

Water Market Profile



NFWF



Columbia Basin
Water Transactions
Program

Wenatchee Basin Profile (Washington)

Report Prepared for

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June 3, 2021

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Purpose

National Fish and Wildlife Foundation (NFWF) operates the Columbia Basin Water Transactions Program (CBWTP) in cooperation with Bonneville Power Administration and Northwest Power & Conservation Council to acquire water to enhance instream flows for the benefit of anadromous and resident fish species. As part of the CBWTP, Qualified Local Entities (QLEs) within the Columbia Basin are responsible for identifying and negotiating voluntary instream water transaction opportunities and serve as independent contractors to NFWF. Pursuant to CBWTP Valuation Policy, each water transaction must be supported with adequate justification for the negotiated price. This water market profile is intended to assist the CBWTP and QLEs in establishing an appropriate range of value for water transactions in the Wenatchee Basin.

This report contains available market data and information from local experts, as well as an informed professional judgment regarding data analysis and pricing. The content of this report is organized as follows:

Basin at a Glance: Offers a broad overview of the demographic and economic characteristics of the region.

Market Analysis: Summarizes CBWTP and non-CBWTP water market activity and analyzes sale and lease data to identify price trends.

Crop Budget Analysis: Estimates lease values for the water by calculating the foregone net revenue that an irrigator would incur should they participate in a temporary instream water lease.

Land Value Analysis: Utilizes regional agricultural sales data to compare land sales *with* and *without* water rights to determine a proxy for the permanent value of water rights.

Water Right Valuation Summary: Summarizes the information and analysis presented in this report and provides a summary of the market information applicable to water transactions in the basin.

Basin at a Glance

Trout Unlimited – Washington Water Project and Washington Water Trust are pursuing opportunities to contract for surface water to improve streamflow conditions where water right diversions for agricultural purposes have diminished water levels and are negatively affecting native fish populations.

The Wenatchee Basin has been listed by the Department of Ecology as one of 16 basins in Washington with over-appropriated and inadequate streamflows for fish. Spring Chinook in the basin have been federally listed as endangered since 1998, and bull trout and steelhead have been listed as threatened under the Endangered Species Act since 1999 and 2006, respectively.¹

The Wenatchee Basin, also known as Water Resources Inventory Area (WRIA) 45, covers 1,330 square miles and is located entirely within Chelan County. Chelan County is 2,994 square miles and includes several other tributaries to the Columbia including the Entiat. The headwaters of the Wenatchee River originate in the Cascade Mountains and flow into Lake Wenatchee. Snowmelt is the primary source of late summer and fall streamflow in the Basin. Variability in winter precipitation results in highly variable streamflow, especially in the late summer and early fall.

The total volume allocated to surface water rights in the basin is 73,099 AF. A majority of available water resources in the region are used for agricultural purposes, primarily for the cultivation of pear and apple orchards and small quantities of field crops. There are 23,819 acres of irrigated land according to the 2017 agricultural census. Fish propagation, which is a largely non-consumptive water use, has the second highest appropriated volume of surface water (behind irrigation) with 17,812 AF. Additionally, the development of groundwater supplies is common in the Basin with 23,729 AF pumped annually, primarily for irrigation and fish propagation.²

Wenatchee Basin at a Glance

Total Area (acres)	850,245 acres
Land in Farms	59,767 ³ acres
Irrigated Land	23,819 ⁴ acres
Market Value of Products Sold	\$258,434,000 ⁵
Major Crops	Pears, Apples, Cherries
Population	77,200 ⁶

The following sections in this market profile develop a range of estimated value for water transactions in the Wenatchee Basin.

¹ Dept. of Ecology, Instream Resources Protection Program

² 2003 Wenatchee River Basin Watershed Assessment

³ USDA. "2017 Census of Agriculture"

⁴ USDA "2017 Census of Agriculture"

⁵ USDA

⁶ US Census, 2019 estimate. Includes entirety of Chelan County

Market Analysis

Market Size

The water rights market in the Wenatchee Basin is small. As a result, this analysis also considers transactions in other basins within Chelan County and downstream along the Columbia River. Chelan County includes the Wenatchee Basin as well as Entiat Basin which is another small tributary to the Columbia River upstream of the confluence between the Wenatchee and Columbia rivers.

In Chelan County, just over \$1.5 million of water rights were traded among non-CBWTP participants from 2015 to 2020. There were 22 transactions identified which consisted mostly of sales (21). One lease was also identified; however, the lease term began in 2021. **Figure 1** illustrates the total transaction volume by year with data labels representing the total value transacted for each year. The market was most active in 2020 due to a large purchase of a municipal water right. In both 2016 and 2019, there were no transactions identified in Chelan County.

