APPENDIX B

SUMMARY OF MITIGATION MEASURES

Resource	Mitigation Measures and Commitments
Transportation	WisDOT will develop a Traffic Management Plan to coordinate and manage impacts associated with construction. WisDOT will continue coordination with the Union Pacific Railroad to develop preliminary and final plans to relocate the railroad bridge over I-43 and reconstruct cross street grade crossings. WisDOT will coordinate with Milwaukee County Transit System to minimize impacts to bus services. See **Subsection 3.2.3 and 3.21**.
Residential Development	Federal property acquisition law[1] provides for payment of just compensation for residences displaced for a federally funded transportation project. Acquisition price, replacement dwelling costs, moving expenses, increased rental or mortgage payments, closing costs and other relocation costs are covered for residential displacements. Under state law, no person or business would be displaced unless a comparable replacement dwelling, business location or other compensation (when a suitable replacement business location is not available) would be provided. Compensation is available to all displaced persons without discrimination. Before appraisals and property acquisition, an authorized relocation agent interviews each owner and renter to be relocated to determine their needs, desires and unique situations associated with relocating. The agent explains the relocation benefits and services each owner may be eligible to receive. Property acquisitions not involving residential, business or other building relocations are also compensated in accordance with state and federal laws. Before initiation of property acquisition, WisDOT provides information explaining the acquisition process and the state's Eminent Domain Law under Wisconsin Statutes Section 32.05. A professional appraiser inspects the property to be acquired. Property owners are invited to accompany the appraiser to ensure that full information about the property is taken into consideration. Property owners may also obtain an independent appraisal. Based on the appraisal, the value of the property is determined and that amount offered to the owner. In the event agreement on fair market value cannot be reached, the owner would be advised of the appropriate appeal procedure. Any septic tanks, drain fields or wells on acquired properties would be abandoned in accordance with state regulations and local zoning standards. WisDOT will survey all buildings to be demolished to determine whether asbestos or lead paint is present. All appropriate and applicable engineering and regulatory controls will be followed during the handling and disposal of asbestos-containing material and lead-based paint. Contractors must comply with the most recent editions of U.S. Environmental Protection Agency (EPA) regulations; National Emission Standards for Asbestos; Occupational, Safety, and Health Administration regulations on asbestos removal; local government regulations; and all other applicable regulations. In addition, any person performing asbestos abatement must comply with all training certification requirements, rules, regulations and laws of the state of Wisconsin regarding asbestos removal. Before a contractor demolishes a building that may contain or is known to contain asbestos, the contractor must notify the WDNR and Wisconsin Department of Health and Family Services at least 10 working days before starting the work, using WDNR Form 4500-113, Notification of Demolition and/or Renovation and Application for Permit Exemption. Demographic data for the areas in which residential displacements would occur indicate that no age or income-level characteristics that would require special relocation consideration or services. WisDOT also coordinated with potential relocated residents prior to and during public meetings and no needed special relocation considerations or services were identified at those times. If unusual circumstances were to arise during real estate activities, WisDOT real estate personnel would be available to provide appropriate relocation services.

