



November 6, 2023

**Project: Ruby Resort**

**Subject: Water System Demands and Storage Sizing**

Reeve & Associates has prepared this letter to address the anticipated water flows for the proposed Ruby Resort development located at 10909 UT-39 in Huntsville City, Utah. The proposed site consists of 7 buildings each with 16 resort-type units, a 50-seat restaurant, an on-site caretaker's home, irrigation of amenity areas, and a pool. Tables 1 and 2 below provide the source sizing flows for indoor and outdoor flows. Table 3 provides a summary of the total daily and annual demands. Storage for the site will need to be provided. Calculations have been completed for the equalization storage requirements for each of the uses listed and are included below in Table 4. In addition, a fire flow of 2,000 gpm for 2 hours has been included for the site. Total storage requirements from the proposed uses and the fire flow are included in Table 5. A final fire flow rate will be determined by the Fire Department depending on the building size, construction, and whether buildings are sprinkled.

**Table 1 – Daily Indoor Source Sizing**

Building Type	Count	# of Seats	Flow Per Unit/Seat <sup>1</sup> (gpd)	Flow (gpd)
Lodges	112	-	150	16800
Clubhouse/Restaurant	1	50	35	1750
Caretaker Housing	1	-	800	800
Public Restroom	4	-	500	2000

1) Water flow demands as listed per Utah R309-510 Tables 1 & 2 "Source Demand for Indoor Use"

**Table 2 – Daily Outdoor Source Sizing**

	Area (acres)	Map Zone	Peak Day Demand (gpm/acre)	Avg Year Demand (ac-ft/acre) <sup>2</sup>
Irrigation	6	3	3.39	1.66

2) Year demand for irrigation water use based on 213 days of irrigation per Utah R309-510 Table 3 "Source Demand for Irrigation"

**Table 3 – Daily and Annual Demands**

Daily Demand	23387	gal
Annual Demand	8226608	gal
Average Day Demand	16.2	gpm
Peak Day Demand (2.5 factor)	40.6	gpm



**Table 4 – Equalization Storage**

Building Type	Count	# of Seats	Volume Required <sup>3</sup> (gal)	Total Volume (gal)
Lodges	112	-	75	8400
Clubhouse/Restaurant	1	50	35	1750
Caretaker Housing	1	-	400	400
Irrigation (acre)	6	-	2528 (per ac)	15168

3) Storage demands as listed per Utah R309-510 Tables 4 & 5 "Storage Volume for Indoor Use"

**Table 5 – Total Storage**

Uses Equalization Storage	25718 gal
Fire Flow (2,000 gpm for 2 hr)	240000 gal
<b>Total Storage</b>	<b>265718 gal</b>

The property parcel number is 210130002. The current associated water rights for the property are 35-5306 and 35-3861. These water rights are for 0.111 cfs and 0.102 cfs respectively. Water uses are currently for irrigation and lodge recreation and match the proposed uses for the property. The total daily volume from the water right flow rate is 137,655 gallons. An existing onsite spring with an existing collection box and associated pipeline is located on the property, with the current flow rate as measured by the property owner at 40 gpm year-round. This is equivalent to 57,600 gallons per day. The proposed uses fall within the available flow. The pool requirements have not been specifically considered, however the typical daily use for the pool is minimal after the initial system volume is filled.

Water demands for the site will be met with an on-site system utilizing the existing on-site spring/well with new pump vault, water treatment, storage tank, and transmission lines. The pump will need to supply an estimated 130' of TDH at the available 40 gpm flow rate.

The South Fork Ogden River passes through the middle of the site, and the water utility will need to cross the river. Separation between sewer and water will be maintained, and all water system tank, pump, etc. components will meet the setbacks as listed in the Utah rules. An exhibit of the proposed development layout with the proposed location for the water system components is included with this submittal. The final water system design will be revised with any additional requirements or concerns that are identified.

# Reeve & Associates, Inc.



If you have any questions, or we can be of further assistance, please let us know.

Sincerely,

Nate Reeve, P.E.  
Principal Engineer  
Reeve & Associates  
[Nate@reeve.co](mailto:Nate@reeve.co)

Blake Gaiser, E.I.T.  
Project Engineer  
Reeve & Associates  
[blake@reeve.co](mailto:blake@reeve.co)

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5160 South 1500 West • Riverdale, Utah 84405 • Tel: 801-621-3100 • Fax: 801-621-2666

Email: [office@reeve.co](mailto:office@reeve.co) • Website: [www.reeve.co](http://www.reeve.co)