

Mission Bay Water Quality Monitoring Report

2024



SAN DIEGO
COASTKEEPER®

Executive Summary

Welcome to our first annual report on water quality in Mission Bay!

Our Community Science and Outreach team, supported by a passionate team of volunteers, collected monthly water samples at ten locations around Mission Bay to test for a range of pollutants that can impact public health and the marine life in the Bay that depends on clean water to survive. This monitoring program is a key part of our regional Watershed Watch program, which utilizes community science, outreach and education, and stewardship activities in five of our local watersheds (Mission Bay, San Diego Bay, San Diego River, Chollas Creek, and the Tijuana River) to support our fight for clean water and equitable access to clean, safe beaches throughout San Diego.

We began with Mission Bay because of its popularity for public recreation, and long-standing concerns about poor water quality in the Bay, which may lead to heightened public health risks for people recreating in and on the water. We also sought to generate public interest and engagement in Bay water issues through our volunteer outreach program, and we're thrilled to report that it's been a huge success! To date, we have engaged over 180 volunteers in water quality monitoring, beach cleanups, and community advocacy initiatives that all support our vision of a clean, safe, and healthy Mission Bay for the people and wildlife who depend on it.

Here are a few key findings – please read on to learn more about the Bay!

- 50% of our sampling locations reported fecal bacteria levels exceeding state standards more than 50% of the time, in dry and wet weather, highlighting the public health risk to Mission Bay users and the urgent need for increased attention to leaking stormwater and wastewater pipes that are likely a significant source of this pollution.
- 90% of our sampling locations reported copper levels well above state standards more than 50% of the time, raising serious concerns about the impacts to fish and other aquatic life that result from this widespread and likely chronic pollution. This data supports the need for increased attention to addressing the sources of copper, including better stormwater management to reduce runoff into the Bay.
- 60% of our sampling locations reported high levels of phosphorus in more than 50% of samples. Phosphorus is a nutrient that is beneficial to marine life at low levels but contributes to depleted oxygen and growth of harmful and nuisance algal blooms at higher levels. Future tracking of phosphorus sources will help us identify where it's coming from, and how to reduce its impact on the Bay.

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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.



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



Introduction

Mission Bay is one of San Diego's most popular marine recreation areas, attracting an estimated 15 million visitors each year who come to recreate in the Bay and surrounding parks. Yet, the current Bay as we know it is the result of a massive engineering project, constructed from approximately 4,000 acres (1619 hectares) of marshland that was historically the outlet for the San Diego River. The river was diverted and constrained to man-made flood control levees just south of the Bay. The parks that surround Mission Bay are nearly entirely man-made, with dredged sand and silt used to create landmasses, some of which are built on closed landfills.

Kendall-Frost Marsh in the northeastern corner of the Bay represents the last remaining natural tidal marsh habitat, after 95% of the original marsh habitat was cleared to create the Bay and surrounding parkland. Mission Bay encompasses over 4,200 acres (1,700 hectares) of land and water, with approximately 27 miles (43 kilometers) of shoreline. The Bay also hosts a rich diversity of wildlife, including hundreds of bird species, such as the endangered California least tern, and an estimated 100 native plant species.

The Los Peñasquitos Watershed Management Area drains an area of approximately 94 square miles (243 square kilometers) to the central coastline of San Diego County and works in conjunction with the Mission Bay Watershed Management Area (64-square-miles / 166-square-kilometers). Development and urbanization in these watersheds, along with aging stormwater and wastewater infrastructure, have created conditions where pollution and poor water quality plague our communities. This in turn can cause illness, urban flooding, erosion, and habitat degradation. Polluted stormwater runoff and leaking wastewater infrastructure are the biggest threats to the health of Mission Bay's waters. This pollution threatens our habitats and wildlife and poses serious health risks to children, swimmers, subsistence fishers, and beach-going families.

San Diego Coastkeeper's Mission Bay water quality monitoring is a critical element of our regional Watershed Watch program, using community science, volunteer engagement, and grassroots outreach to drive policy changes to improve water quality and equitable access to our shared San Diego waterways.



Polluted stormwater runoff and leaking wastewater infrastructure are some of the biggest threats to the health of Mission Bay's waters.

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 Resources Control Board's California Environmental Data Exchange Network (CEDEN), where it will help inform future regulatory actions to reduce pollution.

Program goals include:

1 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.

2 Workforce Development

Build skills through water quality sampling training and data collection.

3 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.

4 Community Engagement

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

Methodology

Volunteer Recruitment and Training

San Diego Coastkeeper (SDCK) staff are trained in proper safety and sampling procedures. Lesly Gallegos-Stearns, the Volunteer and Outreach Manager, recruits and trains volunteers in field water quality sampling and analysis techniques, as well as data recording. Upon completion of the training, volunteers are required to pass a quiz prior to joining us in the field.

Volunteers also learn about water quality issues, sources and impacts of pollution, impaired water bodies, and regulatory and policy tools used to improve water quality. All volunteer water quality monitors receive a training manual, which includes background information on water quality, field protocols, descriptions and photographs of sampling locations. They also receive safety protocols and directions to each sampling location. It is emphasized that safety protocols dictate that monitoring only occurs in safe conditions and in teams of at least two individuals. SDCK staff monitor and observe the practices of the volunteers and provide feedback. Staff also review field data sheets to ensure proper data collection using quality assurance/quality control (QA/QC) procedures.

Field Measurements and Sample Collection

Volunteers collect water quality samples from nine sites throughout Mission Bay one Saturday a month. At each site, water temperature, pH, dissolved oxygen, salinity, and turbidity are measured using field instruments. Volunteers also record visual observations, including the tide level, trash and debris, animal or people presence and activities, and weather conditions.

Water samples are collected following SDCK sampling protocols, which have been established in the Quality Assurance Project Plan (QAPP), to fill laboratory bottles for nutrients, metals, and total suspended solids analyses. SDCK staff and volunteers return early the following week to collect bacteria samples, as well as all sample parameters at the tenth site, Kendall-Frost Marsh, which is a University of California Natural Reserve System with restricted access.

All water samples are kept on ice and transported to a an ELAP-certified professional chemistry laboratory. A Chain-of-Custody (CoC) form is filled out for each sampling event and remains with the samples to provide quality assurance. Samples are analyzed following certified Standard and EPA analytical methods.





Map of the ten sampling locations throughout Mission Bay, San Diego, California



What are we looking for?

Parameter	Type of Analysis
Temperature (°C)	Field
Dissolved Oxygen (mg/L)	Field
pH	Field
Salinity (ppt)	Field
Turbidity (NTU)	Field
Total Suspended Solids (mg/L)	Laboratory
Nitrate + Nitrite as N (mg/L)	Laboratory
Total Phosphorus (mg/L)	Laboratory
Copper (µg/L)	Laboratory
Zinc (µg/L)	Laboratory
Barium (µg/L) - 3 sites only	Laboratory
Cadmium (µg/L) - 3 sites only	Laboratory
Total Coliform Bacteria (MPN/100mL)	Laboratory
<i>E. coli</i> Bacteria (MPN/100mL)	Laboratory
Enterococci Bacteria (MPN/100mL)	Laboratory
Visual Observations	Field
Total Dissolved Solids (mg/L)	Discontinued as of August 2024
Lead (µg/L)	Discontinued as of August 2024
Conductivity (µS/cm)	Discontinued as of August 2024

Results and Discussion

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. San Diego Coastkeeper has consistently measured high levels of fecal indicator bacteria in sections of Mission Bay during both the wet and dry seasons. 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.

