

STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

MEETING DATE: September 14, 2022

Item: 8

Executive Officer's Report

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Unprecedented Harmful Algal Bloom Spreads Across San Francisco Bay (Rebecca Nordenholt and Bill Johnson)

The first report of a harmful algal bloom in San Francisco Bay, near Alameda, arrived in late July 2022. By early August, reports were coming from the Oakland Inner Harbor and Lake Merritt. By mid-August, similar reports were coming from Richmond, Belvedere, San Mateo, and Foster City, and the bloom was spreading into the open waters of the South Bay. The bloom has now expanded throughout most of the South Bay and has spread into

Central Bay and San Pablo Bay.

The California Department of Public Health tests for marine algal blooms and has identified the culprit as *Heterosigma akashiwo*, a harmful algal species associated with fish mortality in other coastal systems. According to Wikipedia, "akashiwo" is from the Japanese for "red tide." Early reports of the bloom in San Francisco Bay were not accompanied by reports of fish mortality. However, late August was met with many reports of dead fish including sturgeon, striped bass, sharks, bat rays, smelt, and anchovy in bloom-affected areas of the Bay. At Lake Merritt, which is connected to San Francisco Bay, reports suggest as many as 10,000 fish died in late August. Beyond the direct toxicity of the bloom to marine life, dissolved oxygen concentrations in the water column have declined as dead algae decays, further threatening aquatic life.

Heterosigma akashiwo is not known to cause human illness. Nonetheless, the Department of Public Health and Office of Environmental Health Hazard Assessment recommend that people and their pets avoid water contact during dense blooms or discoloration in the water. People exposed to some algal blooms may experience irritation of their eyes, skin, or respiratory systems. Based on this guidance, various agencies have posted signs near affected waters (e.g., Lake Merritt, Crown Beach, and Coyote Point Beach, among others) to caution the public to stay out of the water. The San Francisco Bay Regional Water Quality Control Board (The Water Board) publishes bloom reports and caution advisories on the [Harmful Algal Bloom Incident Reports Map](#).

Heterosigma akashiwo grows successfully across a range of conditions (temperature, salinity, and light levels). In San Francisco Bay, it has been detected with moderate frequency over the past 30 years, but generally at low abundance. Prior blooms have been much smaller than this one. San Francisco Bay's elevated nutrient concentrations likely contributed to this current bloom's spread, but since San Francisco Bay nutrient concentrations have long been elevated and *Heterosigma akashiwo* is somewhat common here, other factors likely triggered this specific event. The combination of factors responsible for the current bloom are the focus of intensive study.

Our Nutrient Management Strategy, a collaboration between researchers, regulators, and dischargers to study potential impacts of nutrients on San Francisco Bay, is funding the San Francisco Estuary Institute to study what causes major algal blooms, including harmful algal blooms, and to characterize this current bloom in particular. As required by

the San Francisco Bay Nutrients Watershed NPDES Permit, municipal wastewater treatment plants that discharge into San Francisco Bay collectively contribute \$2.2 million dollars per year to fund about 80 percent of the Nutrient Management Strategy budget. Continuing these investments will advance our scientific understanding and inform future decision-making. Over the past several years, these investments have already improved our capacity to monitor algal blooms as follows:

- Systematic collection of algal toxin data during recurring channel cruises
- Development of DNA-sequencing techniques for specific algal species
- Sampling for algal species of concern and their toxins during mapping surveys
- Measurement of algal toxins in bivalves at several locations

Ongoing field work will track this current bloom's progression, including related water quality impacts; characterize its response to biological, physical, and chemical factors; and identify the factors that contribute most strongly to its expansion and eventual end. Understanding these factors will be increasingly important with climate change because warming waters could lead to more frequent and severe algal blooms in the future.



***Heterosigma akashiwo* bloom in Oakland Estuary.**
Photo credit: Vanessa Zubkousky, California Department of Public Health



**Dead fish on Lake Merritt shoreline
Photo credit: Lorien Fono, Bay Area Clean Water Agencies**

Fuel Spill Cleanup at Hyde Street Harbor, San Francisco (Michelle Thompson)

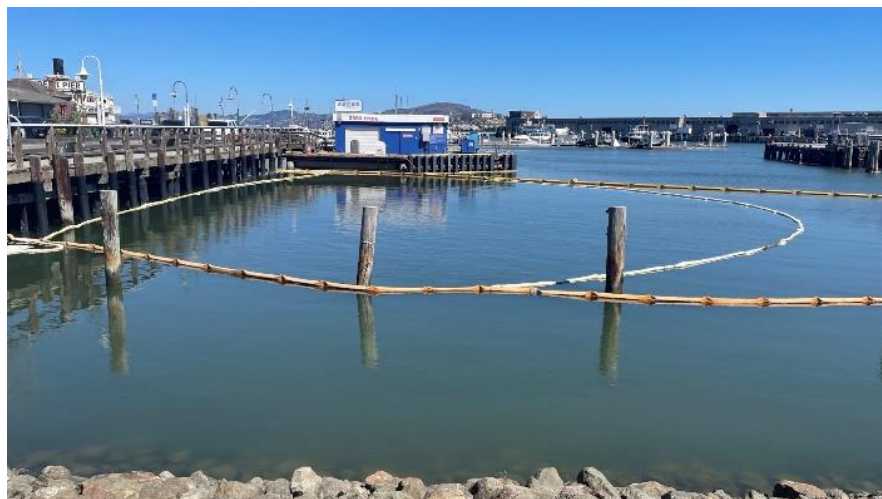
In April 2020, the Port of San Francisco (Port) reported a diesel fuel sheen at the Hyde Street Harbor. The Port identified the source as a leak of R-99 diesel fuel (also referred to as renewable diesel) from the fueling station pipeline at the harbor. The Port owns the property and leases fueling station operations to Pilot Thomas Logistics, LLC, which also owns the pipeline.

