

## SOUTH BAY MANAGEMENT UNIT

### SOUTH BAY TRIBUTARIES

#### Description:

The South Bay tributaries area includes the two larger drainages of the Elk and Johns River and six smaller, independent drainages (O'Leary, Stafford, Indian, Chapin, Newkah, and Charlie Creeks) that enter Grays Harbor between John's River and the mouth of the Chehalis River. The elk and John's Rivers had extensive estuaries that support oyster farms. The remainder of the Elk River drainage is managed as commercial timberlands.

The John's River estuary has a cranberry processing plant located at the mouth. The estuary was diked and drained to develop crop lands, but a recent project breached the Dyke in two locations on the east side of the river. The installation of a tidal gate increased function in access to fish habitat. The John's River Astoria is part of the John's Rivers State wildlife area. Rural residences lie along John's River Road between RM 4 and 6. The uplands throughout the drainage are in commercial timberland production.

Newkah Creek is the third largest drainage in the South Bay region. The diked estuary was breached as part of an off-site mitigation project for the construction of Stafford Creek Correctional Facility. Located in the lower watershed are rural residential development and a large rock quarry. All other land in the drainage is for commercial timber production.

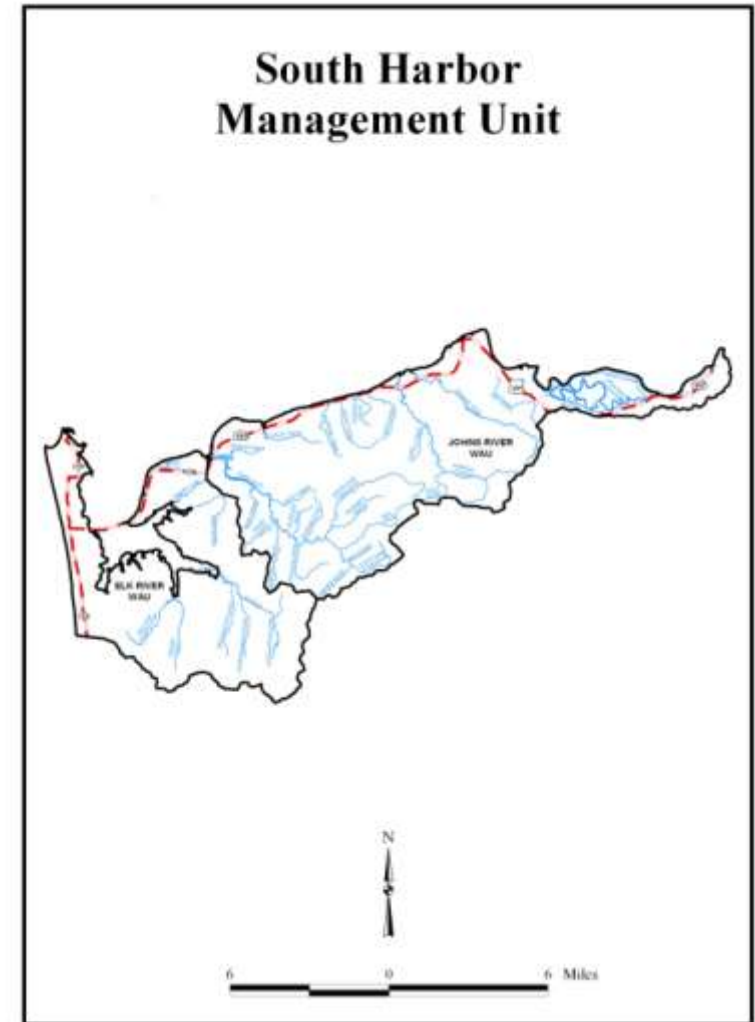
The small independent drainages of O'Leary, Stafford, Indian, Chapin, Newkah, and Charlie Creeks are short basins that have minimal spawning habitat due to sedimentation from timber harvesting activities from the 1930s on. Rural residences lie along Highway 105, which crosses all of the Creeks, but the estuaries and floodplains are mostly undisturbed. The upland surrounding these creeks is exclusively commercial timberlands. The only other notable development along these Creeks was the Stafford Creek Correctional Facility completed in 1999.

