

**ASSESSMENT OF MUNICIPAL WATER RIGHTS IN THE UPPER CLARK FORK
RIVER BASIN**

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Executive Summary

Introduction

This assessment of municipal water rights in the Upper Clark Fork River basin was commissioned by the Upper Clark Fork Basin Steering Committee (UCFSC) to examine the current and future availability of water for those communities holding such rights in the Upper Clark Fork River basin. The study was funded by the Montana Department of Natural Resources and Conservation (DNRC) through the Steering Committee budget.

The Upper Clark Fork River basin is defined by MCA §85-2-335 as “...the drainage area of the Clark Fork River and the Blackfoot River and their tributaries above the confluence of the Clark Fork River and the Blackfoot River.” This basin includes four sub-basins: the Blackfoot River sub-basin (sub-basin 76F), the Clark Fork River above Blackfoot River sub-basin (sub-basin 76G), the Flint Creek sub-basin (sub-basin 76GJ), and the Rock Creek, tributary to the Clark Fork River sub-basin (sub-basin 76E). The basin includes parts or all of the following counties: Missoula County, Deer Lodge County, Silver Bow County, Powell County, Granite County, and Lewis and Clark County. The Upper Clark Fork River basin is closed to the development of new surface water, meaning that the basin has most likely been over-appropriated and new water rights for surface waters cannot be filed. *(New surface water permits can be filed for storage and for hydropower, so long as the new hydropower use does not increase consumption. See in 85-2-336.)* However, MCA §85-2-330 allows an exception for municipalities to file new water rights if required. *(The Upper Clark Fork closure found in 85-2-336 does not include an exception for municipal water rights permits.)*

As certain areas in western Montana continue to experience growth, it is important to analyze whether the water rights pertaining to those communities will accommodate expanded water use by future residents. The Jocko Lakes fire of 2007 highlighted this issue as Seeley Lake’s water system infrastructure (and not the water right) was pushed to the brink due to high demand for water for fire suppression by residents and firefighters. *(85-2-113 provides that shall adopt rules providing for and governing temporary emergency appropriations, without prior application for a permit, necessary to protect lives or property. DNRC rules (36.12.105) TEMPORARY EMERGENCY APPROPRIATIONS states that, “(1) A temporary emergency appropriation may be made without prior approval from the department, but the use must cease immediately when the water is no longer required to meet the emergency.” Fire fighting does not need a water right. The issue that triggered this analysis was the Seeley Lake Water District foreseeing growth beyond its existing water right.)*

The water rights of the following communities represent the only municipal rights that have been filed in the basin: Anaconda, Butte, Deer Lodge, Drummond, Milltown, Philipsburg, and Seeley Lake. Other than Milltown and Seeley Lake, all of these communities are incorporated cities.

This study examines the water rights that each community holds and provides a brief analysis of their water systems. Items analyzed include total flow rates and volumes of

communities' water rights, and the amount of water consumed by their populations. Consumption data are then projected out to the year 2030 to see if the water rights and the communities' water systems will be able to accommodate future growth.

In the following sections of this Executive Summary the methods used for deriving current and estimated future water use in the communities are explained. Then the results of the analyses are presented, followed by discussion and recommendations. In the sections of this report that follow this Executive Summary, the water right and use data, and more detailed analyses pertaining to these, of each community's water system are provided.

Methods

The first set of data that were collected for this assessment were those pertaining to each municipal water right that has been claimed or filed in the Upper Clark Fork River basin; the data are organized by community, and these are listed alphabetically in the following section of this report. Specific data include water right numbers, sources, priority dates, flow rates, and volumes. Total flow rates and volumes were then aggregated for each community. This information was assembled using the Montana Department of Natural Resources and Conservation's (DNRC) Water Rights Query System (available at <http://nris.mt.gov/dnrc/waterrights/>).

Demographic data were then obtained from the 1990 and 2000 Censuses for each community when available. 2007 Census estimates taken from the Montana Census and Economic Information Center were used if they were available and if the municipal rights seemed to serve the Census enumerated or estimated population. However, water rights for certain communities do not serve the entire community or are used to provide water service outside of the community boundary as defined by Census methods.

In these cases the populations served by the municipal water rights were estimated using historic Census data and rates of growth corresponding to either the community or the county in which the system is located, or by utilizing water system or connection data provided by the community water system managers. The population projected to be served by each community's water system was then estimated for the years 2020 and 2030 using population growth rates for the counties in which they are located and applying these to the current estimates of population served (the growth rates come from NPA Data Services which was contracted by the Montana Census and Economic Information Center to develop population projections for Montana counties).

