STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

Rathdrum Prairie Aquifer Evolving Use

History of the Area

Kootenai and Coeur d'Alene Indian Tribes were early inhabitants of the area. In the mid-1800s, settlers, miners, and explorers started to traverse the region. Between 1853 and 1861, Lieutenant John Mullen completed a 624-mile road between Fort Walla Walla in Washington and Fort Benton in Montana, connecting the Missouri and Columbia watersheds. Completion of the road and discovery of gold brought an influx of settlers.



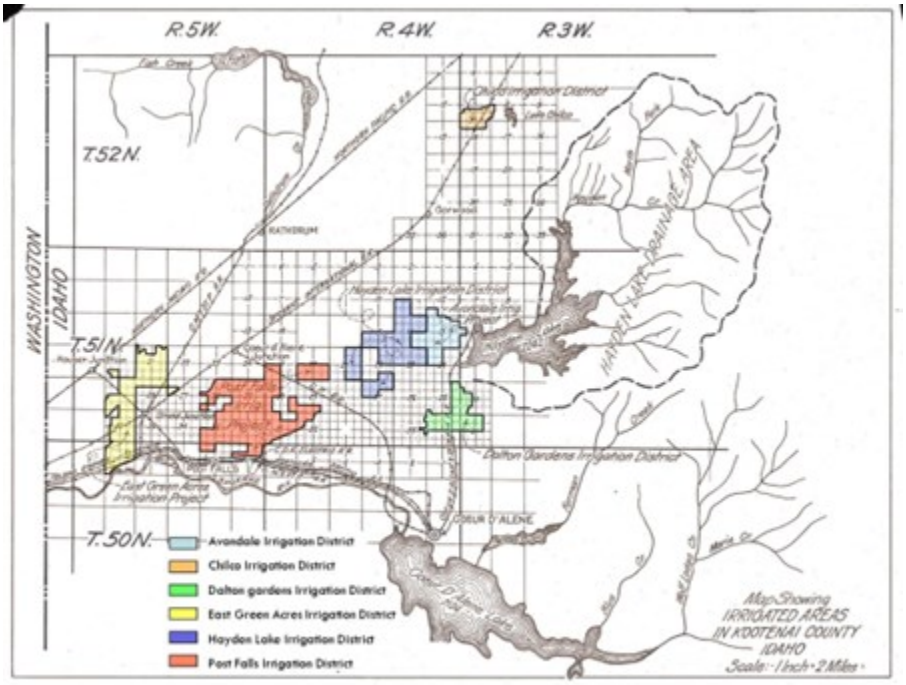
Fort Sherman circa 1890: North Idaho Museum photo

In 1879, Fort Sherman was established on the northern shore of Lake Coeur d'Alene as a trading post and later expanded as the railroad completed a line through the area and mining became more established. The photo above shows Fort Sherman around 1890. Blackwell Island and the Spokane River are in the foreground, and Lake Coeur d'Alene and Tubbs Hill are in the background. Agricultural development on the Rathdrum Prairie consisted of dry-farming hay and oats to meet the needs of the army and the mining and lumber industries.

Agricultural Development

As the population grew on the Rathdrum Prairie, so did agricultural development. Between 1889 and 1966, a number of irrigation districts were formed, supplying water for agriculture from Twin, Hayden, and Hauser Lakes. The five irrigation districts developed were (1) Interstate Irrigation District, which later became the Hayden Lake Irrigation District, (2) Avondale Irrigation District, (3) Dalton Gardens Irrigation District, (4) Post Falls Irrigation District, and (5)

East Greenacres Irrigation District. Hayden Lake was used as a water supply for Hayden Lake, Avondale, Dalton Gardens, and Post Falls Irrigation Districts, while East Greenacres Irrigation District received water from Twin Lakes through Rathdrum Creek and associated ditches (US Bureau of Reclamation 2007). Combined, the five districts provided water to irrigate over 10,000 acres on the Rathdrum Prairie.



Irrigation Districts-Kootenai County: Modified from Idaho Historical Society map



Wooden pipe: North Idaho Museum photo



Irrigation ditch & flume: North Idaho Museum photo

Originally, water was carried through miles of wood pipe and/or irrigation ditches that often developed significant leaks and required considerable repair. Fortunately, leaking areas were easy to locate due to the dense vegetation that grew in the well-watered area next to the leak. Water wells on the Rathdrum Prairie were dug by hand so there were few in the early 1900s. The hand-dug wells were typically square-shaped, measured 36 to 40 inches across on each side, and varied in depth from 10 feet to almost 350 feet. As pump technology improved and drill rigs became more prevalent by the 1930s, the use of water wells increased.

