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Sent: Monday, April 12, 2010 8:50 AM
To: SR 520 Bridge SDEIS
Subject: SDEIS comments

here is our response to SDEIS. If you would also like me to mail you a copy of our comments, please let me know.

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**Save Union Bay Association
Response Statement to SR 520 Project SDEIS**

SUMMARY

C-011-001

We have reviewed the SDEIS for the 520 bridge replacement project and appreciate the opportunity to discuss some topics within the SDEIS that we feel are missing or not described in adequate detail for WSDOT or public analysis. These topics are:

- The wetland mitigation opportunities discussed, particularly aquatic bed vegetation enhancement, do not include most of the aquatic bed areas infested by milfoil in Union Bay, many of which are closer to, and more directly affected by the proposed project.
- The wetland and shoreline mitigation opportunities do not include or discuss the damage to shoreline and wetland vegetation caused by the invasive mammal, nutria.
- The project, as described in the SDEIS, does not provide suitable refugia for the fish and wildlife species that will be displaced, or will avoid the project footprint during construction.
- The SDEIS does not discuss the risk of releasing milfoil and other invasive species from the project footprint during construction.
- In order to adequately mitigate for the impacts associated with the proposed project, we suggest that the following be considered as parts of the overall mitigation approach:
 - Enhance the aquatic bed wetlands that cover most of Union Bay by reducing the coverage of milfoil and other invasive plants. This will provide both wetland mitigation (enhancement), and, if conducted prior to construction, will offset the effects to lake habitats and wildlife by providing enhanced refugia for displaced species during and after construction. Long-term control of invasive species will also offset the permanent fish and wildlife habitat losses that will result from the project, including effects on ESA-listed fish species.
 - Include restoration of shoreline areas damaged by nutria as part of the shoreline and wetland mitigation approach.

C-011-002

C-011-003

C-011-004

C-011-001

WSDOT has reviewed existing literature and treatment programs on milfoil and determined treatments have limited and short term benefits. In addition, other methods of mitigation are a better use of funds than treatment for milfoil. The costs of the treatments are not justified by the ecological benefits. WSDOT therefore will not work to implement a milfoil reduction plan.

WSDOT is not proposing to control nutria in the Arboretum unless it is determined that they are affecting mitigation plantings in the Arboretum, if plantings occur in the Arboretum.

WSDOT is considering the Union Bay Natural Area as part of mitigation for effects to wetlands. Please refer to the Conceptual Wetland Mitigation Plan in Attachment 7 of the Final EIS.

C-011-002

There is no indication that refugia habitat is a limiting factor in the project area. A substantial portion of the project area is shallow water habitat with dense aquatic vegetation, much of which is non-native and invasive. This habitat is similar to other undeveloped shoreline areas in Union and Portage Bays, but does not appear to provide substantial habitat for many native fish species. Migrating salmonids typically pass through the area relatively quickly (hours or days), so long-term displacement of individual fish of these species is not expected. Much of the remaining project area consists of open water habitat, similar to much of Lake Washington. While some wildlife species could be displaced during construction, most of these species are accustomed to human disturbances and are unlikely to move far from the project area. The undeveloped shoreline areas of Portage Bay and Union Bay provide habitat for wildlife species displaced by construction activities. These species are expected to reoccupy portions of the project area after

C-011-004

- Eradicate invasive species within the project footprint (which includes boat and barge travel corridors, anchoring locations, temporary work platforms, as well as the construction footprint, PRIOR TO CONSTRUCTION. This will reduce the risk of releasing thousands of milfoil fragments and other invasive species into the surrounding areas of Union Bay and Lake Washington.

Introduction

C-011-005

Save Union Bay Association (SUBA) is a neighborhood association consisting of interested individuals and waterfront owners living on Union Bay. There are currently 120 members. Over the 35 years operating, we have dealt with issues of Union Bay including milfoil, sewage spills, Green Lake pipeline, and eutrophication. We are concerned about the disruption that construction of the new SR520 bridge will have on Union Bay and want to work with DOT to offset this impact.

The SDEIS identified effects during construction within the Elements of Nature (Chapter 6). We are concerned about the effects within the following elements during construction on the overall ecosystem of Union Bay (UB): recreation, noise, air quality, water resources, ecosystems, geology and soils, hazardous materials, and navigation.

Although the SDEIS did a good job of describing effects that will occur within the 520 work corridor along UB, there was no mention of the effects on the rest of UB. We contend that there will be multiple effects throughout the UB environment and we want the SR520 program to mitigate these impacts.

Our SDEIS Response statement begins with an overview of Union Bay, describing both the general characteristics of the bay and also the recreational and wildlife usage. We then describe the three most important problems threatening the integrity of Union Bay (UB) and its fragile ecosystem:

- infestation of invasive aquatic plants;
- shoreline habitat degradation by nutria (an invasive mammal), and
- a shallow bay made worse by ongoing sedimentation from sewage overflows, fertilizer use, and erosion.

