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a living river

SANTA CRUZ RIVER 2025 DOWNTOWN TUCSON TO MARANA



BUILDING RIVER COMMUNITY



THE SANTA CRUZ RIVER CELEBRATE & PROTECT

When visiting a flowing reach of the Santa Cruz River, you are likely greeted by the melody of birdsong and buzzing insects, the cooling shade of a willow tree, and the glittering of water moving in a smooth plane over the sandy riverbed. It's a scene not unlike what the first people experienced when arriving in the region. But today, the water flowing in the river, recharging our aquifer, and creating vital wildlife habitat comes from human-managed sources. Pima County is fortunate to have over 23 miles of the Santa Cruz flowing year-round thanks to the release of water into the river from our regional wastewater reclamation facilities.

The flowing river is now a valued community asset and, increasingly, an outdoor classroom where people of all ages and abilities can see how water benefits desert life. New partnerships enable students like those from Arizona's School for the Deaf and Blind to learn about and experience the river. The numbers of pedestrians and cyclists enjoying the Loop and stewards caring for the river continue to rise. A single event in January 2024 drew more than 300 people to remove trash from the river and scatter mudballs packed with native wildflower seeds. Cheers to building river community and to the river that supports our communities!

Mudballs full of native wildflower seeds

MARANA

Trico Rd

Marana Rd

10

Silverbell Rd

Avra Valley Rd

Sandario Rd

Twin Peaks Rd

Cortaro Rd

Ina Rd

Camino del Cerro

AGUA NUEVA

Silverbell Rd

TUCSON

RILLITO RIVER

Congress St

Silverlake Rd

10

19

<< SANTA CRUZ RIVER

LAND ACKNOWLEDGEMENT

We respectfully acknowledge the Santa Cruz River flows through the land and territories of Indigenous peoples. Today, Arizona is home to 22 federally recognized tribes, with the Santa Cruz Watershed being home to the O'odham and the Yaqui, whose relationships with the land and river continue to this day. Learn more about the San Xavier District of the Tohono O'odham Nation at www.waknet.org and the Yaqui Tribe at www.pascuayaqui-nsn.gov



LEGEND 5 Miles

Water reclamation facility (treatment plant)

River reaches with seasonal flows

River tributaries

Northwest Tucson to Marana Reach

Heritage Project Reach



Verdin (Auriparus flaviceps)



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TRACKING RIVER CONDITIONS

Annual Living River reports share conditions along the flowing reaches of the Santa Cruz River. Included here are conditions from downtown Tucson to Marana for the 2024 water year (October 1, 2023 to September 30, 2024). Scan the QR code above and learn more in the supplemental report.

NOTABLE ACHIEVEMENTS

Expansion of the Chuck Huckelberry Loop recreation path in Marana

Inclusion of Arizona School for the Deaf and Blind in two programs that connect students to the river

Recognition of Tucson by the BBC as one of 25 global places to visit

Initiation of regional collaboration with signing of the Santa Cruz River Wildlife Partnership

Approval of an updated Floodplain Management Plan for Pima County

Removal of 10 tons of river trash by nearly 800 volunteers

powered dancer damselfly (Argia moesta)



Rivers perform many important services for people and wildlife. They move nutrients and sediments, recharge aquifers, sustain cooling trees and plants, and connect living organisms across habitats. As floodwater spills out of a river's channel and onto its adjacent floodplain, riparian vegetation slows flood flows, reduces

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The Santa Cruz River provides these benefits, but like many urban rivers, its natural state has been altered by development. As communities have grown and constructed buildings, parks, and other infrastructure close to the river channel, its historically

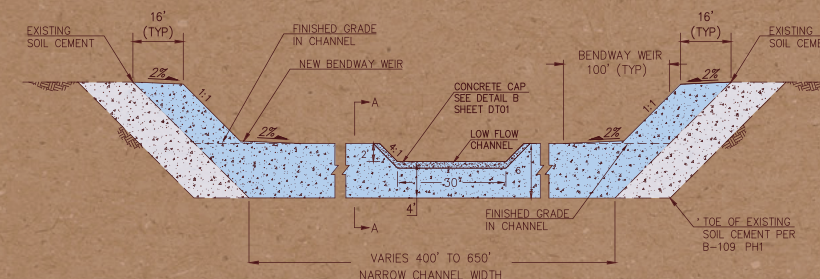
Releasing effluent into the river provides habitat, helps replenish the aquifer, and enhances vital open space in the middle of the urban area where people can connect with nature while building river community. Effluent flows are monitored to

minimize contact with closed landfills and gravel pits adjacent to the river. Trees, thick vegetation, and accumulated sediments also require attention, since they can impede flows and cause floodwaters to spill out of the channel, especially in narrow urban stretches. To maintain flow capacity, these impediments are occasionally removed or managed. Other improvements and infrastructure further enhance the river as a community amenity.

