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DEPT. OF WATER RESOURCES
EASTERN REGION

July 8, 2024

Regional Manager
Idaho Department of Water Resources
900 N. Skyline Drive, Suite A
Idaho Falls, ID 83402-1718

Re: Sam's Hollow Water Company – 2023 Annual Report

Dear Regional Manager:

Enclosed please find the 2023 annual report required by the approved mitigation plan for Sam's Hollow Water Company in Bear Lake. If you have any questions or need additional information, please do not hesitate to contact me.

Cordially,

Greg Sullivan, M.S., Engineer

Cc: Sam's Hollow Water Company
Enc: Sam's Hollow Water Company-3 Final Reports
Idaho Department of Water Resources Eastern Region-1 Final Report

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Project No. 370-06-2024

2023 Annual Report on Water Use and Mitigation for the Sam's Hollow Water Company

Prepared for:

Sam's Hollow Water Company
Bear Lake, Idaho

July 8, 2024

For information concerning this report, contact
Greg W. Sullivan, M.S., Engineer



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2023 Annual Report on Water Use and Mitigation Sam's Hollow Water Company

Brockway Engineering, PLLC
July 8, 2024

Introduction

The Water Management and Operations Plan for Mitigation (the "Plan") dated June 19, 2006 for Sam's Hollow Water Company requires an annual report of water use on residences and facilities in use during the year. The Water Management and Operation Plan for Mitigation was amended February 10, 2015 by Rocky Mountain Environmental Associates Inc. The reporting requirements are outlined in the Plan, which was submitted to the Idaho Department of Water Resources. The Plan requires the submittal of the number and type of facilities (residences, commercial, and other) utilizing ground water during the year, the estimated depletion to Bear Lake resulting from the occupancy of the facilities, irrigated acres taken out of production within the project, and the volume of mitigation water returned to Bear Lake through the mitigation facilities.

The mitigation facilities consist of a water deliveries from the end of the irrigation system to Fish Haven Creek and a mitigation pipeline which conveys water to Bear Lake. The 2015 amended Plan changed the method of returning water to Bear Lake by including the option to discharging a portion of irrigation water back into Fish Haven Creek allowing it to flow down the creek into Bear Lake. Water was also delivered to Bear Lake through a mitigation pipeline that collects water at the end of the irrigation system. Water delivered through the irrigation system, the Fish Haven Creek bypass pipe and the mitigation pipeline is to be measured before mitigation water returns to Bear Lake.

Sam's Hollow Water Company has shares in Fish Haven Water Users for delivery through three ditches from Fish Haven Creek to the project. In previous years, deliveries into the ditches were measured through calibrated flumes. Deliveries through Ditch No. 3, the lower ditch, was the source of water for mitigation.

Project Build-Out History

In 2006 there were no homes or water-using facilities in use on the Project. Project build out varies from year to year but has steadily increased. In 2011, the Club House was constructed in the Project area. Table 1 provides the year and number of residences constructed in the Project, type of wastewater treatment and if construction occurred within the current place of use of irrigation water rights.

There were twelve (12) houses for which constructed concluded in 2023. All twelve homes were constructed and connected to the Fish Haven Sewer District. The total number of residential households constructed in the project area is 95. Locations of the residences are shown on the attached map. A total of 22 residential homes and the clubhouse have been constructed inside of the irrigation place of use and qualify for mitigation acres.

Table 1: Residence Units Constructed Information

Residence Units Constructed					
Year	On-site Wastewater treatment	St Charles Sewer District	Condominium	Inside Irrigation Place of Use	Total Residences
2006					0
2007	4	1			5
2008	3	5		3	13
2009	1	2			16
2010		6		4	22
2011		8		3	30
2012		1			31
2013		3			34
2014		8		4	42
2015		5		1	47
2016	2	4		1	53
2017		3			56
2018	1	4			61
2019	1	7		1	69
2020	1	6		3	76
2021	1	3			80
2022		3			83
2023		12		2	95
Total	14	81		22	

Irrigated Acres

Mitigation for water use on residential and commercial units requires that irrigated acres formerly supplied with surface water be dried up to compensate for consumptive use depletion of the development. The 2008 annual report documented the fact that 2.05 acres had been removed from irrigation due to construction of roadways (note that other roads were in place prior to the approved mitigation plan and are not accounted for). The assumed area of house footprints, driveways, and other hardscape areas per residence is 4,000 ft². The assumed area of turf, garden area and landscaping areas per residence is 5,000 ft² for a total displaced area of 9,000 ft² per residence. The approximate area removed from irrigation for the clubhouse, pool area and parking lot is 1.0 acres or 43,560 ft². Based on procedures developed by Dr. Robert Hill and adopted in the Bear River Ground Water Management Plan, the consumptive depletion for grass pasture is 1.18 ac-ft/acre/year.

