BLACK RIVER MANAGEMENT UNIT

BLACK RIVER

Description:

The Black River watershed drains an area of 144 square miles. The mainstem is 25 miles long and its tributaries provide another 84 stream miles. Starting at an elevation of 144 feet at Black Lake, the river meanders gradually over its lowland course before merging with the Chehalis River at RM 47. The gradient over most of the river's course drops an average of nine inches per mile, steepening only at Littlerock. The width of the river varies from 15 to 120 feet.

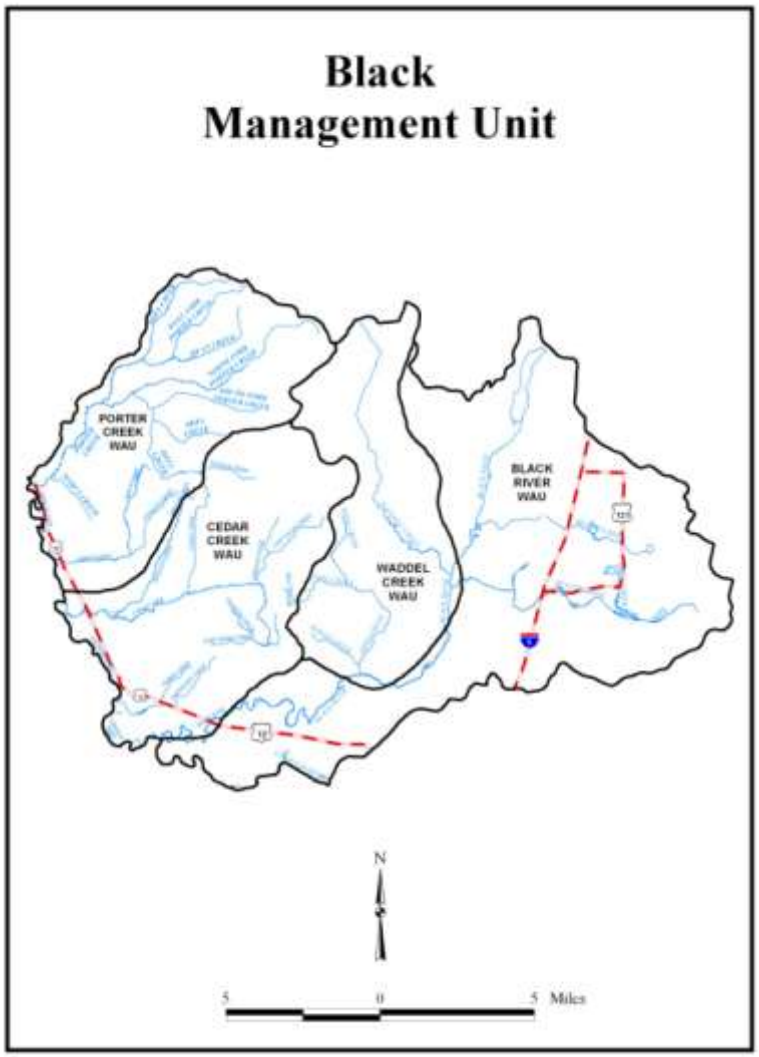
The slow descent for most of the river allows an accumulation of mud, sand, and decomposing organic material that provides for abundant aquatic and semi-aquatic plant life. The Black River valley is a broad floodplain containing numerous wetlands, lakes, ponds, swamps, and bogs. The upper reaches of the mainstem (RM 25 to RM 20) have relatively intact riparian corridors. Construction of a gas pipeline in the 1960s left sporadic mounds of excavation spoils in the river and surrounding wetlands. Subsequent beaver dams connected these mounds, thereby creating a vast wetland that has become an important habitat for fish, amphibians, and migratory birds. A section of gravel/cobble streambed occurs in the lower reaches of the river by Littlerock.

From RM 20 to RM 17, the Black River flows through residential and agricultural development with disturbed riparian conditions. However, from RM 17 to RM 9, riparian conditions improve as the river flows yet again through a long stretch of swamp, marsh, bogs, sloughs, and other wetlands. Vegetation within this section consists of grasses, rushes, sedges, willow, black cottonwood, and red alder. Riparian conditions deteriorate in the lower reach of the Black River (RM 9 to RM 1), which is skirted by intensive agricultural development and buffered only by a narrow strip of trees.