[1] *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act)*

Resource	Mitigation Measures and Commitments
Commercial and Industrial Development	Commercial and industrial acquisitions and relocations would be in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. In addition to providing just compensation for property acquired, additional benefits are available to eligible displaced businesses, including relocation advisory services, reimbursement of moving expenses, and down-payment assistance. Under state law, no person would be displaced unless a comparable business location or other compensation (when a suitable business location replacement is not practical) is provided. Compensation is available to all displaced businesses without discrimination. Before initiating property acquisition activities, property owners would be contacted and given a detailed explanation of the acquisition process and Wisconsin's Eminent Domain Law under Wisconsin Statutes Section 32.05. Any property 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 that 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, the value of the property would be determined and that amount offered to the owner. Before a contractor demolishes a building that may contain or is known to contain asbestos, the contractor must notify the WDNR and Wisconsin Department of Health and Family Services at least 10 working days before starting the work, using WDNR Form 4500-113, Notification of Demolition and/or Renovation and Application for Permit Exemption.
Institutional and Public Services	WisDOT and FHWA will fairly compensate schools, churches and other institutions for land acquired as part of the project. WisDOT will continue to coordinate with affected institutions and other community stakeholders to minimize property impacts with future design refinements. Among specific issues, WisDOT will also continue coordination with the North Shore Water Commission to minimize impacts to operations and Nicolet High School regarding pedestrian access to the athletic fields east of I-43. During preliminary engineering, WisDOT would initiate its Community Sensitive Solutions (CSS) process. During this process WisDOT develops concepts through coordination with study corridor communities and stakeholders to integrate aesthetic treatments into highway design. WisDOT is developing a traffic mitigation plan, which will include coordination with emergency service providers and other stakeholders to mitigate traffic impacts and maintain access during construction. WisDOT will coordinate with local Jewish communities to maintain eruvin that may be affected by construction activities.
Utilities	WisDOT and FHWA will continue coordinating with utilities, municipalities, and the county to avoid or minimize utilities relocations and interruptions in service during preliminary engineering and construction.
Agriculture	WisDOT will continue to evaluate measures to further minimize unavoidable impacts to farmlands through preliminary engineering. During preliminary design, WisDOT will follow up with Ozaukee County to confirm that no affected properties are in wetland reserve program or conservation reserve programs. WisDOT will follow up with the city of Mequon during preliminary engineering to determine where drainage tiles might be located and determine design and construction measures to maintain drainage patterns.

Resource	Mitigation Measures and Commitments
Visual Character and Aesthetics	Future CSS efforts will further identify existing viewsheds and vistas, and provide concepts for visual benefits and the minimization of impacts resulting from a larger scale freeway. If the I-43 North-South Freeway Corridor Study proceeds to preliminary engineering for a selected alternative, WisDOT would form a CSS committee of local stakeholders to identify aesthetic treatments and beautification measures to ensure the freeway complements surrounding communities' cultural context, including their architectural, historic and natural features. The build alternatives could create excess fill material during construction, which may offer WisDOT an opportunity to coordinate with local communities to identify suitable locations for earth berms to block views of the freeway. WisDOT will continue during design to quantify available fill and work with local communities to refine potential berm locations if fill material is available.
Water Resources	WisDOT will implement stormwater management techniques for the build alternatives. The build alternatives would increase impervious area and therefore increase the amount of stormwater runoff from the study area freeway and local roadway system. However, these alternatives also provide the opportunity to implement best management practices to treat the runoff and bring the study corridor and local roadway system in compliance with state stormwater management regulations that limit the amount of pollution in runoff. Stormwater treatment measures will be evaluated during the study's design phase. Best management practices can be utilized for stormwater management, which could include: • Retention basins (wet detention basins) – Retention basins have a permanent pool of water year round. The permanent pool allows pollutant particles in stormwater runoff to settle out over an extended period of time. Nutrient uptake also occurs through increased biological activity. • Dry detention basins – A dry detention basin is typically designed to store runoff and discharge it slowly to reduce the peak discharge downstream. As normally designed, these basins typically have little effect on the volume of stormwater released to the receiving water. The peak flow reduction is often accomplished through use of a multistage outlet structure that allows increased discharge as water levels in the basin increase. • Infiltration devices – Infiltration devices such as trenches or grass swales are used to slow the water flow so that more water is absorbed into the ground, and more pollutants are removed from runoff. • Grass ditches – This best management practice generally helps reduce total suspended solids (TSS) to meet the regulatory goal of Trans 401. The majority of the stormwater quality control in Milwaukee and Ozaukee counties would be achieved with this best management practice. • Trapezoidal swale through infield – This best management practice combines grass ditch treatment with peak flow reduction, and it is considered to provide the same level of TSS control as grass ditches. • Vegetated rock filters – This best management practice may be used at outfalls to waterways or anywhere concentrated runoff leaves the right of way. It is similar in concept to a level spreader, which attempts to reintroduce sheet flow and also provides a small amount of peak flow and volume reduction. • Swale blocks/ditch checks – These are small, earthen berms constructed in the bottom of a ditch at regular intervals to detain runoff from frequent storms. This best management practice provides peak flow reduction and may provide infiltration benefits depending on soil conditions. • In-line storage – This method is not desirable from a water quality standpoint but would manage water quantity. Storm sewer pipes would be designed larger than normal to provide storage in the sewer during rain events, and then the water is gradually released after the rain event ends.

