

RECLAMATION

Managing Water in the West

2012 Salmon Flow Augmentation Program and Other Activities Associated with the NOAA Fisheries Service 2008 Biological Opinion and Incidental Take Statement for Operations and Maintenance of Bureau of Reclamation Projects in the Snake River Basin above Brownlee Reservoir

Annual Progress Report



INTRODUCTION

On May 5, 2008, National Oceanic Atmospheric Administration Fisheries/National Marine Fisheries Service (NMFS) released a new biological opinion (2008 Upper Snake BiOp) for the continued operation and maintenance of Bureau of Reclamation projects in the Snake River Basin above Brownlee Reservoir. The incidental take statement included reasonable and prudent measures (RPMs) and associated terms and conditions to minimize incidental take to 13 listed salmon and steelhead Evolutionary Significant Units (ESUs).

This document reports the status of activities related to the incidental take statement, including Reclamation's flow augmentation program, status of new contracts, coordination activities, and conservation activities. This report meets Reclamation's responsibility to submit an annual progress report by December 31 of each year.

RECLAMATION'S 2012 SALMON FLOW AUGMENTATION PROGRAM

Overview of Salmon Flow Augmentation Program

Reclamation was able to provide 487,000 acre-feet of water for flow augmentation in 2012, the upper limit to be provided in any given year (See Table 1). Water supply conditions in 2012 were near average in the Middle Snake River Basins, and below average in the Upper Snake Basin above Milner. The winter season progressed differently between the Upper Snake and Middle Snake Basins. Snowpack in the Upper Snake got off to a normal start early in the season, but the early advantage was slowly lost the rest of the winter as the storm track often missed the basin, especially in spring. The opposite was true for the Middle Snake Basins, with a very slow start to the snow accumulation season, resulting in abnormally late openings for many ski resorts. Unlike the Upper Snake, however, the storm track did favor the Boise and Payette River Basins the remainder of winter and snow accumulated at a near normal rate. A very wet March also helped erase the early season deficits. The Middle Snake also benefitted from a large rain event in late April, following several days of hot temperatures, which resulted in very high inflows. In fact, these were the peak inflows for the season which is abnormally early, and necessitated several weeks of flood control releases on the Payette and Boise Basins. In the Upper Snake, the dry spring and slow snowmelt resulted in excess flows past Milner ramping down as irrigation demand developed in April, reaching 0 cubic feet per second (cfs) by the end of the month. Except for a few days in early May when American Falls filled and passed excess inflow, no flows passed Milner until flow augmentation began in early June.

November carryover storage from 2011 was very abundant thanks to the large runoff and late snowmelt experienced in 2011, with carryover in the Payette Basin at 111%, the Boise Basin at 124%, and the Upper Snake Basin above Milner at 134%. This high carryover was especially beneficial in the Upper Snake given the below average runoff in 2012. As noted above, snowpacks tended to lag behind average most of the season, until the Payette and Boise Basins got a boost in March; the Upper Snake missed out on this

boost. By April 1, snowpacks in these three basins were 98%, 93%, and 84%, respectively, of the official 30 year average. Observed unregulated runoff for the April through July period was 111% for the Payette River at Horseshoe Bend, 108% for the Boise River near Boise, and 82% of average for the Snake River at Heise.

Due to lower than expected runoff, flood control operations, and early season irrigation demands, the Upper Snake above Milner Reservoir System reached a maximum combined physical storage content about 465,500 acre-feet below full capacity of 4,045,695 acre-feet. The Boise and Payette Reservoir Systems had sufficient water to refill completely, but were deliberately held slightly below full (13,134 acre-feet on the Boise system, and 6,807 acre-feet on the Payette) in order to move the flow augmentation release to an earlier timeframe as outlined in the 2008 Biological Assessment. See **Timing Considerations for Flow Augmentation Releases** section of this document for more detail.

The 487,000 acre-feet volume includes 60,000 acre-feet of natural flow rights, a small portion (10,500 acre-feet) of which is considered to occur outside of the April 3 to August 31 migration period.

