

2025

Mission Bay

Water Quality Monitoring Report



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Dear Reader,

Over the past year, our monitoring in Mission Bay has revealed a clear and consistent story: water quality is strongly shaped by stormwater runoff, creek inputs, and ongoing urban pressures. In 2025, we observed three key patterns:

- **Nutrients remained persistently elevated at creek inflows**
- **Bacteria levels spiked across all sites following rain events**
- **Metals, including zinc and copper, frequently exceeded water quality objectives during storms**

These findings highlight both acute impacts from storm events and chronic water quality challenges in specific areas of Mission Bay.

These insights would not be possible without the dedication of our volunteer monitoring team. Month after month, trained community scientists show up to collect high-quality data that drives our work forward. We are deeply grateful for the time, care, and energy they bring to protecting our shared waterways.

This year is especially meaningful as we celebrate **30 years of protecting clean water**. Over the past two years, our Mission Bay monitoring program has grown into a powerful tool for understanding local water quality and informing solutions. At a time when water systems across the country are facing increasing pressure from urbanization, aging infrastructure, and climate-driven extremes, local data and community engagement are more important than ever.

We hope this report helps you better understand the health of Mission Bay, the challenges it faces, and the collective role we all play in protecting it.

**With gratitude,
Water Quality Monitoring Team**



ABOUT SAN DIEGO COASTKEEPER

Founded in 1995, San Diego Coastkeeper safeguards our region's coastal and inland waters through a strategic blend of community science, education, grassroots outreach, policy advocacy, and legal enforcement of environmental laws.

Fundamental Right to Clean Water

We are guided by the belief that humans and the environment share a fundamental right to clean water.

Inherent Value of Waterways and Ecosystems

We believe in the inherent value of San Diego's rivers, streams, canyons, and coastline, as well as the ecosystems and biodiversity they support.

Diverse Stakeholder Engagement

We are dedicated to engaging with diverse partners and stakeholders to protect and restore clean water for the communities and traditions that depend on it.

Fearless Advocacy

We are committed to addressing environmental threats directly, fearlessly, and on the basis of sound scientific and legal principles, even when doing so challenges popular opinion.

Strategic, Multifaceted Approach

We believe a strategic combination of science, advocacy, education, and community engagement is the most effective way to address existing and emerging water quality issues.

Mission:

Protecting and restoring swimmable, drinkable, fishable waters in San Diego County.



PROJECT PURPOSE



Using Community Science as a tool – gathering data for multifaceted goals.

This program creates a pathway for interested community members to:

- Learn the scientific tools they need to understand their local watersheds.
- Get involved with Mission Bay and the local community.
- Directly influence local resource management by collecting data that informs regulatory decisions about the protection and management of San Diego’s rivers and streams.

Volunteers attend monthly water quality monitoring events to gather samples and data at ten different sites in Mission Bay. They also engage in community events, meetings, and advocacy efforts.

The data collected is shared with the public on San Diego Coastkeeper’s website, and is used in advocacy to improve the Bay’s water quality for the people and wildlife who use and depend on it. This includes stressing the need for improvements to stormwater and wastewater infrastructure, better flood control, more climate resilient enhancement projects, and habitat restoration projects. The data is also uploaded to the California State Water Quality Control Board’s California Environmental Data Exchange Network (CEDEN), where it will help inform future regulatory actions to reduce pollution.

Program goals include:

Environmental Stewardship

Increase environmental literacy and knowledge among community members, connect volunteers to the outdoors, and improve the ecological health of Mission Bay and the Los Peñasquitos watershed.

Equitable Access

Provide program material and training in both English and Spanish, increase diversity and representation in the conservation and environmental workforce, and provide a monthly stipend to volunteers.

Community Engagement

Connect volunteers to local environmental issues and advocacy efforts, and invite volunteers to community events and campaigns.

Workforce Development

Build skills through water quality sampling training and data collection.

METHODS

Field Measurements & Sample Collection







Community Powered Science

Our monitoring program is powered by trained community volunteers.