Resource	Mitigation Measures and Commitments
Water Resources	Due to space and cost, and the urban nature of the corridor from the southern study limits to Good Hope Road, best management practices to be utilized in this area are street sweeping and in-line pipe storage. North of Good Hope and Mequon roads, ditches and detention basins may be used in addition to street sweeping and in-line pipe storage. The study corridor becomes fully rural at Mequon Road, and roadside and median ditches along the I-43 corridor become viable for best management practices that reduce TSS. Preliminary estimates show that maximizing opportunities for best management practices using open space at the northern end of the corridor will reduce TSS in excess of Trans 401 requirements. During preliminary engineering, WisDOT will continue coordination with the city of Glendale to determine if the existing storm sewer at Nicolet High School will have adequate capacity. If the storm sewer will not have adequate capacity, WisDOT will consider a range of options that could include adding capacity to the existing stormsewer or separating freeway runoff from non-freeway sources. To comply with Wisconsin Statute 87.30 and NR 216,[2] and to address concerns raised by MMSD and local communities, WisDOT and FHWA are investigating retention and detention basins to manage stormwater from the proposed improvements. The retention and detention basins would also improve water quality by allowing solid pollutants such as sand and grit to settle out of the water before it flows into storm sewers or streams. If these retention basins, detention basins or both are built, WisDOT would landscape the area around the basin. Wetlands within the study area limit space for retention and detention basin placement. Potential locations for retention basins, detention basin or both include: • Milwaukee County – Stormwater detention basins may be located within the infields at the Brown Deer Road interchange. • Ozaukee County – Stormwater detention basins may be placed within the right of way along the west side of I-43 at the Mequon Road interchange, both north and south of Mequon Road. WisDOT will coordinate with Ozaukee County and other stakeholders to incorporate fish passage design criteria, as appropriate. WisDOT will further assess the water quality and quantity management options during the design phase. WisDOT will comply with *Trans 401* and its Memorandum of Understanding with WDNR on Erosion Control and Stormwater Management. WisDOT will engage in further discussions with WDNR, MMSD and other partner communities during design to identify additional stormwater management measures that may be cost-effective to implement, consistent with WisDOT's stormwater management policies. WisDOT will coordinate with EPA, and Milwaukee and Ozaukee counties to meet any new runoff quality and volume standards when necessary. During the design phase, some design measures for culverts could include: • Single span structures, where feasible. • Appropriately sized structures to ensure that stable channel morphology can be maintained and baseflow is accommodated. • Bottomless culverts, where feasible, or at minimum, lowered into the substrate to allow accumulation of a natural steam bottom. • Structures that span the width of the floodplain, where practicable. • Completing construction during low-flow conditions, which may include a dam and pump-around to ensure construction is completed in dry conditions.

[2] *NR 216 states that WisDOT bridge "construction may not cause any obstruction to flood flows."*