Table 2 provides the total accumulated mitigation from the construction of structures within the water right place of use from the start of the project until the end of the current reporting year of 2023.

Table 2: Summary of Mitigation Provided by Construction through 2023.

		ft ² /structure	Acres	AFA
Road Ways			2.05	2.42
Homes	22	9000	4.55	5.36
Condos	0	12000	0.00	0.00
Commercial	1	43560	1.00	1.18

Total Removed for Mitigation 7.60 Acres 8.96 AFA

Estimated Project Depletion

The estimated consumptive depletion from residences and other facilities was determined using procedures developed by Dr. Robert Hill and adopted in the Bear River Ground Water Management Plan. For the Sam's Hollow system, the depletion values for potable water and irrigation of residences and commercial facilities were developed and included in the Plan for the project. Table 3 was developed to assist in estimating depletion each year based on the facilities build out. Table 3 shows the annual unit depletion and the number of units on line in 2023. The total estimated

depletion from the ninety five (95) units and club house on line in 2023 is 31.91 acre feet.

Table 3. Depletion analysis for Sam's Hollow Water Company in 2023. All depletions are in acre-feet annually.

Entities with On-Site Sewage Disposal

	Unit Depletion	Occupied Units	Total Depletion
Domestic Potable Water - Homesites	0.03	14	0.42
Irrigation - Homesites	0.14	14	1.96

Entities with St. Charles Sewer District Service

	Unit Depletion	Occupied Units	Total Depletion
Domestic Potable Water - Homesites	0.19	81	15.39
Irrigation - Homesites	0.14	81	11.34

Domestic/Irrigating - Condominiums (Per Building = 4 units)	0.5	0	0.00
Irrigation - Condominiums	0.14	0	0.00

Potable Water - Commercial	2.8	1	2.80
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All Depletion Values are in Acre-Feet Annually

The annual depletion value is based on a rate of 40.2% occupancy

Total Homesites	95
Total Condominiums	0
Total Commercial Sites	1
Total Depletion	31.91 afa

Water Supply Available for Mitigation

The 140.5 shares in Fish Haven Water Users owned by Sam's Hollow Water Company can be diverted through any of three ditches: the Upper North Ditch, Number 1 Ditch, and Number 3 Ditch. Each ditch has been instrumented with water measuring flumes and flow measurements have been recorded since May 22, 2004. The flumes were installed by the Fish Haven Water Users Company with assistance from Sam's Hollow Water Company and are being monitored by Sam's Hollow Water Company.

As discussed in previous reports, 22.2 acres of previously irrigated land covered by the 140.5 shares in Fish Haven Water Users were dried up in 2009.

There have been 7.60 acres dried up due to construction of roads and buildings in the project irrigated area. The total irrigated acres that have been set aside to date for the project is 29.80 acres.

Mitigation Water Returned to Bear Lake

Water returned to Bear Lake via the mitigation pipeline has historically been measured by the flow meter located just east of the Fish Haven Cemetery. The flowmeter stopped working properly in 2022 and no data is available to report. Historically, the pipeline at the end of Ditch 1 conveyed water from the retention pond, under the highway, and to Bear Lake in an 8-inch PVC pipe with a Siemens SITRANS FM electromagnetic water meter Type MAG 8000 installed in the pipeline (see attached photograph). The meter had a totalizer and instantaneous discharge readout which read in gallons and gallons per minute. The meter was maintained by Sam's Hollow staff.

In the amended mitigation plan that was finalized in 2015, the method of returning mitigation water to Bear Lake was modified. Instead of all of the water being delivered to Bear Lake through the meter that was installed in 2007, water was also to be measured and delivered into Fish Haven Creek. This mitigation water is measured with a ramp flume installed on the end of the bypass pipe. Operation and measuring direction for the bypass pipe and flume designed by McMillen Engineering are included in the amended 2015 mitigation plan. The flume described in the 2015 mitigation plan was only operable for the years 2018 and 2019. Debris and a flume designed resulted in the failure of the measurement device. No data has been collected from this flume at the bypass pipeline since 2019.