Figure 1: Total Transaction Volume and Value in Chelan County



During the same time period, there were two completed CBTWP transactions with a total value of \$402,911. These transactions were part of the same project completed in different phases. The total volume associated with these transactions is 328.29 AF.

The Wenatchee Basin water rights market activity has been characterized by transfers between irrigators, environmental transfers,

including CBWTP projects, and transfers to municipalities. Growing population in the basin has led municipalities to seek additional water rights to meet rising demand. Municipalities in the basin include Wenatchee, Monitor, Cashmere, Dryden, Peshastin, and Leavenworth.

Municipal Transactions

From 2015-2020 there was one municipal water right purchase and one municipal water right lease. Both transactions involved The Regional Water Supply (Regional), which is a cooperative entity formed in 1999 consisting of the City of Wenatchee, Chelan County PUD, and East Wenatchee Water District.

In 2020, Linage Logistics, LLC conveyed its water rights to the City of Wenatchee in lieu of paying environmental mitigation costs associated with their water intake equipment and distribution system.⁷ Linage transferred the water right to the City at no cost. The Lineage water right was historically used for cooling purposes at their Columbia Colstor buildings. That same year the city sold the water right to Regional Water System for \$1,400 per AF. The total volume was 780 AF yielding a total purchase price of \$1,092,000. Regional is the primary water supplier for the City of Wenatchee. As a result, these parties could be considered related which would suggest that the market price of this transaction may not be representative of water right prices throughout the basin.

Regional currently receives its entire water supply from groundwater wells and has no infrastructure in place to utilize the Wenatchee River water rights it acquired from the Wenatchee sale as well as a previous sale in 2013 in which Regional purchased 6,011 AF (1,769 AF CU) from the Pioneer Water Users Association (Pioneer). The City also does not have a current need for the water rights and initially purchased them for future demand. To protect the water rights, Regional temporarily transferred the water rights to the Trust until its system demands increase.

In 2020 Regional entered into an agreement to lease a portion of the Regional water rights that were being held in Trust to Crown Columbia Water Resources, LLC (Crown). Crown is an entity that acquires water rights in the region to resell to other parties as mitigation for water use in the Columbia River Basin. The lease included the entire consumptive use portion of the Pioneer water right (1,769.63 AF CU) but with a total diversion volume of 2,082 AF. The diversion

volume differs from the Pioneer purchase because the Department of Ecology determined that the percent CU at Granite Farms was higher than was determined for the Pioneer right.

The lease begins in 2021 and ends in 2032. The starting price is \$94.55 per AF in 2021 and increases by approximately 2.38% each year with a 2032 lease price of \$119.27 per AF.

In addition to the Regional transfers, there were 13 permanent water right sales associated with the Bear Mountain Water District (Bear Mountain) from 2015 through 2020. Bear Mounting was formed in 2005 to provide water for a large new development on the south side of Lake Chelan near the City of Chelan. At the time, the district was experiencing rapid growth and thus sought to change a large number of water rights to municipal use in order to accommodate this growth. The recession of 2008 led to a significant slow-down in growth which caused the district to re-evaluate its water right holdings. It was determined that even with moderate future growth, the district had a surplus of water rights. The district sold off some of this surplus water right capacity to private surface water users along Lake Chelan. The first transaction was completed in 2011 with 18 additional transactions completed through 2018. Many of these users had been pumping from the lake without a water right and these water rights helped to bring them into compliance. The transactions were mostly for 0.5 AF. No distinction between diversion volume and consumptive use was made. The 9 transactions that occurred in 2015 were made at \$10,000 per AF, the 3 transactions that occurred in 2017 were for \$12,000 per AF, and the one transaction that occurred in 2018 had a unit price of \$14,000 per AF. The unit prices are not reflective of the broader market as they involved small volumes for domestic purposes.

Agricultural Transactions

Two agricultural transactions were identified in Chelan County. These transactions were located just south of the City of Wenatchee close to the Columbia River directly below the confluence between the Wenatchee and Columbia rivers. Both transactions involved orchard farmers.

In 2015, an orchardist purchased 10 AF of irrigation water in the Stemilt Project Reservoir in the Lower Stemilt Irrigation District. The total purchase price was \$20,000 yielding a unit price of \$2,000 per

⁷City of Wenatchee, City Council Meeting, April 9, 2020, Retrieved from:

<https://www.wenatcheewa.gov/home/showpublisheddokument?id=22934>

AF. Both parties were orchard growers located in the Wenatchee Heights area.