Resource	Mitigation Measures and Commitments
Floodplains	All structures would have adequate capacity for 100-year flood flow without public or emergency vehicle interruption from damage to the roadway or structures and would not increase the base flood elevations by more than 0.01 foot. None of the floodplain crossings would cause a substantial potential for interruption or termination of a transportation facility needed for emergency vehicles or the community's only evacuation route. Crossings would be consistent with local floodplain management goals and objectives. Additionally, floodplain crossings would be designed to avoid impacts to existing flood profiles on adjacent landowners properties. The build alternatives do not support development in floodplains, as communities surrounding the I-43 North-South Freeway Corridor study area have floodplain management regulations in place to prevent inappropriate development.
Wetlands	In accordance with state and federal agency policies and regulations for wetland preservation, including the Section 404(b)(1) Guidelines for Specifications of Disposal Sites for Dredged or Fill Material (40 CFR part 230), the following sections describe wetland mitigation strategies for the I-43 North-South Freeway Corridor Study alternatives. **Avoid and Minimize Wetland Impacts.** WisDOT will investigate additional measures to avoid and minimize wetland impacts, such as keeping roadway side slopes as steep as practicable; disposing of excavated material on new roadway side slopes or in upland areas; using equalizer pipes to maintain wetland hydrology; minimizing sedimentation and siltation into adjacent wetlands by using strict erosion control measures; and using detention ponds, where allowed, to reduce pollutant loading and protect streams from sedimentation. **Wetland Compensation.** If a build alternative is implemented, a wetland mitigation plan would be developed during the future project's design phase, in consultation with state and federal agencies. Where there is no practicable alternative to filling wetlands, state and federal regulations require compensatory mitigation. Compensation for unavoidable wetland loss will be done in accordance with the July 2012 WisDOT-WDNR memorandum of understanding titled "Compensatory Mitigation for Unavoidable Wetland Losses Resulting from State Transportation Activities." The memorandum of understanding on compensatory mitigation states that mitigation banking is the preferred compensation option, though WisDOT and WDNR agree that other practicable and ecologically valuable project specific opportunities may be pursued on a case-by-case basis. Consistent with federal rules and the Wetland Mitigation Banking Technical Guideline, the mitigation goal is to compensate wetland loss as near as practicable to the area where the loss occurs, recognizing important factors such as land acquisition availability, resource sensitivity, project schedules, and the linear nature and length of WisDOT projects that may cross multiple watersheds. The mitigation banking guidelines also recommend compensation ratios for wetland debits from an established wetland mitigation bank site. The wetland compensation ratios reflect the types of impacted wetlands versus types available at the established mitigation site and whether the mitigation site is in the same watershed as the impacted wetlands. Compensation will also be done in accordance with WisDOT's Wetland Mitigation Banking Technical Guideline developed in 1993 and updated in 1997 and 2002, in cooperation with the WDNR, USACE, EPA, FHWA and U.S. Fish & Wildlife Service (USFWS), and in accordance with the regulations for compensatory wetland mitigation issued jointly by USACE and EPA in 2008 (33 CFR Parts 325 and 332; and 40 CFR Part 230-dated April 10, 1998).

Resource	Mitigation Measures and Commitments
Threatened and Endangered Species	Impacts to threatened and endangered species can be avoided through mitigation measures. **Plants.** To avoid and minimize impacts to the forked aster and the seaside crowfoot, WisDOT would physically relocate any plants found. If needed, field surveys would be conducted during design if a build alternative is selected at the conclusion of the environmental study phase. The need for and extent of field surveys would be determined in consultation with the WDNR and other interested agencies. The timing of the field survey would coincide with the optimal identification periods established by the WDNR. If a particular plant species is found to be within the study's area of potential effect, further measures to avoid or minimize impacts would be evaluated. Where avoidance is not possible, WisDOT would coordinate with the WDNR on possible mitigation measures such as transplanting affected plants outside the area of potential effect. **Fish.** To avoid and minimize impacts to listed fish species, WisDOT would use erosion-control best management practices (See Water Resources above) and follow the following restriction dates for work in streams: • Fish Creek: Implement cold water restriction of work (no work between Sept. 30 and March 15). • All other stream crossings: Implement warm-water restrictions (no work between March 15 and June 15). • As long as physical work is done within the construction window (such as installing coffer dams), then work could continue in protected area (such as working within the coffer dam). **Birds.** About one year before construction, WisDOT would inspect bridges for the presence of nesting birds. If nests are present, WisDOT would install nets on the structure before May 1 in the construction year, or remove nests if no eggs are present. WisDOT will contact USFWS should additional information on species become available, if project plans change or if a portion of the proposed project was not evaluated in the EIS. If the Northern long-eared bat is listed under the Endangered Species Act, WisDOT will resume coordination with USFWS during preliminary engineering to determine if habitat is present in the study and develop measures to avoid potential impacts. If bald eagles are identified in the project area, WisDOT will notify USFWS and follow *Bald Eagle Management Guidelines and Conservation Measures*, located at http://www.fws.gov/midwest/eagle/guidelines/index.html. **Bats.** Minimization measures are required to protect bats that may use bridges for summer roosting. WisDOT would use the following WDNR protocol: • Demolitions occurring from Aug. 16 to May 31 do not have any restrictions. • Demolitions between June 1 and August 15 have restrictions. Unless bats are excluded before April to prevent them from using the bridge, demolition may not occur from June 1 to August 15.
Other Natural Resources	To minimize impacts to environmental corridors, isolated natural resources, and natural areas adjacent to the study corridor, the Modernization – 6 Lanes alternative for the freeway mainline would be widened to the inside in the existing median. WisDOT would consider design measures such as steepened slopes to further avoid and minimize impacts. Such measures would be determined in coordination with the WDNR during preliminary engineering. During preliminary engineering, WisDOT will coordinate with Ozaukee County to confirm no affected properties are in conservation or wetland reserve programs.

