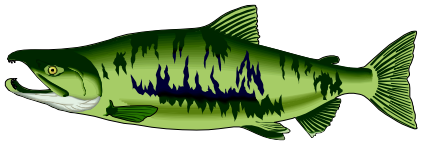
PORT ORFORD WATERSHED

ACTION PLAN



Prepared for

The Port Orford Watershed Council

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ABSTRACT

The *Port Orford Watershed Action Plan* was prepared for the Port Orford Watershed Council whose members are dedicated to sustaining the health of their watershed. This document utilizes detailed information about the Port Orford watershed from the *Port Orford Watershed Assessment* which followed guidelines described in the *Governor's Watershed Enhancement Board's 1999 Draft Oregon Watershed Assessment Manual*.
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WATERSHED ASSESSMENT SUMMARY

Introduction

The Port Orford watersheds, as referred to in this document, include three distinct basins that drain directly into the Pacific Ocean. They include Garrison Lake, Hubbard Creek, and Brush Creek. In total, these three watersheds drain approximately 13,339 acres or 20.8 square miles of land. The Port Orford watersheds, situated entirely within Curry County, are among the smaller basins on the southern Oregon coast. Garrison Lake and certain portions of Hubbard Creek are located within the vicinity of the Port Orford community. Brush Creek, located a few miles south of Port Orford, empties into the Pacific Ocean near Humbug Mountain. Elevations in the Port Orford watersheds range from sea level to approximately 3,040 feet on Rocky Peak, located in the Brush Creek basin. A reservoir located on the North Fork of Hubbard Creek serves as the primary water source of the City of Port Orford. In total, approximately 69% of the watersheds are in private ownership.

History

There is some historic evidence that Garrison Lake was periodically connected to the ocean and subject to saltwater intrusion, like Lake Earl near Crescent City, or Floras and New Lakes in northern Curry County. A huge fire swept through the Port Orford area in late 1800's. Twenty years later a photograph of early Port Orford still shows hundreds of standing dead snags from the fires. There was some logging in all Port Orford watersheds, with the most extensive cutting occurring in the 1950's and 1960's, following the introduction of heavy equipment and improvements in technology after World War II. Port Orford cedar, a rare and precious straight-grained tree, was logged heavily and shipped overseas during the last half of the 20th century.

Watershed Issues

The Port Orford Watershed Council identified the following issues of concern related to land uses: drinking water sources, storm run-off, urban sprawl, sedimentation, water flows, fish passage and habitat, water rights/water quality and water quality related to Garrison Lake.

Ecoregions

Coastal Lowlands make up 27 percent of the basin. Gradients are fairly low, fog and strong winds are common, and rainfall averages 60-85" per year. Strong beaver populations, especially beaver dams, are expected in Coastal Lowland streams.

Southern Oregon Coastal Mountains make up 46% of the basin, with steep to very steep gradients, high rates of erosion, and high stream densities. Rainfall averages 79-140" per year. High winds, landslides and fires are expected natural disturbances.

Coastal Uplands cover 27 percent of the watershed and roughly follow the historic Sitka spruce distribution. High and low gradient habitats are present, with slow moving earthflows common on the hillslopes.

Channel Habitat Types
Twenty-five miles of stream were classified for channel habitat types, with over 30 percent rated as highly responsive. Ten percent of the stream length was identified as low gradient/moderate confinement, eleven percent as moderate gradient/moderate confinement, and ten percent floodplain channel. Floodplain channels are very responsive to disturbance, often migrate laterally and are difficult to restore.

Fish and Fish Habitat Assessment
Chinook and coho are present in the basin at levels much lower than those of steelhead. Five barriers are identified; one adult barrier above Garrison Lake, 1 juvenile barrier on Hubbard Creek, and three uncertain juvenile barriers (two on Hubbard, one on Brush). Field visits are warranted for all known or suspected barriers.

Water Quality Assessment
Water temperatures are greater than 64 degrees at Hubbard Creek below the reservoir, at Garrison Lake, and at Mill Creek Weir. Garrison Lake is 303(d) listed for water weeds/algae, nutrients and pH. Data exist for the City of Port Orford water supply, though it was not analyzed for the assessment.

