



# FACILITIES DEVELOPMENT MANUAL

Wisconsin Department of Transportation

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## FDM 24-1-1 General

May 17, 2022

### 1.1 Originator

The Bureau of Technical Services - Environmental Services Section is the originator of this chapter. Questions and comments on the contents of this chapter should be directed to Jennifer Gibson, Ecologist and Wetland Biologist (920) 492-4160, [Jennifer.Gibson@dot.wi.gov](mailto:Jennifer.Gibson@dot.wi.gov) or Bob Pearson, Hydrogeologist and Wetland Bank Administrator (608-266-7980), [Robert.Pearson@dot.wi.gov](mailto:Robert.Pearson@dot.wi.gov).

### 1.2 Purpose of Chapter

The purpose of this chapter is to assist project teams in developing their projects in compliance with federal and state natural resources laws including water resources, threatened and endangered species, wildlife, and terrestrial systems.

## FDM 24-1-5 Ecological Overview

December 8, 1995

### 5.1 Definition and Concepts

Ecology is the study of the relationships of organisms or groups of organisms to their environment. The interaction of organisms with each other and the physical environment form an ecological system or ecosystem. An ecosystem has function and structure.

One of the structural components of an ecosystem is the biotic community. It is an assemblage of living organisms having mutual relationships among themselves and their environment. The species that exert control over and characterize the community are referred to as the dominant species. If they are removed for any reason, dominance is usually assumed by other species and the character of the community is changed. Communities may be named and classified according to major structural features, such as dominant species, or the physical habitat of the community (e.g., mud-flat, stream-rapids). Density refers to the total number of a species that occupies an area. Diversity refers to the total number of species that occupy an area, species richness, and the total number of individuals within a species, species evenness. Of the total number of species in a community, a relatively small percentage are usually represented and abundant. It is the number of infrequent species that determines the species diversity of the community. A community that has many species that are not abundant is more diverse than a community with few species occurring in large numbers.

One structural component of the biotic community is a population. A population which is a group of interbreeding organisms of the same species occupying a defined space. Populations are characterized by density age structure (ratio of one age class to another), birth and death rates, immigration (addition of new individuals from other areas), emigration (loss of individuals to other areas), and migration (temporary gain or loss of individuals).

### 5.2 Assessment

#### 5.2.1 Analysis of Natural Systems

Natural systems can be analyzed for the purpose of predicting impacts. Analysis involves a thorough description of existing conditions (qualitative and/or quantitative) and identification of community types (based on vegetation and associated wildlife). Quantitative data can be used to help estimate the magnitude of impacts on the ecosystem.

#### 5.2.2 Impact Assessment

Impact assessment involves estimating changes that are expected to occur to an existing situation. The existing conditions are described and compared to expected conditions after a disturbance has occurred. Changes must be looked at in terms of both short-term and long-term effects.

#### 5.2.3 Determination of Significance

Impact assessment also involves estimating the significance of changes to existing conditions. Significance, as

used in the National Environmental Policy Act (NEPA), requires consideration of both context and intensity.<sup>1</sup>

Context means the significance of an action must be analyzed from several points of view such as society (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. Impacts may be categorized as to their significance to the immediate locale, the watershed, the state, the region or the nation, but all categories must be addressed. Actions that have nationwide impact will lead to determination of greater significance than those of regional or local impact. Both short and long-term effects are relevant.

Intensity refers to the severity of impact. The following should be considered in evaluating intensity:

1. Impacts that may be both beneficial and adverse. A significant effect may exist even if on balance the effect will be beneficial.
2. The degree to which the proposed action affects public health or safety.
3. Unique characteristics of the geographic area such as proximity to parklands, wetlands, wild and scenic rivers, or ecologically critical or unique areas (e.g. fens, bluff prairies).
4. The degree to which the effects on the quality of the human environment are likely to be highly controversial. (e.g. project affects recreational area, a favored wildlife or fishery area, a favored aesthetic landscape, etc.).
5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.
6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration. (i.e. potential for secondary development).
7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.
8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.
9. The degree to which the action may adversely affect an endangered or threatened species or its habitat.
10. Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment.

### **5.3 Factor Sheet Reference List**

Users can find the Factor Sheets under "Forms and tools" on the environmental services webpages site at:

<https://wisconsin.gov/Pages/doing-bus/eng-consultants/cnslt-rsrcs/environment/formsandtools.aspx>

### **5.4 References**

Odum, E.P. 1971. Fundamentals of Ecology. W.G. Sanders Co., Philadelphia, PA.

Smith, R.L. 1980. Ecology and Field Biology. Harper and Row, New York, NY.

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<sup>1</sup> "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act" Council on Environmental Quality, Executive Office of the President, November 29, 1978.



## FDM 24-5-1 Introduction

December 8, 1995

The purpose of this section is to discuss potential impacts on aquatic systems from highway projects. This section is divided into two subjects: [FDM 24-5-5](#), Rivers, Streams and Lakes and [FDM 24-5-10](#), Wetlands.

Highway projects can present specific problems to each of these types of aquatic systems.

## FDM 24-5-5 Rivers, Streams and Lakes

December 8, 1995

### 5.1 Evaluating Existing Conditions

#### 5.1.1 Hydrology-Physical

**Rivers or streams** are defined as either naturally occurring or human-made watercourses that have distinguishable beds and banks and a flow gradient. They are components of a drainage basin in a watershed and usually serve as habitat for aquatic species.

Where appropriate, physical descriptions of rivers and streams should include geologic and topographic features; geometric characteristics such as depth, width, slope, and velocity; soils and substratum type; and discharge and drainage area data.

Water quality and sediment transport are usually intimately related to the watershed feeding the stream. Consequently, it is important to evaluate the land use and soil characteristics of the project area. Nearby upstream dischargers and downstream receivers should also be noted. They include wastewater treatment plants, industrial dischargers, and water intake systems for municipalities. Information on surface water resources is available by county through the Department of Natural Resources (DNR) District Offices.

Rivers and streams should be characterized based on continuity of flow. Three situations are possible:

1. **Permanent (Year-Round) Flow:** Rivers and streams that receive water mostly through seepage, subsurface springs, lakes or impoundments. In the immediate drainage area, the water table usually stands at a higher level than the stream bottom.
2. **Temporary Flow:** Rivers and streams that receive water primarily from surface runoff. Because runoff is seasonal, these streams are dry during part of the year.
3. **Intermittent Flow:** Rivers and streams that flow alternately on and below the ground's surface. Subsurface flow is usually through coarse sand, gravel, or limestone.

**Lakes** are bodies of water formed in depressions of the earth's surface. A lake with a surface outlet represents a holding and mixing basin for stream flow. Zonation and stratification are characteristics of lakes. The littoral zone is one containing rooted vegetation along the shore. The limnetic zone is one of open water dominated by plankton, microscopic plants and animals that float or drift in water. The deep-water profundal zone is an area of poor light with no rooted vegetation and is inhabited by heterotrophic organisms - those organisms that are dependent on organic matter for food (see [Attachment 5.1](#)).

Physical descriptions of lakes should include inlets or outlets, approximate size and depth, substratum and vegetation.

The amount of dissolved oxygen in a lake varies according to depth (or zone) as well as according to season. In summer, the surface waters are warmer than the bottom waters and circulate, not mixing with the colder more viscous bottom waters. The epilimnion is the zone in which sunlight penetrates causing more phytoplankton, activity which in turn produces more dissolved oxygen. The photosynthetic activity, as well as surface motion is lacking in the hypolimnion causing a lack of dissolved oxygen, possibly even a depletion. A depletion would result in stagnation.

In the onset of winter, the oxygen in a lake circulates freely due to the drop-in temperature of the surface waters to equal the bottom waters. This is when the waters are said to turn over. Cold water holds more oxygen. This fact, along with the reduced activity of aquatic organisms usually assures an adequate amount of dissolved oxygen in a lake in the winter unless a lake is too shallow and is ice covered for a long period.

For purposes of impact evaluation, lake trophic state may be an important consideration. The trophic state of a lake describes the nutrient content and productivity (Weller 1981). A lake can change from an oligotrophic state

(low productivity) to a eutrophic state (high productivity) as nutrients are added through surface water flow. The trophic state of a waterbody is influenced by water temperature, water depth, and season and is associated with certain fish and wildlife species.

A highly eutrophic lake will exhibit stagnation, algae bloom, excessive vegetation, and contain fish such as bullhead and carp. These conditions are associated with low dissolved oxygen levels.

### 5.1.2 Water Quality

A good indication of water quality can be gained by observation in the field. Qualitative information to be noted includes type of substratum; water clarity; sources of agricultural, residential, or industrial runoff; odor or other signs of stagnation (e.g., algae blooms, dead fish, excessive weeds); and habitat diversity.

Aquatic insects and fish are good indicators of water quality. Many species can tolerate only clean, well oxygenated water, while others are able to survive low oxygen or polluted conditions. In general, waterbodies with a high diversity of insect or fish species are considered healthier and more stable than those with only a few species.

Quantitative water quality data are available through the Department of Natural Resources (DNR), U.S. Geological Survey (USGS), or private industry for many rivers and lakes; or, if it is necessary, these data can be obtained by individual water quality testing procedures.

Quantitative values of factors such as turbidity, nitrates, phosphates, dissolved oxygen, biological oxygen demand, and conductivity are useful indicators of the existing quality. Standards are available to which the data can be compared. The Region Offices should contact the Office of Environmental Analysis (OEA) for technical assistance if it is determined that such data are necessary.

### 5.1.3 Aquatic Species

If it is desirable to do so, many sampling techniques are available to determine the species of fish, aquatic insects, and bottom dwelling organisms that are present. Generally, the DNR District Office can provide adequate information. In most cases, it is sufficient to know whether a particular waterbody supports a critical resource, such as trout, forage species, or spawning habitat. The presence or absence of vegetation should also be noted. Include the submergent, emergent, and bank or shoreland vegetation that might serve as a source of food or cover, or function to control water temperature.

### 5.1.4 Waterbody Uses

Impact significance is generally based on waterbody use. A description of present use, such as recreational, sport fishery, irrigation, wildlife production, rare plant habitat, etc., should be provided. The DNR can provide information on whether a river is classified as a trout stream or a scenic or wild river. Any upstream or downstream uses that might contribute to, or receive effects from, the project area should also be included. This information can be obtained from DNR watershed basin studies.

Contributors of pollution along large, commercially navigable waterways generally include point sources such as industrial and storm sewers. Nonpoint sources along other waterbodies include urban and agricultural runoff.

The area over which these observations should be made depends upon the waterbody. The idea is to describe those existing situations that could reasonably be expected to either influence the water quality at the project site or that could be receivers of siltation due to construction.

## 5.2 Evaluating Impacts on the Aquatic System

The proposed project activity should be explained in terms of how it will change the existing waterbody. Discuss whether a new or replacement structure is proposed and if there will be a channel change or instream dredging or filling. Document whether a temporary crossing will be provided during construction and if there will be any changes in drainage to and from wetlands. Any other work that could alter the waterbody should also be evaluated.

### 5.2.1 Primary Impacts

Primary impacts are those that would be expected to occur as a result of initial construction. These include:

1. Removal of Bank or Shoreland Vegetation: Can eliminate a source of food input to the water body and can cause a temperature change due to loss of cover that can be lethal to species with narrow temperature tolerances. An increase in temperature would cause a reduction in dissolved oxygen and may result in a reduction in the number of cold water fish species. This activity can also eliminate habitat for wildlife and accelerate bank erosion.
2. Removal or Simplification of Substratum: Can eliminate spawning habitat and benthic food source.

3. Increase in Suspended Particulate Matter: Can affect aquatic insects and fish directly by covering spawning areas, smothering, and gill abrasion and can decrease productivity by limiting sunlight availability.
4. Alteration of Stream Hydrology: Can eliminate diverse bottom gradient, meanders, and pool and riffle areas resulting in scour around piers and erosion. Velocity changes can also occur.
5. Alteration of Adjacent Wetland Habitat: Can disrupt or eliminate wildlife habitat and reduce flood storage capacity. See [FDM 24-5-10](#) for further wetland information.

### 5.2.2 Secondary Impacts

Secondary impacts occur as a result of primary impacts. These occur over a period of time and although not immediately observable are usually predictable. Secondary impacts may include the following:

1. The introduction of chemical pollutants such as road salt or automobile by-products can adversely affect the quality of the water.
2. Aesthetics and recreational use can be affected.
3. Water quality, vegetational and structural alterations may lead to changes in wildlife and/or human populations and use.

Common knowledge and past experience should allow a reasonable prediction of secondary impacts. Previous, comparable situations can be cited in discussions of secondary impacts. The point is to predict changes that could reasonably be expected to be long-term consequences of the initial action.

### 5.3 Determination of Significance

Impact significance can be estimated based on a thorough knowledge of the local ecology or land use of the project area. Coordination with the DNR, local units of government, and private property owners is the best way to gain information about the uses and importance of the waterbody. Once this has been done, a basis is available for determining significance. Both context and intensity should be addressed.

This type of analysis should be made for all alternatives, comparing each in terms of adverse and beneficial effects. Differences among alternatives should be pointed out. For example, all alternatives might involve a stream crossing, but the crossing site for one alternative might avoid a spawning bed or food source (e.g., a riffle area) considered important to the stream's productivity.

### 5.4 Measures to Minimize Harm

Techniques to reduce adverse impacts should consider the critical nature of the resource being affected. For many projects, the standard specifications outlined in the Standard Specifications for Road and Bridge Construction are adequate procedures to minimize harm. Specifically, the reader is referred to the following sections of the Standard Specifications:

<a href="#">standard spec 107.18</a>	Environmental Protection
<a href="#">standard spec 107.20</a>	Erosion Control
<a href="#">standard spec 203</a>	Removing Old Culverts and Bridges
<a href="#">standard spec 205.3.11</a>	Disposal of Surplus or Unsuitable Material

Information on standard erosion control measures is also found in [Chapter 10](#).

For certain projects, specific mitigation measures are usually requested by the DNR, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, Environmental Protection Agency, or local units of government. Requests to select alignments that would affect the least critical part of the waterbody, to design crossings that minimize work in the waterbody and to keep clearing and grubbing operations to a minimum are common recommendations. Timing of construction activities ("construction windows") to avoid adverse impacts on animal life can also be a type of mitigation. Mitigation by habitat replacement or enhancement for habitat lost to the project may be requested under special circumstances by the DNR or other government agencies.

Where stream channel changes are unavoidable, efforts should be made to reconstruct the channelized segment to hydrologic characteristics similar to the original stream. Thought should also be given to reestablishment of natural bank or shoreland vegetation and to placing clean aggregate on the new stream bottom in order to speed recolonization of food crop species. Basic goals in project planning are:

1. Change existing conditions as little as possible.
2. Where adverse changes are unavoidable, try to implement techniques that could minimize primary

and secondary impacts.

3. Look into possibilities for enhancing remaining undisturbed features of the project site (e.g., adding spawning gravel or creating riffle areas by the addition of riprap).
4. Be aware that mitigation techniques can also cause secondary impacts that can be more undesirable than no mitigation.

Mitigation must have a goal and must be decided upon relative to the current uses of the waterbody. Coordination with the DNR and the U.S. Fish and Wildlife Service will generally provide an acceptable mitigation plan.

## 5.5 Permits

A federal permit may be required. Section 404 of the Clean Water Act requires permit authorization from the U.S. Army Corps of Engineers for the discharge of fill material into waters of the United States. These waters include rivers, streams, lakes, embayments and wetlands. In addition, a Section 401 Water Quality Certification (from the Clean Water Act) must be waived, denied or granted by the DNR before a Section 404 Permit is issued or denied by the Corps. Chapters 30 and 31 in the State Statutes pertain to alterations to or impacts on a waterbody from channel changes, rip-rap, bridges, or other structures. WisDOT is exempt from obtaining Chapter 30 permits for certain activities, according to a Cooperative Agreement between the WisDOT and the DNR for wetland mitigation. This cooperative agreement applies only to highway and bridge projects, and only if the activity is accomplished in accordance with the interdepartmental procedures established in this cooperative agreement.

[FDM 21-50](#) discuss federal and state permits.

## 5.6 Factor Sheets

Factor Sheets F1 through G pertain to aquatic system evaluation and need to be completed when preparing an environmental document if the project affects rivers and their floodplains (F1 and F2) or lakes (G).

<https://wisconsin.gov/Pages/doing-business/eng-consultants/cnsit-rsrcs/environment/formsandtools.aspx>

## 5.7 Reference

"Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act", Council on Environmental Quality, Executive Office of the President, November 29, 1978.

Ruttner, F. 1973. Fundamentals of Limnology. University of Toronto Press. Toronto, Canada.

Weller, M. W., 1981. Freshwater Marshes. University of Minnesota Press. Minneapolis, MN.

## LIST OF ATTACHMENTS

[Attachment 5.1](#) Zonation of Lakes

## FDM 24-5-10 Wetlands

December 8, 1995

### 10.1 Evaluating Existing Conditions

Wetlands should be described in terms of hydrology, relationship to other waterways, vegetation and soils, and ecology. Following is an outline that defines wetlands and provides several criteria for describing different types. As with other environmental factors, understanding the existing wetland complex is necessary before impacts can be predicted and assessed.

