

**Upper Salmon Basin  
Watershed Program**

# Upper Salmon Basin Watershed News

NEWS ABOUT RESTORING FISH IN CENTRAL IDAHO

Fall 2009

## Big Timber Flow Improvement Project

*"We will focus on forging collaborative working relationships with fish and wildlife partners, defining our objectives in environmental and biological terms, and meeting those objectives as cost-effectively as possible."*

*Greg Delwiche,  
BPA Vice-President for  
Environment, Fish & Wildlife*

The Idaho Department of Fish and Game (IDFG) and the Upper Salmon Basin Watershed Program (USBWP) are partnering to reconnect Big Timber Creek with the Lemhi River so that ESA listed Chinook salmon, steelhead, and bull trout can migrate between these two watersheds. The USBWP technical team, which is comprised of staff from many of the state and federal agencies collaborating in fish conservation, identified Big Timber Creek as the most biologically important tributary currently disconnected from the mainstem Lemhi River because of its potential to provide good quality spawning and rearing habitat for all species of trout and salmon.

road culverts and irrigation diversions that block upstream migrating fish, and stream segments where flow is either limited or unavailable for fish. Beginning in 2006, the partners developed projects to address many of these obstacles. The road culvert at the intersection of Highway 28 and Big Timber Creek was replaced with a concrete open bottom culvert with a natural stream bottom, and the interception of Big Timber Creek flow by the Lemhi River #63 diversion was modified by siphoning the diversion water underneath the Big Timber Creek stream channel.

The State of Idaho's Habitat Conservation Program also recognized Big Timber Creek as the most important tributary to reconnect to assist with supporting the recovery of salmon and steelhead in the Lemhi River. Furthermore, in 2005 Idaho completed a water rights settlement between the U.S. government and the Nez Perce Tribe that calls for, among other things, that Big Timber Creek be reconnected to the Lemhi River to benefit salmon and steelhead in the basin.



*Jeff Lutch, IDFG Staff Fishery Biologist, inspects stream flow restored to the lower reach of Big Timber Creek*

The Nez Perce Agreement (2005) launched a habitat restoration and management initiative in the Salmon and Clearwater River Basins to improve instream flows and fish habitat and passage to benefit ESA-listed fish. A Habitat Fund supports improvements under this program and the state will administer innovative cooperative agreements under the ESA to enhance riparian habitat.

Staff from IDFG and the USBWP identified numerous obstacles that prevent fish from migrating into Big Timber Creek. These include

More importantly, the partners completed a project that improves irrigation water use efficiency on a ranch while adding approximately 4.5 cubic feet per second of flow in a previously dewatered section of Big Timber Creek. Water is now available for certain life stages of migrating fish that has not been available for many decades. Other projects are currently being developed by the partners to remove additional migration barriers while increasing the water available for fish.



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**Watershed Calendar**

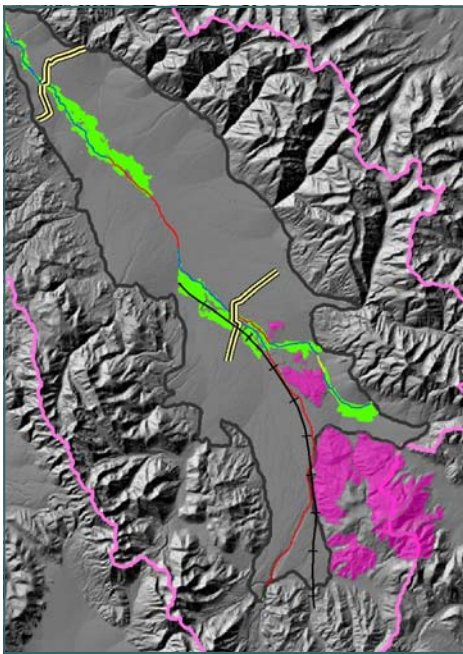
- **January 12, 2010 Advisory Committee Meeting—10 a.m. at USBWP Conference Room**

## Geologic Controls on Groundwater/ Surface Water Interaction in the Pahsimeroi Valley

By Robert B. Whittier, University of Hawaii, Hydrogeologist (Part three of four articles)

Groundwater surface/ water interaction is the exchange of water that flows below the ground surface and with that which flows over the ground surface. The most visible indication of this process is the wetlands (shown in green on the map) where groundwater feeds springs resulting in gaining reaches of stream (shown in blue on the map). Less visible are those areas where surface water infiltrates beneath the ground surface recharging the aquifer (shown in red on the map). These processes were investigated by:

- performing closely spaced flow measurements along the entire reach of the Pahsimeroi River (described in the previous installment of this series),
- using geophysics to image the subsurface, and correlating the occurrence of valley wetlands with visible geologic features.



