400	COMMERCIAL	NO
4020010000	241 N 35TH ST	0.030303	72,900	2,000	70,900	RESIDENTIAL	NO
4020009000	237 N 35TH ST	0.041667	69,000	4,500	64,500	COMMERCIAL	NO
4020017110	215 N 35TH ST	0.626722	426,000	68,300	357,700	COMMERCIAL	SITE 120
4020020000	3504 W PARK HILL AVE	0.137741	48,500	15,000	33,500	COMMERCIAL	NO
4000084000	2631 W CLYBOURN ST	0.206612	135,000	31,500	103,500	COMMERCIAL	NO
4009991215	2612 W GREVES ST	2.539991	1,070,000	317,500	752,500	COMMERCIAL	SITE 210
4000401110	2501 W ST PAUL AVE	0.705992	346,800	88,300	258,500	COMMERCIAL	SITE 216
4009991110	305 N 25TH ST	1.339945	404,000	233,500	170,500	COMMERCIAL	NO
4009990000	321 N 25TH ST	0.429293	262,000	74,800	187,200	COMMERCIAL	SITE 215
4000774110	2326 W ST PAUL AVE	3.9	1,189,200	487,500	701,700	COMMERCIAL	SITE 218
4009995115	2401 W ST PAUL AVE	2.819995	934,000	352,500	581,500	COMMERCIAL	SITE 219

TABLE 3: BRIDGE LOCATIONS

STRUCTURE ID NUMBER	STRUCTURE ON	STRUCTURE UNDER	MATERIAL	TYPE	YEAR_BUILT
B-40-0040-0001	USH 41 SB-STADIUM INT	RAMP USH 41NBL-IH 94 WB	CONT STEEL	DECK GIRDER	1959
B-40-0040-0002	USH 41 SB-STADIUM INT	LAND	CONT STEEL	DECK GIRDER	1959
B-40-0040-0003	USH 41 SB-STADIUM INT	IH 94 EB/WB, RAMP IH 94 EB - USH 41 NB STADIUM INT	CONT STEEL	DECK GIRDER	1959
B-40-0009	USH 18-W BLUE MOUND RD	USH 41-STADIUM FREEWAY	STEEL	DECK GIRDER	1955
B-40-0015	N 35TH ST	IH 94 E-W FREEWAY	STEEL	DECK GIRDER	1961
B-40-0033	IH 94 E-W FREEWAY	N 32ND ST	STEEL	DECK GIRDER	1956
B-40-0087	IH 94 WB FREEWAY	S 70TH ST	CONT STEEL	DECK GIRDER	1963
B-40-0086	IH 94 EB FREEWAY	S 70TH ST	CONT STEEL	DECK GIRDER	1963
B-40-0034	N 25TH ST	IH 94 E-W FREEWAY	CONT STEEL	DECK GIRDER	1957
B-40-0038	I-94 EB FREEWAY	YOUNT DR	CONT CONCRETE	RIGID FRAME	1958
B-40-0037	I-94 WB FREEWAY	YOUNT DR	CONT CONCRETE	RIGID FRAME	1958
B-40-0039	RAMP USH 41 NB-IH 94 WB	IH 94 EB-STADIUM INT	CONT STEEL	DECK GIRDER	1959
B-40-0040-0004	RAMP IH 94 WB - USH 41 SB	LAND	CONT STEEL	DECK GIRDER	1959
B-40-0040-0005	RAMP IH 94 WB - USH 41 SB	USH 41 NB, IH 94 EB STADIUM INT	CONT STEEL	DECK GIRDER	1959
B-40-0049-0001	USH 41	IH 94 WB STADIUM INT	CONT STEEL	DECK GIRDER	1959
B-40-0049-0005	USH 41 SB	44TH ST	CONT STEEL	DECK GIRDER	1959
B-40-0049-0004	USH 41 SB	MENOMONEE RIVER	CONT STEEL	DECK GIRDER	1959
B-40-0049-0003	IH 94 EB	44TH ST	CONT STEEL	DECK GIRDER	1959
B-40-0049-0006	IH 94 EB STADIUM INT	CMSTPP RR	CONT STEEL	DECK GIRDER	1959
B-40-0049-0002	USH 41 SB	RAMP IH 94 WB-STH 341 SB	CONT STEEL	DECK GIRDER	1959
B-40-0041	IH 94 EB STADIUM INT	USH 41 NB STADIUM INT	CONT STEEL	DECK GIRDER	1959
B-40-0042	IH 94 WB STADIUM INT	USH 41 NB-STADIUM INT	CONT STEEL	DECK GIRDER	1959
B-40-0043	STH 57-27TH ST	IH 94 E-W FREEWAY	CONT STEEL	DECK GIRDER	1960
B-40-0046	IH 94 EB FREWAY	GENERAL MITCHELL BLVD	CONT CONCRETE	FLAT VOIDED SLAB	1959
B-40-0047	IH 94 WB FREEWAY	GENERAL MITCHEL BLVD	CONT CONCRETE	FLAT VOIDED SLAB	1959
B-40-0048	ZABLOCKI DR	IH 94 E-W FREEWAY	CONT STEEL	RIGID FRAME	1959
B-40-0050	IH 94 WB FREEWAY	N 44TH ST	CONT STEEL	DECK GIRDER	1959
B-40-0052	W WELLS ST	USH 41 STADIUM FREEWAY	CONT PREST CO	DECK GIRDER	1958
B-40-0053	W VLIET ST	USH 41 STADIUM FREEWAY	PREST CONTRETE	DECK GIRDER	1959
B-40-0055	W WISCONSIN AVE	USH 41 STADIUM FREEWAY	PREST CONCRETE	DECK GIRDER	1960
B-40-0056	W WASHINGTON BLVD	USH 41 STADIUM FREEWAY	CONT PREST CO	DECK GIRDER	1958
B-40-0057	W ST PAUL AVE-N 26TH ST	IH 94 E-W FREEWAY	CONT STEEL	DECK GIRDER	1960
B-40-0060	W LLOYD ST	USH 41 STADIUM FREEWAY	CONT PREST CO	DECK GIRDER	1960
B-40-0063	USH 41 SB STADIUM FREEWAY	W STATE ST	PREST CONCRETE	DECK GIRDER	1960
B-40-0064	USH 41 NB STADIUM FREEWAY	W STATE ST	PREST CONCRETE	DECK GIRDER	1960
B-40-0081	IH 94 E-W FREEWAY	N HAWLEY RD	CONT CONCRETE	HAUNCHED SLAB	1960
B-40-0082	IH 94 EB FREEWAY	S 64TH ST	CONT PREST CO	DECK GIRDER	1960
B-40-0083	IH 94 WB FREEWAY	S 64TH ST	CONT PREST CO	DECK GIRDER	1960
B-40-0084	IH 94 EB FREEWAY	S 68TH ST	CONT PREST CO	DECK GIRDER	1961
B-40-0085	IH 94 WB FREEWAY	S 68TH ST	CONT PREST CO	DECK GIRDER	1961
B-40-0655	FREDERICK MILLER PKWY/STADIUM SOUTH ACCESS	STH 341/MILLER PARK WAY	CONT STEEL	DECK GIRDER	1998
B-40-0654	STH 341 SB/MILLER PARK WAY	SELIG DR/STADIUM NORTH ACCESS	CONT STEEL	DECK GIRDER	1998
B-40-0656	PEDESTRIAN WALKWAY	STH 341/MILLER PARK WAY	STEEL	DECK GIRDER	1998
B-40-0653	STH 341 NB/MILLER PARK WAY	SELIG DR/STADIUM NORTH ACCESS	CONT STEEL	DECK GIRDER	1998
B-40-0658	SELIG DR/STADIUM NORTH ACCESS	MENOMONEE RIVER	CONT PREST CO	DECK GIRDER	1998
B-40-0657	CP RAIL	STH 341/MILLER PARK WAY	STEEL	THRU GIRD/FL SYS	1998
B-40-0660	PEDESTRIAN WALKWAY (BASEBALL STADIUM PARKING LOT)	MENOMONEE RIVER	--	--	N/A
B-40-0659	CANAL STREET	MENOMONEE RIVER	PREST CONCRETE	DECK GIRDER	1998
B-40-0513	27TH ST	Menomonee Valley	--	--	N/A



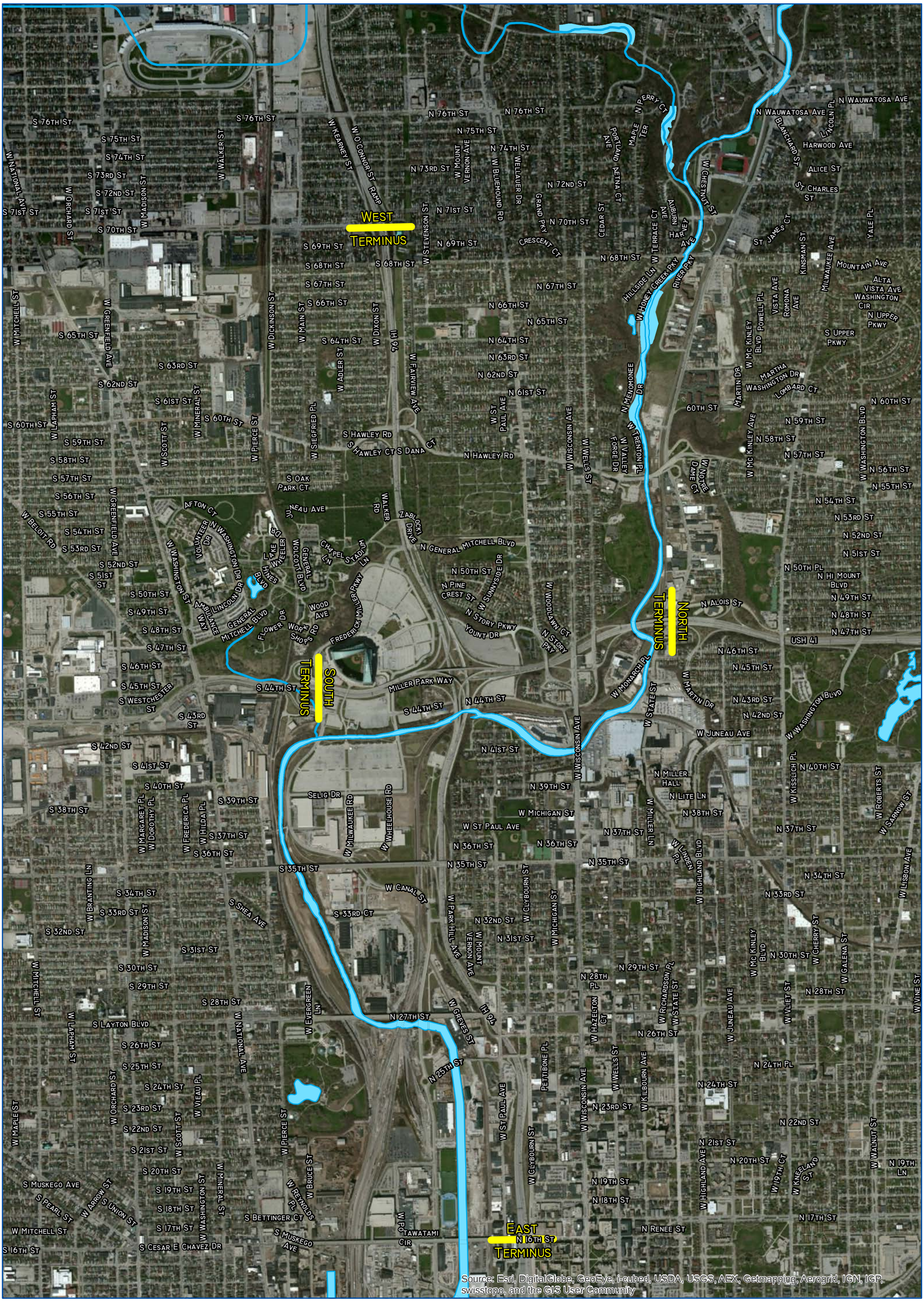
KAPUR & ASSOCIATES
CONSULTING ENGINEERS

0 500 1,000
Feet

TOPOGRAPHIC MAP

IH 94 EAST-WEST FREEWAY CORRIDOR STUDY
MILWAUKEE COUNTY
WISDOT ID: 1060-27-00

FIGURE:
1



KAPUR & ASSOCIATES
CONSULTING ENGINEERS

0 500 1,000
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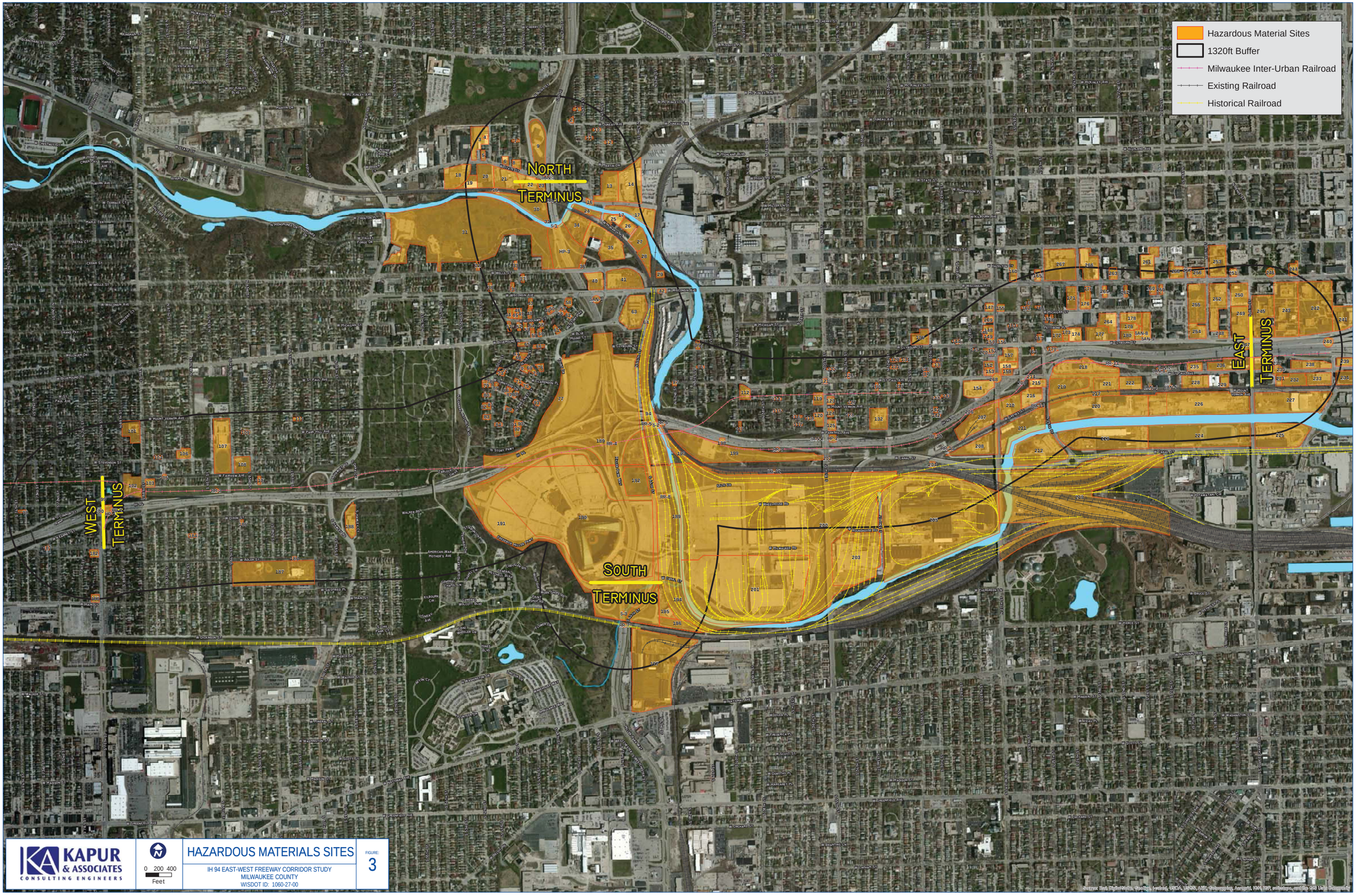
AERIAL PHOTOGRAPH

