Water Transaction Program
Monitoring and Evaluation Report – 2004

Introduction

During 2004 six water transactions occurred in the Upper Salmon River basin (Beaver Creek, Fourth of July Creek, Kenney Creek, Lemhi River, Big Hat Creek, and Otter Creek). Gages were installed on each of the streams with the exception of Otter Creek. Three additional gages were installed on the Salmon River above Obsidian, Id; on the Salmon River at the Casino Creek Bridge; and on the East Fork of the Salmon River. The gage data from the three gages will be used to determine critical periods for future water transactions and will be used to populate the Mike Basin surface water model with data.

The U.S. Forest Service, the U.S. Geological Survey and the U.S. Bureau of Land Management have modeled the habitat using PHABSIM for many streams in the Upper Salmon River Basin including Fourth of July Creek, Beaver Creek, Champion Creek, Big Hat Creek and other potential priority candidates for transactions. We can use much of the available data to assess habitat enhancement for specific projects. At some sites, such as the Pahsimeroi River at Furey Lane where PHABSIM data does not exist, we may need to contract to have the data collected to evaluate the benefits of a transaction using this process. PHABSIM uses field-measured hydraulic parameters (water depth, flow velocity, substrate, and cover) at different flow levels and relates them to known preferences of different species and life stages (most limiting is usually selected as target). A minimum of one transect at three different flow levels will be established (better with at least three transects). Sites should be representative and include critical habitat elements.

Basin 71

Beaver Creek

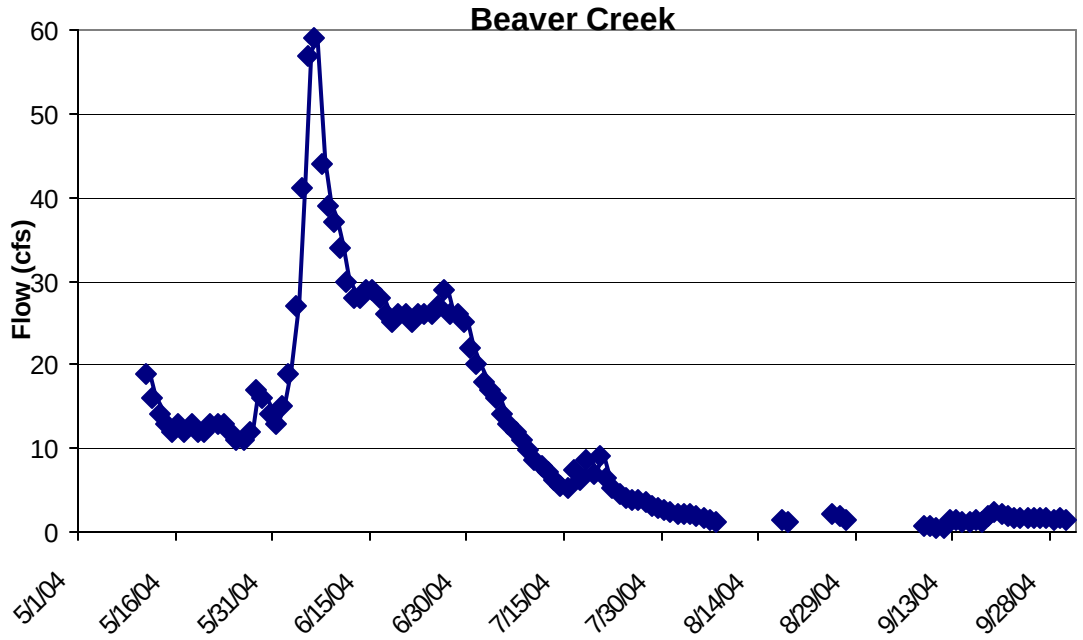
A total of 8.77 cfs, formerly irrigating 241 acres, were leased from D.O.T. LLP. The water was leased from May 1st to October 15th.

Stream Miles: Approximately 0.8 miles of lower Beaver Creek was reconnected to the Salmon River. This provided fish access to the upper reaches of Beaver Creek.

Photo Points: Photo points were taken by Liz Robbins and Morgan Case in August 2004. See Appendix A.

Site Visits: Morgan Case and Liz Robbins verified that water was not being diverted on August 26, 2004, and the sprinkler system had been dismantled.

Water Measurement: Idaho Power Gage Data.



Flow in cfs.	May	June	July	August	September
Mean	13.7	30.2	8.1	1.7	1.4
Max	20	59	20	2.2	2.5
Min	11	15	2.5	1.2	0.52

Satellite Technology: No satellite imagery available.