*Pahsimeroi Valley:  
Green—wetlands, red—aquifer*

A geophysics team from Boise State University (BSU) led by Lee Liberty imaged the subsurface using seismology. The photo in the lower right shows a BSU technician operating the seismic trailer that generates a sound pulse using a power driven 400 lb weight. The travel time of the sound pulse depends on the density of the underlying geology.

A series of geophones laid out in a string approximately two miles long measures the velocity of the sound energy. Using the velocity-density relationship, a two dimensional cross-section of the underlying geology can be constructed. Two seismic transects (shown as yellow and black lines on the map) were done across the Pahsimeroi Valley. The southern transect followed McCoy Lane and the northern transect followed Downton Lane. The southern transect showed that a dense formation approaches very close to the ground surface where a spring system feeds the wetlands

southwest of the river. The structure is interpreted to be an extension of the Goldberg Fault (shown as a cross-hatched black line on the map) that follows the upper Pahsimeroi River channel down to the west side road. The fault then tends to the northwest forming a subsurface dam that forces the groundwater to the surface. The Downton Lane transect showed that bedrock of low permeability lies closer to the surface at this location than does the bedrock south of Hooper Lane. This and the narrowing of the valley walls again force the groundwater to surface.

There are also significant wetlands along Goldberg Creek east of Hatch Lane and east of the highway. In both cases the wetlands occur where bluffs of older alluvium (shown in pink) approach the stream channel. The upper reaches of Goldberg Creek gain water as the channel approaches and flows past these low lying hills. Once the creek passes under the highway it loses water until it turns to the west at the base of the Big Creek alluvial fan. It then gains water until Hatch Lane where the creek flows past the mid-valley bluffs that hug the stream channel from the south and from the north. Past Hatch Lane this stream loses water until its confluence with the main Pahsimeroi River.

This brief article summarizes the naturally occurring controls on groundwater/surface water interaction. This process is important because the slow transport times of groundwater store this resource in the subsurface, allowing for a controlled release that maintains the wetland ecosystems along much of the main Pahsimeroi River channel.



*Seismic trailer generating a sound pulse to measure density of underlying geology.*

## USBWP Technical Team Tour

For the past three years, members of the Upper Salmon Basin Watershed Program's Technical Team (Team) have reserved a date in August to tour project sites a major drainage of the basin and discuss accomplishments and potential future projects. This year, Team members and partner agency staff focused on sites in the Lemhi River watershed from the headwaters downstream to Hayden Creek.

The Team's objective is to perform technical and science-based evaluations of projects for the USBWP Advisory Committee, participate in project scoping and development, and present ideas and restoration opportunities. They also evaluate project proposals for their biological and technical merit using the best available data and adaptive management techniques.

Twenty-one participants began the annual event in the upper reaches of the Lemhi on a Tuesday evening, assembling for a campout in the Timber Creek drainage. The Team was joined by five additional participants the following morning at their first stop on the tour, the historic Carey Act Dam on Big Timber Creek. The history of the dam and its significance within the watershed were topics of discussion. From the location of the dam, participants could clearly view the landscape of the Lemhi headwaters and gain a better understand of the scope of both past and present conservation efforts in the area. The rest of the morning included visits to the recently completed Big Timber/L-63 Siphon, Big Timber/Highway 28 Culvert and Upper Lemhi Flow Improvement/Whitefish Ditch project sites. The group also looked at several headwater projects in the implementation or project development phases, including the Big Timber Flow Improvement, Whitefish Ditch Alternative Stockwater, and other flow improvement efforts.

After a quick stop for lunch, the Team traveled down-stream to Little Springs Creek, a tributary to the Lemhi River, where they spent most of the afternoon. Numerous partner agencies within the Team have focused their efforts on Little Springs Creek and surrounding lands for the past few years. Conservation easements, riparian fencing, an off-stream stockwater system, pond and stream channel restoration, and replacement of highway culverts that pose a barrier to fish migration were among the implemented and proposed projects discussed for the creek and adjacent lands.

