**Blakely Elementary**

**Habitat Management Plan**

**Habitat Buffer Functional Assessment**

Staff used *Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington* (credit-debit method) to estimate whether the mitigation plan proposed in the HMP will result in greater functions and values than the prescribed 200-foot habitat buffer. The credit-debit method is based on the *Washington State Wetland Rating System for Western Washington* and is designed to assess wetlands themselves, not wetland buffers. As such, staff assessed the proposed buffer mitigation plan somewhat qualitatively based on relevant indicators of habitat function as outlined in the *Washington State Wetland Rating System for Western Washington.* This method analyzes functions and values by answering a series of questions that note the presence, or make simple measurements, of environmental indicators. Indicators are easily observable characteristics that are correlated with the performance of a function based on best available science and the calibration of the method. Note the credit-debit method does not use area (square feet) alone as the “currency” for estimating the adequacy of a mitigation project; rather, it relies both on area and function. As required in BIMC 16.20.060, staff assessed the function and value of the habitat buffer as proposed in the HMP as compared to providing the prescribed 200-foot buffer. The assessment assumes that the existing forested area within the habitat buffer would be included in both the prescriptive and proposed habitat buffer and is not included in the credit-debit equation.

**Structural diversity --** More habitat niches are provided within a wetland as the number of plant communities increases. The increased structural complexity provided by different plants optimizes potential breeding areas, escape, cover, and food production for the greatest number of species. This increased species richness arising from the increased structural diversity also supports a greater number of terrestrial species in the overall wetland food web (Hruby and others 1999). The Cowardin plants classes are used as indicators of different types of structure in the plant community. In addition, the presence of vertical structure in forested communities is considered a characteristic that increases habitat complexity and niches.

**Richness of plant species --** The number of plant species present in a wetland reflects the potential number of niches available for invertebrates, birds, and mammals. The total number of animal species in a wetland is expected to increase as the number of plant species increases.

**Interspersion of plant communities --** In general, interspersion among different physical structures (e.g., open water) and classes of plants (e.g., aquatic bed, emergent plants, shrubs) increases the suitability for different guilds of wildlife by increasing the number of ecological niches.

**Special habitat features --** There are certain habitat features in a wetland that provide refuge and resources for many different species. The presence of these features increases the potential that the wetland will provide a wide range of habitats.

**Area of relatively undisturbed habitat --** “Relatively undisturbed” is a general term used to describe areas that are almost completely free of human impacts and activities. This includes uplands, other wetlands, lakes and other bodies of water. It means that the area is free of regular disturbances.

**Area of accessible habitat --** Accessible habitat is defined as the amount of habitat that can be reached from the wetland without crossing a human land use (e.g., roads, fields, and development). Some lower intensity human land uses such as parks do not completely isolate a habitat. The total area of low and moderate intensity land uses adjacent to the unit is divided by two and then added to the area of undisturbed habitat. This addresses the issue that some lower intensity land uses do still provide habitat, but not to the same level as undisturbed areas.

**Table 1. Functional attributes of prescriptive and proposed habitat buffer.**

| **Functional Indicator** | **Prescriptive Habitat Buffer** | **Proposed Habitat Buffer** | **Change in Functional Score** |
| --- | --- | --- | --- |
| Structural diversity | One plant community is present: moss/groundcover. | The proposed habitat buffer would include two, possibly three plant communities: forested, forested with three strata, and scrub/shrub. Total number of plant communities would be determined by final planting plan. Vertical structure would be greatly increased by addition of over 200 trees. | +1 (could be +2, depending on final planting plan) |
| Richness of plant species | The number of plant species is minimal. The majority of the vegetated portion of the buffer is maintained lawn. There are a limited number of tree species (no more than three). | The proposed planting plan includes four tree and eight shrub species (12 total). | +1 (could be +2 if number of plant species increased in restoration planting area to 19) |
| Interspersion of plant communities | One plant community, interspersion not possible. | Interspersion of different plant communities possible. Depending on final planting plan, interspersion could be rated as low. | +1 |
| Special habitat features | Only special habitat feature present is <25% invasive species cover. Low functional rating. | Large downed woody debris could be incorporated into mitigation plan and invasive species could be kept to less than 25 percent. This would result in a low functional rating. | No change. The number of special habitat features could increase from one to two, but the score on the rating form does not increase. Functional lift would be provided, but score on the rating form does not increase. |
| Area of relatively undisturbed habitat | None. | The area of relatively undisturbed habitat would approximately equal the area of proposed restoration planting. | Functional lift would be provided, but score on the rating form does not increase. |
| Area of accessible habitat | The area of accessible habitat is approximately equal to half the area of existing lawn, since low intensity land uses provide some level of habitat. | The area of accessible habitat would approximately equal the area of proposed restoration planting minus half the area of existing lawn. | Functional lift would be provided, but score on the rating form does not increase. |

