WATERMASTER'S REPORT

From January 1, 20 19 To December 31, 20 19

Water District No. 11

Name of Watermaster Josh Hanks

P.O. Address 132 E 400 S Richmond UT 84333

AFFIDAVIT OF WATERMASTER

STATE OF IDAHO }
} ss.
COUNTY OF _____ }

Josh Hanks, being first duly sworn, deposes and says that he is Watermaster of Water District 11, having been lawfully appointed by _____, Director, Idaho Department of Water Resources, and that the volumes of water, as stated in this report and prorated by him to the water right holders of the district are correct.

Josh Hanks
(Deputy) Watermaster District No. 11

Subscribed and sworn to before me, this 4th day of February, 2020.

Tausha Vorwaller
Notary Public

TAUSHA VORWALLER
NOTARY PUBLIC - STATE OF IDAHO
COMMISSION NUMBER 29010
MY COMMISSION EXPIRES 12-8-2021

(SEAL)

My Commission expires 12-8-2021

Boise, Idaho, _____, 20____

I HEREBY CERTIFY, that _____ was lawfully appointed by me as Water Master of Water District No. 11, and that the information contained in this report, as herein sworn to, is, to the best of my knowledge and belief, correct.

Director, Department of Water Resources

By _____

2019 Annual Watermaster Report

Idaho Water District 11- Bear River

Central Division of the Bear River in Pegram Valley - Photo by Josh Hanks

Submitted by Josh Hanks
Bear River Watermaster
February 4, 2019

Table of Contents

Section 1 – Season Summary & Comments

Data within this report has been provided by the Idaho Department of Water Resources, PacifiCorp and Bear River Watermaster records.

Bear River Tour - Bear River Commission

This year the Bear River Commission Tour was completed in the Lower Division and began at by all attendees meeting in Grace Idaho, boarding a bus, and then traveling to the first stop at Alexander Reservoir Dam in Soda Springs. We toured the dam and then traveled through the Grace area and visited the new Last Chance check dam and the grace power plant. We continued through the river system to the beginning of the Oneida reservoir near Thatcher and then returned to Grace. The trip was well attended and there will probably be a continuation of the tour from Oneida reservoir down to the Cutler reservoir this season.

2019 Bear Lake Water Supply - Season Summary

10-01-2018	Bear Lake Beginning Elevation - 5,916.47 ft (65% full)
11-30-2018	Bear Lake Low Elevation - 5,916.40 ft (64% full)
7-06-2019	Bear Lake High Elevation - 5,920.28 ft (83% full)
6-20-2019	Outlet Canal Opened for Irrigation
7-11-2019	Outlet Canal Maximum Release - 1,216 cfs
9-30-2018	Bear Lake Ending Elevation - 5,917.90 ft (72% full)

Note: At the end of this report is more information concerning the 2019 irrigation season provided by Pacificorp.

2019 Water Delivery Cost

103,563 (24 Hour CFS) total delivered for irrigation*.
(central and lower divisions)
536,863 (24 Hour CFS) delivered for power generation. Oct. 1 - Sept. 31
The total delivered for the 2019 season is 640,426 (24 Hour CFS) with $82,631 total expenses.

Cost per 24 Hour CFS - delivered = $0.13 *(higher than past years)*

*Note: Irrigation deliveries are a combination of Bear Lake storage water and natural flow water rights. *58,947.36 (24 Hour CFS) as storage water.*

2020 Scenario - This Coming Season

The current elevation level of Bear Lake, as of February 2nd, is 5918.07 ft. There is 174 cfs of flow at the Rainbow Canal. The lake is approximately 72% full.

The USDA Water Supply Outlook Report as of January 1 has the Bear River Basin snowpack at 103% of normal and the Water Supply estimate at 85-90% of normal. The February forecast from the USDA is not available yet, but we are expecting increases in snowpack and water supply outlook. However, these are estimates and the actual water supply that we receive could be different then forecasted. NOAA forecasts a few snow storms for the coming week in the Uinta mountain range. The 2020 year looks to be an average ,to slightly above average, water supply season.

Based on Bear Lake level there will be a full allocation of storage water for the 2020 water year.

Telemetry System and Bear River Basin Website

The cellular repeater station in Pegram was relocated back to the original tower located in the valley to the South West of Pegram town. It worked well all season. Kerry Romrell, from Pegram and Nuffer Ditch, paid for the addition of weather sensors to be added to the Pegram repeater system. This allows the additional collection of wind speed, wind direction, precipitation, air temperature and relative humidity data that is transmitted to the bearriverbasin.org web page.