IH 94 EAST-WEST FREEWAY CORRIDOR STUDY
MILWAUKEE COUNTY
WISDOT ID: 1060-27-00

FIGURE:
2



KAPUR & ASSOCIATES
CONSULTING ENGINEERS

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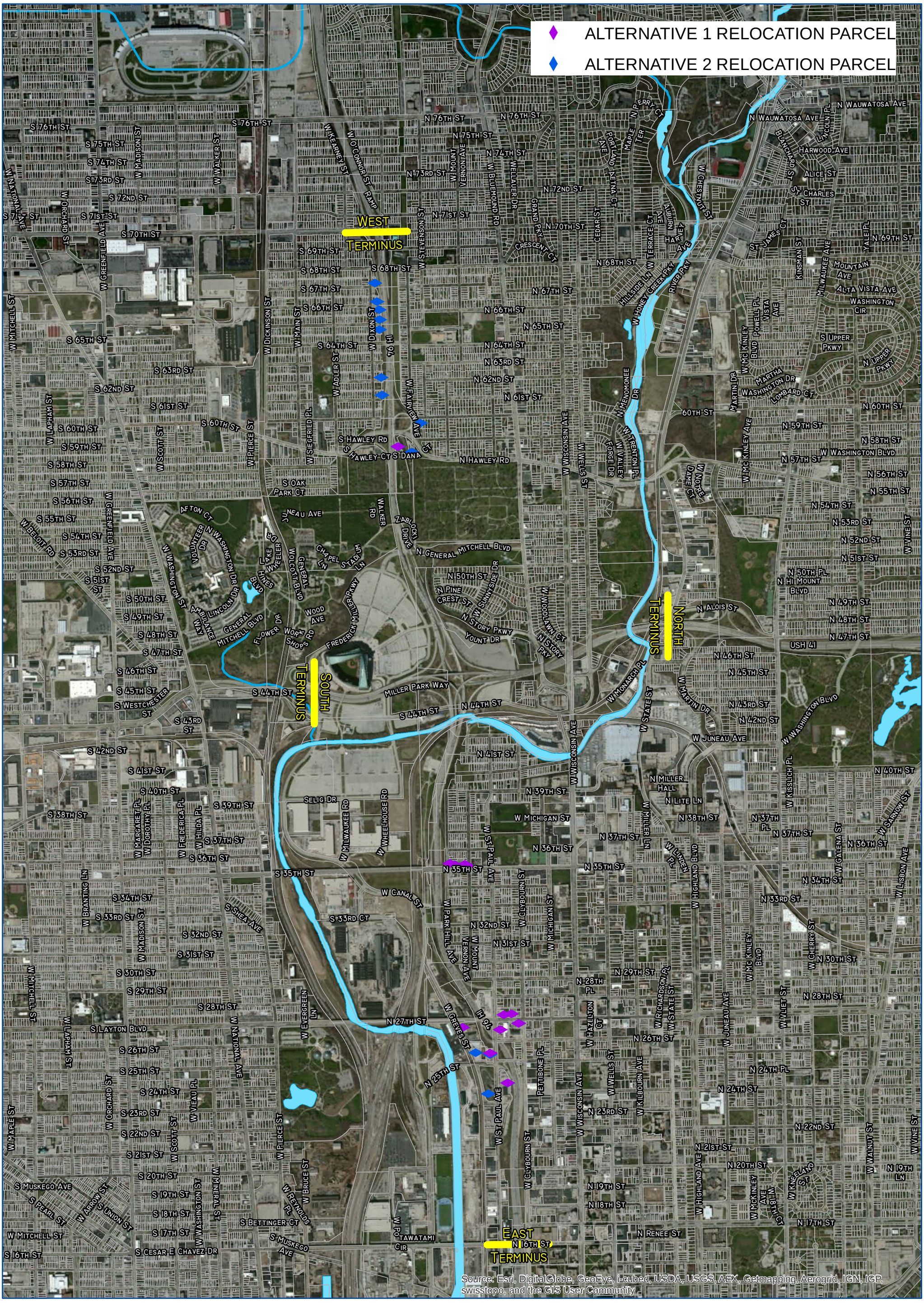
Feet

HAZARDOUS MATERIALS SITES

IH 94 EAST-WEST FREEWAY CORRIDOR STUDY
MILWAUKEE COUNTY
WISDOT ID: 1060-27-00

FIGURE:
3



KAPUR & ASSOCIATES
CONSULTING ENGINEERS

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Feet

RELOCATION PARCELS

IH 94 E/W AND STADIUM INTERCHANGE--
MILWAUKEE COUNTY
WISDOT ID: 1060-27-00

FIGURE:
5

TECHNICAL MEMORANDUM

CH2MHILL®

Predictive Safety Analyses
I-94 East/West

PREPARED FOR: Jason Lynch/WisDOT
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DATE: August 26, 2013 – Updated on December 17, 2014

The purpose of this memorandum is to update the anticipated safety comparisons of the alternatives considered for the I-94 East/West Improvement Project that was conducted last year. This analysis used the newly introduced Enhanced Interchange Safety Analysis Tool to compare the predicted crash frequency on the different alternatives considered. There are comparisons between Replace-in Kind (same as the no-build) and design alternatives under consideration for segments of the project corridor.

Predictive safety analyses were conducted for the alternatives for the various segments of the project:

- Split Diamond at 68th and 70th
- Cemetery Area – At-Grade vs. Double Deck
- Stadium Interchange
- East Leg - Off Alignment vs. On Alignment

For more information on the alternatives see Section 2 of the Draft Environmental Impact Statement that was signed in November 2014.

Tools Used and Definitions

***Enhanced Interchange Safety Analyses Tool* (ISATe),** a spreadsheet based tool was used to conduct freeway and interchange safety analyses. With the input of the geometric and operations data, the built-in algorithms and equations compute the predicted average crash frequencies.

This model was developed using the predictive methods that were developed for the 2014 supplement to the first edition of the AASHTO Highway Safety Manual (HSM). One method is for freeways and the other is for ramps. The model shares the limitations of these methods.

Crash Frequency is one of the simplest forms of crash data analysis. It is defined as the number of crashes occurring within a specific jurisdiction, on a roadway segment, or at an intersection over a period of time. For the ISATe analyses, the crash frequency was evaluated on the I-94 mainline, the ramps, and C-D roadways for the period from year 2021 to year 2040. (When the spreadsheet was set the horizon year was 2028, so the 20 year projections labeled 2009 to 2028 in the tool are actually 2021 to 2040 values.) Average crashes per year for the design period is used for comparison as well as the total crashes for the 20 year analysis period. As the volume of traffic increases the number of crashes is expected to go up.

Crash severity is a key indicator in evaluating the current safety condition of the route. Understanding the severity of injuries allows the implementation of appropriate countermeasures to reduce the severity of crashes in the future. Crash severity is broken down by the categories shown in Table 1.

Table 1 - Crash Severity Descriptions

Severity	Description
Fatal (K)	A traffic crash in which at least one person dies within 30 days of the crash.
Type A (Incapacitating injury)	Any injury, other than fatal, that prevents the injured person from walking, driving, or normally continuing the activities he/she was capable of performing before the injury occurred. Inclusions: severe lacerations, broken/distorted limbs, skull injuries, chest injuries and abdominal injuries.
Type B (Non-incapacitating injury)	Any injury, other than a fatal or incapacitating injury, that is evident to observers at the scene of the crash. Inclusions: lumps on the head, abrasions, bruises, and minor lacerations.
Type C (Reported, injury not evident)	Any injury reported or claimed that is not listed above. Inclusions: momentary unconsciousness, claims of injuries not evident, limping, complaints of pain, nausea.
All Injury (KI)	Total of the four categories above
Property Damage (PDO)	No injuries or fatalities, but damage is caused to either vehicle or property.

Work Approach

Analyses were conducted for the scenarios mentioned above for the design year 2040 conditions using the proposed geometric alternatives and projected traffic data to determine the predicted average crash frequency. This method does not use crash rates because the relationship between the traffic volume and the frequency of crashes is not a linear function. ISATe incorporates various geometric and operational features of the interstate facility and the ramps including the basic number of through lanes, roadway horizontal alignment and cross section data, ramp access data with entrances, exits and weaving data; and the average annual daily traffic volumes. In summary, these models incorporate several of the geometric and operational features of the freeway and ramp facilities. The 2040 traffic data used in the comparison of the alternatives was projected for the design year based on the information provided by SEWRPC. This predictive method accounts for the AADT that is input to the model. Tables in the following sections of this memo show the average crashes per year and over the 20 year design period for the severity categories shown in Table 1.

The ISATe tool only analyzes freeways and ramps. Where a change in interstate access resulted in a significant difference in traffic volume on the local road network, the study team analyzed the increased volume of traffic on nearby local roads and the increase in crash rates on these roads as a result of the increase in traffic. Other than this change in access, changes to crash frequency on other surface streets are not accounted for.

Limitations of the Model

This model is based on data collected during the research used to develop these new chapters of the HSM. It has not been calibrated for this region. The results are used for order of magnitude comparisons rather than the absolute values.

Special purpose lanes are not accounted for. Ramp metering is not included in the model. There is no distinction between different types of barriers. Auxiliary lanes for short distances along the freeway are not included in the model. Vertical alignment is not included in the model, so there is no consideration of steep grades or short vertical curves on the frequency of crashes. This model does not include frontage roads or other surface streets within the interchange area.

The ISATe analysis does not take into account any changes in crashes on the Local Street system due to diversion to the freeway from geometric and capacity improvements with the alternatives. Since urban arterial crash rates run higher than freeway crash rates, it is likely that a significant reduction in crashes may result due to the

diversion of traffic from the urban arterials to the improved freeway, with the higher capacity alternatives having the greatest overall reduction in urban arterial crashes.

The analysis also does not take into account that some vehicles being diverted under the alternatives with reduced access at Hawley may be leaving that analysis segment and moving to another segment that may be increasing the freeway and ramp crashes in that segment and yet are not being accounted for in the comparison segment.

West Leg Split Diamond at 68th and 70th

This scenario compares the Replace-in-kind (6 total freeway lanes) with the proposed alternative that keeps a split diamond at 68th and 70th Streets (8 total freeway lanes).
This comparison does not include the ramp terminals. This comparison was done on the freeway only, no ramp segments are included. The ISATe tool does not analyze the frontage road between the spilt diamond intersections. The length of this segment is approximately .15 mile. Table 2-1 shows the average predicted crashes per year over the 20 year design period from 2021 through 2040. Table 2-2 shows the total crashes predicted over the 20 period.

Table 2-1 Average frequency of crashes per year

Scenario	Fatal	Injury			PDO			KI			Total		
	K	A	B	C	Crashes	Reduction (No./%)		Crashes	Reduction (No./%)		Crashes	Reduction (No./%)	
RIK–BASE CASE	0.0	0.1	0.5	1.8	6.1	--	--	2.4	--	--	8.5	--	--
Split Diamond	0.0	0.1	0.5	1.6	5.0	1.1	18.0%	2.2	0.2	8.3%	7.2	1.3	15.3%

Table 2-2 Crashes over 20 year Design Period

Scenario	Fatal	Injury			PDO			KI			Total		
	K	A	B	C	Crashes	Reduction (No./%)		Crashes	Reduction (No./%)		Crashes	Reduction (No./%)	
RIK–BASE CASE	0.5	1.3	9.1	35.6	122.8	--	--	47.5	--	--	169.3	--	--
Split Diamond	0.5	1.4	9.5	31.3	100.8	22.0	17.9%	42.7	3.8	8.2%	143.5	25.8	15.2%

The crashes in the Replace-in-Kind alternative are approximately 75% multiple vehicle and 25% single vehicle crashes. For the proposed split diamond the crashes are approximately 72% multiple vehicle and 28% single vehicle crashes.

The safety performance for the two alternatives is very similar. With as small as these crash numbers are the difference is about one crash per year. The local streets are not included in this model.

Alternatives in the area of the Cemeteries

This scenario compares the replace in kind to the following three alternatives:

- 8-lane at-grade section with no interchange at Hawley Road
- 8-lane at-grade section with a half interchange at Hawley Road
- 8-lane plus two auxiliary lanes on the double deck section with a full interchange at Hawley Road

The 8-lane at-grade typical section has reduced lane and shoulder widths to fit the roadway between the cemeteries. The full typical is too wide to fit in the existing right-of-way and would require the relocation of graves. The 8-lane at-grade typical consists of four lanes that narrow to 11' with shoulders that narrow to 2'. The double deck typical section consists of four 12' lanes, two 12' auxiliary lanes and shoulders with an average of 10' width. The length of this segment is approximately 1.0 mile.

Table 3-1A shows the average predicted crashes per year over the 20 year design period from 2021 through 2040 on the freeway and the ramps. The traffic volume projected to be on this segment of freeway varies between these alternatives due to difference in access at Hawley Road. The increase in crashes on the routes that the traffic is diverted to was estimated from the existing crash rates and the diverted traffic volume. This was added to the freeway crashes to get a more complete comparison. The tables that show the rates and traffic volumes are attached in the Diversion Route Crashes section at the back of this memo.