After serving the community for over half a century, the Roger Road Wastewater Reclamation Facility was closed in 2014, leaving behind an industrial legacy on nearly 50 acres adjacent to the river. Pima County has been working over the past three years to advance the redevelopment of this strategic site. After conducting environmental investigations at the site and procuring grant funding to abate hazardous substances, Pima County recently began collaborating with the Center for Creative Land Recycling to engage community members in developing conceptual site designs for the property. The stakeholder engagement process has resulted in a concept that prioritizes open space and ecological restoration on most of the site while setting aside a portion for market-driven economic development.



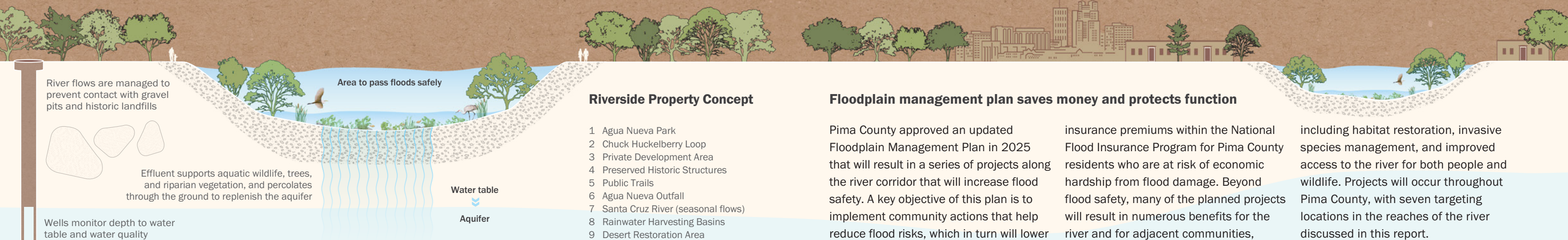
Building structures between Tangerine Road and Marana Road to help keep effluent flows in the middle of the channel and minimize erosion of the riverbanks. Seen here is an example of an engineering cross section of this type of structure.



- Infrastructure
- Habitat protection and restoration
- Bank protection

Creating new wetland areas and using the old Orange Grove gravel pit as a location for recharge that will help replenish groundwater.

Evaluation of the soil cement protecting the riverbank near Sunset Road and ensuring there is room for large floods to pass safely.



Pima County approved an updated Floodplain Management Plan in 2025 that will result in a series of projects along the river corridor that will increase flood safety. A key objective of this plan is to implement community actions that help reduce flood risks, which in turn will lower

insurance premiums within the National Flood Insurance Program for Pima County residents who are at risk of economic hardship from flood damage. Beyond flood safety, many of the planned projects will result in numerous benefits for the river and for adjacent communities,

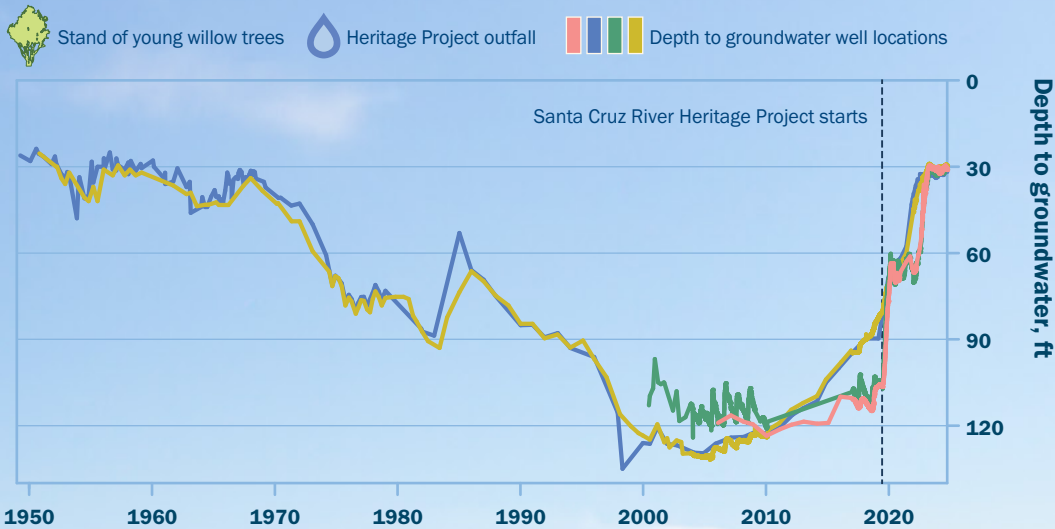
including habitat restoration, invasive species management, and improved access to the river for both people and wildlife. Projects will occur throughout Pima County, with seven targeting locations in the reaches of the river discussed in this report.

SANTA CRUZ RIVER HERITAGE PROJECT REACH

The river near downtown Tucson flowed year-round until 1914 and was inhabited by several native fish species, lowland leopard frogs, and other aquatic species. Groundwater pumping caused water levels to decline, and the reach has typically been dry since the 1940s. Flows returned in June 2019, when City of Tucson | Tucson Water launched the Santa Cruz River Heritage Project. Developed to store water in the

aquifer for future use, the project releases water into the river just north of Silverlake Road from either a nearby well or from the reclaimed water system which transports effluent from the Agua Nueva facility. With the Heritage Project's water comes an opportunity to create wetland habitat, support community cultural connections, provide educational opportunities, and improve the quality of life in downtown neighborhoods.

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Increased groundwater level supports new vegetation

The Santa Cruz River near downtown historically flowed year-round in part because a shallow 'perched' aquifer held water close to the surface. Current monitoring in the A Mountain area indicates groundwater has risen to levels not seen since the 1950s, suggesting this perched aquifer is filling back up. This is a big success, since groundwater recharge and storage were key objectives in creating the Heritage Project. With higher water levels, trees and other vegetation along the river have increased. Post-monsoon surveys found noticeably more stands of young Goodding's willow along the channel. Willow cover at one site (see photo, left) increased from 0% in 2023 to 26% in 2024. In addition, the locations and species of mature trees were also mapped in 2024 to provide a baseline that will help measure and manage future change in tree cover.

Young Goodding's willow (*Salix gooddingii*) trees just north of Starr Pass Rd

Project area serves as outdoor learning space

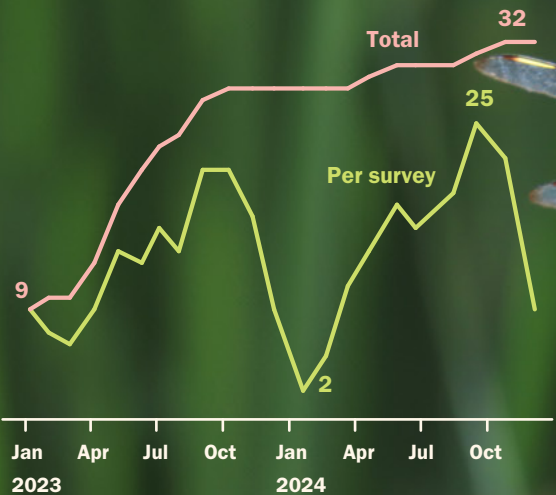
One added benefit of the Santa Cruz River Heritage Project is that it has become a beneficial outdoor classroom for people to learn about river science and the benefits of adding water to the river. Between June 2023 and May 2025, the University of Arizona's BIORETS program (see page 11) engaged 359 students and 83 adults in learning opportunities at the Heritage Reach. An additional 59 adults attended dragonfly tours at this site during the annual Santa Cruz River Dragonfly Festival. Other events, including trash cleanups, poetry workshops, and art installations demonstrate the importance of this reach to community members.



142 adults

359 students

Number of Dragonfly Species



A little high-quality water provides habitat for dragonflies

Research from the University of Arizona documented as many as 32 dragonfly species in the Heritage Reach since 2023. This total was 9 fewer than found at a site in Marana, but 5 of the species were only found in the Heritage Reach. Although high-quality water is providing good conditions for wildlife in the Heritage Reach, the lower dragonfly diversity there may result from less available habitat given the smaller amounts of water and vegetation compared to Marana. Surveys at all sites found the lowest number of species during the cool winter months. As the weather warmed, the number of species in the Heritage Reach increased steadily, though more slowly than in Marana. In June 2024, surveys at Heritage found the first-ever sighting on the Santa Cruz River of the Comanche skimmer dragonfly, whose nearest populations are along the Salt and Gila rivers.