#### 10.1.1 Definition and Characteristics

1. Wetlands are "those areas that are saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas." <sup>1</sup> The Wisconsin Statutes define a wetland as "an area where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which has soils indicative of wet conditions".<sup>2</sup>
2. Saturation ranges from waterlogged soils to permanent, standing water. The degree of saturation

<sup>1</sup> Code of Federal Regulations, 33CFR 323.2(c). Regulatory definition accepted by the FHWA, CORPS, U.S. Fish & Wildlife, U.S. EPA, etc.

<sup>2</sup> Wisconsin Statutes, 23.32(1). Definition used by Wisconsin Wetlands Inventory.



changes with seasonal or annual changes in water levels. Associated plant and animal communities adjust as water levels fluctuate.

3. Wetlands have some of the characteristics of both the aquatic and upland communities.
4. Wetlands are part of the hydrologic cycle ([Attachment 10.1](#)):
  - Water enters the groundwater system through recharge areas by precipitation. Water runs off to streams, is transpired through plants, evaporates or seeps into the groundwater.
  - Water that enters the groundwater moves to discharge areas such as springs, lakes, streams, and wetlands.
5. Wetlands can occur in any part of the hydrologic cycle. Characteristics of categories of wetlands, according to Novitzki's (1981) hydrologic classification system, are as follows:
  - Perched wetlands:
    - Occur at the highest point of ground surface in the area's hydrologic cycle.
    - Are usually small in size.
    - Have an impermeable bottom separating them from the groundwater.
    - Serve very little recharge function.
  - Flow-through wetlands (upland slope):
    - Created where a dip in the land surface intersects the water table.
    - Groundwater discharges to the wetland on the upper side and recharges to the zone of saturation on the lower side.
    - May also have relatively impermeable bottom layer.
  - Spring-fed wetlands:
    - Similar to flow-through wetlands with water emerging from groundwater system on upper side.
    - Water usually does not re-enter groundwater on lower side, but leaves the wetland as a stream headwater.
  - River floodplain wetlands:
    - Most common wetlands.
    - Occur along river floodplains and lake margins.
    - Groundwater is discharged through these into streams or lakes.
    - These wetlands may become recharge areas when their water levels are higher than the water table due to heavy precipitation, saturated soils, and low evaporation rates.
6. Wetland soils may be mineral (sand, silt, clay) or organic (peat, muck):
  - Wet mineral soils occur where the water table is slightly below the land surface most of the year. Anoxic conditions are produced and the soils exhibit mottling or gleying.
  - Organic soils occur where the water table is at or above the surface most of the time. These soils are formed by incomplete decay of vegetation that builds layers as it dies. Saturated soils do not contain the necessary oxygen to complete decomposition.

A list of hydric soils by series and subgroup for Wisconsin (Wis. Bulletin No. 430-5-9) can be obtained from the Natural Resource Conservation Service or through the Office of Environmental Analysis (OEA).

7. Vegetation:
  - Vegetation is indicative of soil type, saturation, soil, water chemistry, and climate.
  - Knowledge of local ecology is important in knowing what types of wetlands occur in various areas of the state.

### 10.1.2 Wetland Classification

The most current wetland classification system is "Classification of Wetlands and Deepwater Habitats of the United States" (Cowardin, et al., 1979). Table 4 and Figures 1, 4, 5, and 6 in this publication summarize wetland types in use and adopted by the FHWA and all federal regulatory and resource agencies.

A new federally accepted classification system based on the hydrogeomorphic functions of wetlands may be used in functional wetland assessment. In this case a regional model rather than a national model of wetlands has been proposed by Brinson (1992).

The classification is based on the three basic properties that are incorporated into determination of wetland function:

1. Geomorphic setting (depressional, riverain, fringe or extensive peatlands)
2. Water source (precipitation, lateral flow from upstream/upslope, or ground water)
3. Hydrodynamics (primarily vertical, primarily unidirectional and horizontal or primarily bidirectional and horizontal)

From the three basic properties describing wetlands a particular wetland is given a profile from which the functions it performs are deduced.

For the purpose of the WisDOT wetland mitigation banking program, a classification for wetland type was derived. A correspondence table of this classification with other classifications is given in [Attachment 10.2](#). These wetland types should be used on the factor sheets (E) for environmental documents. The "Wisconsin Wetlands Inventory User Manual" summarizes wetland types for the purpose of wetland inventory mapping.

The DNR has mapped and described the wetlands in Wisconsin based on the Department of the Interior's publication, but with a few simplifications. These maps are printed by township and are available for internal WisDOT use at the WisDOT district offices.

All Wisconsin Wetland Inventory Map Products are now sold by the Department of Natural Resources. Please send Map Order Form and Payment to:

Wisconsin Department of Natural Resources  
Bureau of Water Regulation & Zoning, WZ/6  
101 S. Webster St., P.O. Box 7921  
Madison, WI 53707  
(608) 266-8852

[Attachment 10.3](#) is a copy of the DNR map order form.

### **10.1.3 Wildlife**

Wildlife use is most easily determined by observation. Ideally, observations should be made during each season because many species use wetlands only seasonally. Migratory birds can be observed best during spring and fall. Information may be obtained through the DNR and the U.S. Fish and Wildlife Service. Wildlife use may also be estimated through knowledge of the area, associated vegetation, and open water conditions.

An approach to discussing wetland wildlife is to list species observed or expected to be present, what parts of the wetlands are being used, and what the observations and assumptions are based on (e.g., actual inventories, vegetation, water conditions, or other criteria). This method provides document reviewers with a better understanding of the habitat value and productivity of the wetland. It also allows a thorough evaluation of impacts, particularly in situations where only a fringe taking is involved.

### **10.1.4 Wetland Functions and Value**

Wetland systems serve many functions and provide many benefits. Their potential for supporting large plant and animal populations of diverse species is high. Wetlands act as nutrient traps and thus usually have considerable vegetation. The vegetation provides the base for many aquatic and terrestrial food chains. The reproduction of deep water species may also occur in marsh areas adjacent to a water body.

Wetlands can improve water quality. This is done through the filtering capacity of dense stands of wetland vegetation, which provide an effective means of removing suspended solids from polluted waters.

Wetlands provide important resting, breeding, feeding, and rearing habitat for many species of waterfowl, fur bearing mammals, and fish.

Wetlands contribute to the biodiversity of an area. Primary environmental corridors are areas consisting of a concentration of a variety of natural resource features, such as wetlands, floodplains and woodlands. These areas have been identified by some regional planning agencies in Wisconsin under Section 208 of the Clean Water Act.

Wetlands can serve as effective flood control and erosion buffers. Wetland areas of shallow water and associated vegetation can slow the velocity and desynchronize the peaks of flood water and thus reduce shoreline and river bank erosion. They can also act as groundwater discharge areas and, under some circumstances, as groundwater recharge areas.

Wetlands have recreational value. Activities may include observing birds and other wildlife, fishing, hunting, and

canoeing. Wetlands are also important for their aesthetic value.

## 10.2 Evaluating Impacts on the Wetland

Describe the proposed project in terms of the anticipated work in the wetland. Provide enough engineering detail to explain how wide a strip will be involved, including shoulders, medians, and ditches. Also include land acquired for auxiliary lanes, frontage and access roads, intersections and interchanges, rest areas, waysides, and weigh stations. Explain whether excavation or fill are necessary, whether a structure across the wetland is proposed, what the marsh disposal method will be and where it will be located, and any other activity that will affect the wetland. Encroachments on separated wetlands along the project should be described separately. Determine the number of acres lost or modified at each wetland site.

### 10.2.1 Primary Impacts

Marsh Disposal: Primary impacts are usually associated with construction. Removal of loose, compactable organic soils for the roadbed core presents a disposal problem. Casting aside this material creates a berm that probably will not settle to the original marsh elevation. This causes a loss of additional wetland acreage or a change to a drier and disturbed wetland. If the material is removed to an upland disposal site, the upland habitat is disturbed.

Hydrology: The relationship of a wetland to the surrounding watershed should also be evaluated. Impacts of highway construction will differ depending upon the water source of a wetland. If the wetland is adjacent to a stream, lake, or other waterbody, a determination should be made as to whether the wetland depends on periodic flooding of the waterway. If the wetland is supported by stream flooding or overland flow, road fill can interrupt flow patterns and reduce flood storage capacity. Drying of portions of a wetland can occur or, conversely, the road fill can act as a dam, creating wetter conditions. Either has the potential for changing the characteristics of the wetland.

If the wetland is not adjacent to a stream, lake or other waterbody, discuss whether the wetland is groundwater dependent or whether it is a perched, water-filled depression in the land surface. This information will help in determining whether a structure or fill will have an impact on the wetland's source of water.

Roadfill can also interrupt groundwater movement which may be an important source of water for the wetland. Depending upon soil types, the weight of the road fill can cause a mudwave effect, where adjacent soil is pushed above its original elevation, causing it to dry out and convert to upland habitat.

Habitat: Since many wetlands are islands of a unique habitat surrounded by upland communities, the loss of this habitat reduces its ability to support wildlife associated with wetlands. Wetland species correspondingly have unique requirements and adaptations that can only be met by the special characteristics of wetlands.

The roadbed can also act as a barrier to the movement of amphibians and reptiles to near-shore breeding areas, and the movement of furbearers among feeding, breeding, and resting areas.

Construction noise has a potential for interrupting courtship, breeding, nesting, and prey/predator location behavior for species that depend upon audio cues for these activities.

### 10.2.2 Secondary Impacts

These impacts are generally associated with the operation and maintenance of the facility or are those that occur over time as a result of initial construction.

Traffic noise could eliminate use of wetland habitat adjacent to the roadway for breeding purposes by some species. Road kills will occur, particularly during dispersal periods when wildlife are actively moving in response to seasonal water level changes or other breeding and feeding requirements.

Because destruction of vegetation and contamination of open water areas is possible from road salt and automobile by-products, it should be discussed as a potential impact.

## 10.3 Determination of Significance

The significance of impacts should be viewed in terms of the functions of a particular wetland and how these might be affected. Perched wetlands isolated from waterways would best be discussed in terms of aquatic wildlife, waterfowl, and loss of habitat. Those wetlands associated with and dependent upon other waterways require additional discussions on elimination of flood storage and water quality functions, such as sediment and nutrient trapping, as well as wildlife habitat and food chain support.

Fringe encroachments on wetlands tend to be less significant than severances. The fringe of a wetland, however, can provide critical resources, such as food, shelter, or nesting. Size and location of wetlands are also important considerations.

Wetlands with open water are also subject to water quality impacts similar to those discussed for other water bodies. This should be considered when estimating impact significance.

In most cases, impact significance can be estimated based on a thorough knowledge of the local ecology or land use of the project area. Coordination with the U.S. Fish and Wildlife Service, the DNR, and local units of government is a way to gain information about the uses and importance of the wetland. Once this has been done, a basis is available for stating whether the changes proposed will be significant. This type of analysis should be made for all alternatives, comparing each in terms of adverse and beneficial effects. Differences among alternatives should be pointed out. For example, all alternatives might involve wetland loss, but the site for one alternative might be away from a wildlife nesting area or food source.

There are several methods available for assessing wetland significance. All of them are equally acceptable.

A Method for Wetland Functional Assessment (Adamus 1983) has been updated (Adamus 1989) and is referred to as WET 2.0. The WET 2.0 manuals contain information on the functions and values associated with wetlands and provides a method of assessing these values for individual wetlands. Functions covered include groundwater recharge and discharge, flood storage and desynchronization, shoreline anchoring and dissipation of erosive forces, sediment trapping, nutrient retention and removal, food chain support, habitat for fish and wildlife, water quality and active and passive recreation.

The Corps of Engineers, St. Paul district, and the Minnesota Environmental Quality Board, have developed a wetland evaluation methodology (WEM) for the north central states (Minnesota and Wisconsin). This method was derived from Adamus (1983). The method allows the user to select functions to be included in the analysis. This document also provides an overview of unique wetland qualities and qualities of potential legal significance. Functions covered in this manual are flood flow characteristics, water quality, wildlife, fish, shoreline anchoring and visual values.

The Hollands and Magee (1986) evaluation methodology assigns weighted values to the functions evaluated for each wetland. Each wetland is given a total value to be compared with other wetland's total values. Functions covered by this method include hydrologic support, water quality, ground water recharge, biological, shoreline protection, stormwater and flood and aesthetic values.

#### **10.4 Measures to Minimize Harm**

Because wetlands are recognized and protected by legislation and executive order as critical resources, they should be avoided, where possible, during alignment location studies.

When upgrading a roadway on existing alignment by widening, it is nearly impossible to avoid encroachment into adjacent wetlands. A dilemma is created because, from an overall standpoint, existing alignment reconstruction causes the least impacts; and, yet, where wetlands are involved their preservation is often considered paramount to other land uses. It becomes necessary to justify the use of wetlands on the basis of no practicable alternatives rather than on the basis of reasonable land use trade-offs.

Coordination with the DNR and the U.S. Fish and Wildlife Service can provide recommendations on impact mitigation.

Compensatory mitigation policy is outlined in detail in the DOT/DNR Cooperative Agreement amendment on compensatory mitigation. Restoration of former or degraded wetlands or creation of new wetlands can be recommended as compensatory wetland mitigation. If unavailable wetland loss cannot be replaced on or near the project, a wetland mitigation bank site may be available for wetland compensation.

Compensation for wetland loss is based on evaluation of primary and secondary impacts. The replacement of wetland acreage lost is based on ratios of replacement acreage to acreage lost as determined by the probability of restoration or creation success. Any type of compensation should be conducted prior to or in concert with construction of the transportation project. Compensation is for unavoidable wetland losses after all effects to avoid and minimize the impact to wetlands have been taken.

Techniques for increasing open water are beneficial primarily for waterfowl production and might not be the best solution for a particular wetland. For example, in parts of the state where open water is already abundant it could be more beneficial to create upland islands or berms to provide habitat diversity, such as waterfowl resting and nesting sites. Mitigation proposals should be evaluated on a case-by-case basis.

Consideration can be given to utilizing longer structures to minimize fill into wetlands, particularly those that are dependent upon surface water. Techniques to maintain existing flow patterns under the roadway can assist in the maintenance of water levels in portions of the wetland. Passive maintenance of normal flow can be accomplished with pipe culverts, valved pipe, and the use of permeable fills. Water level control structures would be needed to actively manage water levels.

Where possible, roadway severances of wetlands should be avoided. Fringe takings are less likely to cause significant impacts. Marsh disposal into wetlands should be minimized or avoided. Special disposal methods for excavated material are also recommended. Where practicable, slopes can be steepened to minimize the amount of wetland fill. The use of permeable, granular-fill material will help maintain the natural surface water movement.

Construction should be restricted during critical nesting, breeding, or spawning periods, if these have been identified for a project site. Construction windows, if needed, are usually recommended by the DNR or the U.S. Fish and Wildlife Service on an individual project basis. After construction, the disturbed areas will need to be revegetated. On site soil conditions, land contours, and surrounding vegetation are some of the factors to consider when selecting a suitable roadside cover.

Techniques for reducing adverse impacts should consider the critical nature of the resource being affected. For many projects, the standard specifications outlined in the Standard Specifications for Road and Bridge Construction define adequate procedures for minimizing harm. Specifically, the reader is referred to the following sections of the Standard Specifications:

<a href="#">standard spec 107.18</a>	Environmental Protection
<a href="#">standard spec 107.20</a>	Erosion Control
<a href="#">standard spec 203</a>	Removing Old Culverts and Bridges
<a href="#">standard spec 205.3.11</a>	Disposal of Surplus or Unsuitable Material

#### 10.4.1 Wetland Finding

When there is no practicable alternative to an action which involves new construction located in a wetland, the final environmental document should contain the finding required by Executive Order 11990 and by DOT Order 5660.1A, entitled Preservation of the Nation's Wetlands, August 24, 1978.<sup>3</sup> The finding should summarize the following points which should be detailed elsewhere in the environmental document:

- A reference to Executive Order 11990.
- A discussion of the basis for the determination that there are no practicable alternatives to the proposed action.
- A discussion of the basis for the determination that the proposed action includes all practicable measures to minimize harm to wetlands.
- A concluding statement as follows: "Based upon the above considerations, it is determined that there is no practicable alternative to the proposed new construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use."

The environmental document should also contain information on the wetland type, acres lost, and a map of the area, such as a wetland inventory map, showing the wetland basin where the project is located.

#### 10.4.2 Permits

Federal and state permits are required to discharge fill into wetlands. Section 404 of the Clean Water Act requires permit authorization from the U.S. Army Corps of Engineers of the United States. These waters include rivers, streams, lakes, embayments and wetlands. In addition, a Section 401 Water Quality Certification (from the Clean Water Act) must be waived, denied, or granted by the DNR before a Section 404 Permit is issued or denied by the Corps.

Chapters 30 and 31 in the State Statutes pertain to alterations to or impacts on a waterbody from channel changes, rip-rap, bridges or other structures. WisDOT is exempt from obtaining Chapter 30 permits for certain activities, according to a Cooperative Agreement between the WisDOT and the DNR. This cooperative agreement applies only to highway and bridge projects and does so only if the activity is accomplished in accordance with the interdepartment procedures established in this cooperative agreement.

[FDM 21-50](#) discusses federal and state permits.

