

Appendix G  
**PM<sub>2.5</sub> Qualitative Hot-Spot Analysis**

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# PM<sub>2.5</sub> Qualitative Hot-Spot Analysis

Interstate I-94, I-894, and U.S. Highway 45  
(Zoo Interchange)  
Milwaukee County, WI

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# EXECUTIVE SUMMARY

Federally supported highway and transit projects located in nonattainment or maintenance areas are required by section 176(c) of the Clean Air Act to be consistent with (“conform to”) the state implementation plan (SIP). Conforming to the SIP, according to Section 176(c)(1)(B) means that a transportation project, such as the reconstruction of Zoo Interchange, will not

“cause or contribute to any new violation of any standard in any area; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emission reductions in any area.”

The Transportation Conformity Rule was amended by United States Environmental Protection Agency (EPA) with the final rule on March 10, 2006. The Amended Transportation Conformity Rule requires a hot-spot analysis to determine project-level conformity in PM<sub>2.5</sub> and PM<sub>10</sub> nonattainment and maintenance areas. The amended rule also stated that qualitative hot-spot analysis would be performed on projects until such time that quantitative procedures are developed. A hot-spot analysis is an assessment of localized emissions impacts from a proposed transportation project and is only required for “projects of air quality concern.”

The existing annual average daily traffic (AADT) through the Zoo Interchange are 144,000 on the north leg, 143,000 on the east leg, 127,000 on the south leg and 125,000 on the west leg. HDDV truck percentages are 8.1% and 9.3% on the west and south legs, respectively. Design year 2035 AADT traffic on the four legs is projected to increase to 197,000 on the north leg, 173,000 on the east leg, 222,000 on the south leg and 179,000 on the west leg. Truck percentages are expected to remain constant. Based on this traffic data, it was determined that 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”.

An Interagency Consultation Team, comprised of representatives from the Wisconsin Department of Transportation (WisDOT), Federal Highway Administration Wisconsin Division (FHWA), Wisconsin Department of Natural Resources (DNR), Wisconsin Department of Health Services (DHS), Southeastern Wisconsin Regional Planning Commission (SEWRPC), United States Environmental Protection Agency Region 5 (EPA), Milwaukee County Transit System (MCTS), the City of Milwaukee, the City of West Allis, Milwaukee County, and WisDOT’s consultants was established to review the project, air quality status in the study area, existing air quality data, existing and projected traffic data volumes, heavy-duty diesel emission trends and compare the project to the I-80/94 Interchange Modifications at I-65 project in Lake County, IN, to determine whether the Zoo Interchange project meets all the project level conformity requirements.

Based on the qualitative analysis prepared for the Interagency Consultation Team it is determined that the Zoo Interchange project meets all the project level conformity requirements, and that the project will not cause or contribute to a new violation of the 24-hour or Annual PM<sub>2.5</sub> NAAQS, or increase the frequency or severity of a violation and will not delay timely attainment. Therefore, the project meets the conformity hot-spot requirements in 40 CFR §93.116 and §93.123 for PM<sub>2.5</sub>.

# 1. INTRODUCTION

## 1.1 Purpose

Federally supported highway and transit projects are required by section 176(c) of the Clean Air Act to be consistent with (“conform to”) the SIP. Conforming to the SIP, according to section 176(c)(1)(B) means that a transportation project, such as the reconstruction of the Zoo Interchange, will not

“cause or contribute to any new violation of any standard in any area; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emission reductions in any area.”

The standards referred to in section 176(c)(1)(B) of the Clean Air Act are the National Ambient Air Quality Standards (NAAQS or “standards” or “criteria pollutants”).

Transportation conformity is required for federal supported transportation projects located in nonattainment or maintenance areas. Nonattainment areas are those regions, cities or portions of cities that have been designated by the EPA as not meeting a NAAQS. Maintenance areas had previously violated air quality standards, but currently meet them and have an approved maintenance plan.

The Transportation Conformity rule was amended by EPA with the final rule on March 10, 2006.<sup>1</sup> The amended Transportation Conformity rule required a hot-spot analysis to determine project-level conformity in PM<sub>2.5</sub> and PM<sub>10</sub> nonattainment and maintenance areas. The amended rule also stated that qualitative hot-spot analysis would be performed on projects until such time that quantitative procedures are developed. A hot spot analysis is an assessment of localized emissions impacts from a proposed transportation project and is only required for “projects of air quality concern.” The March 10, 2006 rule provides examples of “projects of air quality concern,” as well as those that are “not an air quality concern.” The PM<sub>2.5</sub> and PM<sub>10</sub> hot-spot requirements in the final rule became effective April 5, 2006. Project level conformity determinations are required pursuant to 40 CFR §93.116. and §93.123. Following the publication of the final rule, the EPA and the FHWA released a conformity guidance manual to aid in the application of the new rule.<sup>2</sup>

EPA released a draft version of the quantitative hot-spot analysis guidance on May 26, 2010.<sup>3</sup> On December 20, 2010 EPA announced the final hot-spot analysis guidance for quantitative PM<sub>2.5</sub> and PM<sub>10</sub> hot-spot analyses using EPA’s Motor Vehicle Emissions Simulator model (MOVES).<sup>4</sup> The December 20, 2010 publication date begins a two-year conformity grace period. Therefore, quantitative hot-spot analyses and the use of MOVES2010a will be required at the end of the grace period, which ends on December 20, 2012.<sup>5</sup>

Based on the scheduled late summer 2011 completion of the Zoo Interchange Final Environmental Impact Statement, the recent release of EPA’s final PM<sub>2.5</sub> hot-spot analysis guidance and the two-year conformity grace period, it was deemed appropriate

that should the Zoo Interchange project meet the definition for “projects of air quality concern” that a qualitative hot-spot analysis should be completed. The Zoo Interchange qualitative hot-spot analysis report presents a project description, the air quality status in the study area, existing air quality data, existing and future diesel truck volumes, emission factor trends, a qualitative analysis of this data and a conclusion that this project will not cause or contribute to a new violation of the PM<sub>2.5</sub> NAAQS, or increase the frequency or severity of a violation, and will not delay timely attainment.

## 1.2 Project Description

“The Zoo Interchange is the oldest and busiest interchange in the state of Wisconsin. Safety issues, design deficiencies and traffic congestion concerns require full redesign and reconstruction.”<sup>6</sup> The Zoo Interchange is located in western Milwaukee County in southeastern Wisconsin at the junction of Interstate 94 (I-94), Interstate 894 (I-894), and United States Highway 45 (US 45), in the cities of Milwaukee, Wauwatosa, and West Allis (**Exhibit 1**). The study area encompasses the Zoo Interchange and its four approaches (referred to as the east, west, north, and south legs). The west terminus of the project is 124th Street, and the east terminus is 70th Street, a distance of about 3.5 miles. The south terminus of the project is Lincoln Avenue, and the north terminus is Burleigh Street, a distance of approximately 5.5 miles.

The Draft Environmental Impact Statement (DEIS) for the Zoo Interchange corridor was approved by the FHWA and WisDOT on May 20, 2009. WisDOT held public hearings on June 23 and 24, 2009, at the Tommy Thompson Youth Center in West Allis to accept public and agency comments on the DEIS. Following the public hearing and DEIS comment period FHWA and WisDOT deemed it appropriate to develop a new freeway modernization alternative known as the “Reduced Impacts Alternative” along with freeway-related improvement options to several arterials in the study area, including Highway 100, Watertown Plank Road, and 84th Street. This information along with updated existing conditions data were presented in a Supplemental DEIS (SDEIS) which was approved by the FHWA and WisDOT on February 4, 2011. Public hearings on the SDEIS were held at the Tommy Thompson Youth Center in West Allis on March 22 and 23, 2011. On May 13, 2011 WisDOT announced the selection of the “Reduced Impacts Alternative” as the preferred alternative for the Zoo Interchange project.<sup>7</sup>

The following description of the Reduced Impacts Alternative and Adjacent Arterials Components are summarized from the SDEIS.<sup>8</sup> Exhibits for segments of the Reduced Impacts Alternative and Adjacent Arterials Components are located in Appendix A.