The radio to cellular network that collects the data in the Dingle area of the Central Division began having issues this season. It may require that we move the cellular repeater station that is currently located at the West Fork station to another location. I will work on that this spring to ensure that data is updated regularly on the bear river basin website.

There was an announcement by Verizon, our cellular provider, that their 3G Cellular network is going to be retired as of December 31, 2020. I replaced all of the cellular modems in our network that were only compatible with 3G service to a new modem that will work on the 4G/LTE cellular network. These modems were installed and working for about half of the irrigation season. Due to increased data usage by these modems we also upgraded our cellular data plans from 5 MB per station to 25 MB per station for a small fee increase.

Section 2 - Individual Diversions Report

Note: The site numbers below are the Idaho Department of Water Site ID numbers.

#10043105 Miller Ditch
The flow sensor at this location has been damaged and is no longer functioning. The water user has been contacted and a new sensor will be ordered.

#10043110 Rigby Pump
Battery was replaced on the magmeter.

#10043120 Nuffer Canal

#10043140 Sorenson Ditch

#10043150 Ure North Hills Diversions
Nothing has changed at this location, it still is in need of an approved measuring device and a lockable head gate.

#10043180 Smith/Lloyd Ditch
The flume at this location does not read correctly due to sediment in the ditch. The flume needs to be raised. I will work with the user to get the flume installed correctly.

#10043160 Jensen Ditch
This site was flooded for a few months at the beginning of the water season. The sensor and telemetry system are still in need of repair. There are new users at this site and I will work with them this coming season to get this site back in working condition. They were able to divert all of 2019 and I was able to manually measure to get data for reporting.

#10044060 Dingle Canal
The radio transmission for this site has been spotty and there may need to be some changes to how the data is sent to the cellular repeater this coming season.

#10044070 Ream/Crockett Canal
(This still needs to be done) The flume at this site needs to have the brush and trees cut back, the vegetation is beginning to grow into the flume and that does affect the flumes ability to read flows correctly.

#10044200 Black Otter
Users cleaned up the site around the still well. There still needs to be some trimming of trees and brush around the flume.

#10044450 Preston/Montpelier Canal
There needs to be a permanent staff/weir gauge installed in the correct location for this site. Currently I measure with a manual gauge and I know that it is not ideal. I will work with them to get a permanent staff gauge installed this season.

#10044450 Todd Lloyd Pump (Preston/Montpelier use)

#10044700 Keetch (Larocco-Kent) Pump

#10044714 Fern Keetch Pump
I will be adding radio telemetry to this site and sending the data to the website for the 2020 season.

#10044800 Pugmire Pump

#10045800 West Fork Canal
Still using a water level sensor to calculate flow based on an old flow rating formula. It tracked fairly accurately, but still has issues when flow changes in large amounts. This site will need an area velocity sensor, or flume, installed to be able to read this flow accurately throughout the season.

#10067831 Charles Kunz (Pacificorp #3)

#10047305 Wayne Kunz Pump
#10067705 Hardcastle Pump
This site was used this year. The station had a magmeter and I was able to get flow data.

#10067725 - L STEVENS (Rockin G Ranch)

#10067870 & 10067874 Paul Kunz Pumps #1, #2 (Pacificorp)

#10067834 Steven Kunz Pump
This meter is not working. I will work with the user to replace the meter as soon as possible.

#10067855 Dean Kunz
Storage contract - Allyn & Rhett Phelps Pump
The magmeter failed in the 2016 season and needs to be replaced.

#10068205 Chris Christensen or Alleman Pump

#10072550 Eight Mile (Harris Pump 1)
The sensor at this location may be damaged, the end of the 2019 season it was not reading velocity data. I will troubleshoot this sensor this season.

#10072550 Eight Mile 2 (Harris Pump2)

#10074805 Bear Meadows

#11-00449/11-00531C Soda Golf Transfer

#10078905 Soda Golf Pump
#10079600 Last Chance Canal
#10079800 Bench B Canal
#10080105 Gentile Valley Canal

#10080355 Wheeler Pump
The magmeter has failed and needs to be replaced.

#10080385 Matthews Pump (Wanlass Pump)

#10081650 & 10082550 Skabelund Pumps
One of these sites the flow meter has died and needs to be replaced.