Table 3-1A Average frequency of crashes per year on freeway and ramps

Scenario	Fatal	Injury			PDO			KI			Total		
	K	A	B	C	Crashes	Reduction (No./%)		Crashes	Reduction (No./%)		Crashes	Reduction (No./%)	
RIK–BASE CASE	0.3	0.9	5.4	18.0	58.5	--	--	24.6	--	--	83.1	--	--
No Hawley	0.2	0.6	3.8	13.5	41.2	17.3	29.6%	18.1	6.5	26.4%	59.3	23.8	28.6%
Half Hawley	0.2	0.6	4.3	14.4	44.4	14.1	24.1%	19.5	5.1	20.7%	63.9	19.2	23.1%
Double Deck	0.3	0.9	5.6	16.0	48.4	10.1	17.3%	22.8	1.8	7.3%	71.2	11.9	14.3%

Table 3-1B Increased Surface Street Crashes due to diverted traffic

Scenario	Fatal	Injury			PDO	KI	Total
	K	A	B	C			
No Hawley	0.1	0.8	5.1	11.1	26.5	17.1	43.6
Half Hawley	0.1	0.3	2.1	4.5	10.8	7.0	17.8

Table 3-1C Total Average Crashes per Year on the freeway, ramps and diversion to Surface Streets

Scenario	Fatal	Injury			PDO	KI	Total
	K	A	B	C			
No Hawley	0.3	1.4	8.9	24.6	67.7	35.2	102.9
Half Hawley	0.3	0.9	6.4	18.9	55.2	26.5	81.7
Double Deck*	0.3	0.9	5.6	16.0	48.4	22.8	71.2

*Same as the table 3-1A since there is no traffic diverted

Table 3-2 shows the total crashes predicted over the 20 period from the ISATe Model.

Table 3-2 Crashes over 20 year Design Period on the freeway and ramps

Scenario	Fatal	Injury			PDO			KI			Total		
	K	A	B	C	Crashes	Reduction (No./%)		Crashes	Reduction (No./%)		Crashes	Reduction (No./%)	
RIK–BASE CASE	6.2	17.4	108.8	359.7	1170.9	--	--	492.1	--	--	1662.9	--	--
No Hawley	4.1	11.1	76.7	271.0	823.0	347.9	29.7%	362.9	129.2	26.3%	1185.8	477.1	28.7%
Half Hawley	4.7	12.8	85.7	288.1	887.1	283.8	24.2%	391.3	100.8	20.5%	1278.3	384.6	23.1%
Double Deck	6.3	18.0	111.1	319.6	968.5	202.4	17.3%	455.0	37.1	7.5%	1423.4	239.5	14.4%

The breakdown between multiple vehicle and single vehicle crashes on these alternatives are as follows:
RIK - 76% multiple vehicle, 24% single vehicle
No Hawley - 74% multiple vehicle, 26% single vehicle
Half Hawley - 72% multiple vehicle, 28% single vehicle
Double Deck - 64% multiple vehicle, 36% single vehicle

Tables 3-3 and 3-4 show the crashes on the freeway mainline and ramp segments respectively. With the double deck option the number of crashes on the mainline is lower than the other alternatives. There are more ramp crashes predicted due to the greater length of ramp roadway in certain alternatives. The Double Deck alternative has the most ramp length since it has all the ramps and more distance to connect the ramps to both levels.

Table 3-3 Freeway Crashes over the 20 year period

Scenario	Fatal	Injury			PDO	KI	Total
	K	A	B	C			
RIK	4.9	13.4	89.9	332.6	1109.6	440.8	1550.4
No Hawley	3.9	10.3	73.2	263.9	808.3	351.3	1159.6
Half Hawley	4.1	11.2	77.9	273.5	853.9	366.7	1220.6
Double Deck	4.1	11.4	77.4	248.2	783.2	341.1	1124.2

Table 3-4 Ramp Crashes over the 20 year period

Scenario	Fatal	Injury			PDO	KI	Total
	K	A	B	C			
RIK	1.3	3.9	18.9	27.1	61.3	51.2	112.5
No Hawley	0.2	0.7	3.5	7.0	14.7	11.4	26.2
Half Hawley	0.5	1.6	7.8	14.6	33.1	24.5	57.6
Double Deck	2.2	6.7	33.7	71.4	185.2	114.0	299.1

Stadium interchange

The selected alternative for the Stadium Interchange is a service interchange that consists of free-flow exit ramps and signal controlled entrance ramps.

There is also an embedded service interchange to replace the access at Mitchel Boulevard that has diagonal ramps to 44th and 46th Streets underneath I-94.

This alternative will have free-flow ramps for the eastbound and westbound exits to northbound and southbound USH 41. The ramp terminal intersection on USH 41 with the entrance ramps to eastbound and westbound I-94 will have signalized left turn movements and free-flow right turn movements. These signalized movements do not have crossing through movements so they are coded into the model as signalized T-intersections. Table 4-1 shows the average predicted crashes per year over the 20 year design period from 2021 through 2040. Table 4-2 shows the total crashes predicted over the 20 period.

Table 4-1 Average frequency of crashes per year

Scenario	Fatal	Injury			PDO			KI			Total		
	K	A	B	C	Crashes	Reduction (No./%)		Crashes	Reduction (No./%)		Crashes	Reduction (No./%)	
RIK–BASE CASE	0.5	1.4	8.5	25.9	72.6	--	--	36.3	--	--	108.9	--	--
Service int.	0.4	1.3	7.7	20.5	56.3	16.3	22.4%	29.9	6.4	17.6%	86.2	22.7	20.8%

Table 4-2 Crashes over 20 year Design Period on the freeway

Scenario	Fatal	Injury			PDO			KI			Total		
	K	A	B	C	Crashes	Reduction (No./%)		Crashes	Reduction (No./%)		Crashes	Reduction (No./%)	
RIK–BASE CASE	9.6	27.3	170.5	517.4	1452.7	--	--	724.8	--	--	2177.5	--	--
Service int.	8.2	25.6	153.9	409.6	1125.8	326.9	22.5%	597.3	127.5	17.6%	1723.2	454.3	20.9%

The Replace-in-kind has 80% multiple vehicle and 20% single vehicle crashes predicted.

The hybrid alternative has 73% multiple vehicle and 27% single vehicle crashes predicted.

Tables 4-3 and 4-4 show the crashes on the freeway mainline and ramp segments respectively. The removal of left side ramps and improvements to the alignment result in fewer crashes on the mainline. With the additional number and length of ramps there is a significant difference in ramp crashes.

Table 4-3 Freeway Crashes over the 20 year period

Scenario	Fatal	Injury			PDO	KI	Total
	K	A	B	C			
RIK	8.0	22.5	145.6	473.6	1335.4	649.7	1985.1
Service int.	3.3	9.2	60.9	185.2	600.0	258.6	858.6

Table 4-4 Ramp Crashes over the 20 year period

Scenario	Fatal	Injury			PDO	KI	Total
	K	A	B	C			
RIK	1.6	4.8	24.9	43.8	117.3	75.1	192.4
Service int.*	5.0	16.4	93.1	224.5	525.8	339.0	864.6

* includes the ramp terminals

Comparison of the Off Alignment vs. On Alignment of the East Leg

This scenario compares an alternative that keeps the freeway basically on the existing alignment with the alternative that relocates the freeway slightly south with flatter curves. The alternative on existing alignment has widened shoulders to provide the required sight distance. The limits of this segment are from just west of 32nd Street to 16th Street. The on alignment has a minimum radius of 1636' and the off alignment has a flatter radius of 2788'. The length of this segment is approximately 1.1 miles. Table 5-1 shows the average predicted crashes per year over the 20 year design period from 2021 through 2040. Table 5-2 shows the total crashes predicted over the 20 period.

Table 5-1 Average frequency of crashes per year

Scenario	Fatal	Injury			PDO			KI			Total		
	K	A	B	C	Crashes	Reduction (No./%)		Crashes	Reduction (No./%)		Crashes	Reduction (No./%)	
RIK–BASE CASE	0.3	0.7	4.6	16.6	56.1	--	--	22.2	--	--	78.3	--	--
On Alignment	0.3	0.7	4.5	12.2	38.5	17.6	31.4%	17.7	4.5	20.3%	56.2	22.1	28.2%
Off Alignment	0.3	0.7	4.6	12.1	37.9	18.2	32.4%	17.7	4.5	20.3%	55.6	22.7	29.0%

Table 5-2 Crashes over 20 year Design Period on the freeway

Scenario	Fatal	Injury			PDO			KI			Total		
	K	A	B	C	Crashes	Reduction (No./%)		Crashes	Reduction (No./%)		Crashes	Reduction (No./%)	
RIK–BASE CASE	5.1	14.7	93.0	331.5	1121.4	--		444.3	--	--	1565.6	--	--
On Alignment	5.1	14.3	90.5	245.0	770.0	351.4	31.3%	354.9	89.4	20.1%	1124.9	440.7	28.1%
Off Alignment	5.1	14.5	91.8	242.2	757.9	363.6	32.4%	353.6	90.7	20.4%	1111.4	454.2	29.0%

The ISATe tool predicted approximately 74% of the crashes as multiple vehicle crashes and 26% of the crashes as single vehicle for the existing alignment. The distribution is approximately 62% multiple vehicle and 38% single vehicle for the on alignment and 60% multiple vehicle and 40% single vehicle for the off alignment.

Tables 4-3 and 4-4 show the crashes on the freeway mainline and ramp segments respectively. The alignment with the flattened curves has the lowest number of predicted crashes on the freeway mainline. With greater ramp length, this alternative is predicted to have a higher number of ramp crashes.

Table 5-3 Freeway Crashes over the 20 year period

Scenario	Fatal	Injury			PDO	KI	Total
	K	A	B	C			
RIK	4.2	11.9	79.7	309.4	1069.1	405.2	1474.4
On Alignment	3.9	10.6	73.0	207.3	686.9	294.8	981.7
Off Alignment	3.8	10.3	71.3	197.0	657.2	282.4	939.6

Table 5-4 Ramp Crashes over the 20 year period

Scenario	Fatal	Injury			PDO	KI	Total
	K	A	B	C			
RIK	0.9	2.8	13.2	22.1	52.2	39.0	91.2
On Alignment	1.2	3.7	17.6	37.6	83.1	60.1	143.2
Off Alignment	1.4	4.1	20.5	45.1	100.7	71.1	171.8

ISATe Summary Sheets

Output Summary

General Information

Project description:	I-94 EW Corridor Study - ISATe Analysis - West Leg-70th to 68th_RIK				
Analyst:	AVG	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009				
Last year of analysis:	2028				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility		Total	K	A	B	C	PDO
Estimated number of crashes during Study Period, crashes:		169.3	0.5	1.3	9.1	35.6	122.8
Estimated average crash freq. during Study Period, crashes/yr:		8.5	0.0	0.1	0.5	1.8	6.1
Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	1	169.3	0.5	1.3	9.1	35.6	122.8
Ramp segments, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2009	8.1	0.0	0.1	0.4	1.7	5.9
	2010	8.1	0.0	0.1	0.4	1.7	5.9
	2011	8.2	0.0	0.1	0.4	1.7	5.9
	2012	8.2	0.0	0.1	0.4	1.7	5.9
	2013	8.3	0.0	0.1	0.4	1.7	6.0
	2014	8.3	0.0	0.1	0.4	1.8	6.0
	2015	8.3	0.0	0.1	0.4	1.8	6.0
	2016	8.4	0.0	0.1	0.5	1.8	6.1
	2017	8.4	0.0	0.1	0.5	1.8	6.1
	2018	8.4	0.0	0.1	0.5	1.8	6.1
	2019	8.5	0.0	0.1	0.5	1.8	6.2
	2020	8.5	0.0	0.1	0.5	1.8	6.2
	2021	8.6	0.0	0.1	0.5	1.8	6.2
	2022	8.6	0.0	0.1	0.5	1.8	6.2
	2023	8.6	0.0	0.1	0.5	1.8	6.3
	2024	8.7	0.0	0.1	0.5	1.8	6.3
	2025	8.7	0.0	0.1	0.5	1.8	6.3
	2026	8.7	0.0	0.1	0.5	1.8	6.4
	2027	8.8	0.0	0.1	0.5	1.8	6.4
	2028	8.8	0.0	0.1	0.5	1.8	6.4
	2029						
	2030						
	2031						
	2032						

Distribution of Crashes for Entire Facility

Crash Type	Crash Type Category	Estimated Number of Crashes During the Study Period					
		Total	K	A	B	C	PDO
Multiple vehicle	Head-on crashes:	0.4	0.0	0.0	0.1	0.2	0.2
	Right-angle crashes:	2.7	0.0	0.0	0.2	0.8	1.7
	Rear-end crashes:	89.3	0.2	0.7	4.8	18.7	64.8
	Sideswipe crashes:	30.9	0.1	0.2	1.1	4.5	25.0
	Other multiple-vehicle crashes:	3.3	0.0	0.0	0.2	0.8	2.3
	Total multiple-vehicle crashes:	126.5	0.3	0.9	6.4	25.0	93.9
Single vehicle	Crashes with animal:	0.7	0.0	0.0	0.0	0.0	0.6
	Crashes with fixed object:	30.7	0.1	0.3	2.0	7.7	20.7
	Crashes with other object:	4.7	0.0	0.0	0.1	0.5	4.0
	Crashes with parked vehicle:	0.7	0.0	0.0	0.0	0.2	0.5
	Other single-vehicle crashes	6.0	0.0	0.1	0.6	2.2	3.1
	Total single-vehicle crashes:	42.8	0.1	0.4	2.7	10.6	28.8
Total crashes:		169.3	0.5	1.3	9.1	35.6	122.8

