

## Project aims to photograph every inch of Sacramento River

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The Sacramento River this summer is set to become the first water body in the world to be documented inch-for-inch in photographs.

The goal of the Riverview Project ([riverviewproject.org/](http://riverviewproject.org/)) is to apply to waterways the same techniques popularized by Google Street View. The popular Internet tool attaches 360-degree images to map locations, allowing a quick look at intersections, storefronts and front yards.

In the same way, an armchair traveler could use an online map to pick any point along the Sacramento River and view panoramic images of that location in all its gritty detail.

Jared Criscuolo, co-founder and executive director of the project, said the group also intends to attach environmental data to the maps and images, such as water quality and fisheries information.

"On one level, it's a basic exploration tool just to get people on the river," he said. "But on another level, this is a way to put together some really robust and unbiased information to help better protect not just the Sacramento River, but that vital source of water to keep the state as productive as it is."

The U.S. Geological Survey has taken an interest in the project, offering to help integrate its own data from existing water-quality monitors in the river. It may also provide boats, fuel and other tangible support, though spokeswoman Laurel Lynn Rogers said those details are yet to be firmed up.

"The collaboration is potentially of great value to the public as a way to provide more information about our nation's streams and waterways," Rogers said. "This may be another way for us to collect important visual information, and is potentially a way for more people to access our data in a user-friendly way."

Other partners include the Clif Bar Family Foundation and the Nature Conservancy. The Surfrider Foundation is serving as a financial custodian while the Riverview Project pursues nonprofit status of its own.



The finished project – complete with online maps, photos and integrated data – is expected to cost about \$320,000, Criscuolo said. The public may make tax- deductible donations at <http://riverviewproject.org/>.

He said the group hopes to begin documenting the river in June or July, at the headwaters near the small city of Mount Shasta, and work downstream along some 405 miles of the river's run to Suisun Bay.

The work will start with crew members wading in the river with a backpack-mounted camera setup. The volleyball-sized camera head includes 11 high-definition video cameras that will collect a continuous, 360- degree picture of the river.

When the water becomes too deep to wade, the equipment will be transferred to a kayak or canoe, then a motorboat.

Still images for the "riverview" panorama will be edited out and attached to map points later.

Criscuolo said water samples will be taken at regular intervals, perhaps every mile, and analyzed later to provide water-quality data that will be connected with the maps and images. Data from a number of USGS monitors, which have been fixed in the river for years, will also be integrated.

The group plans to survey 27 rivers in a similar manner. The San Joaquin and Colorado will be next.

It opted to start with the Sacramento River because Criscuolo and his partner, Kristian Gustavson, already know it fairly well because they kayaked its full length in 2009. They also recognize its importance as the source of nearly half of all the fresh water in California.

"We found out that a lot of people depend on the Sacramento River," Criscuolo said, noting that this includes himself as a resident of San Diego, which relies partly on drinking water diverted from the river. "It's a critical artery, and there's a lot of pressure on it."

He expects the end product to be useful not only for planning excursions on the river – whether boating, fishing or paddling – but also to policymakers engaged in big decisions. Those are myriad and ongoing, from flood protection to habitat enhancement, to salmon restoration and flow management.

For example, he said, anyone concerned about salmon habitat could click a map point on the river, find out whether water temperatures are suitable for salmon, and use the images to look for signs of erosion or pollution problems.

For those reasons, the Sacramento River Watershed Program is helping Criscuolo connect with local groups that depend on the river and might have an interest in the results. The nonprofit program has been working since 1996 to restore and sustain the river for all its users.

"Pictures tell a thousand words," said Mary Lee Knecht, executive director of the watershed program. "We think the visual aids this project will come up with will help us understand how the river is changing, and how those changes affect the ecosystem as well as the landowners along the river."