

Appendix L

Powder Basin Report

1. Basin Description

The Powder River is a tributary of the Snake River located in east-central Oregon along the border with Idaho. The Powder River Basin is approximately 3,500 square miles in size, and the main channel of the Powder River is approximately 144 miles long. The Powder River Basin is divided into three subbasins: Burnt River, Powder River and Brownlee. All streams in these watersheds drain into the Snake River.

Approximately 50 percent of the land in the Powder River Basin is public, managed mainly by Bureau of Land Management and the U.S. Forest Service. Rangeland is the dominant use in the basin along with forested lands in the western and northeastern portions of the basin, and irrigated pasture and other agricultural land concentrated in the central Baker Valley, Burnt River, Keating and Lower Powder valleys to the south and east. The climate is semi-arid and agriculture is dependent on the use of water stored in reservoirs that are filled by streams draining the Blue Mountains and Wallowa Mountains. Efforts to improve water quality in the basin have mainly focused on improving irrigation efficiency and minimizing irrigation-induced erosion, limiting livestock access to streams and improvements to riparian vegetation condition and floodplain connection.

Table L-1: 2011 Land use and land cover for each subbasin in the Powder.

Subbasin	Watershed Area (km2)	% Urban/Roads	% Forest	% Cultivated	% Range/Forest Disturbance	%Other
Brownlee Reservoir	1630.993	1.1	29.9	5.5	63.0	0.5
Burnt	2847.495	1.0	28.0	2.1	68.0	0.9
Powder	4423.313	1.6	34.8	10.5	51.4	1.6

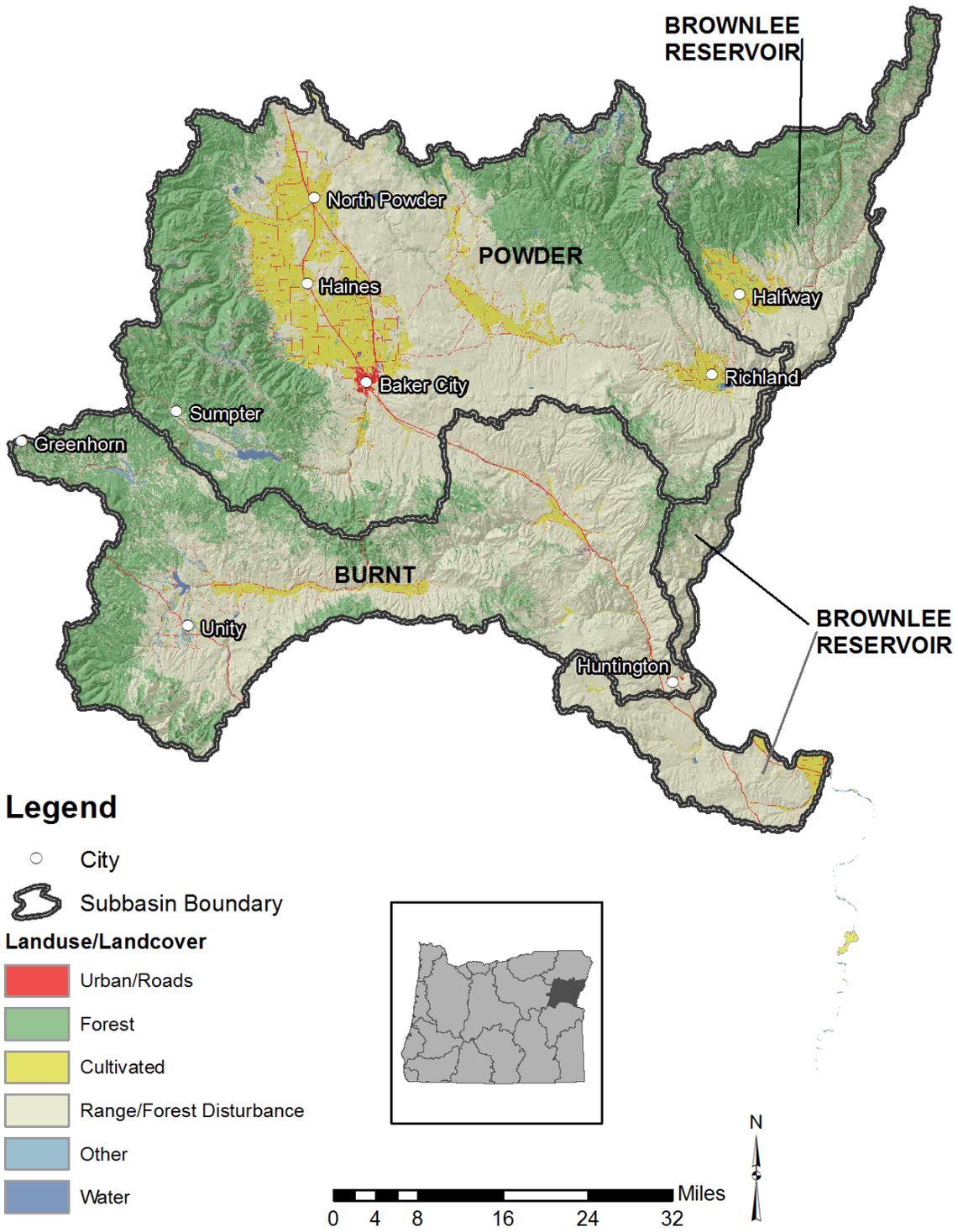


Figure L-1: Land use in the Powder administrative basin.