Resource	Mitigation Measures and Commitments
Noise	Based upon the requirements of 23 CFR 772 and within the framework of FDM 23 Noise, various methods were reviewed to mitigate the noise impact of the proposed improvements. Among those considered were restricting truck traffic to specific times of the day, prohibiting trucks, altering horizontal and vertical alignments, property acquisition for construction of noise barriers or berms, property acquisition to create buffer zones to prevent development that could be adversely impacted, and insulating public use or nonprofit institutional buildings, berms, and sound barriers. Restricting or prohibiting trucks is counter to the project's purpose and need. Design criteria and recommended termini for the proposed project preclude substantial horizontal and vertical alignment shifts that would produce noticeable changes in the projected acoustical environment. Due to right of way limitation the construction of noise berms is neither feasible nor reasonable. Therefore, only the construction of noise barriers was reviewed. Abatement is recommended only when it is feasible and reasonable to construct a noise barrier. FDM 23 Noise, has established criteria for determining feasibility and reasonableness and is summarized as follows: • The barrier must provide a minimum 5-dB reduction to be considered feasible. • One receptor or common use area must meet the 9-dB design goal for the noise barrier to be considered for reasonableness. • A noise barrier must reduce noise levels by a minimum of 8 dBs for a receptor or common use area to be considered as benefited for the purposes of determining reasonableness. The total cost of the barrier may not exceed $30,000 per benefited receptor. • If a common noise environment exists within the project termini, cost averaging of multiple barriers within the common noise environment may occur as part of the reasonableness determination. Noise barriers exceeding $60,000 per benefited receptor cannot be included in the cost averaging. The order of cost averaging of eligible multiple barriers will start with the most cost-effective noise barrier increasing to the second most cost effective barrier to the third, etc., until the average cost approaches or equals but does not exceed $30,000 per benefited receptor. The noise barriers included in the cost averaging may be carried forward for a determination of whether the barrier(s) will be incorporated into the project. WisDOT must receive a vote of support for the project from a simple majority of all votes cast by the owners or residents of the benefitted receptors. WisDOT analyzed the feasibility and reasonableness of 14 noise barriers at 13 locations including historic sites, 4(f) lands and two day care centers adjacent to the freeway system within the I-43 North-South Freeway Corridor study area. Maps in Appendix E identify barrier locations that are feasible and resonable. Thirteen of the 14 noise barriers analyzed would meet WisDOT's feasibility criteria, of which five noise barriers would meet both of the FDM 23 Noise definitions for feasible and reasonable noise mitigation. Based on the study WisDOT is likely to incorporate the feasible and reasonable noise barriers shown in **Appendix E** into the project. During the design phase of the project the location of feasible and reasonable noise mitigation will be reassessed. If final design results in substantial changes in roadway design from the conditions modeled for the DEIS or FEIS/ROD, noise abatement measures will be reviewed. A final decision on the installation of the abatement measure(s) will be made upon completion of the project's final design and through the public involvement process which will solicit the viewpoints of residents and property owners benefited by the construction of the feasible and reasonable noise barriers.
Air Quality	See Construction Impacts.