Wetland Characterization and Functional Assessment
An estimated 21.5 acres of wetlands, located outside the Local Wetland Inventory, were assessed in the Port Orford watersheds. Four wetlands are identified. Thirty-five percent of the acreage assessed had a low level of alteration. Of the four wetlands, one has some riparian restoration potential and the other three could be protected in their present state. All of the wetlands have a surface water connection to another body of water. All of the wetlands are buffered by rural surroundings.

Hydrologic Condition Assessment
This assessment is based on runoff estimates for various landuses and soil cover conditions. Peak flow enhancement (increased stream power) is an increase in the strongest, and potentially most destructive, part of the flood curve.

Risk of peak flow enhancement due to timber harvest is rated as low. Garrison Lake area ranked as high for risk of peak flow enhancement due to urban roads, though the interaction with the lake is unknown. Risk of peak flow enhancement due to rural roads is low in Brush Creek but moderate in Garrison Lake and Hubbard Creek.

All of the roads rankings need to be re-assessed to incorporate revised road data. Flow alteration (road drainage and ditched/drained wetlands) is not addressed in this assessment.

Water Use
Cranberry production and harvest accounts for most of the water used in the watershed. Twenty-five percent of water rights in Brush Creek are junior to the in-stream right. Eleven percent of Hubbard Creek rights are junior. Water is slightly over-allocated from May to October in Brush Creek and April to November in Hubbard Creek. Hubbard Creek has the highest consumptive use, especially in May through October.

PORT ORFORD WATERSHED SYNTHESIS

The watersheds near Port Orford include Brush Creek, Hubbard Creek, and Garrison Lake. All are small, independent, and flow into the Pacific Ocean. Hubbard Creek is contained within the Southern Oregon Coastal Mountains (48%), Coastal Lowlands (37%), and Coastal Uplands (14%). Brush Creek is Southern Oregon Coastal Mountains (57%) and Coastal Uplands (43%). Garrison Lake is contained entirely within the Coastal Lowlands ecoregion. Approximately 69 percent of the Port Orford watersheds are privately owned.

Garrison Lake has had a historic pattern of cycling between lake and lagoon. The watersheds have been mined for gold, timber harvested and partly consumed by wildfires. Brush Creek has been moved from its original channel with highway development through the canyon area.

Sediments in portions of the Hubbard and Brush Creek are unstable, with high sediment production in a Brush Creek tributary. The municipal water supply is in the north Fork of Hubbard Creek, and water quality has been affected by a landslide and by natural tannins. Sediment is linked to phosphate inputs into Garrison Lake. Water temperatures in Hubbard Creek are above the 64 degree standard. Total Maximum Daily Load allowances have been established for aquatic weeds/algae, nutrients, and pH for Garrison Lake. Phosphate levels have declined since the sewage treatment outfall was relocated out of Garrison Lake.

Risk to peak flow enhancement (PFE - increased stream power) due to forest roads and timber harvest is low. Urban roads in the Garrison Lake watershed have a high risk of PFE and rural roads moderate, though how that relates to lake levels in unknown. Rural roads in Hubbard Creek also pose moderate risk to PFE.

Of the 27 miles of stream channel assessed in these watersheds, little less than ten miles are reported as highly responsive/sensitive reach types. Three miles are in low gradient, confined channels. Fish use is limited to steelhead and cutthroat, with no chinook or coho, and is likely not changed in history. A bypass in Brush Creek was constructed to shunt a 5-year flow away from developed areas. Passage concerns exist on North Fork Hubbard Creek and the mainstem for juveniles.

We have no data on shade or large wood in Hubbard, Brush or Garrison Lake. North Fork Hubbard has opportunities for vegetation improvements, and increases are needed in Upper Hubbard. Gorse populations are a concern.

Water use is minimal, with greatest interest in protecting and treating municipal water supplies. Wetlands assessed (not including wetlands report for Port Orford), report two wetlands in Hubbard and two in Brush Creek. All have some potential for improvement through vegetation or connection to another water body.

Limiting factors to fish production appear to be road densities and flood peak flow, sediment sources, floodplain connectivity, channel alterations and migration barriers.

SUBWATERSHED SUMMARIES

Brush Creek

The Brush Creek subwatershed is contained within the Coastal Uplands (43%) and Southern Oregon Coastal Mountains (57%) ecoregions. Landuse is forestry, with a very small percentage of agricultural/rural use. Two wetlands are identified, both with rural buffers and little alteration. Humbug State Park occupies the lower portion of the subwatershed. A hydrologic shunt for deflecting water in high stream flow events is present in the central subwatershed.

