

City of Bozeman

Future Water Supply Planning

Bozeman Municipal Water Supply Challenges

- Bozeman is the fastest growing community in MT
- Closed basin to appropriation of new water rights
- Does not have any water rights on a major river
- Limited availability of surface water storage
- Municipal Water Reservation is inadequate to meet future water supply needs
- New water rights are limited to permitted groundwater sources requiring acquisition of mitigation water, a successful mitigation plan, and mitigation water infrastructure
- Municipal water uses occur year-round whereas a vast majority of reliable senior water rights in the Gallatin have seasonal period of use
- Aquifer storage or surface water impoundment are required to extend the period of use of seasonal water rights
- Cumulative impact of exempt wells on the reliability of senior water rights

Current Water Supplies and Demands

- Current water supply sources
 - o Direct surface flow rights: Hyalite Creek, Sourdough Creek, Lyman Creek
 - o Stored water rights: Hyalite Reservoir
 - o Reliable yield = 11,500 ac-ft; Water rights = 17,100 ac-ft
 - Annual water yield is highly dependent upon seasonal weather patterns
- Municipal watersheds areas are largely contained within USFS lands
 - o Hyalite and Sourdough watersheds are amongst most heavily trafficked municipal watersheds in USFS Region 1
 - o Pristine quality water sources at high susceptibility to wildfire impacts
- Current water demands
 - o 2015 population = 42,000
 - o 2015 total annual water demand = 6,000 ac-ft
- Current reliable supply can support a population of 66,000
- Demand predicted to eclipse reliable supply around 2030 - 2035

Integrated Water Resources Plan (IWRP)

- Proactive effort to prepare for future supply needs now
 - o Developed with assistance of a Technical Advisory Committee (TAC) comprised of local agricultural, governmental, conservation, and academic water experts
- 50-year future water supply planning document
 - o 2062 population estimated at 140,000
 - o 2062 additional water supply needs = 17,750 ac-ft
 - o 2062 total supply needed 28,700 ac-ft
- Climate impacts considered
 - o Predicted prolonged and warmer growing season, reduced total annual precipitation, earlier spring runoff.

- Climate induced water demand response: more water use per person to meet increase in predicted outdoor lawn/garden irrigation requirements
 - 50-year reliable supply of current supplies decreases to 10,950 ac-ft
- 25 water supply alternatives evaluated by TAC
 - Recommended future water supply source additions
 - Water conservation
 - Sourdough Creek storage
 - Municipal groundwater
 - Additional Hyalite Reservoir water
 - Expand Lyman Creek system
 - Non-potable irrigation supply

Implementation of IWRP To-Date

- Development of Montana's first and only municipal water conservation program
 - 2 staff - Water Conservation Program Coordinator, Program Technician
- Drought Contingency Plan (ongoing)
- Groundwater Investigation (ongoing)
 - Includes a collaborative effort to advance a 'GW Mitigation Bank' for the Gallatin Valley
 - Involvement from: City of Bozeman, MBMG, AGAI, TU, DNRC, TNC, and MARS
- Lyman Creek Expansion Preliminary Engineering (ongoing)
- Water Facility Plan Update (ongoing)
 - Develop non-potable irrigation supply engineering standards
 - Evaluate existing water distribution system
 - Future water distribution system master planning
 - Pressure and leakage reduction study
- Installation of stream flow gages on Sourdough Creek and Lyman Creek
- Completion of a Water Loss Audit
- Hyalite Reservoir share acquisitions

Attachments: IWRP Executive Summary
 IWRP TAC Recommendations
 Water Conservation Program Annual Report