**Primary Subbasins:** Elk and John's River

**Secondary Subbasins:** Alder, Charley, Newkah, Chapin, Campbell, Indian, Stafford, and O'Leary Creeks

**Land Uses:** Commercial timberlands, aquaculture, conservation areas, scattered rural residences, and correctional facility

**Anadromous Fish Stocks:** Fall Chinook, coho, chum, cutthroat, and winter steelhead



## South Bay Tributaries Tier 1 Concerns

South Bay Tributaries Tier 1		
FISH PASSAGE		
Symptom	Cause	General Actions
<ul style="list-style-type: none"> <li>➔ Fish passage is limited by barrier culverts</li> </ul>	<ul style="list-style-type: none"> <li>➔ South Bay watersheds (particularly John's and Elk River) have among the highest road densities in Chehalis Basin. Many stream crossings are impassible to salmonids at all life stages. Migration barriers are present in down-stream reaches preventing all upstream migration and promoting sediment retention; this is of concern for primary subbasins directly discharging into mainstem or estuary habitat.</li> </ul>	<ul style="list-style-type: none"> <li>➔ Correct barrier culverts. See Section 4 for guidelines.</li> </ul>

South Bay Tributaries Tier 1		
SEDIMENT		
Symptom	Cause	General Actions
<ul style="list-style-type: none"> <li>➔ Significantly increased sediment delivery, especially fine sediments located upstream of blockages</li> <li>➔ Highly embedded stream reaches</li> <li>➔ Substrate consisting of smaller than average particle size</li> </ul>	<ul style="list-style-type: none"> <li>➔ Extensive timber harvests in the majority of the South Bay watersheds (headwaters to mouth). The Elk River Natural Resources Conservation Area (NRCA) protects the mid- and lower-reaches of the John's and Elk River watersheds; NRCA protection does not extend to secondary subbasins.</li> <li>➔ Runoff from logging roads</li> <li>➔ Removal of riparian corridor and loss of LWD inputs</li> </ul>	<ul style="list-style-type: none"> <li>➔ Reduce sediment loading by reducing road densities</li> <li>➔ Revegetate streams/riverbanks for added erosion protection</li> <li>➔ See LWD actions</li> <li>➔ See Riparian actions</li> <li>➔ Upgrade logging roads to comply with Forest and Fish Agreement (1999)</li> </ul>

South Bay Tributaries Tier 1		
RIPARIAN		
Symptom	Cause	General Actions
<ul style="list-style-type: none"> <li>➔ Most headwater reaches have riparian buffers that are relatively small, narrow, and homogenous in plant species composition.</li> <li>➔ Riparian tree species composition is relatively homogenous in the mid and lower reaches.</li> <li>➔ Increased presence of codgrass and spartina</li> </ul>	<ul style="list-style-type: none"> <li>➔ Riparian areas in headwater streams that are confined by steep hillsides have been most affected by timber harvest.</li> <li>➔ Riparian areas in mid and lower reaches are comparatively well maintained and currently protected in Elk River NRCA.</li> <li>➔ Elk and Johns River estuaries are among the most pristine estuaries on the west coast; preservation is a high priority.</li> <li>➔ Introduced exotic species</li> </ul>	<ul style="list-style-type: none"> <li>➔ Interplant conifers in deciduous dominant areas where appropriate</li> <li>➔ Identify specific degraded riparian areas for restoration needs</li> <li>➔ Protect (fee simple or easements) key properties of riparian habitat</li> <li>➔ Remove invasive species</li> </ul>