Evaluation Site Summary

General Information

Project description:	I-94 EW Corridor Study - ISATe Analysis - West Leg-70th to 68th_RIK				
Analyst:	AVG	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009	Total length of freeway segments for Study Period (mi):	0.145		
Last year of analysis:	2028				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	6	0.145	68th-70th
2	0	0.000	0
3	0	0.000	0
4	0	0.000	0
5	0	0.000	0
6	0	0.000	0
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description	Number	Study Period Description
1	0	21	0
2	0	22	0
3	0	23	0
4	0	24	0
5	0	25	0
6	0	26	0
7	0	27	0
8	0	28	0
9	0	29	0
10	0	30	0
11	0	31	0
12	0	32	0
13	0	33	0
14	0	34	0
15	0	35	0
16	0	36	0
17	0	37	0
18	0	38	0
19	0	39	0
20	0	40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	I-94 EW Corridor Study - ISATe Analysis - West Leg-70th to 68th				
Analyst:	AVG	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009				
Last year of analysis:	2028				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility		Total	K	A	B	C	PDO
Estimated number of crashes during Study Period, crashes:		143.5	0.5	1.4	9.5	31.3	100.8
Estimated average crash freq. during Study Period, crashes/yr:		7.2	0.0	0.1	0.5	1.6	5.0
Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	1	143.5	0.5	1.4	9.5	31.3	100.8
Ramp segments, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2009	6.3	0.0	0.1	0.4	1.4	4.4
	2010	6.4	0.0	0.1	0.4	1.4	4.4
	2011	6.5	0.0	0.1	0.4	1.4	4.5
	2012	6.6	0.0	0.1	0.4	1.5	4.6
	2013	6.7	0.0	0.1	0.4	1.5	4.6
	2014	6.7	0.0	0.1	0.5	1.5	4.7
	2015	6.8	0.0	0.1	0.5	1.5	4.8
	2016	6.9	0.0	0.1	0.5	1.5	4.9
	2017	7.0	0.0	0.1	0.5	1.5	4.9
	2018	7.1	0.0	0.1	0.5	1.6	5.0
	2019	7.2	0.0	0.1	0.5	1.6	5.1
	2020	7.3	0.0	0.1	0.5	1.6	5.1
	2021	7.4	0.0	0.1	0.5	1.6	5.2
	2022	7.5	0.0	0.1	0.5	1.6	5.3
	2023	7.6	0.0	0.1	0.5	1.6	5.4
	2024	7.7	0.0	0.1	0.5	1.7	5.4
	2025	7.8	0.0	0.1	0.5	1.7	5.5
	2026	7.9	0.0	0.1	0.5	1.7	5.6
	2027	8.0	0.0	0.1	0.5	1.7	5.7
	2028	8.1	0.0	0.1	0.5	1.7	5.7
	2029						
	2030						
	2031						
	2032						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	0.4	0.0	0.0	0.1	0.2	0.1
	Right-angle crashes:	2.2	0.0	0.0	0.2	0.7	1.3
	Rear-end crashes:	73.1	0.3	0.7	4.9	16.0	51.3
	Sideswipe crashes:	25.0	0.1	0.2	1.2	3.8	19.8
	Other multiple-vehicle crashes:	2.7	0.0	0.0	0.2	0.7	1.8
	Total multiple-vehicle crashes:	103.4	0.3	1.0	6.5	21.3	74.3
Single vehicle	Crashes with animal:	0.6	0.0	0.0	0.0	0.0	0.6
	Crashes with fixed object:	28.8	0.1	0.3	2.2	7.2	19.0
	Crashes with other object:	4.4	0.0	0.0	0.2	0.5	3.7
	Crashes with parked vehicle:	0.6	0.0	0.0	0.0	0.1	0.4
	Other single-vehicle crashes	5.7	0.0	0.1	0.6	2.1	2.8
	Total single-vehicle crashes:	40.0	0.2	0.5	3.0	9.9	26.5
Total crashes:		143.5	0.5	1.4	9.5	31.3	100.8

Evaluation Site Summary

General Information

Project description:	I-94 EW Corridor Study - ISATe Analysis - West Leg-70th to 68th				
Analyst:	AVG	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009	Total length of freeway segments for Study Period (mi):	0.146		
Last year of analysis:	2028				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	8	0.146	haw-70th
2	0	0.000	0
3	0	0.000	0
4	0	0.000	0
5	0	0.000	0
6	0	0.000	0
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description	Number	Study Period Description
1	0	21	0
2	0	22	0
3	0	23	0
4	0	24	0
5	0	25	0
6	0	26	0
7	0	27	0
8	0	28	0
9	0	29	0
10	0	30	0
11	0	31	0
12	0	32	0
13	0	33	0
14	0	34	0
15	0	35	0
16	0	36	0
17	0	37	0
18	0	38	0
19	0	39	0
20	0	40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	I-94 EW Corridor Study - ISATe Analysis - IH-94-West Leg _RIK				
Analyst:	OI	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009				
Last year of analysis:	2028				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility		Total	K	A	B	C	PDO
Estimated number of crashes during Study Period, crashes:		1662.9	6.2	17.4	108.8	359.7	1170.9
Estimated average crash freq. during Study Period, crashes/yr:		83.1	0.3	0.9	5.4	18.0	58.5
Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	2	1550.4	4.9	13.4	89.9	332.6	1109.6
Ramp segments, crashes:	11	112.5	1.3	3.9	18.9	27.1	61.3
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2009	73.9	0.3	0.8	4.9	16.2	51.7
	2010	74.9	0.3	0.8	5.0	16.4	52.4
	2011	75.8	0.3	0.8	5.0	16.6	53.1
	2012	76.8	0.3	0.8	5.1	16.8	53.8
	2013	77.7	0.3	0.8	5.1	17.0	54.5
	2014	78.7	0.3	0.8	5.2	17.1	55.2
	2015	79.6	0.3	0.8	5.3	17.3	55.9
	2016	80.6	0.3	0.8	5.3	17.5	56.6
	2017	81.6	0.3	0.9	5.4	17.7	57.4
	2018	82.6	0.3	0.9	5.4	17.9	58.1
	2019	83.6	0.3	0.9	5.5	18.1	58.8
	2020	84.6	0.3	0.9	5.5	18.3	59.6
	2021	85.5	0.3	0.9	5.6	18.4	60.3
	2022	86.5	0.3	0.9	5.6	18.6	61.1
	2023	87.6	0.3	0.9	5.7	18.8	61.8
	2024	88.6	0.3	0.9	5.7	19.0	62.6
	2025	89.6	0.3	0.9	5.8	19.2	63.4
	2026	90.6	0.3	0.9	5.8	19.4	64.1
	2027	91.6	0.3	0.9	5.9	19.6	64.9
	2028	92.7	0.3	0.9	5.9	19.8	65.7
	2029						
	2030						
	2031						
	2032						

Distribution of Crashes for Entire Facility

Crash Type	Crash Type Category	Estimated Number of Crashes During the Study Period					
		Total	K	A	B	C	PDO
Multiple vehicle	Head-on crashes:	4.4	0.0	0.1	0.5	1.9	1.8
	Right-angle crashes:	26.3	0.1	0.3	2.0	7.4	16.5
	Rear-end crashes:	891.3	2.9	8.0	53.2	194.4	632.9
	Sideswipe crashes:	307.0	0.7	1.9	13.0	47.7	243.7
	Other multiple-vehicle crashes:	31.7	0.1	0.3	2.2	7.7	21.4
	Total multiple-vehicle crashes:	1260.7	3.8	10.6	71.0	259.0	916.3
Single vehicle	Crashes with animal:	4.8	0.0	0.0	0.1	0.3	4.4
	Crashes with fixed object:	295.9	1.7	4.8	27.1	72.2	190.1
	Crashes with other object:	36.3	0.1	0.2	1.4	4.6	30.0
	Crashes with parked vehicle:	5.2	0.0	0.1	0.5	1.3	3.3
	Other single-vehicle crashes	60.0	0.5	1.6	8.7	22.3	26.9
	Total single-vehicle crashes:	402.2	2.3	6.7	37.8	100.7	254.7
Total crashes:		1662.9	6.2	17.4	108.8	359.7	1170.9

Evaluation Site Summary

General Information

Project description:	I-94 EW Corridor Study - ISATe Analysis - IH-94-West Leg _RIK				
Analyst:	OI	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009	Total length of freeway segments for Study Period (mi):	1.036		
Last year of analysis:	2028				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	6	0.506	Hawley Exit - Hawley Ent
2	6	0.530	Hawley Ent - Mitch Exit
3	0	0.000	0
4	0	0.000	0
5	0	0.000	0
6	0	0.000	0
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description	Number	Study Period Description
1	Hawley Eastbound Ext 1	21	0
2	Hawley Eastbound Ext 2	22	0
3	Hawley Westbound Ent	23	0
4	Hawley Eastbound Ent	24	0
5	Hawley Westbound Ext 1	25	0
6	Hawley Westbound Ext 2	26	0
7	Mitch Eastbound Ext 1	27	0
8	Mitch Eastbound Ext 2	28	0
9	Mitch Westbound Ent	29	0
10	68th EB Entrance	30	0
11	68th WB Exit	31	0
12	0	32	0
13	0	33	0
14	0	34	0
15	0	35	0
16	0	36	0
17	0	37	0
18	0	38	0
19	0	39	0
20	0	40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	I-94 EW Corridor Study - ISATe Analysis - IH-94-West Leg _No Hawley				
Analyst:	AVG	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009				
Last year of analysis:	2028				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility		Total	K	A	B	C	PDO
Estimated number of crashes during Study Period, crashes:		1185.8	4.1	11.1	76.7	271.0	823.0
Estimated average crash freq. during Study Period, crashes/yr:		59.3	0.2	0.6	3.8	13.5	41.2
Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	2	1159.6	3.9	10.3	73.2	263.9	808.3
Ramp segments, crashes:	6	26.2	0.2	0.7	3.5	7.0	14.7
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2009	52.7	0.2	0.5	3.5	12.2	36.3
	2010	53.3	0.2	0.5	3.5	12.4	36.8
	2011	54.0	0.2	0.5	3.5	12.5	37.3
	2012	54.7	0.2	0.5	3.6	12.6	37.8
	2013	55.4	0.2	0.5	3.6	12.8	38.3
	2014	56.1	0.2	0.5	3.7	12.9	38.8
	2015	56.8	0.2	0.5	3.7	13.1	39.3
	2016	57.5	0.2	0.5	3.7	13.2	39.8
	2017	58.2	0.2	0.5	3.8	13.3	40.3
	2018	58.9	0.2	0.6	3.8	13.5	40.8
	2019	59.6	0.2	0.6	3.9	13.6	41.4
	2020	60.3	0.2	0.6	3.9	13.8	41.9
	2021	61.0	0.2	0.6	3.9	13.9	42.4
	2022	61.7	0.2	0.6	4.0	14.0	42.9
	2023	62.5	0.2	0.6	4.0	14.2	43.5
	2024	63.2	0.2	0.6	4.1	14.3	44.0
	2025	63.9	0.2	0.6	4.1	14.5	44.6
	2026	64.6	0.2	0.6	4.1	14.6	45.1
	2027	65.4	0.2	0.6	4.2	14.7	45.6
	2028	66.1	0.2	0.6	4.2	14.9	46.2
	2029						
	2030						
	2031						
	2032						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	3.1	0.0	0.1	0.4	1.4	1.3
	Right-angle crashes:	18.2	0.1	0.2	1.5	5.3	11.1
	Rear-end crashes:	619.5	2.1	5.6	39.3	141.4	431.1
	Sideswipe crashes:	209.1	0.5	1.4	9.7	34.9	162.6
	Other multiple-vehicle crashes:	21.8	0.1	0.2	1.6	5.5	14.4
	Total multiple-vehicle crashes:	871.7	2.8	7.4	52.5	188.5	620.6
Single vehicle	Crashes with animal:	4.5	0.0	0.0	0.1	0.2	4.2
	Crashes with fixed object:	228.0	1.0	2.6	17.4	59.3	147.7
	Crashes with other object:	32.9	0.1	0.2	1.2	4.3	27.2
	Crashes with parked vehicle:	4.1	0.0	0.0	0.3	1.1	2.7
	Other single-vehicle crashes	44.6	0.3	0.8	5.2	17.6	20.8
	Total single-vehicle crashes:	314.2	1.3	3.6	24.2	82.5	202.5
Total crashes:		1185.8	4.1	11.1	76.7	271.0	823.0

Evaluation Site Summary

General Information

Project description:	I-94 EW Corridor Study - ISATe Analysis - IH-94-West Leg _No Hawley				
Analyst:	AVG	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009	Total length of freeway segments for Study Period (mi):	1.034		
Last year of analysis:	2028				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	8	0.506	1
2	8	0.528	2
3	0	0.000	Void
4	0	0.000	Void
5	0	0.000	Void
6	0	0.000	0
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description	Number	Study Period Description
1	WB Exit1	21	0
2	WB Exit2	22	0
3	WB Exit3	23	0
4	EB Ent1	24	0
5	EB Ent2	25	0
6	EB Ent3	26	0
7	0	27	0
8	0	28	0
9	0	29	0
10	0	30	0
11	0	31	0
12	0	32	0
13	0	33	0
14	0	34	0
15	0	35	0
16	0	36	0
17	0	37	0
18	0	38	0
19	0	39	0
20	0	40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	I-94 EW Corridor Study - ISATe Analysis - IH-94-West Leg _Half Hawley				
Analyst:	AVG	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009				
Last year of analysis:	2028				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility		**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:		1278.3	4.7	12.8	85.7	288.1	887.1
Estimated average crash freq. during Study Period, crashes/yr:		63.9	0.2	0.6	4.3	14.4	44.4
Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	2	1220.6	4.1	11.2	77.9	273.5	853.9
Ramp segments, crashes:	10	57.6	0.5	1.6	7.8	14.6	33.1
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2009	56.5	0.2	0.6	3.9	13.0	38.9
	2010	57.3	0.2	0.6	3.9	13.2	39.4
	2011	58.1	0.2	0.6	4.0	13.3	40.0
	2012	58.8	0.2	0.6	4.0	13.4	40.6
	2013	59.6	0.2	0.6	4.0	13.6	41.1
	2014	60.3	0.2	0.6	4.1	13.7	41.7
	2015	61.1	0.2	0.6	4.1	13.9	42.3
	2016	61.9	0.2	0.6	4.2	14.0	42.8
	2017	62.7	0.2	0.6	4.2	14.2	43.4
	2018	63.5	0.2	0.6	4.3	14.3	44.0
	2019	64.2	0.2	0.6	4.3	14.5	44.6
	2020	65.0	0.2	0.6	4.3	14.6	45.2
	2021	65.8	0.2	0.7	4.4	14.8	45.8
	2022	66.6	0.2	0.7	4.4	14.9	46.4
	2023	67.4	0.2	0.7	4.5	15.1	47.0
	2024	68.2	0.2	0.7	4.5	15.2	47.6
	2025	69.1	0.2	0.7	4.6	15.4	48.2
	2026	69.9	0.3	0.7	4.6	15.5	48.8
	2027	70.7	0.3	0.7	4.7	15.7	49.4
	2028	71.5	0.3	0.7	4.7	15.8	50.0
	2029						
	2030						
	2031						
	2032						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	3.4	0.0	0.1	0.4	1.5	1.3
	Right-angle crashes:	19.5	0.1	0.2	1.7	5.8	11.7
	Rear-end crashes:	652.0	2.3	6.1	42.7	149.0	451.9
	Sideswipe crashes:	221.7	0.6	1.5	10.4	36.2	173.1
	Other multiple-vehicle crashes:	24.1	0.1	0.3	1.8	6.1	15.8
	Total multiple-vehicle crashes:	920.8	3.0	8.2	56.9	198.7	653.9
Single vehicle	Crashes with animal:	5.0	0.0	0.0	0.1	0.3	4.6
	Crashes with fixed object:	260.3	1.2	3.3	20.7	64.4	170.8
	Crashes with other object:	35.3	0.1	0.2	1.3	4.3	29.5
	Crashes with parked vehicle:	5.1	0.0	0.1	0.4	1.2	3.4
	Other single-vehicle crashes	51.8	0.4	1.0	6.3	19.3	24.9
	Total single-vehicle crashes:	357.5	1.6	4.6	28.7	89.4	233.1
Total crashes:		1278.3	4.7	12.8	85.7	288.1	887.1

