

# The Redwood Creek Water Conservation Project, South Fork Eel River: Report & Updates

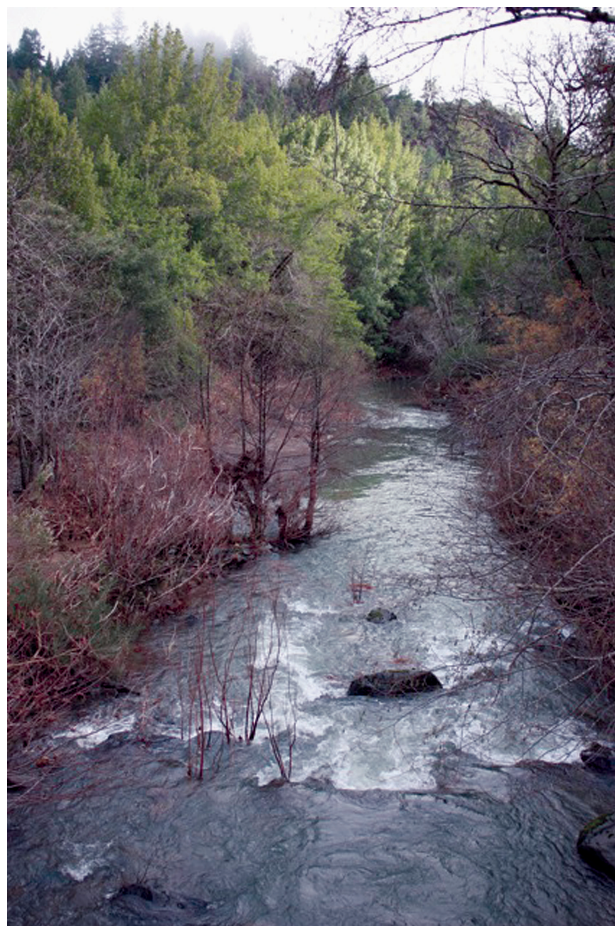


## A Project of Salmonid Restoration Federation

Early in 2013, Salmonid Restoration Federation in collaboration with a Humboldt State University sociology graduate student, Sara Camp Schremmer, initiated a study to determine the feasibility of conducting a “technology transfer” of Sanctuary Forest’s successful Mattole headwaters water storage and forbearance program to Redwood Creek on the South Fork Eel River.

The Redwood Creek watershed spans 26 square miles and has historically supported strong runs of coho, Chinook and steelhead. Juveniles of these species are routinely found throughout the watershed in spring and early summer, with Coho and steelhead rearing in the watershed until migrating to the ocean the following spring. Today, the watersheds, tributaries, and drainages of the South Fork Eel River basin are suffering from the legacy impacts of industrial timber management, extensive road networks and rural sub-divisions. Residential water diversions appear to be compounding the problem. Native salmon populations are now endangered and rural communities have virtually no baseline information or data about historic flows in the small creeks which many local residents depend upon.

To address these concerns, the Redwood Creek Water Conservation Project was designed in order to gather baseline data about human water use and low flows in the watershed, to gauge community interest in establishing a voluntary water conservation program, and to understand the type of water conservation program that might be appropriate for the Redwood Creek watershed and its rural residents. The project is based on the methods employed in Sanctuary Forest’s innovative Mattole headwaters water storage and forbearance program, where during the period from 2007-2012, sixteen participating landowners signed a legal agreement with Sanctuary Forest to store water from the Mattole River during high flows, and to use stored water from their tanks during the low flow season. The program has successfully engaged the community in water conservation efforts and has increased flows in that one-mile reach of the Mattole by 40%, according to data monitored by the CA Department of Fish and Wildlife.



## Surveys & Data Analysis

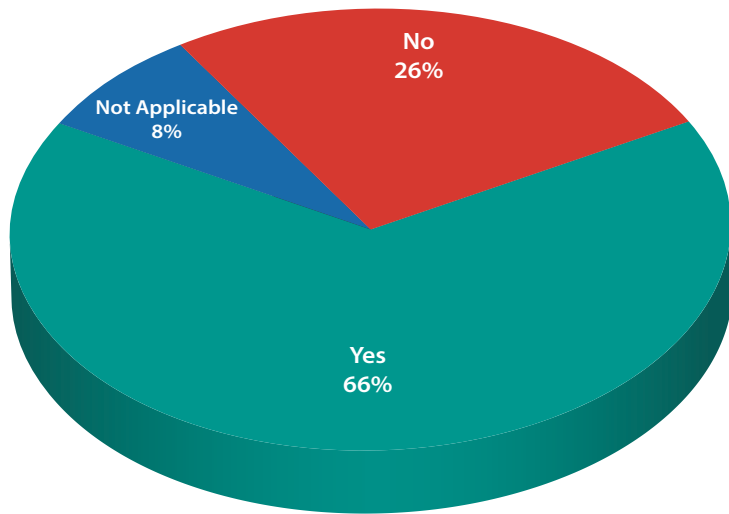
In the first phase of the feasibility study, an anonymous survey was mailed to the approximately 400 owners of parcels in the Redwood Creek watershed. In order to gather baseline data and obtain a clear understanding of human water use patterns in the watershed, the survey contained questions related to water source(s), withdrawal rates and current on-site storage capacity. Questions on community perceptions and values regarding Redwood Creek were also included, in order to gauge the level of interest that residents have in participating in a voluntary water conservation program.