### Core

The Reduced Impacts Alternative Core is defined as I-94 from roughly 92nd Street to Highway 100, and US 45 from Schlinger Avenue to Bluemound Road. The improvements to the Core are as follows (**Exhibit A-1**):

- All exits on the right; through traffic stays left.



**Project Limit**

## Exhibit 1 Project Limits



- Full 8- to 12-foot shoulders on all ramps and freeways.
- 18-foot inside shoulders on I-94 eastbound and westbound that could be converted to an additional through lane in the future.
- 3 lanes on US 45 northbound and southbound and 2 lanes I-94 eastbound and westbound.
- The interchange would have four levels making it about 20 feet higher than the existing core.
- Several ramps that have 1 lane today would have 2 lanes:
  - The ramp from I-94 eastbound to I-894/US 45 southbound would be 2 lanes.
  - The ramp from I-894/US 45 northbound to I-94 westbound would be 2 lanes.
  - The ramp from US 45 southbound to I-94 eastbound would be 2 lanes.
  - The ramp from I-94 westbound to US 45 northbound would be 2 lanes.
- Smoother curves on all freeway-to-freeway interchange ramps (minimum 45 mph design speed, compared to as low as 30 mph today).
- I-94 and US 45 would have a 60 mph design speed.
- Access to and from US 45/I-894 is provided to US 18 (Bluemound Road); access to and from I-94 to this interchange would not be provided.

#### West Leg

The Highway 100 interchange with I-94 would be reconfigured. The three exit ramps would remain in roughly the same configuration but lengthened to provide adequate acceleration/deceleration distance. The entrance ramps from Highway 100 to I-94 would be consolidated into one ramp that would split into two ramps, one eastbound and one westbound (**Exhibit A-2**).

#### East Leg

The East Leg of the Reduced Impacts Alternative (**Exhibit A-3**) maintains the 84th Street interchange ramps in roughly their same configuration but with longer acceleration and deceleration lanes. The service drives south of I-94 (Kearney Street) and north of I-94 (O'Connor Street), each east of 84th Street, would remain in-place.

#### South Leg

The South Leg of the Reduced Impacts Alternative (**Exhibit A-4**) would be reconstructed as a diamond interchange. The improvements would take place west of the utility corridor located east of I-894.

#### North Leg

The North Leg of the Reduced Impacts Alternative is described by section, as follows:

- **Between the core and the south end of the US 45/Watertown Plank Road interchange:** The Reduced Impacts Alternative include: 1) access at Bluemound Road to and from US 45 only (no access to/from Bluemound to I-94); 2)



continuation of 95th Street as a local road connection between Bluemound Road and Wisconsin Avenue; and 3) cul-de-sac of 97th Street near Bluemound Road. **(Exhibit A-5).**

#### The US 45/Watertown Plank Road interchange

The Reduced Impacts Alternative includes a distinct Watertown Plank Road interchange configuration. This alternative includes free flow access to and from all directions; that is, no signals would be required along Watertown Plank Road which would significantly increase the capacity of this interchange. A combination of loop ramps (southwest and northeast quadrants) and U-ramps (both north and south of the US 45 bridges over Watertown Plank Road) are included. Swan Boulevard would be separated from the Watertown Plank Road interchange, with access to and from Swan Boulevard to US 45 provided exclusively via the extension of Swan Boulevard to the south and west, intersecting with Watertown Plank Road at a new signalized intersection at the existing Innovation Drive/Watertown Plank Road intersection.

- **Between the US 45/Watertown Plank Road interchange and the northern terminus of the project at the Burleigh Street interchange:** The slip ramp to northbound Highway 100 (Mayfair Road) would remain with the Reduced Impacts Alternative, and a double-loop ramp configuration would be constructed at the North Avenue interchange **(Exhibit A-5).**

#### Adjacent Arterials Component

The Zoo Interchange project includes improvements to the following adjacent arterials:

- Highway 100 between I-94 and Watertown Plank Road
- Watertown Plank Road between Highway 100 and 87th Street
- 84th Street/Glenview Avenue between I-94 and Wisconsin Avenue

#### Highway 100

Proposed improvements to Highway 100 include eight through lanes; access modifications via driveway consolidation, median opening changes, and additional width for bicyclists in the outside lane. The improvements at the Highway 100/Bluemound Road intersection include adding left-turn lanes (to provide three left-turn lanes instead of the current two), adding a through lane on Highway 100 and lengthening the existing right-turn lanes are the key improvements. In addition, turn lanes and storage for turning vehicles would be added at the intersections of Highway 100 with Potter Road, Wisconsin Avenue, and Watertown Plank Road **(Exhibit A-6).**

#### Watertown Plank Road

Improvements to Watertown Plank Road include widening from four to six through lanes between Highway 100 on the west and 87th Street on the east. Also, additional turn lanes and storage for turning vehicles at the intersections of Watertown Plank

Road with Swan Boulevard/Innovation Drive, 92nd Street, and 87th Street would be provided (**Exhibit A-7**).

WIS 181 (84th Street/Glenview Avenue)

84th Street/Glenview Avenue is a two- to four-lane undivided urban arterial on the east side of the study area. Major 84th Street/Glenview Avenue intersections through the study area include the ramp terminals with I-94, Bluemound Road, and Wisconsin Avenue. The Bluemound Road/84<sup>th</sup> Street intersection would be reconstructed to lengthen existing left-turn lanes and right-turn lanes. A left-turn lane would be added on southbound 84<sup>th</sup> Street/Glenview Avenue as it approaches Bluemound Road. Glenview Avenue north of Bluemound Road would be reconstructed to provide one lane in each direction and a two-way left-turn lane in the middle. Left-turn lanes would be provided on all four approaches to the Wisconsin Avenue/Glenview Avenue intersection. (**Exhibit A-8**).

## 2. AFFECTED ENVIRONMENT

### 2.1 Particulate Matter

Particulate matter is the general term used for a mixture of solid particles and liquid droplets found in the air. The very large particulates settle to the ground, while the smaller particulates stay suspended in the air. Some are visible to the naked eye; others require a microscope to be seen. “PM<sub>2.5</sub> describes the ‘fine’ particles that are less than or equal to 2.5 µm in diameter. ‘Coarse fraction’ particles are greater than 2.5 µm, but less than or equal to 10 µm in diameter. PM<sub>10</sub> refers to all particles less than or equal to 10 µm in diameter.”<sup>9</sup> Even though PM<sub>10</sub> can be inhaled, PM<sub>2.5</sub>, due to its small diameter (approximately 1/30th the average width of a human hair), and the ability to become lodged in the lungs, is believed to pose the greatest health risk.<sup>10</sup> Road dust and soot from wood combustion are referred to as “primary” particles as they are emitted directly into the atmosphere. Particulates that form in the atmosphere from primary gaseous sources are referred to as “secondary” particulates. Examples of secondary particulates include “sulfates, formed from SO<sub>2</sub> emissions from power plants and industrial facilities, and nitrates, formed from NO<sub>x</sub> emissions from power plants, automobiles, and other types of combustion sources. The chemical composition of particles depends on location, time of year, and weather. Generally, coarse PM is composed largely of primary particles and fine PM contains many more secondary particles.”<sup>11</sup>

The National Ambient Air Quality Standard (NAAQS) for PM<sub>10</sub> is a 24-hour standard (150 µg/m<sup>3</sup>). The NAAQS for PM<sub>2.5</sub> includes an annual standard of 15.0 µg/m<sup>3</sup> and a 24-hour standard of 35 µg/m<sup>3</sup>. The 24-hour standard of 35 µg/m<sup>3</sup> became effective on December 16, 2006. The PM secondary (welfare-based) standards have been revised by making them identical to the primary standards. EPA believes that the PM<sub>2.5</sub> and PM<sub>10</sub> standards, combined with the Clean Air Act-required regional haze program, will provide protection against the major PM-related welfare effects, including visibility impairment, soiling and materials damage.

