of wetlands in the Hylebos watershed moderated flood flows or maintained base flows, followed by a discussion of the current status of wetlands and their level of function.

An alternative to defining an historical condition may be a somewhat modified but sustainable ecosystem condition.

G01-040

Using thresholds to assess resource degradation

The threshold issue has also been raised previously in these comments relative to the project's direct and indirect impacts. The use of qualitative and quantitative thresholds is an important way of assessing the importance of a particular incremental impact. Whenever possible, thresholds that are based on law, agency regulations or agency guidance should be used to evaluate the significance of cumulative impacts. Some thresholds are set as numerical standards (e.g., concentrations of specific pollutants under state water quality standards), while others may be based on desired management goals (e.g., amount of open space or unaltered habitat in a particular area).

The DEIS would benefit from a more thorough discussion of current conditions relative to identified threshold values based on the cumulative impacts of past actions, coupled with a discussion of how the project action and other foreseeable actions are likely to deteriorate or ameliorate the condition. It seems quite intuitive that, for example, the release of a particular pollutant into a watershed is especially important if current levels of the pollutant are already at or above identified thresholds.

As watershed conditions relate to salmonids, a useful set of thresholds to be considered is the NOAA Fisheries PFC framework that identifies thresholds for "properly functioning", "at risk" and "not properly functioning" conditions for several watershed attributes, such as stream temperature and riparian condition.

Other examples of threshold categories include: total change in land cover (as an indicator of biotic integrity), patch size distribution and distances between patches (as indicators of species change), estimators of fragmentation and connectivity, etc.

G01-041

Recommendations regarding cumulative impacts analysis

A defensible assessment of cumulative impacts begins with a thorough assessment of intra-project impacts as described in the Synthesis section. Most of the issues that we highlighted in the context of cumulative impacts – threshold analysis and the definition of a "baseline" in particular – are also integral parts of a thorough intra-project analysis. The EPA document provides very useful, additional guidance.

Since cumulative impacts analysis occurs on a broader spatial scale - *but* should focus on specific environmental receptors and ecological processes – the receptor-based synthesis (see above) is a natural starting point for coupling the project impacts to external impacts. Not every receptor (i.e., every row of the matrix) has to be carried forward into a thorough cumulative impacts analysis. Reasonable, well founded choices can and should be made to identify those receptors that are likely to suffer from cumulative impacts, i.e., those receptors that are expected to be impacted by the proposed action that are in poor current condition (past impacts), and/or are expected to be impacted by other present or future actions in a significant way.

G01-042

Page 12

RESPONSE G01-041

Further analyses are being conducted for the Biological Assessment (BA) that would consider "threshold values." Additional information will be provided to you when the BA process is complete.

RESPONSE G01-042

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.

2. Riparian Restoration and Stream Relocation

The Friends of the Hylebos Wetlands are very encouraged by and supportive of the riparian restoration and stream relocation concepts described in the DEIS. With a carefully designed plan, successful implementation and a commitment to maintenance, monitoring and adaptive management, we believe the WSDOT concept can significantly improve both biotic and hydrologic conditions in lower Hylebos Creek and Surprise Lake Drain.

At this time, it is impossible to assess the adequacy of the plan or provide specific comments since no details have been provided apart from conceptual drawings in the DEIS. Since the restoration and stream relocation plans are part and parcel of the stormwater treatment and habitat mitigation components of the DEIS, we expect that opportunity will be provided to comment on specific proposals as they are developed by WSDOT. The completion of a FEIS would, in our view, be premature prior to the completion of a restoration plan that has been made available to the public for comment. The Friends of the Hylebos Wetlands is very familiar with the Hylebos Creek watershed and has performed numerous restoration projects in the basin. We hope that WSDOT undertakes a collaborative approach to restoration planning that provides opportunities for the Friends group to support this important effort. G01-043

The DEIS does not clearly identify between the areas where restoration is being proposed as part of the alternative stormwater management plan and restoration areas that are being proposed as mitigation for project impacts. These components need to be thoroughly described in the FEIS, particularly with respect to the amount of proposed mitigation (i.e. acres of habitat, lineal stream feet), mitigation ratios and the amount of destroyed or degraded habitat linked to the proposed mitigation component.

