

The wildlife section provides another example of distinct inconsistencies within the DEIS. Whereas very few wetlands in the study were functionally classified as providing wildlife habitat (DEIS Wetlands subchapter), this section describes how “[r]esident waterfowl species... are expected to use the rivers streams and wetlands in the project area for nesting and brood-rearing in summer and as wintering grounds during the rest of the year.” It is apparent from these inconsistencies that the chapters of the DEIS have been prepared in isolation without meaningful consideration of the interactions between different ecosystem components, ecosystem functions and project impacts. See section below regarding the overall lack of Synthesis.

G01-025

The DEIS takes a very simplistic view toward quantifying wildlife impacts, which are described as “proportional to loss of vegetation” in acres. Similar to the wetlands case, the DEIS should consider the full suite of habitat functions across the project area, connectivity between patches and losses in habitat diversity as part of the analysis. *It is inconsistent that the benefits of restoration/mitigation actions do include some discussion of broader habitat functions while project impacts are reduced to the simple accounting of lost acreage.*

G01-026

Regarding construction impacts, increased sedimentation and runoff are mentioned as water quality impacts, but no discussion is provided of how these might impact specific fish life stages, nor of what the current conditions are in the streams (e.g., degree of substrate embeddedness or water turbidity). The DEIS notes the possible impacts of falling debris during the demolition of existing stream crossings; these impacts are likely to pale in comparison to the potential sedimentation/erosion impacts.

G01-027

While the riparian restoration proposal may indeed increase future recruitment of Large Woody Debris (LWD, p.3-119), the DEIS should note that these benefits are not likely to accrue until 50-100 years in the future.

G01-028

The success of the Surprise Lake Drain restoration is described as being vulnerable to the potential continuation of channel-clearing activities by adjacent agricultural landowners. It seems only reasonable that WSDOT should secure a permanent conservation easement for the area that precludes such activities. If success is dependent on voluntary cooperation of landowners, then perpetuation of the restoration action is unlikely and can not be regarded as a mitigation action for purposes of fish and wildlife habitat.

G01-029

The DEIS largely avoids a substantive discussion of operational impacts to fisheries, stating only that water quality may be affected (p.3-123). A rigorous analysis of operational impacts seems to be deferred pending future coordination for threatened and endangered species under the Endangered Species Act (ESA). Future ESA-consultation does not absolve the WSDOT from performing credible analysis pursuant to NEPA. At a minimum, the analysis should couple the information on specific water quality impacts (as discussed in Water Resources section) and wetland losses and restoration proposals to provide a credible analysis of effects on specific species and life stages.

G01-030

The Screening Criteria Analysis (Chapter 3.4.5, p.3-123) is unclear and does not adequately convey the purpose of the criteria or how they will be applied. The Threatened and Endangered Species screening criteria seem to constitute a preliminary effect determination under ESA, but it is not at all clear how these determinations will be used in the selection of design options. The Aquatic Priority Habitat and Life criterion (p.3-124) appears to be a simple estimate of losses in riparian acreage despite a rather convoluted explanation. Apparently, the riparian zone is estimated as a 50-foot buffer zone along a

G01-031

RESPONSE G01-025

Please see response to G01-004.

RESPONSE G01-026

This comment was considered as part of the revision of section 3.4, see response to G01-004.

RESPONSE G01-027

Please see response to comment G01-015.

RESPONSE G01-028

LWD will be placed to increase streambank stability, allow for the development of pools for refugia, provide favorable substrate for invertebrate colonization, and shade within the RRP.

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The RRP will protect the stream, wetland, and riparian habitats.

RESPONSE G01-030

Section 7 consultation has been initiated with the U.S. Fish and Wildlife Service and NOAA National Marine Fisheries Service (NOAA Fisheries). The project’s commitments to the necessary performance measures, and terms and conditions of the Biological Opinion issued by the Services, will be included in the federal Record of Decision regarding the project.

stream course. The paragraph goes on to claim that these estimates present “a worst case scenario, as no actual riparian zone in the study area is that wide”. This seems rather counterintuitive and illogical. It would seem that the amount of existing riparian zone would be a crucial factor in determining a screening criterion, and that areas with less existing riparian cover should receive enhanced protection and restoration. The Wildlife criterion appears to be a simple accounting of lost vegetation acreage, but the criterion purports to include a consideration of required mitigation. It is not clear at all whether such a mitigation factor is somehow reflected in the index. *We strongly suggest that the screening criteria concept be substantially revised and clearly explained in the next iteration of the DEIS.* At present it appears to suggest a quantitative decision-making tool where none actually exists.

