RECLAMATION

Managing Water in the West

2009 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

U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region

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INTRODUCTION

On May 5, 2008, National Oceanic Atmospheric Administration (NOAA) Fisheries 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 2009 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 2009 (See Table 1). An abundant water supply in 2009, particularly from the Upper Snake Basin above Milner, greatly aided in the procurement of the full 487,000 acre-feet.

November carryover storage from 2008 was near average in the Payette basin (98%) and in the Boise basin (97%), and below average in the Upper Snake Basin above Milner (83%), although much improved over the prior year's carryover of 36%. Mountain snowpacks accumulated at a near average rate throughout the winter months in the Upper Snake Basin above Milner, but were below average in the Payette and Boise Basins. April 1 snowpacks in these three basins were 87%, 85%, and 97% of average, respectively. However, a wet and cool spring (particularly June) helped offset any snowpack deficiencies and added substantially to the runoff in the Upper Snake. Unregulated runoff for the April through July period was 112 percent of average for the Snake River at Heise, 91 percent for the Payette River at Horseshoe Bend, and 87 percent for the Boise River near Boise.

Both the Payette and Upper Snake reservoir systems refilled completely in 2009; for the Upper Snake this was the first time in 11 years (since 1998) that all Federal reservoirs in the system were filled simultaneously. The Boise reservoir system had sufficient water to refill completely as well, but was deliberately held about 18,000 acre-feet from full in order to move the flow augmentation release to an earlier timeframe as outlined in the 2008 BiOp. (See **Timing Considerations for Flow Augmentation Releases** section for more detail.) Sufficient water was available to Reclamation to provide 487,000 acre-feet, the upper limit of flow augmentation to be provided in any given year. The 487,000 acre-feet 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 2009 salmon flow augmentation program.

Table 1. Summary of Reclamation's 2009 Salmon Flow Augmentation Program.

SOURCE	AMOUNT (acre-feet)	DATES OF DELIVERY
Upper Snake above Milner Dam		
Reclamation Uncontracted Space	19,758	July 5 – July 31
Reclamation Powerhead Space	0	
Rentals – Water District 01	180,000	
Rentals – Tribes	0	
Subtotal	***199,758***	
Payette		
Reclamation Space	95,000	June 24 – August 28
Rentals	71,402	
Subtotal	***166,402***	
Boise		
Reclamation Uncontracted Space	41,343	June 19- July 13
Reclamation Powerhead Space	0	
Rentals	1,848	
Subtotal	***43,191***	
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

All uncontracted and reacquired space dedicated to flow augmentation was fully released during the previous (2008) water year. Reclamation's 95,000 acre-feet of uncontracted

space assigned to flow augmentation in the Payette system fully refilled, as did 22,896[1] acre-feet of uncontracted 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.

Reclamation provided all of this accrual from the Payette and Boise basins to the 2009 flow augmentation program. The targeted volume from the Boise basin was overshot by an additional 411 acre-feet according to after-the-fact accounting, making for a total release of 41,343 acre-feet. The additional 411 acre-feet was provided from Reclamation held water assigned to instream flows. Reclamation provided 19,758 acre-feet of its uncontracted space from the Upper Snake above Milner; ample rental water allowed the remaining 2,800 acre-feet to be carried over into 2010 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 2009.

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. Reclamation and the Tribes were not able to negotiate rentals consistent with the price stipulated in the Nez Perce Settlement, so no rental of Tribal storage water occurred in 2009. However, Idaho Power Company executed a late season lease with the Tribe at a price reportedly well above that stipulated in the Nez Perce Settlement and released this volume upon the conclusion of Reclamation's augmentation releases at Milner Dam on July 31. This and other Idaho Power Company storage provided additional flows at Milner Dam until September 3, at a maximum rate of 1,500 cfs, but are not included in Reclamation's 487,000 acre-foot volume.

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 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

[1] Based on provisional IDWR water accounting. The final yield into the Upper Snake uncontracted account was 22,558 acre-feet after evaporation charges were administered according to water accounting rules. These values may change slightly when the 2008 accounting is finalized.

Settlement and is fully consistent with Reclamation's description of its flow augmentation program in its 2004 and 2007 Upper Snake Biological Assessments.

In 2009, the chart specified that Water District 01 would make available 150,000 acre-feet of rental water for flow augmentation. Carryover from 2008 on November 1 was 1,696,237 acre-feet, and the April 1 runoff forecast was 4,109,600 acre-feet (99 percent of average) for the April through September period. Actual runoff turned out to be 112 percent of average. Through cooperation from the irrigators and the State, Reclamation was able to rent an additional 30,000 acre-feet beyond what the chart specified.

In the Payette basin, 71,402 acre-feet was made available and rented by Reclamation, and 1,848 acre-feet was rented from the Boise basin in 2009, marking the second year in a row that rental water has been made available from this basin.