The second transaction occurred in 2017 in which 38.7 AF (32.7 AF CU) was transferred from among agricultural producers. The two parties previously acquired the water rights together by purchasing irrigated land in Okanogan County. The total diversion volume for the water rights was 399 AF (337 AF CU). The land and water rights were acquired to move the water rights downstream along the Columbia River to the Wenatchee Heights region in Chelan County. Subsequently, one of the owners purchased the other owner’s interest in the water rights for a unit price of \$1,436 per AF (\$1,700 per AF CU).

Downstream Market Influence

Water rights in the Wenatchee Basin can be transferred downstream to users on the Columbia River. As a result, downstream water rights demand and pricing have the potential to affect market prices in the Wenatchee Basin. Given the limited amount of trading activity in the Wenatchee Basin, transactions occurring downstream on the Columbia River were also analyzed.

For the purposes of this analysis, relevant water rights transactions were defined as transfers to diversions on the mainstem Columbia River between the mouth of the Wenatchee River and McNary Dam. This included transactions in Walla Walla, Douglas, and Grant counties. Water transfers in the Yakima Basin were excluded because water rights regulation has created a significant upward influence on the price in that region. The following sections document several representative water right transactions in the region.

Crown entered into the lease agreement described in the previous section on municipal transactions in Chelan County, so that they could resell the water rights downstream in Walla Walla County. In 2020, Crown agreed to lease to a farming operation located downstream of the Wenatchee River on the Columbia River near Richland. The lease began in 2020 and ends in 2032. In 2020, 139 AF were leased for \$200 per AF. Starting in 2021, 3,300 AF will be leased for \$140 per AF with an annual escalation rate of 1.75%.

In Douglas County there were two transactions identified downstream of the Wenatchee River confluence. The First transaction was between two orchard growers in 2015 involving 78.35 AF (61.47 AF CU) of groundwater rights to the Columbia River Alluvium for \$2,000 per AF.

In 2019 Crown purchased 85 AF from an agricultural producer for \$3,400 per AF.

In Grant County there were six transactions in the Columbia River region from 2015 through 2020. In total, 1,667 AF were sold at unit prices ranging from \$1,800/AF to \$2,445/AF.

Based upon the above information, most of the water right sales in the region have had unit prices between \$1,800 to \$2,500 per AF, with one transaction at \$3,400 per AF. The one lease agreement had a unit price of \$140 per AF.

Environmental Activity Characterized by Conservation Projects

From 2015 to 2020, CBWTP did not fund any projects directly in the Wenatchee Basin. However, there was one CBWTP funded project along the Entiat river (a tributary to the Columbia River just north of the Wenatchee River in Chelan County). There was also one project on the Wenatchee River that was developed by the Washington Water Trust. These projects are described below.

Environmental Transactions/Water Conservation Projects

The Roaring Creek Instream Flow Project

The Roaring Creek instream flow project eliminated two surface diversions utilized by 8 private landowners and moved 1.4 cfs permanently into Trust on Roaring Creek. Roaring Creek is the most critically perennially accessible tributary in the Entiat River for steelhead. The project converted the diversion points to a single location on the Entiat River. The project was initially funded by CBWTP in 2015 with \$57,915 which was used to convert one of the PODs conserving 86.38 AF (\$670.46 per AF). The project was finished in 2017 using \$344,996 of funding from Trout Unlimited which was used to move the other 7 PODs thus conserving another 242 AF (\$1,426 per AF).

Peshastin Irrigation District – Canal Lining project

The Washington Water Trust partnered with the Peshastin Irrigation District to pipe a portion of its main canal. This piping project yielded 360 AF of non-consumptive benefit for a reach of Peshastin Creek and the Wenatchee River. 270 AF of benefit was placed into Trust temporarily for 25 years, while the remaining 90 AF was transferred into Trust permanently. The total cost was \$255,000 yielding a unit cost of \$708 per AF.

Market Summary

Water rights trading activity in the Wenatchee basin is limited due in a large part to the high proportion of high value orchard crops planted in the area. As a result, this analysis included water right transaction information from other neighboring basins as well as downstream along the Columbia River. Based upon the available transactions, water rights in the region are valued between \$1,500 and \$2,500 per AF for sales and \$95 to \$140 per AF for leases.

Market Summary in the Wenatchee Basin

Basin	Market Activity	Price Trend	Demand Sectors
Wenatchee	Low	Stable	Municipal, Agriculture

Crop Budget Analysis

Where there are limited market sales, it is useful to implement more than one independent valuation approach to estimate value. This analysis considers a Crop Budget approach to estimate the value of the annual value of water rights. The Crop Budget approach is used to estimate the agricultural value of water in its current use by determining irrigation water’s contribution to net revenue from agricultural production. Water value estimates derived using the Crop Budget approach provide a measure of the financial compensation required by the irrigator to ensure that net farm income prior to a water right lease or sale is equivalent to net farm income following a lease or sale. The approach estimates the minimum price that a producer would be willing to accept to stop irrigating for a specified period of time.

