



Four flood-to-pivot irrigation conversion projects were completed in 2021 as part of Canyon SCD's conservation work plan. (Photo by Steve Stuebner)

CANYON SCD IMPROVES WATER QUALITY WITH FOUR NEW PIVOT PROJECTS, NEW NO-TILL DRILLS

By Steve Stuebner

The Canyon Soil Conservation District recently completed four irrigation-conversion projects that will improve water quality in the Boise River.

Participating farmers switched from gravity-flood irrigation to more efficient pivot sprinklers, conserving water, saving top soil and reducing the amount of sediment flowing in the Lower Boise River.

In a second component of the 2020-2021 \$319 grant project from the Idaho Department of Environmental Quality/Environmental Protection Agency, the District purchased two No-Till drills to assist Canyon farmers with conserving topsoil, building organic matter in the soil profile, fuel

savings, and adding value to their farms.

Chase Vandenberg was one of four Canyon farmers who recently completed a major pivot conversion project. He's happy with the project so far.

"It looks real good," Vandenberg says. "We put seven different fields into one. We're saving a lot on water, we should save on labor, and the biggest thing, is we're saving all of that topsoil that was washing off the field before."

The project converted a 200-acre field into the pivot irrigation systems. The project will reduce sediment loads flowing into the Boise River. The Total Maximum Daily Load (TMDL) water quality plan for the Lower Boise River

calls for a 37% reduction in sediment, notes Stan Hays, conservation technician for the Canyon District.

Pre-project estimates indicated that five tons of sediment per acre were washing off the field by Galloway Road, north of Middleton.

"The runoff from the fields was terrible," Hays says. "It looks much better now. The project changed the whole picture of the landscape. The old sediment ponds and irrigation ditches are gone."

Total cost was \$454,368, with Vandenberg covering more than 80 percent of the cost, or \$374,368. The investments included four center pivots, one 100-horsepower pump and motor, and several pipe sizes to

pressurize the system for irrigation.

"It was expensive, but it'll be worth it," Vandenberg says.

The Canyon District Board and the Lower Boise Watershed Council are always looking for conservation projects that protect and enhance water quality, Haye says.

Beneficial uses which are listed as being impaired in the Lower Boise River, from Middleton to Parma, include aquatic life support, salmonid spawning, primary contact recreation, domestic, agricultural, and industrial water supply, according to the §319 final report.

In 2009, the Canyon District formed a partnership with the Lower Boise Watershed Council, National Resources Conservation Service, and the Ada County Soil and Water Conservation District by providing administration and technical assistance for the conservation projects.

The District has received \$2 million in §319 grant funds over the last decade, with matching funds provided by landowners, the district and in-kind contributions total a similar amount, officials said.

Through the partnership, Ag Best Management Projects (BMPs) accomplished over the last decade include:

- Two watershed-scale and 21 farm-scale projects.
- Total conservation savings include: 18,000 acres treated; 24,000 tons of sediment reduced annually; 49,000 pounds of phosphorous reduced annually.

A former Kimberly cattle rancher, Haye has been assisting the Canyon District with technical, professional and engineering assistance, working with participating landowners to install voluntary conservation projects in the area. Haye has been working for the Canyon SCD for two years. He has

experience working as conservation technician for NRCS and irrigation management for the Twin Falls Canal Company.