1.1 Basin Contacts

Table L-2: Oregon DEQ basin contact.

Administrative Area	DEQ Basin Coordinator
Powder River Basin	John Dadoly: 541-278-4616: dadoly.john@deq.state.or.us

2. Water Quality Impairments and TMDLs

2.1 Water Quality Impaired Stream Segments

Under Section 303(d) of the Clean Water Act, states, territories and authorized tribes must submit lists of impaired waters. Impaired waters are those that do not attain water quality standards or support all designated uses. The law requires that states establish priority rankings for waters on the lists and develop Total Maximum Daily Loads (TMDLs) for these waters. Table L-3 identifies the number of Powder Basin waterbody segments impaired by parameter from the 2012 Integrated Report and the number of segments with approved TMDLs. Sources: [ODEQ](#), [USEPA](#)

Table L-3: Number of impaired stream segments with and without a TMDL as identified in Oregon's 2012 Integrated Report and Assessment database.

Parameter	Segments without a TMDL	Segments with a TMDL
4,4'-DDD	0	1
4,4'-DDE	0	1
4,4'-DDT	0	1
Arsenic	2	0
Biological Criteria	2	0
Chlorophyll a	2	1
Dieldrin	0	1
Dissolved Oxygen	10	1
E. Coli	12	0
Fecal Coliform	2	0
Fish tissue, Mercury	2	0
Iron	2	0
Lead	2	0
Mercury	5	0
pH	1	0
Phosphorus	0	1
Sedimentation	6	1

Parameter	Segments without a TMDL	Segments with a TMDL
Temperature	39	3
Total Dissolved Gas	0	1
Total Phosphorus	1	0
Turbidity	1	0

2.2 Total Maximum Daily Load Watershed Plans

The federal Clean Water Act requires that water pollutant reduction plans, called Total Maximum Daily Loads (TMDLs), be developed for water bodies that are listed in Category 5 of the Integrated Report (303(d) List). TMDLs describe the maximum amount of pollutants that can enter the river or stream and still meet water quality standards.

TMDLs take into account the pollution from major sources including discharges from industry and sewage treatment facilities, runoff from farms, forests and urban areas, and natural sources. TMDLs include a margin of safety to account for uncertainty, and may include a reserve capacity that allows for future discharges to a river or stream. DEQ typically develops TMDLs on a watershed, subbasin, or basin level and occasionally at the reach level depending on the type and extent of impairments.

The Water Quality Management Plan (WQMP) is the framework for TMDL implementation that is issued by Oregon along with the TMDL (Oregon Administrative Rules 340-042-0040(1)). The TMDL and WQMP serve as a multi-sector plan and provides the blueprint for TMDL related implementation activities.

- **Currently there are no TMDLs in the Powder Basin.**

3. Implementation Highlights

3.1 Section 319 Grants

Federal Section 319(h) funds are provided annually through the EPA to states for the development and implementation of each state's Nonpoint Source Management Program. In Oregon a portion of 319 grant funding is "passed through" to support community or partner projects that address Oregon's nonpoint source program priorities. Generally, DEQ requires grantees to report annually on the progress made implementing their grant project. This section highlights those outputs and accomplishments reported to DEQ in 2019. Note this section does not identify or include projects proposed and awarded a grant in 2019. Outputs and accomplishments for those projects will be reported to DEQ in future years once they have been implemented. For a listing of projects proposed and awarded a grant in 2019 see Section 3.6.2 of the main report.

In 2019, there were two 319 projects active that reported project outputs and accomplishments to DEQ. Combined the projects have a total grant budget of \$45,440. Table L-4 describes the projects and the reported outputs.

Table L-4: Project outputs reported in 2019 for Section 319 pass through grants.