Next, the number of active connections and accounts were obtained for each community's water system; these data were provided by community water system managers. In some communities only one of these was available. It is important to keep in mind that certain connections could have multiple accounts. The 2009 annual water use for each community was found, along with the percentage used of the total

volume of the water rights available. Next, the number of accounts and connections were then projected for the years 2020 and 2030, using the projected growth rates of the counties in which the communities were situated. The projected growth rates came from data provided by NPA Data Services. The NPA data do consider “plausible courses of future population change based on assumptions about future births, deaths, international migration, and domestic migration.” Using the aforementioned growth rates, annual water use was estimated for each community (along with the percentage used of the total volume available in water rights) for the years 2020 and 2030.

Discussion

All of the communities studied appear to have water rights that are sufficient to last them into the future (i.e., the year 2030). A few of the communities (Butte, Anaconda, Drummond) are predicted to experience little to no growth in the next two decades, while Deer Lodge and Philipsburg are predicted to grow but not exceed previous population levels. The only community that is predicted to experience high amounts of growth is Seeley Lake (based on Missoula County’s projected growth rates). Currently, it appears that Seeley Lake has sufficient water rights for growth over the next 20 years. Once Seeley Lake’s water system upgrade is complete, the system will be able to deliver water more efficiently and won’t have the same frequency of water shortages as it did in the past (these occurred largely because of insufficient capacity of the system’s mains and lines).

However, this analysis doesn’t take into account several factors. Based on the available information, it is difficult to determine if certain communities are growing faster than the counties in which they are located. There was also no way to analyze whether the amount of water available will change due to climate change, or if patterns of water use will change. It is important to note that estimations of future water use do not consider any potential changes in per account/ per connection water use related to increased use of water-conserving appliances and practices in residences and businesses. With that being said, the analysis does provide information about whether communities will run out of water given projected growth rates and continued consumption rates.

Table 1. Water use information for Upper Clark Fork River basin communities holding municipal water rights.

Community	Total Volume of Water Rights	Annual Water Use, 2009 (% of Total Volume Available in Water Rights)	Estimated Annual Water Use, 2020 (% of Total Volume Available in Water Rights)	Estimated Annual Water Use, 2030 (% of Total Volume Available in Water Rights)
Anaconda-Deer Lodge County	12467.1 acft/yr	3867 acft/yr (31%)	3523 acft/yr (28%)	3519 acft/yr (28%)
Butte-Silver Bow County	46078.2 acft/yr	8439 acft/yr (18%)	8273 acft/yr (18%)	8486 acft/yr (18%)
Deer Lodge	8481.28 acft/yr	780 acft/yr (9%)	814 acft/yr (10%)	870 acft/yr (10%)
Drummond	No Data	No Data	No Data	No Data
Milltown	No Data	No Data	No Data	No Data
Philipsburg	8463.95 acft/yr	848 acft/yr (10%)	895 acft/yr (11%)	942 acft/yr (11%)
Seeley Lake	350 acft/yr	250 acft/yr (71%)	291 acft/yr (83%)	329 acft/yr (94%)

Recommendations

As said before, Seeley Lake appears to be the community most likely to experience water shortages in the future. Every other community has water rights sufficient for current rates of consumption and to accommodate future growth if it occurs. Seeley Lake is making strides with the \$4,000,000 upgrade to its system, but if the population served by the water system exceeds 3,000 and consumption rates stay constant, Seeley Lake will experience water shortages in distant future. As much of the land in this community is forested, lawn watering ordinances wouldn't make that large of a difference. Provided that Seeley Lake eventually obtains a sewer system for the community, perhaps it could consider the reuse of effluent water. The community could also consider obtaining new water rights.

Detailed Municipal Water Right Assessments

Anaconda - Deer Lodge County

Anaconda is the county seat and the only incorporated city in Deer Lodge County. It is located in the Clark Fork River above Blackfoot River sub-basin (Sub-basin 76G) of the Upper Clark Fork basin. As of the 2000 Census, there are 9,417 residents, though estimates show that the population has and will continue to decrease. As the city government is consolidated with Deer Lodge County's, I will refer to it as "Anaconda-Deer Lodge."

Table 2. Water right information for Anaconda-Deer Lodge. Source: Montana Water Rights Query System. Available online at <http://nris.mt.gov/dnrc/waterrights/>.