The Zoo Interchange study area is located within the Southeastern Wisconsin Intrastate Air Quality Control Region #239. Milwaukee County is currently in attainment status for five of the seven criteria pollutants, and has been classified as being in moderate non-attainment for the 8-hour ozone standard and non-attainment for PM<sub>2.5</sub>. Since the region has recently been designated as a non-attainment area for PM<sub>2.5</sub>, DNR and SEWRPC are developing budgets to control PM<sub>2.5</sub> emissions in accordance with EPA guidelines so that the region will be in attainment by 2015.

The DNR Bureau of Air Management PM<sub>2.5</sub> monitoring network was made up of 26 particulate air monitoring sites in 2008, including Tribal and cooperative sites. Seven (7) of those were located in Milwaukee, Ozaukee and Waukesha Counties. These seven (7) monitoring locations are shown on **(Exhibit 2)**. Monitored PM<sub>2.5</sub> yearly annual means and the three year design values for each site are presented in **Table 1**. In 2007 the annual mean at Site 4 exceeded the 15 µg/m<sup>3</sup> NAAQS for PM<sub>2.5</sub>. None of the sites exceeded the annual 3-year average 15 µg/m<sup>3</sup> NAAQS. 24-hour data from the same

monitoring locations are presented in **Table 2**. Violations of the 24-hour 3-year average 35 µg/m<sup>3</sup> NAAQS for PM<sub>2.5</sub> occurred at Sites 1 through 5 in the period from 2005 through 2007 and at Sites 1 through 3 and 5 for the periods between 2006 and 2009. None of the sites reported a violation of the 24-hour 3-year average 35 µg/m<sup>3</sup> NAAQS for PM<sub>2.5</sub> for the 2008 to 2010 averaging period.

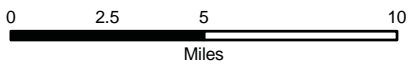
The data in **Tables 1** and **2** are graphically presented in Appendix B, **Graphs 1** and **2**. Examination of the Annual data in **Graph 1** indicates that since 2005 there has been a downward trend in the concentrations. This trend is evident even though the 2007 concentrations increased across the whole area, including Harrington Beach. The 24-hour data, which is shown in **Graph 2** varies by location and year. The 2007 and 2009 data at quite a few of the monitoring sites increased compared to the preceding years. As with the Annual data, there is a slight downward trend, although not as visible in the graph as the Annual data. The slight downward trend is more apparent when reviewing the 24-hour Three Year Design Values in Table 2.

During DNR's annual reviews of the monitoring network the DNR determined that upon completion of the Marquette Interchange project the Virginia Fire Station site and the Milwaukee Fire Department Headquarters site were no longer needed and monitoring was discontinued in December 2009. With the reconstruction of the I-94 corridor in the vicinity of the Mitchell Interchange and south through Milwaukee County, the DNR removed the FAA site and replaced the site with one located at 1550 W. College Avenue (the College Avenue Park and Ride lot).<sup>12, 13</sup> Since the College Avenue site only had two years of PM<sub>2.5</sub> data, the monitoring data were are not presented in either Table 1 or 2.

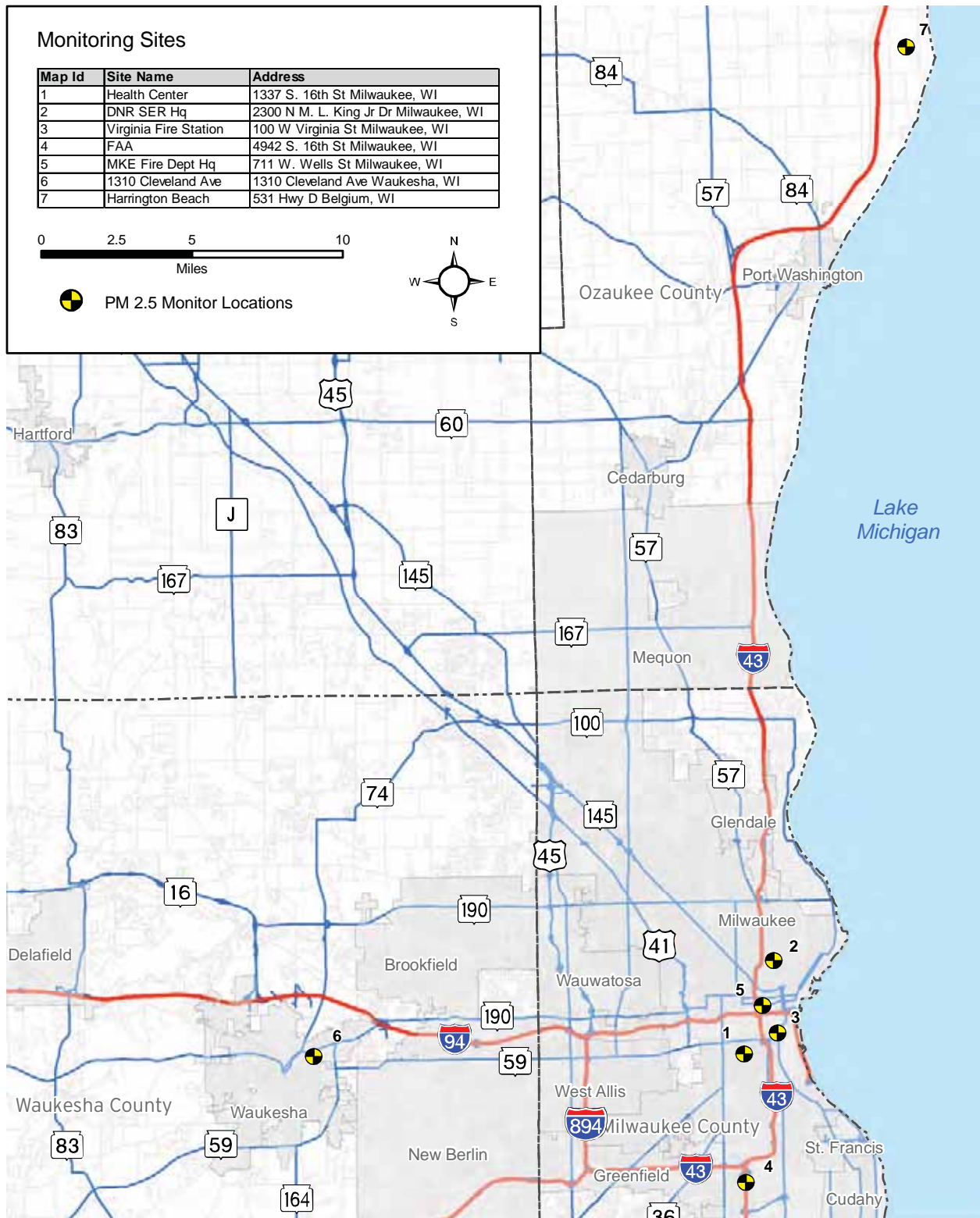
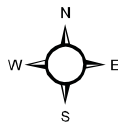
The Zoo Interchange study area ranges from undeveloped land to high-density urban development including commercial, residential, institutional, industrial, parks, transportation and utilities. The closest monitoring site to the Zoo Interchange study area is Site 1, the 16<sup>th</sup> Street Community Health Center, which is located 5.2 miles to the east. Monitoring Sites 2, 3 and 5 are located 5.8 to 6.6 miles east of the study area. Site 4 is located 7.1 miles southeast of the Zoo Interchange. The monitoring site in Ozaukee County, Site 7, is located 34 miles northeast of the study area. Monitoring Site 6 is located 9.2 miles west of the Zoo Interchange in Waukesha County.

## Monitoring Sites

Map Id	Site Name	Address
1	Health Center	1337 S. 16th St Milwaukee, WI
2	DNR SER Hq	2300 N M. L. King Jr Dr Milwaukee, WI
3	Virginia Fire Station	100 W Virginia St Milwaukee, WI
4	FAA	4942 S. 16th St Milwaukee, WI
5	MKE Fire Dept Hq	711 W. Wells St Milwaukee, WI
6	1310 Cleveland Ave	1310 Cleveland Ave Waukesha, WI
7	Harrington Beach	531 Hwy D Belgium, WI



PM 2.5 Monitor Locations



## Exhibit 2 Wisconsin PM<sub>2.5</sub> Monitors

PM 2.5 Qualitative Hot-Spot Analysis | Zoo Interchange | Milwaukee County



TABLE 1  
PM<sub>2.5</sub> Annual Monitoring Data Summary - Wisconsin  
Milwaukee, Ozaukee and Waukesha Counties, WI

Site # on Exhibit 2	City	Site Name	Yearly Annual Means, µg/m <sup>3</sup>						Three Year Design Values, µg/m <sup>3</sup>			
			2005	2006	2007	2008	2009	2010	05-07	06-08	07-09	08-10
1	Milwaukee	Health Center	14.4	12.7	14.7	12.8	11.6	11.0	13.9	13.4	13.0	11.8
2	Milwaukee	DNR SER Hq	13.7	13.3	14.6	12.5	11.6	10.6	13.9	13.5	12.9	11.5
3	Milwaukee	Virginia Fire Station	14.7	14.2	15.0	12.7	11.3		14.6	14.0	13.0	
4	Milwaukee	FAA	14.4	14.0	16.3	13.3	11.1		14.9	14.5	13.6	
5	Milwaukee	MKE Fire Dept Hq	14.4	14.0	14.8	13.1	11.6		14.4	14.0	13.2	
6	Waukesha	1310 Cleveland Ave	14.9	13.8	14.3	13.5	11.9	11.4	14.3	13.9	13.2	12.3
7	Belgium	Harrington Beach	12.3	11.5	12.9	11.3	10.1	9.3	12.2	11.9	11.4	10.2

**Value above the annual standard**

Note: The Annual Standard is 15.0 micrograms per cubic meter (µg/m<sup>3</sup>). To attain this standard, the 3 year average of the weighted annual mean PM<sub>2.5</sub> concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m<sup>3</sup>.

Source 2005 to 2006 data: <http://www.epa.gov/air/data/> accessed on May 2, 2011.

Source 2007 to 2009 data: E-mail correspondence, Grant Hetherington, DNR to John Jaeckel, HNTB Corporation, May 17, 2011.

Source 2010 data: E-mail correspondence, Grant Hetherington, DNR to John Jaeckel, HNTB Corporation, September 8, 2011.

Site #4 was terminated in late 2009.

Sites #3 and #5 were terminated in December 2009.



TABLE 2  
PM<sub>2.5</sub> 24-Hour Monitoring Data Summary - Wisconsin  
Milwaukee, Ozaukee and Waukesha Counties, WI

Site # on Exhibit 2	City	Site Name	24-Hour 98 <sup>TH</sup> Percent, µg/m <sup>3</sup>						Three Year Design Values, µg/m <sup>3</sup>			
			2005	2006	2007	2008	2009	2010	05-07	06-08	07-09	08-10
1	Milwaukee	Health Center	38.7	40.7	40.6	27.3	39.1	30.9	40	36	36	32
2	Milwaukee	DNR SER Hq	41.5	36.2	39.8	27.5	39.0	31.9	39	35	35	33
3	Milwaukee	Virginia Fire Station	37.1	44.0	38.0	27.4	41.7		40	36	36	
4	Milwaukee	FAA	41.3	29.0	40.8	26.9	33.0		37	32	34	
5	Milwaukee	MKE Fire Dept Hq	37.1	38.3	40.7	29.0	40.3		39	36	37	
6	Waukesha	1310 Cleveland Ave	41.1	28.2	33.8	29.9	32.0	35.9	34	31	32	33
7	Belgium	Harrington Beach	37.4	30.3	34.5	26.3	31.5	27.6	34	30	31	28

**Value above the 24-Hour standard**

Note: Prior to December 17, 2006 the 24-Hour Standard was 65.0 micrograms per cubic meter (µg/m<sup>3</sup>). Effective December 17, 2006 the 24-Hour Standard is 35.0 µg/m<sup>3</sup>. To attain this standard, the 3 year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m<sup>3</sup>

Source 2004 to 2006 data: <http://www.epa.gov/air/data/> accessed on May 2, 2011.

Source 2007 to 2009 data: E-mail correspondence, Grant Hetherington, DNR to John Jaeckel, HNTB Corporation, May 17, 2011.

Source 2010 data: E-mail correspondence, Grant Hetherington, DNR to John Jaeckel, HNTB Corporation, September 8, 2011.

Site #4 was terminated in late 2009.

Sites #3 and #5 were terminated in December 2009.

## 3. QUALITATIVE ANALYSIS

### 3.1 Interagency Consultation

The interagency consultation process began on Thursday, May 12, 2011 with a conference call to introduce the interagency consultation team (ICT) to WisDOT's Zoo Interchange project, the process to determine whether the project was a "project of air quality concern" based upon definitions provided in 40 CFR 93.123(b)(1)(i), and the potential steps to prepare a qualitative PM<sub>2.5</sub> hot-spot analysis for a conformity determination. Participating in the conference call were representatives from the following agencies; WisDOT, FHWA, DNR, DHS, SEWRPC, MCTS, the City of West Allis, Milwaukee County, and WisDOT's consultants. EPA Region V could not make the conference call on May 12, 2011. However, all items discussed during the conference call were reviewed with EPA Region V on a follow-up call on Monday, May 16, 2011.

During the conference call the ICT reviewed the following:

- The history of PM<sub>2.5</sub> transportation conformity - March 29, 2006 EPA and FHWA issued joint guidance on how to meet the PM<sub>2.5</sub> hot-spot analysis requirements established in the March 10, 2006, final transportation conformity rule ;
- The Zoo Interchange environmental process timeline – DEIS was approved by the FHWA and WisDOT on May 20, 2009 ;
- The PM<sub>2.5</sub> nonattainment designation for Milwaukee, Racine and Waukesha counties - October 8, 2009. Therefore, once the preferred alternative for the Zoo Interchange corridor is determined it became necessary for WisDOT and FHWA to determine whether the project was a project of air quality concern and whether the project does or does not meet the conformity hot-spot requirements in 40 CFR §93.116 and §93.123 for PM<sub>2.5</sub>;
- What constituted a project of air quality concern based upon the definitions in 40 CFR 93.123(b)(1)(i) - A project that serves a significant volume of diesel truck traffic, such as a facility with greater than 125,000 annual average daily traffic (AADT) and 8% or more of such AADT is diesel truck traffic;
- Existing and projected daily traffic volumes along with heavy duty diesel truck percentages through the Zoo Interchange - The Zoo Interchange corridor presently has between 125,000 and 144,000 AADT on the various legs of the interchange. Design year traffic on the four legs is projected to increase to the 173,000 to 222,000 AADT range by 2035. Diesel truck traffic ranges from 8.1 – 9.3%, and;
- A proposed PM<sub>2.5</sub> qualitative hot-spot analysis methodology – an air quality study approach.

Based on the traffic data presented to the ICT, the Zoo Interchange project was determined to be 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".



The air quality study approach was determined to be the most applicable to this qualitative hot-spot analysis. The qualitative analysis methodology agreed upon was to present projected traffic data, present trends in heavy duty diesel truck emission rates, and present regional particulate data. As discussed on the next page, on September 22, 2011, the hot-spot analysis methodology was changed from the air quality study approach to a comparison to another location with similar characteristics.

