

Popular beach sees water pollution reduced

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Storm water that falls on the grounds of Scripps Institution of Oceanography passes through an innovative water-pollution-control system, including these two inconspicuous semicircular 'media filters' to remove pollutants before the water enters the ocean. Credit: Kimberly McConnell/UC San Diego

A legendary La Jolla surfing beach adjacent to Scripps Institution of Oceanography has significantly less water-borne pollution, due to the completion this year of an innovative project by UC San Diego.

The San Diego Regional Water Quality Control Board, which monitors water at Scripps as one of California's 34 Areas of Special Biological Significance, required UC San Diego to reduce the amount of excess irrigation water and other dry-weather runoff that reaches the [beach](#). State regulators also required the university to reduce pollutants in storm water runoff.

The university completed a \$4.9 million water-pollution-control construction project in 2011 that has become a model for the state, helping UC San Diego meet state mandates while also cultivating a more vibrant, pedestrian-friendly beach. The San Diego and Imperial Counties Chapter of the American Public Works Association and the San Diego-area chapter of the American Society of Civil Engineers recognized the university's project with the 2011 "Project of the Year" and "Outstanding Award," respectively.

"The main features the public notices are these visually appealing bioswales, walls and other attractive landscaping enhancements, but civil engineers are most impressed with the sophisticated system of water-diversion structures, pollution-prevention controls, and erosion and sediment controls covering more than 30 acres," said Dan Goldberg, a civil engineer and Awards Committee chair for the American Public Works Association. "The dry-weather flows of water, which have been an unwelcome part of that beach for years, are now gone."

Almost unnoticed to most visitors are shore improvements that work together as a system to remove pollutants from runoff water before it reaches the beach.

The gently sloping beach near Scripps is an international destination not just for surfers and kayakers, but also for snorkelers and scuba divers eager to observe hundreds of species of fishes such as the harmless leopard shark. Schools of the slender, strikingly patterned shark congregate in the shallow waters off Scripps from spring to autumn to feed on plentiful squid, octopus, crabs and other invertebrates and fish.

The water-pollution-control project involved four UC San Diego operations departments: Environment, Health and Safety, Facilities Management, Facilities Design and Construction, and Physical and Community Planning. Scripps Institution of Oceanography, one of the

world's most important centers for ocean and earth science research, education and public service, was also a key partner in the project. The project consultants were Nasland Civil Engineering and KTU+A Planning and Landscape Architecture, and MACTEC Engineering. Sheene Consulting handled grant administration, and the contractor was Western Rim Constructors, Inc.

“The award-winning design developed for the Scripps area can also be applied to future campus projects to both reduce dry-weather runoff and more effectively and efficiently treat any storm water that leaves the campus,” said Gary C. Matthews, vice chancellor of Resource Management and Planning. “This project is itself an outgrowth of UC San Diego’s dedication to water and energy conservation, [pollution](#) prevention, resource protection, and innovative technologies. And with the study of global climate change firmly rooted in the past, present and future of Scripps Institution of Oceanography, the beach there is a perfect place to take steps locally to protect the environment.”

The university financed the effort with a \$1.1 million grant from the State Water Resources Control Board, a \$2.65 million grant from the American Recovery and Reinvestment Act, a \$150,000 donation from the Miocean Foundation, and \$1 million in campus funds.

“Thanks to these projects, almost all the water runoff that had previously ended up on the beach untreated, is now passing through an elaborate filtration and pollution-control system,” said Garry MacPherson, director of Environment, Health, and Safety at UC San Diego. “This is meaningful to all Californians because this offshore Area of Special Biological Significance supports such a variety of aquatic life, including many unique species.” The coastal area also is designated a Critical Coastal Area.

To devise the award-winning improvements, university designers

collaborated with colleagues at the city of San Diego and San Diego Coastkeeper, a nonprofit environmental group that promotes stewardship of clean water and a healthy coastal ecosystem in San Diego County. One of the most innovative features involves four swimming-pool-size “media filters” consisting of a gravely blend of dolomite, perlite, gypsum and crushed rock. Storm water flows down through the filter, where phosphorus, copper and other pollutants are absorbed, and petroleum products are broken down.

Native plants used in landscaping features called bioswales remove silt and pollution from surface runoff. By mimicking the natural environment, the bioswales don’t require energy or mechanical equipment, which makes them ideal for additional campus projects and also for any developed coastal area in California.

“I’m most impressed with the comprehensive approach on all fronts to eliminate dry-weather water runoff and the pollution from storm water runoff,” said Chiara Clemente, senior environmental scientist with the San Diego Regional [Water](#) Quality Control Board. “UC San Diego has become the model for protection of Areas of Special Biological Significance.”

Provided by University of California

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