

Paul Arms

# Poor Water Quality Impacts Local Parks

Friends of Harbors, Beaches and Parks set out to determine first, which waterways were impacted by pollutants in Orange County and second, which parks

were impacted by those impaired waterways. This factsheet outlines the results of our research. Data was compiled from the State Water Resources Control Board.

## Background

Orange County has a rich natural, cultural, and historical heritage with many parklands. The types of natural lands available in Orange County are diverse. From the national, state, county, and local governments to non-profit conservation organizations, park districts, and joint powers authorities—the land ownerships vary greatly. All together, these various owners manage 133,865 acres of conserved land within Orange County, including hundreds of miles of trails for residents and visitors to enjoy. Camping, bird watching, picnicking, hiking, fishing, mountain biking, and horseback riding, are just some of the ways people use these parklands.

This area, and much of the rest of California, is within the California Floristic Province. We have many plant and animal species found only here—making our landscapes biologically unique and important to protect. In fact, many of the species found here are threatened with development, which has landed our region and state as one of 20 global hotspots of biodiversity. Our parks provide the refuge, nurseries, hunting grounds, foraging areas, and wildlife corridors that these species need to survive. These protected lands often contain rivers, streams, wetlands, and beaches that both wildlife and people rely on.



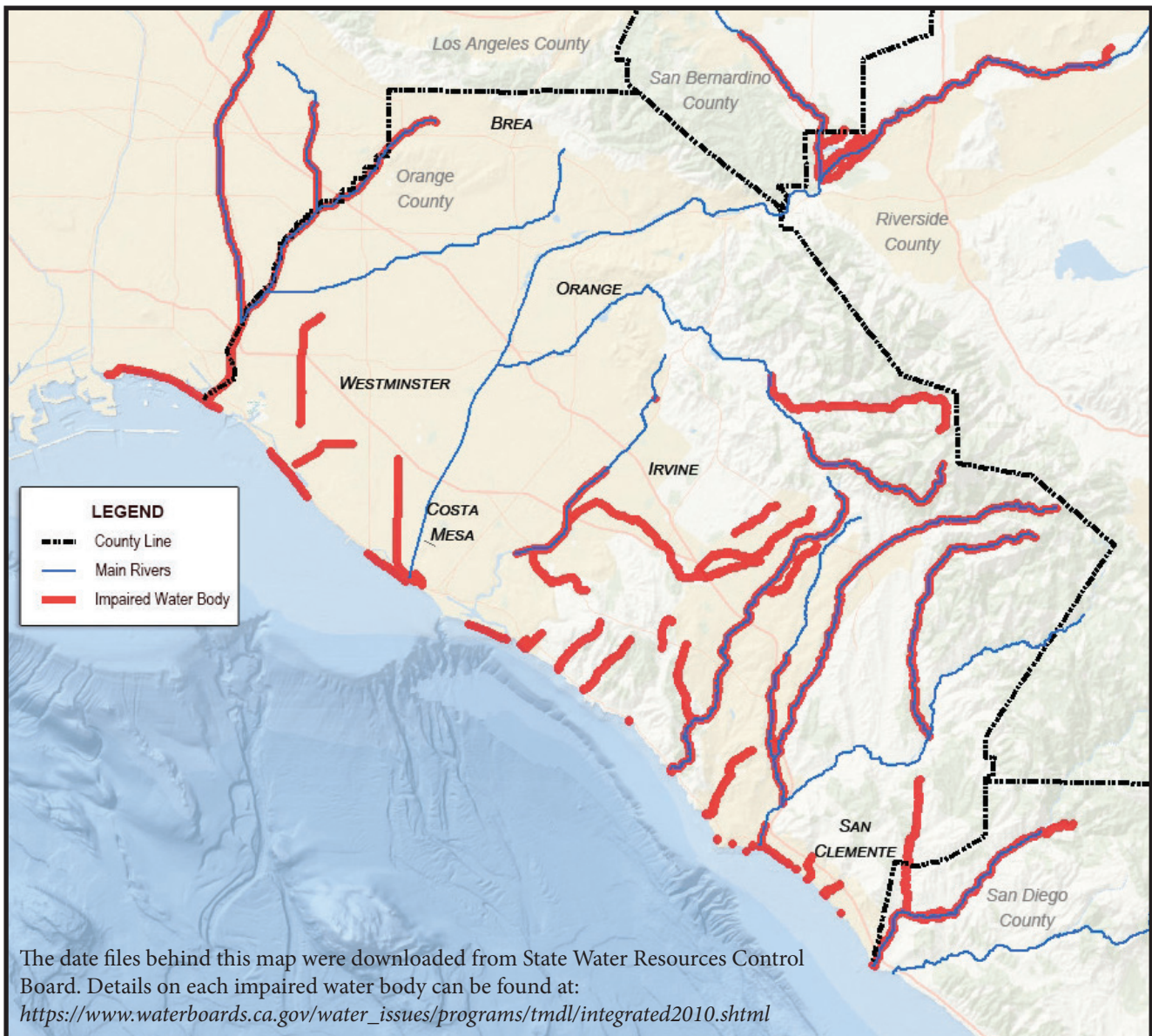
# Impaired Water Bodies

The State Water Resources Control Board is tasked with ensuring the water bodies of the California are appropriately governed by the state and federal Clean Water Act. The State tests the water quality of every water body every two years (per the requirements of the federal Clean Water Act, Section 303d), specifically trying to identify if certain pollutants exist and at what levels. A determination is then made to add the water body to the “303d list” if the data demonstrates the pollutants are at levels higher than is considered safe. Consequently, if a water bodies is added to the 303d list, it is impaired.

Impairments can come in a variety of forms, but always has “too much” of something: bacteria, selenium, sediment, total suspended solids, cadmium, dioxin, lead, etc. And, sometimes the water bodies have multiple impairments. The State Water Resources Control Board publishes a map and digital data of impaired water bodies. During this review, we narrowed down the list of waters to only those in and around Orange County.



