520 West Approach Bridge North (WABN)
Restoration of Temporary Impacts

USACE IP NWS-2008-1246

Northwest Region
2018 MONITORING REPORT

Wetlands Program

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Washington State Department of Transportation
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# 520 WABN Restoration of Temporary Impacts

**USACE IP NWS-2008-1246**

<table>
<thead>
<tr>
<th>General Site Information</th>
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</thead>
<tbody>
<tr>
<td><strong>USACE IP Number</strong></td>
</tr>
<tr>
<td><strong>Ecology WQC</strong></td>
</tr>
<tr>
<td><strong>Mitigation Location</strong></td>
</tr>
<tr>
<td><strong>LLID Number</strong></td>
</tr>
<tr>
<td><strong>Construction Date</strong></td>
</tr>
<tr>
<td><strong>Monitoring Period</strong></td>
</tr>
<tr>
<td><strong>Year of Monitoring</strong></td>
</tr>
<tr>
<td><strong>Type of Impact</strong></td>
</tr>
<tr>
<td><strong>Area of Project Impact</strong></td>
</tr>
<tr>
<td><strong>Type of Mitigation</strong></td>
</tr>
<tr>
<td><strong>Planned Area of Mitigation</strong></td>
</tr>
</tbody>
</table>

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1 Impact numbers sourced from WSDOT 2018, Final Wetland Mitigation Addendum #7, Appendix A, Figures A-2, A-3, Table 2. LWN-1,3,4 and LWS-4

2 Mitigation numbers sourced from polygons GPS’d in the field.
## Summary of Monitoring Results and Management Activities (2018)

<table>
<thead>
<tr>
<th>Performance Standards</th>
<th>2018 Results³</th>
<th>Management Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native, wetland woody species will achieve an average density of at least four plants per 100 square feet in the revegetated wetland.</td>
<td><strong>Foster Island:</strong></td>
<td>Control of garden loosestrife and purple loosestrife was performed within WSDOT ROW in August 2018</td>
</tr>
<tr>
<td></td>
<td>Buffer: 9 plants/100ft² (CIₘ₈₀% = 6.4-11.5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wetland: 10 plants/100ft²</td>
<td></td>
</tr>
<tr>
<td></td>
<td>E. Montlake Shoreline:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 plants/100ft²</td>
<td></td>
</tr>
<tr>
<td></td>
<td>WSDOT Peninsula:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>22 plants/100ft²</td>
<td></td>
</tr>
<tr>
<td>Cover of native, wetland emergent vegetation will provide at least 30 percent cover.</td>
<td><strong>Temp Clearing area:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>25 to 35% cover (Qualitative)</td>
<td></td>
</tr>
</tbody>
</table>

## Report Introduction

This report summarizes first-year (Year-1) monitoring activities at the 520 WABN Temporary Impact Mitigation areas. Included are a site description, the performance standards, an explanation of monitoring methods, and an evaluation of site establishment. Monitoring activities included vegetation surveys and photo-documentation on September 25, 2018.

³ Estimated values are presented with their corresponding statistical confidence interval. For example, 9 plants/100ft² (CIₘ₈₀% = 6.4-11.5) means we are 80% confident that the true density value is between 6.4 and 11.5.
What are the 520 WABN Temporary Impact Mitigation Areas?
These temporary impact restoration areas (Figure 1) restore areas of temporary impacts that occurred during the construction of the 520 West Approach Bridge North (WABN) project. A temporary work trestle was constructed and removed to facilitate construction on the bridge. The temporary impacts that occurred following the removal of this trestle include temporary wetland and buffer impacts to the southern edge of Foster Island and a shoreline near East Montlake Park. Another small trestle was constructed and removed on the WSDOT peninsula near the construction office that resulted in temporary impact to the aquatic bed wetland and the shoreline buffer.

Figure 1  Site Sketch
The 520 WABN Temporary Impact Mitigation include areas that were planted as well as areas left to natural recruitment.
Appendix 2 includes site directions
What are the performance standards for this site?

**Year 1**

**Performance Standard 1**
Native, wetland woody species will achieve an average density of at least four plants per 100 square feet in the revegetated wetland.

**Performance Standard 2**
Cover of native, wetland emergent vegetation will provide at least 30 percent cover.

Appendix 1 shows the As Built (WSDOT 2018).
How were the performance standards evaluated?

The table below documents the sample methods used for all of the performance standards as required by the mitigation plan or permits. For additional details on the methods see the WSDOT Wetland Mitigation Site Monitoring Methods Paper (WSDOT 2008).

Density for the WSDOT peninsula and the E. Montlake shoreline area were estimated using the total count completed by the 520 project office and the area was derived from Polygons GPS’d in the field.

Density for the bridge impact buffer area was sampled by the monitoring team using unequal belt transects. Density for the bridge impact PSS/PFO wetland area was qualitatively estimated.