We understand that the proposed Hylebos stream relocation will be performed as required mitigation for stream channel impacts associated with expansion of I-5 between Porter Way and 70th. We do expect the FEIS to provide details about the lineal feet of stream channel that would be destroyed by the roadway expansion and the amount of stream channel and associated habitat that will created in kind. G01-044

The DEIS discusses "reconfiguration of approximately 2,400 feet of Surprise lake drain and the possibility of an additional 2,000 lineal feet of riparian restoration." This discussion is not fully formed in the DEIS and it is not clear the scope of the relocation/restoration being proposed, nor the driving factor for the proposal (i.e. is this stormwater management or mitigation for environmental impacts?). If this is required mitigation, the discussion should explain what is being mitigated for and at what ratios, and provide more specifics about the proposed work.

In Table 3.2-4, please clarify whether riparian corridor width, channel migration width and buffer width are intended to represent widths on each side of the stream, or the total width following the stream centerline. G01-045

One important element that is currently absent from the DEIS is a "balance sheet" that conveys the trade-offs between adverse project impacts and the expected benefits of the restoration proposals. Such a balance sheet should convey not only ratios of loss versus gain for particular habitat types, but should also convey functional trade-offs for specific environmental receptors. For example, the balance sheet may convey the adverse effects to juvenile coho salmon of wetland losses and water quality degradation due to increased stormwater runoff, contrasted with the benefits to juvenile salmon provided by increased riparian cover and side-channel refuge habitat. G01-046

Page 13

RESPONSE G01-043

WSDOT will continue to work collaboratively with FOHW, the Puyallup Tribe, resource agencies, and other interested stakeholders during the development of the restoration proposal. These stakeholders will not only have an opportunity to comment, but have opportunities to be involved in the actual design, and possibly the construction of the restoration work.

RESPONSE G01-044

In collaboration with stakeholders, the RRP has been further described in sections 3.2, 3.3, 3.4, and 3.17 of the FEIS. Future design of the RRP will be coordinated with through the RRP Technical Advisory Group, which FHOW is a member of.

RESPONSE G01-045

Figures 2-5 and 2-6 show the riparian restoration corridor to scale.

RESPONSE G01-046

A balance sheet with appropriate FEIS section references would require effort above and beyond the requirements of SEPA/NEPA.

In the absence of a specific restoration proposal to review, we provide the following comments and suggestions *regarding the development of an effective restoration plan*:

Successful restoration will integrate site-specific knowledge – both historical and present day - with key concepts and methods of restoration planning, implementation and monitoring. Restoration will seek to recapture over time the natural processes that create, maintain and renew healthy and dynamic wetland, riparian and in-stream habitats. In turn, healthy and connected habitat areas will perform a number of critical functions that allow salmon and other organisms to thrive during periods of favorable environmental conditions, and to persist through less favorable ones.

The restoration area should be large enough to become a self-maintaining environmental unit. The effective size of the unit depends not only on absolute acreage, but also on connectivity between habitat areas within a broader stream system. The Hylebos riparian restoration proposal, coupled with the stream relocation as described in the DEIS, could potentially serve to connect previously restored and other undeveloped open space totaling in excess of 1000 acres. One reason many restoration projects fail to meet expectations is that projects are often too small (FISRWG 2001, NRC 1992). Small restoration efforts may not be able to perpetuate desired ecological conditions or resist external factors such as high winds, flooding, and invasive species. As the ratio of site perimeter to site area increases (i.e. the site gets smaller), the vulnerability to external factors grows.

Shabman (1993) proposes an approach to watershed restoration that begins with planning to establish the sizes, types, and locations of the wetlands/uplands complexes with potential as self-functioning, self-maintaining ecosystems. Considering the interactions among sizes, types, and locations of the wetlands/uplands complexes is important, but often overlooked.

G01-047

Soil associations and soil types influence vegetation types that will successfully grow, affect infiltration and runoff, and filter pollutants. Soil type is also intimately linked to erosion potential, with certain soils more prone to erosion by hydraulic forces (e.g., non-cohesive soils, such as gravelly streambanks) while others are more prone to failure due to geotechnical instability. The presence of fill or other imported soils may limit the potential for restoration, or increase the cost by requiring extensive soil removal and replacement. A careful assessment of existing soil conditions is an integral precursor to planning both morphological and vegetative restoration efforts.