These problems contribute to algal growth, high water temperatures, low oxygenation, high phosphorus, and wetland degradation. These elements combine to hasten eutrophication. Save Union Bay Association (SUBA) is in the process of developing an Integrative Aquatic Vegetation Management Plan (IAVMP) for Union Bay. Our priority is to preserve the health of the UB ecosystem by managing the invasive aquatic plants, enhancing the habitat, and improving the aquatic ecology.

C-011-006

It is important to understand this situation in order to gain perspective. It is our belief that bridge construction will result in increased use of the bay north of the

construction is completed. Please refer to the Ecosystems Discipline Report Addendum (Attachment 7 to the Final EIS).

C-011-003

Milfoil and other invasive species are a problem throughout Lake Washington, including nearby areas. The project construction would not likely increase the spread of invasive species because most available niches are already occupied. In addition, treatment measures have been shown to be effective for only short time periods, requiring repeated applications.

C-011-004

Please see the response to Comment C-011-001.

C-011-005

Please see the response to C-011-010. The contribution of construction of the replacement bridge to invasive native plants and shoreline degradation by nutria will be negligible.

C-011-006

The project would likely have limited effects on shoreline habitat, the infestation of invasive aquatic vegetation, or on-going sedimentation. However, the project would result in a greater shaded area through the west approach and Washington Park Arboretum, likely resulting in decreased densities of aquatic vegetation, although it is uncertain whether this would provide greater access to available habitat. In addition, the treatment of roadway runoff is expected to improve water quality conditions in the area.

The conditions described for the north-northwest portion of Union Bay are very similar to the habitat in the project area. Therefore, any species displaced by project activities would have an abundance of similar

C-011-006

work corridor. All species will react to and cope with construction activities by moving away from the construction zone. It is most likely that they will look nearby for suitable habitat, migration routes, feeding and nesting grounds and recreation (humans). Hence, they will be drawn to the north-northwest side of Union Bay because it closely resembles the wetlands near SR520. The current problems of UB (invasive aquatic plants, nutria denuded shoreline, shallow depth and poor water quality due to recent CSO overflows) will make it more difficult for species to use the bay. Many waterfowl and fish have deserted the wetlands of UB north of SR520 because there is not access due to overgrowth of invasive aquatic plants, and there is inadequate shoreline vegetation for protective cover from eagles and other predators. It is important to understand how all of the features of the bay interact in order to accomplish bridge construction while providing adequate resources for the species impacted by the construction. For example, although restoration of UB wetlands may partially mitigate wetland loss near SR520, if the waterfowl and fish can not access the wetlands due to milfoil and waterlily mats, then the habitat addition will be meaningless.

C-011-007

In the following statement, we respond to each of the Elements of Nature described in the SDEIS which SUBA believes will have impacts on species, wetlands, and recreation outside of the work corridor. There was no discussion in the SDEIS of impacts beyond the work corridor in UB. Our suggestions for mitigation address the three problems we believe are impacting the bay and thus, would affect movement of species from the work corridor into the rest of the bay. Because construction will impact habitat, we suggest that mitigation be performed before construction begins to eradicate the invasive aquatic plants within and near the work corridor so that construction will not spread invasive plant fragments throughout Union Bay. We are defining work corridor as that area within the project footprint which includes boat and barge travel corridors, anchoring locations, temporary work platforms, as well as the construction footprint, from the southwest end of Portage Bay to the east end of Lake Washington. Providing alternate nesting sites for protected birds/waterfowl nesting within the work corridor and improving wetlands in Union Bay (invasive species control) would enable fish and wildlife species to locate and begin to adapt to new habitat before construction displaces them.

Overview of Union Bay Environment and Ecological Concerns

C-011-008

Union Bay is at the west side of Lake Washington where Lake Washington empties into the ship canal. Union Bay (UB) is in a shallow glacially carved basin covered by a deep layer of peat. It has a surface area of 985,000 squared meters and ranges in depth from 3-12 ft except where it has been dredged to 30 ft in the navigation channel. Union Bay has the largest green belt in the city along its shoreline; its shorelands provide rich habitat and yet half of this natural area sits on top of a toxic dump site. Over 2/3 of the shoreline is state/city property. 100 residential properties also front Union Bay.

nearby habitat to occupy. However, much of the habitat in Union Bay is substantially modified from historic conditions. These unnatural conditions, along with the extensive invasive aquatic vegetation beds throughout the shallow portions of the bay, likely provide limited habitat for native species. The mitigation for the project is primarily focused on restoring natural habitat conditions to support native species. See the Aquatic Mitigation Plan and the Wetland Mitigation Plan in Attachment 9 to the Final EIS for details regarding proposed mitigation.

C-011-007

The study areas for wetlands, fish, wildlife, and habitat included the areas where potential effects may occur, which is along the project corridor. Refer to the Ecosystems Discipline Report (Attachment 7 to the SDEIS) for a description of the study areas.