In Season Management Considerations for Meeting Augmentation Targets

Reclamation manages its in-season storage releases for flow augmentation relying on the best data available at the time in order to set release rates. Reclamation utilizes preliminary water rights accounting provided by the state of Idaho to estimate volumes available in storage accounts and amounts delivered. This accounting is provisional and subject to change at a later date when data are finalized and after-the-fact accounting is completed. Therefore, while it is difficult to deliver the precise targeted volume on a real time basis, Reclamation strives to come as close as possible, with a typical margin of error of less than one percent.

Table 1 summarizes the source, amount, and timing for Reclamation’s 2012 salmon flow augmentation program.

Table 1. Summary of Reclamation’s 2012 Salmon Flow Augmentation Program.

SOURCE	AMOUNT (acre-feet)	DATES OF DELIVERY
Upper Snake above Milner Dam		
Reclamation Uncontracted Space	20,179	June 8 – July 8
Reclamation Powerhead Space	0	
Rentals – Water District 01	170,000	
Rentals – Tribes	0	
Subtotal	190,179	
Payette		
Reclamation Space	95,608	June 20 – August 31
Rentals	72,060	
Subtotal	167,668	

Boise		
Reclamation Uncontracted Space	40,204	June 10 – July 19
Reclamation Powerhead Space	0	
Rentals	11,300	
Subtotal	51,504	
Natural Flows		
IWRB Lease (Idaho)	60,000 ¹	April 3 – August 31
Skyline Farms (Oregon)	17,649	
Subtotal	77,649	
TOTAL	487,000	

¹ See section titled “Lease of Natural Flow Water Rights Below Milner Dam.”

Uncontracted Space and Space Reacquired for Flow Augmentation

Reclamation’s 95,608¹ acre-feet of un-contracted space assigned to flow augmentation in the Payette system fully refilled, as did 20,263 (out of a total of 22,896) acre-feet of un-contracted space in the Upper Snake above Milner. The 40,932 acre-feet of space reacquired for flow augmentation in the Boise system reservoirs completely refilled as well.

In the Payette Basin all 95,608 acre-feet was provided. In the Upper Snake above Milner, Reclamation released 20,179 acre-feet. Reclamation provided 40,204 acre-feet from the Boise Basin to the 2012 flow augmentation program. Ample rental water was available to allow any remaining un-contracted storage to be carried over into 2013 while still meeting the flow augmentation target.

The 17,649 acre-feet of natural flow rights Reclamation has acquired in Oregon (Skyline Farms) were fully available again in 2012.

Rentals from Shoshone–Bannock Tribes

The Shoshone-Bannock Tribes have contract space in American Falls Reservoir. They are able to rent water from this space for downstream uses in accordance with the terms of the Fort Hall Water Rights Settlement of 1990. Tribal policy requires that on-reservation water needs are served first. The Tribes’ space in Palisades Reservoir is usually adequate to meet their irrigation requirements, freeing up the space in American Falls Reservoir for potential rental. It was not necessary for Reclamation to negotiate rental of Tribal storage water in 2012. However, Idaho Power Company executed a lease with the Tribe for storage water and released this volume, along with other Idaho Power owned storage water, between July 8 and August 18 at various rates, but typically about 1,500 cfs; this water is not included in Reclamation’s 487,000 acre-foot volume.

¹ Reclamation was able to reacquire 608 acre-feet of formerly contracted space in 2012, increasing the total uncontracted storage assigned for flow augmentation in the Payette system to 95,608 acre-feet.

Annual Rentals

Reclamation relies heavily each year on annual rentals from water users to acquire water for its flow augmentation program. Water availability from the Water District 01 Rental Pool (Upper Snake above Milner Dam) is determined by a chart (attachment 1) that considers carryover storage on November 1 and the April 1 runoff forecast for the Snake River at Heise (for the April through September period) to determine contributions to the rental pool for the flow augmentation program. Use of this chart was enacted after negotiation of the Nez Perce Water Rights Settlement and is fully consistent with Reclamation's description of its flow augmentation program in its 2004 and 2007 Upper Snake Biological Assessments.