Major Tributaries: Black River, Beaver Creek, Waddell Creek, Salmon Creek, and Mima Creek

Land Uses: Forestry, agricultural, and rural residences

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



Black River Tier 1 Concerns

Black River Tier 1 Concern	WATER QUALITY	
Symptom	**Cause**	**General Actions**
➡ The river has a deep stretch with naturally low dissolved oxygen levels in the lower zone of the stratified reach, increasing the risk of anoxia in the lower Black River. ➡ Low DO due to high temperatures during the summer (303d List for temperature).	➡ Low dissolved oxygen levels. The low gradient and long reaches of wetlands drained by the Black River creates a unique palustrine river that stratifies similar to a lake. This condition has been magnified from land use practices along the river which became apparent during the 1989 Black River fish kill, which resulted in the death of adult Chinook salmon.	➡ Control point-source contamination from dairy farms ➡ Identify specific degraded riparian areas for restoration ➡ Implement TMDL recommendations ➡ Install riparian fencing to exclude or reduce livestock access ➡ Interplant conifers in deciduous dominant areas where appropriate ➡ Revegetate open riparian areas with native plants

Black River Tier 1 Concern	RIPARIAN	
Symptom	**Cause**	**General Actions**
➡ The lower nine miles of the mainstem are “poor”, but the remaining areas have “good” riparian conditions.	➡ Undisturbed habitat. Mainstem has large expanses of swamp, marsh, and sloughs surrounded by a relatively undisturbed riparian habitat. ➡ Vegetation loss data indicated: • 23 miles throughout the watershed. • 4.9 miles on Porter Creek. • 2.2 miles on Cedar and Gibson Creeks. • 6.4 miles within Black River drainage (82 recorded bank erosion sites). ➡ Bank erosion sites were numerous throughout Mima, Waddell, Salmon, and lower Beaver Creeks. In the smaller Porter drainage, 72 (2.6 miles) sites of bank erosion were noted, and 52 sites (3088 feet) were recorded in the Gibson and Cedar Creek subbasins. ➡ Invasive species on tributaries	➡ Control of invasive species on Lower Black, Bloom’s Ditch, and Stoney and Beaver Creeks. See Section 5. ➡ Identify specific degraded riparian areas for restoration needs ➡ Implement alternative methods of bank stabilization (bioengineering) in locations of excessive erosion ➡ Install riparian fencing to exclude or reduce livestock access ➡ Interplant conifers in deciduous dominant areas where appropriate ➡ Protect areas of mid-to-late seral stage riparian corridors with priority given to older stands (applicable to lands that do not have current protection and outside of FPA regulations). ➡ Revegetate open riparian areas with native plants, especially conifers; revegetate stream and river banks for added protection from erosion

Black River Tier 1 Concern	WATER QUANTITY	
Symptom	**Cause**	**General Actions**
➡ Water quantity is considered poor in the river and does not meet minimum instream flows.	➡ Poor water quantity occurs naturally on the Black River due to its general character; however, loss of water from the pipeline crossing and increased water withdrawals (irrigation) has contributed to this. ➡ Fish farming practices. Fish farm south of Black River Ranch has indirectly contributed to water quantity issues. It is suspected that the fish farm's timing of shutting its operation down in summer contributed to the 1989 fish kill due to a lack of input of ground water from the farm into the river. ➡ Agricultural practices. Withdrawals within Beaver Creek drops water quantity below set minimum instream flows.	➡ Conduct study on unregulated/regulated withdrawals, especially gravel mines ➡ Determine if water withdrawals are being followed in accordance with current water rights ➡ Increase education and outreach in the watershed to inform about water withdrawals. ➡ Reduce water withdrawals from surface sources.