A comprehensive NRTWG composed of regulatory agencies and the tribes developed an appropriate mitigation strategy. In addition suitable mitigation for effect to upland wildlife habitat has been developed in coordination with the City of Seattle during the shoreline permit process. Refer to the Conceptual Wetland Mitigation Plan (Attachment 7 of the Final EIS) for details.

C-011-008

Comment noted.

Union Bay is a favorite spot for recreation. Water sports enthusiasts crowd the bay. People sail, canoe and kayak in UB to explore the inlets around the Arboretum and the Union Bay Natural Area (UBNA); to observe birds and waterfowl; and for enjoyment. Often UW students will rent canoes and paddle to a shaded shoreline to picnic and swim. Hikers and bicyclists use the trails around Union Bay. The Arboretum and Foster Island as well as the UBNA host many people from birdwatchers to sports teams jogging down the paths. In the Laurelhurst neighborhood, there is public shoreline access at Belvoir Park and Waterway #1. Many people launch kayaks or canoes from these sites. Motor boats also fill the bay, whether anchored and enjoying water sports; slowly moving while fishermen cast their lines; or traveling through the bay.

Union Bay and its shorelands host a variety of ecosystems from open water to wetlands and from prairie to forest. It provides habitat for many species of mammals, amphibians, birds, reptiles, and fish. There are several species federally listed as threatened (ESA). Others are protected by the Migratory Bird Treaties. There are over 200 species of birds and waterfowl that either live here or migrate through on an annual basis.

There are three major problems in Union Bay that have affected the ecology of UB and hastened eutrophication. It is important to understand these issues to fully appreciate the impact of the SR520 construction project.

Non-native invasive aquatic plants (Eurasian watermilfoil, Brazilian elodea, fragrant waterlilies, and purple loosestrife) have changed the water quality, interfered with recreational uses, and severely affected waterfowl and fish habitat in Union Bay.

Milfoil was first introduced into Lake Washington in 1974. By 1985, 50 acres of Union Bay were infested with milfoil. By 2007, 75% of Union Bay contained well-established milfoil stands. Dense stands of milfoil interfere with all recreational uses (sailing, swimming, canoeing, motor boating) and destroy the natural ecosystem. In the summer, their density in the water as well as floating fragment mats prevent adequate water circulation, resulting in increased water temperature, decreased oxygenation, increased algal blooms and degraded habitat for fish. This makes it very difficult for juvenile salmon to survive throughout Union Bay.

Although milfoil is the primary invasive aquatic plant in Union Bay, fragrant water lilies also heavily infest the bay. By 2007, they extended out 30 feet from the western shoreline forming a thick dense mat. These plants interfere with recreational uses and ecosystem balance due to their density. The thickly matted waterlilies create a threat for waterfowl because it forces them to swim in open water, further from shore, making it more difficult for them to hide among shoreline reeds and making them easy targets for the eagles that nest along the shore. Waterlily mats also provide shelter for salmonid predators.

C-011-009

A second problem area is erosion and destruction of the shoreline by nutria, a non-native invasive rodent. They have eaten roots of native plants denuding the shoreline of plants needed to hold the dirt in place. The loss of reeds, cattails and other native wetland plants has had a devastating effect on the ecology of the area. The loss of plants has meant a loss of shelter and nesting areas for waterfowl and birds. The increase of erosion into the lake has decreased water habitat for fish.

C-011-010

The final problem is sedimentation which has resulted in the lake becoming shallower. A large portion of sedimentation has occurred secondary both to milfoil and waterlily mats binding into mud islands and also from nutria burrows and denuded shorelines collapsing into the water. Sedimentation has also occurred because there are several CSO outfalls that drain into UB and overflow during periods of heavy rain. For example, measurements of the lake bottom during high water in June, reveal that directly in front of the Belvoir outfall, there is no change in depth since 1980 but in the area where the outfall currents reduce and dissipate, the depth has been reduced from 5ft to 2.5 ft. There have been two major sewage overflows into Union Bay. One (Belvoir outfall), in 1988, released 5 million gallons of raw sewage into the bay. The second one (University Slough), in 2008 released 8 million gallons. The frequent CSO overflows and the major sewage spills have contributed to eutrophication because they have created a nutrient rich environment for aquatic plants to flourish, have been responsible for algal blooms (including cyanobacteria-toxic blue green algae), and have decreased the overall depth of the lake. Run-off from residences and other property around the lake have also increased the phosphorus load in the bay and contributed to water quality degradation and sedimentation.