Elevated levels of nutrients and metals, particularly phosphorus and copper, have also been measured at many of the sampling locations. Nutrients are naturally occurring in aquatic systems and can be beneficial. However, excessively high levels can lead to excessive algal growth, which can reduce the amount of sunlight entering the system, lead to the presence of algal toxins, and increase the presence of bacteria feeding on decaying algae. This could ultimately lead to decreased dissolved oxygen levels in the water, impairing the aquatic ecosystem.

The metal copper is also naturally occurring, but it can enter waterways through human activities, such as from the brake pads of vehicles, pesticide use, industrial pollution, wastewater, and is also found in antifouling paint on watercraft. Acute and chronic exposure of aquatic life to high levels of copper can affect survival, growth, and reproduction. The threshold values used to assess potential aquatic toxicity of the heavy metals analyzed in this monitoring project are derived from the U.S. Environmental Protection Agency and the Cornell Law School Legal Information Institute. The dataset used in this report ranges from September 2023, the start of this monitoring program, through December 2024. In October 2024, analyses for the metals barium and cadmium were added to three of the ten sampling locations, South Shores - midchannel, Paradise Point, and Fiesta Sunset Beach - midchannel. These metals may enter Mission Bay waters through outfall from fireworks shows and eventually accumulate in the Bay's sediments. So far, there has been only one detection of barium at the South Shores location, closest to a barge used to launch routine fireworks shows. There have been no detections of cadmium.

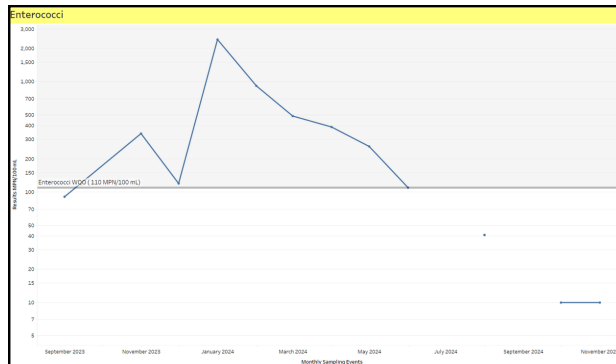


De Anza Cove

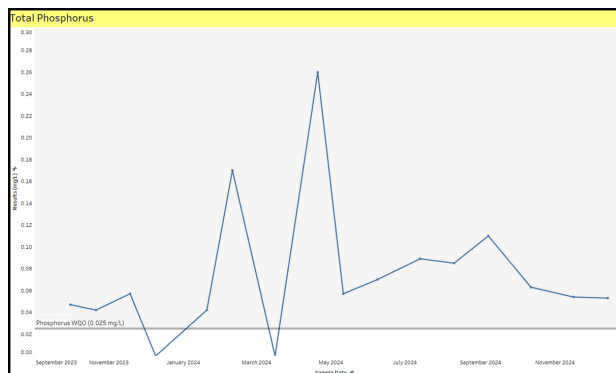
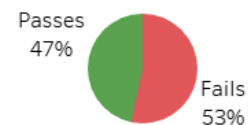
This sampling location is located within a recreational park that contains restroom facilities, picnic areas, playgrounds, parking lots, and a boat ramp.

Over half of the detections of enterococci bacteria in this monitoring project to date have exceeded the water quality objective (WQO) for safe contact recreation, particularly after rain events. The WQO for total phosphorus, 0.025 mg/L, is routinely surpassed, yet nitrogen as nitrate + nitrite remains at levels considered safe for supporting a healthy aquatic ecosystem.

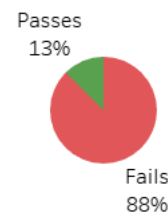
This location has also routinely failed the criteria maximum concentration for copper, which identifies the highest concentration in saltwater that aquatic life can be exposed to in a short time without damaging effects. The highest concentration spikes occurred in September 2023 and March 2024. The cause of the large September detection is unclear, while the latter is likely related to stormwater runoff. Zinc has been detected only once at this location, yet at a level approximately six times the established criteria maximum concentration.



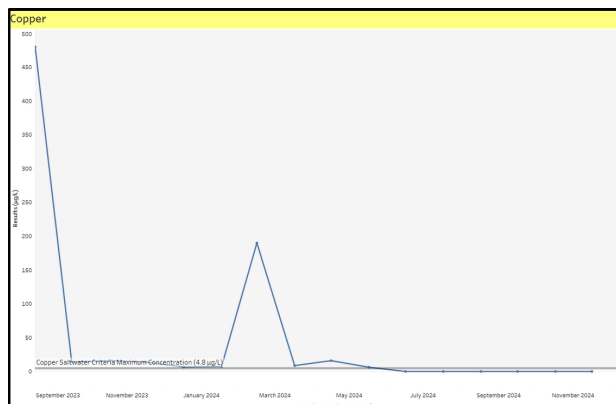
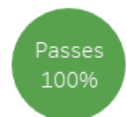
Enterococci percent passes/fails the water quality objective of 110 MPN/100 mL



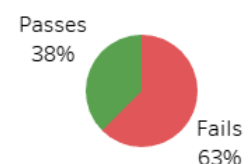
Total Phosphorus percent passes/fails the water quality objective value of 0.025 mg/L



Nitrate + Nitrite as Nitrogen percent passes/fails the water quality objective value of 0.68 mg/L



Copper percent passes/fails the criteria maximum concentration of 4.8 µg/L



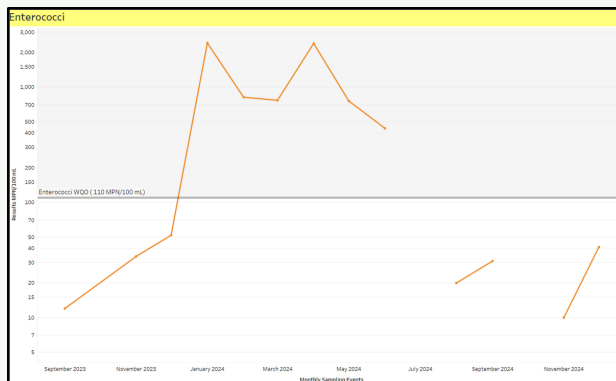
Fanuel Street

This site is located within a recreational park at the end of Fanuel Street that contains restroom facilities, playgrounds, a parking lot, and plenty of access for beach and water activities.