## South Bay Tributaries Tier 2 Concerns

South Bay Tributaries Tier 2		
LARGE WOODY DEBRIS (LWD)		
Symptom	Cause	General Actions
<ul style="list-style-type: none"> <li>➔ LWD is highly variable throughout the South Bay tributaries.</li> </ul>	<ul style="list-style-type: none"> <li>➔ In headwater reaches, LWD is present at an elevated frequency due to increased blow down frequency in steep-sloped riparian areas. Elevated LWD frequency in headwater reaches also contributes to stream blockages associated with undersized or outdated culverts.</li> <li>➔ In mid and lower reaches, LWD frequency is relatively reduced because of high road densities, stream blockages, and direct LWD removal. Reduced LWD frequency is of particular concern in the mid and lower reaches where LWD functions to collect spawning gravel, retain nutrients and promote channel formation.</li> </ul>	<ul style="list-style-type: none"> <li>➔ Develop LWD supplementation plan that will install logjams in key places to improve instream channel structure and habitat diversity</li> <li>➔ Install LWD pieces in conjunction with other restoration projects</li> <li>➔ See riparian actions</li> </ul>

South Bay Tributaries Tier 2		
FLOODPLAIN		
Symptom	Cause	General Actions
<ul style="list-style-type: none"> <li>➔ Floodplain connectivity limited in the upper reaches and reduced in lower reaches</li> <li>➔ Channel incision and confined streams with minimized estuary connectivity</li> </ul>	<ul style="list-style-type: none"> <li>➔ High road density has created a number of channel blockages that limit floodplain interaction, especially in the upper reaches. Floodplain interaction is reduced in lower reaches because of downstream blockages. Downstream blockages modulate instream flow promoting sedimentation and changes in plant community composition in riparian habitat. Connectivity to estuary habitat has also been significantly impacted by instream blockages; thereby, limiting fish usage during estuary residence.</li> <li>➔ Increased timber harvest has also increased peak flow discharge by increasing overland flow, decreasing floodplain interaction and decreasing channel complexity (e.g., LWD). Increased discharges have resulted in downstream channel incision and decreased off-channel habitat access.</li> </ul>	<ul style="list-style-type: none"> <li>➔ Correct barrier culverts. See Section 4 for guidelines.</li> <li>➔ Enhance estuary connectivity</li> <li>➔ Reconnect, enhance, and or restore potential off-channel, floodplain, and wetland habitat</li> </ul>

## South Bay Tributaries Tier 3 Concerns

South Bay Tributaries Tier 3		
WATER QUANTITY		
Symptom	Cause	General Actions
<ul style="list-style-type: none"> <li>➔ Increased peak flows and decreased water retention</li> <li>➔ Conversion of pool habitat to run/glide habitat in headwater and mid-reaches; channel incision in downstream reaches</li> <li>➔ Decreased water retention (via LWD removal) and channel incision has reduced floodplain interaction and access to over-wintering habitat.</li> </ul>	<ul style="list-style-type: none"> <li>➔ Increased vegetative removal in headwater streams, decreased presence of LWD in lower reaches, and decreased off-channel and floodplain connectivity</li> </ul>	<ul style="list-style-type: none"> <li>➔ See LWD actions</li> <li>➔ See Riparian actions</li> </ul>

South Bay Tributaries Tier 3		
WATER QUALITY		
Symptom	Cause	General Actions
<ul style="list-style-type: none"> <li>➔ Primary water quality concerns are associated with elevated sediment delivery</li> <li>➔ Increased water temperatures</li> <li>➔ Presence of carbaryl in estuarine areas</li> </ul>	<ul style="list-style-type: none"> <li>➔ Extensive timber harvest and run-off from roads. Most sediment delivery originates in headwater reaches from increased overland flow (associated with vegetative removal) and road erosion (associated with high densities of parallel-adjacent roads).</li> <li>➔ Likely due to riparian timber harvest in headwater reaches</li> <li>➔ Use of carbaryl (Sieven) by the oyster culture industry also may negatively impact salmonid productivity. Impacts of pesticide and nutrient application on fish productivity are unclear.</li> </ul>	<ul style="list-style-type: none"> <li>➔ Implement TMDL recommendations</li> <li>➔ See Sediment actions</li> </ul>