

# Water Supply and Availability

## Water Supply Wells

The primary water supply source in the Big Sky area is groundwater obtained from wells operated by the Big Sky County Water and Sewer District (BSCWSD), Yellowstone Club, Spanish Peaks, and Moonlight Basin (**Table 1**). Within the BSCWSD boundary, the recently completed *Water System Source Capacity Plan Update* (Western Groundwater Services 2015) identifies opportunities for maximizing capacity from existing wells and constructing new sources. Outside of the BSCWSD boundary, numerous individual wells provide water for small community systems, homes and businesses. There are no water quality regulations for these individual wells, except during the planning process when siting septic tank location relative to well location. There are several geologic formations from which groundwater is drawn in the Big Sky area, including sand and gravel aquifers, sandstone and shale aquifers, Madison limestone aquifers, and fractured bedrock aquifers. Local aquifers are generally recharged annually during snowmelt and water quality within these aquifers varies. Sand and gravel aquifers and fractured bedrock aquifers, in which the BSCWSD wells are located, provide high quality water, while sandstone and shale aquifers, in which many private wells are located, provide lower quality water. In general, the water supply of the Big Sky area is high in total hardness, which results in “lime scale” that is often treated by individual home owners using water softeners.

**Table 1. Water Supply Wells**

Entity	Number of Wells	Existing (gpm)	Existing (MGY)	Water Right Date Range (Groundwater)
BSCWSD - Mountain Village	9	1,155	135.8	1971-2002
BSCWSD - Meadow Village	5	995	138.5	
Spanish Peaks	4	670	52.8	2004-2010
Yellowstone Club	13	592		2001-2014
Moonlight	3	260	19.6	1968-2014
<b>Total</b>	<b>34</b>	<b>3,672</b>	<b>346.7</b>	

## Water Supply Storage Reservoirs

Water obtained from groundwater wells is stored in water tanks located throughout the West Fork Gallatin River and Jack Creek watershed (**Table 2**) for use throughout the year. While peak visitation occurs during the winter recreation season, summer water use exceeds winter water use due to irrigation demands.

**Table 2. Existing Storage Reservoirs (Water Tanks)**

Entity	Gallons	MG
BSCWSD - Cascade (Big Sky)	1,500,000	1.50
BSCWSD - Mountain Village (Big Sky)	500,000	0.50
BSCWSD - Lone Moose	450,000	0.45
BSCWSD - Aspen Groves	240,000	0.24
BSCWSD - Sweetgrass	250,000	0.25
BSCWSD - Sweetgrass	50,000	0.05
BSCWSD - Hidden Village	1,000,000	1.00

**Table 2. Existing Storage Reservoirs (Water Tanks)**

Entity	Gallons	MG
<b>BSCWSD - Total</b>	<b>3,990,000</b>	<b>3.99</b>
Spanish Peaks	832,000	0.83
Yellowstone Club - Andesite	600,000	0.60
Yellowstone Club - Phase 3A	275,000	0.28
Yellowstone Club - Lower Pioneer	400,000	0.40
Yellowstone Club - Lower Pioneer	275,000	0.28
Yellowstone Club - Lower Pioneer	320,000	0.32
Yellowstone Club - Settlement	275,000	0.28
Moonlight	318,000	0.32
<b>Grand Total</b>	<b>7,285,000</b>	<b>7.29</b>

**Water Rights**

The Upper Missouri Basin is a closed basin, which means there is no more surface water legally-available for appropriation. In addition, groundwater is considered connected to surface water and the development of new water resources will require mitigation for any water that is consumed. Mitigation water is available when water is no longer needed for its original purpose and can be obtained by purchasing historical water rights, with pre-1890 irrigation claims typically providing the most water for mitigation. However, mitigation is challenging in a mountain environment since there are relatively few irrigation water rights available for conversion. Relative to instream flows, Montana Fish, Wildlife and Parks (FWP) holds Murphy Rights on the mainstem of the Gallatin River with a priority date of 1970 (**Table 3**). In addition, FWP has instream flow reservations on several streams in the Big Sky area that were calculated based on the wetted perimeter method, which targets riffles at minimum flows to maintain aeration. The FWP instream flow reservations provide an indicator of the minimum flows required to maintain fish populations.

**Table 3. Murphy Rights and Instream Flow Water Reservations**

Stream	Reach	Dates Granted	Amount Allowed (cfs)
<b>Murphy Rights</b>			
West Gallatin River	Yellowstone Park to Gallatin Gateway	5/16-7/15	800
		7/16-5/15	400
<b>Instream Flow Water Reservations</b>			
Gallatin River #1	Yellowstone NP boundary to WF Gallatin River	Jan 1-Dec 31	170
Gallatin River #2	WF Gallatin River to East Gallatin River	Jan 1-Dec 31	400
MF of the WF Gallatin River	Headwaters to NF of the WF Gallatin River	Jan 1-Dec 31	3
SF of the WF Gallatin River	Headwaters to mouth	Jan 1-Dec 31	5
WF Gallatin River	Middle and North forks to mouth	Jan 1-Dec 31	26
Porcupine Creek	NF Porcupine Creek to mouth	Jan 1-Dec 31	4.5
Jack Creek	Lone Creek to mouth	Jan 1-Dec 31	24