In 2012, the chart specified that Water District 1 would provide 185,000 acre-feet of rental water. Carryover from 2011 on November 1 was 2,680,735 acre-feet, and the April 1 runoff forecast was 3,785,000 acre-feet (91% of average) for the April through September period. Actual observed runoff turned out to be lower at 84%. Due to the dry conditions and less than expected runoff in the Upper Snake, Reclamation cooperatively sought voluntary higher rental contributions from the Boise and Payette Basins to help ease the obligation from Water District 01. This resulted in a lower rental amount of 170,000 acre-feet, and reciprocates for years when the Upper Snake provided more than the obligated amount in water rich years.

In the Payette Basin, 72,060 acre-feet was made available and rented by Reclamation, and 11,300 acre-feet was rented from the Boise Basin in 2012, a marked increase in available rental water from previous years. The additional water from the Boise was the primary source for relaxing the Upper Snake rentals as discussed above.

Powerhead Space

As part of the Nez Perce Water Rights Settlement, Reclamation may utilize powerhead space in Palisades Reservoir and Anderson Ranch Reservoir for flow augmentation. In order for Palisades Reservoir powerhead space to be used, the sum from all other sources must be less than 427,000 acre-feet, and this powerhead space cannot be used to exceed a flow augmentation total of 427,000 acre-feet. It is anticipated that this powerhead space will be used relatively infrequently, and it was not necessary to use any in 2012. The account remains full.

Use of powerhead space from Anderson Ranch Reservoir is less restrictive, and can be used to provide flow augmentation volumes in excess of 427,000, if available. Reclamation considers use of this powerhead space to be undesirable due to the difficulty in refilling the water right the following year and the potential for shutting down the powerplant during a continuing drought. No use was necessary in 2012, and the account remains full.

Lease of Natural Flow Water Rights below Milner Dam

The Nez Perce Water Rights Settlement authorized the use of up to 60,000 acre-feet of natural flow rights downstream of Milner Dam for the purpose of flow augmentation. In better water years, this will increase the volume of water available for augmentation. In 2005 the Idaho Water Resources Board (IWRB) purchased approximately 98,000 acre-feet of water rights from the Bell Rapids Mutual Irrigation Company; this is water that served roughly 25,000 acres via high-lift pumps. Reclamation then entered into a 30-year lease with the State for 60,000 acre-feet of this water for salmon augmentation (IWRB lease in Table 1).

Flow augmentation from natural flow rights downstream of Milner Dam occurs during the entire irrigation season, roughly April 1 to October 31. The IWRB lease of 60,000 acre-feet is comprised of 49,500 acre-feet estimated to occur within the April 3 to August 31 period, and 10,500 acre-feet estimated to occur before and after the migration period. Even though these 10,500 acre-feet are delivered outside the April 3 to August 31 period, it provides an instream benefit and continued flow augmentation.

Timing Considerations for Flow Augmentation Releases

The timing of flow augmentation releases depends on the individual basin and source of water. Flow augmentation releases in 2012 mark the fourth year of operations under the 2008 Upper Snake BiOp, in which Reclamation committed to shifting releases to earlier in the migration season when Snake River flows are more beneficial to listed fish. The primary goal of the earlier releases is to minimize the amount of warmer water provided in August and to shift it into July or earlier. The opportunity and ability to shift the releases will vary depending on the water year type, total augmentation volume available, and by which basin the augmentation originates from. Consistent with the 2008 Upper Snake BiOp, not all water can be shifted from August releases, particularly in the Payette Basin. The changes in release patterns for 2012 will be highlighted in the following discussion for each basin.

As discussed in the previous section, the 60,000 acre-feet of natural flow rights from the IWRB was provided for augmentation during the irrigation season, which ends on October 31.

To the extent possible, Reclamation will strive to benefit local resources when implementing its proposed actions while also meeting its obligations under the biological opinion and incidental take statement.