Black River Tier 2 Concerns

Black River Tier 2	LARGE WOODY DEBRIS (LWD)	
Symptom	**Cause**	**General Actions**
➡ Mainstem and tributaries lack LWD.	➡ Low levels of LWD. Riparian areas have poor LWD recruitment potential due to a lack of large conifers.	➡ Develop LWD supplementation plan that will install logjams to improve instream channel structure and habitat diversity ➡ Educate landowners on importance of leaving LWD in river ➡ Identify specific degraded riparian areas for restoration ➡ Install large wood pieces in conjunction with other projects ➡ Install riparian fencing to exclude or reduce livestock access ➡ Interplant conifers in deciduous dominant areas ➡ Revegetate open riparian areas with native plants

Black River Tier 2	FISH PASSAGE	
Symptom	**Cause**	**General Actions**
➡ Fish access to spawning and rearing habitat is restricted ➡ Loss of access to Black Lake (Smith and Wenger).	➡ High density of roads with barrier culverts ➡ Natural gas pipeline	➡ Change pipeline and river crossing ➡ Correct barrier culverts. See Section 4 for guidelines.

Black River Tier 3 Concerns

Black River Tier 3	FLOODPLAIN	
Symptom	**Cause**	**General Actions**
➡ Floodplain along mainstem is well connected and extensive. ➡ Without quantifiable data, the floodplain ratings for many of these watersheds cannot be rated. Salmon Creek, Beaver Creek, Bloom's Ditch, and Allen Creek, have substantial off-channel loss and channelization - impacts are rated "poor".	➡ Highly developed residential lands surround Black Lake and agricultural lands are adjacent to the lower 10 miles of Black River, Beaver Creek, Salmon Creek and Blooms Ditch. Commercial timberlands lie along Dempsey, Waddell, Porter, Cedar and Gibson Creeks.	➡ Assess floodplain conditions and identify impacts ➡ Reconnect, enhance, and/or restore potential off-channel, floodplain, and wetland habitat

Black River Tier 3	SEDIMENT	
Symptom	**Cause**	**General Actions**
➡ Livestock activities are contributing to increased sediment input within agricultural areas. ➡ Loss of riparian areas has led to erosion and sediment input. • Waddel Creek has good gravel above the mouth in places; the bottom is scoured in places. • Salmon Creek lacks spawning substrate. • Allen Creek lacks a sediment source. ➡ Drainages with higher road densities have a higher potential of increased delivery of sediment to streams - road run-off ➡ Roads can serve as a conduit for transport of fine sediment to the streams at stream crossings ➡ Based on road densities, sedimentation conditions are “poor” in the Black River and “fair” in the Porter and Cedar and Gibson Creek subbasins.	➡ Livestock access to streams was documented for nearly 1 mile in the Porter Creek watershed, 2.6 miles in Cedar and Gibson Creeks, and 23.9 miles in the Black River drainage (Wampler et al., 1993). ➡ Timber harvest. Bank vegetation loss from timber harvest and unknown sources has the potential of creating sediment input to streams by exposing more soils to erosive sources. Road-related sediment transport results from exposed soil, such as clear-cuts and landings. ➡ Gravel mines ➡ High road densities. Road densities are high in these drainages, ranging from over 4.5 miles of road per square mile in Black River to just under 3 miles per square mile in Porter and Cedar Creeks (Lunetta et al. 1997). ➡	➡ Correct cross drains that may trigger mass wasting on geologically sensitive slopes ➡ Identify sources that are contributing to sediment loading ➡ Implement alternative methods of bank stabilization (bioengineering) in locations of excessive erosion ➡ Install riparian fencing to exclude or reduce livestock access ➡ Livestock exclusion projects and the closure of two major dairy farms have reduced some of the sediment inputs. ➡ Reduce sediment loading by reducing road densities ➡ Relocate gravel mines away from shorelines and floodplain. ➡ Revegetate stream and river banks for added protection from erosion ➡ Upgrade logging roads to comply with Forest and Fish Agreement (1999)

Porter Creek

Description:

Porter Creek is a right bank tributary to the Chehalis River with its headwaters originating in the Black Hills and draining into the Chehalis at river mile 38.5 (Smith Wenger 2001). While the upper reaches are in forestry, the lower reaches consist of floodplain with some residential development and agriculture.

Major Tributaries: WF Porter Creek, SF Porter Creek, NF Porter Creek, Cedar Creek

Land Uses: Forestry, agriculture and rural residences

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

Watershed Analysis: Black River Management Unit, Porter Creek

Porter Creek Tier 1 Concerns

Porter Creek Tier 1	LARGE WOODY DEBRIS (LWD)	
Symptom	**Cause**	**General Actions**
➡ Data gap for LWD. Although data is lacking for LWD, it is likely the effects of historical splash dam activity on the South Fork Porter Creek.	➡ Splash dams. Historically, there were 3 splash dams located on the South Fork Porter Creek (Smith Wenger 2001).	➡ Determine LWD levels in Porter Creek. ➡ Develop LWD supplementation if LWD levels are low. ➡ Install logjams and single piece key placement using large conifer if possible.