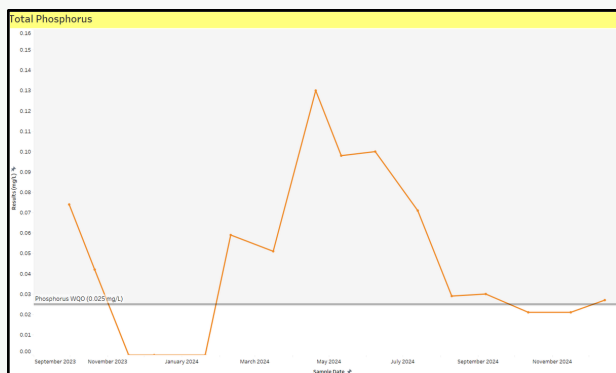
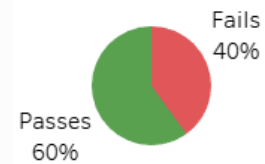


Throughout this monitoring project thus far, elevated levels of the fecal bacteria enterococci have often surpassed the WQO, primarily through the wet season. While nitrogen as nitrate + nitrite has remained at safe levels, total phosphorus measurements have frequently exceeded the WQO, particularly in the dry season. This may be the result of higher temperatures driving increased phosphorus release from sediment and decomposing organic matter.

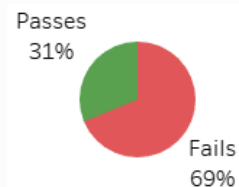
The criteria maximum concentration for copper has also been routinely surpassed, with the highest detections in September 2023 and March 2024, as is the case at many of the sampling locations. Zinc has been detected twice thus far in this monitoring project, with once being at a level approximately two times the criteria maximum concentration.



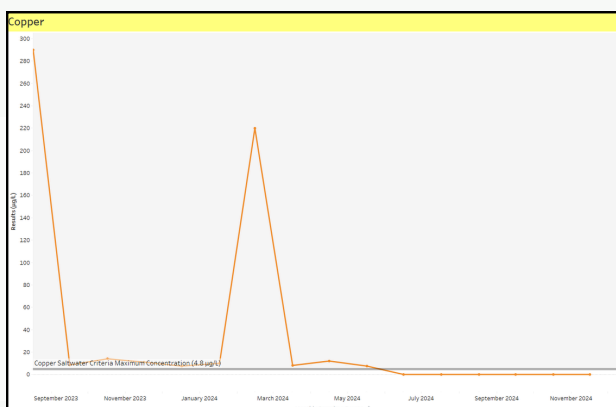
Enterococci percent passes/fails the water quality objective of 110 MPN/100 mL



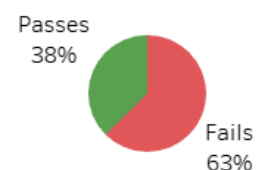
Total Phosphorus percent passes/fails the water quality objective value of 0.025 mg/L



Nitrate + Nitrite as Nitrogen percent passes/fails the water quality objective value of 0.68 mg/L



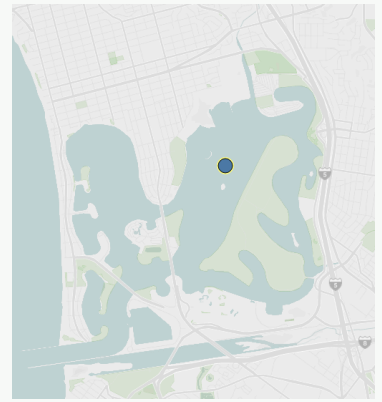
Copper percent passes/fails the criteria maximum concentration of 4.8 µg/L



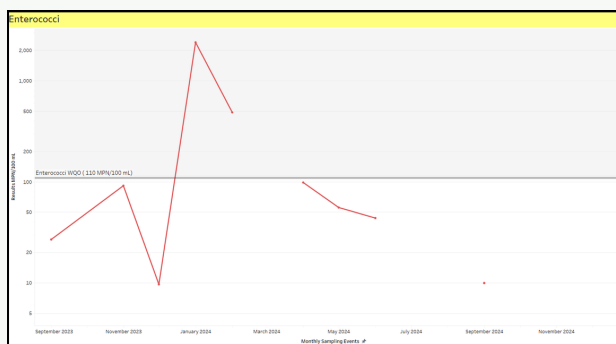
Fiesta Sunset Beach

This sample is collected midchannel, just off of Fiesta Sunset Beach of Fiesta Island in Mission Bay. The area is popular for boaters and jet skiers, and the Island typically has many recreators, primarily beachgoers and dog walkers.

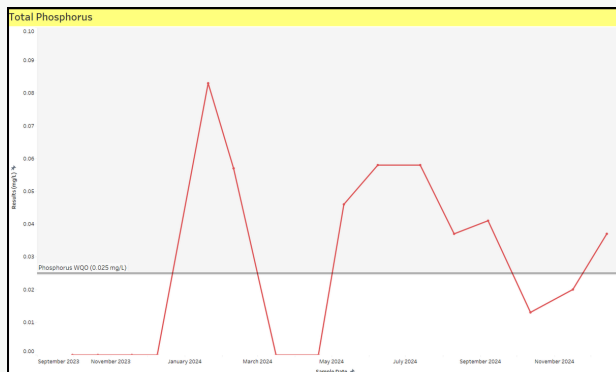
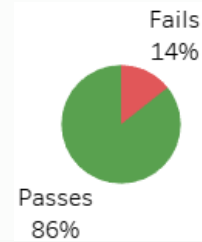
Enterococci have not been detected as often at this location, however, following substantial rain events in January 2024, these fecal bacteria were measured orders of magnitude above the WQO and surpassed the maximum level of detection of the chemistry lab.



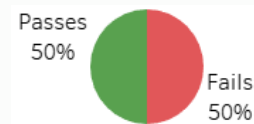
Total phosphorus measurements have exceeded the WQO half the time, particularly in the dry season but also following substantial rain events in January 2024. Additionally, the criteria maximum concentration for copper has often been surpassed, with the highest detection 50 times the threshold value. The analyses for barium and cadmium were added to this site in October 2024, although there have been no detections thus far.



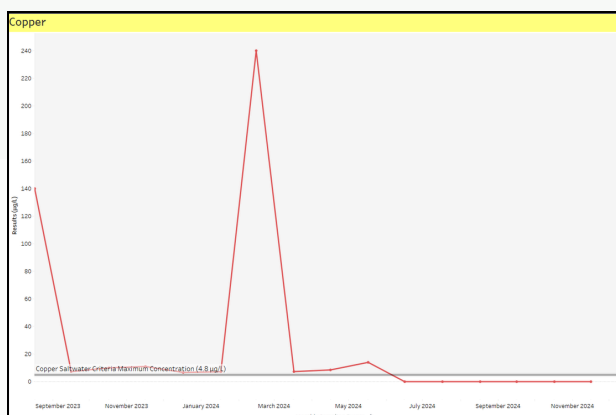
Enterococci percent passes/fails the water quality objective of 110 MPN/100 mL



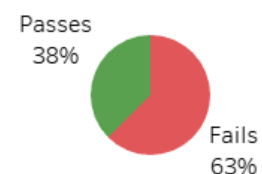
Total Phosphorus percent passes/fails the water quality objective value of 0.025 mg/L



