Wetland and Buffer Impact Assessment Guidance

WSDOT Updated 4/16/08

The intent of this document is to provide detailed guidance on how to correctly and consistently determine impacts due to proposed WSDOT projects so that appropriate mitigation measures can be determined for each project. This document provides WSDOT guidance on the types of impacts that may occur and should be followed to determine the level of impact that occurs due to a proposed project. Once the impacts have been correctly determined, appropriate mitigation can be determined (refer to WSDOT Wetland Mitigation Calculation Guidance).

The Washington State Department of Transportation (WSDOT) is required by federal and state law and local Critical Areas Ordinances (CAO) to provide adequate mitigation for impacts to wetlands. Impact assessment is the first step in the mitigation process and incorrect impact assessment can result in inappropriate, inadequate, or excessive mitigation. Impacts to streams and their buffers are covered under separate guidance and regulations. This guidance will identify the types of impacts to sensitive areas, provide guidance on assessing impact area and function of sensitive areas, and provide a process and checklist for impact assessment.

Jurisdictional Wetlands and Buffers within Road Project Areas

WSDOT actively maintains specific areas within the highway right-of-way that are considered exempt from sensitive area protection. However, these areas are not always easy to identify. The following section discusses specific situations in which sensitive areas occur within the highway right-of-way and whether they are jurisdictional.

Wetland and Wetland Buffers Adjacent to Road Prisms

(Adapted from WSDOT Guidance on Delineating Wetlands, Streams, and Buffers Adjacent to Road Prisms Version 3/28/08 (pdf 72 kb). See guidance for more details).

The roadway prism is the actively maintained portion of the roadway and includes the paved roadway surface, roadway side shoulders, retaining walls (if present), and roadway side slopes. The following describes WSDOT policy on determining jurisdiction for sensitive areas adjacent to roadways. (In most cases, WSDOT does not treat existing elevated road prisms as either wetland, streams, or their buffers, except where the local jurisdictions require WSDOT to do so (this is further explained below). Similarly, WSDOT does not treat elevated fill in the median between highway lanes as wetlands, streams, or buffer. If a road bed was built in existing jurisdictional wetland and the median is not elevated, then jurisdictional wetlands may be present in the median and would be determined through wetland delineation.

Figure 1 depicts an elevated road fill that has been constructed in a jurisdictional wetland. Section B represents two road prisms with an elevated median between them. Section A represents those areas outside the road prism: 1. wetlands (in blue) and 2. the portion of the ditch that could potentially be found as wetland (in orange). Section B represents the elevated road prism. In most cases, elevated fill areas within the road prism (B) that appear as biological wetlands are non-jurisdictional. Consequently, the placement of additional fill in Section B would not require a wetland fill permit from the US Army Corps of Engineers (USACOE) or local jurisdictions. However, for proposed construction activities outside of the roadway prism in any wetlands found in section A, WSDOT would need to obtain federal, state, and local permits and to provide compensatory mitigation.

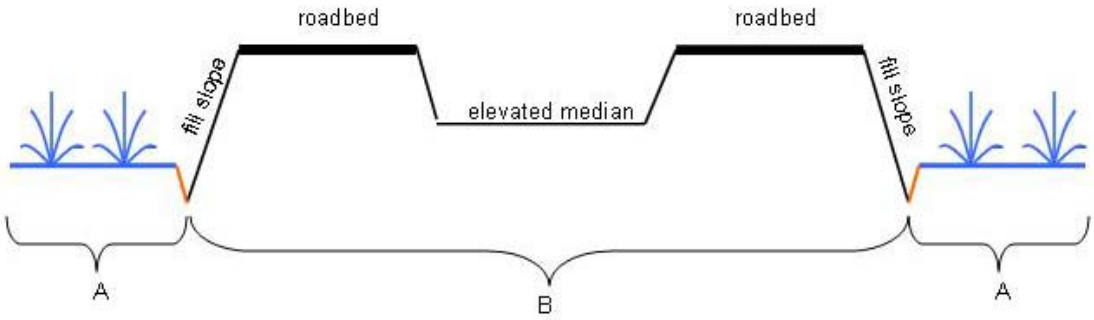

Figure 1. Elevated roadway with an elevated median that was constructed in a jurisdictional wetland.