G01-031

Finally, the introduction to the Wildlife, Fisheries and Threatened and Endangered Species section claims that “impacts of construction and operation to these resources are quantified...”. With the unremarkable exception of lost vegetation acreage, the DEIS completely fails to provide a quantitative analysis of any meaningful impacts to fish, wildlife or associated habitat characteristics.

G01-032

Lack of Meaningful Synthesis and Cumulative Impact Analysis

A major thematic weakness of the DEIS, in our view, is the lack of two interrelated aspects of environmental analysis: Synthesis and Cumulative Impacts. I will first clarify our understanding of the meaning of these two terms in the context of environmental impact assessment. Second, I will focus on specific issues that we have identified in the DEIS.

What we have identified as a lack of Synthesis in the DEIS is perhaps best described as a lack of intra-project cumulative effects analysis. While the DEIS analyzes “linear” impacts, i.e., impacts of a specific project component on a particular environmental receptor, the cumulative effect of numerous individual project impacts on specific environmental endpoints has not been adequately discussed.

G01-033

Cumulative impacts, on the other hand, are typically defined as the consideration of the direct and indirect impacts of the proposed action in light of past, present and reasonably foreseeable future actions that have affected or are expected to affect the same environmental resources or values. That is, cumulative impacts analysis involves a synthesis and integration of effects across time and space for a suite of activities that may or may not be related to the project at hand. Cumulative impacts analysis cannot be adequately performed until the rigorous synthesis of intra-project effects has been completed.

In reality, direct, indirect and cumulative effects are all components of a continuous spectrum of impacts arising from a particular action. Often, cumulative impacts are regarded as general, broad-scale impacts in contrast to the relative specificity of direct impacts. However, that interpretation is, in our view, erroneous and can easily lead one to understate potential impacts. Some direct impacts can be quite general or at least vague, while certain cumulative impacts can be quite specific.

Synthesis

The DEIS is understandably organized according to specific resource areas (e.g., Water Resources, Wildlife & Fisheries). Within each resource area, impacts are divided into Construction Impacts and Operational Impacts. Finally, the analysis is divided into specific project segments (e.g., SR 509 to 8th Avenue). With few exceptions, the impacts described

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RESPONSE G01-031

The Screening Criteria Matrix was developed for the Signatory Agency Committee (SAC) which concurred with the screening criteria for selection of the build alternative and options. As noted in the FEIS, the screening criteria help select the preferred options, but are not the sole deciding factor. The environmental impacts of each option are thoroughly and independently evaluated as required by NEPA and SEPA. Since Tier II presents only the one build alternative along with the no-build, the screening criteria at this point in time are intended for the use of interchange design options only.

RESPONSE G01-032

Please see response to comment G01-004.

RESPONSE G01-033

See response to G01-005.

are limited to primary, direct impacts (e.g., kg/yr of a specific pollutant entering the watershed). Secondary impacts, such as the direct effect of that pollution loading on a specific class of organisms, have not been adequately discussed, and in many cases have not been discussed at all.

Apart from the lack of adequate attention to secondary, direct effects, our main concern is the lack of synthesis for particular, environmentally meaningful locations and for specific environmental receptors. For example, regarding spatial synthesis, at no point does the DEIS present the collective impacts of all project components for a particular section of Hylebos Creek, such as the stream reach downstream of 8th Avenue. Basically, what is missing is a sort of “balance sheet” that shows all of the environmental costs and benefits to that portion of the stream, coupled with a detailed discussion of the same.