The qualitative hot-spot analysis requires re-entrained road dust and construction emissions to be considered if appropriate based on the requirements set forth in 40 CFR 93. Re-entrained road dust is to be included “if the EPA Regional Administrator or the director of the State air agency has made a finding that re-entrained road dust emissions within the area are a significant contributor to the PM<sub>2.5</sub> nonattainment problem and has so notified the MPO and DOT” (40 CFR 93.102(b)(3)). There has been no determination that re-entrained road dust emissions within the area are a significant contributor to the PM<sub>2.5</sub> concentrations.<sup>14, 15</sup>

Particulate construction emissions are not required to be considered in the qualitative hot-spot analysis if the emissions are considered to be temporary according to 40 CFR 93.123(c)(5), “Temporary increases are defined as those which occur only during the construction phase and last five years or less at any individual site.” Construction on the Adjacent Arterials Component is projected to begin in 2013 and be completed in 2014. Preliminary construction scheduling indicates that one or two contracts could be let for the 2013 projects and one to five contracts for the 2014 work for the Adjacent Arterials Component. Reconstruction of the Zoo Interchange freeway system will begin in 2015 and be completed at end of 2018. The reconstruction of the Zoo Interchange would most likely entail one or two contracts over the first two years of the construction schedule, 2015 – 2016, and two more contracts over the last two years of the construction schedule, 2017 - 2018. The Adjacent Arterial Component projects must be completed before the Zoo Interchange construction can commence. The various contracts will be located in different areas of the study area, and none will last longer than two years. Therefore, neither re-entrained road dust nor particulate construction emissions will be analyzed in this qualitative hot-spot analysis.

One of the requirements for hotspot analysis is that it addresses the year or years of peak emissions. Trends in regional emissions, trends in motor vehicle emissions rates, and projected traffic volumes were examined to determine the appropriate analysis year(s). Based on the various trends, it was agreed that the year of peak emissions would be the opening year for the completed improvements, 2019.

The ICT reviewed the June 10, 2011 Draft PM<sub>2.5</sub> Qualitative Hot Spot Analysis from June 16, 2011 through June 23, 2011 culminating with a conference call on June 23, 2011. Participating in the conference call were representatives from the following agencies; WisDOT, FHWA, DNR, SEWRPC, MCTS, the City of Milwaukee, the City of West Allis, and WisDOT’s consultants. Items discussed during the conference call included the following:

- Specific wording regarding the status of the non-attainment area;
- Status of 2009 air quality monitoring data;
- Specific wording regarding why a qualitative hot-spot analysis was being prepared;

- Request for clarification on re-entrained road dust;
- Request for clarification on particulate construction emissions;
- Request for clarification on 2035 AADT traffic volumes;
- Request for clarification on origin on heavy duty diesel vehicle emission rates;
- Recommendation to delete NO<sub>x</sub> emissions since the data is not required according to 40 CFR 93; and
- Discussed pending amendment to the conformity determination to The Year 2035 Regional Transportation Plan and The Year 2011-2014 Transportation Improvement Program which will include the preferred alternative for the Zoo Interchange project.

EPA Region V could not make the conference call on June 23, 2011. However, all items discussed during the conference call were reviewed with EPA Region V on a follow-up call on Tuesday, July 12, 2011.

The ICT participated in a third conference call on September 14, 2011 to review the September 9, 2011 Draft PM<sub>2.5</sub> Qualitative Hot Spot Analysis which addressed all the items discussed during the first ICT conference call on June 23, 2011. Participating in the conference call were representatives from the following agencies; WisDOT, FHWA, EPA, DNR, MCTS, and WisDOT's consultants. Based upon EPA's review of DNR's 2010 air quality monitoring network, which was occurring simultaneously with this analysis, but not as part of this analysis, EPA recommended that the methodology for the PM<sub>2.5</sub> Hot-Spot Analysis be changed from one based on air quality studies to comparing the Zoo Interchange project to another location with similar characteristics.

## 3.2 Traffic Data

The existing annual average daily traffic (AADT) on the four legs of the Zoo Interchange ranges from 125,000 on the west leg to 144,000 on the north leg. HDDV truck percentages are 8.1% and 9.3% on the west and south legs, respectively.<sup>16, 17</sup> Design year traffic on the four legs is projected to increase to the 173,000 to 222,000 AADT range by 2035. Truck percentage is expected to remain constant.<sup>18</sup> The existing and future AADT volumes and truck percentages are presented in **Table 3**. Based on this traffic data, it was determined that 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". The increase in AADT is projected to range from 21% on the east leg to 75% on the south leg.

TABLE 3  
Existing and Future Traffic  
Zoo Interchange

Roadway	Existing (2009) <sup>1</sup>		Future (2035) <sup>2</sup>	
	AADT	Truck Percentage <sup>3</sup>	AADT	Truck Percentage
US-45 Zoo Interchange to North Avenue	144,000		197,000	
US-45 North Avenue to Burleigh Street.	119,000		181,000	
I-94 East of Zoo Interchange	143,000		173,000	
I-894/US-45 South of Zoo Interchange	127,000	9.3	222,000	9.3
I-94 West of Zoo Interchange	125,000	8.1	179,000	8.1

1. The Existing 2009 AADT is 93.59% of the average daily traffic presented in the updated version of Exhibit 1-14, Existing and Future Traffic Volumes (VPD), Zoo Interchange FEIS.
2. Source of Future 2035 average daily traffic: E-mail correspondence from Marty Hawley, Forward 45, to John Jaeckel, HNTB Corporation, August 16, 2011.
3. Truck percentage - 2005 Wisconsin Vehicle Classification Data, Wisconsin Department of Transportation, May 2006.

### 3.3 Heavy Duty Diesel Emission Trends

According to EPA, the 2007 heavy-duty engine standards will result in the introduction of new, highly effective control technologies for heavy-duty engines, beginning in 2007. Particulate matter emission levels are expected to be 90 percent lower on a per vehicle basis than 2000 standards levels due to the 2007 diesel engine and fuel program. On-Road diesel trucks implemented Ultra Low Sulfur Diesel (ULSD) in the fall of 2006. As older heavy duty diesel vehicles are replaced with newer less polluting vehicles, the heavy duty diesel truck fleet emission rate in southeastern Wisconsin is projected to decrease approximately 89% from 2008 through the 2035 design year and 51% from the year the project is completely open to traffic in 2019 through the 2035 design year. The US Environmental Protection Agency's MOBILE6.2, Mobile Source Emission Factor Model, was used to develop the heavy duty diesel vehicle PM<sub>2.5</sub> emission rates for the southeastern Wisconsin nonattainment area presented in **Table 4**.

TABLE 4  
Heavy Duty Diesel Vehicle PM<sub>2.5</sub> Emission Rates  
Southeastern Wisconsin Nonattainment Area

Time Period	Total PM <sub>2.5</sub> Heavy Duty Diesel Vehicle Emission Rates, g/mi					
	Year					
	2008	2012	2019	2020	2030	2035
Weekday	0.2168	0.1196	0.0501	0.0402	0.0268	0.0245

Source: E-mail correspondence Christopher Bovee, WNDR, to John Jaeckel, HNTB Corporation, May 20, 2011.