C-011-011

Save Union Bay Association is addressing the problems of invasive aquatic plants and shoreline destruction by nutria. Since 2009, we have been working with USDA Wildlife Division to eradicate nutria from UB. Over 250 nutria have been removed from the bay. The USDA is also doing research into shoreline restoration of the areas damaged by nutria. In February 2010, SUBA received a grant from the Washington State Department of Ecology to develop a plan to reduce and manage milfoil and other invasive aquatic vegetation in UB. We contracted with Herrera Environmental Consultants to perform an aquatic plant survey and to write an IAVMP (Integrative Aquatic Vegetation Management Plan). This integrative lake management plan will provide an overview of the problems of UB and their interrelationships and present an on-going solution. It will provide a template for ecological stewardship of UB. The plan should be completed by August 2010. We will then apply for an implementation grant from DOE.

C-011-009

WSDOT is not proposing to control nutria in the Arboretum unless it is determined that they area effecting mitigation plantings in the Arboretum, if plantings occur in the Arboretum.

C-011-010

The contribution of the existing SR 520 bridge to the sediment load entering Union Bay will be addressed by the construction and operation of basic and enhanced stormwater treatment facilities to treat the portion of stormwater draining from the replacement highway to Lake Union. These facilities can remove approximately 80 percent of the Total Suspended Solids (TSS) prior to discharging to Lake Union. Refer to the Final EIS Section 5.10 for more information.

C-011-011

Comment noted.

C-011-012

SDEIS Omissions

There was no mention in the SDEIS of impacts of bridge construction or lane alternatives on the ecosystem of Union Bay outside the work corridor. (We are defining work corridor as the entire project footprint which includes boat and barge travel corridors, anchoring locations, temporary work platforms, as well as the construction footprint.) Our position is that the entire bay area will be affected by many of the elements described in the SDEIS. The SDEIS described impacts from construction on species inhabiting or migrating through the work corridor but it did not discuss how the species will cope with the 7-10 year construction project. SUBA contends that, as habitat near SR520 is impacted, the species using that area will move to other areas of Union Bay where similar wetland habitat exists. These wetland areas are degraded more than the southern shore within the SR520 corridor because there is less water mixing, less boat traffic, and more invasive species. The north residential shoreline contains some shoreline habitat restoration but the salmon are unable to nest there due to the area in front of these properties being clogged with milfoil, waterlilies, and algae. In addition, not mentioned in the SDEIS is the impact simply from construction itself- the movements and voices of people and machines creating noise, waves, and air-ground movement. These activities will frighten many species and result in their distancing themselves from the source of this activity. (e.g., Currently, waterfowl on the bay may be content to swim or nest near SR520 despite the car movement on the bridge but, as people and machines line the sides of the bridge or during pile driving, these species will seek calmer waters.)

The SR 520 project FEIS should contain information about the impacts to all of Union Bay and proposed mitigation to facilitate species continued existence on UB.

Impact of Bridge Construction on SUBA's Three Priority Areas

C-011-013

Save Union Bay Association has identified the major problems in Union Bay and is working to manage and solve them. Our top priority is to reduce the infestation of milfoil. We believe that, when the density of invasive aquatic plants is reduced, then the water will circulate better improving oxygenation, temperature, and nutrient load. Improving the aquatic ecosystem should make UB more hospitable to fish- especially to salmonids- which currently are unable to travel through most of the bay due to thick aquatic plant growth and high water temperature. The direct impacts of bridge construction on our priority areas are:

1. Invasive aquatic plants. The SR 520 work corridor is choked with milfoil. Milfoil spreads and re-roots from stem fragments. As work is undertaken in this area, these plants will be disturbed and fragments will float to other parts of UB and propagate. Barges and other boats bringing in supplies for bridge construction will probably bring in milfoil fragments from Lake Union and will probably break off stem fragments from the milfoil in Union Bay. This disruption will also create more milfoil infestation in UB.

C-011-012

The study areas for wetlands, fish, wildlife, and habitat included the areas where potential effects may occur, which is along the project corridor. Refer to the Ecosystems Discipline Report (Attachment 7 to the SDEIS) for a description of the study areas.

C-011-013

The extensive distribution and density of invasive aquatic vegetation in Union Bay is indicative of the overall habitat conditions, including the extensive shallow water areas, limited currents, and soft silty substrate material. These conditions are conducive to the growth of aquatic vegetation, and are not expected to be substantially changed as a result of the project. In addition, the extensive boat traffic is expected to provide sufficient mechanical disturbance of existing milfoil to maintain it. However, the proposed wider bridge is expected to reduce the distribution or density of vegetation in the immediate bridge vicinity. WSDOT therefore will not work implement a milfoil reduction plan.

C-011-014

2. Shoreline-habitat destruction. Nutria and beaver live near SR520. SUBA is currently undertaking a nutria eradication program to deal with the shoreline destruction caused by this invasive mammal. As their habitat is destroyed/impacted by SR520 construction, they will seek new habitat away from this area- most likely along the University of Washington shoreline. We have already eradicated the nutria from this area and are now focusing our efforts on the Arboretum and Portage Bay. Movement of nutria back to the UW will result in more shoreline destruction. There are three beaver dams in the work corridor. The USDA biologists believe that the beaver were impacted by human activities on Foster Island and moved their dam to a more remote location between the cattails in this same general area. Every time beaver move, they take down many more trees to build their home. Bridge construction will impact the beaver living next to SR520 such that it is likely they will move again. The closest habitat is in UB north of the work corridor.