#10083505 Mussler (Fox) Pump
The meter was not sending data to the datalogger for a month at the end of the season, it is probably a damaged cable. I will fix it this season.

#10086950 Smith/Bosen Ditch
Spoke to water users in (2017) about a new flume to be installed. The old concrete parshall flume now becomes submerged during the season. Did not see that any progress was made by the end of the season for the new flume site. Have not heard any more about this project.

#10089820 Smith Pump (now the Boyack Pump)

#10089880 Upper Riverdale Canal and Pump
#1089881 Upper Riverdale Subdivision

This is a new site that was split from the Upper Riverdale canal diversion. There is a magmeter that I read manually for data.

#10089850 Nelson Ditch
#10089950 Riverdale Irrigation Canal

#10089955 Higley Pump
Needs a new battery or power supply of some type.

#10089960 Riverdale/Preston Pump
#10089970 Lucia Pump

#10090250 West Cache Canal

#10091120 Hodges Pump
#10091110 Johnson Pump
#10091495 Griffith Pump (Bastion Pump)
#10091455 Floyd Jensen Pump

#10091460 Bear Grove LLC (S. Bobka Pump)
Meter seems to be reading but may need new batteries for next season.

#10091503 Inglet Lamont
In 2019 this site was updated with a new pump and new magmeter.

#10091563 M Curry
#10092755 Carol Whitney Pump

#10092650 Cub River Pumps
The cable for the flow meter has been run to the datalogger site, I need to work with the water users to find out which signal in the PLC to connect to for getting that data to our datalogger.

#10092900 West Cache Pumps
Installed a new area velocity sensor. The radio struggled this season to get data to the cellular data site. It may be that trees have now grown to block the signal or the radio in the logger is worn out. I will troubleshoot more this season.

Section 3 - Individual Diversions Flow Data

The data below is gathered from the Idaho Dept. of Water website. This data is collected throughout the water season by way of meters, flumes, dataloggers, and manual flow measurements.

Water District 11 Points of Diversion	Total 24 Hour CFS
10043105 - MILLER CANAL	1,645
10043110 - RIGBY	44.1
10043120 - NUFFER CANAL	2426
10043140 TRANSTRUM (SORENSEN)	169
10043150 - URE NORTH HILLS	289
10043160 - WILLIAMSON (JENSEN)	381.5
10043180 - J SMITH (LLOYD)	298.5
10044060 - DINGLE IRRIGATION CANAL	3360
10044070 - REAM-CROCKETT CANAL	4672
10044200 - BLACK OTTER CANAL	1863
10044450 - PRESTON-MONTPELIER CANAL	4225
10044700 - KEETCH (LAROCCO-KENT)	73.5
10044714 - FERN KEETCH	121.9
10044800 - J KEETCH (PUGMIRE)	120.8
10045800 - WESTFORK CANAL	7214
10047305 - STEWART	0.00
10050400 - INDIAN CREEK LLC	53.6
10067705 - HARDCASTLE	10.0
10067725 - Rockin G Ranch (Stevens)	82.4

10067831 - CHARLES KUNZ	0.00
10067834 - S R KUNZ	0.00
10067855 - PACIFICORP 3 (D. Kunz)	0.00
10067870 - PACIFICORP 2 (P. Kunz)	15.3
10067874 - PACIFICORP 1 (P. Kunz 2)	46.8
10068205 - ALLEMAN	0.00
10068210 - ALAN PHELPS	36.1
10072550 - EIGHT MILE RANCH (HARRIS)	453.3
10072554 - EIGHT MILE 2 (HARRIS)	40.7
10074805 - BEAR R MEADOWS LLC	11
10076000 - SODA CREEK TRANSFER FLOW	87.5
10078905 - SODA GOLF	50
10079600 - LAST CHANCE CANAL	22,492
10079800 - BENCH 'B' CANAL	19,349
10080105 - GENTILE VALLEY CANAL	5,686
10080355 - WHEELER	18.2
10080385 - MATHEWS, B	90.9
10081650 - SKABELUND 1	0.00
10082550 - DAVID SKABELUND	0.00
10083505 - MUSSLER (FOX)	16
10086950 - SMITH-BOSEN CANAL	75.3
10086975 - TWIN LAKES PUMPS	0.00
10089820 - BOYACK	52.1
10089850 - NELSON CANAL	241.5
10089880 - UPPER RIVERDALE CANAL	0.00
10089881 - UPPER RIVERDALE SUBDIVISION	50.3
10089950 - RIVERDALE CANAL	1258
10089955 - HIGLEY	0.00
10089960 - RIVERDALE-PRESTON PUMP	351.1
10089970 - T LUCHIA	4.0