Project Name	Grantee	Project Description	Reported Outputs
North Fork Burnt River and Deer Creek Stream Gages	Powder Basin Watershed Council	The project grant funds were used to support data collection at the two gage sites by WRD staff for 2018 and 2019.	This project completed in December 2019. Project outcomes included maintenance and operation of the North Fork Burnt River and Deer Creek stream gages. These gages had previously funded by OWRD and are located upstream of reservoirs that supply irrigation water for downstream communities. The data of flow and water temperature was collected at these sites, which will be used to examine the effects of ongoing forest management and climate change on these two respective watersheds. The data included instantaneous flow, mean daily flow, and water temperature for two full years ending in September 2019.
Powder Basin Macroinvertebrate Sampling	Powder Basin Watershed Council	The goal for this project is to fill in data gaps related to aquatic macroinvertebrate assemblages in lower elevations and valley bottoms that had not been addressed by previous sampling efforts. The grant funds will be used to collect samples in Powder River subbasins. PWC will write a QAPP, get trained in sampling methods, and then conduct field sampling in summer months. All data will be available to the public and agencies.	This project completed in June 2019. PWC were able to accomplish the project goal by working with the landowners from our existing network of water quality monitoring sites. This project had the added benefit of pairing aquatic macroinvertebrate data with water quality parameters that had been collected, in some cases, for the previous five years. This project will help in the development of future water quality monitoring plans within the Powder Basin. Even though the final report has not been released yet, the data has already been used to help justify conducting a fish habitat survey in order to identify limiting factors within a local fishery.

3.2 Clean Water State Revolving Fund (CWSRF)

The Clean Water State Revolving Fund loan program provides below market rate loans to public agencies for the planning, design and construction of various projects that prevent or mitigate water pollution. Eligible agencies include federally recognized Indian tribal governments, cities, counties, sanitary districts, soil and water conservation districts, irrigation districts, various special districts and intergovernmental entities. DEQ partners with Oregon communities to implement projects that attain and maintain water quality standards, and are necessary to protect beneficial uses. This section highlights the ongoing projects and the outputs and accomplishments reported to DEQ in 2019.

In 2019 there were no nonpoint source related Clean Water State Revolving Fund projects with reported outputs in the Powder.

3.3 Source Water Protection Grants

The Oregon Health Authority regulates drinking water under state law and the Safe Drinking Water Act and works cooperatively with DEQ on source water protection efforts. Using the Drinking Water Revolving Loan Fund, OHA funds Source Water Protection Grants (up to \$30,000 per public water system) for source water protection activities, monitoring, and planning in Drinking Water Source Areas. In addition, loans are available for improving drinking water treatment, source water protection activities, or land acquisition in source areas. Oregon's Infrastructure Finance Authority is responsible for administering these projects. The loan fund set-asides also fund five Drinking Water Protection positions at DEQ that provide technical assistance to public water systems and communities while they develop and implement strategies that reduce the risk within the delineated source water areas. This section highlights the ongoing projects and the outputs and accomplishments reported to DEQ in 2019.

In 2019 there were no nonpoint source related Drinking Water Source Protection program projects with reported outputs in the Powder.

3.4 Drinking Water Provider Partnership Grants

Oregon DEQ participates in the Drinking Water Providers Partnership (DWPP) with USDA Forest Service Region 6, EPA Region 10, the U.S. Bureau of Land Management OR/WA Office, the Washington Department of Health, Geos Institute and WildEarth Guardians. Together, these partners coordinate a competitive grant solicitation and award program for environmental conservation and restoration projects in municipal watersheds across the Northwest. The Drinking Water Providers Partnership made the first of the annual awards in 2016 and most projects have a focus on nonpoint sources of pollution. The goal of the Partnership and the funding is to develop and support local partnerships to restore and protect the health of watersheds which communities depend upon for drinking water while also benefiting aquatic and riparian ecosystems, including the native fish that inhabit them. This section highlights the ongoing projects and the outputs and accomplishments reported to the DWPP in 2019.

In 2019 there were no active Drinking Water Providers Partnership projects with reported outputs in the Powder.

3.5 OWEB Grant Funded Projects

The Oregon Watershed Enhancement Board (OWEB) is a state agency that provides grants to help Oregonians take care of local streams, rivers, wetlands, and natural areas. These grant projects often address nonpoint sources of pollution and are thus included in this report.

Based on the most recent data available in OWEB’s Oregon Watershed Restoration Inventory (OWRI) database, there were six OWEB funded projects completed in 2018 with a total cash and in-kind budget of \$349,762. The tables below summarize reported outputs for different project activities in each Powder subbasin.

Learn more about OWEB grant programs at <https://www.oregon.gov/OWEB/grants/Pages/grant-programs.aspx>.

Table L-5: Summary of OWEB grant funded fish passage projects completed in 2018, the most recent year data is available in the OWEB OWRI database.

Subbasin	Fish Passage Non-crossing improvement (Number of treatments)
Brownlee Reservoir	1

Table L-6: Summary of OWEB grant funded upland projects completed in 2018, the most recent year data is available in the OWEB OWRI database.

Subbasin	Irrigation system improvement (Acre)	Irrigation system improvement (Feet)
Brownlee Reservoir	94.0	760
Powder	20.4	NA

Table L-7: Summary of OWEB grant funded upland projects completed in 2018, the most recent year data is available in the OWEB OWRI database.

Subbasin	Off-channel livestock or wildlife watering (Number of treatments)	Upland fencing (Acre)	Upland fencing (Mile)
Brownlee Reservoir	2	10.0	0.6
Burnt	1	NA	NA
Powder	7	0.3	NA