Mitigation water returned to Bear Lake via the bypass pipeline and through the flowmeter continued until 2022. The flowmeter stopped working correctly in 2022 and has not been replaced. While all mitigation water continues to flowing into Fish Haven Creek and into Bear Lake, there is not a functioning measurement device installed to provide a volumetric value under the 140.5 shares that is being diverted through the Reserve

irrigation headgate and then bypassing the irrigation system for the sole purpose of mitigation.

Total annual flows through Fish Haven Creek have been recorded since at least 2018. Through correspondence with James DeRito, any flows through the fish Haven Creek exceeding 20.0 cfs are considered inaccurate because the stream channel and the current rating curve for the flume is not calibrated for a flow greater than 20.0 cfs.

In an effort to develop an estimate of a mitigation volume amount, the total flows in Fish Haven Creek for 2018 and 2019 were analyzed and compared to the mitigation water measured in the bypass flume at the end of ditch 1.

In 2018, the total volume of water in Fish Haven Creek that flowed into Bear Lake was recorded at 1,337 acre feet. There was no flows greater than 20.0 cfs recorded. The Sam's Hollow Water Company shares can only be used for irrigation and mitigation purposes between April 15 and October 31 of each year. The volume recorded in Fish Haven Creek in this time period was 990 acre-feet. Of the total water volume, the bypass flume measured the mitigation portion of the volume to be 22.3 acre-feet or 2.25% of the total Fish Haven Creek volume.

In 2019, the total volume of water in Fish Haven Creek that flowed into Bear Lake was recorded at 1,989 acre feet. There were recorded flows greater than 20.0 cfs in May and June that were adjusted to 20.0 cfs. The Sam's Hollow Water Company shares can only be used for irrigation and mitigation purposes between April 15 and October 31 of each year. The volume recorded in Fish Haven Creek in this time period was 1,938 acre-feet. Of the total volume of water, the bypass flume measured the mitigation portion of the volume to be 67.22 acre-feet or 3.47% of the total Fish Haven Creek volume.

In 2023, the total volume of water in Fish Haven Creek that flowed into Bear Lake was recorded at 17,450 acre feet. There was a long period of time in May and June when flows greater than 20.0 cfs were recorded. These high flow readings were adjusted to 20.0 cfs. The adjusted volume that flowed into Bear Lake was 4,103 acre-feet. The Sam's Hollow Water Company shares can only be used for irrigation and mitigation

purposes between April 15 and October 31 of each year. The volume recorded in Fish Haven Creek in this time period was 3,576 acre-feet. By applying the average percentage (2.86%) of discharge water into Bear Lake compared to the recorded mitigation volume measured by the bypass flume in 2018 and 2019, the estimated volume of mitigation water discharged into Bear Lake to satisfy the Sam's Hollow mitigation demand is 102.3 acre-feet.

The estimated 102.3 acre-feet of mitigation is not an accurate accounting of the mitigation volume amount. It is simply an estimate of the possible mitigation volume in 2023. Due to the high flows in Fish Haven Creek in the spring and also during the summer months of 2023, it is reasonable to assume that there was sufficient water for the Sam's Hollow to utilize as mitigation water for the current build out. It is recommended that the Sam's Hollow staff update the measuring equipment without delay to provide more accurate and consistent data recordings for mitigation water.

The consumptive use reduction appurtenant to the 7.60 acres removed from irrigation provided 8.96 acre feet to mitigate for the project depletion in 2023, which was insufficient to provide the entire mitigation requirement. Therefore, 19.45 acres (22.95 acre feet) of additional irrigated acres beyond those dried up on the residential footprints and roadways will be added to the mitigation acres for the current development build-out.

The additional 19.45 acres of additional irrigated acres to be dried up will come from the 22.2 acres that were dried up in 2009. The remaining total of 2.75 acres of the 22.2 acres is available for future mitigation needs.

At the conclusion of 2023, total recorded cumulative volume of water discharge into Bear Lake is 411.35 acre feet. This value does not include water delivered to Bear Lake from Fish Haven Creek during 2020, the ditches in 2021 or the pipeline in 2022. The cumulative volume required for mitigation from project development is 299.97 acre feet (See Figure 1).