Resource	Mitigation Measures and Commitments
Hazardous Materials	If a build alternative is selected, WisDOT would conduct a follow-up Phase 2 survey of identified sites that may present an environmental risk. WisDOT would develop remediation measures for contaminated sites that cannot be avoided during the design phase. Disturbance near potentially contaminated sites would be minimized to the extent possible and practicable. As applicable, the contract special provisions would include a Notice to Contractor describing the potential contamination with names and locations of the sites. The areas of potential contamination would be marked on the plan sheets with reference to check the Notice to Contractor in the special provisions. WisDOT will include special provisions to notify contractors of potential presence of oil storage tanks or potential contaminated soils before proceeding with any construction activities at those sites. The Phase I Assessment also indicated that any soils to be disturbed within the UP Railroad right of way would most likely be impacted with industrial railroad contamination. Any excavated contaminated materials within the UP Railroad corridor areas should be characterized and managed appropriately during construction activities. The regional WisDOT office would work with concerned parties to ensure that the disposition of any petroleum contamination is resolved to the satisfaction of the WDNR, WisDOT and FHWA before acquiring any questionable site, and before advertising the project for letting. Nonpetroleum sites would be handled on a case-by-case basis, with detailed documentation and coordination with the FHWA as needed. During the project's real estate acquisition phase, WisDOT would survey all buildings that need to be demolished to determine whether asbestos is present. A predemolition inspection should be completed at any relocated structures to determine the presence of additional hazardous materials. A notification of demolition and/or renovation and application for permit exemption (WDNR Form 4500-113) must be submitted to the WDNR 10 days before demolition or abatement activities. During the future project's real estate acquisition phase, WisDOT will survey all buildings that need to be demolished to determine whether asbestos is present. Standard special provision 203-005, Abatement of Asbestos Containing Material Structure __ (bid item 203.0210.S), will be included in the plan. The contractor will be responsible for completion of the Notification of Demolition and/or Renovation (WDNR Form 4500-113).
Archaeological Resources	The WisDOT construction project manager shall immediately stop construction activities and fence off the site area if any inadvertent burial related discoveries are encountered. On state or privately owned lands, WisDOT will comply with Wisconsin Statute § 157.70. Any such finds will be considered within the category of a "known uncatalogued burial site," and a Wisconsin Historic Preservation Division standard contract for treatment of human remains will be followed. If human remains are discovered, all construction in the area of the discovery will be stopped and the area protected. The project manager will immediately notify WisDOT Bureau of Technical Services (BTS). BTS will notify FHWA and interested consulting parties, including tribes, of discoveries.
Public Parks and Recreation Areas/public se Lands and Private Recreation Areas	Before construction, WisDOT will compensate the Nicolet High School District and the village of Whitefish Bay for unavoidable right of way acquisitions at the high school and Craig Counsell Park. WisDOT will continue to use measures to avoid and minimize impacts to Nicolet High School athletic fields and Craig Counsell Park to the greatest practicable extent by using steeper side slopes and retaining walls. The pedestrian tunnel replacement between Nicolet High School main campus and its upper athletic fields would benefit public recreational uses on the school property by providing an ADA-compliant connection that can be used by both pedestrians and bicyclists.WisDOT will coordinate with the Town of Grafton to provide sufficient room at the I-43 overpass at Lakefield Road to allow horse-riding passage.

Resource	Mitigation Measures and Commitments
Construction	**Traffic.** During the design phase, WisDOT and FHWA would evaluate diversion routes to determine if improvements to these routes are necessary. In addition to roadway improvements, signal timing modifications, temporary signals, parking restrictions, intersection improvements, incident management, and demand management options may be instituted during construction to ease potential congestion and delay. Freeway and local street lane closures would be staged to ease disruptions to the extent possible. Other mitigation measures may include the following: • Holding workshops to determine methods to reduce the effects of construction on area businesses, residents, commuters, community services, and special events. • Implementing a community involvement plan to inform the public, including radio, Internet, print and television. • Encouraging the use of transit and carpooling through advertising, temporarily reduced rates, additional routes, and expanded or new park-and-ride lots. • Encouraging businesses to modify their work schedules and/or shipping schedules to avoid peak traffic hours. **Erosion/Water Quality.** Construction in and near waterways would be performed in accordance with WisDOT's Standard Specifications for Road and Bridge Construction; Wisconsin Administrative Code Chapter Trans 401 titled Construction Site Erosion Control and Stormwater Management Procedures; and the WisDOT-WDNR cooperative agreement. There is potential for erosion during construction as soils are disturbed by excavation and grading. Appropriate techniques and best management practices, as described in the WisDOT Facilities Development Manual, would be employed to prevent erosion and to minimize siltation to environmentally sensitive resources in the project area. Erosion-control devices would be installed before erosion-prone construction activities begin. WisDOT would consult with the WDNR to agree on specific erosion-control measures to include in construction plans and contract special provisions. The construction contractor would be required to prepare an erosion control implementation plan that includes all erosion control commitments made by WisDOT while planning and designing the project. The WDNR reviews the erosion control implementation plan.