As of May 2013, 70 people completed and sent in a survey questionnaire, resulting in a 17.5% response rate. Intensive outreach efforts were made through local media outlets, phone banking, and word-of-mouth to ensure the highest response rate possible, and while the feasibility study coordinators are pleased with the results, we have also done an assessment of the factors that may have kept more residents from participating in the survey.

For our mailing list, we could only obtain the names and addresses of the owners of parcels in the watershed. Owners who did not live on their parcel and/or had a primary tenant and caretaker living on their land may not have completed the survey; in other instances, residents may not have received the survey if they lived on a sub-divided parcel and were not technically an owner. Also, many Southern Humboldt residents travel during the winter and may have missed the survey as a result. Other residents may not have felt that the survey applied to them if they identified as resident of a smaller drainage (ex: “I’m a Miller Creek resident, not a Redwood Creek resident”). And lastly, we recognize that water is a sensitive issue for the rural residents of Humboldt County, and some people may have opted not to participate in the survey if they were distrustful of how the information would be used.

Tables 1 and 2 summarize the results of the first two questions on the Redwood Creek Community Perceptions & Residential Water Use Survey, where respondents were asked to rank what they

**Figure 1: Do you have any mechanisms in place to prevent tank overflows?**



value about Redwood Creek and to share any observations of changes that they have observed in the watershed that may be contributing to low summertime flows.

An interesting finding surfaced when we analyzed the results in Table 1. There is a significant relationship between a respondent valuing the aesthetic beauty of the creek and valuing the creek for habitat for salmon when compared to the respondent's level of interest in volunteering in flow restoration efforts. Values concerning fresh drinking water and water for irrigation did not have a significant impact on levels of interest in volunteering. From this information, we could conclude that the emphasis of community outreach efforts for the Redwood Creek Water Conservation Project should be on restoring and preserving the natural beauty of the creek and the vital habitat for salmon that it provides.

Figure 1 shows a breakdown of the percentage of survey respondents who have mechanisms in place to prevent tank overflows. While 66% reported that they do have mechanisms in place to prevent overflows, 26% reported that they do not, and 8% indicated that the question was not applicable to them. With

**Table 1: Please tell us what you value about Redwood Creek by marking each scale provided below.**

	% Agree*	% Neutral	% Disagree*	Mean**	Number of Responses***
Aesthetic Beauty	92.8	2.9	1.4	1.26	68
Habitat for Salmon	88.5	10.0	1.5	1.33	70
Fresh Drinking Water	57.1	15.7	24.2	2.37	68
Water for Irrigation	50.0	15.7	32.8	2.68	69

over one-quarter of respondents indicating that they do not have mechanisms in place to prevent tank overflows, the Redwood Creek Water Conservation Project should work to ensure that information is available to all residents about the affordable and accessible options that can help prevent water loss, including the installation of automatic shut-off valves and installing an overflow pipe back to the water source.

Figure 2 illustrates a comparison between two questions: How frequently or infrequently do you talk to other people in your community about the health of Redwood Creek? and How interested or uninterested are you in participating in voluntary flow restoration efforts in Redwood Creek? We found that there is a significant correlation between how often respondents talk about the health of the creek and how interested they are in volunteering in restoration efforts. One interpretation of this finding suggests that future efforts to increase levels of volunteer engagement in the community would more likely be successful if we were to provide additional forums for public dialogue among residents of the watershed.

Lastly, Figure 3 describes respondents' water source(s) for irrigation and household use. Just over half of the respondents reported that they obtain their water for irrigation from springs, and nearly 70% use springs for their water for household use. This information will help inform the low flow study that will be happening in the summer of 2013.

If you are interested in learning more about the survey results, or if you have any questions about the data analysis in this report, please contact Sara Schremmer at [sara@calsalmon.org](mailto:sara@calsalmon.org).

