



*Toxic blue-green algae blooms on Lake Cascade have occurred the last five years in a row, sounding the alarm for more work to improve water quality in the North Fork Payette River watershed. (photo courtesy Valley SWCD)*

## VALLEY DISTRICT WORKS TO IMPROVE WATER QUALITY IN NORTH FORK PAYETTE WATERSHED, LAKE CASCADE

By Steve Stuebner

The Valley Soil and Water Conservation District has a very big job, working on improving water quality in the North Fork Payette River watershed and in Lake Cascade, the state's fourth largest lake or reservoir, which covers 47 square miles between Cascade and Donnelly.

Two massive algae blooms in 2022, one in June and another in late

August through October, thanks to intense spring runoff and record-breaking summer heat, raised the red flag, once again, that more work needs to be done to improve water quality in Lake Cascade. The June bloom had an impact on the community drinking water system in Horseshoe Bend, causing an unusual odor and significant down turn in the 4th of July tourism impacting the local economy.

"They tested the water and the cyanobacteria was not toxic, but they could smell an offensive odor in the water," said Durena Farr, Valley District Manager. "The problem got flushed out of the system and went away, but it's an indication of concern down the road."

"The watershed is under immense environmental pressures and with Harmful Algae Bloom alerts for the past 5-years in a row; the lake is

changing for the worse,” said Lenard Long, who lives in Cascade and is an associate supervisor on the Valley District board of supervisors. “There’s much more that needs to be done to improve water quality in the lake. The lake and North Fork Payette River are valuable resources to our community,” Long said.

“I think the reservoir is potentially in real trouble,” added Art Troutner, Chairman of the Valley District Board. “We’ve been getting algae blooms every year.”

In 1993, 23 cattle died after drinking toxic water laced with blue-green algae out of Lake Cascade in the fall, and that inspired a lot of positive activities to address the issue, Long notes. Some of the main issues at that time included reducing wastewater from the McCall Sewer Treatment Plant draining into the North Fork of the Payette River, the primary water source that feeds Lake Cascade; substandard septic systems from lakeshore cabins bleeding nutrients and bacteria into the lake; sediment runoff from the forests circling the lake, sediment and animal waste runoff and return flows from agriculture fields on the edge of the lake and tributaries, and more.

Today, many of the same issues are affecting water quality in Lake Cascade, Long says, plus a few new ones such as wake-surfing boats stirring up lake sediments, eroding banks on the lakeshore from high winds and boating wave actions, cattle use in the lake and on the lakeshore, poorly maintained septic systems, ash and sediment runoff from wildfires, wetland losses, land development runoff, internal organic sediment loading and other issues.

The Valley District has an ambitious slate of conservation projects under way to address many of the issues at play, which we’ll detail in this article.

But Long says, “We’re just scratching the surface, we have a lot more work



Members of the Idaho Conservation Corps install riparian fencing to keep livestock and ATVs away from lakeshore areas (Courtesy Valley SWCD).

to do.”

All of that is challenging because another factor – population growth and a flurry of new housing projects in the valley, plus an increase in recreation/tourism – are also contributing to the recreation pressure on Lake Cascade and affecting water quality, Troutner says.

“It’s a big area, and it’s getting more complex all the time,” says Troutner, who’s served on the Valley District board for 35+ years. “It’s a big job.”

**New North Fork Payette Watershed Coalition to be formed**

All of the Valley District officials are excited about winning a \$198,220 Bureau of Reclamation WaterSMART

planning grant to help organize a North Fork Payette River Watershed Coalition with local citizens and

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*Idaho Conservation Corps workers roll out wire for the riparian fencing project (courtesy Valley SWCD).*

stakeholders. The goals will be to identify and prioritize restoration projects, create a Watershed Management Plan for the North Fork Payette River area, and find funding sources. The Watershed Coalition will be helpful in setting priorities for water quality work, Troutner says.

“The intent is to have a diverse group of interests, including the cities, agencies and citizens, everyone who has a stake in the water quality of Lake Cascade and our valley, to please come forward and help us shape the future. If we don’t get everyone involved, the plan won’t be as meaningful.

“Everyone can help, and that means getting people aware of the problem and engaged in the solutions.”