Evaluation Site Summary

General Information

Project description:	I-94 EW Corridor Study - ISATe Analysis - IH-94-West Leg _Half Hawley				
Analyst:	AVG	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009	Total length of freeway segments for Study Period (mi):	1.035		
Last year of analysis:	2028				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	8	0.506	1
2	8	0.528	2
3	0	0.000	0
4	0	0.000	0
5	0	0.000	0
6	0	0.000	0
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description	Number	Study Period Description
1	Haw to WB1	21	0
2	Haw to WB2	22	0
3	Void	23	0
4	Void	24	0
5	EB to Haw1	25	0
6	EB to Haw2	26	0
7	WB to 68-1	27	0
8	WB to 68-2	28	0
9	WB to 68-3	29	0
10	68 to EB1	30	0
11	68 to EB2	31	0
12	68 to EB3	32	0
13	void	33	0
14	void	34	0
15	void	35	0
16	0	36	0
17	0	37	0
18	0	38	0
19	0	39	0
20	0	40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	I-94 EW Corridor Study - ISATe Analysis - IH-94-West Leg _Double Deck				
Analyst:	AVG	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009				
Last year of analysis:	2028				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility		**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:		1423.4	6.3	18.0	111.1	319.6	968.5
Estimated average crash freq. during Study Period, crashes/yr:		71.2	0.3	0.9	5.6	16.0	48.4
Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	3	1124.2	4.1	11.4	77.4	248.2	783.2
Ramp segments, crashes:	24	299.1	2.2	6.7	33.7	71.4	185.2
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2009	60.8	0.3	0.8	4.9	14.0	40.8
	2010	61.8	0.3	0.8	5.0	14.2	41.5
	2011	62.9	0.3	0.8	5.0	14.4	42.3
	2012	63.9	0.3	0.8	5.1	14.6	43.1
	2013	65.0	0.3	0.8	5.2	14.8	43.9
	2014	66.1	0.3	0.9	5.2	15.0	44.7
	2015	67.2	0.3	0.9	5.3	15.2	45.5
	2016	68.3	0.3	0.9	5.4	15.4	46.3
	2017	69.4	0.3	0.9	5.4	15.7	47.1
	2018	70.5	0.3	0.9	5.5	15.9	47.9
	2019	71.6	0.3	0.9	5.6	16.1	48.7
	2020	72.7	0.3	0.9	5.7	16.3	49.5
	2021	73.9	0.3	0.9	5.7	16.5	50.4
	2022	75.0	0.3	0.9	5.8	16.7	51.2
	2023	76.2	0.3	0.9	5.9	16.9	52.1
	2024	77.3	0.3	1.0	5.9	17.1	53.0
	2025	78.5	0.3	1.0	6.0	17.3	53.8
	2026	79.7	0.3	1.0	6.1	17.6	54.7
	2027	80.9	0.3	1.0	6.1	17.8	55.6
	2028	82.1	0.3	1.0	6.2	18.0	56.5
	2029						
	2030						
	2031						
	2032						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	4.0	0.0	0.1	0.6	1.7	1.6
	Right-angle crashes:	18.6	0.1	0.3	1.8	5.7	10.8
	Rear-end crashes:	640.3	2.5	7.1	48.2	147.5	434.9
	Sideswipe crashes:	218.8	0.6	1.7	11.4	35.2	170.0
	Other multiple-vehicle crashes:	29.9	0.1	0.4	2.8	7.6	18.8
	Total multiple-vehicle crashes:	911.5	3.4	9.6	64.7	197.6	636.2
Single vehicle	Crashes with animal:	5.6	0.0	0.0	0.2	0.4	5.0
	Crashes with fixed object:	384.4	2.1	6.1	33.4	87.9	254.9
	Crashes with other object:	35.9	0.1	0.2	1.4	4.2	29.9
	Crashes with parked vehicle:	6.9	0.0	0.1	0.6	1.6	4.6
	Other single-vehicle crashes	79.1	0.7	2.0	10.8	27.8	37.9
	Total single-vehicle crashes:	511.9	2.9	8.4	46.4	122.0	332.3
	Total crashes:	1423.4	6.3	18.0	111.1	319.6	968.5

Evaluation Site Summary

General Information

Project description:	I-94 EW Corridor Study - ISATe Analysis - IH-94-West Leg _Double Deck				
Analyst:	AVG	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009	Total length of freeway segments for Study Period (mi):	1.033		
Last year of analysis:	2028				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	9	0.425	1
2	9	0.132	2
3	8	0.476	3
4	0	0.000	0
5	0	0.000	0
6	0	0.000	0
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description	Number	Study Period Description
1	North CD1	21	WB to Haw3
2	North CD2	22	WB to Haw4
3	North CD3	23	WB to Haw5
4	South CD1	24	WB to Haw6
5	South CD2	25	0
6	South CD3	26	0
7	68th to CD1	27	0
8	68th to CD2	28	0
9	CD to 68th1	29	0
10	CD to 68th2	30	0
11	CD to 68th3	31	0
12	CD to Haw1	32	0
13	CD to Haw2	33	0
14	CD to Haw3	34	0
15	Haw to EB1	35	0
16	Haw to EB2	36	0
17	Haw to CD1	37	0
18	Haw to CD2	38	0
19	WB to Haw1	39	0
20	WB to Haw2	40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	I-94 EW Corridor Study - ISATe Analysis - Stadium_RIK				
Analyst:	KJD	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009				
Last year of analysis:	2028				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility		**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:		2177.5	9.6	27.3	170.5	517.4	1452.7
Estimated average crash freq. during Study Period, crashes/yr:		108.9	0.5	1.4	8.5	25.9	72.6
Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	4	1985.1	8.0	22.5	145.6	473.6	1335.4
Ramp segments, crashes:	18	192.4	1.6	4.8	24.9	43.8	117.3
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2009	105.7	0.5	1.3	8.4	25.4	70.1
	2010	105.9	0.5	1.3	8.4	25.4	70.3
	2011	106.1	0.5	1.3	8.4	25.4	70.5
	2012	106.4	0.5	1.3	8.4	25.4	70.7
	2013	106.7	0.5	1.3	8.4	25.5	71.0
	2014	107.0	0.5	1.4	8.4	25.5	71.2
	2015	107.3	0.5	1.4	8.4	25.6	71.5
	2016	107.7	0.5	1.4	8.5	25.7	71.8
	2017	108.1	0.5	1.4	8.5	25.7	72.1
	2018	108.5	0.5	1.4	8.5	25.8	72.4
	2019	108.9	0.5	1.4	8.5	25.9	72.7
	2020	109.3	0.5	1.4	8.5	25.9	73.0
	2021	109.7	0.5	1.4	8.6	26.0	73.3
	2022	110.1	0.5	1.4	8.6	26.1	73.6
	2023	110.6	0.5	1.4	8.6	26.2	73.9
	2024	111.0	0.5	1.4	8.6	26.2	74.3
	2025	111.5	0.5	1.4	8.7	26.3	74.6
	2026	111.9	0.5	1.4	8.7	26.4	74.9
	2027	112.4	0.5	1.4	8.7	26.5	75.3
	2028	112.8	0.5	1.4	8.7	26.6	75.6
	2029						
	2030						
	2031						
	2032						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	7.1	0.1	0.2	1.0	3.3	2.5
	Right-angle crashes:	38.0	0.2	0.6	3.9	12.6	20.7
	Rear-end crashes:	1227.2	5.3	14.9	95.8	307.5	803.7
	Sideswipe crashes:	414.1	1.3	3.5	22.9	73.5	312.9
	Other multiple-vehicle crashes:	48.7	0.2	0.7	4.3	13.4	30.0
	Total multiple-vehicle crashes:	1735.1	7.0	19.9	128.0	410.4	1169.8
Single vehicle	Crashes with animal:	5.2	0.0	0.0	0.1	0.4	4.6
	Crashes with fixed object:	328.4	1.8	5.4	30.6	77.1	213.5
	Crashes with other object:	34.4	0.1	0.2	1.4	4.1	28.6
	Crashes with parked vehicle:	6.4	0.0	0.1	0.6	1.5	4.2
	Other single-vehicle crashes	68.0	0.6	1.7	9.8	23.9	32.0
	Total single-vehicle crashes:	442.5	2.5	7.5	42.5	107.0	282.9
Total crashes:		2177.5	9.6	27.3	170.5	517.4	1452.7

Evaluation Site Summary

General Information

Project description:	I-94 EW Corridor Study - ISATe Analysis - Stadium_RIK				
Analyst:	KJD	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009	Total length of freeway segments for Study Period (mi):	0.927		
Last year of analysis:	2028				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	6	0.137	Mitch Ent-Mitch Ex
2	8	0.120	Mitch Ent -Stadium Int
3	6	0.310	Thru Stadium Int
4	8	0.360	Stadium Int - 35th Exit
5	0	0.000	0
6	0	0.000	0
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description	Number	Study Period Description
1	Stadium (W-S)	21	0
2	Stadium (W-N)	22	0
3	Stadium (S-W)	23	0
4	Stadium (N-W) 1	24	0
5	Stadium (N-W) 2	25	0
6	Stadium (N-W) 3	26	0
7	Stadium (S-E) 1	27	0
8	Stadium (S-E) 2	28	0
9	Stadium (S-E) 3	29	0
10	Stadium (N-E) 1	30	0
11	Stadium (N-E) 2	31	0
12	Stadium (N-E) 3	32	0
13	Stadium (E-S)	33	0
14	Stadium (E-N)	34	0
15	35th Eastbound Ext 1	35	0
16	35th Eastbound Ext 2	36	0
17	35th Westbound Ent 1	37	0
18	35th Westbound Ent 2	38	0
19	0	39	0
20	0	40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	I-94 EW Corridor Study-ISATe Analysis-Stadium_Hybrid Alt				
Analyst:	OI	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009				
Last year of analysis:	2028				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility		Total	K	A	B	C	PDO
Estimated number of crashes during Study Period, crashes:		1723.2	8.2	25.6	153.9	409.6	1125.8
Estimated average crash freq. during Study Period, crashes/yr:		86.2	0.4	1.3	7.7	20.5	56.3
Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	4	858.6	3.3	9.2	60.9	185.2	600.0
Ramp segments, crashes:	17	714.6	4.9	14.7	81.7	162.0	451.4
Crossroad ramp terminals, crashes:	2	150.0	0.1	1.7	11.4	62.5	74.4
Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2009	80.6	0.4	1.2	7.3	19.3	52.4
	2010	81.2	0.4	1.2	7.3	19.5	52.8
	2011	81.8	0.4	1.2	7.4	19.6	53.2
	2012	82.4	0.4	1.2	7.4	19.7	53.6
	2013	82.9	0.4	1.2	7.5	19.8	54.0
	2014	83.5	0.4	1.3	7.5	19.9	54.4
	2015	84.1	0.4	1.3	7.5	20.1	54.8
	2016	84.7	0.4	1.3	7.6	20.2	55.2
	2017	85.3	0.4	1.3	7.6	20.3	55.6
	2018	85.8	0.4	1.3	7.7	20.4	56.1
	2019	86.4	0.4	1.3	7.7	20.5	56.5
	2020	87.0	0.4	1.3	7.8	20.7	56.9
	2021	87.6	0.4	1.3	7.8	20.8	57.3
	2022	88.2	0.4	1.3	7.8	20.9	57.7
	2023	88.8	0.4	1.3	7.9	21.0	58.1
	2024	89.4	0.4	1.3	7.9	21.1	58.6
	2025	90.0	0.4	1.3	8.0	21.3	59.0
	2026	90.6	0.4	1.3	8.0	21.4	59.4
	2027	91.2	0.4	1.3	8.1	21.5	59.8
	2028	91.8	0.4	1.4	8.1	21.6	60.3
	2029						
	2030						
	2031						
	2032						

Distribution of Crashes for Entire Facility

Crash Type	Crash Type Category	Estimated Number of Crashes During the Study Period					
		Total	K	A	B	C	PDO
Multiple vehicle	Head-on crashes:	8.7	0.1	0.2	1.1	3.2	4.2
	Right-angle crashes:	53.3	0.1	0.7	4.8	21.3	26.3
	Rear-end crashes:	821.6	3.7	11.9	72.2	208.0	525.8
	Sideswipe crashes:	296.2	0.8	2.3	14.3	39.4	239.4
	Other multiple-vehicle crashes:	70.6	0.4	1.3	7.7	17.8	43.3
	Total multiple-vehicle crashes:	1250.3	5.2	16.5	100.1	289.8	838.9
Single vehicle	Crashes with animal:	4.2	0.0	0.0	0.2	0.4	3.6
	Crashes with fixed object:	355.7	2.2	6.6	38.6	85.7	222.6
	Crashes with other object:	28.8	0.1	0.2	1.4	3.7	23.4
	Crashes with parked vehicle:	6.5	0.0	0.1	0.7	1.6	4.1
	Other single-vehicle crashes	77.6	0.7	2.2	13.0	28.5	33.2
	Total single-vehicle crashes:	472.9	3.1	9.2	53.9	119.9	286.9
Total crashes:		1723.2	8.2	25.6	153.9	409.6	1125.8