Nitrate + Nitrite as Nitrogen percent passes/fails the water quality objective value of 0.68 mg/L

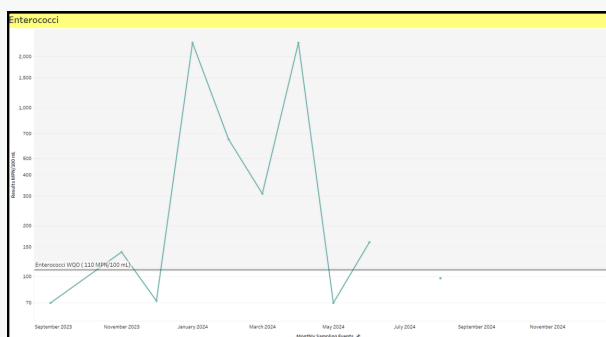
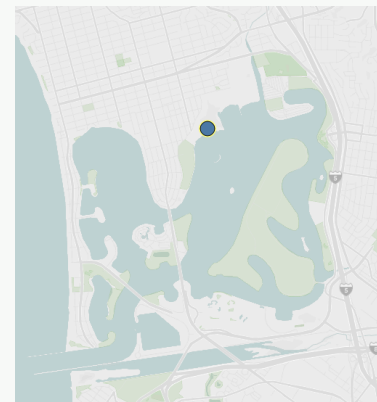


Copper percent passes/fails the criteria maximum concentration of 4.8 µg/L

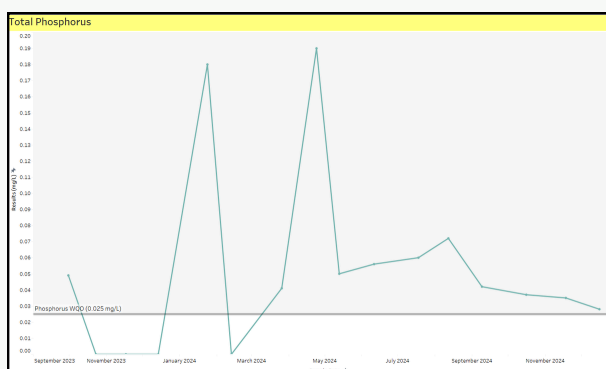
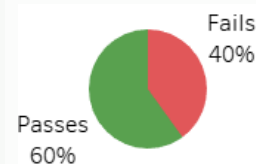


Kendall-Frost Marsh

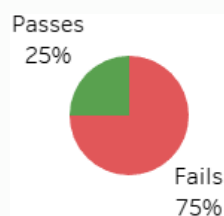
The Kendall-Frost Marsh Reserve is part of the University of California Natural Reserve System in the northern portion of Mission Bay, between Crown Point Park and Campland on the Bay RV Park. It is one of the few remaining areas of coastal salt marsh habitat in Southern California. As part of the De Anza Natural Plan, an amendment to the City of San Diego's Mission Bay Park Master Plan, wetland restoration efforts would substantially increase the size of this area for added habitat, improved water quality, and increased climate resilience. Enterococci detections have often been measured at safe levels, although this area had measurements substantially above the WQO in the 2024 wet season, with the two highest detections surpassing the lab's capability for an accurate measurement. Total phosphorus frequently surpasses the WQO for supporting a healthy aquatic system, likely the result of urban runoff and phosphorus release from sediment and decaying organic matter. Nitrogen as nitrate + nitrite has been detected twice at a measurable amount – once being at a level over 2.5 times the desired WQO. The threshold value for copper has often been surpassed. This could be the result of increased runoff carrying wastewater, synthetic pesticides, and copper fragments from vehicle brake pads. Interestingly, the November 2023 sample exhibited a spike in copper concentration substantially higher than that seen at the other nine sampling locations. The cause is unclear.



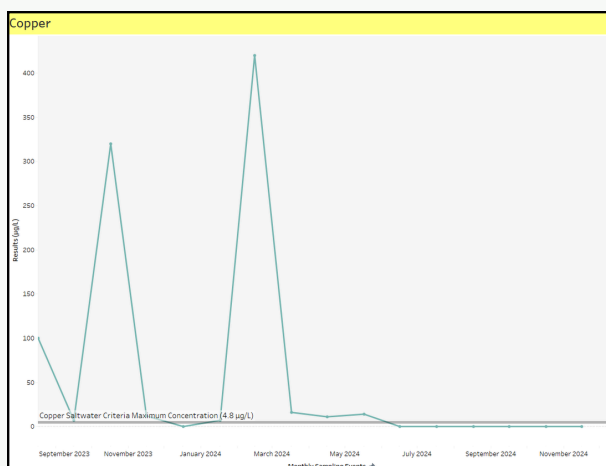
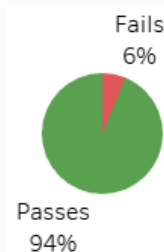
Enterococci percent passes/fails the water quality objective of 110 MPN/100 mL



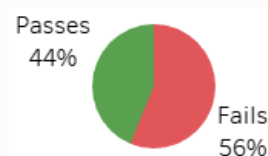
Total Phosphorus percent passes/fails the water quality objective value of 0.025 mg/L



Nitrate + Nitrite as Nitrogen percent passes/fails the water quality objective value of 0.68 mg/L



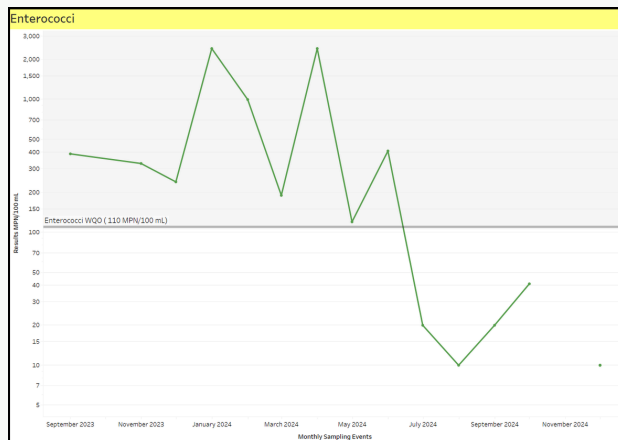
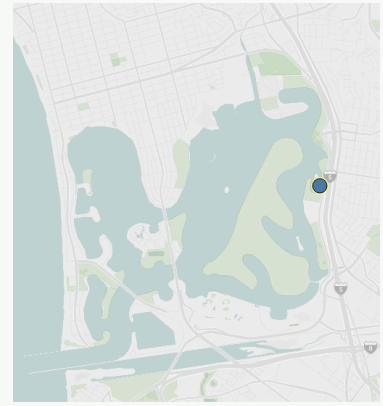
Copper percent passes/fails the criteria maximum concentration of 4.8 µg/L



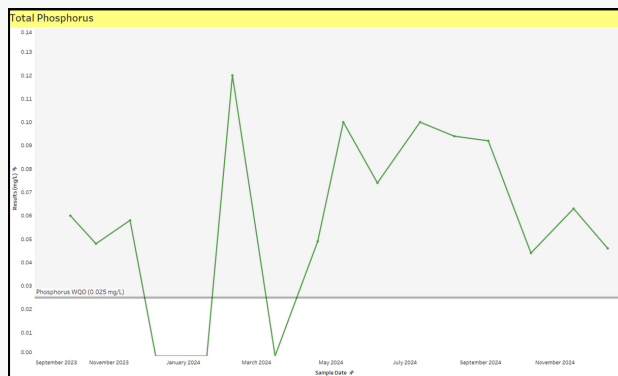
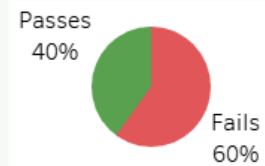
Leisure Lagoon

This sample is collected at the Leisure Lagoon storm drain in Playa Pacifica Park, which contains beach access, large grassy areas, a playground, parking lots, and restroom facilities.