The final hours of the tour were utilized inspecting several diversion replacement sites further downstream and viewing some of the damage caused by an unexpected high water event that took place in June. The Team ended the tour on lower Hayden Creek, examining a project site that has been proposed for diversion replacement and riparian fencing.

Touring past and potential project sites has become an anticipated August tradition for the Team. The tour has rotated through the major drainages of Upper Salmon Basin, beginning in the Salmon River headwaters and Stanley Basin in 2007, then moving to the Pahsimeroi River drainage in 2008, and this year's tour of the Lemhi River watershed. The 2010 tour will again return to the high elevation tributaries of the Stanley Basin. Team members and guests agree that this annual tour of projects is a beneficial and educational experience.



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## Recorder Herald—Dateline July 4, 1934

### STILL BOOSTING SALMON DIVERSION

Senator Pope Has Attention of President Roosevelt

WASHINGTON – Senator Pope, Democrat, Idaho, was assured by President Roosevelt that the Salmon river diversion project to carry water to the Boise valley in Idaho would continue to receive consideration as one of the major water conservation developments of the administration.

In a letter to Pope, the president said he fully appreciated "the necessity of taking prompt steps to relieve the acute water shortage which exists not only in Idaho but throughout much of the central and western sections of the country."

Hunt Site—"I am advised by the secretary of the interior that investigations are still in progress to locate a reservoir site on the North Fork of the Snake river in Idaho and that the question of the Salmon river diversion is to receive further consideration with a view of determining definitely the feasibility of this project with a more careful estimate of its cost and the quantity of water that can be diverted." The letter said.

The Salmon river plan calls for tunneling thru the mountains between that stream and the Boise river to supplement water now available from the latter for irrigation purposes.

The project has been estimated to cost from 7 to 10 million dollars but the senator said a more careful estimate after a complete survey may materially reduce that amount.



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Watershed Program

NEWS ABOUT  
RESTORING FISH  
IN CENTRAL  
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To :

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## Coordinators Comments

*By Hans Koenig*

Sara Schmidt, our new Idaho Soil Conservation Commission Administrator visited our offices in September, meeting with watershed program staff as well with some of our conservation partners including the Lemhi Soil and Water Conservation District Board. Sara took the opportunity during her stay to spend a day touring watershed projects in the Upper Lemhi with Nate Fisher, Administrator for the Idaho Governor's Office of Species Conservation (OSC). OSC Program Manager Mike Edmondson led the multi-agency tour which focused on conservation easements and habitat projects. Sara most recently served as the Regional Assistant Chief for the USDA's Natural Resource Conservation Service. She was the Executive Vice President for the Idaho Cattle Association from 1997-2003. We welcome Sara to the commission and look forward to her leadership in Idaho's conservation partnership.

Build it and they will come. If you spend any amount of time with fisheries biologists in the Upper Salmon Basin, chances are good that you'll hear their rendition of that old saying. It's a popular summation of how fish habitat enhancement and restoration projects are supposed to work. I have questioned that optimistic adage, wondering to myself about when those fish will decide to show up and prove them right. Biologists know that recovery efforts don't often demonstrate results overnight. And they don't expect them to. Some labor past the twilight of their careers without ever seeing the results of their efforts. Sometimes the elements just don't cooperate. This was not the case this year.

In September 2008, Fisheries Biologists from the Idaho Department of Fish and Game (IDFG) surveyed a total of only two Chinook salmon "redds" or nests in the Upper Big Springs/Patterson Creek area in the Pahsimeroi River Basin. That same year marked the completion of the P-9 diversion removal and associated projects, a complex, Herculean task that was a decade in the making and involved many entities including the Custer Soil and Water Conservation District. In late September of this year, excited biologists surveyed 69 redds in the same streams, a testament to the value of this project.

The Iron Creek Reconnect Project has a similar story line with an equally satisfying outcome. After several decades of migration-thwarting seasonal dewatering due to irrigation practices, a cooperative effort between the irrigator, the USBWP and its multi-agency partners was successful in reconnecting this important tributary to the Salmon River. The project was completed in 2007 and was featured in the Fall 2008 issue of the Upper Salmon Basin Watershed News. In September of 2009, IDFG Biologists documented Chinook redds in Iron Creek.

In a short span of time, two key projects have yielded dramatic results. In both cases, federally-listed fish have returned to historical spawning grounds that had for years been inhospitable habitat. Their return has not only renewed the faith of those who have labored to accomplish these seemingly impossible feats but it has also added new life to an old phrase.