

Restoration Design  
Lab/Studio Design Assignment 3  
Assigned 2 & 3 May 2007  
Due 9 & 10 May 2007

### Overview

The proposed reconstruction of the SH 520 Evergreen Point Floating Bridge will involve the destruction and disturbance of several acres of wetland including parts of Marsh Island and Foster Island in Union Bay. State agencies are looking for sites near the route where compensatory mitigation can be performed, and where similar kinds of wetlands (freshwater, fringing lacustrine) can be created, restored or enhanced. A multiplier has been applied to the acreage that is to be lost, and 15 acres need to be located for restoration.

Both the Washington Department of Ecology and the U.S. Army Corps of Engineers have expressed an interest in using area around the Union Bay Natural Area (UBNA) to improve habitat for salmon and to create lakeside wetlands. The DOE requested UW Botanic Gardens to identify 15 acres within the boundaries of UBNA where mitigation might be performed. Looking at areas either adjacent to the Lake or along University Slough where the creation of lakeside wetlands might be built without damaging existing wetland or upland restoration projects, UWBG staff were able to propose 10 acres.

This would be an expensive kind of restoration because UBNA is located atop the former Montlake Landfill, and to lower existing grades to an elevation where they would function as wetlands, both the landfill cap and some fill material would have to be removed. Then a new cap would need to be installed, and contouring and vegetation installation would have to take place in that material. The excavated fill material would have to be taken to a hazardous waste disposal site, and the cost would be significant.

A lakeside wetland would need to have areas of shallow standing water, and transitional zones where the land would rise out of the water to an elevation of about a foot or more above the lake. This would allow open water to enter the wetlands, and would provide a place for emergent wetland vegetation to be established in shallow water or in saturated soil. Adjacent to the emergent vegetation, slightly higher ground would support shrubs and small trees that are commonly found around the edge but within a few feet of wetlands (*Lonicera involucrata*, *Purshia tridentata*, *Crataegus douglasii*, *Pyrus fusca*, etc.).

Designing fringing wetlands at this site is complicated by the fact that the level of Lake Washington and Union Bay is artificially controlled by the dam at the Hiram Chittendon Locks in Ballard. In winter, the lake level is lowered to an elevation of about 20'. In summer it is raised to 21.5', though for the last

several years it has topped out at about 22' (<http://www.nwd-wc.usace.army.mil/nws/hh/basins/lwscsh.html> .) Locally this is described as "reverse hydrology", because wetlands and lakes in this region normally have more water in winter and less in summer.

### *Your Assignment*

1. Locate areas of the Union Bay Natural Area and University Slough that are suitable for conversion to lakeside wetland, will not damage any of the existing restoration projects in UBNA, and total up to 10 acres. (**Draw these areas on a map**)
2. Using contour maps for the area, draw a profile view of several lines running from the Lake or Slough onto the Natural Area, with elevations (do this at two points along the Lake and one on the Slough). (**Three profiles**)
3. At each point, and along the profile generated for that point, show how you might change the elevations to get down to water level. (**Three profiles with your modifications**)
4. Using the flooding preferences shown in the tables from Stevens and Vanbianchi's book on wetland restoration, contour the land along the Lake edge, show the elevations (**a plan view**), and show at one site the kinds of plants that you might plant (**a detail**). Keep in mind that you would not just want to make a shallow slope down to the water, but you would want to make create a bench at about the right elevation. And you would want to excavate channels and coves on this bench to create complexity. Look at the existing wetlands that are extensions of the Lake and see how they are structured.
5. For at least one of the profiles you are using in numbers 3 and 4 above, provide two options that you could show to the client as design alternatives or options from which to choose (**one alternative set**).

Be sure to pay careful attention to the information that is provided in the "over" section."

Example of profile and plan view sketches:

