

BOISE RIVER, IDAHO'S URBAN CONSERVATION CROWN JEWEL, SHINES BRIGHT LIKE A DIAMOND

Vision, persistence, commitment to stewardship have the urban-area of the Boise River and its surrounding watershed well on the way to achieving long-time goals set by leaders and the community. Water quality has improved significantly as a result of the Conservation the Idaho Way ethic, residents' new habits, improved wastewater, stormwater management, and innovative phosphorus offset projects. Downstream, the Boise River threads its way through rural agricultural areas, but that's another story for a future issue. —Ed



By Steve Stuebner

City leaders of Boise showed great vision in the 1960s when they began to look at the Boise River as a key centerpiece of the community and started making detailed plans to build a Boise River Greenbelt and clean up the Boise River. This was a decade before the Clean Water Act was passed by Congress in 1972, which embodied numerous water quality provisions to clean up the nation's rivers.

"Prior to 1950, all of the wastewater (sewage) and stormwater was discharged directly into the Boise River," notes Robbin Finch, water quality manager for the City of Boise. "There were slaughter houses along the river that discharged waste into the river, and all kinds of garbage dumped into the river."

Things have changed over the last 50 years to improve water quality in the Boise River. Today, the river is the city's pride and joy. The Boise River Greenbelt is more than 20 miles long, flowing through a series of parks from Lucky Peak Dam to Eagle. The river has been cleaned up dramatically since those early days, with cutting-edge wastewater

treatment and stormwater management. City leaders hope to make more improvements with a water-filtering wetlands treatment program in Canyon County to reduce phosphorus.

Today, over 100,000 people float the Boise River during the hot summer months in a very cold, clean river from Barber Park to Ann Morrison Park. The city has built a whitewater park for kayakers and wave surfers next to Quinn's Pond, and the Esther Simplot Park, a large 55-acre park with ponds, pathways and connected waterways, is under construction nearby. Boise Mayor Dave Bieter has made it clear that he wants Boise to be "the most livable city in America."

So how did Boise clean up the river? It was a combination of voluntary leadership and community pride that got the ball rolling, and federal government intervention provided the laws and grant money to incentivize water quality improvements. Much like conservation work in the farm and ranch country of Idaho, best management practices and best avail-

able technology for environmental fixes have evolved and improved to achieve better results over time.

The first step was to build a wastewater treatment plant on Lander Street in 1950. After the Clean Water Act was passed, the city built a much larger wastewater treatment plant in West Boise. Today, both plants treat about 39 million gallons per day. The treatment processes used at those plants have evolved over time, with new and improved biological treatment technology and nutrient recovery processes to reduce phosphorus, nitrogen, and other pollutants before discharge to the Boise River.

Stormwater system's impact was, is significant Managing stormwater is another important water-quality issue that the Boise community has tackled with multiple agencies involved. The Ada County Highway District (ACHD), the owner and manager of the public county-wide street system, is the lead agency on stormwater management. It manages 1,100 outfalls under its jurisdiction, but there are hundreds of others that exist as well.

BOISE RIVER *Cont. from Pg. 1*

As of 2014, ACHD managed a 575-mile storm drain system, with 5,600 sand and grease traps, 19,500 catch basins, and 76 detention and retention ponds. The Environmental Protection Agency monitors stormwater in the Boise Valley via NPDES discharge permits with multiple agencies. The key pollutants of concern are phosphorus, bacteria, sediment, and temperature.

“We’re not supposed to discharge anything that would exceed clean water requirements,” notes Erica Anderson Maguire, Stormwater Quality Manager for ACHD.

But she notes that more than a thousand stormwater outfalls discharge into the Boise River, canals and tributaries, so it’s a hard issue to manage. “We have sources coming from all over the place,” Maguire says.

And of course, there are all kinds of tales of people dumping weird things into storm drains-- things like dog poop, used motor oil, paint, cooking grease and other hazardous materials. One man dumped dog poop into the storm drain on a daily basis, Maguire said. “It was just shocking!”

ACHD staff investigate complaints and issue notices of violation if warranted, she said. Last year, the agency investigated 52 complaints of illicit discharges-- 30 of which came from an agency hotline.



The best defenses against unwanted discharges into stormwater drains are pollution prevention via stormwater management and information and education, officials said.

For example, there are approximately 11,500 storm drains in Ada County and more than 8,000 have been marked with curb stickers that say “No Dumping: Flows to River.” Lots of community outreach activities such as media

outreach, flyers, brochures, public programs, etc., take place to educate citizens about the proper way to dispose of hazardous waste and other harmful items. The City of Boise is the lead agency for public information and education about stormwater. Scout troops, schools and other partners help with outreach, showing that community pride and volunteerism help achieve positive results. More than 2,000 volunteers have been involved in installing storm drain curb markers.

ACHD also has a robust street-sweeper program for county roads that picks up debris on the streets as well as sand that’s laid down for traction on icy and snowy roads. In 2013, ACHD’s sweeper trucks covered 53,242 miles on the county street system-- 100 percent of the total with multiple passes during the year-- picking up 28,265 cubic yards of debris, much of it sediment. Without the sweeper program, much of that debris could have ended up in the Boise River.

Sediment and erosion control efforts Starting in the 1980s, developers have been required to develop stormwater management plans for new housing areas and subdivisions. The purpose of those plans is to manage stormwater on site. ACHD has manuals and helpful information for developers to come up with their plans. “They need to have stormwater controls that retain their stormwater runoff on site,” Maguire says. “We review and approve those on a routine basis.”

In 2014, ACHD reviewed 424 erosion- and sediment-control plans from developers, inspected 140 sites and issued five notices of violation.

ACHD monitors several stormwater outfalls to get a sense of water quality trends. Sediment levels are going down, but they see spikes in phosphorus during the spring and summer season because of people over-fertilizing and over-watering their lawns. To tackle that issue, “we’re trying to do more targeted outreach to landscape



Innovative bioretention systems encourage runoff absorption in urban areas.

contractors, homeowners and construction contractors,” Maguire said.

Employing Best Management Practices Best management practices for stormwater management are evolving in a positive way. A number of innovative practices are being promoting by ACHD to absorb runoff onsite. These BMP’s include:

- Using permeable pavers in alleys and roadways instead of concrete or asphalt. Several pilot projects have been built in downtown Boise with positive results.
- Stormwater tree trenches between the curb and sidewalk absorb runoff. The soil in “Silva cells” installed below grade help absorb the runoff.
- Bioretention systems also absorb runoff into the soil.

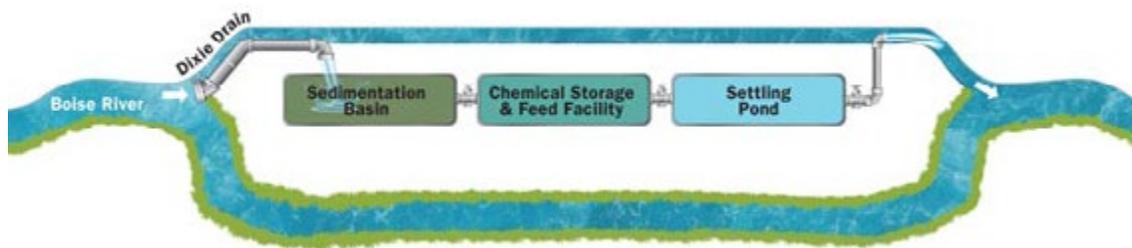
Back in the 1990s, large cities including Boise used chlorination systems to disinfect wastewater prior to discharge into the Boise River to protect human health. “It was the easiest method, a best-in-class practice for treating wastewater,” Finch recalls.

The City of Boise manages wastewater today using a multi-pronged clean up system that uses ultraviolet light in the last stage to disinfect wastewater.. “The UV light scrambles the DNA of bacteria and de-activates the pathogens,” Finch says. “With UV light, we’re getting at a broader spectrum of organisms and doing a better job of protecting public health.”

The decision to move away from chlorine

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treatment also had to do with a byproduct, mercury. Releases of dechlorinated water into the Boise River after treatment had an adverse impact on some aquatic life, Finch said. City officials noticed that freshwater sculpins, a potential food source for brown trout, and an indicator of high water quality, returned to the river below the Lander Street wastewater plant after switching to the UV disinfection process.

In brief, the city processes wastewater by separating out the solids, clarifying the waste liquids by injecting the water with oxygen and stimulating the activity of naturally occurring bacteria, sending the water to secondary clarifiers, where more bacteria work on cleaning the water, and then purifying the water by passing it by a bank of 2,500 UV lights in the final stage before releasing treated flows into the Boise River. The power bill for the lights is about \$60,000 per month, Finch says.

The solids from the wastewater are collected and spread onto a city-owned 4,000-acre farm as fertilizer. Methane gas generated by the treatment process is recycled -- it's used to heat water in boilers for space heating, fuel engines that generate electricity or operate wastewater pumps.

Two other issues are still being addressed by the City of Boise -- phosphorus levels and water temperature. The city has developed a long-range plan to make improvements to the wastewater treatment system to deal with those two issues.

Downstream, Dixie Drain reduces phosphorus, other pollutants On the phosphorus side, the city is working to reduce discharge levels substantially under a new NPDES permit with the EPA. The new standard to reach is 70 micrograms per liter of phosphorus,

and the average reading at the West Boise treatment plant is 5,300 micrograms per liter. New biological treatment processes, costing at least \$24 million in capital improvements at the West Boise plant, will reduce phosphorus levels to 350 micrograms per liter, still short of the goal. "We have a very heavy lift," Finch says.

One method of reducing phosphorus is through a so-called "offset" approach, where the City of Boise is removing phosphorus from an agricultural drain, the Dixie Slough in Canyon County between Notus and Parma, at a 50-acre site. The city bought the property specifically to reduce phosphorus levels in the Boise River. The \$12 million project is funded in part with a 5 percent increase in Boise City sewer fees. The Dixie Slough will cut phosphorus releases to the Boise River by about 140 pounds per day. The water-treatment project is expected to go online in 2016.

"WHEN IT ALL COMES DOWN TO IT, WE NEED TO BE WORKING ON IT TOGETHER."

LANCE HOLLOWAY, DEQ

"The permit requires us to take out 1.5 pounds at Dixie for every additional pound that goes in at West Boise," Finch says. "In terms of the environmental benefit, that's a huge decrease at a location that matters. We're trying to get the most benefit for the watershed, the Snake River and Brownlee Reservoir as well."

Downstream from the City of Boise, the

water quality of the Boise River decreases as it flows into agricultural lands to the West. The first segment on the 303(d) list of degraded waters is the reach from Veterans Park to Star. Contaminants of concern there are bacteria, sediment and temperature. Further downstream, additional pollutants include phosphorus, bacteria, E. coli, temperature and sediment. Elevated water temperatures in the hot summer months during low flow periods is another issue that affects fish and cold water biota.

DEQ, Commission creating water quality improvement plans

Idaho DEQ is working with the stakeholders in the Lower Boise Watershed on developing TMDL water quality plans that contain strategies to reduce pollutants of concern. The Conservation Commission is involved in crafting TMDL implementation plans for agriculture in the lower river. That's a big story by itself. But what the people and government do to clean up the Boise River in the Boise urban zone helps communities and agricultural users downstream grapple with their own water quality issues.

Paul Woods, district manager of the Ada Soil and Water Conservation District, agrees, and adds that the no-till direct-seed farming in the west side of the county is improving soil health and water quality as well. "Our work on soil health is going a long way to achieve positive water-quality gains much like the Dixie Drain project," says Woods.

"When it all comes down to it, we need to be working on it together," adds Lance Holloway, surface water manager for the Idaho Department of Environmental Quality. □



QUAGGAS MARCHING NORTH, CLOSER TO IDAHO

Uh-oh! Remember when [we told you about quagga mussels in 2013](#)? Well, they are getting closer to knocking on Idaho's door, advancing toward the Bear River system in Southeast Idaho.

Several of Idaho's local conservation districts - north and south - are waging war against the introduction of quagga and zebra mussels into our rivers and lakes. These nasty non-native hitchhikers are a nightmare: slipping into waterways quietly, riding concealed in boats that have plied infected waters, and then reproducing exponentially. Idaho has no known infestations. Yet.

BUT, last month the Utah Division of Wildlife Resources announced confirmation that Deer Creek Reservoir now hosts microscopic juvenile quagga mussels. They're in a watch and see mode - will it develop into a fullscale infestation? It may very well, and that worries many in

Idaho. In the meantime, all water craft leaving Deer Creek Reservoir (an important part of the drinking water for Utah and Salt Lake counties) will be decontaminated.

Inspections currently conducted by the Department of Agriculture and some Southeastern Idaho conservation districts continue as well. ☐

BOARDS KICK OFF LEGISLATIVE SESSION, GOVERNOR'S RECOMMENDED BUDGET TO BE PRESENTED

The Conservation Commission and Idaho Association of Soil Conservation Districts kicked off the 2015 Legislative Session with a joint Board meeting at the end of January.

Among topics discussed were developing unified goals and upcoming legislative presentations. The Boards will meet together to review and approve draft goals in June.

Teri Murrison, Commission Administrator, will present the Governor's Recommended FY 2016 Budget to the Joint Finance-Appropriation Committee (JFAC) on Tues., Feb. 3rd at 9:35 am.

The presentation will be live-streamed at

the [Legislative Services' website](#).

The Governor's Recommended budget contains a modest .04% increase and will allow the Commission to replace outdated and inoperable survey equipment, convert 2 1/2-time positions to 1 full time position (with no increase in funding), and add a .75 position to bring fiscal operations in house. To fund that new position, existing funds and an additional \$20,300 is recommended. In addition, the Governor recommends a 3% merit-based salary increase, and payment of a forecasted 9% increase in health insurance premiums (\$950 per employee).

Both Boards will present reports to five Senate and House committees in February.

Presentations will be made:

- 1:30 pm, Feb. 16, House Ag Committee, State Capitol, Rm. EW 42
- 8:00 am, Feb. 17, Senate Ag Committee, State Capitol, Rm. WW 53
- 1:30 pm, Feb. 18, House Environment, Energy & Technology Committee, State Capitol, Rm., EW 41
- 1:30 pm, Feb. 23, Senate Resources & Environment Committee, State Capitol, Rm., WW 55
- 1:30 pm, TENTATIVE, Feb. 25, House Resources & Conservation Committee, State Capitol, Rm. EW 40. ☐

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Conservation the Idaho Way: Sowing Seeds of Stewardship