Restoration in the project area alone cannot significantly alter the hydrologic regime of the basin as a whole. However, restoration can ameliorate the effects of high flows by providing additional holding capacity in the form of wetlands and side channels. Restoration can also benefit salmonids during low flows by creating pools and reducing thermal stress through shading. Richter (1997) argues that – for wetland restoration in particular – hydrologic patterns are the key factor determining the success or failure of restoration efforts in urban areas.

Efforts to restore vegetation should be informed by considerations of soil type, surface and groundwater flows, exposure, microclimate, and adjacent conditions (FISRWG 2001). Proper consideration of environmental conditions will increase the likelihood that the vegetation will survive to provide the intended aesthetic and ecological benefits. Consider little to no treatment of areas that presently support native vegetation, with few or no invasive species.

Restoration should incorporate the development of a diverse, multi-layered, successional planting plan. Short-term objectives should include planting fast-growing, successional trees, woody shrubs and herbaceous plants. A comprehensive mix of trees (e.g., black cottonwood, red alder and bigleaf maple), woody shrubs (e.g., salmon berry, willows and red-twig dogwood) and herbaceous plants (e.g., goat's-beard, nettle and oxalis) should be developed to provide bank stability, leaf-litter and shade. Long-term (decade scale) species composition targets should include slower-growing, decay-resistant conifers, such as Douglas fir, western red cedar, and Sitka spruce. Being late successional species, these are best planted in the shade of deciduous trees where the bank is already somewhat stable.

The project area has many invasive and non-native species including reed canary grass, Himalayan and evergreen blackberries. Removing invasive species and preventing their re-establishment is important to assuring that the restoration project will be successful (Houck 1997). Vegetative site restoration should be coordinated with site development by integrating restoration into site preparation and construction activities. For example, using compost berms and mulch (in place of hay bales and silt fences) for erosion and stormwater management during highway construction facilitates incorporation of compost directly into the soil.

The riparian restoration proposal should directly address the need to initially install large woody debris in the stream channel and to supplement that with new wood over time until the riparian conifer plantings are mature enough (50-100 years) to provide stable, long-term recruitment of large woody debris to the stream channel.

Restoration efforts should seek to meet the requirements of a multitude of species in addition to pacific salmon. Freshwater mussels, for example, live in Hylebos Creek. Freshwater mollusks are negatively affected by any increase in siltation, decrease in water flow, nutrient enrichment, or increase in temperature. In King County, mussels have been observed to live as long as 90 years (Chew 1998).

G01-047

The incorporation of habitat requirements for multiple species or taxonomic groups highlights the importance of habitat diversity. For example, Richter (1997) provides criteria for the restoration and creation of wetland habitats of certain amphibians appropriate for Hylebos Creek. These criteria include suggested ranges for water current depth and velocity, water fluctuation, open water, and types of vegetation. Richter suggests that water velocities exceeding 5 cm/sec may preclude breeding by the red-legged frog (*Rana aurora*). It follows that if *R. aurora* (or other species with similar requirements) were selected as a target species for restoration, the achievement of reliably low velocities requires that slow-moving, backwater wetlands are explicitly incorporated into a restoration design.

The DEIS advocates relocating the stream to a healthy stream channel in a wetland east of the Fife curve. Channel relocation is not an easy task, and should be considered carefully (FISRWG 2001). Rivers integrate upland and upstream effects (Naiman *et al.* 2000). A relocated channel should attempt to capture most characteristics of ecologically healthy floodplain streams. These include:

- A riparian buffer, including a diversity of obligate and facultative riparian plants, at least 250 feet wide on each side of the Creek, up to 1,000 feet to provide for birds and wildlife habitat and connect habitat per WDFW "Management Recommendations for Washington's Priority Habitats: Riparian,"

- A wetland buffer, including a diversity of obligate and facultative wetland plants, at least 300 feet wide from the edge of the wetland per DOE's Model Wetlands Protection Ordinance,
- A Creek with natural soil and vegetation along streambanks, cobble and gravel as the dominant substrate, several dozen deep pools per mile, large amounts of LWD per mile, adequate off-channel backwaters and ponds, and
- No or minimal permanent roads or ditches in the restoration area.