Water Right Number	Source	Priority Date	Flow Rate	Volume
76G 17054 00	Groundwater (Well)	Oct 26, 1937	800 GPM	1290 acft/yr
76G 17055 00	Groundwater (Well)	Oct 26, 1937	800 GPM	1290 acft/yr
76G 17056 00	Groundwater (Well)	Oct 26, 1937	1500 GPM	2419.1 acft/yr
76G 17059 00	Fifer Gulch (Headgate)	Feb 23, 1888	2.50 cfs	1814 acft/yr
76G 17060 00	Fifer Gulch (Headgate)	May 15, 1871	2.00 cfs	1451 acft/yr
76G 17061 00	Grays Gulch (Dam/Headgate)	Mar 8, 1898	3.13 cfs	2268 acft/yr
76G 72455 00	Groundwater (Well)	May 29, 1990 5:00 P.M.	2400 GPM	1935 acft/yr
Total			19.88 cfs	12,467.1 acft/yr

Anaconda-Deer Lodge has a total of seven water rights supplying water to its system. In total, Anaconda-Deer Lodge has a total flow rate of 19.88 cfs and 12,467.1 acft/yr for consumptive use. The water system serves the City of Anaconda and a state-run hospital in Warm Springs. According to the former Water Superintendent of Anaconda-Deer Lodge's water system, there are approximately 3,000 connections in use and 2,900 accounts. Around 230 of those connections are metered (7.67%), with a possibility of that number being expanded in the future. Roughly 2,700 (90%) of the connections are residential, 270 (9%) are commercial, and 30 (1%) are industrial. On average, the water system is processing 3,000,000 gallons a day out of a 6,600,000 gallon/day capacity.

Table 3. Montana Population Projections. Estimates were derived using Deer Lodge County's growth rates for 2010, 2020 and 2030 based on data taken from the Demographic Database, Economic Projections Series, NPA Data Services, Inc., Arlington, VA. Accessed 22 January, 2009. Available online at <http://ceic.mt.gov/popprojections.asp>.

1990 Population (BOC 2000)	2000 Population (BOC 2000)	2007 Est. Population Served	2009 Est. Population Served	Projected Population Served - 2020	Projected Population Served - 2030
10356	9417	8852	8638	7870	7860

Anaconda - Deer Lodge is planning to expand its infrastructure to the Mill Creek power substation, which is four miles outside of town. The community is also planning a \$1,500,000 upgrade to their system, which hasn't been upgraded since 1992. There aren't any plans to expand the community's water rights, though hopefully there will be an expansion on meters on the system.

Table 4. Water use. *Active connections, accounts, and annual water use numbers came from the Water Superintendent of the Anaconda/Deer Lodge Water Department.

Active Connections – 2009*	Accounts – 2009*	Annual Water Use - 2009 (approx.)* (% of Total Volume Available in Water Rights)	Water Quantity Consumed (Monthly Max)*
3000	2900	3867 acft/yr (31%)	up to 200,000,000 gal/mo

Currently, Anaconda-Deer Lodge is using 31% of the available water right volume. Since the city/county is projected to experience a decline in population in the next 20 years, there is clearly enough in water rights to provide for any future expansion in use. The community will have enough water for years to come.

Table 5. Water use in the year 2020. To calculate the projected number of connections and accounts, the 2009 numbers for people per connection and account were divided by the projected population served. The projected number of connections and accounts were determined by taking the 2009 numbers and multiplying them by the projected population growth rates. The estimated annual water use was determined by taking the 2009 annual water use and multiplying that by the projected population growth rate.

People per Connection - 2009	People per Account - 2009	Projected Population Served - 2020	Projected Number of Connections - 2020	Projected Number of Accounts - 2020	Estimated Annual Water Use, 2020 (% of Total Volume Available in Water Rights)
2.88	2.98	7870	2733	2642	3523 acft/yr (28%)

Table 6. Water use in the year 2030. Numbers calculated in the same fashion as they were in Table 5.

Projected Population Served - 2030	Projected Number of Connections - 2030	Projected Number of Accounts - 2030	Estimated Annual Water Use, 2030 (% of Total Volume Available in Water Rights)
7860	2730	2639	3519 acft/yr (28%)

Butte - Silver Bow County

Butte is the county seat and largest city of Silver Bow County. It is located in the Clark Fork River basin above Blackfoot River sub-basin of the Upper Clark Fork River basin (i.e., sub-basin 76-G). The population stood at 33,892 in the 2000 Census (which included all of surrounding Silver Bow County – the analysis that follows utilizes an estimate of the Butte population served provided by the Manager of Water Treatment), and is anticipated to decrease within the next 10 years (i.e., by 2020) only to rebound to close to the current population level by 2030.

Table 7. Water right information for Butte-Silver Bow County. Source: Montana Water Rights Query System. Available online at <http://nris.mt.gov/dnrc/waterrights/>. *Right used for in-town irrigation.