Volunteers are recruited and trained by staff in water quality science, field safety, and standardized sampling methods. Before entering the field, volunteers complete hands-on instruction and pass a short quiz to ensure consistency and accuracy. Monitoring is always conducted in teams, under staff oversight, and follows strict quality assurance protocols. Staff review all field sheets and laboratory documentation to maintain data integrity.

What We Measure:

 In Field Temperature, pH, Dissolved oxygen, Salinity, & Turbidity	 Bacteria Total Coliform, <i>E. coli</i> , & Enterococcus	 Nutrients Total Nitrogen, Phosphorus, Total Suspended Solids	 Heavy Metals Copper & Zinc, Barium (South Shores only)
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Methods:

- 1 Sites** - 10 Sites are monitored monthly
- 2 In-Field Measurements** - Volunteers work in teams, visiting each site and taking in situ measurements including temperature, pH, dissolved oxygen, salinity, and turbidity, as well as field observations including weather, tide, wildlife activity, and visible pollution.
- 3 Sample Collection** - Volunteers collect samples for laboratory analysis, including nutrients, heavy metals, total suspended solids, and bacteria.
- 4 Preserve and Transport** - Samples are placed on ice, logged using Chain-of-Custody forms, and delivered to a certified laboratory.
- 5 Certified Laboratory Analysis** - Samples are analyzed using EPA-approved methods at an ELAP-certified laboratory to ensure accuracy and comparability.

SITE DESCRIPTION

Mission Bay is one of San Diego’s most popular aquatic recreation areas, **attracting an estimated 15 million visitors each year**. The Bay was created through large-scale dredging and river diversion, transforming more than 4,000 acres of historic tidal marsh into the engineered waterways and parklands seen today. **Over 95% of the original marsh habitat was removed, leaving Kendall-Frost Marsh as the last remaining natural tidal wetland.**

Our Monitoring Network

San Diego Coastkeeper monitors ten sites throughout Mission Bay each month. Sites were selected to represent major freshwater inflows, high-use recreation areas, open water conditions, and sensitive habitat. Together, these locations provide a snapshot of how water moves through the Bay, and how conditions vary between creeks and open waters.

Go to www.sdcoastkeeper.org/mb-wqm for an interactive map and graphs of our water quality data.

Kind of Sites		
2	Creek Inlets	<ul style="list-style-type: none"> • Rose Creek • Tecolote Creek
2	Mid-Channel	<ul style="list-style-type: none"> • Fiesta Sunset Beach • South Shores
6	Shoreline	<ul style="list-style-type: none"> • Fanuel Street • Kendall-Frost Marsh • De Anza Cove • Leisure Lagoon • Paradise Point/Paradise Pt. North Cove* • Mission Point

*Switched locations halfway through the year



Why Creeks Matter

Rose Creek and Tecolote Creek drain highly urbanized watersheds and serve as primary freshwater inputs to Mission Bay. During rain events, these creeks transport stormwater runoff directly into the Bay, influencing bacteria, nutrient, and metal levels observed throughout the system.

NUTRIENTS



Nutrients are naturally occurring in aquatic systems and can be beneficial. However, excess nitrogen and phosphorus can fuel algal growth, reduce water clarity, and lower oxygen levels, stressing fish and other aquatic life.

Data Collection:

Nitrogen & Phosphorus

Support plant growth, but too much can trigger harmful algal blooms.

Total Suspended Solids

Measures particles in the water that reduce clarity & transport pollutants.

Field Parameters

Temp., pH, dissolved oxygen, salinity, & turbidity — overall water conditions & ecosystem health.

Results:

Phosphorus levels were consistently elevated throughout 2025, with Tecolote Creek and Rose Creek exceeding water quality objectives over 75% of the time. Total nitrogen concentrations were also highest at these creek sites compared to open Bay locations. Other field parameters fluctuated seasonally and in response to storms, as expected. Elevated nutrient levels at Tecolote and Rose Creeks indicate that upstream watershed inputs continue to influence water quality in Mission Bay.