Evaluation Site Summary

General Information

Project description:	I-94 EW Corridor Study-ISATe Analysis-Stadium_Hybrid Alt				
Analyst:	OI	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009	Total length of freeway segments for Study Period (mi):	0.927		
Last year of analysis:	2028				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	8	0.194	Seg1
2	8	0.202	Seg2
3	8	0.399	seg3
4	8	0.133	seg4
5	0	0.000	0
6	0	0.000	0
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description	Number	Study Period Description
1	(W-N+W-S)1	21	0
2	(W-N)2	22	0
3	EB off 2nd ic	23	0
4	E-S+E-N1	24	0
5	E-N2	25	0
6	E-N+W-N3	26	0
7	E-S	27	0
8	W-S1	28	0
9	W-S+E-S2	29	0
10	N-W1	30	0
11	N-W+S-W2	31	0
12	N-E+S-E2	32	0
13	EB on 2nd ic	33	0
14	WB off 2nd ic	34	0
15	WB on ic	35	0
16	35th to WB	36	0
17	EB to 35th	37	0
18	0	38	0
19	0	39	0
20	0	40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	D3en	Signal	StoW, NtoW
2	D3en	Signal	NtoE,StoE
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	I-94 EW Corridor Study - ISATe Analysis - East Leg_RIK				
Analyst:	AVG	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009				
Last year of analysis:	2028				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility		Total	K	A	B	C	PDO
Estimated number of crashes during Study Period, crashes:		1565.6	5.1	14.7	93.0	331.5	1121.4
Estimated average crash freq. during Study Period, crashes/yr:		78.3	0.3	0.7	4.6	16.6	56.1
Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	4	1474.4	4.2	11.9	79.7	309.4	1069.1
Ramp segments, crashes:	6	91.2	0.9	2.8	13.2	22.1	52.2
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2009	67.2	0.2	0.6	4.1	14.6	47.7
	2010	68.3	0.2	0.6	4.1	14.8	48.5
	2011	69.5	0.2	0.7	4.2	15.0	49.3
	2012	70.6	0.2	0.7	4.2	15.2	50.2
	2013	71.7	0.2	0.7	4.3	15.4	51.1
	2014	72.9	0.2	0.7	4.4	15.6	51.9
	2015	74.0	0.2	0.7	4.4	15.8	52.8
	2016	75.2	0.2	0.7	4.5	16.1	53.7
	2017	76.4	0.2	0.7	4.6	16.3	54.6
	2018	77.6	0.3	0.7	4.6	16.5	55.5
	2019	78.8	0.3	0.7	4.7	16.7	56.4
	2020	79.9	0.3	0.8	4.7	16.9	57.3
	2021	81.2	0.3	0.8	4.8	17.1	58.2
	2022	82.4	0.3	0.8	4.9	17.3	59.2
	2023	83.6	0.3	0.8	4.9	17.5	60.1
	2024	84.8	0.3	0.8	5.0	17.7	61.0
	2025	86.0	0.3	0.8	5.1	17.9	62.0
	2026	87.3	0.3	0.8	5.1	18.1	62.9
	2027	88.5	0.3	0.8	5.2	18.3	63.9
	2028	89.8	0.3	0.8	5.2	18.5	64.9
	2029						
	2030						
	2031						
	2032						

Distribution of Crashes for Entire Facility

Crash Type	Crash Type Category	Estimated Number of Crashes During the Study Period					
		Total	K	A	B	C	PDO
Multiple vehicle	Head-on crashes:	4.1	0.0	0.1	0.5	1.8	1.7
	Right-angle crashes:	24.6	0.1	0.3	1.8	7.0	15.5
	Rear-end crashes:	819.3	2.4	6.7	44.9	172.6	592.8
	Sideswipe crashes:	285.0	0.6	1.6	10.8	41.5	230.5
	Other multiple-vehicle crashes:	30.3	0.1	0.3	1.9	7.2	20.9
	Total multiple-vehicle crashes:	1163.4	3.1	9.0	59.9	230.1	861.4
Single vehicle	Crashes with animal:	5.3	0.0	0.0	0.1	0.4	4.8
	Crashes with fixed object:	293.9	1.4	4.1	23.8	72.9	191.7
	Crashes with other object:	37.2	0.1	0.2	1.3	4.5	31.1
	Crashes with parked vehicle:	5.9	0.0	0.1	0.5	1.4	3.9
	Other single-vehicle crashes	59.8	0.4	1.3	7.5	22.1	28.5
	Total single-vehicle crashes:	402.2	2.0	5.7	33.1	101.4	260.0
Total crashes:		1565.6	5.1	14.7	93.0	331.5	1121.4

Evaluation Site Summary

General Information

Project description:	I-94 EW Corridor Study - ISATe Analysis - East Leg_RIK				
Analyst:	AVG	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009	Total length of freeway segments for Study Period (mi):	1.094		
Last year of analysis:	2028				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	6	0.073	1
2	6	0.379	2
3	6	0.541	3
4	6	0.101	4
5	0	0.000	0
6	0	0.000	0
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description	Number	Study Period Description
1	void	21	0
2	EB Exit 26th 2	22	0
3	25th Ent EB	23	0
4	void	24	0
5	28th Ent WB	25	0
6	WB Exit 25th	26	0
7	0	27	0
8	0	28	0
9	0	29	0
10	0	30	0
11	0	31	0
12	0	32	0
13	0	33	0
14	0	34	0
15	0	35	0
16	0	36	0
17	0	37	0
18	0	38	0
19	0	39	0
20	0	40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	I-94 EW Corridor Study - ISATe Analysis - East Leg_On Alignment				
Analyst:	AVG	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009				
Last year of analysis:	2028				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility		**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:		1124.9	5.1	14.3	90.5	245.0	770.0
Estimated average crash freq. during Study Period, crashes/yr:		56.2	0.3	0.7	4.5	12.2	38.5
Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	7	981.7	3.9	10.6	73.0	207.3	686.9
Ramp segments, crashes:	10	143.2	1.2	3.7	17.6	37.6	83.1
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2009	50.0	0.2	0.7	4.1	11.1	33.9
	2010	50.7	0.2	0.7	4.2	11.3	34.4
	2011	51.3	0.2	0.7	4.2	11.4	34.8
	2012	51.9	0.2	0.7	4.2	11.5	35.3
	2013	52.6	0.2	0.7	4.3	11.6	35.8
	2014	53.2	0.2	0.7	4.3	11.7	36.3
	2015	53.9	0.2	0.7	4.4	11.8	36.7
	2016	54.5	0.2	0.7	4.4	11.9	37.2
	2017	55.2	0.2	0.7	4.5	12.1	37.7
	2018	55.9	0.3	0.7	4.5	12.2	38.2
	2019	56.5	0.3	0.7	4.5	12.3	38.7
	2020	57.2	0.3	0.7	4.6	12.4	39.2
	2021	57.9	0.3	0.7	4.6	12.5	39.7
	2022	58.5	0.3	0.7	4.7	12.7	40.2
	2023	59.2	0.3	0.7	4.7	12.8	40.7
	2024	59.9	0.3	0.8	4.8	12.9	41.2
	2025	60.6	0.3	0.8	4.8	13.0	41.7
	2026	61.3	0.3	0.8	4.8	13.1	42.2
	2027	62.0	0.3	0.8	4.9	13.3	42.8
	2028	62.7	0.3	0.8	4.9	13.4	43.3
	2029						
	2030						
	2031						
	2032						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	2.7	0.0	0.1	0.4	1.2	1.1
	Right-angle crashes:	14.7	0.1	0.2	1.5	4.3	8.6
	Rear-end crashes:	488.4	2.0	5.5	37.5	106.2	337.2
	Sideswipe crashes:	167.0	0.5	1.3	9.0	25.4	130.8
	Other multiple-vehicle crashes:	19.8	0.1	0.3	1.7	4.8	12.9
	Total multiple-vehicle crashes:	692.6	2.7	7.4	50.1	141.9	490.5
Single vehicle	Crashes with animal:	5.5	0.0	0.0	0.1	0.4	5.0
	Crashes with fixed object:	318.6	1.7	5.0	29.1	74.3	208.4
	Crashes with other object:	36.7	0.1	0.2	1.5	4.1	30.8
	Crashes with parked vehicle:	6.3	0.0	0.1	0.6	1.4	4.1
	Other single-vehicle crashes	65.3	0.5	1.6	9.1	22.9	31.1
	Total single-vehicle crashes:	432.4	2.4	7.0	40.4	103.1	279.5
Total crashes:		1124.9	5.1	14.3	90.5	245.0	770.0

Evaluation Site Summary

General Information

Project description:	I-94 EW Corridor Study - ISATe Analysis - East Leg_On Alignment				
Analyst:	AVG	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009	Total length of freeway segments for Study Period (mi):	1.091		
Last year of analysis:	2028				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	9	0.021	1
2	9	0.253	2
3	9	0.126	3
4	10	0.171	4
5	9	0.070	5
6	10	0.299	6
7	10	0.151	7
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description	Number	Study Period Description
1	Void	21	0
2	Void	22	0
3	35th Ent EB1	23	0
4	35th Ent EB2	24	0
5	EB Ex 26th	25	0
6	EB Ex 26th	26	0
7	25th Ent EB	27	0
8	25th Ent EB	28	0
9	WB Ex 25th	29	0
10	WB Ex 25th2	30	0
11	WB Ex 35th	31	0
12	WB Ex 35th	32	0
13	void	33	0
14	void	34	0
15	void	35	0
16	0	36	0
17	0	37	0
18	0	38	0
19	0	39	0
20	0	40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Output Summary

General Information

Project description:	I-94 EW Corridor Study - ISATe Analysis - East Leg_Off Alignment				
Analyst:	AVG	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009				
Last year of analysis:	2028				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility		Total	K	A	B	C	PDO
Estimated number of crashes during Study Period, crashes:		1111.4	5.1	14.5	91.8	242.2	757.9
Estimated average crash freq. during Study Period, crashes/yr:		55.6	0.3	0.7	4.6	12.1	37.9
Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	6	939.6	3.8	10.3	71.3	197.0	657.2
Ramp segments, crashes:	12	171.8	1.4	4.1	20.5	45.1	100.7
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2009	49.6	0.2	0.7	4.2	11.0	33.5
	2010	50.2	0.2	0.7	4.2	11.1	33.9
	2011	50.8	0.2	0.7	4.3	11.3	34.4
	2012	51.4	0.2	0.7	4.3	11.4	34.8
	2013	52.1	0.2	0.7	4.4	11.5	35.3
	2014	52.7	0.2	0.7	4.4	11.6	35.8
	2015	53.3	0.2	0.7	4.4	11.7	36.2
	2016	53.9	0.3	0.7	4.5	11.8	36.7
	2017	54.6	0.3	0.7	4.5	11.9	37.1
	2018	55.2	0.3	0.7	4.6	12.0	37.6
	2019	55.8	0.3	0.7	4.6	12.2	38.1
	2020	56.5	0.3	0.7	4.7	12.3	38.6
	2021	57.1	0.3	0.7	4.7	12.4	39.0
	2022	57.8	0.3	0.7	4.7	12.5	39.5
	2023	58.4	0.3	0.8	4.8	12.6	40.0
	2024	59.1	0.3	0.8	4.8	12.7	40.5
	2025	59.7	0.3	0.8	4.9	12.9	41.0
	2026	60.4	0.3	0.8	4.9	13.0	41.5
	2027	61.0	0.3	0.8	5.0	13.1	42.0
	2028	61.7	0.3	0.8	5.0	13.2	42.4
	2029						
	2030						
	2031						
	2032						

Distribution of Crashes for Entire Facility

Crash Type	Crash Type Category	Estimated Number of Crashes During the Study Period					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	2.8	0.0	0.1	0.4	1.1	1.1
	Right-angle crashes:	13.8	0.1	0.2	1.5	4.0	8.0
	Rear-end crashes:	467.3	2.0	5.5	37.4	102.7	319.7
	Sideswipe crashes:	159.3	0.5	1.3	8.9	24.6	124.0
	Other multiple-vehicle crashes:	20.1	0.1	0.3	1.8	4.9	13.0
	Total multiple-vehicle crashes:	663.3	2.7	7.4	50.1	137.4	465.8
Single vehicle	Crashes with animal:	5.7	0.0	0.0	0.1	0.4	5.1
	Crashes with fixed object:	331.2	1.8	5.1	30.1	75.6	218.7
	Crashes with other object:	37.3	0.1	0.2	1.5	4.0	31.5
	Crashes with parked vehicle:	6.4	0.0	0.1	0.6	1.4	4.2
	Other single-vehicle crashes	67.6	0.6	1.6	9.4	23.4	32.6
	Total single-vehicle crashes:	448.1	2.5	7.1	41.7	104.8	292.1
	Total crashes:	1111.4	5.1	14.5	91.8	242.2	757.9

Evaluation Site Summary

General Information

Project description:	I-94 EW Corridor Study - ISATe Analysis - East Leg_Off Alignment				
Analyst:	AVG	Date:	11/19/2014	Area type:	Urban
First year of analysis:	2009	Total length of freeway segments for Study Period (mi):	1.070		
Last year of analysis:	2028				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	9	0.238	1
2	9	0.149	2
3	10	0.093	3
4	9	0.136	4
5	10	0.303	5
6	10	0.152	6
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description	Number	Study Period Description
1	EB Exit 27th	21	0
2	EB Exit 27th2	22	0
3	35th Ent EB	23	0
4	35th Ent EB2	24	0
5	27th Ent EB	25	0
6	27th Ent EB2	26	0
7	WB Exit 35th	27	0
8	WB Exit 35th	28	0
9	27th Ent WB	29	0
10	27 Ent WB2	30	0
11	WB Exit 27th	31	0
12	WB Exit 27th2	32	0
13	0	33	0
14	0	34	0
15	0	35	0
16	0	36	0
17	0	37	0
18	0	38	0
19	0	39	0
20	0	40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Diversion Route Crashes

I-94 East-West Stadium Interchange Study

Local Street Crash Supplement

Additional Local Street Crashes Estimated under 8LAG Corridor Alternative

Roadway	Segment (Incl Intersections)				Existing Crashes by Type (2005-2009)						
						Injury					
	From	To	Length (mi)	Daily Volume (AADT)	Fatal	A	B	C	Tot	Property Damage	Total
Bluemound Rd	76th St	68th St	0.5	14300	0	0	6	22	28	35	63
	68th St	Hawley Rd	0.7	13200	0	0	10	24	34	45	79
	Hawley Rd	Mitchell Blvd	0.3	9000	0	0	5	7	12	27	39
	Mitchell Blvd	Wisconsin Ave	0.6	8800	0	0	1	2	3	7	10
Wisconsin Ave	Bluemound Rd (45th St)	35th St	0.6	12900	0	0	9	19	28	36	64
	35th St	27th St	0.5	15400	0	2	9	14	25	55	80
Hawley Rd	I-94	Bluemound Rd	0.4	13600	0	1	4	2	7	21	28
	Bluemound Rd	Wisconsin Ave	0.2	13900	0	2	1	5	8	7	15
68th St	I-94	Bluemound Rd	0.4	6900	0	1	0	5	6	12	18
	Bluemound Rd	Wisconsin Ave	0.2	10900	0	0	3	2	5	13	18
27th St	Wisconsin Ave	St Paul Ave	0.3	18000	0	3	14	32	49	100	149
	St Paul Ave	National Ave	0.9	20500	0	2	12	33	47	75	122
National Ave	35th St	WIS 341/MPW	0.6	15600	0	2	8	26	36	74	110
	WIS 341/MPW	Hawley Rd	1.0	13600	2	9	32	76	117	156	275
WIS 341/MPW	National Ave	Miller Park Way	0.3	34300	0	1	8	19	28	55	83
Greenfield Ave	National Ave	70th St	0.5	13500	2	1	27	52	80	113	195
70th St	Greenfield Ave	Kearney St	0.9	14100	0	1	16	25	42	43	85
O'Connor St	68th St	70th St	0.1	6550	0	0	3	4	7	11	18
Kearney St	70th St	68th St	0.1	7780	0	0	4	5	9	19	28
Other cross street approaches (not included above)			-	-	1	7	23	52	82	117	200
					0.3%	1.9%	11.6%	25.4%	38.9%	60.8%	