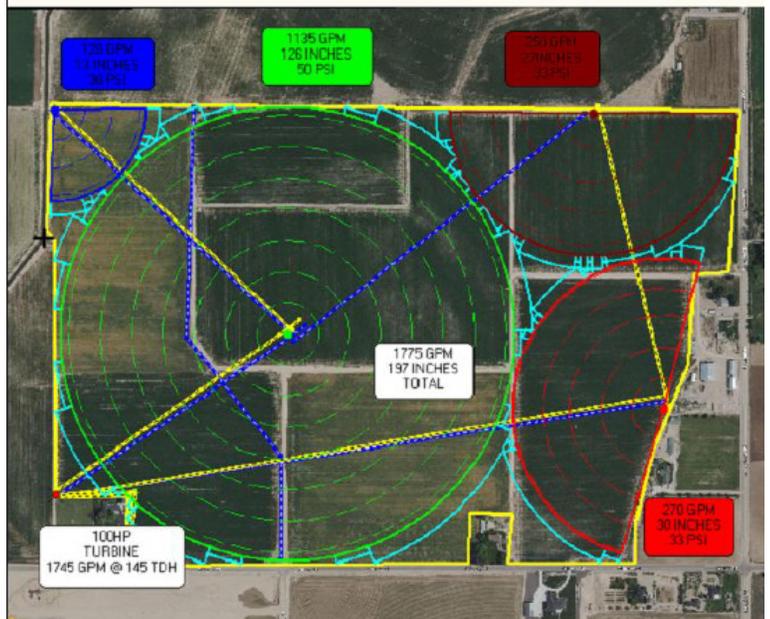
"I love to design sprinkler systems and off-stream water troughs," he says.

"We're lucky to have him," said Canyon SCD Chairman Mike Swartz. "He has a lot of experience working with producers, and he understands agriculture in this state. He gets along really well with our producers, and he gets along well with Tate Walters in the NRCS office, too."

In a similar pivot project north of Middleton, farmer Mike Skogsberg participated in a 70-acre conservation project that combined three gravity-flood fields into one for installation of the pivot sprinkler system. Total project cost was \$136,289.00; the landowner share was \$68,145.

Pre-project estimates indicated that 5.7 tons per acre of sediment will be eliminated from the Boise River as a result of the Skogsberg project.

"Conversion from surface irrigated fields to the center pivot sprinkler



Above, new pivot design for Vandenberg 200-acre field. Below, erosion next to the field from flood irrigation.



LOW INTEREST LOANS FOR IDAHO SOIL & WATER CONSERVATION

1% - 1.5% Terms 7-15 Years Up to \$600,000

- Sprinkler Irrigation
- No-Till Drills
- Fences
- Livestock Feeding Operations
- Solar Stock Water Pump Systems

IDAHO SOIL & WATER CONSERVATION LOAN PROGRAM swc.idaho.gov (208) 332-1790



The Canyon SCD 12-foot No-Till drill has been increasing popular with local farmers. Below, a cover crop provides soil cover after sugar beet harvest. (Photos courtesy Canyon SCD)

system has improved the water use efficiency and reduced the total pollutant discharge,” Haye said.

“Water is supplied uniformly over the entire field at a rate not to exceed the rate at which water can enter the soil (infiltration rate) and with a frequency and amount to meet the crops needs.”

The USDA Ag Research Service estimates that approximately two pounds of total phosphorous are transported with each ton of sediment. Using that rule of thumb,

total phosphorous was reduced by 11.42 pounds per acre per year from the pivot conversion project, Haye said.

In the third gravity-to-pivot project, Miguel Villafana was the participating landowner, near Greenleaf. Runoff from the 20-acre row crop field flowed into an un-named drain and traveled 7.2 miles to the Snake River at Homedale.