Phosphorus

All Sites
19% fail



Pass
Fail

Tecolote Creek
83% fail



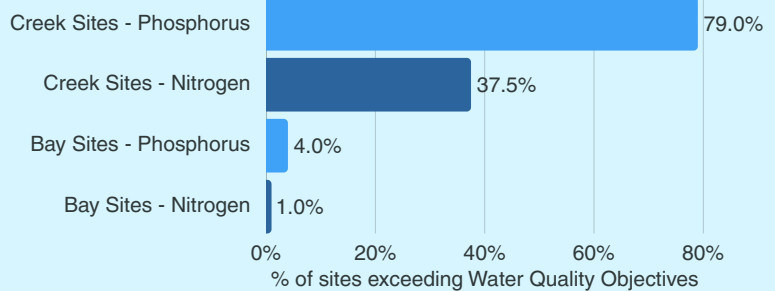
Pass
Fail

Rose Creek
75% fail



Pass
Fail

Bay vs Creek Sites



Higher nitrogen concentrations at creek sites compared to the Bay locations reinforce the role of freshwater inflows as nutrient pathways. In contrast, seasonal shifts in temperature, salinity, dissolved oxygen, and suspended solids followed predictable patterns: warmer water in summer, cooler water in winter, and lower salinity with higher turbidity after storm events. While seasonal variability is natural, sustained nutrient enrichment can increase the risk of algal blooms, reduced water clarity, and cause oxygen stress for aquatic organisms.

Sources of excess nutrients:

Go to www.sdcoastkeeper.org/mb-wqm for more results.

Urban Runoff:

Storm drains carry nutrients from streets and hard surfaces into waterways.

Pet Waste:

Improperly disposed waste is a concentrated source of nitrogen and phosphorus.

Landscape Irrigation:

Fertilizers applied to lawns and gardens leach nutrients into soil and drainage.

Sediment Release:

Nutrients bound to sediment particles can be remobilized during storm flows.

BACTERIA



Persistent pollution has caused portions of Mission Bay and the waterways that flow into it, including Rose Creek and Tecolote Creek, to be listed as impaired under Section 303(d) of the Clean Water Act.

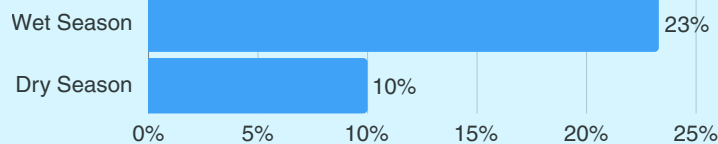
Enterococci fecal bacteria are used as an indicator for the potential presence of pathogens in enclosed bays, estuaries, and inland systems, as established in the California Regional Water Quality Control Board's water quality control plan for the San Diego Basin, when the salinity is ≥ 1 ppt the majority of the calendar year.

High levels of fecal bacteria in Mission Bay pose a health risk to recreators and subsistence fishers, potentially leading to waterborne illnesses and infections.

Results:

Bacteria levels were highest following storm events at all sites. Tecolote Creek and Rose Creek remained elevated year-round, including during dry weather, indicating chronic sources of contamination.

% of Samples Exceeding Standards



Enterococci

All Sites
16.7% fail



Tecolote Creek
50% fail



Rose Creek
58.3% fail



These chronic hotspots represent priority areas for investigation and management. Reducing bacterial pollution will require both stormwater controls and targeted source identification in upstream creek systems.

Go to www.sdcoastkeeper.org/mb-wqm for more results.