The Crop Budget Analysis relies upon published crop production budgets, yields, prices, and irrigation practices as starting points. Typically, the analysis relies upon the assumption that water would be leased from a relatively low-value crop such as hay. This assumption is supported by prior water right leases which in most cases were previously used to irrigate hay and pasture. Using data from the National Agricultural Statistics Service (NASS) and communication with the Chelan County Agricultural Extension Agent, it is apparent that the only low-value crops grown in the basin are for domestic use as feed for horses and small farm animals (hobby farms). Establishing water right leases associated

with these uses is likely to be challenging. Further, leases of water rights used to irrigate permanent crops such as apples and cherries is not feasible due to the potential for tree loss and the high value of the crop. As a result of these conditions, this profile does not include a water value estimated through the Crop Budget Approach.

Land Value Analysis

The Land Price Differential Analysis

Agricultural land market transactions can be utilized to estimate a proxy for water right values by comparing the prices of land sold *with* water rights to prices of land sold *without* water rights.

For non-irrigated land, the county appraiser indicated that the majority of farmable land in the Basin is either already considered irrigated, or it would require extensive development and investment (e.g. forest removal, grading, construction of new roads and ditches, etc.) to use it for agriculture. As a result, this analysis focused on irrigated land sales only and used a trend line to estimate the value of non-irrigated and fully irrigated land.

Nearly all of the Wenatchee Basin lies in Chelan County. Working with the County Appraiser's Office, a dataset was constructed of irrigated land sales from 2015 through April of 2021. The data set included the total acreage as well as the total irrigated acreage. Transactions with a total acreage of less than 10 acres were excluded from this analysis. In addition, improvement values associated with each property were subtracted from the total sale price. The following table summarizes the transactions in the irrigated land sales data set.

Land Sale Values per Acre for Irrigated Properties greater in Chelan County, 2015-2020

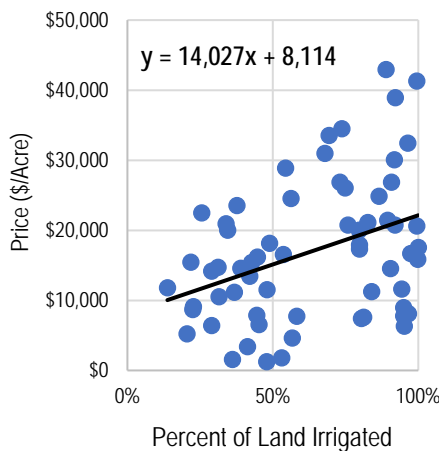
	\$/Acre
Average	\$17,011
Median	\$15,873
Maximum	\$42,939
Minimum	\$1,249
Count	63

According to the County Farm Appraiser, several factors can influence sales prices for irrigated land, including proximity to town and paved roads, the ability to split parcels, and the amount and quality of existing

developed agriculture (i.e. orchard) on the land. This creates some variability in the prices used in this analysis.

Figure 2 shows the per acre sale prices relative to the percentage of total land in each sale that was irrigated. 63 transactions were used for this analysis, totaling 2,198 acres of land. There is a general trend indicating a per acre increase in price as the percent of irrigated land increases. Applying the linear relationship expressed on the chart, the value of a fully irrigated property is approximately \$22,141 per acre and non-irrigated land is valued at \$8,114 per acre. The difference between the two estimates is \$14,027. Assuming a 4.00 AF per acre duty, this analysis estimates the value of water rights to be \$3,507 per AF. While improvement values were excluded, it is still likely that improvements create a bias in this analysis. The improvement values provided by the County are estimates and may underrepresent actual market value. As a result, the estimates from the land price differential analysis are, at best, an upper bound estimate of water right values in the region.

Figure 2: Property Sale Values (\$/acre) by Percent Irrigated Land



values listed for the Market Analysis section have been calculated using the volumes listed in the CBWTP Checklist.

	Lease (\$/AF/Yr.)	Purchase Price (\$/AF)
CBWTP Transfers	N/A	\$670 - \$1,426
Non - CBWTP Transfers	\$95- \$140	\$1,500 - \$2,500
Crop Budget Analysis	N/A	N/A
Land Value Analysis	N/A	\$3,500

Water Right Valuation Summary

CBWTP is pursuing agreements with water right owners in the Wenatchee Basin to improve flows during periods of critical needs for threatened and sensitive anadromous and resident fish species. This memo provides CBWTP with available water right market information to assist in establishing prices for water right agreements in the region. The Table below summarizes the market information contained in this analysis. Please note that