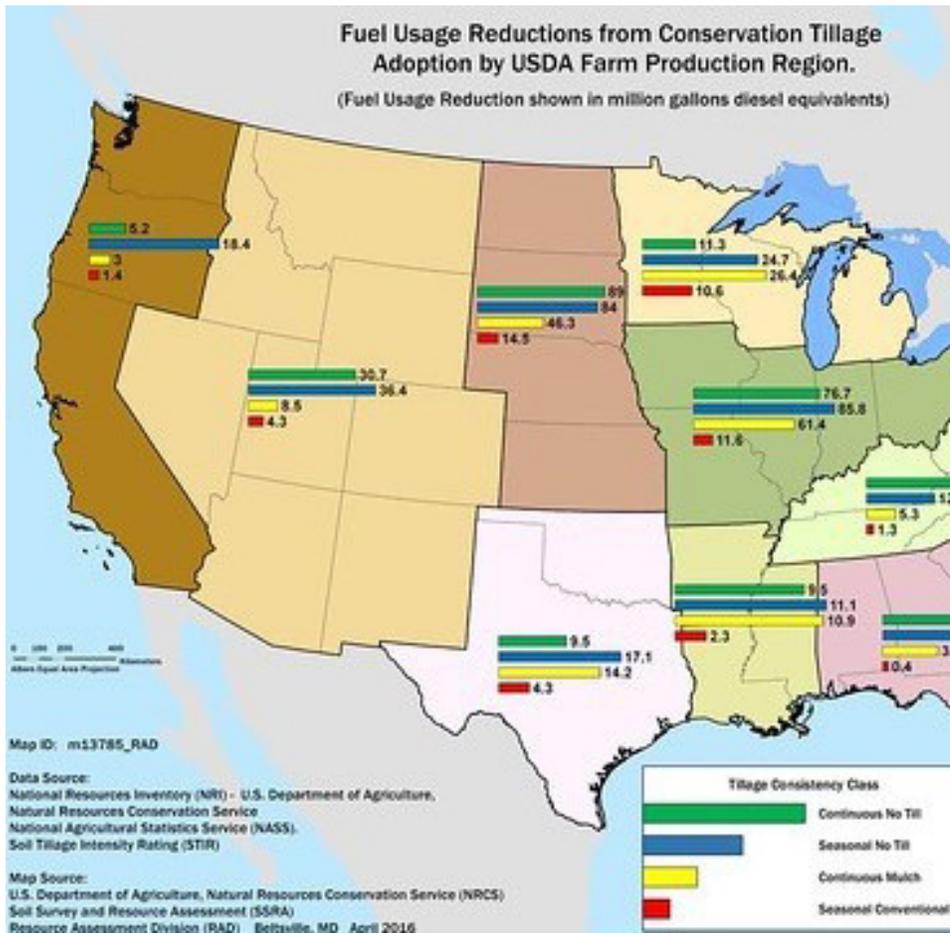
Total cost of the project was \$66,000. The grant covered 50 percent of the project cost, while Villafana paid for

the difference, \$33,000.

The conservation savings was estimated to be 99.4 tons of sediment per year over the 20-year life on the project, Haye said. Total phosphorous reduction: 1 ton/year.

Farmer Jerald Fredrick participated in the fourth gravity-to-pivot project. The new pivot irrigates 19 acres of land with a 2 percent slope. Ag return flows go directly into Indian Creek, east of Nampa. Pre-project, return flow drains have been documented to contribute significant sediment loads to this





Fuel usage reduction as a result of conservation tillage practices. (NRCS graphic)

section of Indian creek.

Pre-project, sediment losses from flood irrigation were estimated to be 3 tons per acre, flowing into Indian Creek; conservation savings should equal the same amount, officials said.

Total cost was \$81,000, with the Natural Resources Conservation Service providing cost-share funds; the landowner paid 25% or \$20,000.

New No-Till Drill for Canyon SCD

An increasing number of Canyon farmers are using No-Till drills to raise and graze cover crops in between raising cash crops, Hays says, so it made sense for the District to purchase two of them as part of the \$319 grant, Hays says.

“They’re getting real popular,” he says.

Canyon District officials wanted to thank the Lower Boise Watershed Council for assisting in funding both of the No Till drills.

The District has a 12-foot No-Till drill, purchased from Burks Tractor in Caldwell, that’s available for rent for \$13/acre. More than 10 Canyon farmers rented the drill last fall to plant 484 acres of cover crops. Another 289 acres were planted in Spring 2022, for a total of 772 acres planted with the No Till drill from New Plymouth to Marsing, Vale, OR to SE Boise, Hays said.

Following the harvest of a cash crop like corn, sugar beets or wheat, farmers are planting a cover crop mix or triticale in the fields to provide a soil cover, enrich soil health, prevent soil erosion, and potentially make extra money leasing the cover crop fields to cattle producers. When grazing occurs, the manure from the cattle add more organic matter to the soil.

“No-till farming practices, when properly used, will reduce farm fuel costs, soil erosion from both wind

and water, labor costs, and result in better water quality and water quantity,” Hays says.