Water Right Number	Source	Priority Date	Flow Rate	Volume
76G 47492 00*	Groundwater (Well)	March 18, 1982 10:17 A.M.	12 GPM	1 acft/yr
76G 47493 00*	Groundwater (Well)	March 18, 1982 10:16 A.M.	2.50 GPM	1 acft/yr
76G 47494 00*	Groundwater (Well)	March 18, 1982 10:18 A.M.	6.00 GPM	1 acft/yr
76G 47495 00*	Groundwater (Well)	March 18, 1982 10:19 A.M.	2.00 GPM	1 acft/yr
76G 47496 00*	Groundwater (Well)	March 18, 1982 10:15 A.M.	14.00 GPM	1 acft/yr
76G 17052 00	Yankee Doodle Creek (Dam)	Jul 11, 1907	4.35 cfs	3,156 acft/yr
76G 17057 00	Pilgrim Gulch (Headgate)	Jan 14, 1914	10.00 cfs	7,238 acft/yr
76G 17062 00	Basin Creek (Dam)	Nov 20, 1868	24.66 cfs	17,897.2 acft/yr
41D 17053 00	Big Hole River (Surface)	Feb 4, 1901	21.26 cfs	15,426.5 acft/yr
41D 17058 00	Divide Creek, South Fork (Surface)	Apr 1, 1866	12.50 cfs	2,360.50 acft/yr
Total			72.77 cfs (not including irrigation)	46,078.2 acft/yr* (not including irrigation)

Butte-Silver Bow County has a total of ten water rights that supply water for its system. The water rights are from both the Clark Fork River above the Blackfoot River sub-basin of the Upper Clark Fork River basin, and the Big Hole River sub-basin of the Upper Missouri River basin. Though part of its system is supplied by water that doesn't originate in the Upper Clark Fork, that water will be included for the purpose of this analysis.

The system supplies water for the communities of Butte, Walkerville and Rucker, and currently serves a population of between 27,000 - 28,000, according to the Manager of Water Treatment. Part of the City of Butte isn't served by the system; instead, they rely on wells for their water source. The water system is fully developed, and lately there have been water system upgrades (renewals and replacements of mains and lines) that have made the system more efficient. There are 12,450 active connections in use as of the end of 2008, of which 5,544 (44.5%) are metered. The split between the number of different types of users is around 89% residential, 8% commercial, 2% industrial, and 1% public (governmental).

Table 8. Montana Population Projections. Estimates were derived using Silver Bow County's growth rates for 2010, 2020 and 2030 based on data taken from the Demographic Database, Economic Projections Series, NPA Data Services, Inc., Arlington, VA. Accessed 22 January, 2009. Available at <http://ceic.mt.gov/popprojections.asp>.

1990 Population (BOC 2000)	2000 Population (BOC 2000)	2009 Est. Population Served	Projected Population Served - 2020	Projected Population Served - 2030
33309	33892	27500	26959	27650

The water system produces around 7.5 million gal/day on average, and is capable of producing 23 million gal/day, giving the average use of 32.6% of its system. Peak consumption tends to peak in the months of July and August, where 350 million gal/mo has been consumed. Consumption tapers off in the winter months, as one would expect. According to the Manager of Water Treatment, maximum consumption days are down, due to main renewal and the fixing of leaks. In fact, prior to 1994, some of the transmission lines were wooden pipelines.

Apparently, even though ample capacity exists for high summer water use, the system implements water conservation measures in summer months. The water system staff begins to implement water conservation measures in place before restrictions for consumers take effect (mandatory restrictions include alternating days for watering lawns). The water system also makes sure to use the local media to its advantage in advertising restrictions on water.

Table 9. Water use. *Active connections, accounts, and annual water use data were provided by the Manager of Water Treatment of the Butte-Silver Bow Water Utility Division.

Active Connections – 2009*	Accounts – 2009*	Annual Water Use - 2009 (approx.)* (% of Total Volume Available in Water Rights)	Water Quantity Consumed (Monthly Max)*
12450	No Data	8439 acft/yr (18%)	up to 350 million gal/mo

If one looks at the numbers in terms of water consumption, the Butte-Silver Bow water system has nothing to worry about for quite a long time. The area is experiencing little

to no population growth. In fact, the population of Butte-Silver Bow used to be larger than it is today. Currently, each connection has five to six times the amount of water available than is used. Because of these facts, it is hard to say if and when Butte-Silver Bow will run out of water.

Table 10. Water use in the year 2020. To calculate the projected number of connections and accounts, the 2009 numbers for people per connection and account were divided by the projected population served. The projected number of connections and accounts were determined by taking the 2009 numbers and multiplying them by the projected population growth rates. The estimated annual water use was determined by taking the 2009 annual water use and multiplying that by the projected population growth rate.

People per Connection - 2009	People per Account - 2009	Projected Population Served - 2020	Projected Number of Connections - 2020	Projected Number of Accounts - 2020	Estimated Annual Water Use, 2020 (% of Total Volume Available in Water Rights)
2.21	No Data	26959	12205	No Data	8273 acft/yr (18%)

Table 11. Water use in the year 2030. Numbers calculated in the same fashion as they were in Table 10.