MIKE Basin Modeling: Skeleton model completed. Pending population with data.

Habitat Availability: See Table C1 in Appendix C for fish periodicity.

PHABSIM: PHABSIM field work has been completed by the USGS. A report of their findings should be available in 2005. Liz Robbins participated in field work with Terry Maret from the USGS.

Fourth of July Creek

A total of 2.9 cfs, formerly irrigating 43.1 acres, were leased from Bill Vanderbilt. The water was leased from May 1st to Oct. 31st.

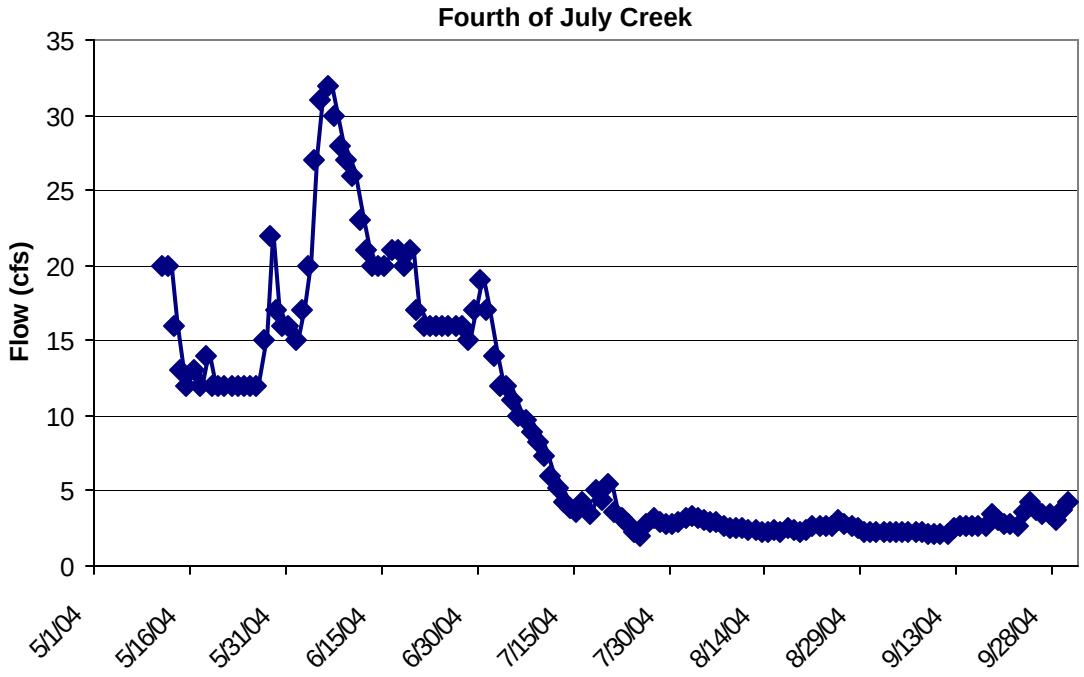
Stream Miles: Approximately 2.0 miles of lower Fourth of July Creek was reconnected to the Salmon River. This provided fish access to the upper reaches.

Photo Points: Photo points were taken by Liz Robbins in September 2004. See Appendix A.

Site Visits: Morgan Case and Liz Robbins verified that water was not being diverted on August 26, 2004. Bill Graham, Roxanne Brown, Thomas Grant, and Liz Robbins met with Bill Vanderbuilt on September 2, 2004 to tour his property and to assess the effectiveness of the

transaction. It was apparent that water leased through the transaction had not been used for irrigation.

Water Measurement: Data from the Idaho Dept. of Water Resources and the USGS gages will be available later this year.



Flow in cfs.	May	June	July	August	September
Mean	14.5	20.7	6	2.6	2.8
Max	22	32	17	3.3	4.3
Min	12	15	2	2.2	2.1

Satellite Technology: Satellite imagery was purchased and analyzed. The LANDSAT imagery from June 30, 2004 shows that the Vanderbilt fields were not being irrigated. See Appendix B

MIKE Basin Modeling: Skeleton model completed. Pending population with data.

Habitat Availability: Passage flows were adequate for steelhead during their critical months of March through May. Flows in Fourth of July Creek were below the 5.12cfs required for adult Chinook passage from mid-July through September. The low flows were due to a combination of 2004 being a drought year and the remaining existing irrigation. See Table C1 in Appendix C for fish periodicity.