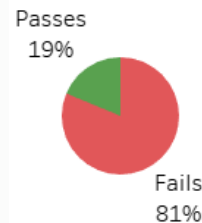
The fecal bacteria enterococci have often been detected from Fall of 2023 through early summer of 2024. Elevated detections have well exceeded the WQO, and on two accounts beyond the lab's capability of obtaining an accurate measurement. Total phosphorus has also been measured above the WQO in the majority of samples thus far, and copper detections frequently exceed the criteria maximum concentration. The highest detection of copper in March of 2024 was over 43 times the threshold value.



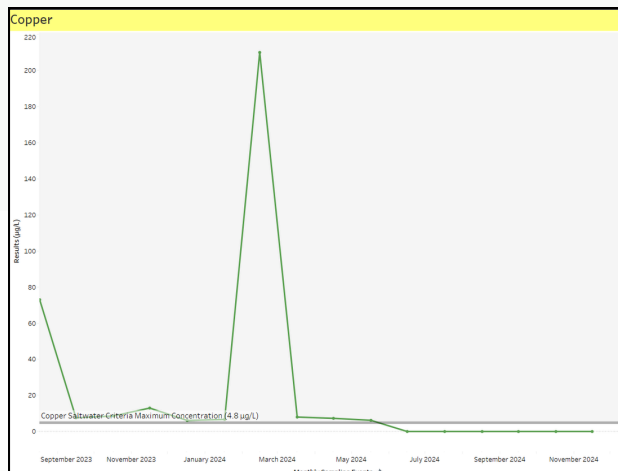
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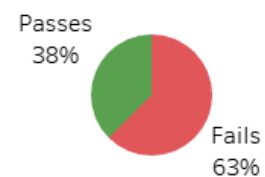
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Nitrate + Nitrite as Nitrogen percent passes/fails the water quality objective value of 0.68 mg/L

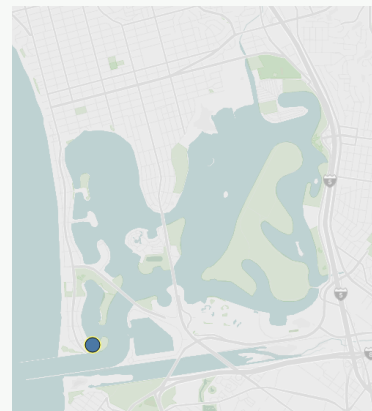


Copper percent passes/fails the criteria maximum concentration of 4.8 µg/L

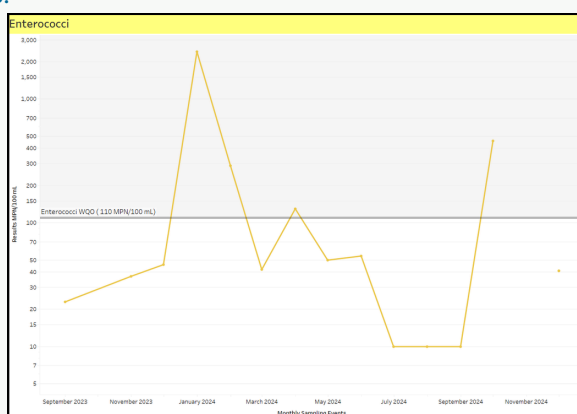


Mission Point

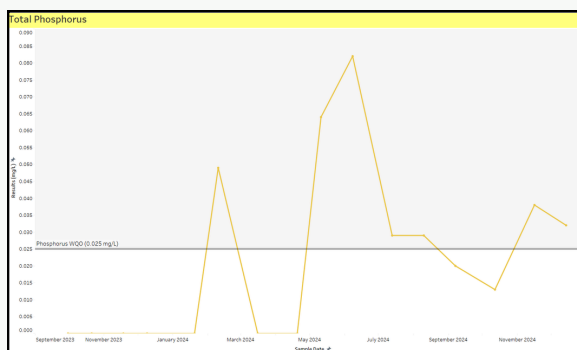
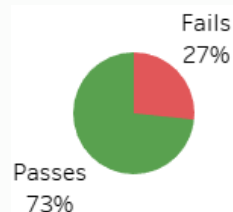
This sample is collected in Mission Point Park in the southwest section of Mission Bay. The water is surrounded by grassy areas, parking lots, and sandy beaches. Sailboats and small motorboats are often seen moored in the water or hauled out on the sand. It's also a popular spot for swimmers, kayakers, and SCUBA divers.



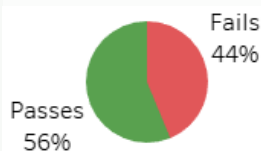
Enterococci bacteria have often been detected, although more frequently at levels below the WQO for safe contact recreation. The highest measurement thus far was following substantial rains in January of 2024. Total phosphorus levels have also intermittently been detected above the desired WQO, particularly in the warmer summer months. To date, nitrogen as nitrate + nitrite has been detected twice in this monitoring project at levels over 1.5 and two times the desired WQO. Copper often surpasses the criteria maximum concentration value, with the highest detections in September of 2023 and March of 2024, as is the case with many of the other sampling locations.



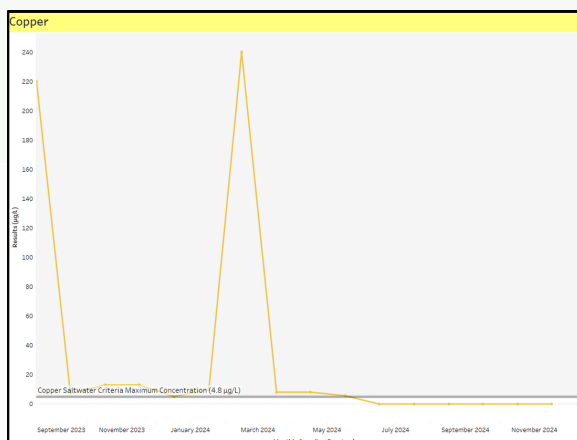
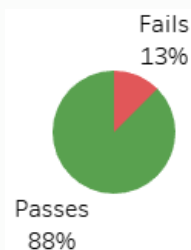
Enterococci percent passes/fails the water quality objective of 110 MPN/100 mL