Roadway	Segment (Incl Ints)		Avg Segment Total Crashes/Year	Avg Crash Exposure Rate/Year	Forecasted Diversion Daily Volume (AWDT)	Converted Diversion Daily Volume (AADT)	Est Change in Total Seg Crashes/Year	
	From	To						
Bluemound Rd	76th St	68th St	12.6	0.000004786	2,000	1,900	1.7	
	68th St	Hawley Rd	15.8	0.000005045	6,000	5,600	6.7	<<<<<
	Hawley	Mitchell Blvd	7.8	0.000008125	3,500	3,200	2.8	
	Mitchell Blvd	Wisconsin Ave	2.0	0.000001123	3,500	3,200	0.7	
Wisconsin Ave	Bluemound Rd (45th St)	35th St	12.8	0.000004812	3,000	2,800	2.8	
	35th St	27th St	16.0	0.000005642	2,500	2,300	2.4	
Hawley Rd	I-94	Bluemound Rd	5.6	0.000002882	500	500	0.2	
	Bluemound Rd	Wisconsin Ave	3.0	0.000003850	500	500	0.1	
68th St	I-94	Bluemound Rd	3.6	0.000003841	3,000	2,800	1.5	
	Bluemound Rd	Wisconsin Ave	3.6	0.000004652	-1,000	-900	-0.3	
27th St	Wisconsin Ave	St Paul Ave	29.8	0.000016494	-2,000	-1,900	-3.1	
	St Paul Ave	National Ave	24.4	0.000003747	-500	-500	-0.6	
National Ave	35th St	WIS 341/MPW	22.0	0.000006137	1,000	900	1.3	
	WIS 341/MPW	Hawley Rd	55.0	0.000010640	2,500	2,300	9.3	<<<<<
WIS 341/MPW	National Ave	Miller Park Way	16.6	0.000004990	3,500	3,200	1.5	
Greenfield Ave	National Ave	70th St	39.0	0.000015387	3,000	2,800	8.1	<<<<<
70th St	Greenfield Ave	Kearney St	17.0	0.000003705	3,500	3,200	3.9	<<<<<
O'Connor St	68th St	70th St	3.6	0.000012120	2,750	2,500	1.4	
Kearney St	70th St	68th St	5.6	0.000015897	2,750	2,500	1.8	
Other cross street approaches (not included above)			40.0	-	13,000	12,000	1.4	
			335.8					

	Total - 43.6				
	Fat	A	B	C	Tot
Fatal/Inj Crashes -	0.1	0.8	5.1	11.1	17.1
Prop Damage Crashes -	26.5				

Notes:

8LAG alternative with full closure of Hawley Rd interchange and existing local street capacities (SEWRPC forecast S1b - received 9/11/14)

I-94 East-West Stadium Interchange Study

Local Street Crash Supplement

Additional Local Street Crashes Estimated under 8LAG Corridor (w/ Half Hawley) Alternative

Roadway	Segment (Incl Intersections)				Existing Crashes by Type (2005-2009)						
						Injury					
	From	To	Length (mi)	Daily Volume (AADT)	Fatal	A	B	C	Tot	Property Damage	Total
Bluemound Rd	76th St	68th St	0.5	14300	0	0	6	22	28	35	63
	68th St	Hawley Rd	0.7	13200	0	0	10	24	34	45	79
	Hawley Rd	Mitchell Blvd	0.3	9000	0	0	5	7	12	27	39
	Mitchell Blvd	Wisconsin Ave	0.6	8800	0	0	1	2	3	7	10
Wisconsin Ave	Bluemound Rd (45th St)	35th St	0.6	12900	0	0	9	19	28	36	64
	35th St	27th St	0.5	15400	0	2	9	14	25	55	80
Hawley Rd	I-94	Bluemound Rd	0.4	13600	0	1	4	2	7	21	28
	Bluemound Rd	Wisconsin Ave	0.2	13900	0	2	1	5	8	7	15
68th St	I-94	Bluemound Rd	0.4	6900	0	1	0	5	6	12	18
	Bluemound Rd	Wisconsin Ave	0.2	10900	0	0	3	2	5	13	18
27th St	Wisconsin Ave	St Paul Ave	0.3	18000	0	3	14	32	49	100	149
	St Paul Ave	National Ave	0.9	20500	0	2	12	33	47	75	122
National Ave	35th St	WIS 341/MPW	0.6	15600	0	2	8	26	36	74	110
	WIS 341/MPW	Hawley Rd	1.0	13600	2	9	32	76	117	156	275
WIS 341/MPW	National Ave	Miller Park Way	0.3	34300	0	1	8	19	28	55	83
Greenfield Ave	National Ave	70th St	0.5	13500	2	1	27	52	80	113	195
70th St	Greenfield Ave	Kearney St	0.9	14100	0	1	16	25	42	43	85
O'Connor St	68th St	70th St	0.1	6550	0	0	3	4	7	11	18
Kearney St	70th St	68th St	0.1	7780	0	0	4	5	9	19	28
Other cross street approaches (not included above)			-	-	1	7	23	52	82	117	200
					0.3%	1.9%	11.6%	25.4%	38.9%	60.8%	

Roadway	Segment (Incl Ints)		Avg Segment Total Crashes/Year	Avg Crash Exposure Rate/Year	Forecasted Diversion Daily Volume (AWDT)	Converted Diversion Daily Volume (AADT)	Est Change in Total Seg Crashes/Year	
	From	To						
Bluemound Rd	76th St	68th St	12.6	0.000004786	0	0	0.0	
	68th St	Hawley Rd	15.8	0.000005045	0	0	0.0	
	Hawley	Mitchell Blvd	7.8	0.000008125	3,500	3,200	2.8	<<<<<
	Mitchell Blvd	Wisconsin Ave	2.0	0.000001123	3,500	3,200	0.7	
Wisconsin Ave	Bluemound Rd (45th St)	35th St	12.8	0.000004812	3,000	2,800	2.8	<<<<<
	35th St	27th St	16.0	0.000005642	2,500	2,300	2.4	<<<<<
Hawley Rd	I-94	Bluemound Rd	5.6	0.000002882	3,500	3,200	1.3	
	Bluemound Rd	Wisconsin Ave	3.0	0.000003850	1,500	1,400	0.3	
68th St	I-94	Bluemound Rd	3.6	0.000003841	0	0	0.0	
	Bluemound Rd	Wisconsin Ave	3.6	0.000004652	0	0	0.0	
27th St	Wisconsin Ave	St Paul Ave	29.8	0.000016494	-2,000	-1,900	-3.1	
	St Paul Ave	National Ave	24.4	0.000003747	-500	-500	-0.6	
National Ave	35th St	WIS 341/MPW	22.0	0.000006137	1,000	900	1.3	
	WIS 341/MPW	Hawley Rd	55.0	0.000010640	2,500	2,300	9.3	<<<<<
WIS 341/MPW	National Ave	Miller Park Way	16.6	0.000004990	3,500	3,200	1.5	
Greenfield Ave	National Ave	70th St	39.0	0.000015387	-1,000	-900	-2.6	
70th St	Greenfield Ave	Kearney St	17.0	0.000003705	1,500	1,400	1.7	
O'Connor St	68th St	70th St	3.6	0.000012120	750	700	0.4	
Kearney St	70th St	68th St	5.6	0.000015897	-1,750	-1,600	-1.2	
Other cross street approaches (not included above)			40.0	-	6,250	5,800	0.8	
			335.8					

Total - 17.8

	Fat	A	B	C	Tot
Fatal/Inj Crashes -	0.1	0.3	2.1	4.5	7.0
Prop Damage Crashes -			10.8		

Notes:

8LAG alternative with half closure of Hawley Rd interchange and existing local street capacities (SEWRPC forecast S1a - received 9/11/14)

BY ELECTRONIC MAIL

U.S. Department of Transportation
Federal Highway Administration

Memorandum

Subject: INFORMATION: Revised FHWA Assessment of Adverse Effects for the I-94 East – West Corridor Project from 16th St to 70th St, Milwaukee, WI (Project ID 1060-27-00)

Date: September 24, 2014

From: Bethaney Bacher-Gresock
Major Projects Environmental Manager
Madison, WI

In Reply Refer To:
HDA-WI

To: Dobra Payant
Deputy Project Manager, SE Region
Waukesha, WI

The Federal Highway Administration–Wisconsin Division Office (FHWA), in cooperation with Wisconsin Department of Transportation (WisDOT), is developing an environmental impact statement (EIS) for a proposed project on I-94 from 16th Street to 70th Street in Milwaukee, Wisconsin. This memorandum provides FHWA's effect determinations pursuant to 36 CFR 800.5. FHWA submitted the first draft of this memorandum to the consulting parties for review and comment in April 2014. This revised memorandum reflects the comments received on the first draft as well as subsequent consultation meetings.

FHWA, in consultation with the State Historic Preservation Office (SHPO) and other consulting parties, identified the project's Area of Potential Effect (APE) and the following historic properties within it.[1]

- Calvary Cemetery
- Northwestern Branch, National Home for Disabled Volunteer Soldiers Historic District (Soldiers' Home Historic District)
- Northwestern Branch, National Home for Disabled Volunteer Soldiers National Historic Landmark (Soldiers' Home NHL)
- Soldiers' Home Reef National Historic Landmark
- Story Hill Residential District #1
- Story Hill Residential Districts #2 and #3

[1] *FHWA Memorandum: Historic Properties On or Eligible for the National Register within the APE for the 1-94 East-West Corridor from 16th St to 70th St* (October 8, 2013, APE map revised March 2014 to clarify historic boundaries for the Northwestern Branch, National Home for Disabled Volunteer Soldiers National Historic Landmark, and the National Register listed Historic District). APE map revised March 2014 is attached. Brief summaries describing the characteristics and significance of the historic properties were provided as part of the October 15, 2013 consultation meeting.

The purpose of the proposed project is to maintain I-94 as a key link in the local, state, and national transportation network; to address obsolete roadway design to improve safety (including replacing left-hand entrances and exits and providing proper weaving distances between exit and entrance ramps); to replace deteriorated pavement and infrastructure (bridges); and to improve capacity by accommodating current and future traffic volumes at an acceptable level of service.

Through the alternatives screening process, the following project alternatives, located within the APE, were retained for detailed study for the I-94 East-West Corridor West Segment (70th Street to Stadium Interchange):

- At-grade alternative: Add a fourth lane in each direction, split-diamond interchange at 68th/70th Streets with either no Hawley Road interchange or a half interchange at Hawley Road (entrance/exit ramps to and from the west), and narrow lanes and shoulders through the cemetery area.
- Double Deck alternative: Add a fourth lane in each direction, split diamond interchange at 68th/70th Streets, full Hawley Road interchange, and a double deck (all up or partially down) through the cemetery area.

These alternatives, along with the No-Build alternative, are evaluated in detail in the I- 94 East-West Corridor Draft EIS.

As part of the Section 106 consultation process, FHWA invited consulting parties to share their views[2] on the potential effects the proposed I-94 project may have on the historic properties located in the APE pursuant to 36 CFR 800.4(d)(2) and 36 CFR 800.5. According to 36 CFR 800.5(a)(1), "an adverse effect is found when the undertaking may alter, directly or indirectly, *any of the characteristics that qualify the property for inclusion in the National Register in a manner that would diminish the integrity* of the property's location, design, setting, materials, workmanship, feeling, or association" (emphasis added).

FHWA, in consultation with the SHPO, Advisory Council on Historic Preservation (ACHP), National Park Service (NPS) as it pertains to NHLs, the Department of Veterans Affairs (VA), and other consulting parties, has applied the criteria of adverse effect, considered the views of consulting parties identified in *I-94 East-West Corridor Study Potential Effects on Historic Resources* (February 26, 2014), and determined that the proposed project, regardless of the alternative selected, would have No Adverse Effect on the following properties:

- Soldiers' Home Reef National Historic Landmark
- Story Hill Residential District #1

The project would not acquire, alter, or change the characteristics that qualify the properties for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

The proposed project would have No Adverse Effect on the Soldiers' Home Reef National Historic Landmark which was listed on the National Register and designated as a landmark in 1993. The historical significance of the 400-million-year-old Silurian Period fossil reef derives from its discovery in the 1830s by Wisconsin's first scientist, Increase A. Lapham, and by James Hall who recognized and described it in 1861 as an ancient fossil reef. The reef was one of the first described reefs in North America and the world. Thomas Chamberlin used the reef and others in formulating his paleoecological and sedimentological model of reef development. The proposed project would not

[2] Consulting party views were recorded in the *I-94 East-West Corridor Study Potential Effects on Historic Resources* memo dated February 13, 2014 and in the Section 106 Consultation meeting minutes from July 15, 2013, to February 13, 2014.

acquire property or otherwise alter or change the character or setting of the historic reef in a manner that diminishes its historic integrity.

The proposed project would have No Adverse Effect on the National Register eligible Story Hill Residential District #1. The historic significance of the district is derived from its period Craftsman and Colonial Revival style homes distinguished by their stucco cladding. The Story Hill neighborhood was developed when Albert & Alice Story registered a plat in 1911. The period of significance spans 1909–1936. The proposed project would not have direct impacts on Story Hill Residential District #1 or otherwise alter or change the character or setting of district in a manner that diminishes its historic integrity.

FHWA, in consultation with the SHPO, ACHP, NPS, the VA, and other consulting parties, has applied the criteria of adverse effect, considered the views of consulting parties and determined that the At-grade alternative would have No Adverse Effect and the Double Deck alternative would have a potential Adverse Effect on the following properties:

- Calvary Cemetery
- Story Hill Residential Districts #2 and #3

The historical significance of Calvary Cemetery is derived from its function as the final resting place of a number of influential individuals who made outstanding contributions to the history of Milwaukee and for embodying the "high style" qualities of Late Victorian and Classical Revival architecture. The period of significance is from 1857 to about 1922.