Porter Creek Tier 1	FISH PASSAGE	
Symptom	**Cause**	**General Actions**
➡ Numerous road crossings are undersized and do not allow adequate fish passage upstream because of water velocity or perched outfall. Undersized structures also inhibit the movement of streambed material downstream and usually contribute to channel scour directly downstream.	➡ Passage barriers. Placement of undersized stream crossing structures restricts fish passage and natural processes (streambed material transport). Streambed scour may have also caused a passage barrier at a location without road crossings (Smith Wenger 2001).	➡ Correct barrier culverts. See Section 4 for guidelines.

Porter Creek Tier 1	RIPARIAN	
Symptom	**Cause**	**General Actions**
➡ Data gap for riparian. Although more data is needed, riparian is rated as poor: • 39% – Hardwoods • 16% – Non forested • 40% – Mid seral stage	➡ Riparian degradation and loss. 1.2 miles of canopy loss was recorded (Smith Wenger 2001).	➡ Identify specific degraded riparian areas for restoration needs. ➡ Install riparian fencing to exclude or reduce livestock access.

Porter Creek Tier 1	RIPARIAN	
Symptom	**Cause**	**General Actions**
• 6% – early seral stage		➡ Interplant conifers in deciduous dominant areas where appropriate. ➡ Remove invasive species. See Section 5. ➡ Revegetate open riparian areas with native plants.

Porter Creek Tier 2 Concerns

Porter Creek Tier 2	SEDIMENT	
Symptom	**Cause**	**General Actions**
➡ Data gap for sediment. ➡ The current road density warranted a "fair" rating and the bank erosion and livestock access impacts were identified as "moderate". (Smith Wenger 2001). ➡ There are approximately 72 sites totaling 2.6 miles of streambank erosion (Smith Wenger 2001).	➡ Livestock access. There is approximately 1 mile of livestock access to Porter Creek (Smith Wenger 2001). ➡ Moderate road densities. Vehicle activity in the Porter Creek drainage is moderate with a little less than 3 miles of road per square mile of drainage (Smith Wenger 2001).	➡ Determine if sedimentation is a problem in Porter Creek. ➡ Identify contributing sources if sediment is a problem. ➡ Work with landowners to reduce livestock access to Porter Creek

Porter Creek Tier 2	FLOODPLAIN	
Symptom	**Cause**	**General Actions**
➡ Data gap for floodplain (Smith Wenger 2001). ➡ Although data is lacking for the floodplain condition, it is likely the effects of the historical splash dam activity on the South Fork Porter Creek that can still be observed today.	➡ Porter Creek has 8 sites of riprap (Smith Wenger 2001). ➡ Road densities. Porter Creek has county roadways located in the floodplain in the lower 3 miles, but the impact has not been quantified (Smith Wenger 2001). ➡ Splash dams. Historically, there were 3 splash dams located on South Fork Porter Creek (Smith Wenger 2001).	➡ Assess floodplain conditions and identify impacts. ➡ Implement alternative methods of bank stabilization (bioengineering). ➡ Reconnect, enhance, and/or restore potential off-channel, floodplain, and wetland habitat.

Porter Creek Tier 3 Concerns

Porter Creek Tier 3	WATER QUANTITY	
Symptom	**Cause**	**General Actions**
➡ Data gap for water quantity. ➡ Land cover vegetation in the Porter Creek watershed is primarily mid-late seral stage and is rated “good” for hydrologic maturity.	➡ Agricultural practices. There are two potential water withdrawals in Porter Creek (Smith Wenger 2001).	➡ Determine if instream flows are a problem in Porter Creek. ➡ Determine if water withdrawals are being followed in accordance with current water rights.

Porter Creek Tier 3	WATER QUALITY	
Symptom	**Cause**	**General Actions**
➡ Data gap for water quality.		➡ Determine water quality conditions in Porter Creek.