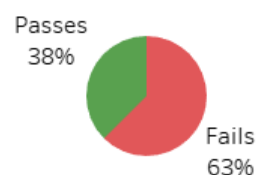
Total Phosphorus percent passes/fails the water quality objective value of 0.025 mg/L



Nitrate + Nitrite as Nitrogen percent passes/fails the water quality objective value of 0.68 mg/L

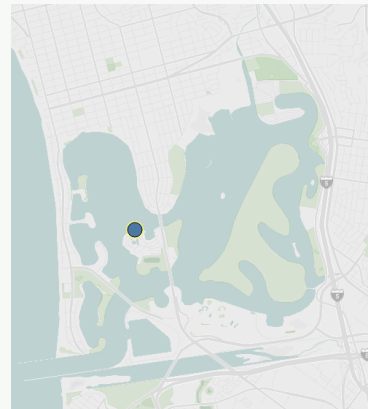


Copper percent passes/fails the criteria maximum concentration of 4.8 µg/L

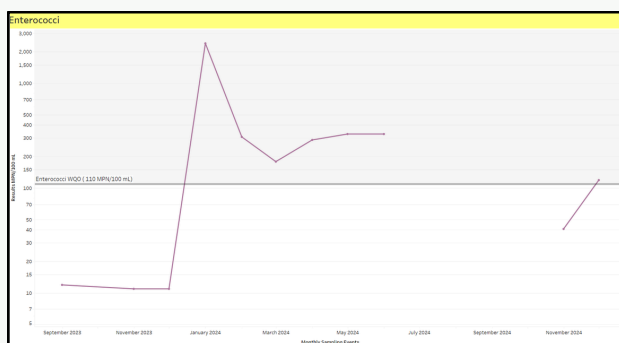


Paradise Point

Paradise Point is a 44-acre resort on Vacation Island in Mission Bay, and contains bungalows, swimming pools, beach access for guests, and a marina. A sample is taken within the resort on the northwest portion of the island.



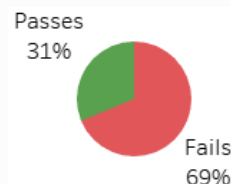
Enterococci bacteria have often been detected, primarily in the 2024 wet season, with the two highest detections surpassing the analytical equipment's capability for an accurate measurement. Total Phosphorus has frequently surpassed the desired WQO in both the wet season and into summer. Copper often surpasses the criteria maximum concentration value, with the highest detections in September of 2023 and March of 2024, as is the case with many of the other sampling locations. These spikes are unclear, although the latter is likely related to stormwater runoff. This sampling location includes the additional analyses for the metals barium and cadmium, which may be associated with the outfall from fireworks shows. Since their inclusion beginning in October 2024, there have been no detections.



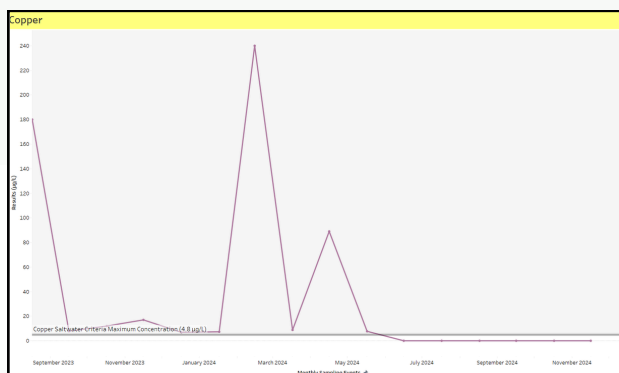
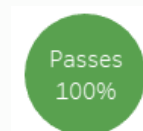
Enterococci percent passes/fails the water quality objective of 110 MPN/100 mL



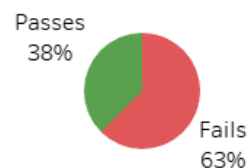
Total Phosphorus percent passes/fails the water quality objective value of 0.025 mg/L



Nitrate + Nitrite as Nitrogen percent passes/fails the water quality objective value of 0.68 mg/L

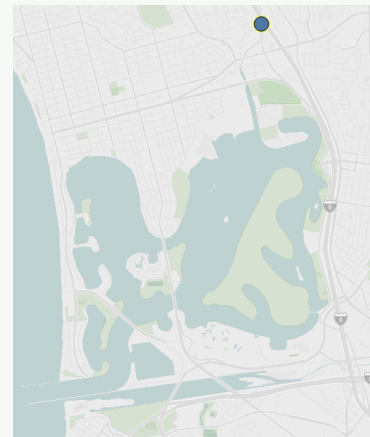


Copper percent passes/fails the criteria maximum concentration of 4.8 µg/L

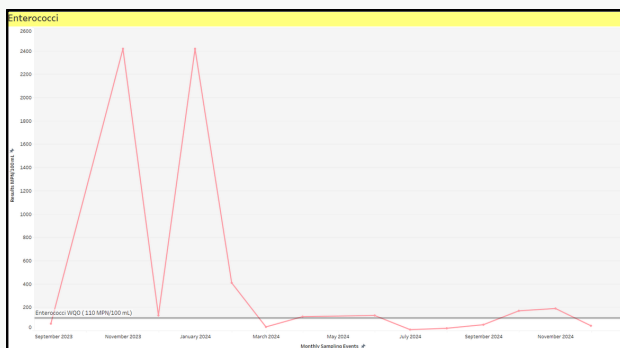


Rose Creek

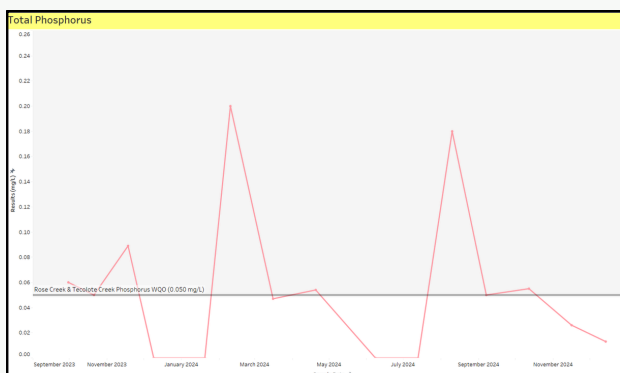
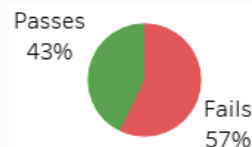
The sampling location in Rose Creek is approximately 1 mile (1.6 kilometer) upstream of where the creek enters Mission Bay. Unlike the other saline sampling locations, this sample is freshwater. However, enterococci fecal bacteria are used as an indicator for the potential presence of pathogens for Rose Creek as the salinity has been ≥ 1 ppt the majority of the calendar year.