#### 10.4.3 Factor Sheets

Factor Sheets E1 and E2 pertain to wetland evaluations and need to be completed when preparing an environmental document if the project affects wetland areas.

<https://wisconsin.gov/Pages/doing-business/eng-consultants/cnslt-rsrcs/environment/formsandtools.aspx>

<sup>3</sup> FHWA Technical Adversary, T6640.8, February 24, 1982.

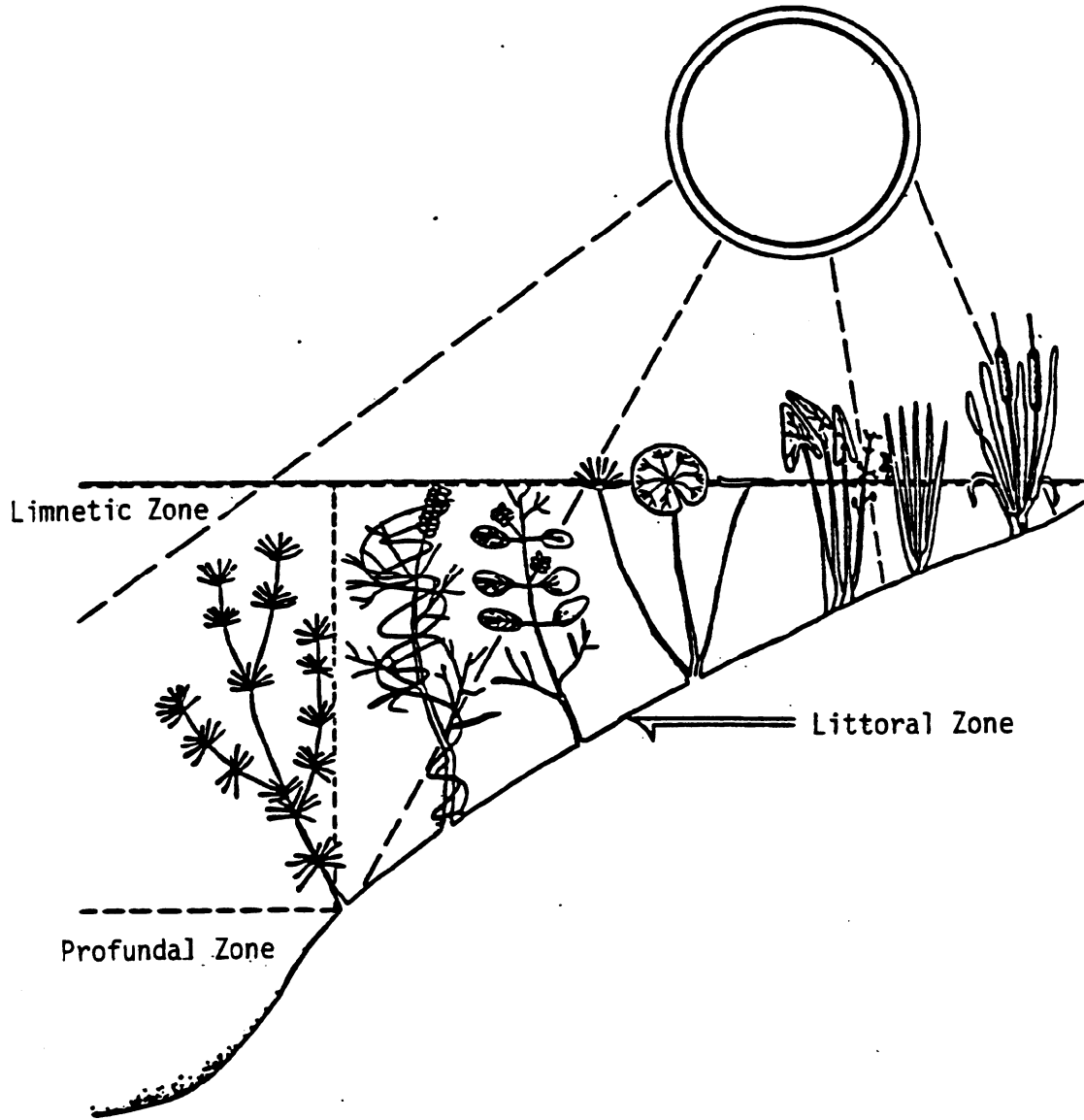
## 10.5 References

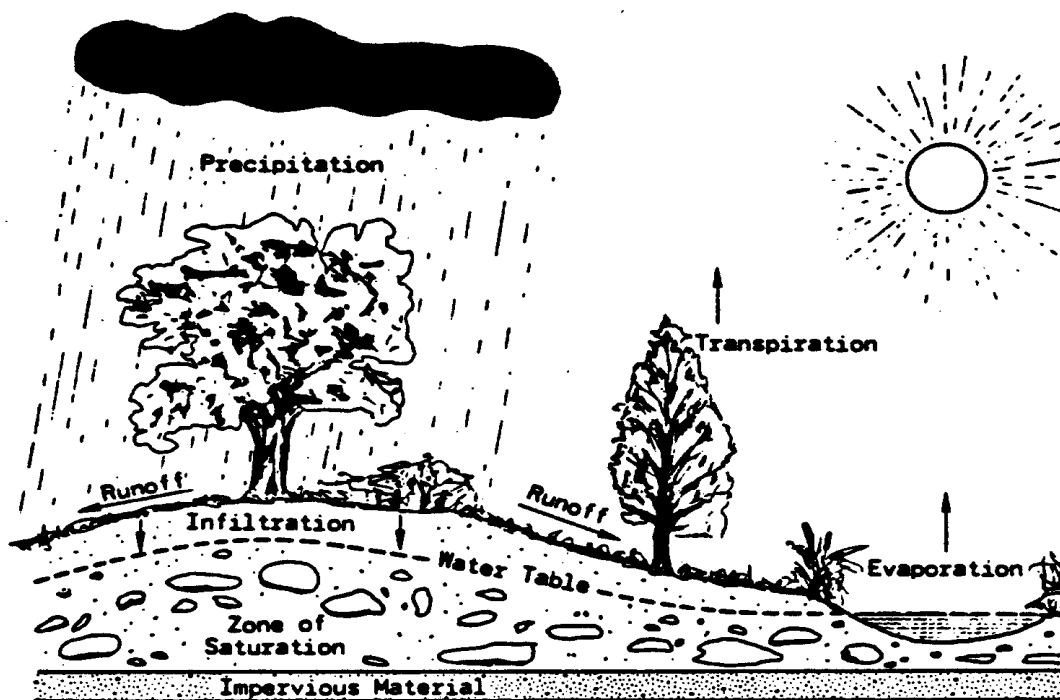
- [1] Committee on Characterization of Wetlands. 1995. Wetlands: Characteristics and Boundaries. National Research Council. National Academy Press. Washington D.C.
- [2] DOT Order 5660.1A, "Preservation of the Nation's Wetlands." August 24, 1978.
- [3] Executive Order 11990, Protection of Wetlands. May 24, 1977.
- [4] FHWA Technical Advisory, T6640.8. February 24, 1982.
- [5] Mitsch, W. J. and J.G. Gosselink. 1993. Wetlands. 2d ed. Van Nostrand Reinhold. New York.
- [6] Novitzki, R. P. 1981, Hydrology of Wisconsin Wetlands, University of Wisconsin Extension, Geologic and Natural History Survey Information Circular 40, Madison, 30 pp.
- [7] "User's Guide to the Wisconsin Wetlands Inventory", Department of Natural Resources. January 1982.
- [8] "Wetlands, Floodplains, Erosion, and Storm Water Pumping", Transportation Research Record 948, Washington, D.C. 1983.
- [9] Wisconsin Department of Administration. 1995. Basic Guide to Wisconsin Wetlands and their Boundaries. Wisconsin Coastal Management Program. PUBL-WZ-029-94.

## **LIST OF ATTACHMENTS**

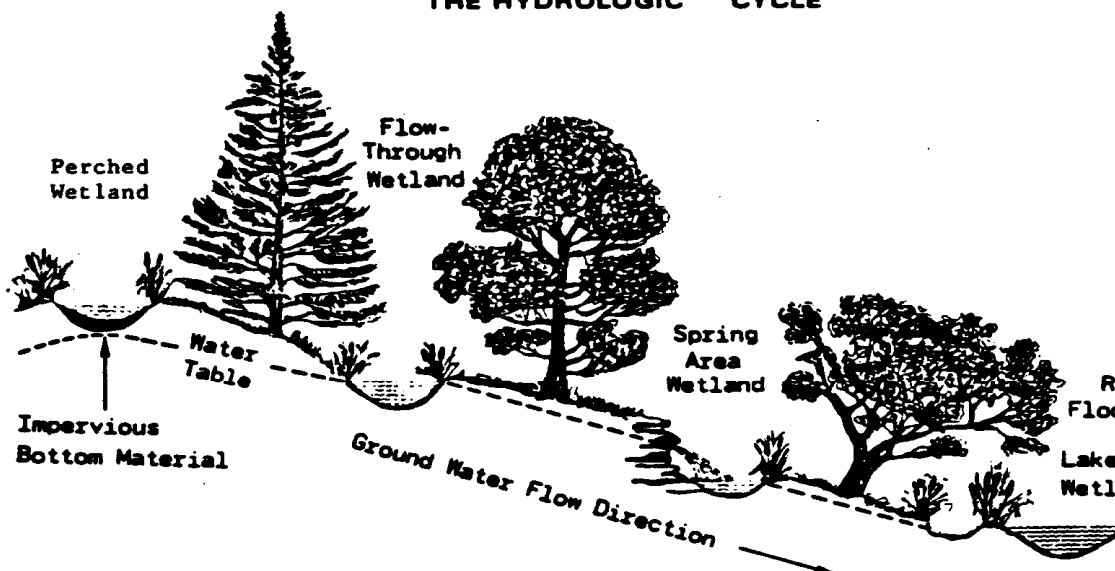
- |                                 |  |
|---------------------------------|--|
| <a href="#">Attachment 10.1</a> | The Hydrologic Cycle                         |
| <a href="#">Attachment 10.2</a> | Wetland Type Correspondence Table            |
| <a href="#">Attachment 10.3</a> | Wisconsin Wetland Inventory - Map Order Form |

Zonation of Lakes





THE HYDROLOGIC CYCLE



WETLANDS AND GROUNDWATER



Wetland Type Correspondence Table. WisDOT Wetland Bank Types and Wisconsin Wetland Inventory.

Wetland Type	Description	Wisconsin Wetland Inventory (subclasses and modifiers)	Example
RPF	Riparian wetland (wooded) Floodplain forests, shrub carr and alder thickets in riverine or lacustrine system	T (1,2,3)K, S(1,2,3)K, (w,s)	T3Kw S3k
RPF(D)	Degraded Wooded Riparian Wetland	T(1,2,3)K, S (1,2,3) K, (a,f,g,v)	T3Kg
RPE	Riparian wetland (emergent) Sedge and wet meadows, bars and mudflats, shallow and deep marsh in riverine or lacustrine system	E(1,2,3)K F(2,3,4,5)K, E(1,2,3,4,5,6)(K,H,L)	E1K F5K E4H
RPE(D)	Degraded Emergent Riparian Wetland	E(1,2,3)K(a,f,g,v) E(1,2,3,4,5,6)(K,H,L)(a,f,g,v)	E1Kg E3Hg
M	Wet and sedge meadows, wet prairie, vernal pools, fens	E(1,2,3)K E(1,2,3)K(a,f,g,v)	E3K
M(D)	Degraded Meadow		E3Kf
SM	Shallow Marsh	E(1,2,3,4,5,6)(K,H,L)	E3H
DM	Deep Marsh	E(1,2,3,4,5,6)(K,H,L)	E3H
AB	Aquatic Bed	A(1,2,3,4)(L,R,H) W(2,3,4)H	A3H W3H
SS	Shrub Swamp Shrub carr, Alder thicket	S(1,2,3,5,6)K	S3K
SS(D)	Degraded Shrub Swamp	S(1,2,3,5,6)K(g,a)	S3Kg
WS	Wooded Swamp	T(1,2,3,5,8)K	T3K
WS(D)	Degraded Wooded Swamp	T(1,2,3,5,8)K(g,a)	T3Kg
BOG	Open and Forested Bogs	E2, S(2,4,5,6,8,9)K T(2,4,5,6,8,9)K	E2Km S5K T8K

National Wetland Inventory based on Cowardin, et al. 1987.

P=Palustrine, L=Lacustrine, R=Riverine

EM=Emergent, SS=Shrub/Scrub, FO=Forested, AB=Aquatic Bed, ML=Moss/Lichen

1=persistent, 2=nonpersistent (EM)

1=broad leaved deciduous, 2=needle leaved deciduous, etc.(SS,FO)

A=Temporarily flooded

B=Seasonally Flooded

C=Semipermanently flooded

E=Permanently flooded

F=Saturated

Comparative

Examples

PEM1F=E1K

PFO1F=T3K

PSS1F=S3K

PEM2C=E4H

PAB2E=A3H

COUNTY MAP INFORMATION

<u>County</u>	<u>Number of Maps</u>	<u>County</u>	<u>Number of Maps</u>
Adams	24	Marathon	44
Ashland	43	Marinette	52
♦ Barron	29	♦ Marquette	19
Bayfield	52	Menominee	10
Brown	19	Milwaukee	8
Buffalo	25	Monroe	26
♦ Burnett	28	Oconto	32
Calumet	12	Oneida	35
♦ Chippewa	33	Outagamie	20
♦ Clark	37	Ozaukee	8
♦ Columbia	29	Pepin	11
Crawford	26	Pierce	21
Dane	35	♦ Polk	29
♦ Dodge	29	Portage	22
Door	30	Price	35
Douglas	42	Racine	11
Dunn	24	Richland	18
♦ Eau Claire	21	Rock	20
Florence	18	♦ Rusk	28
♦ Fond du Lac	25	♦ Sauk	30
♦ Forest	32	St. Croix	23
Grant	37	Sawyer	38
Green	16	Shawano	25
♦ Green Lake	14	Sheboygan	16
♦ Iowa	27	Taylor	27
Iron	27	Trempealeau	24
♦ Jackson	32	Vernon	26
Jefferson	16	♦ Vilas	37
Juneau	26	Walworth	16
Kenosha	10	Washburn	24
Kewaunee	13	Washington	12
La Crosse	17	Waukesha	16
Lafayette	20	Waupaca	21
Langlade	25	Waushara	18
Lincoln	25	Winnebago	16
Manitowoc	21	Wood	23

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Scale of Wisconsin Wetland Inventory paper maps is 1:24,000 (1" = 2,000'). Maps cost \$5.00 each.

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Return this form and payment to:

Wisconsin Department of Natural Resources  
 Bureau of Water Regulation & Zoning, WZ/6  
 101 S. Webster St., P.O. Box 7921  
 Madison, WI 53707  
 (608) 266-8852

Form 3500-98 (8-95)



## FDM 24-10-1 Introduction

May 17, 2022

This section discusses the requirements for identifying and evaluating effects upon rare species and habitats. The Legal Requirements portion will discuss the background and legal framework for federal and state threatened and endangered species legislation. The subsequent Procedures and Impact Assessment section will discuss the roles, processes, determination of impacts, and documentation required for compliance.

## FDM 24-10-5 Legal Requirements

May 17, 2022

### 5.1 Federal Law: The Endangered Species Act of 1973 (ESA) (16 U.S.C. § 1531-1544; Title 50 of the CFR)

#### 5.1.1 Definitions

- Endangered means a species is in danger of extinction throughout all or a significant portion of its range
- Threatened means a species is likely to become endangered in the foreseeable future.
- Critical Habitat includes specific geographic areas that contain the physical or biological features that are essential to the conservation of the listed species and may require special management or protection. Not all listed species or species proposed to be listed have designated critical habitat. Suitable habitat for a species may exist beyond what is designed as critical habitat.
- Candidate means a species that is under consideration for listing, but not yet listed or formally proposed for listing. The ESA does not offer legal protection for these species, but conservation measures can be incorporated into the proposed project under NEPA to protect these species.
- Proposed for listing means USFWS has begun the formal listing process for a candidate species.
- The ESA defines take as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect or attempt to engage in any such conduct. Harm includes significant habitat modification or degradation where it kills or injures wildlife by significantly impairing essential behavioral patterns.
- Purposeful take occurs when the reason for the activity or action is to conduct some form of take. For instance, conducting a research project that includes collecting and putting bands on bats is a form of purposeful take. Intentionally killing or harming listed species is also purposeful take and is prohibited.
- Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. For example, harvesting trees can kill roosting bats, but the purpose of the activity is not to kill bats.
- Projects that contain a federal nexus are those that receive federal funding, permits, or other authorization. Many WisDOT projects have a federal nexus, most often federal funding through the Federal Highway Administration (FHWA) and/or the need for a Clean Water Act Section 404 permit for aquatic resource impacts.
- Action area refers to all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action. As a result, the action area may be larger than the project footprint.
- Programmatic consultation is a standardized and streamlined approach to Section 7 consultation, which includes an impact assessment, and avoidance, minimization, and mitigation of impacts. The FHWA, FRA, FTA Programmatic Consultation for Transportation Projects affecting Northern Long-eared Bat or Indiana Bat Range-wide is an example of this type of consultation.