In some cases, the roadway median is not composed of fill material (not elevated) and is at the same elevation as surrounding wetlands, as shown in Figure 2. In Figure 2, section A again represents: 1. wetlands (in blue) and 2. the portion of the ditch that could potentially be found as wetland (in orange). Section B represents the road prism, those fill areas from the toe of the road fill to the other toe of fill. In contrast with Figure 1, Section C of Figure 2 represents the non-filled, non-elevated median that is at the same elevation as the surrounding wetlands. Consequently, for proposed construction activities in any wetland areas within the non-elevated median (Section C) or wetlands in Section A, WSDOT would need to obtain federal, state, and local permits and also to provide compensatory mitigation prior to conducting work.

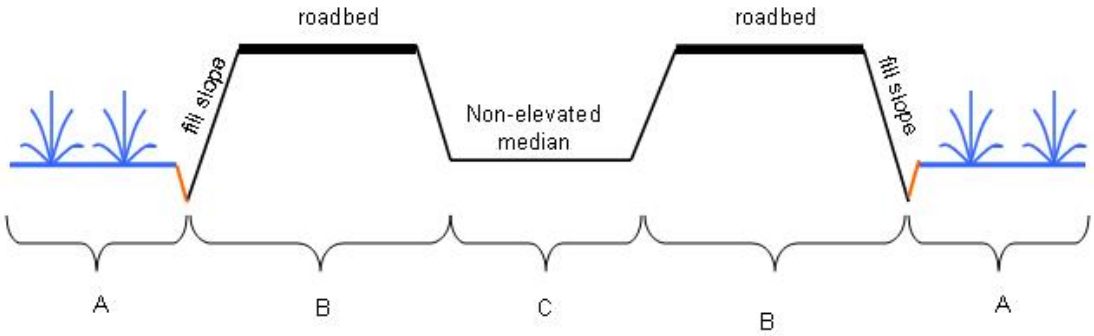

Figure 2. Elevated roadway with a non-filled median at same ground level as a jurisdictional wetland.

Wetlands on Cut Slopes

(Adapted from WSDOT Guidance on Cut Slopes and Wetlands Version 4/16/08 (pdf 70 kb). See this guidance for more details).

To accommodate roadway placement or widening in areas that traverse a hillside, a cut slope is typically required. When these cut slopes are created, the cut may intersect the water table, bringing groundwater to the surface and inadvertently creating a seep wetland on previously upland hillsides (Figure 3). These hillside seep wetlands created by road-building activities, called cut slope wetlands, are generally regulated at federal, state, and local levels, and are thus identified as wetlands. Naturally occurring seep wetlands on existing cut slopes are treated the same. Disturbance of these wetlands by a proposed WSDOT project would be considered a wetland impact.