C-011-015

3. Lake biochemistry and sedimentation. SUBA is concerned about the rich nutrient substrate in Union Bay. The spongy peat bottom is indirectly impacted by any nearby construction vibration and weight. Sedimentation, run off and spills impact the lake's biochemistry and contribute to algal and invasive plant growth. Because Union Bay is shallow with poor water quality in many areas, SR520 construction is likely to have a greater impact on UB than Lake Washington.

Proposed Additions to the SDEIS and Requested Mitigation

C-011-016

Save Union Bay Association's primary concern is the environmental impact of bridge construction on Union Bay. Construction of any of the 6 lane alternative options will impact the environment, slightly more or less depending on the option eventually chosen. Our perspective is that, given the problems currently facing Union Bay, without intervention, the bay will not be able to support the changes engendered by SR520 construction. We need to improve habitat throughout UB and improve access to the area north of the work corridor before bridge construction occurs to enable species to relocate and thrive during construction. SUBA is concerned that construction of SR520 will have bay wide impacts within the following elements of the environment:

C-011-017

1. Recreation
Construction will impact water recreation by limiting small craft access to wetlands around SR520. Canoeists and kayakers will probably explore the wetlands north/northwest of SR520 instead. Larger boats will also be impacted because many of them anchor along the 520 corridor during UW football games or simply during warm summer days. The logical response of boaters during construction is to motor north of the construction area. Large boats as well as small craft will probably move to the N-NW side of UB to be further from the noise, dust, vibration, glare, and accidental damage from construction equipment. Construction will also impact people enjoying nature on the south shore (Arboretum, Foster Island, Montlake Park). Some of these paths will be closed during construction. People visiting the open areas along the Arboretum

C-011-014

Please see the response to Comment C-011-001.

One beaver lodge adjacent to Foster Island would be affected by the project. Beaver are an urban adapted species, they are not an ESA listed species, nor a state priority species. WSDOT is not required to provide mitigation for lost habitat.

C-011-015

Construction management Best Management Practices (BMPs) required by Ecology were identified and discussed in the Water Resources Discipline Report (Attachment 7 to the SDEIS). This document described many of the steps that the Design Build team will be required to take prior to beginning any construction. Discharge of sediments and other pollutants generated by construction activities will be treated in water quality treatment facilities operated during bridge construction. Any spills that may occur during construction will be addressed by the implementation of the spill control and countermeasures plan developed by the Design Build team.

C-011-016

Best management practices (BMPs) to minimize water quality effects during construction were identified and discussed in the Water Resources Discipline Report (Attachment 7 to the SDEIS). This document described many of the steps that the Design Build team will be required to take prior to beginning any construction. The construction stormwater management plans developed by the Design Build team will undergo review and approval by the Department of Ecology. Each of these steps would protect the water quality of the project area receiving environments.

C-011-017

shoreline will be impacted by noise, dust, vibration, and reduced visual quality. Most people will visit the UBNA on the northwest shore of Union Bay instead. At UBNA, they can have a similar experience as they would have had at the Arboretum (hiking, biking, bird watching, viewing the lake and mountains). People will also utilize the other shoreline parks/access areas on the north shore (Belvoir Place Park, Waterway #1, Waterway #2). More people using UBNA and these other areas will result in more auto traffic in the neighborhood and more degradation to the land and shoreline as people utilize the area. Mitigation: Improve boat access throughout Union Bay. Work with UW/UBNA to maintain the integrity of their restoration efforts. Work with Seattle Parks Dept and DNR to maintain integrity of the other areas and to improve boat access to them.

C-011-018

2. Noise
Noise and vibrations will impact all species in the area. Despite all efforts at noise reduction, noise will still be loudest at or near the construction site dissipating with distance. All species will seek habitat areas/migration routes that are further from the source of the noise and vibration
Mitigation: Improve access and habitat on the N-NW side of Union Bay. Provide gravel areas for Chinook salmon nesting and provide access to these areas (ie., decrease milfoil, waterlilies, and blue-green algae). Recommended areas for habitat enhancement are described under the "ecosystem" element. Improve N-NW areas frequented by people who are avoiding the southern shoreline.

C-011-019

3. Air Quality
People (boaters, trail walkers) and other species will be affected by air quality/dust close to the construction site. They will seek areas further from the site, most likely the north and NW side of Union Bay. (e.g., UBNA, Belvoir Park, Waterway #2 and Waterway #1).
Mitigation: Improve access and habitat on the N-NW side of UB.