Sources of bacteria:

Stormwater Runoff:

#1 Driver of Bacterial Spikes

- Urban runoff
- Pet feces
- Wildlife inputs
- Industrial site runoff



Dry Weather Sources:

- Leaking wastewater infrastructure
- Illicit discharges
- Sediment reservoirs
- Concentrated wildlife activity



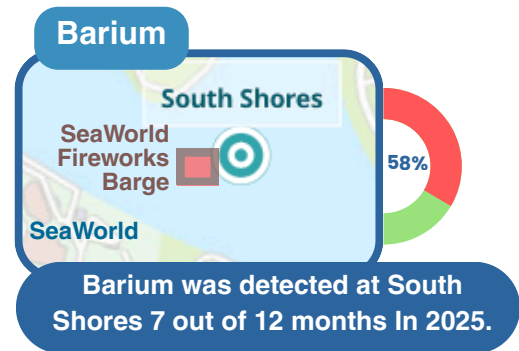
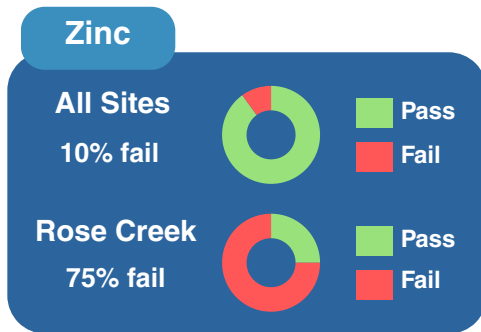
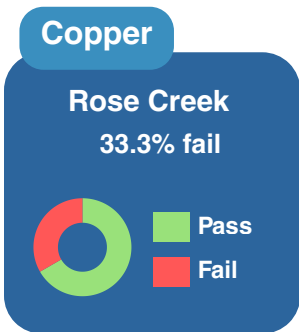
METALS



Heavy metals such as zinc and copper are routinely monitored throughout Mission Bay due to their persistence in the environment and potential to accumulate in sediments and marine organisms. Barium is also monitored at South Shores because of its proximity to fireworks staging areas. Tracking these metals helps identify pollution sources and assess potential impacts to the Bay’s ecological health.

Results:

Metal concentrations in our creeks consistently exceeded water quality objectives throughout the monitoring period. Copper levels in Rose Creek exceeded the applicable standard **one-third of the time**, with higher levels observed following storm events, indicating runoff-related contamination. In Rose Creek, zinc concentrations exceeded the standard **75% of the time**, underscoring ongoing water quality concerns within the watershed. At South Shores, barium concentrations remain consistently elevated throughout the second half of the year.



Stormwater runoff remains the primary driver of elevated metal concentrations in Mission Bay. Widespread zinc exceedances during storms suggest diffuse urban sources rather than a single discharge point. Persistently elevated barium at South Shores may be linked to ongoing large-scale fireworks displays concentrated in that area.

Potential Sources:

Go to www.sdcoastkeeper.org/mb-wqm for more results.

Copper			Zinc		Barium	
Brake Pads	Boating activity	Building materials	Tire wear	Galvanized surfaces	Industrial Materials	Fireworks

While short-term exposure risks to the public are low, repeated exceedances can stress aquatic organisms and contribute to long-term sediment contamination. Reducing metal pollution will depend on improved stormwater capture, stronger source control strategies, and ongoing targeted monitoring to identify hotspots.

PROGRAM ACHIEVEMENTS

This program has been successful in immeasurable ways, helping us meet our goals and expand our reach to a variety of educational, professional, and social backgrounds. Program goal metrics are shown for January 2025-December 2025.

Environmental Stewardship

127 Volunteers Trained

28 Sampling Events

- + In-person training
- + Annual Report Meeting

Community Engagement

98 Mission Bay User Recreation Survey responses

- + Engaged in public comment & advocacy as leading member of ReWild Mission Bay Coalition
- + Expanded outreach volunteer roles
- + End-of-year Volunteer Appreciation event

Equitable Access

143 Stipends (\$60 each) for volunteers

- + Communications & resources in English & Spanish
- + Facilitated carpooling for sampling days

Workforce Development

5 Professional recommendations for volunteers

- + Hands-on training in water quality sampling and data collection
- + Create network with partner orgs

“You will learn about the pressing issues faced by San Diego’s waterways & the invaluable efforts by community members to restore our watersheds. Having fun & getting to meet other passionate individuals is also part of the experience.”
~ Garrett Arauz, volunteer

“I like knowing that I’m tangibly giving back to the community I live in through community science and enjoy being out in nature to do so.”
~ Lance, volunteer



FUTURE ACTIONS & RECOMMENDATIONS



We will continue our monitoring through 2026, and are seeking funding to sustain this program through at least 2028 to build a 5 year dataset that would support our ongoing clean water policy advocacy.

