

North Yamhill Watershed Assessment Summary

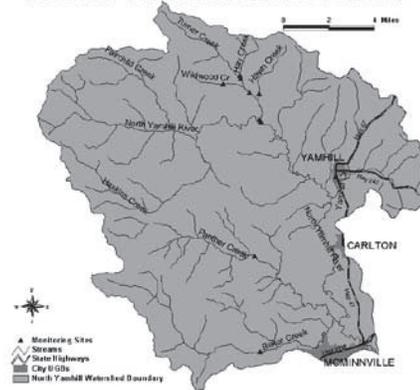
Yamhill Basin Council

Yamhill & Polk Counties, Oregon

Background

- Nearly the entire 113,441-acre watershed, which includes 445 miles of waterways, is in Yamhill Co.
- Major streams include N. Yamhill River, Panther Creek, Baker Creek, Turner Creek, Fairchild Creek, and Haskins Creek.
- Residents are concentrated in Yamhill and Carlton.
- Soils have volcanic and sedimentary parent material.

North Yamhill Watershed



Native Peoples and Practices

- Regular burning by the native Kalapuyans maintained the oak savanna and prairies for at least 4,000 years while preventing Douglas fir forests from developing.
- Fire suppression crews were organized and working to suppress wildfires to protect valuable timber by the early 1930s.

Land Use

- Approximately 60% of the land is used for agriculture. Varied topography allows water to be channeled into streams for cultivation during the wetter part of the year, but also alters hydrology. 22% of the watershed is cultivated for perennial grass seed.
- Forests are the 2nd highest land use, about 37%.
- One rock pit and three quarries are shown on USGS topographical maps of the watershed. Rock is mined for road construction, fill, asphalt paving, or ready mix concrete.

Channel Habitat & Modification

- Most of the surveyed stream segments in the watershed are classified as low gradient flood plains or narrow valley channels.
- Stream incision results from: dredging, dike building, straightening, damming, draining, removing large woody debris, hardening banks with rip-rap (rocks) or concrete.
- Agriculture has had the greatest impact on stream morphology in the watershed.
- Roads run parallel to many streams in the watershed. Since roads require bridges or culverts to access property on the other side of the stream, meandering to dissipate energy is prevented. High velocities are maintained, which begins to downcut and erode the channel. There are 391 stream and road intersections.

Native, Exotic and Rare Species

- Small mammals and 28 cavity-seeking birds are common in oaks.

- Non-native species introduced from other regions or continents occasionally do extremely well and become invasive. The OR Department of Agriculture identifies noxious weeds as plants having the potential to cause economic losses. Cost is high to eliminate weeds once they are established.
- The federal or state government lists 14 species native to the watershed as rare, threatened, or endangered. The BLM lists many additional species as special status or sensitive.

Riparian Zones

- Riparian areas adjacent to streams, rivers and wetlands have higher levels of moisture than adjacent upland areas. Trees in the area provide large woody debris that diverts channels and obstructs flow, thus increasing habitat complexity.
- Riparian vegetation influences fish habitat and water quality by decreasing daily water temperature fluctuations and providing fish with cover from predation. It also stabilizes stream banks, provides habitat for insects and macro-invertebrates and provides nutrients to the ecosystem.
- The lower watershed lacks large wood debris and diverse riparian vegetation. It is intensively managed for agriculture. Most of the vegetation is a narrow one to two tree strip of vegetation along the stream bank.
- Today, 18.3% of streams and in-stream reservoirs in the watershed have only brush or grass and 49.3% have only hardwoods. Ideally, all of these areas should have some mature conifers.

Wetlands

- Wetlands have abundant water, hydric soils, and specially adapted wetland plants. Today, most wetlands have been drained and cultivated.
- Wetlands connect uplands and aquatic ecosystems, connect lakes, streams, rivers and riparian areas to each other, and capture sediment from run-off. They also remove nutrients, improve groundwater recharge, and maintain base flows to streams. Wetlands are important for providing water storage during high flows and habitat to wildlife.
- Historically wetlands were much more extensive than they are today. Wet prairie is now almost non-existent.

Sediments

- There are about 1,307 acres of land that are considered unstable above Pike due to steep (>60%) slopes.
- A major concern about erosion is the contribution from forested areas that are being logged. There are 1,666 acres at high risk for debris flows and 24,447 acres at moderate risk. Debris flows are initiated by landslides on steep slopes that quickly transform into semi-fluid masses of soil, rock, and other debris.
- Landslides that contribute sediment continually are located on Fairchild, Perkins and Turner Creeks. Petch Creek is vulnerable to sediment loading. The headwaters of Panther and Baker Creeks are vulnerable to slides. Potentially unstable road crossings on private lands occur in upper Maroney, Perkins, and Turner Creeks.
- Yamhill County mows ditches where visibility is an issue. Polk County applies herbicides to manage the vegetation. Ditches in Yamhill are re-ditched on a ten-year

rotation during the entire year. Everything that is in the ditches eventually makes it to streams and creeks.