C-011-020

4. Water Resources
Construction will result in increased water turbidity at the construction site. Sediments may be removed from the bay as part of the construction activities such as dewatering. Fish and other swimming/diving species will be affected by the turbidity and will move away from the construction site in search of cleaner water and to escape predators.
Mitigation: Improve access and habitat in UB

C-011-021

5. Ecosystems
Construction and implementation of any option will reduce or disturb fish habitat, displace state and federally listed bird species, and affect wildlife by removing vegetation. Loss of wetlands, shading from the new bridge, removal of vegetation, and pile driving will all reduce wildlife habitat. Night lights, vibrations, and run off contaminants will affect water quality, species survival and salmon migration. In addition, these changes will cause disorientation and stress in all

C-011-017

In 2007, WSDOT initiated the regulatory agency coordination process (RACp) to facilitate agency coordination and the environmental analysis being conducted for the project. A series of smaller technical working groups (TWGs) was developed from the RACp to meet separately and address specific issues. The Parks TWG was one of these groups, and it was first convened in November 2008 to address effects on parks and recreation resources and to help determine appropriate mitigation for those effects. Representatives from both the City of Seattle and University of Washington were members of the Parks TWG, and helped to identify mitigation for construction effects on resources to which they have jurisdiction.

The project team also met separately with staff from the City of Seattle and the University of Washington to discuss potential effects on the natural environment and potential mitigation. Through this extensive coordination, including the parks and natural resources technical working groups, WSDOT has identified ways to avoid and minimize effects to park and natural resources and ways to mitigate for the remaining effects.

WSDOT has also worked with the Arboretum Foundation, under the charge of ESSB 6392, to develop an Arboretum Mitigation Plan (Attachment 9 of the Final EIS). The Arboretum Mitigation Plan was developed to outline mitigation projects that would reduce construction and operation effects on the Washington Park Arboretum.

In compliance with federal and local regulations, WSDOT will provide mitigation for effects to recreational resources from project construction. WSDOT's coordination with regulatory agencies has resulted in the identification of a number of mitigation measures that could be used to reduce the effects of construction on Foster Island, and include routing trails and bicycle routes around construction sites to

C-011-021

species and can alter their natural behavior. Species will disperse to similar habitats located in UB.

C-011-022

Mitigation: To decrease the impact of SR520 construction on species and wetlands, it is suggested that you mitigate the ecosystem affects before bridge construction begins. In this way, species can begin to adapt to new environments under favorable conditions. Specific mitigation suggestions include:

- Preserve nesting sites of protected migratory birds and waterfowl. It is suggested that you create new, compensatory nesting sites and put these in place by 2011- before construction begins. It is suggested that you help train the species to relocate to these new sites. In this way, they will be able to learn new behaviors in a relatively stress free environment. Trying to discover a new nesting site while construction is occurring- with noise, new obstructions, dust, and humans in the 520 work corridor would be very difficult for the migratory Canada geese and cliff swallows and would probably result in death of several birds. SUBA would like SR 520 Mitigation Specialists to work with USDA (Justin Dayton and Aaron Loucks) and other knowledgeable experts to determine appropriate relocation sites and nesting areas.

C-011-023

- Reduce milfoil in the 520 work corridor (which includes boat and barge travel corridors, anchoring locations, temporary work platforms, as well as the construction footprint) from Portage Bay to the east end of Lake Washington. Milfoil and other invasive aquatic plants are a major problem within Union Bay. Milfoil spreads by plant fragments whereas waterlilies spread by root deposits. Construction will cause disruption/uprooting to these invasive plants located within the SR520 work corridor. Plants will be loosened by actions ranging from pile driving to water transportation of materials around the site. It is pointless for SUBA to work at reducing milfoil in the center of UB (to improve access and habitat throughout the bay) if, at the same time, SR520 construction is increasing milfoil fragments. It is recommended that SR520 program eliminate invasive aquatic plants in the 520 work corridor and adjacent environment before construction activities begin. It is recommended that SR520 continue to work with SUBA during construction to monitor milfoil and assist in removal of invasive aquatic plants.

C-011-024

- Preserve habitat, migration, and reproduction of federally listed migratory fish. Because of construction effects of noise, turbidity, vibration, human activity, shading, and wetland destruction, it is reasonable to assume that the fish will alter their migratory/ habitat routes through UB to the N-NW of the construction. Because construction is a 7 year endeavor, there will be long- term effects on fish if they are not enabled to survive in the N-NW waters of UB. Due to the current conditions of UB, survival would be limited. High water temperature, low oxygenation, overgrowth of milfoil, shallow water, and poor habitat make the N-NW area of UB inhospitable to salmon. To improve the viability of salmon in UB, it is recommended that SR 520 project:

- Reduce milfoil and other invasive plants.

minimize trail closures, employing best management practices to reduce the effects of noise, dust, vibration, and glare, and implementing detours and traffic control measures to maintain access to recreational activities. These mitigation measures would maintain recreation throughout the construction period, and would allow for the enjoyment of many areas adjacent to construction sites. Please see the Recreation Discipline Report Addendum (Attachment 7 of the Final EIS) for more information.