Farr is super excited about the planning grant. “I felt a huge need to have a management plan to guide our conservation activities,” she says. “This is a really big deal. I’m

looking forward to going through the process of setting priorities, and that will help direct our outreach for water quality grants and conservation projects.”

### **Hands-on conservation projects improve water quality**

In the last two years, the Valley District has been leading riverbank restoration projects in two locations and completed two fencing projects along the lakeshore to address water quality issues and reduce sediment and phosphorous loading into Lake Cascade and the North Fork of the Payette River.

Three riverbank restoration projects were funded with \$216,098 in Section §319

water quality grants from the Idaho Department of Environmental Quality/ Environmental Protection Agency.

Bill Lillibridge, SWC engineer, did the design and engineering work for all the riverbank restoration projects.

### **•The Alzar Riverbank Restoration Project**

was a partnership with Alzar School in Cascade, Idaho Fish and Game volunteers, Michael Young, IDFG Volunteer Coordinator, Lillibridge, two engineers with the Natural Resources Conservation Service (NRCS), and volunteers from the Valley District. Forty-two Alzar students and four residential life staff participated in planting willow stakes

to stabilize the North Fork riverbank, south of Cascade.

“It was great to have Michael Young and Idaho Fish and Game volunteers,” Farr said. “He’s such a good guy, and he works really well with the kids. The kids came in without any experience, and they left with new skills.”

Idaho Fish and Game “does an amazing job,” added Troutner. “They brought a solid group of people to help us out, and it went really well. We had lots of willow cuttings to plant into the river bank. Those will have lasting value.”

•**The North Fork Bank Restoration at Heinrich Lane**, south of McCall, was another partnership project with Young and IDFG volunteers, Idaho Conservation Corps (ICC) crews, Trout Unlimited, Friends of Lake Cascade, and it was well attended by Valley Soil and Water Conservation District management and supervisors. On the field day, they planted 200 trees, plants and willows to stabilize the North Fork Payette River bank and provide shade to help cool water and provide fish habitat. The project adjoined Bureau of Land Management property by the river and Simplot Company pasture land. The potted plants were watered all summer long



*Lenard Long digs a hole for a new shrub to help anchor the streambank (courtesy Valley SWCD).*



by Trout Unlimited volunteers.

The Valley District also completed two fencing projects, covering a total of 9 miles of lakeshore area next to Lake Cascade, leaving a large buffer between the fence-lines and the lakeshore for wildlife. The projects were financed by Idaho DEQ Ag BMP grants. The main purpose was to keep stray cattle and ATVs away from the fragile riparian area next to Lake Cascade.

Farr points out that the West Mountain riparian fencing project posed a unique funding challenge for the Valley District in that project would need to occur on federal lands. She worked out a joint collaboration with the Bureau of Reclamation, Idaho Fish and Game, the Valley District, the Northwest Youth Conservation Corps and University of Idaho McCall Outdoor Science School.

“However, BMP Installation labor costs and hours were significantly underestimated and by the project’s end, the grant covered only a portion of project’s total labor costs,” Farr said. “The ICC crew was only able to complete three of the six continuous miles of fencing in a narrow building season. So I was grateful to see increased volunteer hours and expanded BOR contributions end up as a major component of the

West Mountain Riparian Fencing Project.”

Volunteers included Valley District Supervisors who donated BMP (Best Management Practices) installation time, tractor, post auger and fencing expertise to the project. “BOR staff, Idaho Fish and Game volunteer crews and habitat technicians were essential to completing the final three miles of fencing,” she noted. “My supervisors did a lot of work, too. Justin Florence brought out his tractor and helped drill the fence holes with an auger. Art Troutner was there, too. It was just a big team effort.”

“Those riparian fencing projects are a



Volunteers plant willows, shrubs and trees to anchor the streambank along the North Fork Payette River near Heinrich Lane. (Courtesy Valley SWCD)

big deal,” Long adds. “The cattle are often in the water. We’ve got five herds, ranging from a few dozen up to 200 head, that often are seen in the lake. Those new fences will take



Fencing projects will keep cattle away from the fragile riparian area next to Lake Cascade. (Courtesy Valley SWCD)



ATV damage to the Lake Cascade riparian area will be prevented with the new fencing projects. (Courtesy Valley SWCD)



care of that problem where we have fences completed.”