Gila woodpecker (*Melanerpes uropygialis*)



- House finch
- Mourning dove
- Verdin
- Abert's towhee
- Gila woodpecker
- All other species

96 bird species

Most common species observed by 45 people on eBird.org

NORTHWEST TUCSON TO MARANA REACH

Beginning near El Camino Del Cerro, this reach historically had only seasonal flows but is now Pima County's longest continually flowing section. Since the 1970s, Pima County's water reclamation facilities have released effluent into the river here year-round, creating a ribbon of green vegetation. Upgrades to the treatment process in 2013 resulted in higher-quality water to support a thriving and more diverse aquatic community,

1016
adults

Educational program participants
at 4 locations between June
2023 and May 2025



1972
students

including native and non-native fish species. Pima County and the Regional Flood Control District have identified projects to further improve this stretch of the river, such as creating a more winding flow path to encourage wildlife and plant diversity and increasing connections to the river corridor for people and wildlife through new parks, bridges, and wildlife ramps.

Wildlife relocated during first phase of river infrastructure project

In 2024, Pima County initiated a multi-year project in this reach near Twin Peaks Road to improve flood safety, repair eroded areas, remove accumulated sediments, manage invasive species, and improve wildlife habitat. To minimize impacts to native wildlife living in the project area, 632 individual reptiles were captured and relocated during the month prior to construction. Relocated reptile species included side-blotched, tiger whiptail, and desert spiny lizards, banded geckos, and desert iguanas. In addition, two Sonora mud turtles were captured in this reach and relocated to the Heritage Project Reach downtown. Other non-native species of turtle found in the area included spiny softshell, pond slider, and a single river cooter. River cooters had not been previously documented in the river.



Common side-blotched lizard (*Uta stansburiana*)

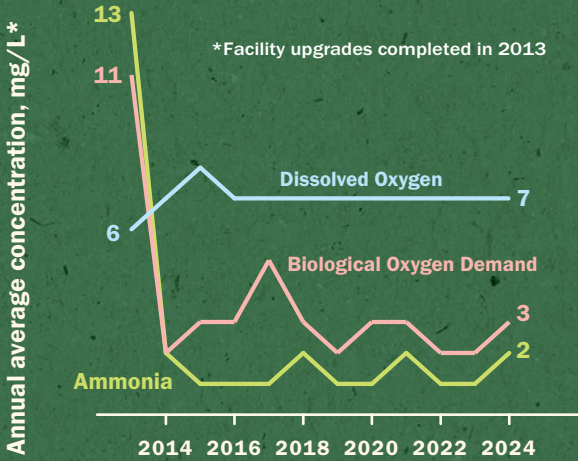
Extensive infrastructure project relocated hundreds of reptiles including the common side-blotched lizard pictured above right.

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High-quality water in the river

Water quality varies by location and over periods of time, but yearly averages of all measures indicate that conditions in the river are good for aquatic wildlife. Concentrations of dissolved oxygen are high and stable, and ammonia levels are not toxic for fish (less than 2 mg/L of ammonia is generally healthy). The natural processes breaking down ammonia and other nutrients in the water use dissolved oxygen. Biological oxygen demand, which measures this microbial consumption of oxygen and tends to increase or decrease with ammonia levels, is another way to track water quality in the river.



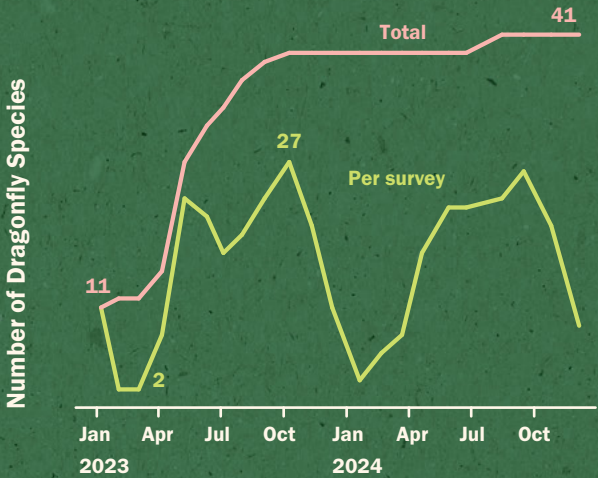
Abert's towhee
Gila woodpecker
American coot
Verdin
Mallard
All other species

Most common species
observed by 2,289
people on eBird.org

234
bird species

Highest diversity of dragonflies

Research from the University of Arizona documented as many as 41 dragonfly species at a site in Marana since 2023—the highest diversity of three survey locations along the river in Pima County, with 14 species that were not found in the Heritage Reach. With more water and vegetation in this reach, this diversity of species may reflect a greater amount and diversity of habitat available for dragonflies. Surveys at all sites found the lowest number of species during the cool winter months. As the weather warmed, the number of species rapidly increased in Marana (faster than at the Heritage Reach).