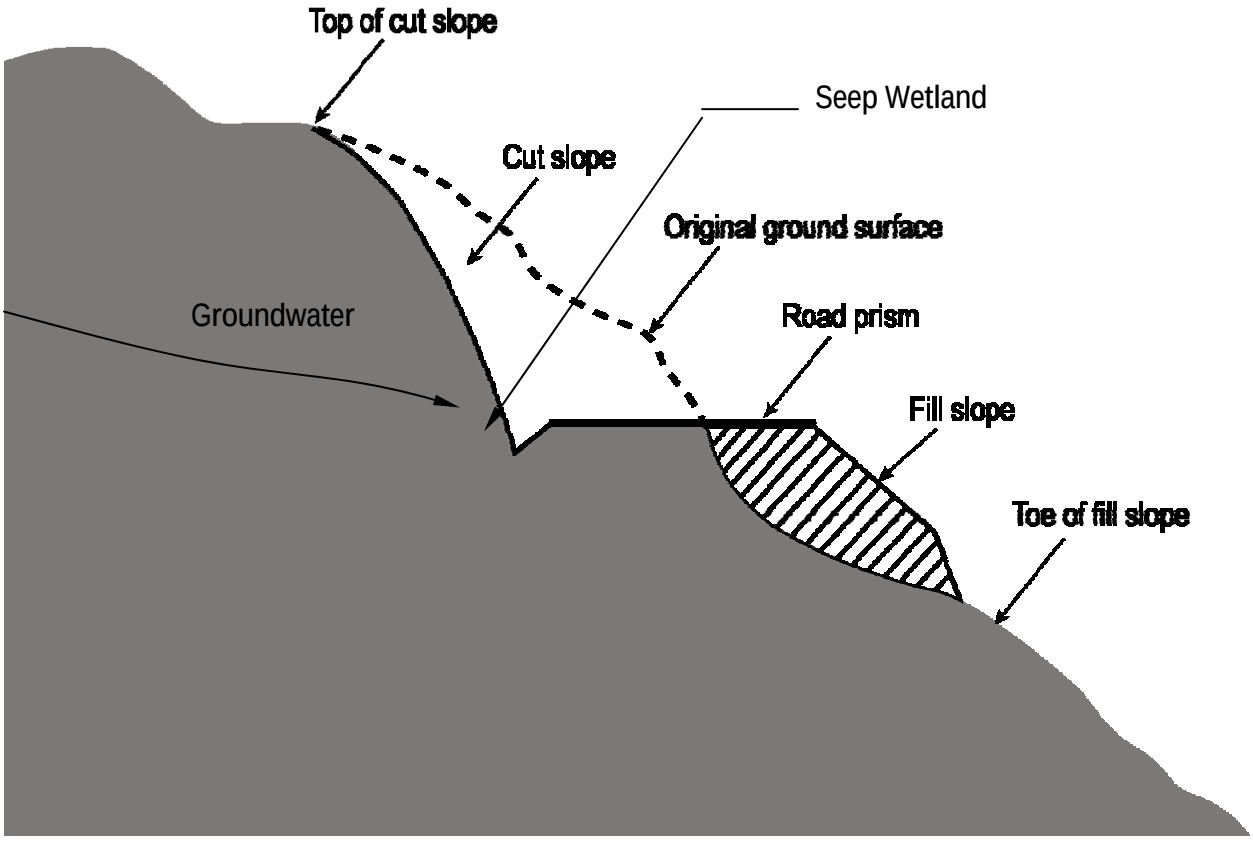

Figure 3. Roadway on a cut slope.

Wetland Buffers Across Roadways

(Adapted from WSDOT Guidance on Buffers Across Roadways Version 4/16/08 (pdf 19 kb). See this guidance for more details).

Local CAOs typically identify buffer widths for wetlands based on the rating of the resource and adjacent land use. When WSDOT proposes a new roadway through an existing wetland buffer, local governments regulate the buffer on both sides of the roadway and may require mitigation for them. For wetlands adjacent to an existing roadway, some local jurisdictions may identify buffer areas as extending across the road. However, buffer areas that are separated from a wetland by an existing road provide no screening, buffering, or water quality functions to the sensitive area. As such, buffers are considered to be functional on the same side of an existing road as the wetland. Therefore, when determining the impacts to wetland buffers from a proposed WSDOT project, WSDOT only considers buffer areas on the same side of the road as the wetland. For example, Figure 4 shows a wetland on the south side of an existing roadway. If WSDOT proposed to widen only the north side of the roadway, the project would not impact any buffers of that wetland.