Six miles of fence were built on the border of Duck Creek Wildlife Management Area and three were built on the border of Willow Creek Wildlife Management Area. The water quality net benefits from each project are as follows:

**•West Mountain Riparian Fencing project**

– Total estimated annual load reductions, Sediment 585 tons; Nitrogen, 7,080 pounds, and phosphorous, 1,267 pounds.

**•South End Riparian Fencing project**

– Total estimated load reductions, Sediment 209 tons, Nitrogen 1,115 pounds, phosphorous, 361 pounds per year, after the riparian vegetation is re-established.

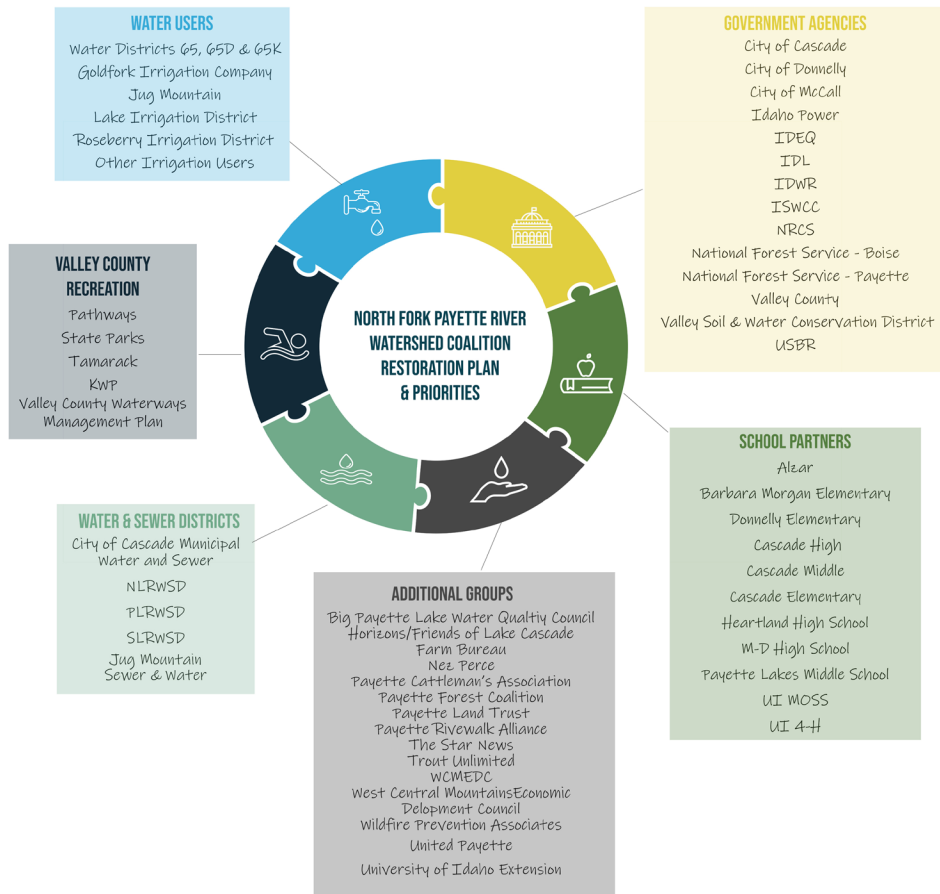
According to the State Ag BMP final report, total annual load reductions for all five riverbank restoration and fencing projects were: Sediment 3,161 tons, Nitrogen 4,264 pounds, phosphorus, 8,609 pounds.

**New Designation for Lake Cascade**

NRCS recently designated the North Fork Payette River Watershed as a “Source Water Protection High Priority Area,” primarily due to excess nutrient loading contributing to poor water quality in Lake Cascade and its tributaries, threatening community drinking water sources downstream, officials said.

The initiative highly incentivizes agricultural producers (farmers, ranchers, private forest landowners) to adopt conservation practices that advance their business while improving water quality and promoting more efficient water use in our watershed, NRCS officials said.

Conservation practices eligible under the program include, but are not limited to those that improve water quality and quantity such as, irrigation water management, nutrient management, cover crops and wetland restoration.