#### 5.1.2 Overview

The federal Endangered Species Act (ESA) (16 U.S.C. § 1531-1544) is designed to provide a means to conserve threatened and endangered species and ecosystems on which they depend. This law requires that federal agencies seek to conserve threatened and endangered species and further the purposes of the ESA. They are required to consult with the U.S. Fish and Wildlife Service (USFWS) to ensure their actions do not jeopardize the continued existence of any listed species or species proposed to be listed or result in the destruction or adverse modification of its critical habitat.

#### Relevant Sections of the Endangered Species Act

<p>Section 4: Determination of endangered species and threatened species (16 U.S.C. § 1533; 50 CFR Part 424)</p>	<p>Allows for the listing of species as threatened or endangered. Section 4(d) can allow USFWS to increase protection for threatened species and streamline consultation.</p>
<p>Section 7: Interagency cooperation (16 U.S.C. § 1536; 50 CFR §402)</p>	<p>Describes consultation procedures and requires that federal agencies and projects with a federal nexus do not jeopardize the continued existence of any listed or proposed species. Also describes conservation obligations.</p>
<p>Section 9: Prohibited acts (16 U.S.C. § 1538; 50 CFR Part 17)</p>	<p>Prohibits take of listed animal species and describes prohibited activities for listed plants.</p>
<p>Section 10: Exceptions (16 U.S.C. § 1539; 50 CFR Part 17)</p>	<p>Provides guidance on permits that may be issued to authorize take, as defined in Section 9. Used to authorize impacts resulting from non-federal projects or projects without a federal nexus.</p>

**5.1.3 Section 4: Determination of Endangered Species and Threatened Species**

ESA Section 4 (50 CFR Part 424) outlines the process by which species are designated as threatened or endangered and dictates that these species receive protections under federal law.

Species proposed for listing are identified through listing petitions from the public or through the USFWS candidate assessment process. To be considered for listing, species must meet one of five criteria:

1. There is the present or threatened destruction, modification, or curtailment of its habitat or range.
2. An overutilization for commercial, recreational, scientific, or educational purposes.
3. The species is declining due to disease or predation.
4. There is an inadequacy of existing regulatory mechanisms.
5. There are other natural or manmade factors affecting its continued existence.

Petitioned species are reviewed and evaluated by USFWS through a formal listing process: 90-day finding, 12-month finding, proposed listing rule and final listing rule. This process includes two public comment periods. At the first three milestones, USFWS may discontinue the listing process if data shows listing is not warranted. If USFWS determines that the listing is warranted, there are two paths forward: continue to list the species through the federal rulemaking process or determine the listing is warranted but precluded by higher listing priorities. The species becomes a candidate species after a positive 90-day finding and remains a candidate until it is either determined listing is not warranted or it is in the formal listing process. With the latter option, it becomes a proposed species.

Species identified through the USFWS assessment process that have sufficient justification to list, become candidate species. USFWS either follows the federal rulemaking process, which includes a public comment period, to list the species as threatened or endangered or determines that the listing is warranted but precluded from doing so by higher listing priorities. In the latter option, the species remains a candidate.

Candidate species are not legally protected under the ESA but receive a higher conservation priority from USFWS. Candidates are assigned priority numbers based on the magnitude and immediacy of threats to it and its taxonomic distinctiveness. These species are reviewed annually and can be reprioritized or removed from candidate status due to successful conservation efforts.

Once a candidate species is in the formal listing process, it is considered a species proposed for listing. USFWS may determine that there are areas of habitat that are essential to the conservation of the species and may propose them as critical habitat. Areas that are not currently occupied but are likely needed for a successful species recovery may also be included in critical habitat.

The ESA does not automatically provide Section 9 protections to threatened species that were listed after September 26, 2019. Section 4(d) of the ESA gives USFWS the authority to write special rules for threatened (but not endangered) species to provide tailored Section 9 protections to aid in species conservation and to streamline compliance for actions that may result in low levels of take but will not threaten a species continued existence. This is referred to as a species-specific Section 4(d) Rule. A species-specific Section 4(d) Rule is generally proposed along with the proposed listing of a species as threatened. This area of the ESA has changed over time. At the time of writing this FDM section, a blanket Section 4(d) Rule does not exist for species added after September 26, 2019. Consult current ESA regulations within 50 CFR Part 17 for further guidance.

The ESA allows for emergency listing of species if there is significant immediate risk of survival. USFWS publishes an emergency listing, and it is valid for 240 days. During this time, the species is provided full ESA protections as USFWS works through the standard evaluation and listing process for the species. Emergency listings are rare.

#### **5.1.4 Section 7: Interagency Cooperation (Consultation)**

All federal agencies and programs with a federal nexus are mandated under Section 7 (50 CFR §402) to consult with USFWS before taking any action that has the potential to affect a listed species or designated critical habitat. Consultation may be informal or formal and is further discussed in Section 10.1.1. No effect determinations are made by the federal agency or its designated non-federal representative (WisDOT) and do not require consultation with USFWS or concurrence on the determination.

#### **5.1.5 Section 9: Prohibitions**

Section 9 of the ESA (within 50 CFR Part 17) prohibits take of listed animal species at all life stages. However, there may be an “exception” from prohibitions if a Section 4(d) Rule has limited the situations in which such take prohibitions of threatened species apply. WisDOT actions that do not have a federal nexus must still adhere to Section 9. The project may require a Section 10 (federal) Incidental Take Permit if species take is anticipated and a Section 4(d) Rule limiting take situations does not exist for the species.

Take prohibitions do not extend to listed plants. The ESA includes other prohibitions for plants including importing, exporting, and transporting; removal and possession, malicious damage or destruction on federal land; and removal, damage, destruction on any land if in knowing violation or any state law or regulation or state criminal trespass law. See [FDM 24-10-10.1.9](#) for more detail.

#### **5.1.6 Section 10: Exceptions (Permits)**

Section 10 (within 50 CFR Part 17) mandates that projects without a federal nexus must obtain a Section 10(a)(1)(B) Incidental Take Permit (ITP) when undertaking otherwise lawful projects that might result in take of a federally listed species, unless a Section 4(d) Rule limiting take situations exists for the species. Project proponents must also design, implement, and secure funding for a Habitat Conservation Plan (HCP) that minimizes and mitigates harm to the impacted species during the proposed project.

It is relatively rare that WisDOT projects need to undergo the Section 10 (non-federal) ITP process. This is due to the low number of projects without a federal nexus, as well as the generally low scope nature of these projects.

### **5.2 State Law: Wisconsin State Statute 29.604, Administrative Rule Chapter NR 27 and NR 10.02**

#### **5.2.1 Definitions**

- Endangered is a legal designation for any species whose continued existence as a viable component of the state's wild animals or wild plants is determined by the Department of Natural Resources (DNR) to be in jeopardy on the basis of scientific evidence.
- Threatened is a legal designation for species of wild animals or wild plants which appears likely, within the foreseeable future, to become endangered.
- Special concern species are those species about which some problem of abundance or distribution is suspected but not yet proven. It is not a legal designation. The main purpose of this category is to focus attention on certain species before they become threatened or endangered.
- Protected wild animal is a legal designation under NR10.02 which prohibits take, attempt to take, transport, possession of a listed animal or its carcass unless authorized by DNR.
- Take means shooting, shooting at, pursuing, hunting, catching, or killing any wild animal or the cutting, rooting up, severing, injuring, destroying, removing, or carrying away any wild plant. In the state definition, “take” only includes harm to the species itself, whereas in the federal definition “take” includes harm to the species and its habitat.

- Incidental take is the unintentional loss of individual endangered or threatened animals or plants that does not put the overall population of the species at risk.

### 5.2.2 Overview

Wisconsin's Endangered Species Law (Wisconsin Statutes Section 29.604) was signed into law in 1972 and aims to conserve “endangered or threatened wild animals and wild plants within their respective jurisdictions to assure their continued survival.”

Chapter NR 27 of the Wisconsin Administrative Code contains the rules necessary to implement Section 29.604, governs the taking, transportation, possession, processing, or sale of any state listed plant or animal, and contains the list of threatened and endangered species. The current reference for state listed threatened and endangered species is linked below:

<https://p.widencdn.net/byxof6/ER001>

Additionally, NR10.02: Protected Wild Animals, contains species for which take, attempt to take, transport, or possession of a listed animal or its carcass is prohibited unless authorized by DNR.

[https://docs.legis.wisconsin.gov/code/admin\\_code/nr/001/10/i/02](https://docs.legis.wisconsin.gov/code/admin_code/nr/001/10/i/02)

### 5.2.3 Protections

Take of state listed endangered or threatened wild animals without a DNR permit or authorization is prohibited on both public and private property. However, take of state listed plants without a permit or authorization is only prohibited on public property. Most WisDOT projects occur on public ROW and do not qualify for forestry, agriculture, or utility exemptions, so protections for state listed plants would apply.

The state special concern designation does not offer specific protections for species. However, other protective laws and regulations such as NR 10.02, the Migratory Bird Treaty Act and/or the federal Endangered Species Act may apply. This means that special concern species may be fully protected or have no protection. If no additional regulatory protection applies to a special concern species, conservation actions are voluntary. Similarly, natural communities and animal concentration sites are not protected by law, but voluntary actions such as construction fencing, and avoidance windows are strongly recommended. Following the spirit of the DNR/DOT Cooperative Agreement, project teams should attempt to accommodate these recommendations and protect special concern species, natural communities, and animal concentration sites whenever possible. These recommendations may include actions such as surveys, avoidance windows or habitat restoration.

### 5.2.4 Natural Heritage Inventory

The Wisconsin Natural Heritage Inventory (NHI) tracks the locations and viability of endangered, threatened, and special concern species, natural communities, and animal concentration sites, and compiles them into the NHI Working List.

<https://dnr.wisconsin.gov/topic/NHI/WList>

## FDM 24-10-10 Procedures and Impact Assessment

May 17, 2022

### 10.1 Endangered Species Act: Federally Listed Species

This section discusses the procedures federal and non-federal projects must follow to comply with the federal Endangered Species Act.

#### 10.1.1 Roles

FHWA is the lead federal agency for Endangered Species Act (ESA) Section 7 consultation for WisDOT's federal-aid projects. FHWA leads the formal consultation process, but generally does not actively participate during informal consultation.

WisDOT serves as the designated non-federal representative for ESA Section 7 no effect determinations and informal consultation for its federal-aid projects. WisDOT assists FHWA with formal consultation. WisDOT is the lead agency for projects without a federal nexus.

The WisDOT region environmental coordinator (REC) works with the project designer throughout the ESA process. The REC is responsible for initiating and leading coordination with USFWS during informal consultation.

The Wisconsin Department of Natural Resources (DNR) completes Natural Heritage Inventory reviews for WisDOT and may provide guidance due to their technical expertise with federal species; however, DNR is not responsible for federal ESA consultation or effect determinations. See [FDM 24-10-5.2](#) and [FDM 24-10-10.2](#) for

state regulations and process.

### 10.1.2 Action Area

The action area under the Endangered Species Act refers to all geographic areas to be affected directly or indirectly by the agency action and not only the immediate area involved in the action. As a result, the ESA action area may be larger than the project footprint. Consider how far the effects of noise, light, vibration and other stressors from the proposed action may extend in aquatic and terrestrial environments when developing the preliminary action area.

A project's action area begins to be established during the environmental scope certification process in the project definition phase. The Risk-Based Environmental Scoping Template (RBEST) may be used during this process. The action area is further defined during NEPA/WEPA as the project's alternatives are developed and project scope is more clearly defined. The action area may change over the course of a project based on alterations to scope and/or changes to listed species in the project area.

### 10.1.3 Official Species List and Natural Heritage Inventory

The USFWS Information for Planning and Consultation (IPaC) website is the starting point for the Section 7 (federal) and non-federal processes under the federal Endangered Species Act.

<https://ecos.fws.gov/ipac/>

The WisDOT region environmental coordinator or project designer creates an IPaC project file and geographically defines the project's preliminary action area. The action area should be drawn broadly at this point to ensure it includes the full extent of the project's effects on listed species. It can be adjusted in the future when more is learned about the project's scope and potential stressors on listed species. The user generates an Official Species List (OSL) for the action area and retains a copy in the project file. The OSL is also included in the project's environmental document. The OSL is valid for 90 days and should be verified/updated (if older than 90 days) before key milestones including initiating consultation with USFWS and draft and final NEPA document approvals. See [FDM 24-10-10.1.12](#) for the OSL update process.

A Natural Heritage Inventory (NHI) review of the project's action area must be completed by DNR. This review is provided in the Initial Review Letter and includes information on occurrences of both federal and state listed species in the project area. Procedures and impact assessment for state listed species is described in [FDM 24-10-10.2](#). An updated NHI review must be requested from the DNR transportation liaison when the previous NHI review is more than 1 year old, when new federal or state species or critical habitat are listed, or when the project scope changes.

### 10.1.4 Impact Assessment

An assessment of the proposed action's effects is necessary to ensure that agency actions do not jeopardize the continued existence of any federally listed species or their designated critical habitat. The ESA states that, "to be considered an effect of a proposed action, a consequence must be caused by the proposed action (i.e., the consequence would not occur but for the proposed action and is reasonably certain to occur). A conclusion of reasonably certain to occur must be based on clear and substantial information, using the best scientific and commercial data available." Effects of the proposed action may occur later in time and may include consequences occurring outside the immediate project area.

The ESA requires consideration of cumulative impacts for a proposed action that "may affect and is likely to adversely affect" a listed species or designated critical habitat. In the context of ESA, cumulative impacts are reasonably certain future actions taken only by state or private entities. Under NEPA, projects may also be required must consider cumulative impacts to threatened and endangered species. NEPA cumulative effects are effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions, regardless of what agency or person undertakes such actions. See [FDM Chapter 20: Environmental Documents](#) for more detail on NEPA requirements.

The impact assessment should consider the environmental baseline or condition of the action area without the consequences caused by the proposed action. It must identify potential physical, chemical, or biological stressors to the listed species that may result directly or indirectly from the action. The assessment needs to consider the proposed action's effects on all life stages of the species, including any host plants or animals. Additionally, the effects must be assessed at the scale of an individual of the species, not upon the species population.

The lack of NHI occurrences within the action area does not alone mean a "no effect" determination can be made for a species. A suitable habitat assessment may need to be completed at this time. The need for survey should be made in consultation with the WisDOT region environmental coordinator, WisDOT ecologist, DNR transportation liaison, and/or DNR conservation biologist, as needed.

Suitable habitat for animals is considered habitat that contains ecological characteristics that support breeding, feeding, resting, or sheltering. Suitable habitat for plants is considered habitat that contains the appropriate environmental (e.g., light, water, nutrients, soil, etc.) and climatic conditions for growth and reproduction. Suitable habitat doesn't necessarily imply high-quality habitat and it may exist in locations without a critical habitat designation.

If suitable habitat is present within the action area, a species presence/absence survey may be appropriate. Survey protocols vary between species and surveys must be conducted during the appropriate time of year. Additionally, for some species, one survey may not be sufficient to prove species absence or to determine that the proposed action would have no effect on the species. Assuming species presence in areas of suitable habitat may be a more appropriate and potentially efficient option for some projects or species when compared to conducting presence/absence surveys. The need for survey and interpretation of the survey results should occur in consultation with the WisDOT region environmental coordinator, WisDOT ecologist, DNR transportation liaison, DNR conservation biologist and/or USFWS, as needed.

Survey results for federally listed species and suitable habitat are incorporated into ESA effect determinations and any required consultation. Surveys and ESA consultation/coordination must be completed prior to the approval an environmental document. This will ensure any necessary avoidance and minimization commitments, further described below, are incorporated into the environmental document.

Analysis of critical habitat needs to consider how the proposed action will affect the physical and biological features of the critical habitat and how the species is likely to respond to changes to its habitat.

Avoidance and minimization measures (AMMs) should be implemented to reduce or eliminate potential effects of the proposed action on the species or critical habitat. Examples include tree clearing restrictions, avoiding construction during specific timeframes, and exclusion fencing during construction. AMMs are species and habitat specific, and implementation should be discussed with the WisDOT region environmental coordinator, WisDOT ecologist, DNR transportation liaison, DNR conservation biologist and/or USFWS, as needed.

These measures must be included in the environmental document as commitments to ensure they are properly incorporated into the project design, plans and construction contract. Additionally, any measures being implemented should be communicated to the DNR transportation liaison and DNR conservation biologist if the species is also state listed (see [FDM 24-10-10.2.1](#)).

### 10.1.5 Effect Determinations

After carefully considering the proposed project's actions and consequences, an effect determination must be made for all federally listed species and designated critical habitats included in the Official Species List. Effect determinations are also made for species and critical habitat proposed for listing. Candidate species appearing in the OSL do not require an effect determination. WisDOT requires that effect determinations are also made for projects without a federal nexus to guide the federal take decision.

Federal effect determinations and any required ESA consultation must be completed prior to the approval of the NEPA environmental document. Any required coordination with USFWS for non-federal projects regarding federal species take must also be completed prior to the approval of the WEPA environmental document ([FDM 24-10-10.1.9](#)).

Any species that is also state listed requires DNR coordination to determine if take will occur under state regulations, see [FDM 24-5-10.2](#).

There are three possible effect determinations for federally listed species and designated critical habitat: "no effect", "may affect, but is not likely to adversely affect" and "may affect and is likely to adversely affect".