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The data files behind this map were downloaded from State Water Resources Control Board. Details on each impaired water body can be found at:  
[https://www.waterboards.ca.gov/water\\_issues/programs/tmdl/integrated2010.shtml](https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml)

# Our Research

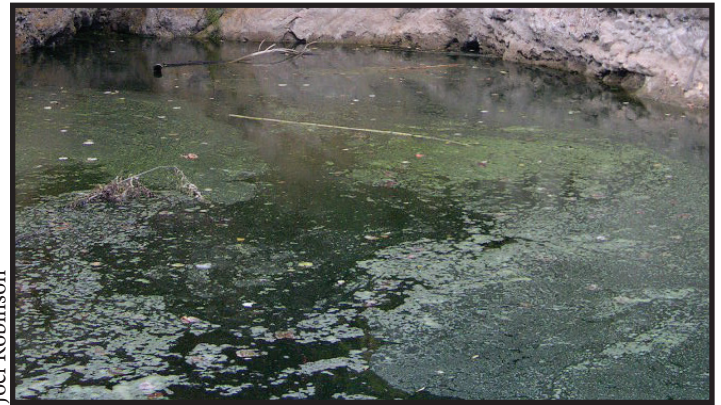
Friends of Harbors, Beaches and Parks completed an analysis of the water bodies completely within and draining into Orange County. There were 70 water bodies on the 303d list. These included segments of rivers, streams, wetlands, and beaches.

The most common impairments included: Indicator Bacteria (52), Toxicity (21), Benthic Community Effects (13), Selenium (10), Phosphorus (8), Malathion (8), and Nitrogen (8).

- Indicator Bacteria describes the amount of fecal contamination in the water. Potential causes could include raw sewage and improper disposal of human and/or animal waste. These bacteria can make people and animals sick.
- Toxicity is defined as direct harmful effects of a substance on an organism. The types of toxic substances vary greatly, but one example is ammonia, which has a direct toxic effect on aquatic life.
- Benthic Communities refer to the benthic zone that live on, in, or near the bottom of a water body. Species that reside in this zone provide a good indication of the tolerance to pollution (including both short and long term changes). Consequently, the 303d listing means that benthic communities are effected by pollution at specific levels. Problems with the benthic communities means other communities will be harmed, if not already.



- Selenium can enter the waterways through mines, refineries, natural deposits, or agricultural runoff. It can cause a host of issues for humans from hair loss to circulation issues.
- Phosphorus can speed up the production of mineral/organic nutrients by reducing the amount of dissolved oxygen. This leads to algal blooms, which can be harmful to humans and animals. Phosphorus is an ingredient common among commercial fertilizers.
- Malathion is a commonly used insecticide that is within the family of organophosphates. It has nervous system implications when humans or animals are exposed. A possible cause of this chemical in the watersheds is spraying for disease-carrying pests.
- Nitrogen usually enters the environment through agricultural practices and the use of fertilizers. Too much nitrogen can stimulate plant growth, causing algal blooms, and blocking water ways.