Coeur d'Alene Water Supply

Historically, the city of Coeur d'Alene received all its drinking water from Lake Coeur d'Alene. By about 1905, a surface water system was in place to provide the city with water. In the late

1920s, a facility was constructed with surface intakes near Tubbs Hill. The photo below, taken in 1929 during construction of the facility, shows the placement of the main valve for the surface water intakes and the distribution system. The water was pumped to a storage tank on top of Tubbs Hill and distributed through wood and steel mains.



Courtesy: Jim Markley, CDA Water Dept.

Coeur d'Alene drilled the first of eight water wells in 1955. As the city completed more wells, the amount of water pumped from the lake decreased. The use of surface water by the city was discontinued by about 1985. The surface water pumps and infrastructure are still in place and maintained for emergency purposes.

A number of private water companies have supplied water to the city of Coeur d'Alene, including the Consumers Water Company from approximately 1900 to 1930, the Washington Water Company from 1930 to about 1950, and the Idaho Water Company from 1950 to 1975 (personal communication, Ralph Kapul). The city of Coeur d'Alene created its own water utility department in 1975, keeping a number of employees from the Idaho Water Company.

Post Falls Water Supply

Post Falls was officially established in 1891. In 1871, Fredrick Post constructed a sawmill at the falls, using the flowing water to power the equipment. As the mill became established, so did the village of Post Falls.

In 1885, Post constructed a waterworks facility and distribution lines to the city of Post Falls from the Spokane River. The city received its drinking water from the Spokane River until 1946, when the first municipal well was completed. Eight additional wells were completed between 1946 and 2007 to supply the city with additional water. Interestingly, Well #3, which was completed in 1963, was hand-dug. The sawmill is no longer present but the Post Falls Dams is in its place.

In the early 1900s, agricultural development in the Spokane Valley, mainly apple orchards, required water for irrigation. D.C. Corbin, a local businessman, constructed a wooden aqueduct from the Spokane River at Post Falls to the apple orchards in the Spokane Valley and named it the "Corbin Ditch." Portions of the wooden aqueduct are still visible today.



Post Falls Saw Mill early 1900's:
Photo courtesy of North Idaho Museum

Today, the Post Falls Hydroelectric Development is located near Post Falls where the Spokane River divides and flows through three bedrock channels. Three dams—one in each channel—make up the development. The dams began operating between 1906 and 1908 and currently provide a combined 14.75 megawatts of electricity.



Avista Dam: Photo courtesy City of Post Falls

Aquifer Hydrogeologic Study

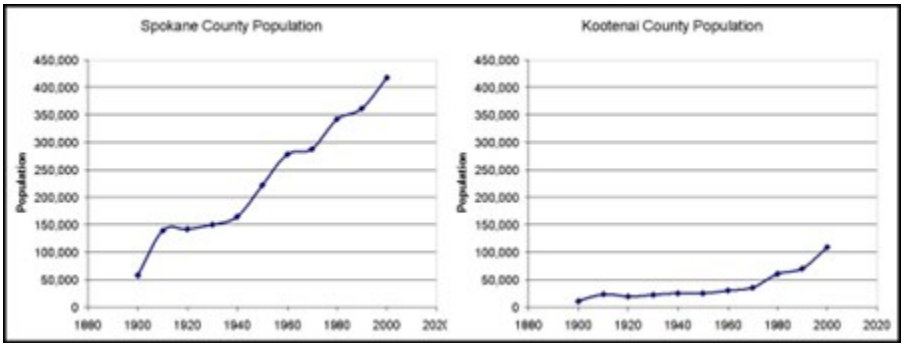
In 2002, Newport Generation, Cogentrix Energy, and Avista Utilities applied for water rights to drill wells on the Rathdrum Prairie to obtain ground water for proposed cogeneration plants. These cogeneration plants would have heated water to create steam and then used the steam to drive generators to produce electricity. About 18 million gallons of ground water per day would have been used in the plants. Significant concern was expressed about using so much water and whether the aquifer could sustain such use. The water rights were granted for one of the proposed projects that would use only a small portion of the 18 million gallons per day. The other projects' water rights were eventually denied.

An increasing demand for ground water and sparse knowledge about the aquifer prompted a call for a hydrogeologic study of the Rathdrum-Spokane Aquifer. In 2003, Congress appropriated $500,000 for the first year of the study. A memorandum of understanding was signed by the US Geological Survey, Washington State Department of Ecology, and Idaho Department of Water Resources to work jointly on the project. Eventually, additional funding was supplied by congressional appropriations and the Idaho and Washington state legislatures, and staff support was provided by state agencies. The project was completed in 2007 at a total cost of approximately $3.5 million. The result was the most comprehensive hydrogeologic study to date of the Rathdrum-Spokane Aquifer.