Secure Long-Term Stormwater Funding

The City of San Diego faces a \$5 billion — and growing — stormwater infrastructure deficit. The lack of funding has led to chronic stormwater pollution of Mission Bay, a growing risk of severe flooding impacts and a stormwater system that is near collapse. Coastkeeper supports increased public investment to fund infrastructure repairs and upgrades to reduce flooding, create green urban neighborhoods and reduce pollution of our shared waterways.

Restore and Expand Tidal Wetland Habitat

Ensure California Coastal Commission approves plans to expand and restore Kendall-Frost Marsh, the last remaining tidal wetland in Mission Bay, which provides critical ecosystem services, e.g. coastal wildlife habitat and local resilience to sea level rise.

Address Upstream Pollution in Rose and Tecolote Creeks

Identify and address upstream sources of bacteria, metals and nutrient pollution of Tecolote and Rose Creeks, major contributors of pollution to Mission Bay. Both Creeks drain large watersheds that include diverse pollution sources, from military airfields to golf courses. In order to clean up Mission Bay, we must address the pollution at its source.

Transition SeaWorld from Fireworks to Drone Light Shows

Ensure that SeaWorld transitions from fireworks displays to drone light shows permanently. Years of firework shows have polluted the Bay, severely disturbing wildlife, including endangered nesting seabirds, and causing noise pollution that impacts local residents' quality of life.

Expand Collaborative Research

Continue collaborative research projects with local scientists from CSU San Marcos, SDSU, and other schools to expand our knowledge of the Bay's ecology and pollution impacts, and drive solutions that will protect human uses and enhance biodiversity and climate resilience.

Sustainable Community Engagement

Build and expand community partnerships to include other nonprofits, local residents and tribal partners, supported by an active and growing volunteer network. Community-level connections are critical to catalyzing our data to drive policy change for clean water.

ACKNOWLEDGEMENTS

This program could not have accomplished all these goals and gathered important data without the amazing support of our program funders, our San Diego Coastkeeper staff, partners, but most importantly our extensive list of committed and valuable volunteers!

Community Partners

- [San Diego Bird Alliance](#)
- [UCSD Reserve System](#)- Kendall-Frost Marsh
- [Dr. Matt Verbyla's Safe WaTER Lab](#)- San Diego State University (SDSU)
- [Dr. Elinne Becket's lab](#)- Cal State San Marcos (CSUSM)
- [ReWild Mission Bay](#) Coalition members
- [The San Diego Natural History Museum](#)

Program Funders

- Dorrance Family Foundation
- Page Family Foundation

Product Sponsors

- Dr. Bronner's

Program Staff

- Lesly Gallegos-Stearns, Volunteer and Outreach Manager
- Marie Diaz, Interim Community Science Director
- Laura Fuller, Community Science Director
- Camila Ruiz, Community Science Coordinator
- Nicole Nelli, Community Science Intern

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Drawings by
Francisco Bassó Medel

"The volunteer experience has been very impactful to me as it has increased my knowledge of the conservation and protection efforts that are being done in San Diego as well as allowing me to be active in my community with regard to those efforts."
- **Marissa, volunteer**

"Mission Bay is an amazing park but the water is of questionable quality too often and too widespread. I want to be a driving force behind the legal work Coastkeeper does to improve the water quality and make Mission Bay safe for human and wildlife."
- **Jim Royer, volunteer**

Get Involved

Create an account on our volunteer platform:



<https://sdcoastkeeper.galaxydigital.com>

Get monthly volunteer opportunities sent to your inbox:



<https://bit.ly/4mEq7ve>