Projected Population Served - 2030	Projected Number of Connections - 2030	Projected Number of Accounts - 2030	Estimated Annual Water Use, 2030 (% of Total Volume Available in Water Rights)
27650	12518	No Data	8486 acft/yr (18%)

Deer Lodge

Deer Lodge is the largest city and seat of Powell County. It is located in the Clark Fork River basin above Blackfoot River sub-basin of the Upper Clark Fork River basin (i.e., sub-basin 76-G). As of the 2000 Census, Deer Lodge had 3,421 residents. If one applies Powell County's projected growth rates for 2010 - 2030 (Table 13), Deer Lodge's population is expected to nearly rebound to the 1970 population.

Table 12. Water right information for City of Deer Lodge. Source: Montana Water Rights Query System. Available online at <http://nris.mt.gov/dnrc/waterrights/>.

Water Right Number	Source	Priority Date	Flow Rate	Volume
76G 100138 00	Groundwater (Well)	October 30, 1996 1:55 P.M.	500 GPM	152.46 acft/yr
76G 10392 00	Groundwater (Well)	Jul 1, 1934	700 GPM	1128.93 acft/yr
76G 10393 00	Groundwater (Well)	Oct 24, 1946	1500 GPM	2419.14 acft/yr
76G 10394 00	Groundwater (Well)	Oct 5, 1946	1750 GPM	2525.49 acft/yr
76G 10396 00	Groundwater (Well)	Sep 19, 1931	500 GPM	807.26 acft/yr
76G 10395 00	Tin Cup Joe Creek (Headgate)	Mar 19, 1864	2.00 cfs	1448 acft/yr
Total			11.91 cfs	8481.28 acft/yr

Deer Lodge has a total of six water rights. The total volume of the active water rights is 8481.28 acft/yr. The water system supplies water within the Deer Lodge city limits. Currently, there are 1700 connections, of which 1474 are active. Around 150 of those 1474 connections are metered (10.2%). There are about 1350 residential connections (93.1% of total) and 100 commercial users (6.9%) in Deer Lodge's system. The only industrial user in Deer Lodge is a sawmill.

Table 13. Montana Population Projections. Estimates were derived using Powell County's growth rates for 2010, 2020 and 2030 based on data taken from the Demographic Database, Economic Projections Series, NPA Data Services, Inc., Arlington, VA. Accessed 22 January, 2009. Available at <http://ceic.mt.gov/popprojections.asp>.

1990 Population (BOC 2000)	2000 Population (BOC 2000)	2007 Est. Population Served	2009 Est. Population Served	Projected Population Served - 2020	Projected Population Served - 2030
3378	3421	3502	3529	3685	3940

Deer Lodge has two storage tanks, one holding 2,000,000 gallons and another holding 600,000 gallons. All the water from the city's water rights enters the storage tanks.

Generally, the system isn't affected by drought problems. The aquifer reaches its lowest point in August, but still has plenty of water for consumption. Up to 1,000,000 gallons of water are used per day in the summertime in Deer Lodge, with a decrease to around 350,000 gallons per day in the winter. In terms of expanding water rights, the City of Deer Lodge is looking into building an industrial park west of the city, though that park wouldn't be connected to the city water system. Instead, wells would be drilled to provide the industrial park with water.

When it comes to conservation measures for the city, Deer Lodge has a project that uses effluent water that has been operational since 2000. A mechanical wastewater plant has also been installed to treat the water to make it suitable for consumption. Deer Lodge has also instituted sprinkling hours and has alternating days for residents to water their lawns. There is an employee checking for lawn watering violations. As the summer months approach, brochures are distributed and water conservation measures are mentioned in the local newspaper. As in every other water system, leaks occasionally develop. Usually, leaks are identified by homeowners, but sometimes a leak detection service is utilized that uses ultrasound to identify leaks.

Table 14. Water use. *Active connections, accounts, and annual water use data were provided by the Operator of the City of Deer Lodge Water Department.

Active Connections – 2009*	Accounts – 2009*	Annual Water Use - 2009 (approx.)* (% of Total Volume Available in Water Rights)	Water Quantity Consumed (Monthly Max)*
1474	1394	780 acft/yr (9%)	up to 32,500,000 gal/mo

If one looks at the amount of available water for use in Deer Lodge, it becomes apparent that Deer Lodge has plenty in water rights to serve the city's consumptive needs. Currently, there is 5.75 acft/yr available per connection and 6.08 acft/yr available per account, which is over ten times the current consumptive use rate. Though Deer Lodge is expected to grow in the next 20 years, the population will still not exceed previous levels by 2030 (4,306 in 1970). Assuming there was enough water to serve the city back then, there will be plenty of water in the future for Deer Lodge unless Deer Lodge experiences unprecedented growth.