A "**no effect**" determination means the proposed action will have no consequences, positive or negative, upon the listed species or designated critical habitat. If there is insufficient evidence to support an unequivocal finding of "no effect", a "may affect" determination should be made instead. A "no effect" determination does not require USFWS coordination or concurrence. See [FDM 24-10-10.1.11](#) for required documentation for "no effect" determinations.

A "**may affect but is not likely to adversely affect**" determination means that all consequences of the proposed action upon the listed species or designated critical habitat are beneficial, insignificant, or discountable. Beneficial effects have contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact and include those effects that are undetectable, not measurable, or cannot be evaluated. Discountable effects are those extremely unlikely to occur.

Proposed "may affect but is not likely to adversely affect" determinations for projects with a federal nexus require informal Section 7 consultation with USFWS and written concurrence on the determination.



Non-federal projects with a proposed “may affect but is not likely to adversely affect” determination need to be coordinated with USFWS to determine if the project will result in federal species take and/or critical habitat harm, requiring a Section 10(a)(1)(B) incidental take permit. These projects are rare and should be discussed with the WisDOT region environmental coordinator and WisDOT ecologist, as needed.

A “**may affect and is likely to adversely affect**” determination means that listed species are likely to be exposed to the proposed action or its environmental consequences and will respond in a negative manner to the exposure. This determination can also apply when the proposed action will negatively affect the essential physical and biological features of designated critical habitat.

Proposed “may affect and is likely to adversely affect” determinations for projects with a federal nexus trigger the need for formal Section 7 consultation with USFWS and requires a biological assessment or biological evaluation. During this consultation, USFWS may recommend modifications to eliminate or reduce adverse effects.

Non-federal projects with proposed “may affect and is likely to adversely affect” determinations need to be coordinated with USFWS to determine if the project will result in federal species take and/or critical habitat harm, requiring a Section 10(a)(1)(B) incidental take permit. These projects are rare and should be discussed with the WisDOT region environmental coordinator and WisDOT ecologist, as needed.

Alternately, adverse effects to proposed species may result in a “**likely to jeopardize**” determination. Adverse effects to proposed critical habitat may result in a “**likely to result in destruction or adverse modification**” determination. Projects with a federal nexus anticipating either of these determinations must initiate a Section 7 conference with USFWS (see [FDM 24-10-10.1.8](#)).

#### 10.1.6 Section 7 Informal Consultation

Section 7 informal consultation (50 CFR § 402.13) is required for projects with a federal nexus that “may affect” a federally listed species or critical habitat. For projects without a federal nexus, see [FDM 24-10-10.1.9](#). WisDOT is the designated non-federal representative and engages in informal consultation with USFWS. Informal consultation is completed during NEPA and must be concluded prior to the approval of the NEPA environmental document.

Informal consultation for the threatened northern long-eared bat is currently completed in IPaC, utilizing either the FHWA, FRA, FTA Programmatic Consultation for Transportation Projects affecting NLEB or Indiana Bat determination key (preferred) or the Northern Long-Eared Bat (NLEB) Consultation and 4(d) Rule Consistency determination key.

Link to the User’s Guide for the Range-wide Programmatic Consultation for Indiana Bat and Northern Long-Eared Bat:

<https://www.fws.gov/media/users-guide-range-wide-programmatic-consultation-indiana-bat-and-northern-long-eared-bat>

The determination key will provide one of the following results: “no effect”, “may affect, but is not likely to adversely affect”, “may affect and is likely to adversely affect”, or the project is outside of the scope of the programmatic consultation determination key. If the project is outside of the scope of the programmatic, see informal consultation process below.

A consistency letter is generated in IPaC for a programmatic “no effect” determination. This letter is saved to the project file and attached to the environmental document. No coordination with USFWS is needed for NLEB.

A concurrence verification letter is generated in IPaC for a programmatic “may affect, but is not likely to adversely affect” determination and is submitted to USFWS through IPaC for review. It must be saved to the project file and attached to the environmental document. If USFWS does not contact the submitter within 14 days after submission of the programmatic determination the informal consultation process for NLEB is considered complete and ESA Section 7 responsibilities have been fulfilled for this species. These determinations frequently have agreed upon avoidance and minimization measures that must be adhered to and they must be incorporated into the environmental document commitments.

A consistency letter is generated in IPaC for a programmatic “may affect and is likely to adversely affect” determination and is submitted to USFWS through IPaC for verification. USFWS will respond within 30 days. A verification letter must be received from USFWS before ESA Section 7 consultation can be considered complete. Documentation of consultation is saved to the project file and attached to the environmental document. These determinations will have agreed upon avoidance and minimization measures that must be adhered to and they must be incorporated into the environmental document commitments.

To begin the informal consultation process for NLEB outside of the FHWA, FRA, FTA programmatic

consultation, other federally listed species and/or critical habitat, WisDOT provides USFWS specific information on the proposed action and its effects on the species or critical habitat. If the proposed action meets the major construction criteria, a biological assessment must be prepared. Otherwise, the contents of a biological evaluation should be submitted. See FDM 24-10-10.1.11 for a description of documentation types.

The WisDOT region environmental coordinator initiates informal consultation with USFWS during NEPA by emailing the documentation to [Darin\\_Simpkins@fws.gov](mailto:Darin_Simpkins@fws.gov) (or current USFWS contact – check with WisDOT ecologist) and requesting USFWS's concurrence on the proposed “may affect, but is not likely to adversely affect” determination(s).

During informal consultation, USFWS may suggest alterations to the proposed action, including avoidance and minimization measures, to reduce the impacts to the species or critical habitat. This may allow USFWS to concur on a “not likely to adversely affect” determination. These measures must be incorporated into the environmental document as commitments to ensure implementation. USFWS may also recommend conservation measures. These are voluntary but WisDOT should consider these measures and implement them when reasonable and appropriate.

USFWS attempts to respond to informal consultation submittals within 60 days (or 30 days for major construction activities with a biological assessment) but may extend the review period up to 120 days. The informal consultation process is not complete until USFWS concurs on the proposed “may affect, but is not likely to adversely affect” determination(s) or the formal consultation process is initiated (see [FDM 24-10-10.7](#)). Documentation of consultation correspondence and concurrence must be saved to the project file and attached to the environmental document. Any agreed upon avoidance and minimization measures must be incorporated into the environmental document commitments to fulfill ESA Section 7 responsibilities.

#### **10.1.7 Section 7 Formal Consultation**

Formal consultation (50 CFR § 402.14) is necessary when a federal action “may affect and is likely to adversely affect” a listed species or designated critical habitat. Formal consultation is completed during NEPA once the preferred alternative has been selected. This process is not often encountered by WisDOT projects, as such, a detailed discussion of the process is not included in this chapter. If an adverse effect determination is anticipated, the WisDOT region environmental coordinator should engage the WisDOT ecologist and FHWA in project impact discussions early in project design.

WisDOT or its consultant prepares the formal consultation initiation package which includes either a biological assessment or biological evaluation. See [FDM 24-10-10.1.11](#) for document requirements. FHWA is provided the consultation package for review and comment. Allow sufficient time in the schedule for revisions. Once complete, FHWA submits the formal consultation package to USFWS and requests to initiate formal consultation.

Once USFWS has confirmed receipt of a complete consultation initiation package, the agency has 135 days to complete consultation (90 days for consultation and 45 days to prepare a biological opinion), unless a 60-day extension is agreed upon by the FHWA and WisDOT.

USFWS prepares a biological opinion, which includes the project description, findings, and generally, an incidental take statement. This document officially determines whether the proposed action is likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. It is USFWS policy to provide the benefit of the doubt to the species if it's unclear if the proposed action's effects are adverse. The incidental take statement includes reasonable and prudent measures that must be implemented to minimize the impacts of any anticipated take. If the proposed action exceeds the parameters of the incidental take statement or cannot implement the reasonable and prudent measures, formal consultation must be reinitiated by FHWA.

Any conservation measures recommended in the biological opinion are voluntary. WisDOT should be consider these measures and implement them when reasonable and appropriate.

Formal consultation concludes with USFWS issuing a biological opinion. Section 7 responsibilities continue through implementation of the proposed action in compliance with the biological opinion.

#### **10.1.8 Section 7 Conference**

A Section 7 conference is legally required under the Endangered Species Act (50 CFR § 402.10) if a proposed action with a federal nexus is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed critical habitat. If an adverse effect to a proposed species or critical habitat is anticipated, the WisDOT region environmental coordinator should involve the WisDOT ecologist and FHWA in project impact discussions early in project design.

Conference will be integrated with formal consultation for listed species or critical habitat, if applicable. If

conference is required, USFWS will prepare a conference opinion for any species or critical habitat proposed for listing. The conference opinion may be included in a biological opinion if one exists.

### **10.1.9 ESA Coordination for Non-Federal Actions Under Section 9**

Proposed actions without a federal nexus (non-federal) do not follow the Section 7 consultation process, but rather focus on whether any of the following will occur:

- take of a federally listed animal species
- a prohibited act for federally listed plant species
- harm to a critical habitat

Evaluation of the above criteria and any required coordination with USFWS occurs during WEPA and must be concluded prior to the approval of the WEPA environmental document.

#### **Animals**

The Endangered Species Act Section 9 prohibits take of endangered animals (50 CFR § 17.21) and threatened animals that were listed on or prior to September 26, 2019 unless a Section 4(d) Rule applies to that species (50 CFR § 17.31).

Determination of federally listed animal species take ultimately rests with WisDOT, the non-federal agency. To aid in the decision-making process on take, WisDOT makes internal effect determinations for its non-federal projects to guide when non-federal projects need to be coordinated with USFWS. The effect determinations are not a USFWS requirement, as the ESA focuses on whether or not take will occur for non-federal actions. WisDOT coordinates proposed non-federal actions with “may affect, but is not likely to adversely affect” and “may affect, and is likely to adversely affect” determinations for animal species with USFWS as described later in this section unless sufficient conservation measures and policy are in place to avoid take (e.g., highway mowing completed per policy).

#### **Plants**

The ESA does not prohibit take of listed plants. However, the ESA Section 9 (within 50 CFR Part 17) does include prohibited acts for endangered plants and threatened plants that were listed on or prior to September 26, 2019. These prohibited acts include importing/exporting, interstate/foreign commerce, and sale/offer for sale. The ESA further prohibits listed plant removal and reduction to possession and maliciously damaging or destroying the species within an area of federal jurisdiction without a permit. If the proposed non-federal action is occurring on federal land, coordination is needed with federal agency with jurisdiction over the land. The federal agency with jurisdiction may be responsible for completing Section 7 consultation with USFWS for listed plant impacts on the federal land. The WEPA environmental document must explain how the proposed non-federal action complies with ESA Section 9 prohibitions and document coordination with the federal agency.

For all areas regardless of ownership, the ESA prohibits removal, cutting, digging up, damaging, or destroying listed plant species (as described above) in knowing violation of any state law or regulation or in the course of any violation of a state criminal trespass law. In Wisconsin, take of state listed plants is prohibited on public land without a state permit or authorization ([FDM 24-10-10.2](#)). All federally listed plants in Wisconsin are also state listed as threatened or endangered (except for Mead’s Milkweed, which is considered extirpated). As such, the ESA prohibitions in this paragraph would apply on any public land, including rights-of-way. If impacts to listed plants are appropriately coordinated with DNR through the process described in [FDM 24-10-10](#) and any applicable authorization is received for state take of listed plants, then WisDOT would not be in violation of the ESA prohibitions for federally listed plants. No coordination would be necessary with USFWS. The WEPA environmental document must explain how the proposed non-federal action complies with ESA Section 9 prohibitions for listed plants and document coordination with DNR.

#### **Critical Habitat**

Take does not occur for impacts to critical habitat unless the proposed action meets all three harm criteria:

- likely to result in significant habitat modification or degradation
- the modification or degradation significantly impairs essential behavior patterns, including breeding, feeding, or sheltering
- as a result of the above, it is likely there will be an actual injury or death to a listed species

Coordination with USFWS is needed for the proposed non-federal action impacts upon critical habitat if the above criteria are not clear or if all three criteria are met. See the coordination process described below. Impacts to critical habitats should be sufficiently discussed in the WEPA environmental document, including the

assessment of the above criteria and documentation of coordination with USFWS as necessary

### **USFWS Coordination Process**

Any required coordination with USFWS occurs during WEPA and must be concluded prior to the approval of the WEPA environmental document.

Coordination for the threatened northern long-eared bat for non-federal projects currently cannot be completed in IPaC. The FHWA, FRA, FTA Programmatic Consultation for Transportation Projects affecting NLEB or Indiana Bat determination key cannot be used for non-federal projects. Follow the general coordination process discussed below for NLEB.

Proposed non-federal actions that receive an internal “no effect” determination would not result in take of a listed animal species and/or harm a critical habitat. These projects do not need to be coordinated with USFWS. See [FDM 24-10-10.1.11](#) for how to document “no effect” determinations.

The WisDOT region environmental coordinator must coordinate with USFWS for all proposed non-federal actions that receive an internal “may affect but is not likely to adversely affect” determination for other federally listed animal species (i.e., all species excluding plants) or critical habitat. The correspondence should clearly identify the project as a non-federal action. Contents of the non-federal coordination email should contain all elements of the biological evaluation (see [FDM 24-10-10.1.11](#)), with the exception of the effect determinations. The intent of the coordination is to determine if the proposed action will cause species take and/or critical habitat harm, not to receive USFWS concurrence on effect determinations. A statement that species take and/or critical habitat harm is not anticipated should be included in lieu of effect determinations. The non-federal coordination email is sent to [Darin\\_Simpkins@fws.gov](mailto:Darin_Simpkins@fws.gov) (or current USFWS contact – check with WisDOT ecologist).

USFWS may suggest alterations to the proposed action, including avoidance and minimization measures, to reduce the likelihood of take. These measures must be incorporated into the WEPA environmental document as commitments to ensure implementation. USFWS will provide guidance on whether take is likely to occur. If take is not reasonably likely to occur, coordination is complete. Documentation of coordination with USFWS must be saved to the project file and included in the environmental document.

If a proposed action without a federal nexus is reasonably likely to take a federally listed animal species (“may affect and is likely to adversely affect” determination”) and/or harm a critical habitat, the WisDOT region environmental coordinator should engage the WisDOT ecologist in project impact discussions early in project design before contacting USFWS. These projects are rare. Coordination with USFWS will follow a similar process to above but also will require additional steps to prepare a Habitat Conservation Plan and apply for a Section 10(a)1(A) Incidental Take Permit. See [FDM 24-10-10.1.10](#) for further information on these steps.

Any species that is also state listed requires DNR coordination to determine if take will occur under state regulations, see [FDM 24-5-10.2](#).

#### **10.1.10 Section 10(a)1(A) Incidental Take Permit and Habitat Conservation Plan**

Proposed actions without a federal nexus (non-federal) that are reasonably likely to take a federally listed animal species (internal “may affect and is likely to adversely affect” determination) and/or harm critical habitat, require an Endangered Species Act Section 10(a)1(A) incidental take permit (ITP) (50 CFR § 222.307). The ITP authorizes take of a listed animal species that is anticipated to occur incidental to an otherwise lawful activity. A Habitat Conservation Plan (HCP) must accompany a Section 10 permit application.

These proposed non-federal actions must be coordinated with the WisDOT ecologist and USFWS prior to preparing a HCP or federal ITP application. WisDOT or its consultant will prepare the HCP. Since WisDOT projects requiring federal incidental take permits are rare, this FDM chapter will not provide a discussion on HCP contents, ITP application process and HCP implementation. See the WisDOT ecologist for more information.

See [FDM 24-10-10.2.2](#) for information on the state incidental take authorization process for state listed plants and animals.

#### **10.1.11 Documentation**

A **biological assessment** (BA) is required under 50 CFR § 402.12 for any project with a federal nexus involving “major construction activities”, which are considered to be projects for which a NEPA Environmental Impact Statement (EIS) is prepared. Its preparation is not dictated by the proposed action’s effects or the type of ESA Section 7 consultation needed.

A biological assessment contains:

- Summary of the proposed action
- Alternatives considered

- Description of the action area
- Identification of proposed/listed species and proposed/designated critical habitat that may be present in the action area
- Description of the environmental baseline
- Analysis of the proposed action's potential effects on species and critical habitat
- Discussion of cumulative effects (only necessary for adverse effects/formal consultation)
- Section 7 effect determinations for each species and critical habitat
- Supporting documentation, which may include a literature review and views of experts

The ESA regulation does not specify a specific format but has recommended elements (see 50 CFR §402.12(f)). The BA must use the best scientific and commercial data available, or which can be obtained during consultation.

WisDOT does not have a specific BA template. See the WisDOT ecologist for further guidance on format and examples.

FHWA's current BA template is available at:

<https://www.environment.fhwa.dot.gov/ESAWebTool/Site/Template.aspx>

WisDOT or its consultant prepares the biological assessment. It should be a standalone document. BAs containing "may affect and is likely to adversely affect" determination(s) must request initiation of formal consultation and require WisDOT ecologist and FHWA review prior to submittal to USFWS. See [FDM 24-10-10.1.7](#) for the Section 7 formal consultation process.

BAs containing "may affect, but is not likely to adversely affect" determinations are sent to USFWS electronically by the WisDOT region environmental coordinator and must request USFWS concurrence on those determinations. See [FDM 24-10-10.1.6](#) for the Section 7 informal consultation process. The BA is a standalone document attached to an email.