PHABSIM: PHABSIM field work has been completed by the USGS (Maret et al. 2004). Liz Robbins participated in field work with Terry Maret from the USGS.

Table 1: PHABSIM Results for Forth of July Creek (Maret et al. 2004).

	Discharge in ft^3/s, required for maximum WUA			Discharge required for adult salmoniod passage using 0.6 ft criterion[1]		Statistical summary of discharge[2]									
Life Stage	Bull trout	Chin-ook salm-on	Steel-head trout	Over 25% of total channel width	Over 10% percent of contig-uous channel width	July			August			September			
						Q.80	Q.50	Q.20	Q.80	Q.50	Q.20	Q.80	Q.50	Q.20	Qa
Upper Reach															
Adult	15	36	36	15	15	23.2	59.8	97.4	15.0	20.7	29.9	11.7	15.3	19.6	51.4
Spawning	51	39	39	ND	ND										
Juvenile	9	9	9	ND	ND										
Middle Reach															
Adult	12	27	27	9	11	32.0	59.9	97.7	14.9	20.8	30.1	11.8	15.6	20.1	52.8
Spawning	18	27	27	ND	ND										
Juvenile	12	9	9	ND	ND										
Lower Reach															
Adult	12	24	24	18.27[3]	5.12[3]	30.9	57.8	94.0	14.5	20.2	29.3	11.6	15.4	19.8	51.9
Spawning	18	30	30	ND	ND										
Juvenile	12	7	12	ND	ND										

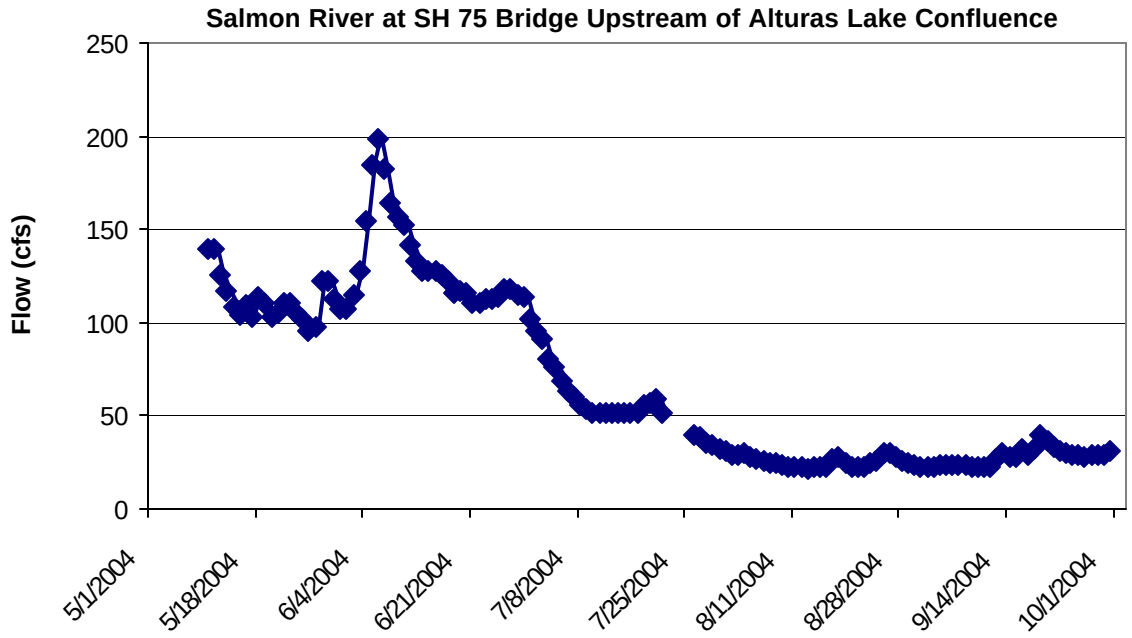
[1]Passage criterion from Thompson (1972) and Scott and others (1981); depth over both width measurements must be met to ensure passage.

[2]Discharge statistics derived from regional equations using basin and climatic characteristics (Hortness and Berenbrock 2001). Q_{80}, Q_{50}, Q_{20} are 80%, 50% and 20% exceedence flow in cfs.

[3]Represents measurements at two transects.