*The Valley District plans to include a broad group of stakeholders in the new North Fork Watershed Coalition. (Courtesy Valley SWCD)*

The new federal designation should help the Valley District acquire more conservation grant funding for agricultural BMPs, off-site stockwater and other conservation practices, Farr said. “This designation is going to be really helpful for the District and landowners to cost-share priority ag conservation projects.”

**BOR study on water operations**

In another initiative, the Valley District organized and hosted work group sessions for agency officials and stakeholders to begin the process of understanding BOR Lake Cascade water operations. From that dialogue, BOR has launched a Lake Cascade Water Modeling study, funded by the agency, to evaluate annual operations, including existing water and management obligations, and how water flows could be potentially tweaked to enhance water quality in the lake.

Overall, the BOR has tried to keep Lake Cascade levels as high as possible during the summer months to help with water quality and avoid algae blooms. But the agency has to balance the water management with irrigation demands in the Emmett Valley and Payette Valley downstream and the salmon and steelhead augmentation flow. The BOR water modeling study has been approved and is under way.

“One of the most important things with that study is the BOR recognizes that the lake has a problem,” Long said.

**Other District recent accomplishments include:**

•The District worked with local producers to install four new pivot sprinkler projects via two grants from the Idaho DEQ Ag BMP program. All four projects converted surface water irrigation flow to ground water pumping, eliminating sediment,



*This is one of four pivot irrigation systems installed in 2022 via Idaho DEQ Ag BMP grants. The pivots will reduce sediment, phosphorus and nitrogen flows into Lake Cascade. (courtesy Valley SWCD)*

nitrogen and phosphorus flows into Lake Cascade.

- The East Cascade Reservoir Irrigation Conversion Phase I project involved installing a new pivot irrigation system on 204 acres of ag land. Total project cost was \$398,192 and the Idaho DEQ grant funded \$238,915. Net annual benefits from the pivot project are as follows: 1,020 tons of sediment, 3,264 pounds of nitrogen, and 1,633 pounds of phosphorus.
- The Boulder Willow Creek Water Conservation Projects involved installing two new pivot irrigation systems on 252 acres of ag land. The total project cost was \$240,035 and the Idaho DEQ grant provided \$144,021. Net annual benefits from the pivot projects are as follows: 1,410 tons of sediment, 4,512 pounds of nitrogen, and 2,256 pounds of phosphorus.

- North Fork Payette tree planting** – Led by Valley District Supervisor John Lillehaug, the District has provided 10,000 ponderosa pine and tamarack seedlings to be planted by landowners along the river. A former professional forester, Lillehaug assists forestry landowners with pre-commercial thinning projects, reducing fuels for wildfire mitigation, insect and disease control and more to improve forest health. Through his outreach, 250 acres of land were treated in 2022 and more than 2,000 acres have been treated since he joined the District Board, Farr said.
- Supervisor Bill Leaf provided a no-till drill presentation** to the Idaho Women’s Charitable Foundation for a district grant to purchase a no-till drill and trailer for use on smaller acreages in the watershed. Megan Brooksher, SWC natural resources conservationist, assisted with the

grant application.

•**Supervisor Colt Brown attended a Berry Growers Conference** in Missoula, Mont., and plans to introduce honeyberries a.k.a. haskap as a climate-appropriate crop to area ag producers. As a certified organic producer, Colt’s experience and interest in water efficiency, BMP practices and noxious weeds is essential to our board, Farr said.

•**New Supervisor Judy Anderson is currently involved in the Alpine Playhouse Production, Voices from our Public Lands** – 1993-

1996, excerpts from Interviews presented as dramatic readings. With 30 years in public education, organic gardening and a passion for preserving the North Fork water and soil resources, her voice is a dynamic addition to the board, Farr said.

•**Associate Supervisor Pam Pace provides Valley SWCD and county officials with monthly water supply outlooks.** A recently retired hydrologist who worked for Idaho Power and the Idaho Department of Water Resources, Pace also is doing research about ground water in the watershed. With Pace, the District has been reintroducing the topic of cloud-seeding to county officials as a means of balancing lake inflows and storage during drought periods.

For more information about the Valley District, contact Durena Farr, District Manager, 208-315-3530. Durena.Farr@id.nacdn.net

*Steve Stuebner writes for Conservation the Idaho Way on a regular basis.*

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