Essentially, the credit-debit method establishes the amount of mitigation needed (debit) by multiplying the area of impact by the score for each function then compares it to the mitigation proposed (credit) which is determined by multiplying the area of mitigation by the score for each function. In this case, the area of impact would be the total area of buildings and hard surfaces located within the habitat buffer and the area of mitigation would be the area of proposed restoration planting. Given that these numbers are close to the same and that the proposed buffer has a higher score for habitat function (see Table 1), the proposed amount of mitigation area appears adequate. The increased area or both relatively undisturbed and accessible habitat would also provide an increase in habitat function. The HMP is consistent with Ecology’s guidance wetland mitigation, including (*staff comment)*:

* Generally, improving the vegetation will be more effective than widening the buffer. *The HMP proposed to improve the vegetation within the buffer with nearly 1,500 native trees and shrubs.*
* A narrower buffer may be acceptable when it will not result in reduced functions in the wetland. *It is not anticipated that the water quality, hydrological or habitat functions of the wetland will be reduced due to the improved vegetation and existing hydrology and topography of the site.*
* Buffer reductions are appropriate when the intensity of impacts from adjacent land uses are reduced. *Staff recommends all measures to minimize impacts of the adjacent land use are required to the extent feasible (see BIMC 16.20.160.D.6 – Table 7, below).*

Recommendations moving forward include:

* Ensure measures to minimize impacts of adjacent land use are required to the extent feasible
* Maximize structural diversity in planting plan; consider adding emergent or groundcover species
* Increase number of plant species in planting plan
* Consider enhancement to existing forested habitat buffer
* Include special habitat features; e.g., downed large woody debris in restoration planting area
* Require low-impact fencing at edge of restoration planting area
* Further refine non-planting mitigation measures (e.g.; soil amendment, invasive species removal)
* Explore potential to provide shrub plant community instead of “ecolawn”

| **Table 7: Examples of Measures to Minimize Impacts to Wetlands from Different Types of Activities** | | |
| --- | --- | --- |
| **Examples of Disturbance** | **Examples of Measures to Minimize Impacts** | **Activities that Cause the Disturbance** |
| Lights | Direct lights away from wetland. | Parking lots, warehouses, manufacturing, residential |
| Noise | Locate activity that generates noise away from wetland. | Manufacturing, residential |
| Toxic runoff\* | Route all new runoff away from wetland.  Establish covenants limiting use of pesticides within 150 ft. of wetland.  Apply integrated pest management. | Parking lots, roads, manufacturing, residential areas, application of agricultural pesticides, landscaping |
| Change in water regime | Infiltrate or treat, detain, and disperse new runoff into buffer. | Impermeable surfaces, lawns, tilling |
| Pets | Plant dense vegetation around buffer, such as rose, hawthorn, etc. | Residential areas |
| Human disturbance | Plant buffer with impenetrable natural vegetation appropriate for region. | Residential areas |
| Dust | Utilize best management practices to control dust. | Tilled fields |
| \*These examples are not necessarily adequate to meet the rules for minimizing toxic runoff if threatened or endangered species are present at the site. | | |