Upper Salmon

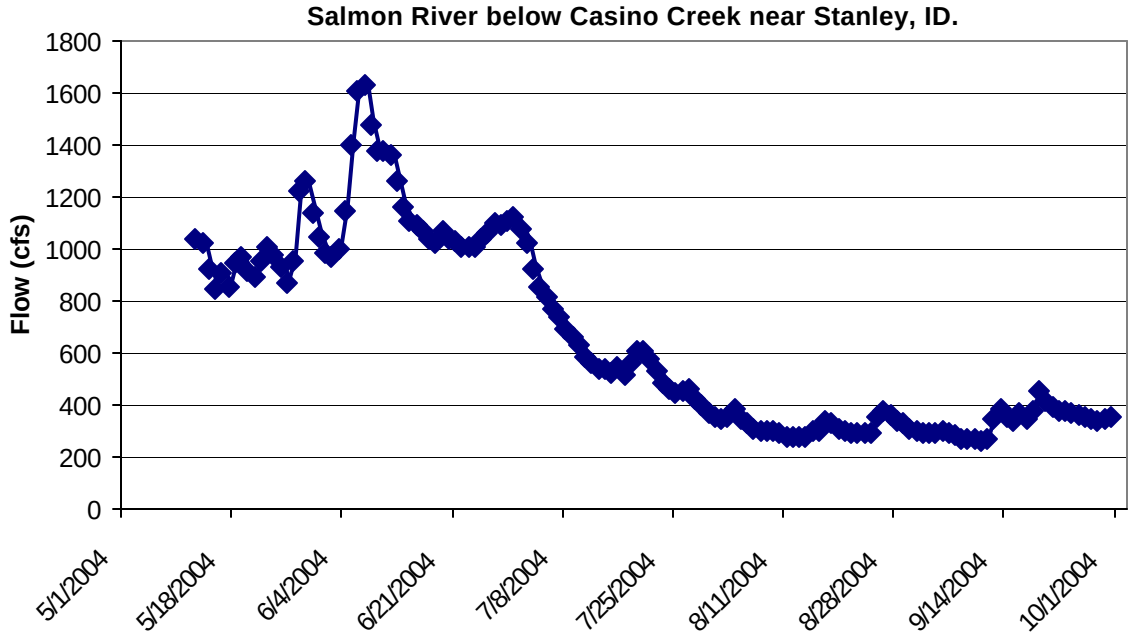
Water Measurement:



Flow in cfs.	May	June	July	August	September
Mean	112	130.9	55.4	25.4	28
Max	140	199	96	30	40
Min	96	102	31	21	22

Salmon River

Water Measurement:

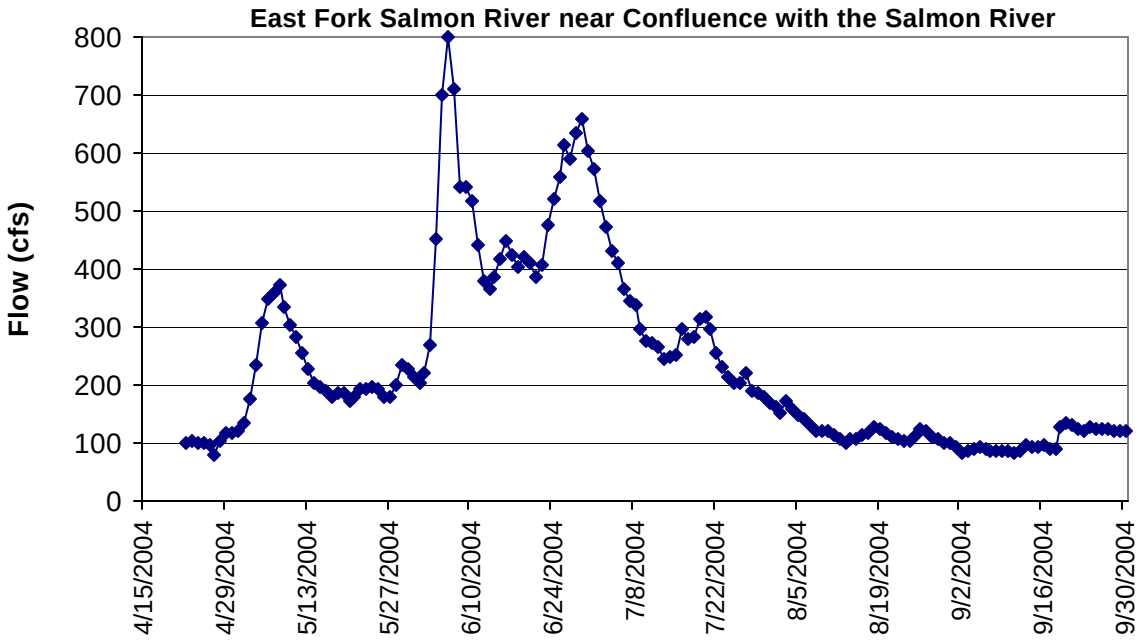


Flow in cfs.	May	June	July	August	September
Mean	984	1159	604	316	337
Max	1260	1630	1080	383	457
Min	847	969	353	274	263