Table 15. Water use in the year 2020. To calculate the projected number of connections and accounts, the 2009 numbers for people per connection and account were divided by the projected population served. The projected number of connections and accounts were determined by taking the 2009 numbers and multiplying them by the projected population growth rates. The estimated annual water use was determined by taking the 2009 annual water use and multiplying that by the projected population growth rate.

People per Connection - 2009	People per Account - 2009	Projected Population Served - 2020	Projected Number of Connections - 2020	Projected Number of Accounts - 2020	Estimated Annual Water Use, 2020 (% of Total Volume Available in Water Rights)
2.39	2.53	3685	1539	1456	814 acft/yr (10%)

Table 16. Water use in the year 2030. Numbers calculated in the same fashion as they were in Table 15.

Projected Population Served - 2030	Projected Number of Connections - 2030	Projected Number of Accounts - 2030	Estimated Annual Water Use, 2030 (% of Total Volume Available in Water Rights)
3940	1645	1567	870 acft/yr (10%)

Drummond

Drummond's Town Clerk/Treasurer was interviewed for this assessment; there was not a water system manager to interview given that Drummond has no municipal water system! The town relies entirely on wells for its residential, commercial and industrial water supply. The infrastructure that exists is a water tower filled by a well that supplies water for the town's fire hydrants. There is also a main sewer line that serves part of the town.

One thing that caught our attention was the Clerk/Treasurer's concerns about contamination of the water supply from the mines upstream. She also mentioned how the town was concerned that it was a hot spot for cancer.

The town of Drummond was incorporated on August 14th, 1945. Though there are two water rights classified as 'municipal,' they aren't used for that purpose and are fairly small (the two water rights add up to 85 GPM).

Table 17. Water right information for the Town of Drummond. Source: Montana Water Rights Query System. Available online at <http://nris.mt.gov/dnrc/waterrights/>.

Water Right Number	Source	Priority Date	Flow Rate	Volume
76G 215019 00	Groundwater (Well)	Dec 31, 1924	50.00 GPM	0.61 acft/yr
76G 215020 00	Groundwater (Well)	Jul 1, 1962	35.00 GPM	No Data
Total			0.19 cfs	No Data

Milltown

At present, little information was able to be gathered about Milltown, aside from the fact that the southern half of Milltown, Milltown South, has a water system. It is operated by the Milltown Water Users Association. At the time of dissemination of this draft report, we are still waiting for more information about the use of Milltown's water rights and system.

Table 18. Water right information for the Town of Milltown. Source: Montana Water Rights Query System. Available online at <http://nris.mt.gov/dnrc/waterrights/>

Water Right Number	Source	Priority Date	Flow Rate	Volume
76F 3849 00	Groundwater (Well)	October 7, 1974 11:28 A.M.	95.00 GPM	No Data
76F 57721 00	Groundwater (Well)	January 28, 1985 9:30 A.M.	200.00 GPM	53.51 acft/yr
Total			0.66 cfs	No Data

Philipsburg

Philipsburg is a town located in Granite County, Montana, of which it is the county seat. It is located in the Flint Creek sub-basin of the Upper Clark Fork River basin. Philipsburg's population was 914 at the 2000 Census and is expected to slightly increase in the next 20 years if it follows Granite County's predicted demographic trend.

Table 19. Water right information for Philipsburg. Source: Montana Water Rights Query System. Available online at <http://nris.mt.gov/dnrc/waterrights/>. *Calculated.

Water Right Number	Source	Priority Date	Flow Rate	Volume
76 GJ 30009405	Spring (Groundwater)	March 9, 1989 4:00 P.M.	150 GPM	241.95 acft/yr
76 GJ 148497 00	Boulder Creek, South Fork	Oct 28, 1892	2.00 cfs	1,447 acft/yr
76 GJ 148506 00	Stewart Gulch	May 19, 1887	2.00 cfs	1,447 acft/yr
76 GJ 145511 00	Fred Burr Creek	Oct 16, 1889	2.35 cfs*	1,700 acft/yr
76 GJ 210974 00	Fred Burr Creek	Oct 16, 1867	2.5 cfs	1,814 acft/yr
76 GJ 210976 00	Fred Burr Creek	Jun 4, 1890	2.5 cfs	1,814 acft/yr
Total			12.01 cfs	8463.95 acft/yr

Philipsburg has six municipal water rights that supplies water for its system. The total flow rate for those six water rights equal 12.01 cfs and the total volume is 8,463.95 acft/yr. The water system serves Philipsburg and parts of unincorporated Granite County. According to the Public Works Director of the town, there are diversions on two of the systems and a pump on two other systems. The water system is fully developed and there are over 550 connections, 530 of which are active. Currently, none of the connections are metered, but meters will be installed in Spring 2009. The split in consumption between different types of customers is roughly 80% residential to 20% commercial. The only industrial connection in Philipsburg supplies water to an ore mill.