The BA and consultation should be summarized in the body of the NEPA EIS and included in the EIS appendix once consultation with USFWS is complete.

A **biological evaluation** (BE) is a generic term for other "may affect" documentation. It is prepared for proposed actions with a federal nexus which "may affect" proposed/listed species or proposed/designated critical habitat, but do not meet the "major construction activities" criteria to require a BA.

The biological evaluation can also be prepared for proposed actions without a federal nexus (non-federal). See [FDM 24-10.1.9](#) for discussion of adjustments to this documentation and the non-federal coordination process.

A biological evaluation does not have a specific format, but USFWS recommends providing similar contents to a BA. It should minimally include:

- Description of the proposed action, including location, purpose, duration, and timing
- Specific components of the action and how they will be carried out
- Description of the effects of the action
- Summary of measures to avoid, minimize and offset effects of the action
- Maps, displays and/or plans depicting all areas to be affected by the proposed action
- IPaC official species list
- Available information such as the presence, abundance, density or periodic occurrence of listed species and the condition and location of the species' habitat, including any critical habitat.
- Any other relevant available information on the effects of the proposed action on listed species or designated critical habitat.

WisDOT or its consultant prepares the biological evaluation. BEs containing "may affect but is not likely to adversely affect" determinations for projects with a federal nexus are sent to USFWS electronically by the WisDOT region environmental coordinator and must request USFWS concurrence on those determinations. See [FDM 24-10-10.1.6](#) for the Section 7 informal consultation process. Depending on the complexity of the evaluation, the BE may be incorporated directly into the email or as a standalone document attached to an email.

BEs containing a “may affect and is likely to adversely affect” determination for projects with a federal nexus must include a request to initiate formal consultation. The WisDOT ecologist and FHWA must be contacted for coordination and review prior to submittal of the BE to USFWS. See [FDM 24-10-10.1.7](#) for the Section 7 formal consultation process.

The BE is included as an attachment in a Categorical Exclusion Checklist (CEC), Environmental Report (ER), or Environmental Assessment (EA) following conclusion of Section 7 consultation or non-federal coordination. The Threatened, Endangered and Protected Resources factor sheet should also be completed. A biological evaluation cannot be prepared for a NEPA EIS, see biological assessments above. A BE can be prepared for a WEPA EIS. The BE and non-federal coordination should be summarized in the body of the WEPA EIS and included in the EIS appendix once coordination with USFWS is complete.

**“No effect” determinations.** Projects with a federal nexus that are documented with a NEPA CEC, ER, or EA do not require preparation of standalone ESA effect determination document for “no effect” determinations. These determinations can be documented solely in the environmental document. The Threatened, Endangered and Protected Resources factor sheet should be completed. The environmental document must include the “no effect” determination, justification for the finding, and any relevant documentation or correspondence (e.g., DNR coordination) for each proposed or listed species and proposed or designated critical habitat. “No effect” determinations made for a project documented with an EIS must be included in a BA, see above.

Projects without a federal nexus (non-federal) do not require preparation of standalone ESA effect determination document for “no effect” determinations that lead to “no take” decisions. The Threatened, Endangered and Protected Resources factor sheet should be completed for WEPA CEC, ER, or EA documents. The environmental document must include the “no effect”/“no take” decisions, justification for the finding, and any relevant documentation or correspondence (e.g., DNR coordination) for each listed species and designated critical habitat. This information is incorporated into the body of a WEPA EIS and attachments as appropriate.

[FDM 24-10-10.2.4](#) describes confidentiality requirements for species that are both federal and state listed.

#### **10.1.12 Updates and Scope Changes**

An updated version of the Official Species List (and NLEB or other species verification letters, if applicable) should be obtained from IPaC at key project milestones: prior to the final NEPA review and approval, prior to submitting a Clean Water Act Section 404 permit application, within 1 year of project letting, if a scope change occurs, and if new species or critical habitat is listed or proposed for listing within Wisconsin. An updated Natural Heritage Inventory (NHI) review must also be requested from the DNR transportation liaison at these milestones if the previous review is more than 1 year old and/or was not conducted for the current project scope.

New species or critical habitat identified in the updated Official Species List require effect determinations to be made and potentially USFWS consultation or coordination, following the processes described earlier in this chapter. If there are changes to the proposed action or new NHI occurrences within the project action area, WisDOT needs to determine if the effect determinations for federally listed species remain valid.

Confirmation of “no effect” and “may affect but is not likely to adversely affect” determinations must be documented in the project file and any applicable environmental document re-evaluation. If a previous “no effect” or “may affect but is not likely to adversely affect” determination is no longer valid, follow the Section 7 consultation process discussed in this chapter for projects with a federal nexus or the non-federal coordination process for projects without a nexus.

The USFWS biological opinion will outline the criteria for re-initiating the formal consultation process. Failure to implement reasonable and prudent measures and/or exceeding the parameters of the incidental take statement require re-initiation of consultation. Similarly, for non-federal projects that have obtained a Section 10 incidental take permit, the permit will discuss the process for re-coordination with USFWS.

Correspondence and consultation documentation must be saved to the project file and included in any applicable environmental document re-evaluation.

#### **10.1.13 Emergency Consultation/Coordination**

For projects that require an emergency response/repair to protect human life and property resulting from “situations involving acts of God, disasters, casualties, national defense or security emergencies, etc.” (50 CFR §402.05), USFWS should be contacted as soon as feasible through the process described below to fulfill Endangered Species Act responsibilities. Repairs that will be completed later in time and do not meet the criteria above must follow the standard USFWS consultation/coordination processes discussed in this chapter.

Send an email to Darin Simpkins at [Darin\\_Simpkins@fws.gov](mailto:Darin_Simpkins@fws.gov) (or current USFWS contact – check with WisDOT ecologist) providing the following information:

- Project location description and map
- Brief description and date of event of triggering emergency response
- Description of the emergency response action (completed and to be completed) and timelines
- IPaC Official Species List

USFWS will respond with recommended actions that may be implemented to minimize the impacts to any listed species or designated critical habitat in the area. These actions should be incorporated when feasible. If the USFWS evaluation indicates that the emergency response procedures may result in jeopardy/adverse modification, and no means of reducing or avoiding this impact are available, USFWS will advise the WisDOT of this and document this conclusion. WisDOT will not stop or delay their emergency response because of this notification. In such a situation, WisDOT, USFWS and FHWA (as applicable) will discuss actions to remediate the effects once the emergency is under control.

After the emergency is under control, WisDOT will notify USFWS what conservation measures it was able to implement during the emergency response and if the response resulted in any incidental take or destruction/adverse modification of critical habitat. If neither occurred, USFWS provides a written response, concluding informal consultation.

If incidental take of a species and/or adverse modification of critical habitat occurred as a result of the emergency response/repair, WisDOT notifies USFWS. If the repair effort had a federal nexus, FHWA submits a request to USFWS to initiate Section 7 formal consultation process. Repair efforts without a federal nexus require non-federal coordination with USFWS led by WisDOT.

USFWS will prepare an after-the-fact biological opinion to cover any incidental take or destruction/adverse modification that occurred during the emergency response and document the final impacts to the listed species or critical habitat. It may contain suggestions for after-the-fact remediation including reasonable and prudent alternatives or mitigation measures. ESA responsibilities are fulfilled with the completion with the implementation of any requirements from the biological opinion.

This emergency consultation/coordination process follows USFWS guidance:

[https://www.fws.gov/sites/default/files/documents/508\\_Emergency%20consultation%20handout.pdf](https://www.fws.gov/sites/default/files/documents/508_Emergency%20consultation%20handout.pdf)

Any species that is also state listed requires DNR coordination to determine if take will occur under state regulations, see [FDM 24-5-10.2](#).

## **10.2 Wisconsin's Endangered Species Law: State Listed Species**

This section discusses the procedures all projects must follow to comply with the state Endangered Species Law.

### **10.2.1 DNR Project Review Process**

The endangered species review process for improvement projects is initiated when WisDOT notifies DNR of a project through the submittal of the DNR Project Coordination Request form and supplemental materials. This request is submitted when the project scope has been established and, for most projects, after areas of ground disturbance have been identified. This allows DNR to provide more specific comments in the Initial Review Letter (IRL). The request can be sent earlier in project development; however, recoordination with DNR will likely be necessary when more project details are available.

DNR transportation liaisons use the Natural Heritage Inventory (NHI) database to review the proposed project area. The NHI database produces a list of known occurrences of state and federally listed species, state special concern species, natural communities, and animal concentration sites. The NHI review is considered valid for 1 year.

DNR evaluates the project's potential to impact NHI resources based on the information provided by WisDOT and other supplemental information, such as desktop and/or field review of the project location. Depending on the level of project detail provided to DNR, time of year the review is occurring, and/or staff time availability, a detailed review may not be feasible. DNR may defer the evaluation to when more detailed scope information is available, or when a field review can be completed. WisDOT must follow up with DNR if the impacts upon NHI resources have not been determined in the IRL.

If the NHI review results in no species or locations of concern, DNR includes a statement in the IRL that there are no known listed species or suitable habitat that could be impacted by the project. This does not necessarily fulfill all WisDOT/FHWA responsibilities under the federal Endangered Species Act if the species is also federally listed (see [FDM 24-10-10.1](#)).

If NHI resources are within the project area, DNR may be able to comment on the likelihood to impact those resources if sufficient project scope and habitat information are available. DNR may propose avoidance measures such as avoiding ground disturbance in suitable habitat or restricting the timing of tree clearing. If WisDOT is able to implement the required measures, no further coordination with DNR is needed for the species. There may be federal Endangered Species Act consultation/coordination requirements if the species is also federally listed.

DNR may also provide recommended or voluntary measures to reduce impacts. These are commonly provided for special concern species, natural communities, or animal concentration sites. While WisDOT does not have a legal obligation to implement these recommendations, under the spirit and intent of the DNR/DOT Cooperative Agreement, WisDOT will implement these measures when feasible. Consideration should be given to design conflicts, environmental constraints, project schedule conflicts, magnitude of additional costs, ect.

DNR may note that more detailed project information must be provided before the liaison can determine if impacts to listed species may occur as a result of the project. DOT is responsible for follow up coordination with DNR to provide additional information on project scope and disturbance.

DNR may indicate that a field survey is needed to evaluate suitable habitat or confirm presence/absence of a species. DOT and DNR may be able to complete a joint field review depending on complexity of the project, safety of the project location, staff expertise and availability. If joint field review is not feasible, DOT will ensure that the field survey is completed by qualified staff. This includes trained/certified WisDOT staff or consultants. Some species require the surveyor to hold an Endangered/Threatened (E/T) Species Permit.

Results of surveys will be shared with the DNR transportation liaison. If surveys are negative for suitable habitat or species, generally no requirements or commitments will be required from DNR's perspective, as species take is not anticipated. WisDOT would expect to receive confirmation of this from the transportation liaison. Habitat and species surveys are typically only valid for 1-5 years and may need to be repeated if project activities do not begin before the survey timeframe ends.

If surveys identify suitable habitat or are positive for species, the transportation liaison will provide avoidance and minimization measures to avoid species take from the state's perspective. If these measures cannot be implemented, state incidental take coverage is required through a broad incidental take authorization or individual incidental take authorization.

The federal ESA process also needs to be followed for any species that is federally listed, see [FDM 24-5-10.1](#).

### **10.2.2 State Incidental Take Permit/Authorization**

Project teams must implement protected species avoidance and minimization measures whenever possible. However, if take avoidance is not practicable, an Incidental Take Permit or Authorization is required.

Incidental Take Permits (ITP) are used for activities not conducted by the DNR and not conducted, funded, or approved by another state agency. An Incidental Take Authorization (ITA) is needed for activities that are being conducted by the DNR itself or being conducted, funded, or approved by another state agency, such as WisDOT.

Incidental Take Permits/Authorizations (ITP/A) are a means by which DNR allows the unintentional and unavoidable taking of state listed endangered or threatened species while conducting otherwise lawful activities. These permits may only be issued if the project minimizes and mitigates for impacts to the species and does not jeopardize the survival of that species. The project cannot be likely to result in the destruction or adverse modification of a habitat that is critical to the continued existence of the endangered and threatened species within the state.

Broad Incidental Take Permit/Authorizations (BITP/A) have been created for certain activities or species. These BITP/A still require minimization and/or mitigation measures. There are currently five types of Broad Incidental Take Permit/Authorizations:

- [Grassland and savanna management BITP/A](#)
- [Bats BITP/A](#)
- [Wood turtle BITP/A](#)
- [No/low impact activities BITP/A](#)
- [Common activities BITP/A](#)

If the project is not covered by a Broad Incidental Take Authorization, WisDOT must prepare an Individual ITA application and submit it to DNR. Individual ITAs must include a conservation plan, which details measures to avoid, minimize and, if necessary, mitigate impacts to the protected resource. Mitigation measures are only



required if there is a permanent loss of habitat, such as a road expansion, but are not required for temporary loss of habitat, such as grading and immediately re-seeding a hillside. Mitigation involves creating new habitat or restoring current habitat, usually onsite or near site, but could also take the form of paying into a DNR mitigation fund if it is not possible to mitigate on or near the project area.

Upon receipt of the Individual ITA application, DNR determines if the compensation plan is complete and conducts a jeopardy assessment to determine whether the proposed take may be authorized. If take is allowable, DNR posts a 30-day public notice. If DNR determines that no significant modifications to the project or its mitigation measures are required as a result of the public notice, DNR signs the ITA, and the project can proceed. All necessary avoidance, minimization, and mitigation measures must be included in the environmental document commitments. These commitments are integrated into project plans, special provisions, and contract language, as appropriate, so they are carried forward into construction.

### **10.2.3 Documentation**

WisDOT documents compliance with state protected species laws in the NEPA/WEPA environmental document. For CECs, ERs, EAs, the Threatened, Endangered and Protected Resources factor sheet should be completed. The document must also include any relevant documentation or correspondence with DNR. See [FDM 24-10-10.2.4](#) below for confidentiality requirements.

### **10.2.4 Confidential Information**

Per Wisconsin Statutes Section 23.27 3(b), Natural Heritage Inventory (NHI) data is confidential and not subject to Wisconsin's open records law. State species information must be redacted before it is made available to the public. This includes redacting information from Initial Review Letters and other DNR correspondence that is included in an environmental document or other public documents that WisDOT produces. State listed species should be generalized to taxa group when discussed the document.

If a species is both federal and state listed, basic information about the species does not need to be redacted from the Initial Review Letter if it is already publicly available. For example, language regarding rusty patched bumble bee high potential zone or Karner blue butterfly high potential range within the project area does not need to be redacted, as this information is publicly available on USFWS's website. These species must be redacted from the IRL if more detailed information on species occurrence within the project area is described. The USFWS official species list, environmental document text, or other non-DNR attachments do not need federally listed species redacted.

### **10.2.5 Updates and Scope Changes**

An updated Natural Heritage Inventory (NHI) review must be requested from the DNR transportation liaison at the following project milestones if the previous review is more than 1 year old: prior to the final NEPA review and approval, prior to submitting a Clean Water Act Section 404 permit application, and within 1 year of project letting. Additionally, the NHI review should be renewed if a scope change occurs or if new species or critical habitat is listed or proposed for listing within Wisconsin.



## FDM 24-15-1 Introduction

December 8, 1995

The purpose of this section is to discuss potential impacts on wildlife. The scope, location, and design of a proposed project determine these impacts and the extent to which they have an effect on wildlife.

For the purposes of this section, it is assumed that there are four phases of development: design, construction, operation, and maintenance. Each phase can present specific problems to wildlife. Basically, primary impacts are those associated with the construction phase and secondary impacts, with the operation and maintenance of the completed facility.

## FDM 24-15-5 Impacts-Design

December 8, 1995

The location of a highway and its extent (both length and breadth) are very important factors in determining wildlife impacts. The impacts of land acquisition for a highway cannot be thought of solely in terms of the strip that will be used for the roadbed itself. Among the many activities that require secondary acquisition of land are auxiliary lanes, frontage and access roads for local users, intersections and interchanges, medians or other barriers, rest areas, waysides, and weigh stations. This partial list does not include secondary development that may be spurred by the existence of new access.

Of primary concern is the identification of wildlife species and the habitats upon which they depend. These inventories should be developed at an early stage, with natural or critical areas being avoided. Location studies refine the information necessary for selecting a particular route within the selected corridor and present that information for public review. During this phase, specific fisheries and game requirements should be determined. The information needed to define potential wildlife problems, such as the removal of food or cover within critical habitats, the bisection of ranges and territories, and the obstruction or alteration of movement corridors can be obtained from the Department of Natural Resources (DNR) or the U.S. Fish and Wildlife Service.

Under certain circumstances, WisDOT projects may be in conflict with the terms of the Migratory Bird Treaty Act of 1918. This Act regulates the taking of migratory birds, their nests, eggs, parts, or products. For example, the demolition or maintenance of bridges may destroy the nests, eggs, or unfledged young of cliff and barn swallows, which are protected under the Act.

It is also during the design phase that forethought should be given to what the agency is willing to do about impacts once they are identified. Mitigation should be planned from the early phases of project development; it is difficult to incorporate changes into a project that has already been designed and is ready for construction.