Basin 72

East Fork Salmon River

Water Measurement:



Flow in cfs.	April	May	June	July	August	September
Mean	101.5	224.3	483.8	295.1	121.4	103.5
Max	118	374	800	574	171	136
Min	79	121	202	170	99	83

Nez Perce Termsheet Instream Flows

	Instream Flow (cfs)
January	91
February	92
March	100
April	166
May	437
June	1014
July	462
August	198
September	144
October	139
November	125
December	100

Basin 74

Kenney Creek

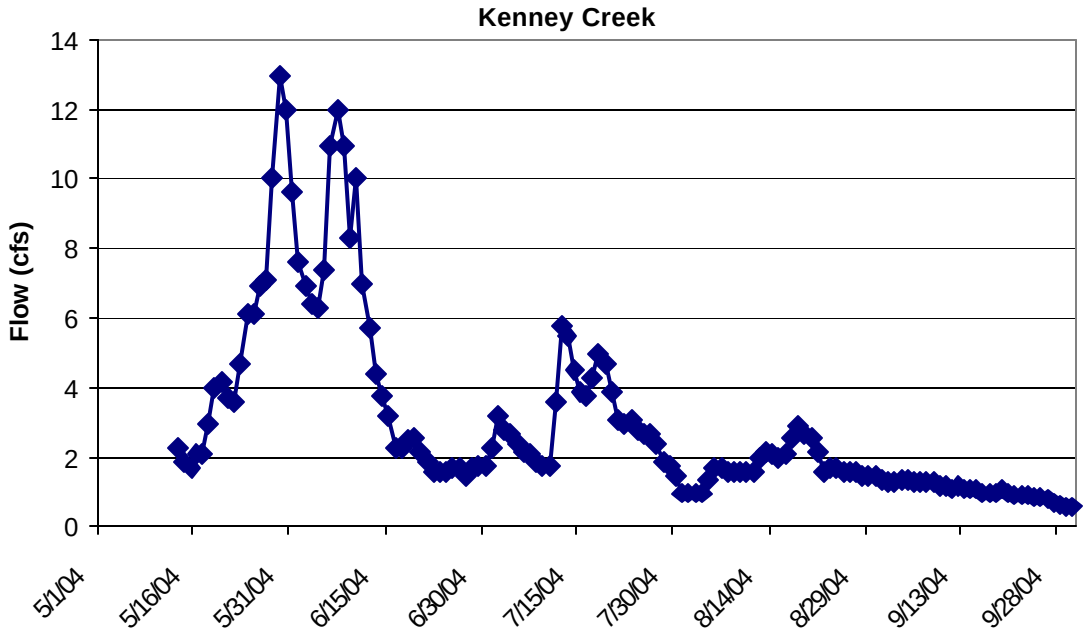
A total of 3.7 cfs, formerly irrigating 158 acres, were leased from the Kenney Creek Ranch. The water was leased from July 1st to Oct. 31st (partial season lease).

Stream Miles: Approximately 1.1 miles of lower Kenney Creek was reconnected to the Lemhi River. This provided fish access to the upper reaches of Kenney Creek, as well as additional flow (consumptive use component) delivered through the Lemhi River to the Wild and Scenic River claims at North Fork.

Photo Points: Photo points were taken on the July 6th site visit. See Appendix A.

Site Visits: Bill Graham, Thomas Grant and Liz Robbins visited Kenney Creek on July 6th, 2004. Liz Robbins and Morgan Case also visited the site on August 24th, 2004.

Water Measurement:



Flow in cfs.	May	June	July	August	September
Mean	5.4	4.6	3	1.8	1
Max	13	12	5.8	2.9	1.4
Min	1.7	1.5	1	0.97	0.56

Satellite Technology: Satellite imagery was purchased and analyzed. The July 16, 2004 LANDSAT imagery confirms that the Kenney Creek Ranch fields were not being irrigated. See Appendix B.

MIKE Basin Modeling: None

Habitat Availability: Jude Trapani, Tech Team Chair and BLM Fisheries Biologist, reported that a snorkel crew surveyed lower Kenney Creek and observed approximately 50 Chinook

salmon smolts rearing. Kenney Creek is 6° C cooler than the Lemhi River. See Table C3 in Appendix C for fish periodicity.