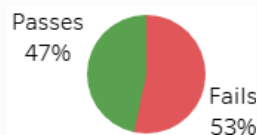
Rose Creek is an impaired system, primarily for high bacteria levels, that drains from a highly urbanized area of approximately 4.5 square miles (11.6 square kilometers). Throughout this monitoring project, enterococci bacteria detections have surpassed the WQO over 50% of the time, with the two highest detections following rain events. These detections surpassed the analytical equipment's capability for an accurate measurement. Total Phosphorus measurements often surpassed the WQO, with the highest following rain events towards the tail end of the wet season. The cause of the high measurement in August of 2024 is unclear but could be related to increased temperatures elevating phosphorus release from sediments and decaying organic matter. The criteria maximum concentration for copper in freshwater samples is higher than that of seawater. While Rose Creek exhibited a high detection in September of 2023, as did the other sampling locations, the threshold value has typically not been exceeded. The cause for the high detection in September is unclear.



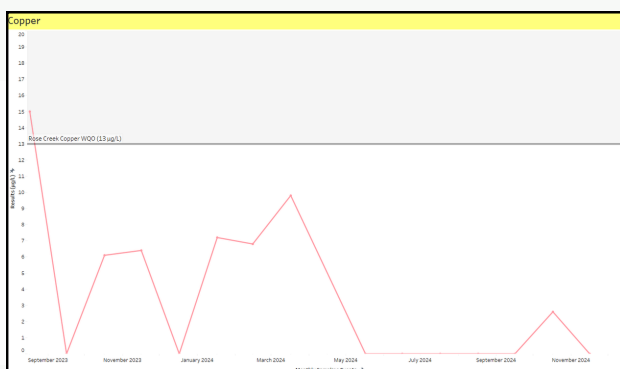
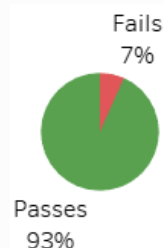
Enterococci percent passes/fails the water quality objective of 110 MPN/100 mL



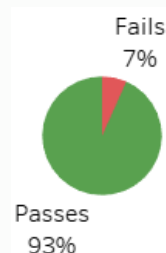
Total Phosphorus percent passes/fails the water quality objective value of 0.050 mg/L



Nitrate + Nitrite as Nitrogen percent passes/fails the water quality objective value of 0.68 mg/L



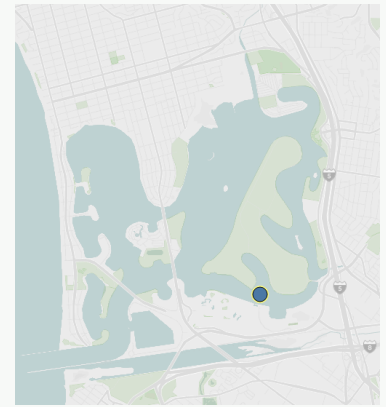
Copper percent passes/fails the criteria maximum concentration of 13 µg/L



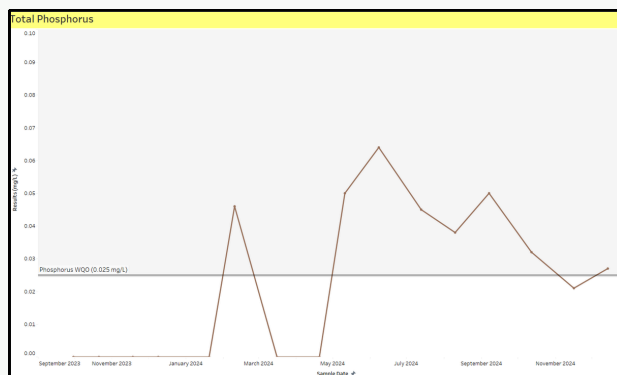
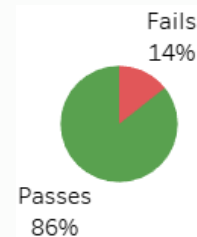
South Shores

This sample is collected mid-channel between South Shores Park and Fiesta Island near the SeaWorld fireworks barge.

The majority of the time that enterococci bacteria have been detected, the measured value has been below the WQO, and therefore passes the water quality standard. However, levels exceeded the objective twice in the 2024 wet season following substantial rain, with the highest detection surpassing the analytical equipment's capability for an accurate measurement. Total Phosphorus is split 50/50 in the pass/fail rate and exhibits a similar pattern of detection and concentration to the other mid-channel sampling location, Fiesta Sunset Beach. As with many sites, copper often exceeds the criteria maximum concentration. The September 2023 spike is unclear, while the high detection in March 2024 is likely related to stormwater runoff. This sampling location includes the additional analyses for the metals barium and cadmium, which may be associated with the outfall from fireworks shows. Since their inclusion beginning in October 2024, there has been only one detection of barium at this location, which is closest to a barge used to launch routine fireworks shows, but not at an alarmingly high level for seawater. There have been no detections of cadmium.



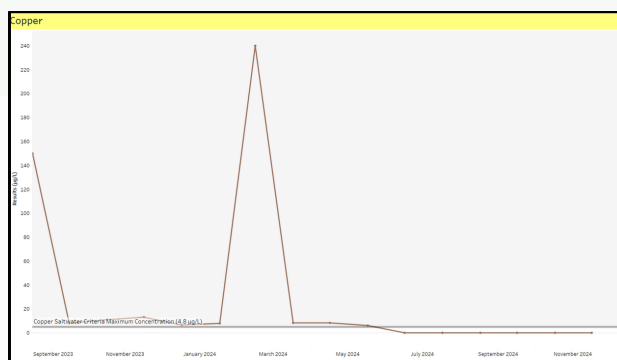
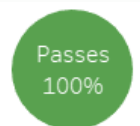
Enterococci percent passes/fails the water quality objective of 110 MPN/100 mL



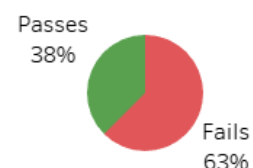
Total Phosphorus percent passes/fails the water quality objective value of 0.025 mg/L



Nitrate + Nitrite as Nitrogen percent passes/fails a desired water quality objective value of 0.68 mg/L