Joel Robinson

The 303d pollutants reviewed and known to have been in these water bodies before or currently include:

Ammonia	Dioxin	pH
Arsenic	Indicator Bacteria	Phosphorus
Benthic Communities	Invasive Species	Salinity
Benzo[b]fluoranthene	Iron	Sedimentation
Cadmium	Lead	Selenium
Chemical Oxygen Demand	Malathion	Silver
Chromium	Mercury	Temperature
Copper	Nickel	Total Nitrogen
Cyanide	Nitrate	Total Suspended Solids
DDE	Nitrogen	Toxaphene
DDT	Nutrients	Toxicity
Diazinon	Oxygen	Turbidity
Dieldrin	PCBs	Zinc

It might also be necessary to look to the future and modify the 303d list of pollutants. Additional upcoming concerns may include Teflon related chemicals (PFOA – perfluorooctanoic acid and PTFE – polytetrafluoroethylene) that were popular in the 1940s. These chemicals are currently only measured in parts per million, but should be measured in parts per trillion. They should also be on the 303d list but are not yet listed. These chemicals stay in the environment for a long time and are

considered “possibly carcinogenic to humans” by the World Health Organization. Further, as large scale storm and “normal” rain events cause erosion, additional pesticides, fertilizers, and other pollutants may come to the surface and wash into waters. Orange County has an agricultural background and erosion may increase pollutants entering the waterways. Finally, as pollutants enter the water bodies, they can and will leach into the groundwater. This could possibly impact drinking water for millions of residents.

## Interesting Findings

While most of the waterways were in very urban areas, four of the tributaries of the Santa Ana River in Riverside and San Bernardino Counties had 303d listings. However, after the confluence of these tributaries into the Santa Ana River at the Prado Wetlands, the River was not contaminated with those same pollutants in Orange County. This could mean the 4,000 acre Prado Wetland complex is serving as a natural filter for pollutants. In other words, the chemicals found in the tributaries get

cleaned out of the water system at the wetlands before the water flows into the Santa Ana River.

Alternatively, the mostly urbanized San Gabriel River, at the Los Angeles and Orange County lines, continues to transport one of the key pollutants from the waterway to the beaches and harbors. That pollutant is indicator bacteria, which likely washes down the watershed and gets washed back ashore from ocean currents and waves.

## Impacts to Parklands

Water is essential to life. Our parks provide a respite for both wildlife and people. Many of our local parks have riparian areas or lakes that we depend on for human enjoyment or, in terms of wildlife, for survival. When water bodies are polluted it can cause significant impacts

to parks, decrease the safety of the water body for contact and consumption, and harm wildlife and plant species. The following publicly protected areas were identified in our study as having an impaired water body in or running through the property:

### FEDERAL

Cleveland National Forest –  
Trabuco District

### STATE

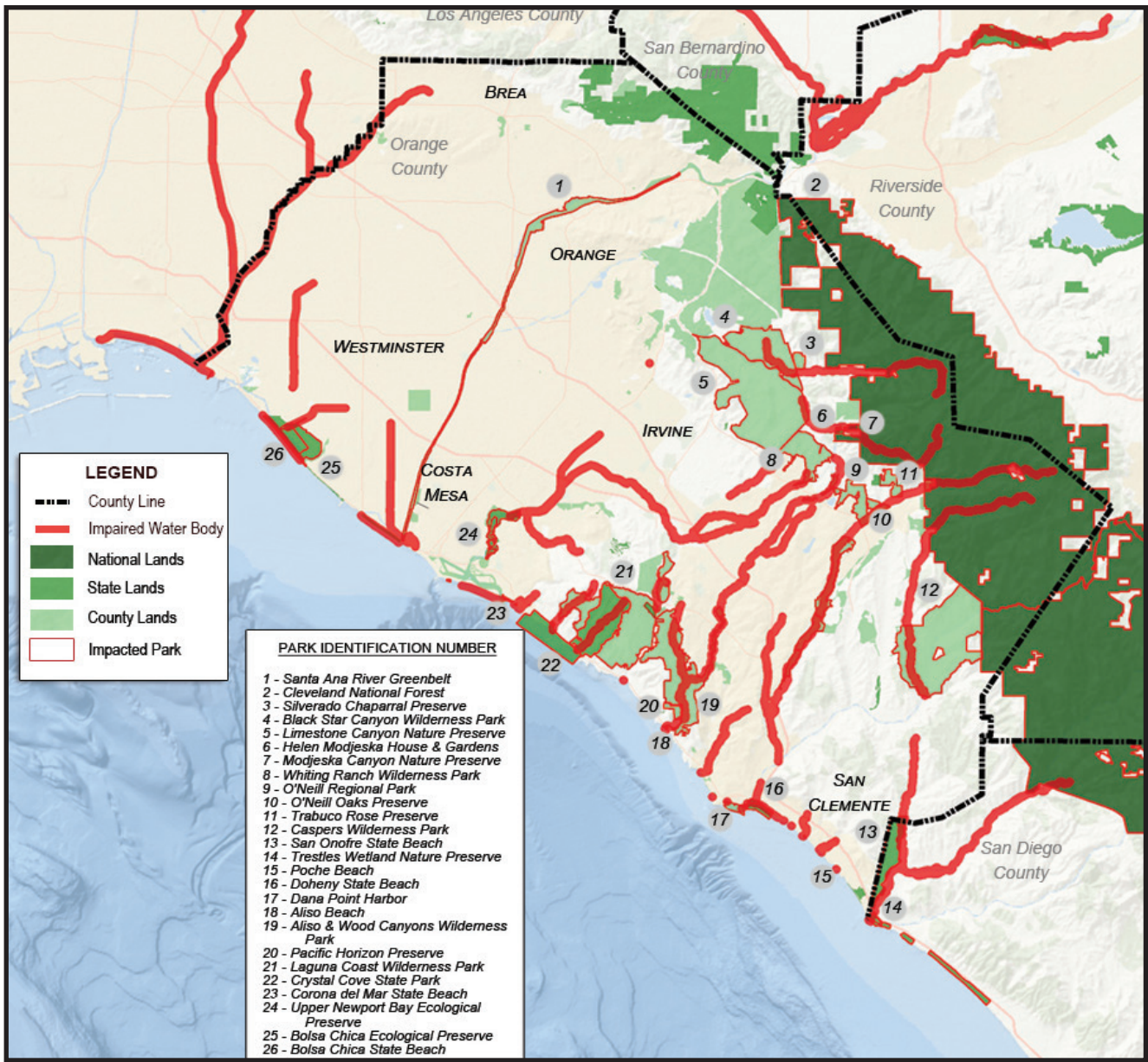
Bolsa Chica Ecological Reserve  
Bolsa Chica State Beach  
Corona Del Mar State Beach  
Crystal Cove State Park  
Doheny State Beach  
San Onofre State Beach  
Trestles Wetlands Nature Preserve  
Upper Newport Bay Ecological  
Preserve

### COUNTY

Aliso & Wood Canyons Wilderness Park  
Aliso Beach  
Black Star Canyon Wilderness Park  
Caspers Wilderness Park  
Dana Point Harbor  
Helena Modjeska Historic House &  
Gardens  
Laguna Coast Wilderness Park  
Limestone Canyon Nature Preserve  
Modjeska Canyon Nature Preserve  
O’Neill Regional Park  
Pacific Horizon Preserve  
Poche Beach  
Santa Ana River Greenbelt  
Silverado Chaparral Preserve  
Trabuco Rose Preserve  
Whiting Ranch Wilderness Park  
Wren’s View Preserve



Melanie Schlotterbeck



Digital files from: State Water Resources Control Board, U.S. Forest Service, California State Parks, California Department of Fish and Wildlife, OC Parks, and Orange County Transportation Authority.

## Conclusion

There are 26 protected parklands in Orange County that have 303d listed (polluted) water. Clearly more work needs to be done through behavior change to reduce those pollutants including individuals, agencies, and business alike. For example, dog owners can pick up the waste in their yard before it washes into the storm drain which leads directly to our waterways and beaches. Agencies can adopt non-toxic strategies to manage their landscapes. For example, the City of Irvine has a new “Beyond

Pesticides” program that uses successful strategies to keep weeds out of sidewalks, keep baseball fields green, and reduce exposures to toxins for humans and wildlife. Businesses that are within the watershed can reduce what gets transported into the watershed as well, by using Best Management Practices, reducing urban runoff, and not dumping into our waterway. Every little bit helps. Protecting our water—protects life.

This report was released in April 2020.