## FDM 24-15-10 Impacts - Construction

December 8, 1995

The construction phase is very critical to wildlife. It is during this phase that the majority of physical and biological changes of the environment occur, or the stage is set for further impacts of other phases. There are specific stages within this phase for which potential impacts can be identified and evaluated.

### 10.1 Clearing and Grubbing

The primary impact of this stage is the removal of existing vegetation and habitat. The degree of impact on wildlife would depend on the extent of vegetation removed, whether it supplied critical cover or a critical food source, and the probability of wildlife successfully relocating to a similar, nearby habitat. There is also a potential for erosion and sedimentation if adequate measures are not taken to protect the soil and nearby water bodies.

### 10.2 Stripping Top Soil

A high potential for erosion exists wherever topsoil is removed and stockpiled. If near watercourses, erosion can impact aquatic life. The exposed subsoil is less fertile than topsoil and will not readily support vegetation. Also, soil fertility is decreased and can be reestablished only when topsoil is replaced. This complete removal of vegetation eliminates the area's use by wildlife. In addition, the roadbed core becomes a permanent barrier

### 10.3 Earthmoving

There is often a need for borrow pits and disposal areas. Those borrow pits that contain standing water may create breeding and resting ponds for waterfowl if they are properly finished. They may provide a basin that is:

1) entirely water, 2) water and wetland, or 3) entirely wetland. Types incorporating wetland and water with gradual slopes are suitable habitats for waterfowl. Size and proximity to the roadway will determine the extent of usage, especially for breeding nesting, and rearing areas. Additionally, depth, shape, extent of shoreline, soils, and water quality determine the extent to which a borrow pit will be a productive resource.

Disposal of unsuitable material can cause an additional loss of habitat, depending on where it is placed. If not adequately removed or if protection is not provided for nearby waterways, overburden material can be a source of siltation and pollution.

#### **10.4 Construction Noise**

Most studies on the potential impacts of construction noise on wildlife have been done with laboratory animals. However, it is likely that some of these conclusions could apply to natural populations. In particular, construction in previously remote areas relatively free from noise would have a potential for disrupting wildlife. Since construction normally occurs from early spring until late fall, there is a potential for noise impacts during the time period when most wildlife species are breeding.

Laboratory studies have shown various effects on animals when noise levels are within the range of 72 dBA to 101 dBA. It is recognized that parameters, such as duration of exposure, whether the noise is intermittent or continuous, and its source affect the results of such studies. This information is provided to give an idea of the types of effects that can occur when noise is at levels normally produced by construction equipment.

Experiments with fowl showed cessation of brooding altogether or a reduction in the number of eggs hatched when brooding continued. Mice exposed to noise at various stages of pregnancy showed effects ranging from resorption of the fetuses, aborting, and giving birth to young that weighed less than offspring of control group animals not exposed to noise. Effects on adult animal populations have demonstrated behavioral changes, such as decreased activity, increased aggression, refusal to eat, and weakened reflexes.

Animals likely to be affected by noise are those that are capable of responding to sound energy, especially those that rely on auditory signals to find mates, stake out territories, recognize young, detect and locate prey, and evade predators. Species that are not responsive to or do not rely on sound signals for important functions could be indirectly affected if noise affects their prey.

Details on noise related impacts on specific species of wildlife may be available from the Department of Natural Resources (DNR) Wildlife Manager or the U.S. Fish and Wildlife Service.

#### **10.5 Structures in Waterways**

Construction of bridge piers and footings can modify the hydrologic regime of a river, which in turn can affect aquatic life. Scour at bridge piers or upstream and downstream from a structure can create pools and riffle areas that were not part of the natural characteristics of the river. There is a potential for either an increase or decrease in species diversity depending upon the type of stream involved and the extent of hydrologic modification.

Culverts, depending upon type, size, and length, can present passage problems for fish and small mammals. In general, shorter culverts with open bottoms provide the best passage for fish. Access to spawning and rearing areas can be eliminated if location and design of culverts is not done considering the natural use of a stream. Small mammals that have established movement routes along stream banks might be forced to cross the roadway if their normal paths are altered.

#### **10.6 Roadway Barrier and Rights-of-Way**

The most obvious effect of highway construction occurs when the roadway acts as a berm that remains as a permanent severance. This berm can act as a deterrent to the normal movement of wildlife as they travel among resting, feeding, mating, and nesting sites throughout the course of a day, week, or season.

Precise wildlife movement patterns are not usually known. This is due in part to the lack of, or short observation times (i.e., one season preceding construction is not adequate), or to natural changes in activity patterns, such as those observed during the mating season of many species. This adds to the difficulty of predicting whether a particular roadway location will affect movement patterns. If a project warrants it, this information might have to be determined through study and observation.

Trapping and road mortality information indicates that small forest mammals are reluctant to venture onto road surfaces where the distance between forest margins exceeds 65.5 feet; wider roads are crossed almost exclusively by medium to large sized mammals. Four-lane divided highways are as effective a barrier to the dispersal of small forest mammals as a body of water twice as wide.

Another possible effect on animal movement is that animals might adjust their movement patterns to utilize the roadway corridor because of the ease of travel along the cleared areas, thus expanding their ranges.

The movement of deer across roadways is largely dependent upon surrounding land use. In forested areas, deer utilize the right-of-way primarily for grazing. Generally, they are attracted to grazing areas that have wooded cover available within 25 yards on either side of the roadway. In agricultural areas, use of the right-of-way decreases and there is an increased tendency for deer to cross the roadway for access to fields.

#### **FDM 24-15-15 Impacts - Operations**

*December 8, 1995*

Operation is defined here to include daily or seasonally routine activities that occur after the highway is built. Traffic movement, automobile pollutants, and application of de-icing chemicals can affect wildlife throughout the life of the roadway. The most observable effect on wildlife is injury and mortality associated with animal/vehicle collisions.

Some general circumstances contributing to traffic hazards for wildlife have been identified. At high speeds, drafts from autotransporters may reduce songbirds' ability to fly clear of the vehicle. Animals have been observed to dart from cover close to the roadway into the path of cars. After dark, the glare of approaching headlights may blind or confuse an animal adjacent to or crossing the roadway. Seasonal and climatic conditions may influence wildlife mortality rates. Increased activity during breeding season and during favorable weather conditions may result in higher mortality rates. The mortality of cottontails, fox squirrels, muskrats, opossums, skunks and raccoons has been associated with increased activity during the breeding season and normal periods of dispersal. Scavengers and other predators are at increased risk of being hit by vehicles when attracted to the remains of road killed animals on the roadway.

Traffic generated noise can also have an impact on wildlife. The degree of impact would depend upon whether the alignment was new or an alteration of the existing one, and the extent and value of wildlife habitat adjacent to the roadway. Noise impacts are further discussed in [FDM 24-15-10](#).

Considerable literature is available on pollutants generated by the operation of automotive vehicles. Most of these reports, however, do not include information on the effects on wildlife. Some of the potentially hazardous substances resulting from auto operation are grease, petroleum, and n-paraffins resulting from spills or leaks of lubricants, antifreeze, and hydraulic fluids. Traffic related lead is deposited principally through the use of leaded fuels, however, this source will diminish with greater use of unleaded fuels in new vehicles. Some lead results from the wear of tires, in which lead oxide is used as filler material. Zinc is used as a filler in tires and at high concentrations in motor oil as a stabilizing additive. Copper, nickel, and chromium are wear metals from metal plating, bearings, bushings, and other moving parts within the engine. Wildlife that consume vegetation or other food chain components from roadsides could be adversely affected by these substances.

Although it is usually considered to be a maintenance practice, roadway de-icing is included under this section because it is an ongoing seasonal practice involving vehicle movement. Sodium chloride and calcium chloride are used almost exclusively as de-icing agents because of their efficiency in melting ice and snow, availability, and relatively low cost.

Two common additives to highway salts are ferric ferrocyanide (Prussian blue) and sodium ferrocyanide, both used as anti-caking agents. Of these, sodium ferrocyanide is soluble in water and will liberate cyanide in the presence of sunlight. Cyanide is lethal to fish and aquatic life in small concentrations. Salt poisoning of wildlife has also been reported. In one Wisconsin study, cottontails, quail, and pheasant were diagnosed as having been poisoned by sodium chloride. Some wildlife species are attracted to the roadway in winter to lick the salt, jeopardizing both the motorist and wildlife.

There is a considerable amount of literature available on the use of de-icing salts, including effects on vegetation and economic considerations. If it is necessary to evaluate salt impacts in detail, the search for the appropriate literature can be coordinated through the Office of Environmental Analysis (OEA).

#### **FDM 24-15-20 Impacts - Maintenance**

*December 8, 1995*

One of the most extensive maintenance tasks is the upkeep of highway rights-of-way. Depending upon the extent to which they are managed, highway rights-of-way have the potential for providing new habitat for wildlife. Studies on interstate interchanges have shown that although most use is observed in the zone just beyond the right-of-way fence, with moderate mowing practices and shrub plantings, interchanges can provide excellent habitat for songbirds and small mammals. Keeping a diversity of natural plant communities in various successional stages has a positive impact on wildlife food and cover. Extensive mowing and clear-cutting of trees or shrubs eliminates use of the right-of-way except by small grass dwelling species. Such practices also encourage the invasion of noxious weeds and increase the potential for erosion.

Another maintenance activity that can adversely affect wildlife is bridge painting. In the past, bridges were painted with red lead paint for all coats. A process is now utilized that minimizes application of lead paint.

Maintenance repainting involves sandblasting and removal of all scale and other substances to bare metal. The amount of lead entering a stream from this process can be significant. Although not soluble in water, lead particles can be ingested by fish, waterfowl and other wildlife, thus accumulating in the food chain. Sandblast scums on the surface of the water have been found to contain concentrations as high as 240,000 parts per million lead. If this floating scum deposits along the shoreline or on vegetation, it can be consumed in lethal amounts by wildlife or domestic livestock.

Depending upon the availability of funds, the best approach to minimizing adverse impacts is a continuous repainting program to eliminate the need for sandblasting. In addition, it is WisDOT practice to require contractors to contain paint chips with boom devices or to prevent these from falling into the water at all. More information may be obtained from the WisDOT Maintenance Section and the Standard Special Provisions.

### **20.1 Factor Sheets**

Questions on Factor Sheets F1, G, H1, and H2 pertain to impacts on wildlife and need to be addressed when preparing an environmental document.

<https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrcs/environment/formsandtools.aspx>

### **20.2 References**

Jackson, H.H.T. 1961. Mammals of Wisconsin. University of Wisconsin Press, Madison, WI.

Vogt, R.C. 1981. Natural History of Amphibians and Reptiles of Wisconsin. Milwaukee Public Museum, Milwaukee, WI.



## FDM 24-20-1 Introduction

December 8, 1995

The major vegetation communities of Wisconsin are separated into two distinct provinces - the prairie forest province in the southwest and the northern hardwoods province in the northeast (Curtis, 1959)<sup>1</sup>. These two provinces are separated by a band of overlap, called the tension zone (see [Figure 1.1](#)). Counties within this zone have species of both southern and northern communities. Since wildlife is dependent upon vegetation for food and shelter, species distribution parallels vegetation distribution. The tension zone also delineates the range limits of many wildlife species.

Specific information on the types of vegetational communities within the state, as well as descriptions of vegetational communities, can be found in Curtis (1959). The vegetational communities have been arranged according to environmental gradients, of which moisture, light, and temperature are factors. This book is intended to supplement field observation and can serve as a resource for describing vegetational communities. Depending upon the scope of a proposal, it is usually sufficient to identify the basic community type (savanna, prairie, forest, or other) and to list dominant species observed.

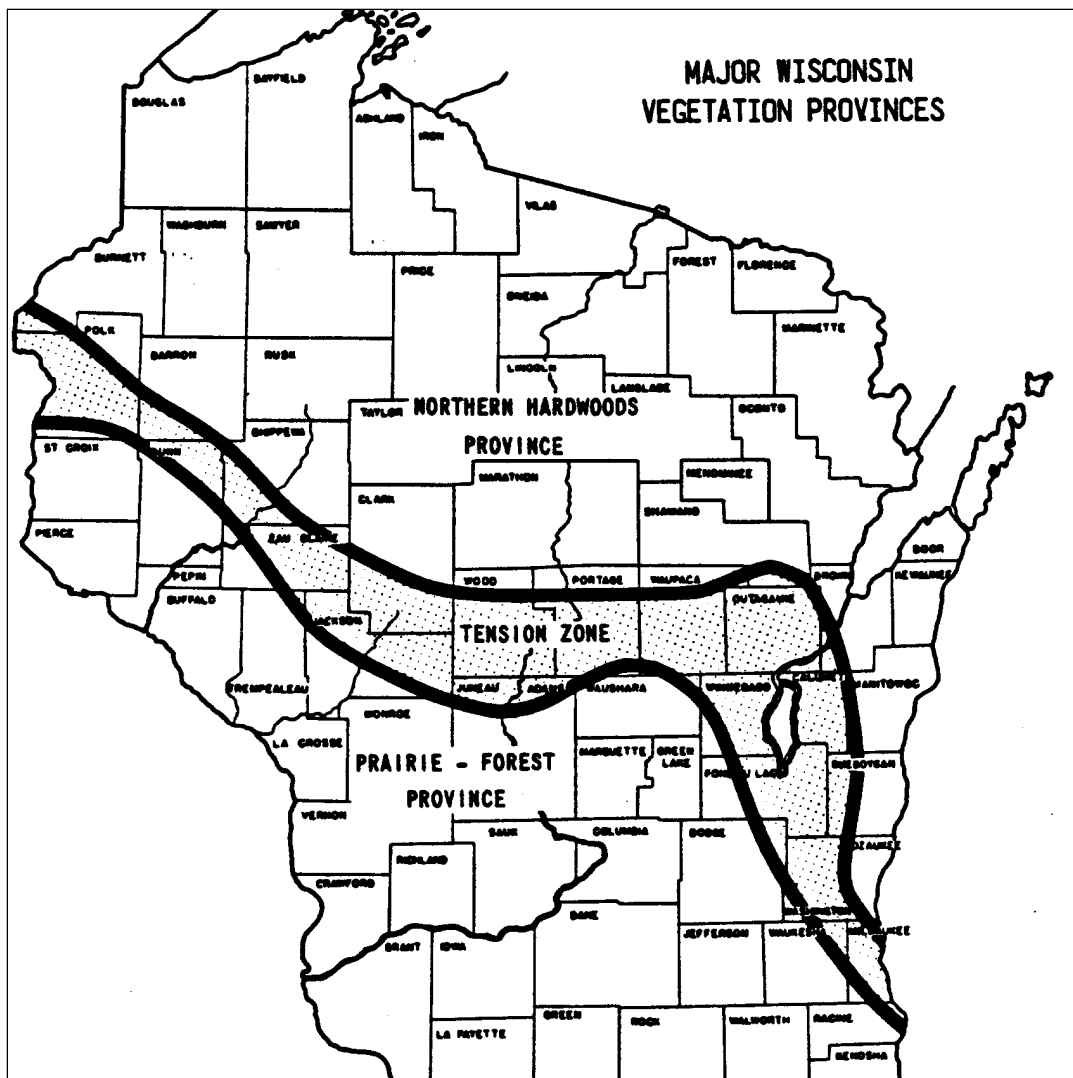
### 1.1 Characteristics of Terrestrial Communities

Different terrestrial communities are characterized by their unique vegetation, soil and water conditions. A prairie is a plant community dominated by grasses. Growing with the grasses are many other species of nongrassy herbs which are known by the collective name, forbs. Woody shrubs can be present, as well as tree seedlings. A prairie is defined as an open area covered by low growing plants, dominated by grasslike species of which at least half are true grasses, and with less than one mature tree per acre.<sup>1</sup> Xeric, or dry, prairies may occur on topographies varying from flat to steep. The soil blanket is thin, a result of water or wind erosion. Both water-holding properties and nutrient supplies in the soil are good, but the thinness of the layers limits the total quantities of water and nutrients. Mesic prairies are those that have soil conditions intermediate between dry and wet. They are found on flat or gently rolling land forms. The level sites are often on glacial outwash with a stratified and very porous subsoil of sand or gravel, while the hilly sites may be on glacial till or residual or loessial soils on the rolling surfaces of dolomitic bedrock. The surface layer of soil is very rich in nutrients. The soil is moderately to well drained.

A savanna is defined as an area covered by low growing plants, dominated by grasslike species of which at least one-half are true grasses, with more than one tree per acre but with less than one-half of the total area covered by the tree canopy. The soils are generally sandy and well drained. Savannas are generally found on flat or gently rolling land, except for one type, the cedar glade, which can be found on steep hillsides of thin loess over limestone or quartzite bedrock, or a gravelly glacial moraine.

Forests are communities dominated by trees and have at least a 50 percent canopy cover. They occur from wet to well drained soils. In southern Wisconsin, soils can vary from very wet places along streams and lakes, through mesic sites with deep soils, to very dry places on the thin soils of exposed hills and bluffs. Northern forests also occur on a wide range of topographic sites, from very wet to very dry, and from thin rocky soils to deep loams and clays. Wooded areas that are considered wetlands are described in [FDM 24-5-10](#).

<sup>1</sup> Curtis, J.T. 1959. The Vegetation of Wisconsin. University of Wisconsin Press, Madison, WI.