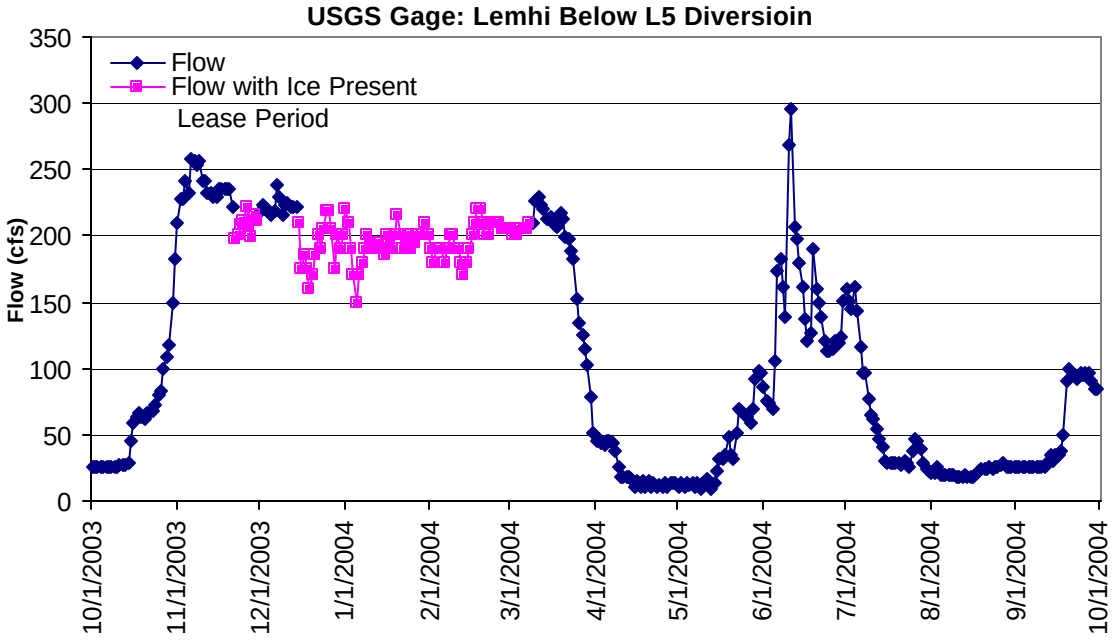
PHABSIM: Is listed as a priority stream for PHABSIM studies for 2005.

Lemhi River

Through agreements not to divert water at the L6 diversion with 7 landowners, in cooperation with Water District 74, water was leased, as needed, to maintain 35 cfs from May 15th through June 30th. Water was leased for one week, after which spring rains resulted in flows greater than the 35 cfs minimum for the remainder of the lease period.

Site Visits: Site visits were made by Thomas Grant, Bill Graham, Liz Robbins, on July 6th and November 3rd. Liz Robbins and Morgan Case also visited the site on August 24th, 2004.

Water Measurement:



Flow in cfs.	April	May	June	July	August	September
Mean	22	37	146	63	22	55
Max	47	98	295	162	28	100
Min	10	9.2	69	22	18	25

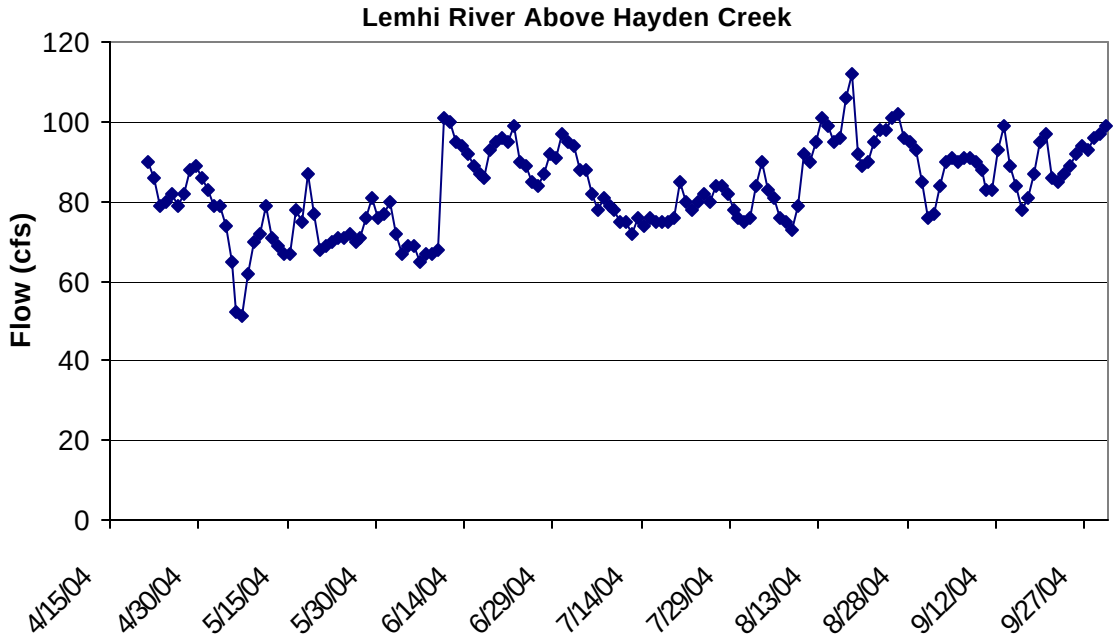
MIKE Basin Modeling: The model for the Lemhi Mainstem, McFarland Campground to mouth, has been completed by DHI. Work will continue to expand the model to include the full basin.