## Community Outreach

In the second phase of the feasibility study, two house meetings were hosted in Miller Creek and Seely Creek to provide a forum where Redwood Creek residents could participate in the decision-making process regarding the scope and trajectory of the Redwood Creek Water Conservation Project. At each meeting, presentations were given by local restoration experts, highlighting the concerns about the watershed from a resource system perspective. Additionally, feedback was gathered from residents on their interest in participating in water storage and forbearance versus other forms of water conservation.

At the Miller Creek house meeting, 40 people were in attendance with a roughly equal distribution of men and women. The Seely Creek house meeting was attended by 11 men and 6 women. Both meetings were comprised mostly of residents who appeared to be in their mid- to late-forties or older. The meetings were designed to provide a welcoming space for

community engagement in the design of a water conservation project, and additional efforts will be made in the future to ensure that younger residents are invited to attend and participate.

Below is a summary of some of the points that were discussed at both meetings:

- The factors that made the Mattole Flow Program successful, including the development of a feasibility study very similar to the one being implemented in Redwood Creek.
- What a low flow study in the Redwood Creek watershed might look like, beginning in the summer of 2013.
- Suggestions for water conservation methods (such as installing float valves) that can be implemented right away by residents.
- Options for incentivizing water storage, such as initiating a revolving low-interest loan fund for storage tanks.
- Increasing community awareness during the low flow season. Specific suggestions included “Water Conservation Corners” at local hardware stores and low-flow road signs for Seely, Dinner, China and Miller Creek.
- The pros and cons of different storage tank options. For example, 5,000 gallon polyethylene tanks are relatively easy to install and do not require a permit.

From the house meetings, we learned that a couple of obstacles currently stand in the way for rural residents who want to add winter water storage to their properties. In addition to the initial expense of purchasing a new tank, the current policy in Humboldt County is to increase a landowner’s property taxes when additional water storage is installed, resulting in a financial disincentive. To address this problem, a few non-profits in the region are working together to explore the options for passing an ordinance or new tax policy that would provide a financial incentive for Humboldt County residents who want to install winter water storage.

Additionally, the issue of water rights presents a significant hurdle for residents who want to legally add water storage to their properties. According to the New California Water Atlas, only two residents have established water rights in the Redwood Creek watershed, yet hundreds of families in the region currently divert water for domestic and agricultural purposes. A recent “enforcement sweep” initiated by The State Water Resources Control Board Division of Water Rights has left many residents confused about their water rights and concerned about state

**Table 2: Please tell us about changes you have observed over the years in Redwood Creek and the surrounding area that you think may be contributing to low summertime flows.**

	% Agree*	% Neutral	% Disagree*	Mean**	Number of Responses***
Fewer pools	57.1	27.1	7.1	2.14	64
Changes in length of dry season	44.3	40.0	8.6	2.32	65
More gullies, landslides, or roads	37.2	34.3	15.7	2.56	61
Changes in forest cover	40.0	31.4	20.7	2.57	63
Fewer logs in the creek	14.3	52.9	22.8	3.13	63

= Respondents who selected Strongly Agree or Agree were included in the % Agree column. Respondents who selected Disagree or Strongly Disagree were included in the % Disagree column. Missing responses were included in the percentage totals.

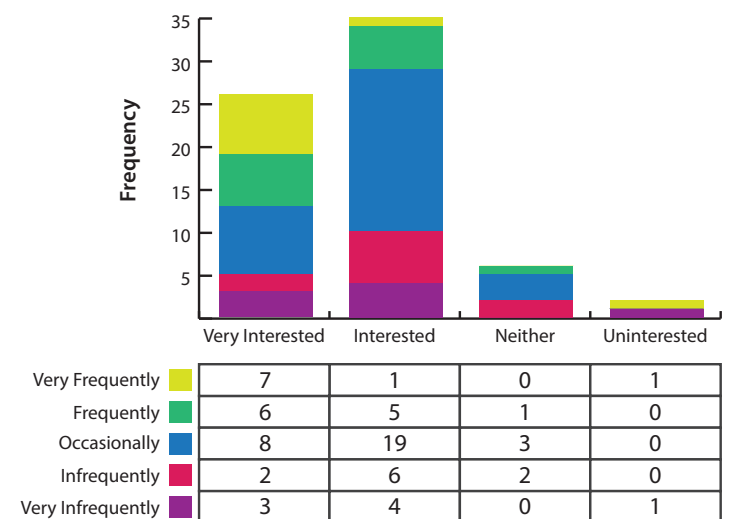
\*\* = The mean was calculated based on a scale of 1 (Strongly Agree) through 5 (Strongly Disagree).