- ODFW stream surveys of Cedar Creek (the lower 6,300 ft) and the North Yamhill main channel (from river mile 20 to river mile 30) show that both channels were rated as having poor stability with approximately 59% and 21% (respectively) of the area examined actively eroding.

Hydrology & Water use

- Streams are influenced by precipitation, withdrawals for irrigation and drinking water, stream channel modifications, changes in land use, and practices and upstream vegetation removal.
- Drainage tiles, ditching, rip-rapping stream banks, and channel straightening all change the way water flows across the land and enters a stream.
- Low flows lead to increases in stream temperatures, decreased water quality conditions, and restriction of water use for consumption by junior users.
- Under Oregon law all water is publicly owned. Water rights are required prior to use or consumption. Streams in the watershed are over appropriated and would run dry during the low flow time of year if everyone exercised their water rights simultaneously. Low streamflow harms aquatic life and prevents sufficient dilution of pollutants.
- The major reservoirs in the watershed are the Haskins Creek Reservoir, water supply for McMinnville, Carlton Lake Reservoir, water supply for Carlton, and a reservoir on Turner Creek that supplies water to the city of Yamhill. Rainbow Lake is a reservoir on Baker Creek but it is not a water supply for any community.

Water Quality

- Benefits of the watershed are domestic water supply, salmonid fish passage, salmonid fish rearing, resident fish and aquatic life, fishing, water contact recreation, aesthetic quality.
- Streams that do not meet set standards of water quality are listed under section 303(d) rules. N. Yamhill River, mouth to Turner Creek is listed for bacterial pollution and warm summer temperature levels. N. Yamhill River, Turner Creek to headwaters and Turner Creek, mouth to Severt Creek are listed for warm summer temperature levels. N. Yamhill River, mouth to Turner Creek is listed for flow modification. Other contaminants that are tested for include nutrients, sediment, organic compounds and solvents and metals.
- High temperatures result in stress, increased metabolism, decreased competitiveness, decreased appetite, and even death of native fish. DEQ's maximum seven day average temperature standard for streams is 64°F.
- Minimum concentrations of dissolved oxygen are essential to support aquatic life and particularly for salmonid species. The screening level of this assessment desired 8 mg/l. For the North Yamhill River, mouth to Turner Creek, three samples out of 111 samples at river mile 4.5 were at 6.2 mg/L and in violation of standards.
- Water pH is an important indicator of the chemical forms and availability of nutrients, as well as the presence of toxic chemicals in the system. Oregon Water Quality standards specify the approved pH range as 6.5-8.5. During the fall, winter

and spring, the DEQ data in the North Yamhill River from river mile 1.5 to 10.0 violated the standard at two sites between 1986 and 1998.

- Elevated levels of nutrients such as phosphorus and nitrates can cause algae and aquatic plant growth to become a problem and even be lethal. Growth also lowers dissolved oxygen levels.
- Turbidity is a measurement of water clarity, with high values indicating high amounts of suspended sediments or particles in the system that can damage fish gills and/or reduce their ability to see prey. Sediments can clog spawning gravel.
- Several pesticides are likely to exist in the streams and rivers of the watershed. There are likely to be a number of agricultural contaminants in the water. Residents likely contribute significant amounts of lawn or garden chemicals.
- There are 11 water discharge permits in the watershed that allow discharge of waste pollutants into the waters of the state or ground.

Fish

- Cutthroat trout are the watershed's most plentiful salmonid. They are native and never have been stocked.
- Winter steelhead were released into the North Yamhill River from 1966 until 1989. Coho salmon were released into North Yamhill River from 1962 until 1988. The stocking program was ended due to concerns over the effect of Coho on native cutthroat trout and winter steelhead.
- Fish barriers such as culverts, dams, waterfalls, logjams, and beaver ponds prevent fish from moving upstream and downstream to adjust to changing habitat conditions. There are 16 barriers on public roads and 10 dams in the watershed.

Restoration & Enhancement

- Passive restoration can simply mean end disturbance and allow nature to recover on its own. Active restoration tries to speed up ecological recovery by rebuilding natural functions but is more complicated because of the difficulty of identifying the causes.
- Ted Gahr restored 30 acres of wetland on his land.
- Over a half million dollars has been spent in the watershed by industry and ODFW to restore steelhead habitat.