Table 20. Montana Population Projections. Estimates were derived using Granite County's growth rates for 2010, 2020 and 2030 based on data taken from the Demographic \Database, Economic Projections Series, NPA Data Services, Inc., Arlington, VA. Accessed 22 January, 2009. Available at <http://ceic.mt.gov/popprojections.asp>

1990 Population (BOC 2000)	2000 Population (BOC 2000)	2007 Est. Population Served	2009 Est. Population Served	Projected Population Served - 2020	Projected Population Served - 2030
925	914	922	930	982	1034

As with other cities in the Upper Clark Fork basin, Philipsburg's water use peaks in the summertime and is lowest in the winter. During the summer, monthly rates can go as high as 650,000 gallons of water per day, while in the winter it drops down to around 330,000 gal/day. According to the Public Works Director, most of Philipsburg's water comes from a high mountain lake. As the water descends from the lake, the same water used for consumption is also used to generate hydropower.

Philipsburg currently has no water conservation program in place, which might change once the entire system gets metered in Spring 2009. The meters are principally going in for the sewer to operate more cheaply and for less water to be treated. Once the metering takes effect, people will most likely be more careful about consuming water. At this point, with a potential per account water use rate of 15.39 acft/yr (and over 9 acft/yr per person), the town of Philipsburg has plenty of water for its consumptive, industrial, commercial and irrigation needs.

Table 21. Water use. *Active connections, accounts, and annual water use numbers came from the Public Works Director of the Town of Philipsburg.

Active Connections – 2009*	Accounts – 2009*	Annual Water Use - 2009 (approx.)* (% of Total Volume Available in Water Rights)	Water Quantity Consumed (Monthly Max)*
530	550	848 acft/yr (10%)	up to 20,000,000 gal/mo

When analyzing the numbers in the years 2020 and 2030 (Table 4 and Table 5), it becomes apparent that Philipsburg will have plenty of water for years to come. The main question comes down to the efficiency of Philipsburg's infrastructure. Philipsburg has a very high rate of consumption per account and per connection. It seems that this high rate stems from the fact that none of the connections are metered. Perhaps the consumption will decrease once people have to start paying for how much water they consume.

Table 22. Water use in the year 2020. To calculate the projected number of connections and accounts, the 2009 numbers for people per connection and account were divided by the projected population served. The projected number of connections and accounts were determined by taking the 2009 numbers and multiplying them by the projected population growth rates. The estimated annual water use was determined by taking the 2009 annual water use and multiplying that by the projected population growth rate.

People per Connection - 2009	People per Account - 2009	Projected Population Served - 2020	Projected Number of Connections - 2020	Projected Number of Accounts - 2020	Estimated Annual Water Use, 2020 (% of Total Volume Available in Water Rights)
1.75	1.69	982	560	581	895 acft/yr (11%)

Table 23. Water use in the year 2030. Numbers calculated in the same fashion as they were in Table 22.

Projected Population Served - 2030	Projected Number of Connections - 2030	Projected Number of Accounts - 2030	Estimated Annual Water Use, 2030 (% of Total Volume Available in Water Rights)
1034	590	612	942 acft/yr (11%)

Seeley Lake

Seeley Lake is an unincorporated community located in the Blackfoot sub-basin (Sub-basin 76F) of the Upper Clark Fork River basin. It has experienced significant amounts of growth in recent years and if its growth matches the projected growth of Missoula County, the population served by its water system is projected to rise to 2,635 in 2030, a 31.8% increase.

Table 24. Water right information for Seeley Lake. Source: Montana Water Rights Query System. Available online at <http://nris.mt.gov/dnrc/waterrights/>.

Water Right Number	Source	Priority Date	Flow Rate	Volume
76F 839 00	Clearwater Creek (Seeley Lake)	May 1, 1968	2.23 cfs	350 acft/yr

Seeley Lake has one water right that supplies water for its system. Established on May 1, 1968, it has a flow rate of 2.23 cfs and a total volume of 350 acft/yr. The water system serves Seeley Lake and the surrounding areas. According to the Manager of the Seeley Lake water system, the system is currently using approximately 250 acft/yr (71.4%). Currently, there are 716 accounts and 545 active connections. The entire system is equipped with radio-read meters along with a centralized meter located at the facility. The split in consumption between different types of customers is roughly 60% residential to 15% commercial. There is also a lumber mill in town that consumes roughly 25% of what water is produced. Also, there is a 100,000 gallon/day US Forest Service line that is used intermittently for fire equipment.