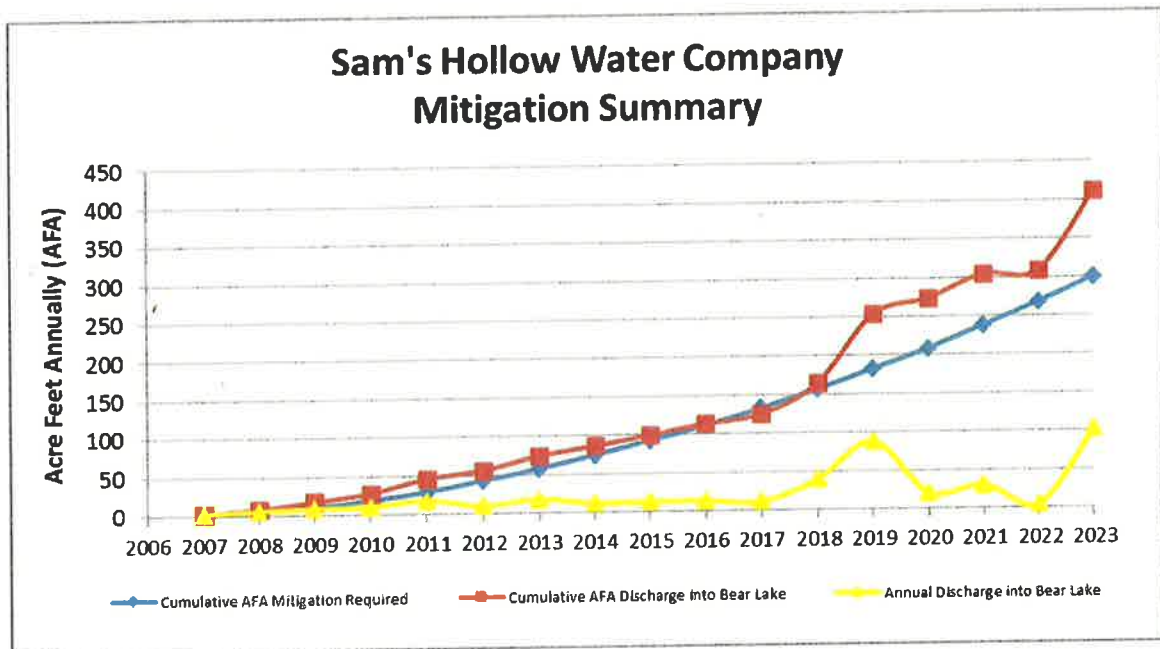


Figure 1: Sam's Hollow Water Company Mitigation Summary

Projection of 2024 Sufficiency of Mitigation Water

Based on a projected build-out, the construction of 9 additional homes will be completed in 2024. The homes will be comprised of 8 residential homes outside of the irrigation area and 1 residential home within the water right place of use. Of the 8 additional homes, it is expected that there will be 0 additional residential homes with on-site sewage treatment. The total expected residential units online will be 104 units. The club house will continue to be utilized with no additional conversion of irrigated areas to commercial uses. The calculated depletion for residences and commercial uses under these assumptions will be 34.88 acre feet. It is estimated that the seasonal water availability for Sam's Hollow Water Company in 2024 will be adequate to provide mitigation water for the expected number of units on-line in 2024. Based on NRCS SNOTEL data for the Bear River Basin obtained on March 8, 2024 the Water Year-to-Date Precipitation was 125% of the average level. The runoff for Fish Haven Creek will likely be considered above average based on the snow pack data. It is anticipated that water supply should be adequate for mitigation needs. Mitigation flow to Bear Lake from Ditch 1 will need to be measured and commence during the irrigation season. Total flow in Fish Haven Creek will continue to be measured by the current flume.

Recommendations for 2024

To be in compliance with the amended 2015 mitigation plan, the Sam's Hollow Water Company must install a flume or a measurement devise that is downstream of the irrigation headgate of Fish Haven Water User's Company and can measure the amount of water set aside for mitigation purposes that is not used for irrigation. This new flume or measurement device must be constructed in a manner in which all of the mitigation water can be accurately measured and quantified. The current flume only measures the total water flowing into Bear Lake via the Fish Haven Creek.



Development that has occurred at Sam's Hollow Water Company as of 2018



Development that has occurred at Sam's Hollow Water Company as of 2018



Development that has occurred at Sam's Hollow Water Company as of 2018



Development that has occurred at Sam's Hollow Water Company as of 2018



0 0.25 0.5 Miles

BROCKWAY ENGINEERING, PLLC.
GWS - 3/8/2024

BEAR LAKE RESERVE LOT LOCATIONS NAIP 2021 AERIAL

- Legend**
- ☆ 2023 Homes Completed
 - Clubhouse
 - On-Site Septic
 - WR POU 11-4022

