Sturgeon Lake/Dairy Creek Restoration Project
Pre-Project Conditions

• Disconnected tidal channel between Columbia River and Sturgeon Lake

• Failing culverts and roadway

• Debris throughout the channel

• Potential fish stranding
Restoration Actions

• Replaced failing culverts with 96’ channel spanning bridge

• Excavated over ½ mile of new channel (low flow and marshplain bench)

• Removed 22,000 cubic yards of material from channel

• Installed debris boom at channel mouth

• Replanted 15,000 trees and shrubs
Construction
Ongoing Monitoring

• Water Surface Elevation

• Channel Cross Sections

• Aerial imagery of Sturgeon Lake

• Veg surveys (emergent & riparian vegetation)

• Pit Tag Array
Water Surface Elevation (WSE) – Pre-project

Columbia River, Dairy Creek and The Wash Gages
WSE – Post-project – 2019 – No lake data yet

Dairy Creek In vs Out WSE

WSE in feet

IN_WSE  OUT_WSE  IN_ELEV  OUT_ELEV

1/4/19 to 10/4/19
High water! April 2019
<table>
<thead>
<tr>
<th>Date</th>
<th>Locations</th>
<th>Xsections</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/24/2017</td>
<td>Pre above culvers</td>
<td>9 through 16</td>
<td>15 was added on 10/15/2019</td>
</tr>
<tr>
<td>2/13/2018</td>
<td>Pre below culverts</td>
<td>1 through 6</td>
<td>7 and 8 added 10/19/2018, just below culverts, too much debris pre-construction</td>
</tr>
<tr>
<td>10/19/2018</td>
<td>Post below bridge</td>
<td>1 through 8</td>
<td>Soon after construction</td>
</tr>
<tr>
<td>10/15/2019</td>
<td>1 year Post</td>
<td>1 through 16</td>
<td></td>
</tr>
</tbody>
</table>
Channel Cross Sections – X1 - Mouth

Cross Section 1

Elevation (feet)

Station

2/13/2018  10/19/2018  10/15/2019
Channel Cross Sections

Cross Section 2

Elevation (feet)

Station

2/13/2018
10/19/2018
10/15/2019
Channel Cross Sections

Cross Section 3

Elevation (feet)

Station

2/13/2018  10/19/2018  10/15/2019
Channel Cross Sections

Cross Section 4

Elevation (feet)

Station

2/13/2018  10/19/2018  10/15/2019
Channel Cross Sections

Cross Section 5

Elevation (feet)

Station

2/13/2018  10/19/2018  10/15/2019
Channel Cross Sections

Cross Section 8

Station

Elevation (feet)

10/19/2018
10/15/2019
Channel Cross Section 10

Dairy Creek Channel Monitoring Map
By WMSWCD; 11/18/2019

Legend
- DC_Xsec_line_2019
- Dairy Creek
- Dairy Creek Project Area

Source: Esri, DigitalGlobe, GeoEye, i-cubed, GDEOS, NASA, USGS, Aero, Getmapping, Aerogrid, IGN, IGP, swisstopo, MapmyIndia
Channel Cross Sections
Channel Cross Section 11
Channel Cross Sections

Cross Section 11

Elevation (feet)

Station

- 7/24/2017
- 10/15/2019
Channel Cross Section 12

Dairy Creek Channel Monitoring Map
By WMSWCD; 11/18/2019

Legend
- DC_Xsec_line_2019
- Dairy Creek
- Dairy Creek Project Area

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Planet Labs Inc., USDA, USGS, FAA, NGA, GEC, Aerogrid, IGN, IGP,滾石, DeLorme

Narrowing in on the map: Sturgeon Lake to Columbia River.
Channel Cross Section 13

Dairy Creek Channel Monitoring Map
By WMSWCD; 11/18/2019

Legend
- DC_Xsec_line_2019
- Dairy Creek
- Dairy Creek Project Area

Source: Esri, DigitalGlobe, GeoEye, Aerogrid, IGN, USGS, Intermap, increment PBC, and the GIS User Community
Vegetation monitoring

• WMSWCD Plantings 80-90% survival rates
  • Thanks in large part to ample site prep
  • 1.5 additional areas in 2020

• Plantings in Construction areas less than 50% survival
  • Compacted soils, low OW, no mulch, etc
  • Replanting this winter paid for by BPA
Fish Monitoring

- 26 wild chinook July 2, 2018
- No post project data yet
- Install Passive Integrated Transponder (PIT) antenna
  - Install by ODFW
  - $40,000 from USACE
  - PGE Power by WMSWCD
  - Data collection by CREST
- Timeline
  - ~Jan-Feb 2020
Summary

• Monitoring Data is still in coming
  • Lake WSE
  • Fish Monitoring
  • Aerial photos

• Currant data point to Project operating successfully
• Some accumulation at the mouth
• Net export of sediment closer to the lake

• Plantings survived their first dry season