IT'S YOUR RIVER GET INVOLVED!

VISIT THE RIVER Going to the Santa Cruz River for a walk or bike ride is easy with the Chuck Huckelberry Loop recreation path. One stretch of the Loop between Speedway and Grant saw over 223,000 pedestrians and cyclists in 2024! Head north from this location and you can try out the Suzanne Shields pedestrian bridge just completed this summer. And a little farther north, near the Sweetwater Wetlands, you can stop to check out the birds and native fish at the Agua Nueva Park. There are even Arizona eryngo and Huachuca water-umbel, endangered wetland plants, being established here.



 Community photo
Sweetwater Wetlands by Eli Heller

SEND US YOUR SANTA CRUZ RIVER PICTURES We love to see and share community pictures of the river. Where is your favorite spot? What do you do and see along the river? Send photos to scrphoto@sonoraninstitute.org. Or post your photos on social media with [#scrphoto](https://twitter.com/scrphoto).



JOIN A RIVER BEAUTIFICATION EFFORT More people than ever are coming to the river to help remove the trash that is so common. In 2024, 794 people joined a river cleanup, a 49% increase over the 533 volunteers removing trash in 2023. These events are not just about work. They are a party with music, food, prizes, and community! Connect with Sonoran Institute or contact AdoptaSite@tucsoncleanandbeautiful.org for information on Tucson-area cleanups.



Bird Day by Alton Soto Gómez, Grade 9
Pueblo High School • Ms. Wise



A Bird by Mateo Medina-Dominguez, Grade 1
Sewell Elementary • Ms. Dolan

TAKE YOUR STUDENTS TO THE RIVER Teachers can apply to participate in Pima County's Living River of Words Program and have their students learn about the water in the desert through science and art. View some of the 2025 program's artwork in this report, and online at pima.gov/RiverofWords. Teachers looking for an immersive summer research experience can apply to the BIORETS program at the University of Arizona, a paid field-focused learning opportunity designed to bring the Santa Cruz River to students throughout southern Arizona. santacruz.arizona.edu



ACKNOWLEDGEMENTS

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IMAGE CREDITS

Cover photos: Teachers at the river in Marana by **Michael T. Bogan**; Mourning dove by **Richard Wright & Danita Delimont**; Desert spiny lizard by **D. Hayes**; Powdered dancer damselfly by **Julius Schlosburg 2**; Seed mudballs by **Julius Schlosburg**; Ceraunus blue butterfly by **Jean Blom**; Students in river by **Jacqueline Bruhn 3**; Verdin in willow tree by **DuneCrane**; Powdered dancer damselfly by **Julius Schlosburg**; Cleanup by **Julius Schlosburg 5**; Great blue heron by **Cavan**; Bank protection by **Pima County 6**; Young willow trees by **Claire Zugmeyer 7**; Adult with net by **Julius Schlosburg**; Child on river by **Spencer Harding**; Comanche skimmer dragonfly by **Michael T. Bogan**; Gila woodpecker by **Jim Shane 8**; Adults in river by **Jacqueline Bruhn**; Children at river by **Julius Schlosburg**; Side-blotched lizard by **Nathan**; Infrastructure by **Pima County 9**; Flame skimmer dragonfly by **Spencer Harding**; American coot by **David McGowen 11**; Cleanup and dragonfly tour by **Julius Schlosburg**

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Desert Animal Sign by Isabella Vega, Grade 9
Arizona School for the Deaf and Blind • Mr. Hellman



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SONORAN INSTITUTE has worked since our founding in 1990 to realize our vision that the Santa Cruz River, from Mexico to Marana, is a living, flowing river and the foundation of community health and prosperity. The Sonoran Institute's mission is to connect people and communities with the natural resources that nourish and sustain them.



Sonoran Institute



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Take this short survey



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Where do you access
the river and what
makes it a good location?



Untitled by Jayla Bacasegua, Grade 5, Grijalva Elementary • Ms. Quintero

PIMA COUNTY—pima.gov

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Pima County Regional Wastewater
Reclamation Department
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