Presented to Lower Columbia Solutions Group 7/8/2011

• The Location
• The Problem
• Possible Contributing Factors
• Solutions?
The Location

PIERS 1, 2 & 3
Central Waterfront Activity

- Oregon’s Blue-Water Port
  - Deep Draft Capable Piers
  - Cargo Handling
  - Cruise Ships
Central Waterfront Activity

- Dredges
- Research Vessels
- Military Vessels
PORT OF ASTORIA

SHIP CALLS
1999-2010

<table>
<thead>
<tr>
<th>CALENDAR YEAR</th>
<th>TOTAL SHIP CALLS</th>
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<tr>
<td>1999</td>
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<td>2009</td>
<td>39</td>
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<td>2010</td>
<td>40</td>
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<tr>
<td>2011</td>
<td>60 estimated</td>
</tr>
</tbody>
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1989 52 (LOG SHIPS ONLY)
1990 42 (LOG SHIPS ONLY)
1991 24 (LOG SHIPS ONLY)
Central Waterfront Activity

• Warehousing
• Fishing Industry
• Marina
• Hotels
• Restaurants
• Tourism
The Problem: Sedimentation
• “At least the Port is going to lower the moorage rates”
Soundings - March 2010 Face of Pier 1

Note depths at face
Soundings - October 2010
Face of Pier 1

Note depths at face

Port of Astoria Pier 1
Astoria, OR

Survey date: October 19, 2010
Vertical Datum: MLLW
Surveyor not liable for depths
Soundings - March 2011 Face of Pier 1 (Post-Dredge)

Port of Astoria
Port Docks Maintenance Dredging Project

Time/Date: 10:00 - 12:00 a.m. 29 March 2011

Depths adjusted for MLLW = 0 Tide

Note depths at face

Note area of still questionable depths
Soundings - June 2006 Slip 2

Note area of till

PRELIMINARY
PORT OF ASTORIA 06/09/08

Soundings represented in Feet, below MLLW
Elevations are shown as +2, indicating height in feet above MLLW
Ellipsoid: WGS-84
Grid: STATE PLANE NAD-83
Zone: OR-3801 OREGON NORTH

The information depicted on this map represents the results of the survey made on the dates indicated and can only be considered as indicating the conditions existing at the time.
Impact on Turn Basin Area

• Cross Hatched area less than 40 ‘
• Cost to Corps of Engineers
• Hazard to navigation in vicinity of Piers
Turn Basin Soundings 2010
Port of Astoria Dredging Costs

- **Average labor per year** –
  last three years = $128,345.00
- **Parts & Supplies** –
  average per year = $19,245.00
- **Fuel / Oil** –
  average per year = $44,255.00
- **Repairs / Maintenance**
  average per year = $65,982.00

- **TOTAL average per year** = $257,825.00

*Direct Costs Only*
 Maintenance Impact

• 2007 through 2011 Port has Maintenance crew of 7 to 8 personnel
• During dredge season two crews of three each run two shifts – 5 days per week
• Approximately 30 % of Maintenance man hours per year spent on dredging
• Maintenance deferred
Other Adverse Impacts

• Increased dredging necessary for Turn Basin
• Potential grounding of loaded cargo vessel
• Double handling of silt as Port dredges then Corps of Engineers dredges
• Cost to Corps of Engineers
Possible Contributing Factors

- Krone Report
- Dredging Upstream
- Hydrology
- Pier Design
- Young’s Bay
- Other
Investigation of Causes of Shoaling in Slips One and Two, Port of Astoria

By R. B. Krone

1971
• Fine sediment as land erosion particles carried by the Columbia, Young’s, & Lewis and Clark Rivers
• Onshore breezes generate disturbance which suspend materials
• Suspended sediment can move downstream from the Bay during the ebb then upstream with bottom currents to the slips during the flood
N.O.A.A. GNOME Simulation
The shape of the 18 ft. contour in Slip Two supports the conclusion that most of the shoal deposits from water entering the slip during flood flows.

A barrier to flow...at the end of Pier Three is needed.

The proposed turning basin...should be dredged to be as deep or deeper than the slips.
• Continue minimum maintenance dredging
• Corps of Engineers dredging Turn Basin
• Wing Dams
• Other?
Recommendations

• Study / Examination of benefits of Wing Dam installation to reduce infill of Port of Astoria Pier areas
• Financial assistance and support for Port request for Corps of Engineer funding
• Support 2013 request for Turn Basin dredge funding
Benefits of Solutions

• Reduced Dredging Costs to Port and Corps of Engineers
• Employment for Clatsop County and Oregon