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Commission water quality resource conservationist Jon Beals is pleased with the basin's capture of large mounds of silt and sediment in summer 2019.

Big sediment-control project in Canyon County achieves big results

Part 2 of a series focusing on water quality in the Boise River watershed. It follows a story last month about Christopher Swain swimming the length of the Boise River to raise awareness about water quality issues in the watershed.

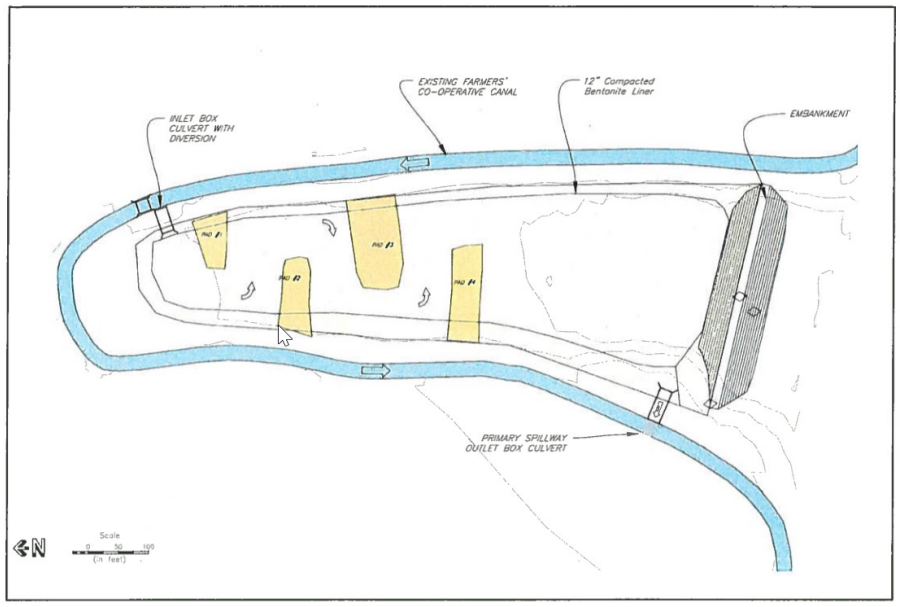
By Steve Stuebner

Jon Beals, water quality conservationist for the Idaho Soil and Water Conservation Commission, provided a tour last week of a new, 9-acre sediment catch-basin directly adjacent to the Farmers' Co-Operative Ditch Company canal near Parma.

Walking next to the sediment basin, Beals pointed out a tall pile of sediment and silt that had accumulated in the first year of operations. "That's a lot of dirt!"

Indeed, it was. Irrigation season is winding down, and Farmers' Co-Operative Ditch Company officials have yet to remove the silt and sediment from the elaborate catch-basin, so they don't know how much was captured. It's designed to take up to 2,000 tons of sediment per year.

"It's doing what it's supposed to do," Beals said.



The basin was engineered in a way that forces water flows to meander through the basin and drop out sediment before leaving the basin and re-entering the canal.

After water levels recede in the canal, the dirt in the basin will dry out and heavy equipment will be used to clean it out and deposit the sediment in a vacant field on an 80-acre farm property that's being leased for the project.

"We'll take that sludge and stockpile it, let it dry out and breathe, and eventually it could be spread out and become highly productive farm ground," says Tom Johnston, a retired farmer and board member for the Farmers' Co-Operative Ditch Company. "It's a win-win!"

Members of the Farmers' Co-Operative Ditch Company (FCDC) are quite pleased with the sediment basin project after one season of use, says Johnston, who served on the Conservation Commission's board of directors for 9 years.

"They are thrilled with how it's working," he says.

It's a voluntary, boots-on-the-ground conservation project that is reducing the amount of sediment flowing to farmers downstream from the project, and it's reducing the amount of sediment and phosphorous flowing from the FCDC canal into the lower Boise and Snake rivers as well.

Moreover, the project is preventing numerous nuisance issues with spray nozzles getting clogged, water pumps getting plugged and other irrigation issues from heavy sediment loads, officials said.

"People are saying it's changing the sediment load, and it's not clogging their nozzles," says Rich Sims, an associate supervisor with the Canyon Soil Conservation District and former NRCS State Conservationist in Idaho.

Farmers who grow onions in the area are using drip irrigation, and the heavy sediment loads were plugging their systems, Johnston said. "People were saying I'm having nothing but trouble with this. Overall, the sediment was causing all kinds of problems. That prompted us to try to provide our irrigators with better-quality water."

Three-hundred and seventy-six shareholders of the Farmers' Co-Operative Ditch Company (FCDC) increased their water assessments by $5 per share to raise $500,000 to pay their cost-share portion of the $1 million project because of all the headaches associated with sediment plugging irrigation equipment, Johnston said.

The farmers had grown tired of having to take extra time to back-wash pumps, remove mud residue from concrete flumes on the edges of fields, among many other things, Johnston said.

Sims worked with project partners to apply for and receive a $500,000 grant from NRCS for the project through the Regional Conservation Partnership Program (RCPP), a program that requires a 50-50 cost-share. NRCS provided in-house engineering for the sediment basin as part of the grant.