Habitat Availability: See Tables C2-C4 in Appendix C for fish periodicity.

PHABSIM: None

Lemhi River above Hayden Creek

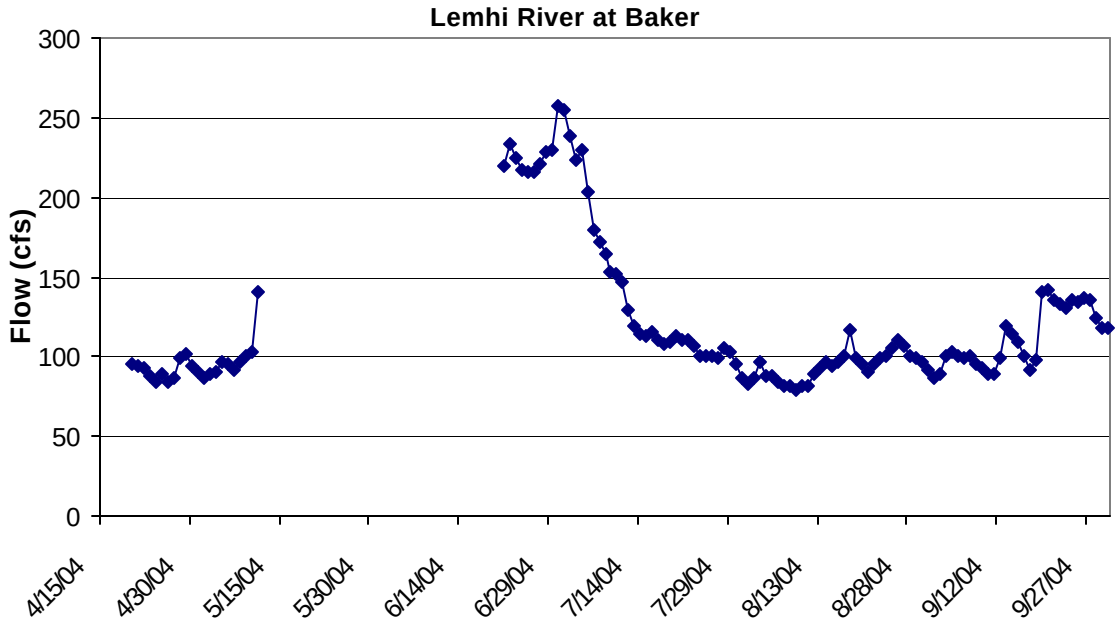
Water Measurement:



Flow in cfs.	April	May	June	July	August	September
Mean	84.1	71.9	85.4	79.9	90.7	89.3
Max	90	87	101	95	112	99
Min	79	51	65	72	73	77

Lemhi River at Baker

Water Measurement:



Flow in cfs.	April	May	June	July	August	September
Mean	92	98	226	138	94	112
Max	102	140	257	255	117	142
Min	84	87	216	86	79	86