Upper Snake Basin:

The primary strategy for shifting augmentation releases in the Upper Snake Basin above Milner involves higher release rates and a relaxation of down-ramping criteria at the conclusion of augmentation. Formerly, the down-ramping rate of 100 cfs per day was very restrictive and forced lower release rates to avoid a protracted down-ramping period. With the restrictive rate, it was necessary to extend augmentation releases past Milner

into mid to late August in most years. The 2008 Upper Snake BiOp anticipated that augmentation releases can be provided in May or June in most average or lower water years, and by the end of July in most wet years. Flow augmentation releases in 2012 at Milner commenced on June 8 and lasted until July 8, initially ramping up over several days to a rate of about 4,000 cfs by June 14 through June 20, then maintained at about 3,500 cfs for the remainder of the period. At the conclusion of flow augmentation releases on July 8, Idaho Power Company began releasing their own storage and leased water at various flow rates: about 1,500 cfs through July 22, 0 cfs for the remainder of July, 600 cfs in the first week of August, and finally 1,800 cfs until August 18. The Idaho Power releases were not counted toward Reclamation's flow augmentation volumes.

Boise Basin:

Augmentation flows began on the Boise system on June 10 and ended by July 19. The shift to earlier delivery of flow augmentation in the Boise Basin relies on a combination of two strategies. First, in flood control years when the system is assured to fill, some portion of the augmentation volume will be delivered by reserving an equivalent amount of system space that is not allowed to refill. In other words, as flood control operations near their end, releases are not cut in order to fill the last remaining space; that vacant space is considered to have been delivered as flow augmentation instead.

The second strategy for shifting augmentation timing from the Boise Basin is to increase the rate of releases. This relies on the opportunity to make higher releases before the recreational floating season begins on the river. Floating season typically begins once streamflows through the city of Boise drop below 1,500 cfs, the weather warms up, the river is inspected and hazards removed, and the county officially opens the launch facilities. Once floating season begins, flows are limited to about 500 cfs above irrigation demand for public safety concerns. Reclamation will look for opportunities to make higher releases; in flood control years this can easily be accomplished by maintaining higher releases rather than immediately ramping down at the end of flood control. In non-flood control years, it can likely be accomplished by releasing in May (or early June) before the float season begins.

In 2012, the Boise Reservoir System was actively operated for flood control from mid-February through late May, with the river flowing above flood stage for 17 continuous days beginning in late April. Under the first strategy outlined above, the system was deliberately operated to not refill completely. By leaving a portion of the storage system unfilled, the starting date of flow augmentation is somewhat subjective. The system reached its maximum capacity for the year on June 9, about 13,130 acre-feet from full, while still making flood control releases, and began to slowly draft. It is at this point that flows would have otherwise been reduced in order to refill the remaining space, but were deliberately left higher to provide augmentation water. Reclamation therefore considers that flow augmentation occurred from June 10 to July 19, at an average rate of about 640 cfs.

Payette Basin:

Augmentation releases from the Payette system began on June 20 and ended by August 31. Strategies for shifting the timing of flow augmentation from the Payette Basin include a combination of deliberately foregoing an amount of refill during years when the reservoirs would otherwise fill (similar to the Boise strategy), or by increasing the initial rate of release in order to “front load” a portion of the augmentation volume, primarily by holding higher releases following flood control. The former strategy was primarily employed in 2012, with about 6,800 acre-feet deliberately left unfilled in Lake Cascade. Due to water quality concerns in Lake Cascade, some amount of flow augmentation water will continue to be released in August. Flood control releases were made from Lake Cascade from mid-March until mid-June; the pool reached maximum content and began to draft on June 19, and rather than cut back outflows to fill the remaining space this marks the beginning date of flow augmentation. No drafting of reservoir storage for irrigation would have been necessary prior to July 15², so all reservoir draft (including Deadwood Reservoir) up to that point (52,944 acre-feet) was for release of flow augmentation water. The release rate from Lake Cascade varied between 1,800 cfs to 2,250 cfs, but the flow rate credited towards augmentation water was variable depending on unregulated tributary runoff and irrigation demands. The flow credited toward augmentation ranged from about 875 cfs to 1,650 cfs, and averaged about 1,160 cfs for the June 20 to August 31 period.