The project has a long list of partners, including the Conservation Commission, Canyon Soil Conservation District, Canyon County Commissioners, City of Parma, Idaho Water Resource Board, Southwest Idaho Resources and Conservation & Development Council, and Black Canyon Irrigation District.

Beals explains how the peninsula features built into the basin provide a gently sloping ramp for heavy equipment to drive into the basin and remove sediment following the irrigation season.

About 80-90 percent of the 16,000 acres served by FCDC are flood-irrigated, officials said, noting that this historical method of irrigation often leads to more soil erosion than pivots or more efficient types of irrigation. The canal runs for 32 miles in western Canyon County. Farmers in the area raise potatoes, alfalfa, alfalfa seed, corn, sugar beets, onions, and vegetables.

The sediment basin, built about 9 miles down the canal north of Parma, is conveniently located in a major U-shaped bend in the canal. Johnston said when the canal was built with teams of horses in 1902, it followed the lay of the land for a slightly downhill gravity-flow, leading to many twists and turns in the canal path.

The basin was engineered in a way that forces water flows to meander through the basin and drop out sediment before leaving the basin and re-entering the canal. Four jetty-type features were incorporated into the sediment basin that direct water flows around them, while serving a dual purpose of providing a sloped platform from which heavy equipment can access the basin to remove silt and sediment after the irrigation season.

Follow-up monitoring is being done to track sediment and phosphorous in the canal below the sediment basin, Sims said. Preliminary results show that the sediment basin is capturing about 75 percent of the silt and sediment as water flows through, and it's also collecting about 50 percent of the phosphorous carried by the dirt.

Both the lower Boise and Snake Rivers will benefit from the sediment and phosphorous reduction, as they are both water quality-limited river reaches with plans to reduce TMDL sediment loads, officials said.

"From what we have heard, the project has exceeded all expectations," says Mindi Rambo, a spokeswoman for NRCS in Idaho.

The project is the largest sediment-control project to be built in Canyon County, but there may be a few other sediment-control projects that are larger elsewhere in the state, officials said.

Partners began working on the project three years ago to determine the scope of the project and look for a suitable location, Sims said. It took time to work through how to fund the project for the local cost-share (raising water assessments for shareholders), gather public support, letters of support, and other project details.

Construction began in late 2018. One of the challenges associated with building the sediment basin was that the engineering plans called for sealing the bottom of the basin with bentonite clay to ensure that water from the basin did not artificially raise the water table and cause issues for adjoining farmers. Four-hundred tons of bentonite were hauled to the site from about 20 miles away to seal the bottom, officials said.

"That took more money and time, but we all wanted to do this project right," Johnston says.

Down the road, FCDC may look at installing additional sediment basins, he said. "We have to see how this project works for now. We're all very hopeful. So far, we are impressed with the mount of sediment it has collected. All in all, it seems like a positive thing."

The Canyon SCD and NRCS will continue to work with local producers to install best management practices on individual farms to reduce sediment, while the sediment basin does its part on a larger scale, officials said.

"It all comes down to the conservation of our natural resources," Sims says. "We can put in sediment basins to trap sediment from flowing into our rivers, while at the same time, we can do conservation projects in the fields with more efficient means of irrigation, cover crops, soil health measures and so forth."

Being close to Parma and U.S. Highway 26, the FCDC sediment basin is

Data gathering at the basin outlet.

The Lower Boise River benefits from reduced sediment loads in the FCDC canal. The canal draws water from the Boise River in Caldwell, and it provides return flows into the Snake River near Parma (portions of the ditch runoff also flow into the Boise River).

about a 45-minute drive from Boise, making it convenient for demonstration tours. The Canyon SCD and Conservation Commission both sponsored well-attended tours of the sediment basin last summer, and Idaho DEQ officials toured the site as part of a tour of Section 319-funded water quality projects in SW Idaho. Even the Boise River swimmer, Christopher Swain of New York, toured the project.

"We were thrilled to pieces that the governor came to see the project himself," Rambo said. "He asked a lot of good questions. When you toured the basin, you could see the water clear up as it traveled from one end of the basin to the other. You could visually see the change."

The Conservation Commission's tour included staff members from the office of Gov. Brad Little, Division of Financial Management, Legislative Budget Office and Legislative Services.

NRCS State Conservationist Curtis Elke toured the project several times, including a ribbon-cutting event in March 2019. "Idaho is very rich with strong partners like the FCDC and the Canyon Soil Conservation District," Elke said. "That and the many valuable investments they bring make projects under the USDA-NRCS Regional Conservationist Partnership Program come alive with successful outcomes for the customers in their community.

"As State Conservationist for Idaho, I stand committed to finding solutions to our resource concerns, helping keep Idaho beautiful and regenerative for generations to follow."

Beals said he heard positive feedback from everyone involved in the tours.

"I'm so pleased. What a wonderful asset that will improve water quality in the Boise River watershed," said Teri Murrison, administrator of the Conservation Commission. "Rules and regulations didn't do this. People stepped up, partnered and cooperated to make it happen. Voluntary conservation succeeds spectacularly when everyone joins in the effort to improve water quality in the Boise and Snake rivers."

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

IDAHO
SOIL & WATER
CONSERVATION COMMISSION
322 East Front Street, Suite 560 Boise Idaho 83702
P: 208-332-1790 • F: 208-332-1799
info@swc.idaho.gov • www.swc.idaho.gov