**Placement of Baseline:** The 81 meter baseline was placed parallel to the westbound lanes of the 520 bridge across the top of the buffer area.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>PS 1</th>
<th>PS 1</th>
<th>PS 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target population</td>
<td>Density</td>
<td>Density</td>
<td>Cover</td>
</tr>
<tr>
<td>Zone</td>
<td>Native woody species</td>
<td>Native woody species</td>
<td>Herbaceous species</td>
</tr>
<tr>
<td>Sample method</td>
<td>UBT</td>
<td>Total Count/Area</td>
<td>Qualitative</td>
</tr>
<tr>
<td>SU length</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>SU width</td>
<td>1</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Points/SU</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Total # of SU</td>
<td>10</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
How are the restoration sites developing?

The woody species planted at all of the temporary impact restoration areas are becoming established. Dead plants counted by the project office have been replaced.

The willows (Salix spp.) and redosier dogwood (Cornus alba) planted in the WSDOT peninsula area in particular are thriving. The E. Montlake plantings had high survivability to begin with and those plantings appear to be on track to meet performance standards in the future as well.

The Foster Island restoration area consists of buffer as well as scrub-shrub/forested (PSS/PFO) and emergent wetland (PEM). The buffer area is becoming established. Initially, this area suffered some mortality but the plants have been replaced and the area is meeting the standard. The PSS/PFO area is fairly small and was planted with willows (Salix spp.) and redosier dogwood (Cornus alba). These species are thriving in the wet conditions in that area. The PEM on Foster Island was planted where accessible with a mix of native emergent species. These species are becoming established but have competition from many non-native and invasive species in the area. The PEM areas that were impacted by the bridge construction trestle, further out to the east and west of the buffer area is not accessible. This area was left to fill in with existing plants from the nearby communities.
Results for Performance Standard 1
(Native, wetland woody species will achieve an average density of at least four plants per 100 square feet in the revegetated wetland):

In the Foster Island area, the buffer area has a density of 9 plants/100ft² (CI_{80%} = 6.4-11.5). This area meets the standard. Planted woody species are becoming established. The dominant species include salal (Gaultheria shallon), salmonberry (Rubus spectabilis), and dull oregongrape (Mahonia nervosa) (Photo 1). The scrub-shrub/forested wetland in this area is fairly small so it was estimated qualitatively at 10 plants/100ft². Dominant species include willows (Salix spp.) and redosier dogwood (Cornus alba).

The E. Montlake Shoreline has 8 plants/100ft². Survival of planed species is high in this area. The dominant species include Pacific ninebark (Physocarpus capitatus), redosier dogwood (Cornus alba), and willows (Salix spp.) (Photo 3).

The WSDOT Peninsula restoration area is thriving with a density of 22 plants/100ft². This area is made up entirely of willows (Salix spp.) and redosier dogwood (Cornus alba) (Photo 2).
Results for Performance Standard 2
(Cover of native, wetland emergent vegetation will provide at least 30 percent cover):

Temporary Clearing (PEM wetland) – This area was observed from above due to access issues. Native emergent vegetation seems to be recolonizing the area in addition to the plants installed nearest to the main path area (Photo 4). Cover in these two areas on either side of the path (out in the open water area) is qualitatively estimated at 25 to 35% cover overall.

What is planned for this site?
The project office has plans to continue weed control.
Appendix 1 – As-Built
(from WSDOT 2018)

Foster Island
Appendix 2 – Photo Points
The photographs below were taken on September 25, 2018 and document current site development.

Photo Point 1 PSS/PFO at Foster Is.

Photo Point 2 Buffer at Foster Is.

Photo Point 3 Recolonized PEM

Photo Point 4 Foster Is. From above
Driving Directions:

East Montlake Park Shoreline trestle impact area
- Driving – SR520 to Montlake Blvd, north to Hamlin Street, east to East Park Drive
- Parking – Limited Street parking on Hamlin, East Park Drive, and Shelby
- Access – Short walk from East Park Drive east down access road to the shoreline restoration area between the Waterfront Trail and the WABN Bridge

WSDOT Peninsula shoreline trestle impact area
- Driving – SR520 to Montlake Blvd, to Lk WA Blvd. 2510, Lk WA Blvd East
- Parking – The location of the WABN Project office and CN staging area. During normal working hours the gate should be open, there is parking inside the gated area.
- Access – Short, less than 1 min., walk from the project office to the trestle restoration area in the CN staging area

Foster Island trestle impact area
- Driving - SR520 to Montlake Blvd, to Lk WA Blvd. to East Foster Is. Road. 2800 East Foster Is Road
- Parking – Small Parking lot at the East Foster Is. Road end.
- Access – From the Foster Is. Road parking lot, ¼ mile walk on the Foster Is. Trail
Literature Cited