Mean Monthly Inflows to Brownlee Reservoir³

April	35,292 cfs
May	27,632 cfs
June	17,293 cfs
July	11,498 cfs
August	9,189 cfs

² Unregulated runoff in the basin was sufficient to meet irrigation demands through July 14 according to preliminary State water accounting.

³ Source: http://www.nwrfc.noaa.gov/runoff/runoff_product.cgi?year=2012

November 1 Carryover

At the end of the 2012 irrigation season (November 1, 2012), the carryover storage into the 2013 water year was as follows:

Upper Snake above Milner Dam	1,254,541 acre-feet
Boise River system	357,342 acre-feet
Payette River system	454,146 acre-feet

OTHER REASONABLE AND PRUDENT MEASURES

NMFS incidental take statement contains two other RPMs and associated terms and conditions to ensure that Reclamation implements its salmon flow augmentation program as described in its Upper Snake Biological Assessment (BA) and supporting documents.

New Contracts for Water Stored in Reclamation Projects

RPM 13.3.1 states:

“Because Reclamation’s salmon flow augmentation program is heavily dependent on annual water rentals from Idaho’s water rental pools, which are variable and insecure sources. Due to this variability Reclamation must consult with NMFS Fisheries prior to issuing a new contract that would reduce streamflows or reduce Reclamation’s ability to meet salmon flow augmentation commitments, as described in its proposed actions, or whenever Reclamation otherwise determines that listed salmon or steelhead species or critical habitat may be affected.”

NMFS 2008 Upper Snake BiOp at page 13-4.

NMFS’s intent is to ensure that any contract actions taken by Reclamation result in “an improvement or ‘zero net impact’ on Snake River flows and on Reclamation’s ability to provide up to 487,000 acre-feet for salmon flow augmentation.”

Reclamation committed in its March 2009 Decision Document to consult with NMFS before entering into new, renewed, or supplemental contracts for storage water, if Reclamation determined that it would affect its ability to provide salmon flow augmentation water as described in the Upper Snake BA, or if it determined that listed species or critical habitat may be adversely affected.

In the past year, Reclamation has not entered into any new contracts for un-contracted space in any of the reservoirs covered in the 2008 Upper Snake BiOp. Further, Reclamation has not entered into any renewed or supplemental contracts for storage water that would result in reduced streamflows or affect Reclamation’s ability to meet its salmon flow augmentation commitments.

Annual Coordination of the Salmon Flow Augmentation Program

RPM 13.3.2 states:

“Reclamation must continue to coordinate annually with the Technical Management Team (TMT) and Regional Forum when planning and implementing its annual salmon flow augmentation program.”

NMFS 2008 Upper Snake BiOp at page 13-4.

Reclamation continued to coordinate with the TMT and Regional Forum when planning and implementing its 2012 annual salmon flow augmentation program. Reclamation staff regularly attended these meetings and provided estimates and updates of the salmon flow augmentation program acquisitions and delivery.

CONSERVATION RECOMMENDATIONS

NMFS included voluntary conservation recommendations in its 2008 Upper Snake BiOp at page 12-3, recommending Reclamation’s participation in Total Maximum Daily Load (TMDL) planning efforts in the Upper Snake River Basin. In its March 2009 Decision Document, Reclamation noted that it was generally amenable to implementing the conservation recommendations to the extent funding and staffing can be made available within its existing authorities. The following summarizes relevant activities that Reclamation has been involved over the past year.

As part of the Idaho and Oregon’s on-going TMDL development and implementation activities, Snake River Area Office and/or Pacific Northwest Region Reclamation staff continued to participate in all appropriate watershed advisory group and watershed council meetings in the Upper Snake River Basin. These included activities in the Lower Boise River, North Fork Payette River, Lower Payette River, Middle Snake River, Lake Walcott, and American Falls Reservoir Watershed Advisory Groups, as well as the Owyhee/Malheur Watershed Council.