The Environmental Matrix of Impacts (p.3-3 to 3-10) accomplishes a portion of this task and can be used as the starting point for spatial synthesis. We recommend the following approach:

- Present and discuss impacts (including intra-project cumulative impacts) on a spatial scale that makes sense environmentally. In other words, for the Lower Hylebos (i.e., downstream of I-5), present and discuss the combination of impacts from SR-167 Mainline, the 54th Avenue Intersection, the I-5 Interchange and the Riparian Restoration Zone. In practice, this means that the columns of the Matrix should be reorganized, with Mainline impacts divided into specific geographic areas. Also, the Surprise Lake Drain component should be explicitly identified as a portion of the Hylebos Creek watershed.
- The Matrix rows and associated analysis should be organized by specific environmental receptors, rather than general categories. For example, under the Wildlife & Fisheries section, the Matrix should have rows for specific species and life-stages, e.g., Chinook eggs, Chinook juveniles, Chinook adults. The impacts are very different for each. For example, if Chinook only migrate through a particular area and are only known to spawn further upstream, impacts to eggs are unlikely, whereas impacts to rearing juveniles may be more severe.
- Importantly, the matrix should also depict secondary impacts or associations. For example, if a particular project component has a direct impact – such as the addition of a particular pollutant to the stream reach – a secondary impact may be warranted for, say, juvenile coho, if the pollutant in question is known or suspected to affect juvenile coho survival.
- For spatially based synthesis, the most important missing piece is a thorough discussion that considers the collective impacts of all project components on a particular area. In other words, a tabular listing is not sufficient.

Regarding synthesis by environmental receptor, this is easily accomplished using the same modified Matrix as described above. While the spatial synthesis is essentially an integration of effects by columns, the environmental receptor-based synthesis looks at the cumulative effects of project components throughout the project area on specific receptors (i.e., synthesis by row). This is a particularly relevant perspective from an ESA point of view. This approach also can be used to integrate impacts/benefits across broader spatial scales. For example, it provides a vehicle for highlighting the potential benefits to coho salmon of

RESPONSE G01-034

Table 3.0-1, the Environmental Matrix of Impacts, has been revised in the FEIS to incorporate additional information from the BA, the Riparian Restoration study, and other relevant studies performed.

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The issues you have raised are currently being given further consideration in the Biological Assessment (BA) and ESA consultation process. New information will be provided to you when the BA process is complete.

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riparian restoration in the lower end of the Hylebos and stream relocation east of I-5, balanced against negative impacts in these and other areas.

Cumulative Impacts

As stated above, cumulative impacts are often mistakenly regarded as including only the general, broad-scale effects that are often associated with external processes such as population growth and urbanization. While these are certainly relevant issues, they do not constitute a complete suite of considerations for cumulative impacts analysis. The DEIS spends a great deal of time on these large-scale issues, but does not bring the analysis to a relevant level of detail. Also, while the project is located largely within incorporated areas, the DEIS focuses on Pierce County plans and actions in unincorporated areas while stating simply that development in incorporated areas will be guided by local jurisdictions. While this is true, it does not absolve the WSDOT analyst from attempting to identify potential cumulative impacts in those areas.

The Environmental Protection Agency (EPA) has produced a guidance document titled "Consideration of cumulative impacts in EPA review of NEPA documents" that highlights many of the most common thematic weaknesses in cumulative impacts analysis. The following discussion summarizes the primary topics with examples from the DEIS project.

Identification of relevant resources and ecosystem components

The EPA guidance highlights the need for a focus on "specific resources and ecological components that can be affected by the incremental effects of the proposed action and other actions in the same geographical area". In other words, the cumulative impacts analysis is meant to relate to the same or associated environmental receptors as the intra-project analysis.

NEPA documents often consider only a limited suite of biological resources, such as ESA-listed species, selected game species and wetlands. This approach (according to EPA) is too limited. For example, as discussed in the section above regarding Wildlife and Fisheries, we believe that a broader suite of aquatic/riparian species should be considered in the DEIS, including freshwater mussels, lamprey, etc.

Specific resource *functions* must also be considered. While wetland impacts are often reduced to an accounting of lost acreage, the function of the wetland within the broader ecosystem must also be considered.