The At-grade alternative would not require acquisition of any Calvary Cemetery property. The noise levels would remain roughly the same as existing conditions. The roadway under this alternative would be slightly elevated (up to 3-5 feet) compared to the existing interstate, but the viewshed from the cemetery would have only minor modifications. The At-grade alternative would not alter or change the character of the property in a manner that diminishes the historic integrity of the property's location, design, setting, materials, workmanship, feeling, or association. The At-grade alternative would have No Adverse Effect on Calvary Cemetery.

The Double Deck alternative could have an Adverse Effect on the National Register-eligible Calvary Cemetery. There would be no direct impacts to the property from the project, and no cemetery property would be acquired. However, there could be indirect impacts to the cemetery from the visual impacts of an elevated interstate. The integrity of location, design, materials, and association would not be altered or diminished by the project. The location of the cemetery would remain intact; the design and materials of the landscape and the architecture would be retained; and the cemetery would continue to be associated with the influential Milwaukee individuals. However, the visual impacts could diminish the integrity of setting and feeling. The viewshed of Calvary Cemetery includes the interstate, but under the Double Deck alternative, the view from the cemetery would be altered and obstructed by the new elevated roadway, which would be 25 to 30 feet taller than the existing roadway.

In summary, the At-grade alternative would have No Adverse Effect on Calvary Cemetery. The Double Deck alternative would have a potential Adverse Effect on Calvary Cemetery due to the visual impacts that could diminish the integrity of setting and feeling of the property.

The period of significance for the National Register-eligible Story Hill Residential Districts #2 and #3 spans from 1924–1963, with much of the construction occurring in the 1920s. The historic significance of the district is derived from its Period Revival styles, which are well represented in the form of Period Colonial Revival, Tudor Revival, and Mediterranean Revival styles and features examples of several well-regarded Milwaukee architects and builders, including Hugo C. Haeuser, Roy J. Jacobs, and the firm of George Schley & Sons. Of the 153 properties within the district, only three are considered noncontributing. Some of the contributing properties on the southeastern side of the

Story Hill Residential Districts #2 and #3 currently have views of the existing, highly urban I-94 corridor, the Stadium Interchange with elevated ramps, and the associated transportation infrastructure. Residents of the district have noise concerns because of the freeway and nearby Miller Park, home of the Milwaukee Brewers. These properties have coexisted with the I-94 corridor for more than 50 years, since the freeway opened in 1963.

As part of the alternative development process, FHWA and WisDOT are carrying forward alternatives within the view from Story Hill Residential Districts #2 and #3 that hold the northern freeway right-of-way line at its existing location, maintain I-94 westbound travel lanes and shoulder in their existing location, maintain the vegetative screening near Story Parkway, and move all proposed freeway improvements farther away. (The proposed Stadium Interchange flyover ramp would be roughly 1,300 feet away from the district.)

The At-grade alternative would not require acquisition of any property in Story Hill Residential Districts #2 and #3. Under the At-grade alternative, the freeway would be about the same elevation it is today adjacent to the historic district. Existing views towards I-94 and beyond would essentially remain the same. Noise levels from the At-grade alternative, if selected, are expected to result in a 1-2 decibel increase within the district, according to the noise analysis conducted as part of the EIS. Although an increase of less than 3 decibels is generally imperceptible to the human ear, the existing noise levels in the district are high enough that a noise wall is reasonable and feasible at that location under WisDOT policy. FHWA has determined that the increase in noise levels within the historic district would not be an adverse effect under Section 106. If a noise wall were installed to mitigate current or future noise levels, the wall itself may constitute an adverse effect on the district because of visual obstruction of the viewshed from the historic district properties.

The At-grade alternative would not alter or change the character of the property in a manner that diminishes the historic integrity of the property's location, design, setting, materials, workmanship, feeling, or association. The At-grade alternative would have No Adverse Effect on Story Hill Residential Districts #2 and #3.

Noise levels from the Double Deck alternative, if selected, are expected to result in a 0 to 6 decibel increase within the district, according to the noise analysis conducted as part of the EIS. As previously noted, the existing noise levels in the district are high enough that a noise wall is reasonable and feasible at that location under WisDOT policy. FHWA has determined that the increase in noise levels within the historic district would not be an adverse effect under Section 106. If a noise wall were installed to mitigate current or future noise levels, the wall itself may constitute an adverse effect on the district because of visual obstruction of the viewshed from the historic district properties.

The Double Deck alternative would not require acquisition of any property in Story Hill Residential Districts #2 and #3. The Double Deck alternative would raise the freeway 14-feet (Partially Down option) to 20-feet (All Up option) at the west end of the district. Under the At-grade and the Double Deck alternatives an eastbound exit ramp from I-94 to US 41/Miller Park Way at the Stadium Interchange would add additional roadway infrastructure that would be roughly 30 feet higher than the existing interchange. This ramp would be roughly 1,300 feet from the district boundary. Under the Double Deck alternative, the new exit ramp and the elevated double deck structures through the cemetery area would be visible from parts of the historic district. The visual impacts of the Double Deck alternative (All Up or Partially Down options) to the district could diminish the integrity of setting and feeling of the historic property. There would be no direct impacts to the district, so it would retain integrity of design, materials, workmanship, and association.

In conclusion, the Double Deck alternative would have a potential Adverse Effect to Story Hill Residential Districts #2 and #3. The visual changes to the district could alter or change the setting and feeling of the district in a manner that could diminish its historic integrity. The At-grade alternative would have No Adverse Effect on the Story Hill Residential Districts #2 and #3.

FHWA, in consultation with the SHPO, ACHP, NPS, the VA, and other consulting parties, has applied the criteria of adverse effect, considered the views of consulting parties identified in the February 13, 2014 *I-94 East-West Corridor Study Potential Effects on Historic Resources* document, and determined that the At-grade alternative could be designed to have to have a No Adverse Effect and the Double Deck alternative would have an Adverse Effect on the following properties:

- Northwestern Branch, National Home for Disabled Volunteer Soldiers Historic District
- Northwestern Branch, National Home for Disabled Volunteer Soldiers National Historic Landmark

The Soldiers' Home NHL and Soldiers' Home Historic District are essentially the same historic property with some slight differences between the historical boundaries and periods of historic significance. The attached exhibit shows the boundaries of the NHL and Historic District. The period of significance for the Soldiers' Home NHL is 1866-1930 and 1867-1955 for the Soldiers' Home Historic District. The National Asylum for Disabled Soldiers, as it was originally named, was established in 1865. The Milwaukee Soldiers' Home campus is the only one of the three original Soldiers' Home sites to have its majestic Soldiers' Home intact, and it is also the only one with the majority of its surrounding recuperative village remaining. The Soldiers' Home NHL houses 25 post-Civil War and turn-of-the-20th-century buildings, as well as the oldest two-thirds of Wood National Cemetery. The most historically significant and architecturally dominant building is the site's namesake, the Soldiers' Home (Building 2), or "Old Main."

The cemetery was established in 1871 as the Soldiers' Home Cemetery, on the grounds of the National Asylum for Disabled Soldiers, to inter the remains of soldiers who died while in the care of the Soldiers' hospital. The cemetery was renamed Wood Cemetery in 1937 in honor of General George Wood. It became a National Cemetery in 1973 and is the only National Cemetery in Wisconsin. Veterans of conflicts ranging from the war of 1812 to the Iraq war are buried in the cemetery.

Potential adverse effects to the Soldiers' Home Historic District and the Soldiers' Home NHL under the Double Deck alternative include the visual effects of constructing a 25- to 30-foot elevated structure to carry I-94 traffic, currently at-grade, between the north and south sides of the Soldiers' Home Historic District and the Soldiers' Home NHL, and the direct effects of converting non-transportation-related property within the Soldiers' Home Historic District and Soldiers' Home NHL into a transportation facility (reconstruction of Zablocki Drive) for the VA.

If the Double Deck alternative is identified as the preferred alternative in the Final EIS and selected for implementation in the Record of Decision,[3] it would require further consultation with the consulting parties to identify specific measures to avoid and or minimize harm to the historic properties. Agreed upon measures would be stipulated in a Memorandum of Agreement and incorporated into the project implementation as commitments identified in the ROD. As part of the alternative development process, FHWA and WisDOT determined that project alternatives along I-94 from Hawley Road to Mitchell Boulevard would be constrained to the existing transportation right-of-way and that all graves would remain in place to avoid and minimize adverse effects to the Soldiers' Home Historic District and the Soldiers' Home NHL. Additional mitigation efforts could include the restoration of property previously functioning as a transportation facility into a more naturalized landscape, and provide openings in the elevated structure to allow for visual connections across I-94 between the north and south sides of the Soldiers' Home Historic District and Soldiers' Home NHL. Should the Double Deck alternative be selected, FHWA looks forward to additional consultation on

[3] FHWA and WisDOT will identify a preferred alternative after the public hearing and comment period for the Draft EIS. The preferred alternative will be described in the Final EIS. FHWA officially selects an alternative to implement the proposed project as part of the Record of Decision.

ways to further avoid, minimize, and mitigate adverse effects to the Soldiers' Home Historic District and the Soldiers' Home NHL.

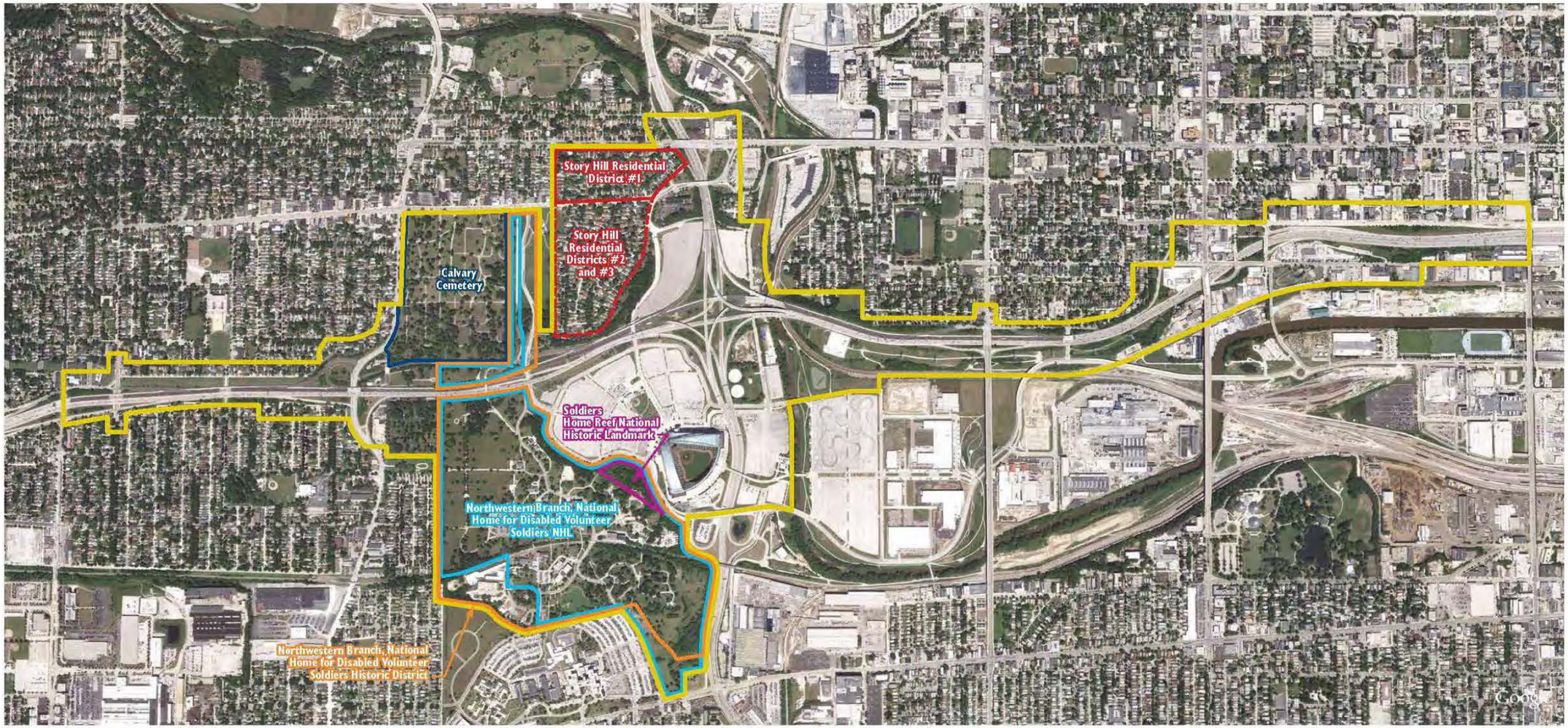
At the January 10, 2014 consultation meeting, the SHPO, NPS, ACHP, and other consulting parties generally agreed that the At-grade alternative could be designed to have no adverse effect to the Soldiers' Home Historic District and the Soldiers' Home NHL. FHWA has determined that the At-grade alternative, pending further engineering and design, would result in a conditional No Adverse Effect to the Soldiers' Home Historic District and the Soldiers' Home NHL. Should the At-grade alternative be selected, FHWA looks forward to continued consultation in the project design phase to ensure that an adverse effect is not created.

In summary, FHWA has determined that the Double Deck alternative would result in an Adverse Effect to the Soldiers' Home Historic District and the Soldiers' Home NHL. Direct adverse effects may be minimized by not acquiring property from the historic sites, not widening I-94 into the Soldiers' Home Historic District and the Soldiers' Home NHL, and not relocating graves. FHWA would continue consultation pursuant to 36 CFR 800.6 to look for opportunities to avoid, minimize, or mitigate adverse effects on the Northwestern Branch, National Home for Disabled Volunteer Soldiers National Historic Landmark and the Northwestern Branch, National Home for Disabled Volunteer Soldiers Historic District as well as on Calvary Cemetery and Story Hill Residential Districts #2 and #3. In addition, FHWA and WisDOT will gather the documentation for consultation materials (as described at 36 CFR 800.11(e)) used as part of the consultation process and prepare a report for consulting parties for further review and comment at a future consultation meeting.

FHWA looks forward to the consultation meeting October 16, 2014, and continued discussion on opportunities to minimize any impacts through avoidance, minimization, and mitigation. Please do not hesitate to contact me at bethaney.bacher-gresock@dot.gov or 608-662-2119 if I can be of additional assistance.

Enclosure

cc: Section 106 Consulting Parties



LEGEND

North

- Area of Potential Effect
- Northwestern Branch, National Home for Disabled Volunteer Soldiers National Historic Landmark
- Story Hill Residential District #1
- Story Hill Residential Districts #2 and 3
- Soldiers Home Reef National Historic Landmark
- Calvary Cemetery
- Northwestern Branch, National Home for Disabled Volunteer Soldiers Historic District

U.S. Department of Transportation Federal Highway Administration

Historic Properties Located in the Area of Potential Effect (March 2014)

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