Resource	Mitigation Measures and Commitments
Construction	The following erosion-control measures may be used during construction: • Minimizing the amount of land exposed at one time • Silt fencing • Sedimentation traps • Dust abatement • Turbidity barriers • Street sweeping • Inlet protection barriers • Temporary seeding • Erosion mats • Ditch or slope sodding • Seeding and mulching exposed soils Under revisions to the WisDOT-WDNR cooperative agreement, *Memorandum of Understanding on Erosion Control and Stormwater Management*, disturbed land would be re-seeded with a mix of fast growing grasses following construction. Drainage systems would be maintained, restored or re-established in a manner that would not impound water. Additional impact mitigation techniques during construction would include the following, as needed, at a particular location: • If dewatering is required, dirty water would be pumped into a stilling, or settling, basin before it is allowed to re-enter a stream. • Trenched-in erosion bales would be installed in areas of moderate velocity runoff; clean-aggregate ditch checks would be installed in ditches with moderate to high velocity runoff during and after construction; and ditches would be protected with erosion bales and matting in conjunction with seeding. • Storage and fueling of construction equipment would be done in upland areas, away from environmentally sensitive areas. Accidental spills during refueling at construction sites or as a result of an accident involving hazardous material haulers would be handled in accordance with local government response procedures. First response would be through local fire departments and emergency service personnel to ensure public safety and to contain immediate threats to the environment. Depending on the nature of the spill, the WDNR would then be notified to provide additional instructions regarding cleanup and restoration of any affected resources. The cost of cleanup operations is the responsibility of the contractor or carrier involved in the spill. Further, WisDOT's standard specifications state that public safety and environmental protection measures shall be enforced by the construction contractor. • Contractors would be required to follow WDNR guidelines for ensuring that construction equipment used in or near waterways is adequately decontaminated for zebra mussels and plant exotics including purple loosestrife and Eurasian milfoil. **Subsection 3.10.3** provides additional information about water quality mitigation and best management practices.

Resource	Mitigation Measures and Commitments
Construction	**Air Quality.** All contractors would be required to comply with all applicable air quality regulations. Dust suppression measures would be implemented throughout the construction process including covering loads of soil, debris and other materials during transport on streets or highways; stabilizing and covering stockpile areas as necessary to avoid windblown dust impacts; and stabilizing and revegetating exposed areas after construction. Several air quality construction mitigation best management practices are available to assist in reducing diesel emission impacts from construction equipment. Off-road diesel engines can contribute significantly to the levels of particulate matter and nitrogen oxides in the air. In recent years, EPA has set emissions standards for engines used in most new construction equipment. However, it may be several years before all equipment in use is equipped with engines that meet EPA standards. In order to combat this, several strategies can be implemented to reduce emissions from the older engines that are in operation today. Reductions in pollutant emissions from older off-road diesel engines can be obtained through a variety of strategies including: • Reducing idling. • Properly maintaining equipment. • Using cleaner fuel. • Retrofitting diesel engines with diesel emission-control devices. By reducing unnecessary idling at the construction site, emissions would be reduced and fuel would be saved. Proper maintenance of the diesel engine would also allow the engine to perform better and emit less pollution through burning fuel more efficiently. Switching to fuels that contain lower levels of sulfur reduces particulate matter. Using ultra-low sulfur diesel does not require equipment changes or modification. Using fuels that contain a lower level of sulfur also tends to increase the effectiveness of retrofit technologies. Retrofitting off-road construction equipment with diesel emission-control devices can reduce particulate matter, nitrogen oxides, carbon monoxide or hydrocarbons, in addition to other air pollutants. Diesel particulate filters can be used to physically trap and oxidize particulate matter in the exhaust stream and diesel oxidation catalysts can be used to oxidize pollutants in the exhaust stream.[3] In the final design phase, WisDOT will consider including these measures on a voluntary or mandatory basis. Fugitive dust impacts generated by construction would be mitigated by standard dust-control measures, which may include the following: frequent watering of construction sites that have large expanses of exposed soil; watering debris generated during demolition; washing construction vehicle tires before they leave construction sites; and securing and covering equipment and loose materials before travel. Dust control during construction would be accomplished in accordance with WisDOT's Standard Specifications for Road and Bridge Construction, which requires the application of water or other dust-control measures during grading operations and on haul roads. The location and operation of concrete batch plants would be in accordance with the standard specifications, and any special provisions developed during coordination with the WDNR regarding air quality standards and emissions. Any portable material plants would be operated in accordance with WDNR air quality requirements and guidelines. Demolition and disposal of residential or commercial buildings is regulated under WDNR's asbestos renovation and demolition[4] requirements. EPA suggested additional construction-related air quality control measures (see **Appendix C**, Page C-115). WisDOT will coordinate with WDNR to consider additional measures that may be appropriate to include in contract specifications.

