Wastewater Treatment and Disposal

Treatment Capacity

Within the West Fork Gallatin River watershed, the Big Sky County Water and Sewer District (BSCWSD) is the largest provider of wastewater treatment. The BSCWSD service area includes Big Sky Resort and Spanish Peaks, along with businesses, private residences and home owners associations. Yellowstone Mountain Club is currently constructing a wastewater treatment plant for the new lodge, while individual lots have onsite septic systems. Outside of the BSCWSD boundary, wastewater is treated by small community systems and individual onsite septic systems. Within the Jack Creek watershed, Moonlight Basin provides wastewater treatment to the majority of the development, though some residences have onsite septic systems. The recently completed *Resort Area Wastewater Analysis, Big Sky, MT* (WGM 2015) and *Wastewater System Master Plan Update for Big Sky County Water and Sewer District 363* (DOWL 2015) provide an estimate for the amount of wastewater generated at full build-out, which is anticipated to occur by 2035 and is summarized in **Table 1**. Within the Canyon area, there are several small community systems, including treatment systems at Ophir School, Ramshorn subdivision, and Buck's T4, along with numerous individual onsite septic systems. Within Gallatin County, a total of 963 septic permits have been approved in the Big Sky area since 1966.

Table 1. Wastewater Generation and Treatment

Entity	Existing (MGY)	Capacity (MGY)	Predicted - 2035 (MGY)
BSCWSD	139.1	219.0	313.8
Yellowstone Club	7.3	18.3	23.4
BSCWSD and YC Total	**146.4**	**237.3**	**337.2**
Moonlight	9.2	36.5	113.4
Grand Total	**155.6**	**273.8**	**450.6**

Septic and other On-site Systems in the Canyon

The canyon area is not served by any central wastewater treatment plant, so estimates of total wastewater generated and treated through septic and small systems must be estimated. The Gallatin City-County Health department did a preliminary calculation based on current septic permits and estimated that at least 123.7 million gallons of wastewater/ year (MGY) is generated and treated through septic systems in the area from Karst to Cinnamon Lodge. **At full build-out** of zoning, an estimate of over **1 million gallons/day of wastewater** could be generated in the Canyon from all sources. (Dowl HKM, 2008) No current septic system treats wastewater to the same level at the current treatment at the Big Sky Water & Sewer District.

Storage Capacity

Wastewater generated in the West Fork Gallatin River watershed is stored in a series of ponds and then applied to area golf courses during the summer irrigation season (May-October). Storage is provided by three ponds at the BSCWSD wastewater treatment plant, along with a pond at the Yellowstone Mountain Club and a pond that is being constructed at Spanish Peaks (**Table 2**). Under an agreement signed in 2001, the Yellowstone Mountain Club is committed to provide storage for 130 MG of treated wastewater from BSCWSD, which would require the development of approximately 50 MG of additional storage. Within the Jack Creek watershed, wastewater is stored in two ponds maintained by Moonlight Basin. Within the Canyon, Buck's T4 provides storage for wastewater generated from their public water system.

Table 2. Existing Storage Capacity

Entity	MG
BSCWSD - Pond 1 (SBR Effluent)	8.2
BSCWSD - Pond 2 (Large)	60.1
BSCWSD - Pond 3 (Small)	19.6
BSCWSD - Pond Total	**87.9**
BSCWSD - Yellowstone Club*	80
BSCWSD - Spanish Peaks	27
BSCWSD - Grand Total	**194.9**
Moonlight - Primary Pond	11.5
Moonlight - Backup Pond	2.5
Grand Total	**208.9**

* Additional 50 MG of storage required under 2001 agreement

Disposal Capacity

Wastewater stored in ponds is primarily applied to area golf courses during the summer irrigation season, though some is also applied to forested areas. Within the West Fork Gallatin River watershed, treated wastewater is currently applied to the Big Sky Golf Course and the Yellowstone Club Golf Course and will be applied to the Spanish Peaks Golf Course in the future. Within the Jack Creek watershed, wastewater is applied to forested areas, with future plans to apply to the Moonlight Basin Golf Course. Golf course irrigation capacities are estimated in the recently completed *Wastewater System Master Plan Update for Big Sky County Water and Sewer District 363* (DOWL 2015) and summarized in **Table 3**. Wastewater generated by Buck's T4 in the Canyon is applied to a forested area.

Table 3. Existing Disposal Capacity using Land Application of Treated Wastewater

Entity	Wet Year (MGY)	Dry Year (MGY)
BSCWSD - Big Sky Golf Course	140	160
BSCWSD - Yellowstone Club Golf Course	22	28
BSCWSD - Spanish Peaks Golf Course	20	30
BSCWSD - Total	**182**	**218**
Moonlight Golf Course*	20	52
Grand Total	**202**	**270**

* Moonlight currently irrigating 17 acres of forest