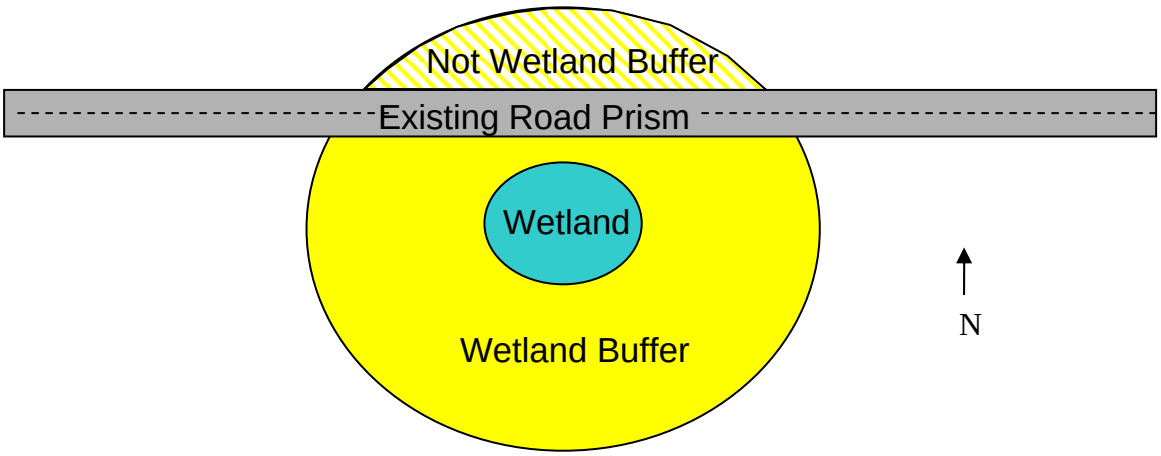

Figure 4 Wetland buffer bounded by existing road prism.

Types of Sensitive Area Impacts

WSDOT defines the types of impacts that can occur to wetlands due to a project as direct, indirect, and temporary impacts. The types of impacts that occur to a wetland buffer include permanent and temporary impacts. Table 1 provides specific wetland classification information and provides a way to tabulate the types of sensitive areas impacts. An example roadway plan sheet is included in Appendix A. This plan sheet illustrates the various types of impacts that can occur to wetlands and buffers by a typical WSDOT roadway project.

Permanent impacts

Wetland Impacts

Permanent wetland impacts are typically identified as any disturbance that affects the existing wetland soils. This disturbance can include placement of fill material within the wetland or excavation of existing wetland soils. Both disturbance types ultimately result in a loss of wetland area and function.

Table 1. Wetland Size, Classification, and Area Impacted by the Proposed Project.

Wetland[A]	Wetland Classification				Wetland Area (acre)	Wetland Impact Area (acre)			
	Cowardin[B]	HGM[C]	Ecology[C]	Local Jurisdiction[D]		Permanent	Percent Impacted	Temporary	Indirect
Total									

A) Wetland locations from project beginning to end: rt = right side of the highway and lf = left side of highway.
B) Cowardin, et al. (1979) or National Wetland Inventory (NWI) Class based on vegetation: PEM = Palustrine Unconsolidated Shore; PEM = Palustrine Emergent; PSS = Palustrine Scrub-Shrub; PFO = Palustrine Forested.
C) Ecology rating according to Hruby (2004)
D) .Local jurisdiction

Buffer Impacts

A proposed project would impact buffers by reduction of buffer area and the permanent removal of vegetation for the construction of structures, including roadbeds, bridges, overpasses, shoulders, water quality facilities, among others. The loss of buffer area and vegetation would result in the reduction or elimination of screening and buffering, water quality, and wildlife habitat functions.

Indirect impacts

Wetland Impacts

Indirect wetland impacts are typically disturbances that reduce or eliminate wetland functions without directly filling or excavating wetland soils. One example of an indirect wetland impact includes isolating hydrology to some or all of the wetland by diverting its water source to another location. This can occur to wetlands relying on surface water flows when the surface drainage is re-routed to another location. For groundwater driven wetlands, soil alterations to areas outside the wetland that result in altered groundwater flows are indirect impacts.

Another example of a permanent indirect impact is when the small remaining unfilled portion of the wetland is not directly filled or excavated but its functions have been reduced (Appendix A). When it has been determined that the functions in the remaining portion of wetland will be substantially degraded or lost, then this would be considered a permanent impact to the wetland through indirect means.

The loss of functions to the affected portion of the wetland is determined by comparing the existing functionality to its post-construction functionality. For example, a one acre wetland is providing a high level of wildlife habitat functions and moderate levels of water quality and flood storage functions. This wetland is filled so that only 20 percent of the wetland remains. The remnant wetland may not provide such high levels of wildlife habitat and flood storage functions, though it will still provide water quality functions. The remaining wetland portion may be considered an indirect impact because the habitat and flood storage functions are severely compromised. There are no specific guidelines available for indirect wetland impact determination. As such, the biologist will need to document their assessment and provide a clear and logical discussion in the mitigation report.