Local conditions in Hylebos Creek, such as the proximity of the highway, will likely limit the ability to achieve all desired features, such as adequately wide buffers throughout the restoration area. When optimal conditions can not be achieved for a particular criterion, other features that perform similar or overlapping functions should be emphasized. For example, if sedimentation is a problem (as is the case in Hylebos Creek), and if narrow buffers are necessary due to site constraints, then revegetation in the stream buffer should strongly emphasize a mix of species with particularly effective sediment-retention characteristics. Just as healthy, natural systems feature redundancy for most critical functions, restoration efforts should attempt to do the same. G01-047

3. Role, adequacy and procedural transparency of discipline reports.

Throughout the DEIS, the discipline reports are purported to contain comprehensive information regarding specific topics, such as fish and wildlife species distribution, wetland functional classifications, etc. Since these documents were prepared as a component of the EIS process, they should be considered a formal component of the DEIS and subjected to the same level of public scrutiny and review. To WSDOT's credit, the Friends of the Hylebos Wetlands were provided an opportunity to review the reports in Fall 2002. We subsequently provided comments to Neil Campbell on July 19, 2002 summarizing our comments on the Water Resources, Wetlands or Wildlife and Fisheries discipline reports. However, to date WSDOT has not responded to any of the comments provided by the Friends group nor made changes in the DEIS that suggest those comments were taken into consideration. G01-048

The discipline reports are substantially inadequate in numerous respects and do not provide a sufficient level of information to adequately assess project impacts to Water Resources, Wetlands or Wildlife and Fisheries. Therefore, I have attached herein our original comment letter of July 19, 2002 along with reviews of each of the aforementioned discipline reports and expect that they will become a part of the official public record. We request that the discipline report comments be considered with the same care and attention that is due formal comments on the rest of the DEIS.

In summary:

- The selection of environmental resources considered in the DEIS lacks both breadth and depth. Impacts to additional species and life-stages (e.g., freshwater mussels, juvenile coho salmon) as well as additional resource functions (e.g., the role of wetlands in base-flow maintenance) should be analyzed. G01-049

- Impacts are characterized simplistically (e.g., wildlife impacts reduced to an accounting of lost vegetation acreage) which tends to understate the significance of the impact in a broader, ecosystem context.
- Current environmental conditions are described poorly, using outdated sources of information and lacking references to meaningful benchmarks (such as historical or properly functioning conditions).
- The DEIS lacks analytical synthesis of impacts between individual project components and between different environmental resources, making it nearly impossible to gauge the net impact of the project on a particular area, species or ecosystem attribute.
- In several instances, the DEIS cites lack of information where information almost certainly exists, or could have readily been collected directly by WSDOT.
- The Cumulative Impacts Analysis is vague and incorrectly limited to broad-scale processes (e.g., population growth). The analysis fails to adequately describe existing conditions in the context of relevant benchmarks or to relate external impacts to the same specific resources as the intra-project impact analysis. G01-049
- The Riparian Restoration proposal and Hylebos Creek Relocation plan are exciting concepts that have the support of the Friends of the Hylebos wetlands, but the lack of defined objectives, stated mitigation requirements, design drawings or other supporting material renders these components impossible to evaluate in the DEIS context.
- A future iteration of the restoration and stream relocation proposals should include a "balance sheet" description that quantifies the presumed benefits of the actions to specific species and ecosystem attributes, relative to the deleterious impacts of the project.

Thank you for the opportunity to provide comments on the proposed SR 167 project DEIS. Please feel free to contact me at 253-929-1519 if you have any questions about these comments or would like to discuss any of these points further.

Yours sincerely,

Chris Carrel

Chris Carrel
Executive Director

RESPONSE G01-047

This information will be reviewed by the RRP Technical Advisory Group.

RESPONSE G01-048

We appreciate the collaborative efforts and commitment by the Friends of the Hylebos during the revision of the discipline reports.

RESPONSE G01-049

Thank you for summarizing your comments. We have responded to your concerns through our responses herein as well as in several personal discussions with you.