**Figure 1.1. Map Showing Major Wisconsin Vegetation Provinces**

*Adapted from Curtis - 1959*

## FDM 24-20-5 Forest Communities

December 8, 1995

### 5.1 Existing Conditions

The immediate project area should be described in terms of the tree species present, including an estimate of maturity (e.g., seedling, sapling, mature tree). Also, indicate which species appear to be dominant. This information is useful in predicting wildlife associations.

Surrounding land use should also be discussed. The value of the woodland depends in part on how much there is in addition to that which will be converted to transportation purposes. An estimate of both the total acreage of the forest unit and the acreage to be taken should be included.

Since the value of the forest community also depends upon its current use, this information should be provided. Wildlife, recreational, forestry, home site, or other uses in the project area can be presented on a land use map exhibit.

### 5.2 Evaluating Impacts on the Forest Community

Describe the proposed project activity in terms of its potential disturbance to the woodland. For upgrading an existing alignment, it is possible that trees will only be removed from the existing forest edge. Relocation might involve either a fringe taking or bisection of the woodland. Provide enough engineering detail to explain how wide a strip will be involved, including shoulders, medians, and ditches. Also include land acquired for auxiliary lanes, frontage and access roads, intersections and interchanges, rest areas, waysides, and weigh stations. Most reviewers are interested in a concise, easily understood explanation of the anticipated physical changes.

Determine how many trees will be affected by listing either the number of trees or the acreage of woodland affected. The types of trees and their approximate sizes should also be described.

### 5.2.1 Primary Impacts

For forested areas, primary impacts are associated with the direct removal of vegetation. Initial clearing and grubbing operations remove the mature trees, saplings, and shrubs. This retards the natural succession to a mature forest. Further, grading and stripping of topsoil clears the ground cover and increases the potential for erosion. This complete removal eliminates use by wildlife and marks the beginning of a permanent barrier--the roadbed core. Loss of humic topsoil can reduce the fertility of the site for future vegetation.

### 5.2.2 Secondary Impacts

Secondary development spurred by new access can contribute to the loss of habitat. Operation and maintenance of a completed facility can cause additional loss of vegetation due to automobile pollutants and salting operations. The creation of edges due to bisecting a woodland can have both positive and negative impacts, which should be addressed in the environmental document. One example of creating an edge effect would be the cutting of trees for highway right-of-way. The direct effect is a reduction of overstory cover and an increase in sunlight penetration into the previously forested area. The increased availability of sunlight permits the growth of a variety of understory species. This increase in understory diversity can result in an increased diversity of animal species. The increased diversity of species is a potentially positive impact on predator populations; whenever a new food base is established, it will be utilized.

While edge effects might be positive, these same conditions may prove adverse. Changes in vegetation or physical conditions of an area of disturbance can adversely affect a critical food or shelter resource for wildlife or affect human activities related to these resources (changes in game animal populations for example). A disturbance which proves beneficial to a predator species, increasing its numbers, may result in a negative impact on its prey species which had not been previously exposed to heavy predation. Increased edge favors populations of edge species such as the cowbird, which adversely affects broods of certain warbler species. In addition, the effects of wind, sun and road salt can cause tree dieback at the edges of previously undisturbed forest.

The significance of this loss can be evaluated by assuming that there is a limited number of organisms that can be supported per unit of space, based on availability of critical resources such as food and cover. Natural fluctuations and factors such as climate, migration, emigration, immigration, seasonal usage, and parameters of animal population dynamics (i.e., mortality, birth rate, age structure, sex ratios) function jointly to determine how many of which species will inhabit an area.

This concept becomes useful when one discusses a unique unit of habitat; that is, an area that can be considered to be an island of one community type surrounded by other land uses. For example, a stand of deciduous trees surrounded by agricultural land, a pine woods surrounded by a savanna, or a wetland surrounded by upland are examples of island habitats that, if reduced in size, have a greater potential for total loss of wildlife because of the reduction in the amount of critical resources needed to support an animal population.

Statements that wildlife will be lost due to habitat destruction must be made considering these concepts. Those species that inhabit island-like units distinct from similar, adjacent habitat will probably be lost. The ability to change homes is species dependent. Species that are gregarious, highly territorial, require large home ranges, have a limited supply of suitable breeding habitat, or have other unique requirements may not survive habitat disruption. Other species that have broader tolerances will likely relocate successfully if similar, adjacent habitat is available. The DNR district wildlife manager will be able to provide information on habitat requirements for specific wildlife species.

To some extent, there will be a replacement of original habitat with new habitat in the highway right-of-way. Grass and shrub successional stages and highway ditches are among some of the most productive habitat for fowl, small mammals, and songbirds. Where the right-of-way provides a new habitat, an increase in diversity of wildlife is likely to result, along with an increase in their predators. A discussion of the amount and type of right-of-way habitat that will be created should also be a part of the environmental document.

## 5.3 Determination of Significance

As with other natural systems, once the basic data have been gathered to describe the existing forest community and its uses, the significance of changing or precluding those uses should be estimated. Again, this should be done in the context of local ecology, critical resources, and the scope of the proposed project. Whenever possible, it should be explained why a particular impact is or is not expected to be significant. In many cases, it will be necessary to rely on other expertise, particularly for wildlife issues. Knowing where to obtain information is important. The DNR, the U.S. Fish and Wildlife Service, local sportsmen, and local



naturalists are often good sources of information on habitats of local interest. This type of analysis should be made for all alternatives, ranking each in terms of adverse and beneficial effects. Differences among alternatives should be pointed out. For example, all alternatives might involve woodland loss, but the site for one alternative might be away from a wildlife resting area or food source.

#### **5.4 Measures to Minimize Harm**

Where appropriate, alignments that involve fringe takings rather than severances should be selected; these are less likely to have significant impacts. Where severances are unavoidable, it is important to determine whether critical habitat exists within the proposed corridor.

If sensitive species have been identified in the project area, construction time constraints should be included in special provisions that will not interfere with mating or nesting behavior. This is particularly true where construction noise could be significant.

Maintenance practices that allow successional layers of vegetation to establish (as opposed to clear-cutting and mowing) provide habitat diversity and are more economical.

Consideration should be given to incorporating animal movement pathways into project design. Migration routes of mammals, amphibians, and reptiles should be identified. Information on methods to minimize adverse impacts can be obtained from the DNR wildlife manager.

Where forested lands are bisected, a buffer zone shrub layer should be allowed to establish itself to help prevent the side effects of drying, wind-throw, and tree dieback. In areas where heavy salting is anticipated, salt tolerant species could be planted in the buffer zone.

Grading sites should be revegetated as soon as possible. For the majority of projects, the basis for erosion control measures are outlined in WisDOT standard construction specifications. Landscape architectural services are available through the WisDOT. Before utilizing any methods to minimize harm, thought should be given to whether these methods could cause additional impacts.

### **FDM 24-20-10 Non-Forested Communities**

*December 8, 1995*

#### **10.1 Existing Conditions**

Generally, non-forested upland communities may be defined as having less than 50 percent canopy cover. More than 50 percent cover would indicate a closed tree stand or forest. Canopy cover is defined as the aerial extent of branches and leaves. A complete canopy cover occurs when the ground is completely hidden by tree tops when viewed from above. Lesser percent cover refers to the canopy relative to open space within a stand of vegetation.

Non-forested communities with scattered trees are called savannahs. Oak openings, cedar glades, pine barrens, and scrub oak barrens are types of savannahs, depending upon the dominant vegetation. Other open areas (without mature trees) include prairies, grasslands, sandy shore, and rock cliff communities.

Open grass areas are often utilized as pastures adjacent to tilled agricultural land. Wildlife use is usually limited to small mammals and bird species that nest in dense grasses. If these open areas are adjacent to wooded tracts, they might be used as supplemental feeding areas by woodland species.

Grass areas that are not tilled often retain some prairie vegetation. Such areas are particularly prevalent along railroads and old highways in the southern portion of the state. Because there are so few remaining, prairie remnants may harbor threatened or endangered plant species.

#### **10.2 Evaluating Impacts on Non-Forested Communities**

Describe the proposed project activity in terms of its potential disturbance to the non-forested communities. Provide enough engineering detail to explain how wide a strip will be involved, including shoulders, medians, ditches, auxiliary lanes, frontage roads, intersections, interchanges, etc. Determine the acreage to be affected for each type of non-forested community.

##### **10.2.1 Impacts**

Impacts can be directly related to the removal of vegetation. These may be short-term impacts if the reestablished right-of-way vegetation provides similar habitat. The wildlife species may be able to relocate successfully provided that an alternate site is available and is able to support the additional population. Other impacts such as erosion, construction noise, or secondary land use changes are similar to those discussed for forest communities.

### 10.3 Determination of Significance

The significance of impacts should be viewed in terms of the functions of a particular nonforested community and how these might be affected. The size, location and local availability of a similar type of nonforested community are important considerations. The DNR and the U.S. Fish and Wildlife Service can provide information to help in determining the significance of the impacts.

### 10.4 Measures to Minimize Harm

If a unique plant community or a critical wildlife resource has been identified, steps should be implemented to avoid these or to minimize adverse effects.

These steps include, but are not limited to the following:

1. Roadway alignment designed to avoid critical habitats.
2. Construction time constraints to avoid interference with breeding or nesting behavior.
3. Erosion control measures.
4. Revegetation as soon as possible after construction.

#### 10.4.1 Factor Sheets

Factor Sheets H1 and H2 pertain to terrestrial systems evaluations and should be completed when preparing an environmental document if the project affects upland habitat.

<https://wisconsin.gov/Pages/doing-business/eng-consultants/cnslt-rsrcs/environment/formsandtools.aspx>

### 10.5 References

Curtis, J.T. 1959. The Vegetation of Wisconsin. The University of Wisconsin Press, Madison, WI.

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## FDM 24-20-15 Agricultural Lands

December 8, 1995

State and federal legislation and regulations have been enacted to preserve farmland. The purpose of the Federal Farmland Protection Policy Act, 1981, and the rule promulgating this Act, 7 CFR 658, is to minimize the role federal programs have in the conversion of farmland to nonagricultural uses. Farmland refers to land in any of four different categories: 1) prime farmland; 2) unique farmland; 3) farmland other than prime or unique that is of statewide importance; or 4) farmland other than prime or unique that is of local importance. Prime farmland does not include land already in or committed to urban development or water storage. The Farmland Conversion Impact Rating form establishes a method to systematically evaluate impacts on agricultural land by using specific criteria and a point rating system and is coordinated through the Natural Resource Conservation Service (NRCS). This form must be used if federal funds are used on the project. This requirement is further discussed in [FDM 5-5-5](#) and [FDM 20-45-35](#).

Wisconsin Statute (S.32.035) requires the Department of Agriculture, Trade and Consumer Protection (DATCP) to prepare an Agricultural Impact Statement if more than five acres of land from any one farm operation would be acquired. A farm operation is defined as "any activity conducted solely or primarily for the production of one or more agricultural commodities in sufficient quantity to be capable of contributing materially to the operator's support". If the total acreage is five or fewer acres, the Agricultural Impact Statement may be prepared at the discretion of the DATCP. [FDM 20-45-35](#) discusses the preparation and processing of Agricultural Impact Statements. [Chapter 20](#) further details federal and state legislation and regulations.

Soil type, series and location can be obtained from soil survey maps prepared by the U.S. NRCS. These maps consist of soil series and type contours superimposed on air photos.

For agricultural purposes, soils are grouped into capability classes, according to their potential limitations for long-term production of common crops and permanent vegetation. Assignment of any of these classifications to a particular agricultural tract is based upon the actual or potential use being important enough so that it is feasible to operate under that classification, i.e., a marketable commodity is being or could be produced. There are eight capability classes, with the risk of soil damage or limitations in use progressively greater from Class I to Class VIII.

### 15.1 Land Suitable for Cultivation and Other Uses

Nationally, farmland is categorized as prime or unique and is further designated as having either statewide or local significance. The NRCS has used capability classes and subclasses to describe several types of important

farmlands for Wisconsin. Factors considered in the classification are moisture supply, temperature, pH, water table, flooding, erosivity, permeability, and presence of rock fragments.

### 15.1.1 Prime Farmland

These are the best agricultural soils in the state. Prime refers only to the productive capacity of the land for crops as affected by soil fertility, growing season and moisture supply. All soils in capability Class I and Subclasses IIe, IIs and IIw are included in this class.

### 15.1.2 Unique Farmland

This class includes land that is used to produce specific high value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high quality and/or high yields of a specific crop when treated and managed according to modern farming methods. Included are soils presently being irrigated in capability Subclasses IVs, IVe, VIs, and VIe on zero to 12 percent slopes. Also included are lands presently used for growing high value crops, such as cranberries, apples, mint, etc., on Class IV through VII land.

### 15.1.3 Farmland of Statewide Significance

These are productive soils, but when used for cultivated crops soil conserving practices are more difficult to apply and maintain. This land supports farm operations important to the state's economy, such as pastureland. NRCS considers all soils in capability Subclasses IIIe, IIIs and IIIw in this category.

### 15.1.4 Farmland of Local Importance

These are productive farmlands that have more use restrictions, and soil conserving practices are difficult to apply and maintain. This class includes specialized enterprises such as Christmas or nursery tree production. Included are soils in capability Subclasses IVe, IVs, IVw, Vw, VIe and VIe.

The NRCS developed a list of Wisconsin soils that are prime farmland, unique farmland, and soils of statewide and local importance. The latest version (June 1984) lists the soil names, percent slopes, symbols used on soil survey maps, counties where found, and additional remarks. This information may be obtained from:

Natural Resources Conservation Service  
4601 Hammersley Road  
Madison, Wisconsin 53711

### 15.1.5 Factor Sheets

Factor Sheets D1 and D2 and the Agricultural Impact Notice Sheets pertain to agricultural land evaluation and need to be completed when preparing an environmental document.

<https://wisconsin.gov/Pages/doing-business/eng-consultants/cnslt-rsrcs/environment/formsandtools.aspx>

## FDM 24-20-20 Natural Areas

December 8, 1995

### 20.1 Definitions

Natural areas, as defined by the Wisconsin Natural Areas Preservation Council, are tracts of land or water so little modified by human activity or sufficiently recovered from the effects of such activity that they contain intact native plant and animal communities believed to be representative of the presettlement landscape. There are two types of natural areas: dedicated and designated. Dedicated natural areas are those areas that are officially listed by the Department of Natural Resources (DNR) and the Wisconsin Natural Areas Preservation Council and have been dedicated by the Governor of Wisconsin. Designated natural areas are locations of significant pieces of habitat listed on an inventory of natural areas. Designated natural areas have not been dedicated by the Governor.

Both types of natural areas are ranked into the following three basic categories according to their quality.

1. Natural Areas of Statewide or Greater Significance: Natural areas of statewide or greater significance are those natural areas which have not been significantly modified by human activity, or have sufficiently recovered from the effects of such activity so as to contain nearly intact native plant and animal communities which are believed to be representative of the pre-settlement landscape.
2. Natural Areas of Countywide or Regional Significance: Natural areas of countywide or regional significance are defined as those natural areas which have been slightly modified by human activities or which have insufficiently recovered from the effects of such activity, but which still contain good examples of native plant and animal communities representative of the pre-settlement landscape. These natural areas are of lesser significance because their quality is less than ecologically ideal and

because there is evidence of past or present disturbances, such as logging, grazing or water level changes as a result of ditching, filling, or pollution. These natural areas may also be of insufficient size to be of statewide significance. These areas, if protected in an undisturbed condition, may be expected to increase in value over time. Therefore some of these areas may eventually become natural areas of statewide significance.

3. **Natural Areas of Local Significance:** Natural areas of local significance are defined as those natural areas which have been significantly modified by human activities but have, nevertheless, retained modest amounts of natural cover. Natural areas of local significance may reflect patterns of former vegetation or serve as examples of the influence of human settlement on vegetation. These natural areas may also be expected to increase in value if protected.

Classification of an area into one of these categories is based upon consideration of the diversity of plant and animal species and community types present; the structure and integrity of the native plant or animal community; the extent of disturbance from human activities such as logging, grazing, water level changes, and pollution; the commonness of the plant and animal communities present; any unique natural features within the area; the size of the area; and the area's educational value.<sup>2</sup>

## **20.2 Effects on WisDOT Project Activity**

Dedicated natural areas are protected from disturbance in that the land can only be altered if approved by the Governor and the Legislature. Designated natural areas have no specific protection; however, when the DNR is notified of a proposed project, it can indicate whether any designated natural areas are at or near the project site and recommend avoidance of the area. Discharge of dredged or fill material into headwaters, wetlands, or isolated water bodies within natural areas requires an individual Section 404 Permit. See [FDM 20-50](#) for permit information. Public opinion can also influence project plans by favoring preservation of a designated natural area.

Information on the locations of dedicated and designated natural areas may be obtained from local governmental offices, regional planning commissions, district DNR offices, the Office of Environmental Analysis (OEA) or the DNR Bureau of Endangered Resources in Madison.

Bureau of Endangered Resources  
Department of Natural Resources  
Box 7921  
Madison, WI 53707

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<sup>2</sup> Southeastern Wisconsin Regional, Planning Commission, Technical Report, Volume 4, Number 2, March 1981.



## FDM 24-25-1 List of References

December 8, 1995

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