Basin 75

Big Hat Creek

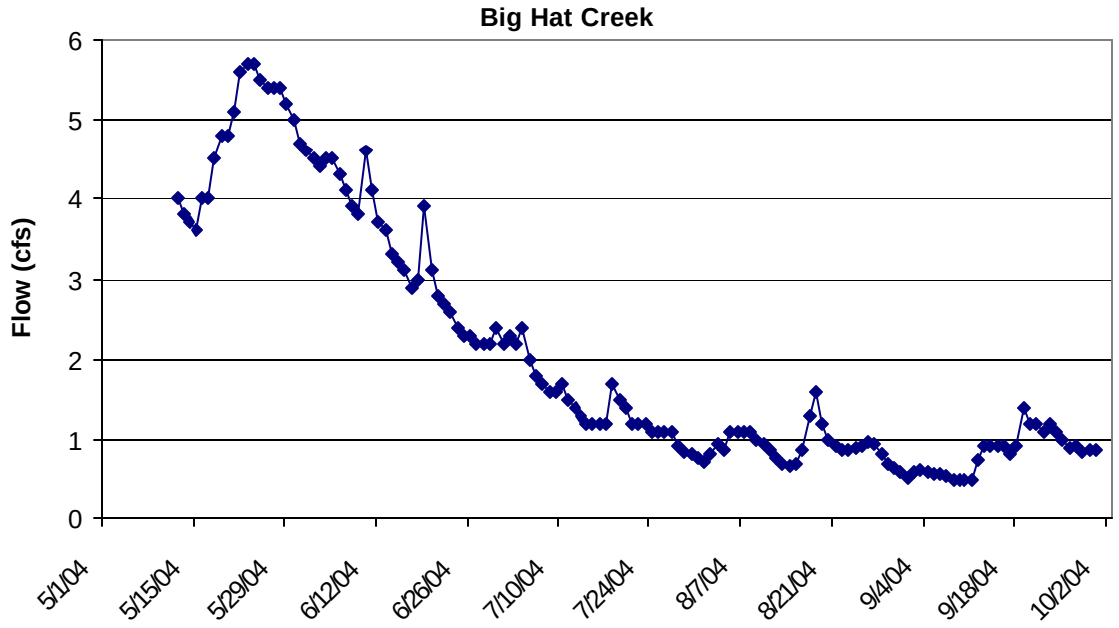
A total of 0.5 cfs, formerly irrigating 35 acres, was leased from Fred Crabtree. The water was leased from April 1th to October 31st.

Stream Miles: Approximately 3.4 miles of lower Big Hat Creek was reconnected to Hat Creek. This provided fish access to the upper reaches of Big Hat Creek.

Photo Points: Photo points were taken on the July 8th site visit. See Appendix A.

Site Visits: Morgan Case and Liz Robbins verified that water was not being irrigated on August 26, 2004.

Water Measurement:



Flow in cfs.	May	June	July	August	September
Mean	4.8	3.4	1.4	0.92	0.83
Max	5.7	4.6	2.4	1.6	1.4
Min	3.6	2.2	0.77	0.59	0.49

Satellite Technology: Satellite imagery was purchased and analyzed. The Crabtree fields with leases showed no sign of being irrigated. The field on the northeast side of the creek was fairly wet, but this field did not have a lease agreement. No water was being diverted on the August 26th site visit. See Appendix B.

MIKE Basin Modeling: None

Habitat Availability: See Table C5 in Appendix C for fish periodicity.
PHABSIM: None

Otter Creek A total of 4.8 cfs, formerly irrigating 85 acres, was leased from Verl Jones. The water was leased from April 1th to October 31st.

Photo Points: None.

Site Visits: Morgan Case and Liz Robbins verified that water was not being diverted on August 26, 2004 but fields appeared to have been recently hayed.

Water Measurement:
None.

Satellite Technology: Satellite imagery was purchased and analyzed. Imagery collected on July 16th, 2004 indicated that Jones' fields appeared to be irrigated. Site visits on August 26th verified that the fields had been recently hayed, but leased water was not being diverted. See Appendix B.

MIKE Basin Modeling: None

Habitat Availability: See Table C5 in Appendix C for fish periodicity.
PHABSIM: None

Reference:

Hortness, J.E., and Berenbrock, C. 2001. Estimating monthly and annual streamflow statistics at ungaged sites in Idaho. U.S. Geological Survey Water-Resources Investigations Report 01-4093.

Maret, T.R., Hortness, J.E., and Ott, D.S. 2003. Instream flow characterization of Upper Salmon River Basin streams, central Idaho, 2003. USGS. Scientific Investigation Report 2004-5173.

Scott, M., Contreras, G., Forsgren, H., Reynoldson, K., and McDevitt, G. 1981 Anadromous fish instream flow needs and conflicts within the Sawtooth National Recreation Area. U.S. Forest Service, p.46.

Thompson, K.E., 1972. Determining stream flows for fish life. Proceedings of the instream flow requirements workshop. Pacific Northwest River Basins Commission, 31-50p.