\*\*\* = Total number of survey responses was 70.

agencies coming onto their land. Several non-profits in the area, including SRF, have responded by putting together a public forum where residents can learn about their water rights and how to come into compliance with state water law so that they can legally divert and store water without fear of legal repercussion.

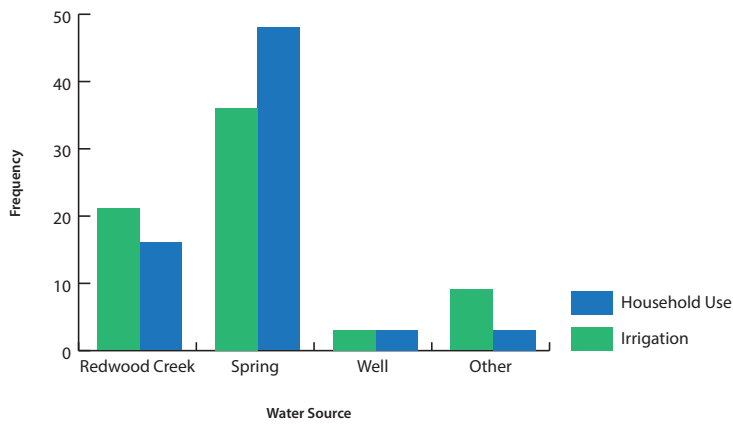
## Landowner Surveys Indicate Strong Stewardship Ethic

**Figure 2: Interest in volunteering in restoration efforts compared to how frequently the respondent talks to their neighbors about the health of the watershed.**



\* = Example: Out of the 27 respondents who indicated that they are Very Interested in participating in voluntary efforts to restore flows in Redwood Creek, 7 also talk Very Frequently with others in their community about the health of Redwood Creek.

Figure 3: Water Source for Irrigation & Household Use



## Water Conservation Workshop and Field Tour

The water usage surveys and house meetings culminated in a free water conservation workshop with presentations by staff from Sanctuary Forest, Salmonid Restoration Federation, the Mattole Restoration Council and the Mattole Salmon Group. Presentations were followed by a three-hour field tour in Briceland in order to teach landowners hands-on water conservation techniques that could be applied to their own homestead. Stops during the field tour included appropriately designed and constructed lined ponds, groundwater recharge ponds, rainwater catchment tanks, and poly-tank farms, all for the purposes of increasing resident knowledge about options for winter water storage.

### Next Steps

Analysis from the surveys and house meetings revealed which tributaries of Redwood Creek have landowners and residents living along them that would be amenable to the implementation of a voluntary water conservation program; however, measuring the social acceptance is just one key component to the project. In order to determine where water storage and forbearance would have the greatest ecological impact in restoring flows, a low flow study will be initiated on Redwood Creek in the summer of 2013.

The low flow study will provide baseline flow data that will illuminate to what extent water diversions are impacting flows

on Redwood Creek, as well as which locations in the Redwood Creek watershed are most critical for salmonid population recovery. Salmonid Restoration Federation's low flow study on Redwood Creek will be guided by Bill Eastwood, a local geologist and restoration practitioner with expert knowledge of the watershed as a resource system.



*SRF Redwood Creek Project Coordinator, Sara Schremmer, trained with Sanctuary Forest's monitoring team to learn low-flow study techniques that will be employed in the low-flow study in Redwood Creek this summer.*

SRF will continue to work with multiple agency and organizational partners, including Sanctuary Forest, the Mattole Restoration Council, Eel River Salmon Restoration Project, the Department of Fish and Wildlife, Humboldt Area Foundation, Trees Foundation, Eel River Watershed Improvement Group, NRCS, and the Briceland Volunteer Fire Department, to harness the momentum and excitement around flow restoration that has already been generated by this project. With the active input and continual engagement from the residents of the Redwood Creek watershed, SRF is working to develop and implement a community-led residential water conservation program in the near future that will suit the needs of both people and fish for generations to come.

Saving coho salmon in South Fork Eel River is critical for the recovery of coho salmon in the North Coast region of California. The tributaries of Redwood Creek have all historically supported coho and provided valuable spawning habitat. Coho salmon are now on the brink of extinction due to lack of habitat and instream flows. Our water conservation efforts can make a difference.



*Participants toured a recharge pond as part of the Water Conservation workshop that SRF hosted in the winter, 2013. All photos: Dana Stolzman*

For additional information about **The Redwood Creek Water Conservation Project** or any questions related to the feasibility study discussed in this report, please contact the Project Coordinator at [water@calsalmon.org](mailto:water@calsalmon.org) or call (707) 923-7501.

Information is also available on the Salmonid Restoration Federation website at [www.calsalmon.org](http://www.calsalmon.org)