Channel habitat typing of 16 miles of stream showed more than 2 miles in highly responsive/sensitive reaches and just over 2 miles in low gradient confined reaches.

Steelhead use the mainstem and larger tributaries. One uncertain juvenile barrier is reported in the lower end of the subwatershed. Temperatures (7-day maximums) are recorded in the low 60's. Water use issues are minor.

Risk of peak flow enhancement (increased stream power due to land use) is rated low for timber harvest, forest roads and rural roads. Unstable roads built on diorite soils are a concern for sediment in Beartrap Creek.

Hubbard Creek

The Hubbard Creek subwatershed is contained in the Southern Oregon Coastal Mountains (48%), the Coastal Lowlands (38%), and the Coastal Uplands (14%) ecoregions. Land use is mostly forestry, with less than ten percent in rural or agricultural use. Two wetlands are identified, both with rural surroundings and moderate levels of alteration.

Channel habitat typing of ten miles of stream showed nearly four miles of highly responsive/sensitive stream reaches and less than one mile of low gradient confined channel. Steelhead use the major tributaries of Hubbard Creek. Three barriers to juvenile migration are reported, one certain and two uncertain.

Temperatures in the mainstem Hubbard Creek are recorded as 60 degrees. Water in the North Fork, flowing from the top levels of the reservoir, shows significant heating (65 degrees). Water use is primarily municipal. A landslide near the near the reservoir is a concern.

Risk of peak flow enhancement (increased stream power) is rated as moderate due to rural roads and low for timber harvest and forest roads.

Garrison Lake

The Garrison Lake subwatershed is entirely within the Coastal Lowlands ecoregion, and contains the City of Port Orford. Land use is mostly urban (55%), with forestry (39%), and water (6.5%).

The 0.9 mile of channel assessed is identified as a flood plain type. There is no anadromous fish use of Garrison Lake. The Department of Environmental Quality has approved TMDL levels for aquatic weeds/algae, nutrients and pH. Temperatures (7-day maximums) for Mill Creek, at the weir, are 74 degrees.

Garrison Lake subwatershed is rated high risk of peak flow enhancement (increased stream power) due to urban roads, though interactions with lake levels are not understood. Risk of peak flow enhancement due to rural roads is moderate, and low for timber harvest and forest roads.

ACTION ITEMS

This list is a product of a synthesis process by natural resource specialists with extensive experience on the South Coast, who reviewed and discussed the watershed assessment for Port Orford. Input from watershed councils is also incorporated. Actions are focused on addressing limiting factors and are listed in order of relative importance, based on the impressions of the resource specialists. For a more complete list of restoration, protection, outreach and assessment activities, refer to the Curry Action Plan. All action items are voluntary, with complete respect for private property rights.

1. **Acquire conservation easements in high quality or critical habitats.**

2. **Restore or improve mainstem Hubbard wetlands.**

3. **Assess wetlands and riparian areas above Garrison Lake for restoration or protection.**

4. **Work with the community on water needs/concerns.**
   Inventory and address (treat) sediment sources.
   Explore feasibility of constructing a new reservoir.
   Work with the City of Port Orford and citizens for more watershed involvement, especially for water conservation.
   Develop and implement a vegetation management plan above the reservoir.
   Evaluate stormwater, septic and other urban water quality concerns.
   Encourage off-stream watering of cattle.

5. **Fix fish migration barriers on Hubbard Creek.**

6. **Evaluate cranberry runoff on water quality**

7. **Assess and protect/stabilize 5 miles of responsive channels.**

8. **Assess status of riparian shade and large wood recruitment.**

9. **Water quality monitoring.**
   Institute water quality measurements in addition to temperature, to identify limiting factors and provide feedback on restoration efforts

10. **Add large wood to Hubbard Creek where appropriate.**

11. **Implement a noxious weed control plan.**
    Identify species and locations of noxious weeds.
    Prioritize control activities.

12. **Look into alternatives to surface water spill from reservoir (i.e. lower intake lever to cooler water).**

13. **Create education/outreach opportunities at the Humbug Mountain State Park.**