Table 25. Montana Population Projections. Estimates were derived using Missoula County's growth rates for 2010, 2020 and 2030 based on data taken from the Demographic Database, Economic Projections Series, NPA Data Services, Inc., Arlington, VA. Accessed 22 January, 2009. Available online at <http://ceic.mt.gov/popprojections.asp>.

1990 Population (BOC 2000)	2000 Population (BOC 2000)	2009 Est. Population Served	Projected Population Served - 2020	Projected Population Served - 2030
No Data	1436	2000	2330	2635

*Estimated based on adjustment of the 2009 estimate of populations served using the county's growth rate used by NPA Data Services.

In the summertime, 450,000-500,000 gallons of water are used per day, compared with 250,000 gal/day in the winter. The water system can produce up to 860,000 gal/day, but the maximum ever reached by the system was 640,000 gal/day. In order to be prepared for potential growth, Seeley Lake's system is undergoing a \$4,000,000 upgrade to its water delivery lines and storage capacity. The district is also looking to acquire new water rights, possibly from purchasing existing rights.

In terms of conservation measures, the water system has an information campaign designed to inform people about ways to conserve water. There are also donated plumbing parts geared toward higher water efficiencies. There isn't a water conservation program in effect due to the fact that most people do not have lawns, since much of the land is forested. The water district would consider the reuse of effluent water; however, there is no sewer system in place. The community has a sewer district in the works, but needs massive federal help (estimated at a cost of \$20,000,000).

Table 26. Water use. *Active connections, accounts, and annual water use numbers came from the Manager/Operator of Seeley Lake Water District.

Active Connections – 2009*	Accounts – 2009*	Annual Water Use - 2009 (approx.)* (% of Total Volume Available in Water Rights)	Water Quantity Consumed (Monthly Max)*
545	716	250 acft/yr (71%)	up to 12,000,000 gal/mo

One might wonder if, with the projected growth, the system would be able to meet future demand with the existing water right. Currently, Seeley Lake looks to have enough water to supply for consumptive needs. This does not take into account extreme situations, such as the Jocko Lakes fires of 2007, which saw daily consumptive rates rise to 780,000 gal/day. This rate greatly exceeded the normal summer consumptive rate of 450,000 gal/day in Seeley Lake. As long as people are more cautious of their consumption amounts, there shouldn't be problems that the community faced in 2007. The \$4,000,000 upgrade to the system will also help to ensure a more efficient delivery of water.

Table 27. Water use in the year 2020. To calculate the projected number of connections and accounts, the 2009 numbers for people per connection and account were divided by the projected population served. The projected number of connections and accounts were determined by taking the 2009 numbers and multiplying them by the projected population growth rates. The estimated annual water use was determined by taking the 2009 annual water use and multiplying that by the projected population growth rate.

People per Connection - 2009	People per Account - 2009	Projected Population Served - 2020	Projected Number of Connections - 2020	Projected Number of Accounts - 2020	Estimated Annual Water Use, 2020 (% of Total Volume Available in Water Rights)
3.67	2.79	2330	635	835	291 acft/yr (83%)

Seeley Lake is and most likely will continue to deal with high population growth. When looking at the potential per connection and per account water use rates in 2020, the numbers come close to the current rates. Though both potential rates are higher than

the estimated rates, this doesn't take into account the fact that running that much water would probably stress the current system, system leakage and other things that could go wrong. It appears, however, that Seeley Lake will have enough water to last it to 2020.

Table 28. Water use in the year 2030. Numbers calculated in the same fashion as they were in Table 27.

Projected Population Served - 2030	Projected Number of Connections - 2030	Projected Number of Accounts - 2030	Estimated Annual Water Use, 2030 (% of Total Volume Available in Water Rights)
2635	718	944	329 acft/yr (94%)

The year 2030 is a different story. The 2030 potential rates (0.49 acft/yr/connection & 0.37 acft/yr/account) are closer to the 2009 estimated rates (0.46 acft/yr/connection & 0.35 acft/yr/account), and probably will be very close to the water system's maximum capacity. It is also important to take into account that these predicted numbers are calculated before all of the work of the \$4,000,000 upgrade has been completed. Perhaps once this upgrade has finished, there will be less leakage in the system and people will have more access to water.

But, measures probably will have to be taken in order for the Seeley Lake Water District to provide enough water for the needs of its citizens down the road, including perhaps purchasing water rights. If current rates of consumption continue, Seeley Lake will reach its full use of the water right once the population reaches 2,798. Considering the amount of growth projected for Missoula County, this will most likely occur shortly after 2030. Because of this, they should consider ways to make more water available for the community. Seeley Lake could consider purchasing new water rights. Also, if the funds are ever made available to build a sewer system, they could consider using effluent water to meet future needs.

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