### 3.4 Regional Emission Trends

Regional mobile source emissions in the nonattainment area are projected by SEWRPC to decrease by over 37% for PM<sub>2.5</sub> emissions from 2008 to 2035. The results of the regional emissions analysis are presented in Table 5. The direct PM<sub>2.5</sub> emissions include mobile exhaust emissions, brake wear and tire wear.<sup>19</sup>

TABLE 5  
Milwaukee, Racine and Waukesha County Regional Emissions Analysis, US Tons/Day

Pollutants	US Tons/Day				
	2008	2012	2020	2030	2035
PM <sub>2.5</sub> Emissions	0.93	0.72	0.57	0.57	0.58

Source: SEWRPC, *Assessment Of Conformity Of Amendment To The Year 2035 Regional Transportation Plan And The Year 2011-2014 Transportation Improvement Program With Respect To The State Of Wisconsin Air Quality Implementation Plan --Six County Southeastern Wisconsin Ozone Nonattainment Area And Three County Fine Particulate (PM<sub>2.5</sub>) Nonattainment Area, Table 4, Waukesha, WI, July 2011.*

## 4. COMPARISON PROJECT

There are no projects similar to the Zoo Interchange project in Wisconsin. Therefore, other recent projects in EPA Region V's area were reviewed to determine whether they had similar characteristics to the Zoo Interchange project. The I-80/94 Interchange Modification at I-65 project was recommended to EPA as a comparison project on September 20, 2011 for the following reasons<sup>20</sup>:

- The 2009 traffic volume on the I-80/94 corridor west of the interchange is 154,000 AADT with 29.3% HDDVs<sup>21</sup> ;
- The 2009 traffic volume on I-80/94 east of the interchange is 109,000 AADT with 29.3% HDDVs<sup>22</sup>;
- The 2009 traffic volume on I-65 south of the interchange is 64,000 AADT with 20.6% HDDVs<sup>23</sup>;
- The 2009 traffic volume on I-65 north of the interchange is 37,000 AADT with 10.7% HDDVs<sup>24</sup>;
- 2026 AADT volumes are projected to increase to 238,000 on I-80/94 west of the interchange with 25% HDDVs and to 128,000 with 27% HDDVs on I-65 south of the interchange<sup>25</sup>;
- The Indiana Department of Environmental Management (IDEM) operates eight (8) PM<sub>2.5</sub> monitoring sites located within 4.5 miles of the I-80/94 corridor in Hammond, East Chicago, Griffith, and Gary, in Lake County and Ogden Dunes in Porter County, IN; and
- On May 26, 2011, IDEM submitted a Redesignation Petition and Maintenance Plan for the Indiana Portion (Lake and Porter counties) of the Chicago-Lake IL-IN Nonattainment Area.<sup>26</sup>

On September 22, 2011 EPA agreed that the I-80/94 Interchange Modification at I-65 project had similar characteristics to the Zoo Interchange project and could be used as a comparison project.<sup>27</sup>

The traffic volumes along the I-80/94 segments of the corridor are similar in magnitude to the Zoo Interchange. However, the HDDV trucks volumes along I-80/94 are over three times the volumes on the various legs of the Zoo Interchange. Even with only 64,000 AADT on the south leg of I-65 the HDDV volumes exceed the truck volumes on both the west and south legs of the Zoo Interchange.

2026 design year volumes on the I-80/94 corridor west of the interchange are projected to be greater than any of the four legs of the Zoo Interchange. HDDV volumes along the I-80/94 corridor will be over 2.5 times greater than Zoo Interchange 2035 HDDV volumes.

The location of the IDEM PM<sub>2.5</sub> monitoring sites are shown on Exhibit 3. Monitored PM<sub>2.5</sub> yearly annual means and the three year design values for each site are presented in **Table 6**. In 2005 the annual mean at seven (7) of the eight (8) sites exceeded the 15 µg/m<sup>3</sup> NAAQS for

PM<sub>2.5</sub>. In 2006 none of the sites exceeded the NAAQS. Then as in Wisconsin, the 2007 concentrations all increased. In 2007 only Sites 15 and 17 exceeded the NAAQS. Except for Sites 15 and 17 during the 2005 to 2007 averaging period, none of the other sites exceeded the annual 3-year average 15 µg/m<sup>3</sup> NAAQS. It should be noted that Site 15, at 25<sup>th</sup> and Burr St., and Site 17, the IITRI Bunker, which is located at U.S. Steel, are source orientated monitors and are not compared to the annual standard.<sup>28</sup>

24-hour data from the same monitoring locations are presented in **Table 7**. Violations of the 24-hour 35 µg/m<sup>3</sup> NAAQS for PM<sub>2.5</sub> occurred at Sites 12, 16 and 17 in 2007. Only Sites 12 and 15 had violations of the 24-hour 3-year average 35 µg/m<sup>3</sup> NAAQS for PM<sub>2.5</sub> for the 2005 to 2006 averaging period.

The data in **Tables 6** and **7** are graphically presented in Appendix B, **Graphs 3** and **4**. Examination of the Annual data in **Graph 3** indicates that since 2005 there has been a downward trend in the concentrations. This trend is evident even though the 2007 concentrations increased across the whole area, as did the Wisconsin data. All the sites 24-hour data follows the same trend in **Graph 4** – a significant decrease from 2005 to 2006 followed by an increase 2007, which also occurred in the Wisconsin data. From 2008 through 2010 the concentrations vary by location and year. As with the Annual data, there is a slight downward trend, although not as visible in the graph as the Annual data. The slight downward trend is more apparent when reviewing the 24-hour Three Year Design Values in Table 7.

IDEM Sites 11, 13, 14, and 15 are of special interest to the comparison methodology as these monitoring sites are all located within 1.7 miles of the I-80/94 corridor, compared to the closest WI DNR monitor which is 5.2 miles east of the Zoo Interchange. Therefore, these four IDEM sites will be used as surrogate monitors. Site 11 is approximately 0.7 miles north of the corridor, Site 13 is 1.7 miles south of the corridor, Site 14 is approximately 1.2 miles north of the corridor, and Site 15, which is located at 25<sup>th</sup> and Burr Street is located between two truck stops and is approximately 1,300' north of the centerline of I-80/94. Since 2005 the only site that has exceeded the Annual 15 µg/m<sup>3</sup> NAAQS was Site 15 in 2007, when all concentrations in Wisconsin and Indiana increased compared to the 2006 data. Only Site 17 during the 2005 through 2007 exceeded the annual 3-year average 15 µg/m<sup>3</sup> NAAQS. Since then, Site 17, along with the other three sites has not exceeded the 3-year average criterion. None of the sites have exceeded the 24-hour 35 µg/m<sup>3</sup> NAAQS. Only Site 15 had violated the 24-hour 3-year average 35 µg/m<sup>3</sup> NAAQS for PM<sub>2.5</sub> for the 2005 to 2007 averaging period.

The PM<sub>2.5</sub> air quality data along the I-80/94 corridor, and within the entire Indiana portion of the Chicago- Gray-Lake County, IL-IN, nonattainment area for fine particulates, has been below the NAAQS for a sufficient period of time that IDEM has requested that the northwest corner of Indiana be redesignated attainment. The IDEM submitted the official request for redesignation along with a maintenance plan to EPA Region 5 on May 26, 2011. The EPA announced the proposed **Approval and Promulgation of Air Quality Implementation Plans; Indiana; Redesignation of Lake and Porter Counties to Attainment of the Fine Particulate Matter Standard** in the **Federal Register**, Vol. 76, No. 187, page 59600 on September 27, 2011. The public comment period on the proposed approval ends on October 27, 2011.



Comparing the I-80/I-94 Interchange Modification at I-65 project in Lake County, IN with the Zoo Interchange project in Milwaukee, WI, the AADT volumes are similar, especially along the I-80/94 corridor with the four legs of the Zoo Interchange. The existing HDDV truck volumes on the I-80/94 corridor are over three times greater than the Zoo Interchange truck volumes. Design year, 2026, HDDV volumes on the I-80/94 corridor are projected to be 2.5 times greater than the 2035 HDDV design year volumes on any of the four legs of the Zoo Interchange. Even with the higher HDDV volumes on the I-80/94 the four (4) IDEM PM<sub>2.5</sub> monitoring sites located within 1.7 miles of the corridor have not violated the PM<sub>2.5</sub> NAAQS since 2007. Therefore using the four IDEM monitoring sites as surrogates and based on the above comparisons, it can be concluded that the Zoo Interchange project will not cause or contribute to a new violation of the PM<sub>2.5</sub> NAAQS (24-hour standard or annual standard), or increase the frequency or severity of a violation, and will not delay timely attainment.