EPA also focuses on the potential for cumulative impacts to ecological processes. Changes in hydrologic patterns, such as changes in sediment transport, alteration of discharge and retention rates of water, changes in velocity of water moving through the system, etc., may initiate incremental, cumulative impacts to specific environmental receptors.

Geographic boundaries and time periods

NEPA documents often limit the cumulative impacts analysis to inadequate geographical and spatial scales. As a general rule, spatial boundaries should attempt to follow natural ecological boundaries. For example, the DEIS Wildlife & Fish section uses areas adjacent to the project within Pierce County UGA as the spatial scale for impacts. A more relevant scale would be the entire Water Resource Inventory Area 10 (WRIA 10) which reflect an

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RESPONSE G01-036

The cumulative impacts issues you have raised are currently being given further consideration in the Biological Assessment (BA) and ESA consultation process. New information will be provided to you when the BA process is complete.

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RESPONSE G01-037

Please see response to comment G01-004.

G01-037

RESPONSE G01-038

Geographic boundaries for analysis varied by the ecological function analyzed. Geographic and temporal boundaries were reviewed and updated as necessary, see section 3.1.2 of the FEIS.

G01-038

accepted frame of reference for fish populations in particular. In general, EPA suggests that the “proper spatial scope of the analysis include geographic areas that sustain the resources of concern”.

The issue of temporal scale can be somewhat vexing in that it is difficult to project impacts into the distant future. However, as the EPA document suggests, selecting a temporal scale requires estimating the length of time the effects of the proposed action will last. For example, construction related cumulative impacts should be considered until the point at which the system has recovered from the disturbance. Operational impacts, on the other hand, will extend for the life of the project. The DEIS has chosen the 2030 as the endpoint of temporal analysis of cumulative impacts. This seems inadequate, particularly considering that the project is still several years away from completion.

G01-038

Past, present and reasonably foreseeable future actions

The DEIS, in our view, considers an incomplete set of actions in this category. We appreciate the difficulty of identifying a comprehensive set of actions, particularly for the future, but the analysis should nevertheless utilize a reasonable set of available resources and relate these actions to specific environmental receptors.

One component of the analysis should be a discussion of specific trends for activities and impacts. For example, though the DEIS touches on the issue of impervious surfaces, the current percentage of impervious surfaces within the broader watershed are not presented nor how it has changed through time. Absent reliable, existing data, current technologies – such as aerial photography coupled with Geographic Information Systems-based spatial analysis – provide the tools for estimating the extent of particular categories of land-cover.

G01-039

It seems reasonable to assume that past, present and future transportation projects may impact many of the same resources as the future SR-167. Discussion of other WSDOT projects as well as other local and regional projects is currently insufficient. For example, cumulative impacts of transportation projects often include “alterations of topography, habitat fragmentation, changes in water quality and quantity, increased sediment and contaminant runoff, direct mortality due to road kills” (EPA). These issues should be considered explicitly in the DEIS. At a minimum, this discussion should specifically include planned HOV lane construction projects in the project area and the proposed I5-SR 18 “Triangle Project” that is currently being considered for regional transportation funding.

Describing the condition of the environment

We have raised this issue repeatedly in these comments with respect to the direct and indirect effects of the project, but it applies equally to the cumulative effects analysis. The assessment of impacts requires a thorough description of “benchmark” or “baseline” conditions against which the current level of degradation and the projected impacts can be assessed. Often, NEPA documents use the current condition as the baseline for impact assessment – this is incorrect, and tends to severely understate potential impacts by ignoring past actions and cumulative effects.

G01-040

In some cases, it may not be feasible to accurately describe an “historical” or “natural” condition to serve as a benchmark. However, it is possible to discuss how specific ecological functions operate under pre-impact conditions, and how those conditions have been degraded over time. For example, one could discuss how the likely historical extent and arrangement

RESPONSE G01-039

WSDOT specifically sought trend data through contact with federal and state natural resource agencies, local governments, and Internet searches. Unfortunately, very limited trend data is available and virtually none of it for the project area. The FEIS is revised to incorporate any additional information that could be obtained on trends.

RESPONSE G01-040

We reviewed temporal boundaries identified in the FEIS to verify they are appropriate.