10090250 - WEST CACHE CANAL	16,416
10091110 - B JOHNSON PUMP	0.00
10091120 - L BRYCE	0.00
10091455 - FLOYD JENSEN	61.1
10091460 - BEAR GROVE LLC	11.2
10091495 - GRIFFITH	33.5
10091503 - B LAMONT	82.2
10091563 - M CURRY	52.2
10092650 - CUB RIVER PUMPS	8,220
10092755 - C WHITNEY	0.00
10092900 - WEST CACHE NO.2 (UTAH)	1,212
Total Irrigation Delivery 24 Hour CFS =	**103,563**

Daily use data for each of these sites is publicly available on the Idaho Department of Water website.

https://idwr.idaho.gov/apps/wm/DiversionDataApplication

SUMMARY OF WATER YEAR 2019 BEAR LAKE OPERATIONS

Date	Hydrologic Information/Event	Contents (% of Full) Discharge (% of Normal)
10-01-18	Bear Lake Beginning Elevation - 5,916.47 ft.	920,664 af (65%)
11-30-18	Bear Lake Low Elevation - 5,916.40 ft. (see note 1)	915,885 af (64%)
	Rainbow Inlet Canal Discharge	257,000 af (98%)
	Bear River Discharge Below Stewart Dam	2,600 af
	Bear Lake Net Runoff (Computed Total Inflow less Lake Evaporation)	277,000 af (86%)
07-06-19	Bear Lake High Elevation - 5,920.28 ft.	1,184,544 af (83%)
	Outlet Canal Releases: 6/20 - 10/5 (86 days irrigation releases)	175,000 af
07-11-19	Outlet Canal Maximum Release - 1,216 cfs	
	Bear Lake Storage Release (see note 2, irrigation release 78,100 acre-feet)	112,000 af
09-30-19	Bear Lake Ending Elevation - 5,917.90 ft.	1,018,948 af (72%)
	Bear Lake Settlement Agreement "System Loss" Volume	33,258 af

Notes:
1 Low contents prior to start of storage.
2 Net irrigation storage release from Bear Lake, subtracting Rainbow inflow and the decreed adjustment for the natural yield of Bear Lake and Mud Lake area. Includes system loss volume.
3 Due to uncontrolled flow from (welcome) rain events. Whenever water flows below Cutler during the irrigation season any storage water in the system at Cutler is the first water out. Natural flow goes to irrigators.

Summary of Water Year 2019

The Bear Lake Irrigation Storage Allocation for 2019 was 245,000 acre-feet. Runoff was close to normal, with Bear Lake net runoff at 277,000 acre-feet (86% of normal). The Bear Lake Outlet Canal was opened for irrigation releases on June 20 and shut on October 5.

Water Year 2019 Operations

High runoff management releases were minimal in water year 2019, a little extra was maintained in the outlet in August as projections showed fall/winter high runoff releases were likely necessary.

Water Year 2020 Operations

Inflows are being passed downstream to meet the March 31, 2020 PacifiCorp Target Elevation (PTE) of 5918.0 feet, consistent with the *Operations Agreement for PacifiCorp's Bear River System*. See Figures 1 and 2 for depictions of recent and anticipated future Bear Lake water levels and outflows for anticipated normal and very-low runoff scenarios.

Operational Notes

- *Bear River Black Canyon Recreational Water Releases* occurred in 2019. The full available inflow or 900 cfs, whichever is greater, is passed through Black Canyon during each event.
- Cutler Reservoir was drawn down for relicensing studies in November 2019. Studies included a LiDAR flyover to collect bathymetry and nearby topography.

State of Idaho
DEPARTMENT OF WATER RESOURCES
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C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Director

February 19, 2020

JOSH HANKS
132 E 400 S
RICHMOND UT 84333

RE: Watermaster's Report; WD 11

Dear Josh,

The Idaho Department of Water Resources has received your 2019 Watermaster's Report.

It is available for viewing and printing on our website at https://idwr.idaho.gov/water-rights/water-districts/active.html under "Documents" to the far right of your listed district.

If you require assistance locating your documents online, please contact Cher Ramos at 208-497-3779.

Kind Regards,

Cher Ramos
Technical Records Specialist