Remember that a wetland that incurs an indirect impact still requires a buffer around the remaining portion of the wetland.

Shading Impacts

Indirect impacts to wetlands and buffers can also occur due to shading. Shading impacts would typically occur if a bridge or other structure is constructed over a wetland or buffer where light to the sensitive area is substantially decreased and adversely affects the existing vegetation. Shading impacts to vegetation can reduce or eliminate wildlife habitat and water quality functions. This substantial loss of functions is considered an indirect impact. This impact would be determined on a project-by-project basis due to the variable nature of shading due to projects.

Temporary Impacts

Temporary Wetland and Buffer Impacts

Temporary impacts to wetlands and buffer occur when it is necessary to cut vegetation to install temporary construction roads, to gain access to complete construction activities, install right-of-way fencing, survey project limits, and installing structures such as retaining wall footings. All temporary impacts will be restored after completion of the construction activities as in-kind roadside restoration.

Ecology guidance on wetland mitigation, *Wetland Mitigation in Washington State, Part 1: Agency Policies and Guidance* (Washington State Department of Ecology 2006) classifies temporary wetland impacts as long-term or short-term impacts. Short-term impacts are described as those that are short in duration and last approximately one year. Long-term impacts affect primarily woody vegetation and impacts to herbaceous communities that will last longer than one year. Long-term temporary wetland impacts will require additional compensatory mitigation area at a ratio of ¼ of the mitigation ratio prescribed per Joint Guidance of the rating of the wetland impacted. Areas affected by temporary impacts will be restored as part of the roadside restoration contract which is administered independently from the construction phase. Therefore, restoration plan sheets will not be included as part of the wetland mitigation report submitted to the agencies. The restoration areas will be monitored for survival and maintained for a period of three years.

When reviewing proposed temporary impacts identified on the plan sheets, verify that the proposed access route is appropriate for the construction equipment and the work to be performed. When in doubt about the size of the temporary access route, err on the high side.

Impact Reduction Techniques

During the design phase of proposed projects, impacts to sensitive areas can be avoided or minimized through several techniques that are typically used by WSDOT. Biologists should work with WSDOT design engineers to calculate numeric impact reduction and avoidance early on in the design phase of a proposed project. The following are typical techniques used to avoid and minimize impacts to sensitive areas.

- Widen roads on the side that will not impact sensitive areas.
- Relocate of on- and off-ramps to upland, non-buffer areas.
- Relocate stormwater facilities to upland, non-buffer areas.
- Steepen roadway side slopes to reduce the roadway footprint.
- Reduce shoulder widths to reduce the roadway footprint.
- Alter the roadway curve radii.
- Use smaller or alternative stormwater facilities.
- Install guardrails to further reduce shoulder widths.
- Install retaining walls to reduce the roadway footprint.

Impact Assessment Process and Checklist

The first step in assessing wetland and wetland buffer impacts is to assess the existing wetland conditions in the project area. The WSDOT existing conditions assessment form should be used to collect consistent information for each wetland that would be potentially disturbed due to a project (Appendix B). The following information would be collected for each potentially affected wetland:

- Local jurisdiction
- WRIA number
- Ecology and local jurisdiction wetland rating
- Required buffer width
- Wetland size
- Cowardin classification
- HGM classification
- Description of vegetation, soils, and hydrology of the wetland and buffer areas
- Functions of wetland and buffer areas

Once the existing wetland information is collected, the impact assessment form can be completed. The following data would be collected to assess the impacts to wetlands and wetland buffers:

- Type of wetland impact (permanent, indirect, temporary)
- Type of wetland buffer impact (permanent, temporary)
- Identify the vegetation impacted
- Identify approximate areas of impacted areas per Cowardin (1979) classification. Include a sketch of each impacted community on a plan sheet
- Identify impacted wetland functions (Wetland Functions Characterization Tool for Linear Projects (pdf 119 Kb))
- Identify impacted buffer functions
- Detailed description of how the proposed project will reduce or eliminate water quality, hydrologic, and habitat functions
- Photograph of the impacted wetland and buffer area
- Sketch a typical cross-section of the proposed roadway impact.

References

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