For instance, a local Canyon farmer followed a grain crop with a four-way cover crop mixture using peas, oats, turnips, hairy veg, and volunteer barley. Livestock grazed on the cover crop, and he will only chisel-plow his field before planting a crop of corn.

Usually prior to planting, farmers engage in several tillage operations including disking the soil after harvest. Then, in the spring, they make two more passes with a disc or possible plow depending on compaction and soil type. Rolla harrow followed by planter. Plowing the fields costs a lot of extra money, especially when fuel costs go up.

By using Canyon County’s No Till drill, this producer figured he saved a minimum of \$35 an acre in fuel costs. “It really can save you a lot of money,” Hays says.

As another example, many of the Canyon County dairies are planting triticale after harvesting a corn crop. Then, in the spring, they will harvest this 2nd crop prior to planting corn again. Putting residue back into the soil with triticale makes for better soil health, he said.

Watson No Till drill

During the fall of 2020 and spring of 2021, the Watsons in Notus used the District’s second No-Till drill to plant cover crops with a diversity of seeds to keep the soil on the farm while reducing noxious weeds. The field is gravity irrigated; during intensive winter runoff, erosion can occur. By planting radish, turnips and other seeds, the ground retains moisture, eliminates water runoff, and the plants give back to the soil.

The Watsons planted a total of 335 acres of cover crops last fall, and another 110 this spring, for a total of 444 acres of cover crops planted from Adrian, OR, to Parma.



Irrigating robust cover crop following harvest of cash crop. (photo courtesy Canyon SCD)

Recent economic study on No-Till

The following information about the economics of No-Till farming was provided in the Canyon SCD §319 final report. The information was shared by Marlon Winger, a NRCS soil health expert in Casper, Wyo.

“For farmers across the country, it comes as no surprise to hear that conservation tillage practices – particularly continuous no-till – can save time and money compared to conventional tillage. The potential benefits of no-till are well-documented, from improving soil health to reducing annual fuel and labor investments,” the NRCS study said.

“Still, continuous no-till has been adopted across only 21 percent of all cultivated cropland acres in the United States. Why? One concern involves money saved compared to money spent. Can fuel and labor reductions really make up for the money invested in switching to a new farming practice? To help farmers answer this question, the

Natural Resources Conservation Service (NRCS) Conservation Effects Assessment Project (CEAP) conducted an annual fuel savings study comparing gallons of fuel used in conventional tillage practices to gallons used in conservation tillage practices like seasonal and continuous no-till.

“Farmers across the country save fuel and money by adopting conservation tillage practices. Fuel saved is money saved. On average, farmers practicing continuous conventional till use just over six gallons of diesel fuel per acre each year. Continuous no-till requires less than two gallons per acre. Across the country, that difference leads to nearly 282 million gallons of diesel fuel saved annually.

“Farmers who manage at least one crop in their rotation without tilling – seasonal no-till – save an additional 306 million gallons of fuel annually,” the report said.

See more about the NRCS study here: https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1258255.pdf

NRCS EQIP projects. In 2020, the Canyon SCD worked with NRCS through the Environmental Quality Incentives Program (EQIP) to achieve more conservation gains. Under the Team 6 EQIP, there were 22 contracts totaling \$1,117,000 on 851 acres in the Canyon SCD.

In 2021, Canyon County received the opportunity for EQIP National Water Quality Initiative funding with seven contracts totaling \$570,000 on 489 acres.

“For over 12 years, the Lower Boise Watershed Council has been honored to partner with Canyon SCD to implement agricultural BMP projects, with 12 state and federal grants so far funding more than 40 individual projects,” said Tom Dupuis, executive director of LBWC. “This BMP work, along with pollution control investments by other stakeholders, is making a meaningful difference in the water quality in our watershed. Over the last decade in particular, we are documenting steady progress and improvement towards meeting our TMDL goals.”

COMMISSION

H. Norman Wright, Chairman
Cathy Roemer, Vice Chairman
Erik Olson, Secretary
Wendy Pratt, Commissioner
Delwyne Trefz, Administrator



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

Conservation the Idaho Way: Sowing Seeds of Stewardship