Reclamation continued to provide technical assistance to irrigation system operators and other appropriate entities throughout its project areas in the Upper Snake River Basin. Reclamation’s Pacific Northwest Region Laboratory also provided financial assistance for analytical laboratory services to several entities in the basin in 2012. These entities included:

- Idaho Department of Environmental Quality – Twin Falls Region
- Idaho Department of Environmental Quality – Pocatello Region
- Oregon Department of Environmental Quality
- U.S. Geological Survey
- Aberdeen Springfield Irrigation District
- Owyhee Watershed Council
- A & B Irrigation District

- Minidoka Irrigation District
- Lake Walcott Watershed Advisory Group
- Malheur Soil & Water Conservation District

Upper Snake Temperature Monitoring - Project Summary

In coordination with the U.S. Geological Survey, Reclamation continued to operate a comprehensive basin wide temperature monitoring study for the Upper Snake River Basin. Data collection at 52 sites in the Upper Snake River and major tributaries was initiated in 2004 and will continue through at least 2015. An interim summary of the data collected thus far was prepared in 2007 and further updated in 2008. Reclamation is currently preparing a summary report that compiles temperature trends at Snake River main-stem sites from 2004-2011. Annual reports will be compiled starting with the 2012 data and continuing through to the project completion. The project will culminate with a completion report describing temperature conditions in the Upper Snake River and relationships to storage, irrigation, and hydropower facilities in the basin.

Attachment 1

Stipulated Augmentation Rental -Water District 01

Stipulated Augmentation Rental Dist 01

November 1 Carryover 1000s af	<----- April 1 Heise Forecast (Apr-Sep) 1000s af ----->						
	< 2,450	< 2,920	< 3,450	< 4,208	< 5,042	< 5,670	> 5,670
0	0	0	0	0	150000	185000	185000
100	0	0	0	0	150000	185000	185000
200	0	0	0	0	150000	185000	185000
300	0	0	0	0	150000	185000	185000
400	0	0	0	0	150000	185000	185000
500	0	0	0	0	150000	185000	185000
600	0	0	0	60000	150000	185000	185000
700	0	0	0	60000	150000	185000	185000
800	0	0	0	60000	150000	185000	185000
900	0	0	60000	60000	150000	185000	185000
1,000	0	0	60000	60000	150000	185000	185000
1,100	0	0	60000	60000	150000	185000	185000
1,200	0	0	60000	60000	150000	185000	185000
1,300	0	0	60000	60000	150000	185000	185000
1,400	0	0	60000	60000	150000	185000	185000
1,500	0	0	100000	150000	185000	185000	185000
1,600	0	0	100000	150000	185000	185000	185000
1,700	0	0	100000	150000	185000	185000	185000
1,800	0	0	100000	150000	185000	185000	185000
1,900	0	0	100000	150000	185000	185000	185000
2,000	0	0	100000	150000	185000	185000	185000
2,100	0	0	100000	150000	205000	205000	205000
2,200	0	0	100000	150000	205000	205000	205000
2,300	0	0	100000	150000	205000	205000	205000
2,400	0	0	100000	150000	205000	205000	205000
2,500	0	0	100000	150000	205000	205000	205000
2,600	0	0	185000	185000	205000	205000	205000
2,700	0	0	185000	185000	205000	205000	205000
2,800	0	0	185000	185000	205000	205000	205000
2,900	0	0	185000	185000	205000	205000	205000
3,000	60000	60000	185000	185000	205000	205000	205000
3,100	60000	60000	185000	185000	205000	205000	205000
3,200	100000	100000	185000	185000	205000	205000	205000
3,300	100000	100000	185000	185000	205000	205000	205000
3,400	100000	100000	185000	185000	205000	205000	205000
3,500	100000	100000	185000	185000	205000	205000	205000
3,600	100000	100000	185000	185000	205000	205000	205000