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. It was not necessary to use any Palisades powerhead space in 2009, and previous use of this space (2007) was able to refill completely in 2009.

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. It was not necessary to use any of this powerhead space in 2009, 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 Apri1 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 depended on the individual basin and source of water. Flow augmentation releases in 2009 mark the first year of operations under the 2008 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 BiOp, not all water can be shifted from August releases, particularly in the Payette basin. The changes in release patterns for 2009 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. Under the 2008 BiOp, Reclamation was able to accelerate the releases in 2009 so that augmentation from above Milner occurred by July 31. Due to the abundant water supply in 2009, flood control releases were made at upstream projects during much of the spring, and particularly in late June, which forced large releases past Milner Dam until early July and pushed back the start date of augmentation. It is anticipated that augmentation releases can begin in May or June in average or lower water years. Augmentation commenced immediately at the tail end of the flood control period on July 5, when flows at Milner[2] would have otherwise gone to 0 cubic feet per second (cfs). The first few days of flow augmentation took advantage of the higher release rates as flows ramped down from about 10,000 cfs to roughly 3,500 cfs by July 10. Flows fluctuated up to about 4,200 cfs until July 15, and were then held to about 3,450 from July 16 until July 24, and then were ramped down at approximately 500 cfs per day until July 31 when the entire volume had been delivered. Releases from Milner Dam continued in August as Idaho Power Company released water it held in

[2] Milner Dam is private and not operated by Reclamation. Reclamation coordinates releases from its upstream projects, primarily at American Falls Dam, to accomplish the desired rates at Milner Dam.

storage or had rented; these flows were 600 cfs until August 9, ramping down to 220 by August 11 and held there until August 18, and then ramped up to about 1,500 cfs and held there from August 20 to September 2.

Boise Basin:
Augmentation flows began on the Boise system in mid June and ended by July 13. 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 town 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 2009, the Boise reservoir system was actively operated for flood control, with moderately large releases necessary from mid May through mid June. Under the first strategy outlined above, the system was deliberately operated to not refill completely; when flood control operations wrapped up on about June 18, there was 18,082 acre-feet of vacant space in the system credited to flow augmentation. Releases for the remainder of June were maintained at higher rates (utilizing the second strategy), beginning at about 1,900 cfs above irrigation demand and dropping to about 1,000 cfs above demand by the end of the month. Releases were dropped to about 500 cfs above demand on July 1 to coincide with the opening of recreational floating on the river. Delivery of augmentation water was completed on July 13 according to preliminary State water accounting.

Payette Basin:
Augmentation releases from the Payette system began on June 24 and ended by August 28. 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. Due to water quality concerns in Cascade Lake, some amount of flow augmentation water will continue to be released in August. The latter strategy was the primary mechanism in 2009, although a small amount of reservoir space (2,362 acre-feet) was deliberately left unfilled rather than cut flows after flood control releases were completed. Beginning June 24, outflows from Lake Cascade were ramped up to approximately 2,100 cfs to

begin early drafting of the reservoir for augmentation. No drafting of reservoir storage for irrigation would have been necessary prior to July 11[3], so all reservoir draft up to that point (47,137 acre-feet) was for release of flow augmentation water. The high release rate of 2,100 cfs from Lake Cascade was maintained throughout July, and ramped down slowly during August. The amount of flow credited toward flow augmentation varied according to available natural flow and irrigation demand, but averaged about 1,390 cfs above irrigation demand from July 11 to July 31, and about 1,120 cfs in August, according to State water accounting. Flow augmentation concluded on August 27.

Mean Monthly Inflows to Brownlee Reservoir[4]

April	22,250 cfs
May	26,542 cfs
June	27,578 cfs
July	15,906 cfs
August	10,327 cfs

November 1 Carryover

At the end of the 2009 irrigation season (November 1, 2009), the carryover storage into the 2010 water year was as follows:

Upper Snake above Milner Dam	2,440,459 acre-feet
Boise River system	429,324 acre-feet
Payette River system	470,577 acre-feet

OTHER REASONABLE AND PRUDENT MEASURES

National Marine Fisheries Service's (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 NOAA Fisheries prior to issuing a new contract would reduce streamflows or reduce Reclamation's ability to meet salmon flow augmentation commitments, as

[3] Unregulated runoff in the basin was sufficient to meet irrigation demands through July 10 according to preliminary State water accounting.
[4] Source: http://www.nwrfc.noaa.gov/runoff/runoff_product.cgi?year=2009

> described in its proposed actions, or whenever Reclamation otherwise determines that listed salmon or steelhead species or critical habitat may be affected.

NMFS 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 uncontracted space in any of the reservoirs covered in the 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 Upper Snake BiOp at page 13-4.

Reclamation continued to coordinate with the TMT and Regional Forum when planning and implementing its 2009 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 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, Mid 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 2009. 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 through 2010. An interim summary of the data collected thus far was prepared in 2007 and further updated in 2008. 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