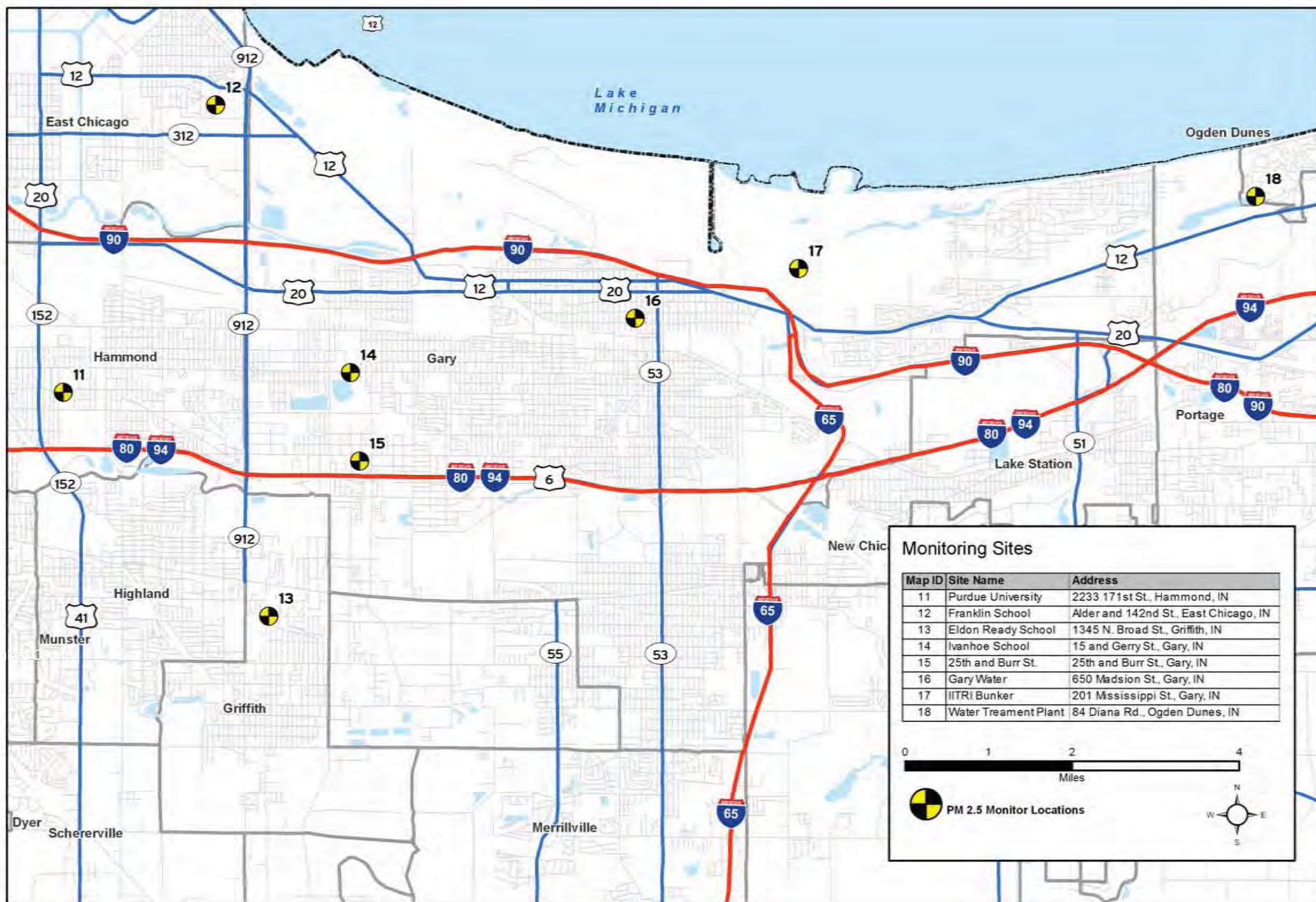


Exhibit 3  
Indiana PM<sub>2.5</sub> Monitors



TABLE 6  
PM<sub>2.5</sub> Annual Monitoring Data Summary - Indiana  
Lake and Porter Counties, IN

Site # on Exhibit 3	City	Site Name	Yearly Annual Means, µg/m <sup>3</sup>						Three Year Design Values, µg/m <sup>3</sup>			
			2005	2006	2007	2008	2009	2010	05-07	06-08	07-09	08-10
11	Hammond	Purdue University	15.4	12.7	13.8	10.8		12.3	14.0	12.7		
12	East Chicago	Franklin School	15.8	13.2	14.4	12.0	11.3	12.5	14.5	13.2	12.6	11.9
13	Griffith	Eldon Ready School	15.5	12.3	13.2	11.7	11.0	12.4	13.6	12.4	12.0	11.7
14	Gary	Ivanhoe School	15.7	12.6	14.0				14.1			
15	Gary	25 <sup>th</sup> and Burr St.	18.7	14.7	15.9	13.0	13.4	14.1	16.4	14.8	14.4	13.8
16	Gary	Gary Water	17.3	12.9	14.8	12.3	12.1	12.9	14.8	13.4	13.0	12.4
17	Gary	IITRI Bunker	18.3	13.6	15.1	11.3	12.5	13.6	15.6	13.7	13.3	12.8
18	Ogden Dunes	Water Treatment Plant	14.6	11.8	13.8	10.9	11.3	11.6	13.4	12.2	12.0	11.2

**Value above the annual standard**

Note: The Annual Standard is 15.0 micrograms per cubic meter (µg/m<sup>3</sup>). To attain this standard, the 3 year average of the weighted annual mean PM<sub>2.5</sub> concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m<sup>3</sup>.

Source 2005 to 2008 data: <http://www.epa.gov/air/data/> accessed on September 16, 2011.

Source 2009 to 2010 data: E-mail correspondence, Shawn Seals, IDEM to John Jaeckel, HNTB Corporation, September 19, 2011.

Site #11: The Hammond - Purdue monitoring site was physically removed to accommodate heating and cooling building repairs on the roof which were conducted from February 12, 2009 through November 18, 2009. As a result, the 2009 monitoring data and 2008 through 2010 three year design values are considered incomplete.<sup>29</sup>

Site #14 was discontinued on December 31, 2007.

Sites #15 and #17 data not compared to the Annual Standard.

TABLE 7  
PM<sub>2.5</sub> 24-Hour Monitoring Data Summary - Indiana  
Lake and Porter Counties, IN

Site # on Exhibit 3	City	Site Name	24-Hour 98 <sup>TH</sup> Percent, µg/m <sup>3</sup>						Three Year Design Values, µg/m <sup>3</sup>			
			2005	2006	2007	2008	2009	2010	05-07	06-08	07-09	08-10
11	Hammond	Purdue University	37.6	26.2	34.9	28.4		28.9	33	30		
12	East Chicago	Franklin School	39.9	29.4	37.2	26.6	25.8	29.5	36	31	30	27
13	Griffith	Eldon Ready School	37.1	25.8	34.1	26.5	29.8	28.8	32	29	30	28
14	Gary	Ivanhoe School	39.0	25.8	33.8				33			
15	Gary	25 <sup>th</sup> and Burr St.	43.7	30.4	35.0	32.4	33.8	31.7	36	33	34	33
16	Gary	Gary Water	40.1	25.6	36.6	29.4	30.0	34.4	34	31	32	31
17	Gary	IITRI Bunker	40.4	28.5	35.2	28.9	30.3	33.6	35	31	31	31
18	Ogden Dunes	Water Treatment Plant	37.5	26.1	33.3	28.3	27.1	29.0	32	29	30	28

**Value above the 24-Hour standard**

Note: Prior to December 17, 2006 the 24-Hour Standard was 65.0 micrograms per cubic meter (µg/m<sup>3</sup>). Effective December 17, 2006 the 24-Hour Standard is 35.0 µg/m<sup>3</sup>. To attain this standard, the 3 year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m<sup>3</sup>

Source 2004 to 2007 data: <http://www.epa.gov/air/data/> accessed on September 16, 2011.

Source 2008 to 2010 data: E-mail correspondence, Shawn Seals, IDEM to John Jaeckel, HNTB Corporation, September 19, 2011.