As part of the Section 6(f) resource mitigation process, WSDOT will provide funding to City of Seattle and University of Washington for the purchase and/or development of the Bryant Building site. The acquisition of this 3.9 acre site would compensate for project use of other recreational facilities and would create a new waterfront park area on Portage Bay. This area would be developed for public use and would include a hand-carried boat launch area. See the Section 6(f) Environmental Evaluation in Attachment 15 to the Final EIS.

The Union Bay Natural Area is managed by the University of Washington, as part of the University of Washington Botanic Gardens. Through the environmental evaluation process, WSDOT has not identified a potential for direct or indirect project impacts to this area, and therefore has not discussed specific mitigation pertaining to its use.

C-011-018

Since publication of the SDEIS, WSDOT has developed a Preferred Alternative which is similar to Option A, but with a number of design refinements. Additional noise analysis was completed for the Preferred Alternative and the effects to wildlife from construction noise would be similar to the effects disclosed in the SDEIS. See the Potential Effects section of the Noise Discipline Report Addendum, (in Attachment 7 to the Final EIS) for detail on expected noise levels. Please also see the Potential Effects section of the Ecosystems Discipline Report Addendum

C-011-024

- Improve the wetlands, including the islands in the NW corner of UB. It is quite likely that, in some areas of nutria-denuded shoreline, shallow gravel areas could be created to provide spawning grounds for Chinook Salmon. This NW corner (waterway #2) used to connect to streams up which the salmon would migrate.
- Present an education program to waterfront owners describing the effects of their shoreline on fish nesting/predator protection.
- Work with homeowners to modify their shoreline to establish beach areas/shallow gravel areas for salmon spawning grounds.
- Improve access to the private property shorelines that have been restored to provide salmon spawning areas. (reduce milfoil)
- Improve access to Waterway #1 that has been restored to provide salmon nesting areas. (reduce milfoil, waterlilies, blue green algae, and other algal growth.)
- Improve access to the University Slough up which salmon migrated in the past. (reduce milfoil, waterlilies, blue green algae, and other algal growth.)
- Modify the shoreline and dock of Belvoir Place Park and naturalize it so it can provide salmon habitat.
- Improve access to Belvoir Place Park. (reduce milfoil and waterlilies)
- Improve access, wetlands, and shorelands along the south shore of Union Bay near Madison Park

C-011-025

- Compensate for wetlands lost during SR 520 construction. Most of Union Bay north of the shipping lanes is considered wetland due to the shallow depth (less than 6 feet) and vegetated cover. The entire Bay should be under consideration as a wetland mitigation site. The removal of invasive species would be similar to the wetland enhancement opportunities discussed in the SDEIS. The only change would be to extend the boundary of the wetland mitigation sites under consideration to the shipping lanes (towards the project area).
- Restore Shorelines damaged by Nutria. On the NW corner of UB is a small inlet that closely resembles the wetland area near SR520. This wetland is currently devastated due to nutria damage. It is suggested that this wetland be restored so that species can find suitable habitat located nearby during SR520 construction. Without the wetland vegetation, this area is no longer safe for nesting because it is too accessible for eagles and other predators. It is recommended that you work with USDA, DNR, and UW shoreline restoration experts to improve the shoreline vegetation and to improve aquatic access to this area.

C-011-026

6. Geology and Soils: Cofferdams, pile driving, and other construction activity will cause sediments to spread within UB. Union Bay is very shallow. An increase in sedimentation will hamper aquatic species survival.
- Mitigation: It is recommended that any sediments removed from the bay not be replaced. Improve access throughout Union Bay so aquatic species can avoid the dangers associated with shading and turbidity.

for a discussion of effects to wildlife and the Conceptual Mitigation Plan for mitigation measures (Attachment 9 to the Final EIS).

C-011-019

WSDOT is committed to air quality management as per the Memorandum of Agreement between WSDOT and the Puget Sound Clean Air Agency. WSDOT is also committed to providing access to existing parks and trails through areas of construction with access and detours to the extent practical. Mitigation will be provided for permanent effects.

A quantitative analysis of construction air quality effects, including diesel exhaust from construction equipment and hauling, fugitive dust from demolition and site grading, emissions associated with workers' commutes, and other construction-related air quality concerns, is included in the Air Quality Discipline Report Addendum (Attachment 7 to the Final EIS). During construction, best management practices would be used to minimize construction emissions. WSDOT will comply with the procedures outlined in the Memorandum of Agreement between WSDOT and the Puget Sound Clean Air Agency for controlling fugitive dust. Federal regulations require the use of ultra-low-sulfur diesel fuel in on-road trucks, and regulations that took effect in 2010 require the use of ultra-low-sulfur diesel fuel for construction equipment. See the Mitigation Measures section of the Addendum for further discussion.