[3] *EPA, 2008b*
[4] *Wisconsin Administrative Code, Chapter NR447*

Resource	Mitigation Measures and Commitments
Construction	**Noise/Vibration.** Construction noise would be controlled in accordance with WisDOT Facilities Development Manual Procedure 23-40-1. In locations where noise walls currently exist, WisDOT would also make every effort to construct new noise walls before demolition of the existing noise walls. To reduce the potential impact of construction noise, special WisDOT provisions would require operation of motorized equipment in compliance with all applicable local, state and federal laws and regulations relating to noise levels permissible within and adjacent to a construction site. All motorized construction equipment would be required to have mufflers constructed in accordance with the equipment manufacturer's specifications or a system of equivalent noise reducing capacity. WisDOT would also require that mufflers and exhaust systems be maintained in good operating condition, free of leaks and holes. Ground-borne vibration has the potential to affect nearby buildings. Blasting and impact pile driving are traditionally associated with high levels of vibration. Excavation and backfilling can generate vibration that is perceptible or noticeable in nearby buildings. Vibration created by the movement of construction vehicles such as graders, loaders, dozers, scrapers and trucks are generally the same order of magnitude as the vibration caused by heavy vehicles traveling on streets and highways. In general, ground-borne vibration from vehicles on streets is not sufficient to impact adjacent buildings. Buildings that are in good structural condition would likely not be affected by construction-related vibration. WisDOT would coordinate with adjacent property owners before construction to determine if any buildings near construction areas are in poor structural condition. In communities that do not have vibration ordinances, WisDOT would comply with the Wisconsin Department of Workforce Development vibration regulations. **Material Source/Disposal Sites.** The construction contractor is responsible for the selection of material source sites. Material would most likely be obtained from local existing quarry sites. Unusable excavated material would be disposed of by the contractor in accordance with WisDOT's Standard Specifications for Road and Bridge Construction, or special provisions to ensure protection of wetlands and waterways. Local zoning, reclamation plans and other approvals may be needed for materials source and disposal sites. Soil and excavated material (including vegetation) would be stockpiled or disposed of in an upland area, away from wetlands, streams, and other open water; and, where applicable, silt fence would be placed between the disposal area and wetland and open water areas. If any material sources are necessary to construct the project, appropriate erosion control measures would be applied to these sites during and following construction; and following use, such sites would be properly seeded, mulched and protected from erosion. Any portable materials plants would be managed to prevent erosion, and WDNR would be able to review site plans including any gravel-washing operations, high-capacity wells, and site closure and restoration. **Cultural Resources.** If previously unrecorded cultural resources are found during construction, activities in the site area would be immediately halted, and the project manager would immediately notify WisDOT's Bureau of Technical Services who would then notify FHWA and any interested consulting parties.