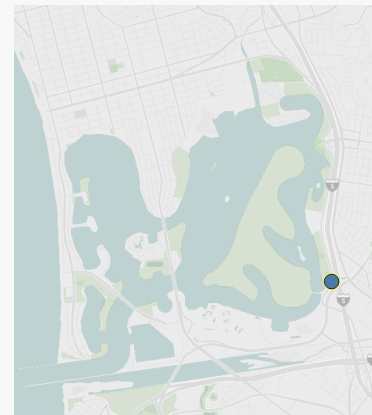


Copper percent passes/fails the criteria maximum concentration of 4.8 µg/L

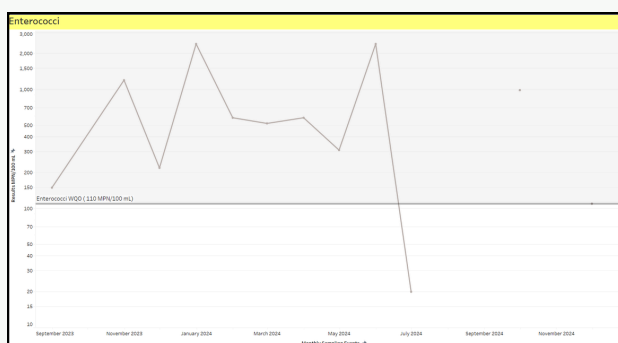


Tecolote Creek

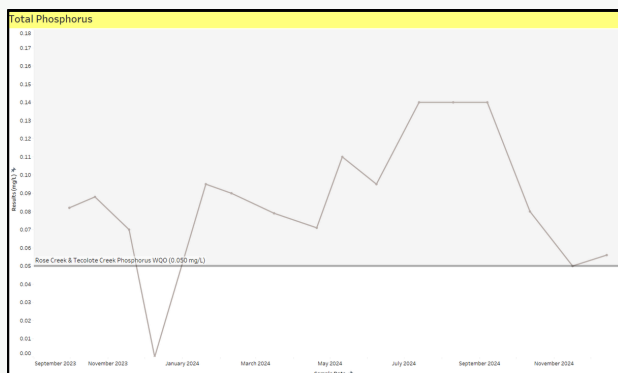
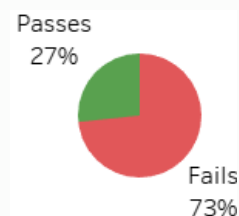
Tecolote creek is an impaired system, primarily for high bacteria levels, that drains from an urbanized area of approximately 9.7 square miles (25 square kilometers) into the southeastern portion of Mission Bay.



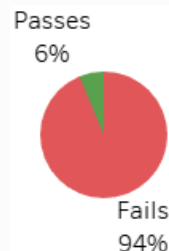
The majority of detections of the fecal bacteria enterococci in this monitoring project have substantially surpassed the WQO, at times exceeding the analytical equipment's capability of obtaining an accurate measurement, although there have been few detections in the Fall of 2024. Total phosphorus exceeds the desired WQO the majority of the time, likely due to a combination of urban runoff and phosphorus release from decaying organic matter in the sediment during warmer times of the year. As with many sites, copper often exceeds the criteria maximum concentration, with the largest detection in March 2024, likely related to stormwater runoff.



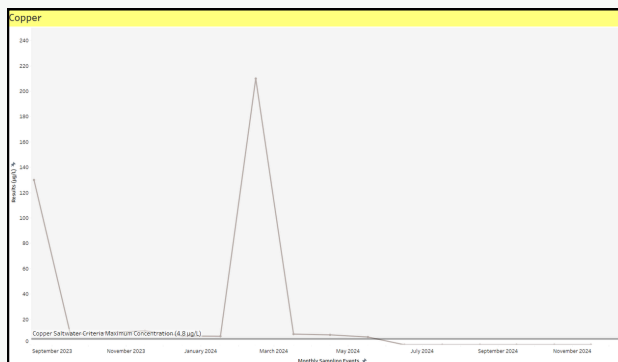
Enterococci percent passes/fails the water quality objective of 110 MPN/100 mL



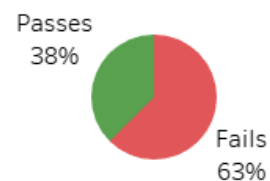
Total Phosphorus percent passes/fails the water quality objective value of 0.050 mg/L



Nitrate + Nitrite as Nitrogen percent passes/fails a desired water quality objective value of 0.68 mg/L



Copper percent passes/fails the criteria maximum concentration of 4.8 µg/L



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. Goal metrics are shown for September 2023 - December 2024.



Environmental Stewardship

- 30 sampling events
- Three in-person trainings, one virtual training given
- A network of more than 180 trained volunteers



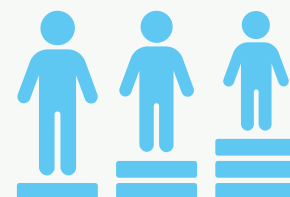
Workforce Development

- Technical, scientific, and professional skills gained
- Connected volunteers with other partner organizations
- Provided letters of recommendation to more than five volunteers



Equitable Access

- 151 stipends (\$50 each) given to volunteers
- Training materials and resources are given in both English and Spanish
- Facilitating carpooling for sampling days



Community Engagement

- As part of the ReWild Mission Bay Coalition we have engaged volunteers in public comment and advocacy opportunities
- Invited volunteers to other events such as beach cleanups and with other environmental non-profits
- Held a Volunteer Appreciation event



“Knowing that our efforts would be used to trigger action to address water quality issues made me feel connected to a larger effort to protect San Diego’s water quality.”
- Sabrina Olivas, joined in January 2024.

Future Directions and Call to Action

The program has secured funding to continue into 2025! As of November 2024, we have added sampling of the heavy metals barium and cadmium to three of our sampling locations. We continue to be involved with the ReWild Mission Bay coalition in support of restoring and expanding tidal salt marsh habitat in the bay, which will further improve water quality and make the Bay more resilient to sea level rise.

Some of our goals and other sampling parameters going forward include:

1 Increasing Community Engagement

- We plan to create more meetups and educational workshops for volunteers and community
- Expand our partnerships and reach out to other community members, residents, and tribal partners
- Obtain at least 100 responses on our Mission Bay User Recreation Survey, deployed in July 2024, to collect key insights on demographics, usage, and knowledge of water quality issues, and to better understand community concerns, optimize strategies for each, and dispel important health and safety information

2 PFAS Sampling (Forever Chemicals)

- These are persistent compounds found in many everyday products with significant long-term public health and ecological implications
- We will be sampling at least two locations in Mission Bay, once in the 2024 - 2025 wet season, and once in the 2025 dry season

3 HF183 sampling in partnership with Dr. Matt Verbyla's Safe WaTER Lab at San Diego State University (SDSU)

- Human-specific DNA marker for the detection of human fecal contamination – samples will be collected once in the 2024 - 2025 wet season and once in the 2025 dry season
- Detections of HF183 will better pinpoint sources of bacterial contamination in Mission Bay

4 Continued partnership with Dr. Elinne Becket's Lab at California State University San Marcos (CSUSM)

- Samples have been collected concurrently with SDCK since the Summer of 2024 for better understanding the microbial community present, and the interactions between the microbes, including DNA exchange
- Further analyzing spatiotemporal shifts throughout Mission Bay will aid in linking human activities and their impacts to the ecosystem's health

Are you a recreation user in Mission Bay? Submit a response to our survey at:

<https://forms.gle/A7e1zLLbhToCb48J8>



SCAN ME

Want to get involved? Sign up on our volunteer platform at: <https://sdcoastkeeper.galaxydigital.com/>



SCAN ME

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! This list includes some of our key partners and sponsors.



“My involvement with San Diego Coastkeeper has also led me to get involved with other environmental protection organizations like San Diego River Park Foundation and San Diego Bird Alliance to not just fret over environmental degradation, but instead to do something about it.” - Brock Roser, joined in September 2023



Key Partners

- [San Diego Bird Alliance](#)
- [UCSD Reserve System](#)
- [Dr. Matt Verbyla's Safe WaTER Lab- SDSU](#)
- [Dr. Elinne Beckett's lab- CSUSM](#)
- [ReWild Mission Bay Coalition members](#)

Sponsors

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- [Think Blue San Diego](#)
- Page Family Foundation

Product Sponsors

- Dr. Bronner's
- PB Coffee Cycle

Program Staff

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