C-011-020

Much of the construction activities in the Union Bay area would be conducted from work bridges, which would minimize the potential for turbidity. The piles for the bridges would be driven from the work bridge as it is constructed out from the shoreline. Pile driving (and the removal of piles) could result in localized and short-term turbidity plumes but this is unlikely to cause fish to move very far from the immediate area. Once the work bridges are constructed the sources of turbidity would be minimal except for the occasional uses of barges and support vessels.

C-011-027

7. Hazardous Materials: Contaminated sediments exist in Union Bay.
Mitigation: It is recommended that any hazardous sediments encountered during construction be removed from UB.

C-011-028

8. Navigation: Construction along the shipping lanes in Union Bay will cause many motorboats to travel slightly further to the north of the construction corridor. Union Bay is very shallow and infested with milfoil. It is likely that boats will have their motors clogged with milfoil or get stuck as they attempt to distance themselves from construction effects (noise, activity, barges).

Mitigation: Reduce milfoil and improve accessibility to UB north of the construction area. Maintain navigable channels through UB.

Conclusions

C-011-029

Currently, Union Bay is facing several problems that are increasing eutrophication. The construction of the SR520 bridge will add to the degradation that the bay is experiencing by destruction of habitat on the southern shorelands and relocation of species to the north of the work corridor. In order to accomplish construction with minimal impacts, it is important first to improve the aquatic ecology of UB. All habitat in Union Bay will be impacted to some extent by noise, vibration, light, and activity within the construction zone. As species distance themselves from the noxious intrusions within the construction area, they will seek habitat nearby- north of the work corridor. Because UB is so heavily infested with milfoil, it will be difficult for aquatic species to survive in the shallow, warm waters of the center-north side of UB. The highest priority to compensate for bridge construction is to reduce the milfoil that is choking the bay. The second priority is shoreline restoration to improve wetland habitat in Union Bay and improve the natural shoreline along the north shore private residences and parks.

Save Union Bay Association wants to work with the SR520 Mitigation Specialists to find ways to minimize ecosystem impacts during bridge construction and to maintain and improve the aquatic environment once the new bridge is in place.

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Other activities that could cause turbidity would be conducted inside cofferdams or surrounded by silt curtains. Installing these turbidity controlling BMPs could result in turbidity but it would be short-term and localized.

WSDOT will mitigate for project effects, and the proposed mitigation measures were developed in close coordination with State and federal resource agencies and local entities. See Section 6.10 of the Final EIS and the Conceptual Aquatic Mitigation Plan (Attachment 9 to the Final EIS) for the list of BMPs and proposed mitigation measures.

C-011-021

Operational and construction effects of the Preferred Alternative are discussed in Section 5.11 and 6.11 in the Final EIS, respectively.

C-011-022

There are no nesting sites of state priority or ESA listed bird species in the project area. Bald eagles are protected under the Bald and Golden Eagle Protection Act. The nearest nest would be more than 900 feet from the bridge. Please refer to the Ecosystems Discipline Report (Attachment 7 of the SDEIS).

C-011-023

Please see the response to Comment C-011-001.

C-011-024

Please see the response to Comments C-011-001 and C-011-018. WSDOT has considered many options for mitigation for both wetlands and aquatic habitat including the Union Bay Natural Area. Please refer to the Conceptual Aquatic Mitigation Plan and the Conceptual Wetland Mitigation Plan in Attachment 9 of the Final EIS.

C-011-025

Please see the response to Comments C-011-001 and C-011-024.

C-011-026

See response to comment C-011-020. Also, mitigation measures that WSDOT has committed to were determined through a variety of processes, including the direct coordination with resource agencies and other interested parties. Any sediment removed from the bay would be retained and disposed of at an appropriate upland facility, to reduce the potential risks of turbidity in the area. See Section 6.11 and the Conceptual Aquatic Mitigation Plan (Attachment 9 to the Final EIS) for a list of mitigation measures that address habitat conditions in Union Bay.

C-011-027

Page 40 of the Hazardous Materials Discipline Report acknowledged that existing sediment quality data is limited and the previous samples were not collected from areas directly impacted by construction, the risk of encountering contaminated sediments during construction is unknown. Excavated sediment would need to be tested and disposed in accordance with applicable regulations.

C-011-028

WSDOT has reviewed existing literature and treatment programs on milfoil and determined treatments have limited and short term benefits. In addition, other methods of mitigation are a better use of funds that treatment for milfoil. The costs of the treatments are not justified by ecological benefits. WSDOT therefore will not work implement a milfoil reduction plan.

C-011-029

Please see the response to Comment C-011-028. The Union Bay

Natural Area is part of WSDOT's mitigation strategy. Please refer to the Conceptual Wetland Mitigation Plan in Attachment 9 of the Final EIS.