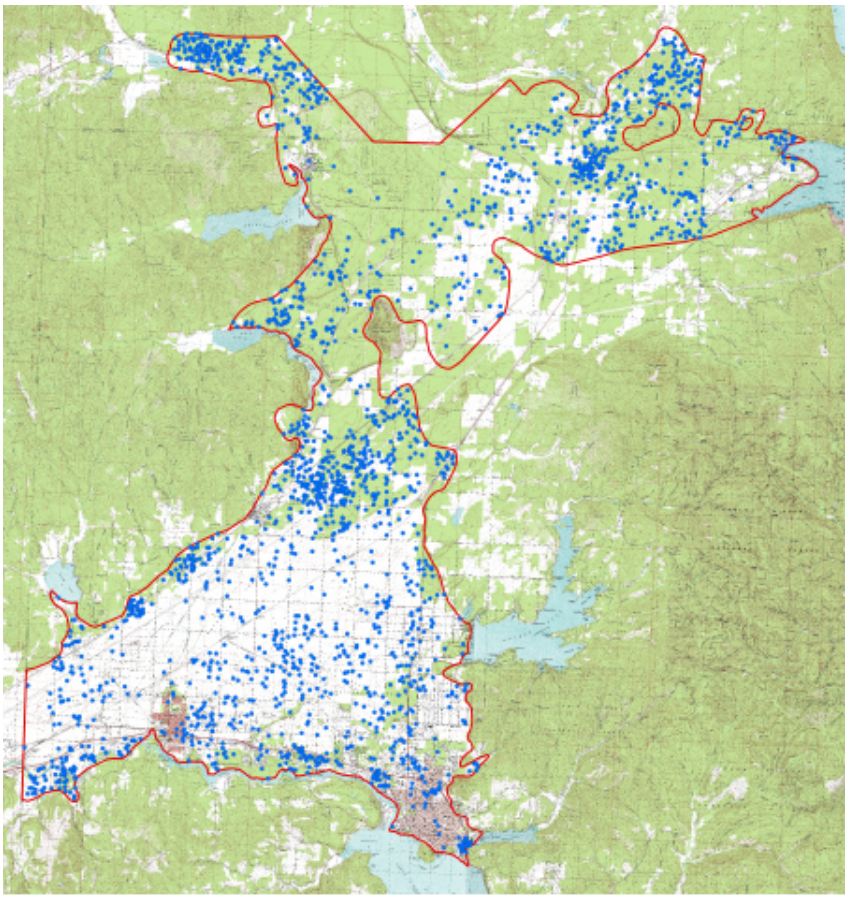
In addition to the aquifer study, another important event occurred in November 2006, when Kootenai County residents approved Resolution 2207-09 to form the Rathdrum Prairie Aquifer Protection District. The district encompasses the area over the Rathdrum Prairie Aquifer and the surrounding upland areas that contribute water to the aquifer. Residents of these areas pay approximately $6 per household and $12 per business to fund aquifer protection activities.

Shifting Use of Ground Water

As the population on the Rathdrum Prairie grows, ground water in the Rathdrum Prairie Aquifer is used more for domestic supply and nonagronomic businesses, with correspondingly less used for agriculture. Not only are populations growing, but the economic focus of communities on the Rathdrum Prairie is becoming less agricultural, which means less water is needed for irrigation.



In the early 1900s, all the water used for drinking or irrigation on the Rathdrum Prairie was derived from the local streams, rivers, and lakes. Today, nearly all the water used for drinking and irrigation comes from ground water. In 1950, there were about 150 water wells on the Rathdrum Prairie (Nace and Fader 1950). Today, there are over 2,200 wells located on the Rathdrum Prairie Aquifer, as seen in the figure below.



Approximate location of water wells completed in the Rathdrum Prairie Aquifer

Although the Spokane River and local streams and lakes no longer supply significant quantities of water for drinking and irrigation, we now recognize that they have other beneficial uses, such as habitat for aquatic species and recreation. Water quality issues present new challenges for the Rathdrum Prairie Aquifer, particularly the potential for ground water contamination from septic discharge, urban runoff, and industrial chemicals. As we recognize the aquifer as a shared resource with communities in Washington state, management of the aquifer will most likely change.

References

US Bureau of Reclamation, 2007. The Rathdrum Project: *http://www.usbr.gov/projects/Project.jsp?proj_Name=Rathdrum%20Prairie%20Project&pageType=ProjectPage*

Nace, R.L. and S.W. Fader. 1950. *Records of Wells on Rathdrum Prairie, Bonner and Kootenai Counties, Northern Idaho.* US Geological Survey Open File Report 51-19.

City of Spokane, Eastern Washington University, Idaho Department of Environmental Quality, Panhandle Health District, Spokane Aquifer Joint Board, Spokane County, US Environmental Protection Agency. 2004. *The Spokane Valley-Rathdrum Prairie Aquifer Atlas.*