Site #11: The Hammond - Purdue monitoring site was physically removed to accommodate heating and cooling building repairs on the roof which were conducted from February 12, 2009 through November 18, 2009. As a result, the 2009 monitoring data and 2008 through 2010 three year design values are considered incomplete.<sup>30</sup>

Site #14 was discontinued on December 31, 2007.

## 5. REGIONAL CONFORMITY STATUS

This project is included in the *Regional Transportation System Plan for Southeastern Wisconsin: 2035* and SEWRPC's *2011-2014 Regional Transportation Improvement Program - Project Number 17: "Reconstruction of the Zoo Interchange and approaches on I-94, I-894, and US 45 in Milwaukee County."* The regional transportation system plan was amended on September 14, 2011, consistent with the Zoo interchange Reduced Impact Alternative, to include the improvement of STH 100 (North 108<sup>th</sup> Street/North Mayfair Road) between I-94 and Watertown Plank Road from six to eight lanes, which was not included previously in the regional transportation system plan. SEWRPC completed a regional conformity analysis on the amended regional transportation plan for Particulate Matter 2.5 (PM<sub>2.5</sub>) and is documented in the SEWRPC Memorandum Report titled, *Assessment of Conformity of the Year 2035 Regional Transportation Plan and the Year 2011-2014 Transportation Improvement Program with Respect to the State of Wisconsin Air Quality Implementation Plan – Six County Southeastern Wisconsin Ozone Nonattainment Area and Three County Fine Particulate (PM<sub>2.5</sub>) Nonattainment Area*. The FHWA and Federal Transit Administration determined the SEWRPC Regional Transportation Plan as amended and Transportation Improvement Program to be in conformance with the transportation planning requirements of Titles 23 and 49 U.S.C., the Clean Air Act Amendments, and related regulation on September 14, 2011.<sup>31</sup>

## 6. CONCLUSION

The qualitative hot-spot analysis for the Zoo Interchange project indicates that:

- The Zoo Interchange is the oldest and busiest interchange in the state of Wisconsin. Safety issues, design deficiencies and traffic congestion concerns require full redesign and reconstruction.
- The increase in AADT on the Zoo Freeway, from 2009 to the 2035 design year is projected to be 37% on the north leg, 21% on the east leg, 75% on the south leg and 43% on the west leg.
- Based on MOBILE6.2 results, PM<sub>2.5</sub> heavy duty diesel truck emission rates are projected to decrease from 0.2168 g/mi in 2008 to 0.0245 g/mi by 2035, an approximate 89% reduction. The heavy duty diesel truck emission rates are projected to decrease from 0.0501 g/mi in 2019, the year of highest emissions and completion of the project, to 0.0245 g/mi by 2035, an approximate 51% reduction.
- Regional projections show that mobile source emissions of PM<sub>2.5</sub> in the three county nonattainment area will decline by 37% between 2008 and 2035, even with the projected increase in AADT through the Zoo Interchange.
- The projected reductions in heavy duty diesel emissions are substantially greater than the increase in AADT through the Zoo Interchange.
- The September 2011 Air Quality Conformity Determination concluded that the projects in the *Regional Transportation System Plan for Southeastern Wisconsin: 2035* (SEWRPC, 2006) and SEWRPC's *2011-2014 Regional Transportation Improvement Program* (SEWRPC, 2011), including this project, conform to the requirements of section 176(c) of the Clean Air Act Amendment and the related requirements of the Final Transportation Conformity Rule (40 CFR Part 51 and 40 CFR Part 93 with respect to PM<sub>2.5</sub>).
- There are four (4) IDEM PM<sub>2.5</sub> monitoring sites within 1.7 miles of the I-80/94 corridor compared to the closest WI DNR monitor which is 5.2 miles east of the Zoo Interchange.
- The closest IDEM site is located at 25<sup>th</sup> and Burr Street between two truck stops and is approximately 1,300' north of the centerline of I-80/94. Since 2005 the 25<sup>th</sup> and Burr Street site is the only site that has exceeded the Annual 15 µg/m<sup>3</sup> NAAQS. This occurred in 2007, when all concentrations in Wisconsin and Indiana increased compared to the 2006 data. During the 2005 through 2007 period the 25<sup>th</sup> and Burr Street site exceeded the annual 3-year average 15 µg/m<sup>3</sup> NAAQS. Since then, the 25<sup>th</sup> and Burr Street site, along with the other three sites along the I-80/94 corridor has not exceeded the 3-year average criterion.
- None of the four IDEM monitoring sites within 1.7 miles of the I-80/94 corridor has exceeded the 24-hour 35 µg/m<sup>3</sup> NAAQS. Only the 25<sup>th</sup> and Burr Street site violated the 24-hour 3-year average 35 µg/m<sup>3</sup> NAAQS for PM<sub>2.5</sub> for the 2005 to 2006 averaging period. Since then, none of the sites have exceeded the 24-hour 3-year average 35 µg/m<sup>3</sup> NAAQS.

- The EPA announced the proposed **Approval and Promulgation of Air Quality Implementation Plans; Indiana; Redesignation of Lake and Porter Counties to Attainment of the Fine Particulate Matter Standard** in the **Federal Register**, Vol. 76, No. 187, page 59600 on September 27, 2011.
- The existing HDDV truck volumes along the I-80/94 corridor are three times greater than along any leg of the Zoo Interchange and future HDDV truck volumes in 2026 are projected to be 2.5 times greater than the projected 2035 Zoo Interchange volumes.
- Comparing the I-80/I-94 Interchange Modification at I-65 project in Lake County, IN with the Zoo Interchange project in Milwaukee, WI and using the four (4) IDEM PM<sub>2.5</sub> monitoring sites which are located within 1.7 miles of the I-80/94 corridor as surrogates it can be concluded that Zoo Interchange project will not cause or contribute to a new violation of the PM<sub>2.5</sub> NAAQS (24-hour standard or annual standard), or increase the frequency or severity of a violation, and will not delay timely attainment.

Based on the qualitative hot-spot analysis and consultation between WisDOT, DNR, SEWRPC, FHWA, and USEPA on September 29, 2011, it is determined that the Zoo Interchange project meets all the project level conformity requirements, and that the Zoo Interchange project will not cause or contribute to a new violation of the PM<sub>2.5</sub> NAAQS, or increase the frequency or severity of a violation, and will not delay timely attainment. Therefore, the project meets the conformity hot-spot requirements in 40 CFR §93.116 and §93.123 for PM<sub>2.5</sub>.

## 7. REFERENCES

- 1 EPA posted the final rule on its website on March 1, 2006 and the final rule was published in the Federal Register on March 10, 2006.
- 2 Transportation Conformity Guidance for Qualitative Hot-spot Analysis in PM<sub>2.5</sub> and PM<sub>10</sub> Nonattainment and Maintenance Areas, US Environmental Protection Agency and Federal Highway Administration, EPA420-B-06-902, March 2006
- 3 Federal Register, Notices, Pages 29537-29538, May 26, 2010 (Volume 75, Number 101).
- 4 Federal Register, Notices, Pages 79370-79374, December 20, 2010 (Volume 75, Number 243).
- 5 Ibid, p79370.
- 6 Wisconsin Department of Transportation News Release, Preferred alternative selected for Zoo Interchange Corridor, May 13, 2011,  
<[http://www.dot.wisconsin.gov/opencms/export/nr/modules/news/news\\_2688.html\\_786229440.html](http://www.dot.wisconsin.gov/opencms/export/nr/modules/news/news_2688.html_786229440.html)>
- 7 Ibid.
- 8 Interstate I-94, I-894, and U.S. Highway 45 (Zoo Interchange), Milwaukee County, WI, Supplemental Draft Environmental Impact Statement, U.S. Department of Transportation, Federal Highway Administration, and the Wisconsin Department of Transportation, FHWA-WISC-EIS-09-01-SD, February 4, 2011.
- 9 <<http://www.epa.gov/air/airtrends/aqtrnd01/pmatter.html>>
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- 11 <<http://www.epa.gov/air/airtrends/aqtrnd01/pmatter.html>>
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