When the spill was first reported, the U.S. Environmental Protection Agency provided emergency response oversight until July 2022. At that point, the Water Board became the lead regulatory agency to oversee completion of long-term cleanup action. Because the pipeline runs underground near the Harbor shoreline, the fuel spill has also saturated shoreline soil, sediment, and groundwater that can continue to threaten beneficial uses of the Harbor.

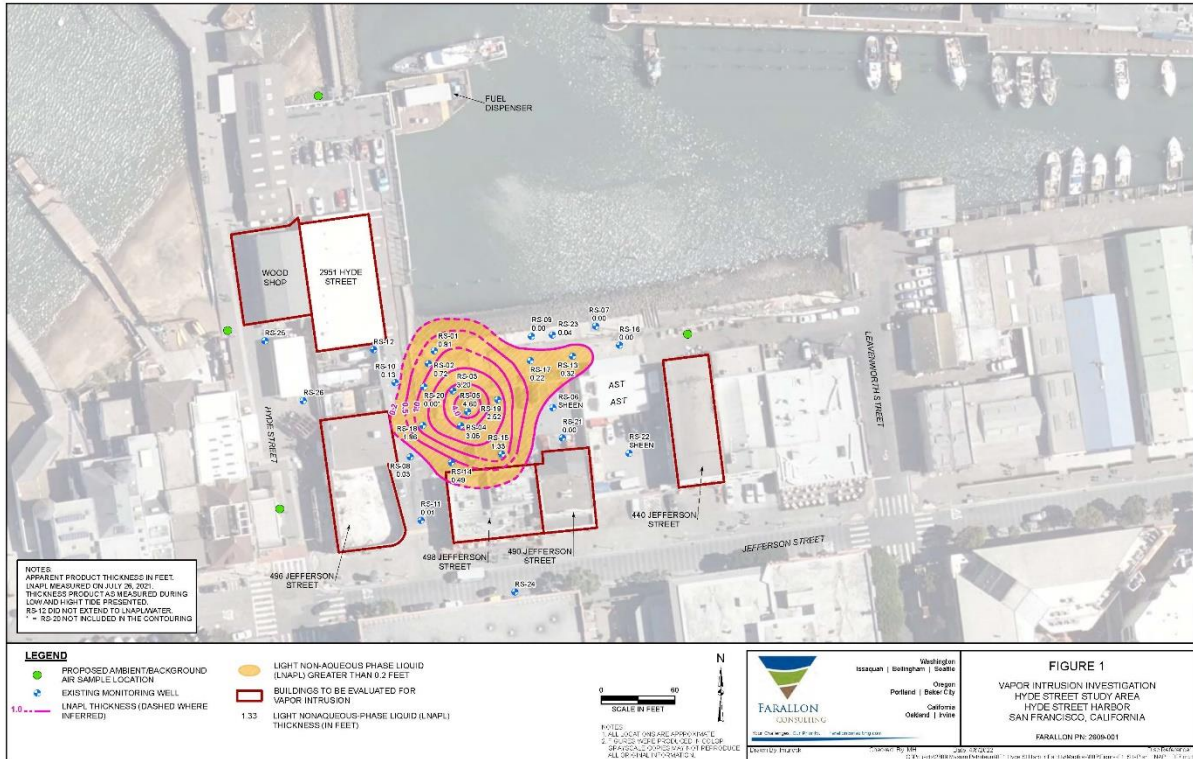
Initial emergency response actions in 2020 included installation of booms and absorbent pads to contain residual floating product (see photo below). These booms remain in place today. Following product recovery efforts from the harbor, recovery wells were installed in the shoreline in Autumn of 2021. To date, the product recovery system using these wells has removed 246 gallons of R-99 diesel and 4,605 gallons of oily water. The exact volume of product spilled from the pipeline is unknown.

In April 2022, the San Francisco Bay Regional Water Quality Control Board required the Port and Pilot Thomas to submit a cleanup plan to protect and restore water quality and beneficial uses of the Harbor, including aquatic and benthic organisms, and to protect the health of building occupants that could be exposed to volatile hydrocarbon constituents through vapor intrusion.

The area includes several commercially occupied buildings, including a restaurant. The Water Board has been in direct contact with the business owners, tenants, and representatives of the Port and Pilot Thomas regarding the scope and schedule for this project. The cleanup plan is expected by the end of November 2022.



.Booms in Hyde Street Harbor



Contours of diesel fuel in groundwater next to the Harbor

Lower Alameda Creek Restoration Project (Brian Wines)

In July, the Water Board issued a Clean Water Act section 401 Water Quality certification to the Alameda County Flood Control and Water Conservation District (District) for the first two phases of the Lower Alameda Creek Restoration Project (Project). The Project will modify the trapezoidal, flat bottom of Lower Alameda Creek (Creek) to provide efficient sediment transport and a more sustainable migratory channel for federally listed California Central Coast (CCC) steelhead (*Oncorhynchus mykiss*). Enhancing sediment transport in the Creek will reduce the frequency of maintenance desilting in the Creek and enhance the delivery of sediment to the Bay, which will help to sustain tidal marshes at the mouth of the Creek.

Project Background

Alameda Creek historically flowed across the Niles Cone alluvial fan after exiting Niles Canyon in the East Bay Hills. In response to severe flooding in the 1950s, the U.S. Army Corp of Engineers constructed the Alameda Creek Federal Flood Control Project (Federal Project) in the early 1970s. The Federal Project re-routed and channelized the Creek and confined it between levees. The Flood Control Channel is also referred to as Lower Alameda Creek.

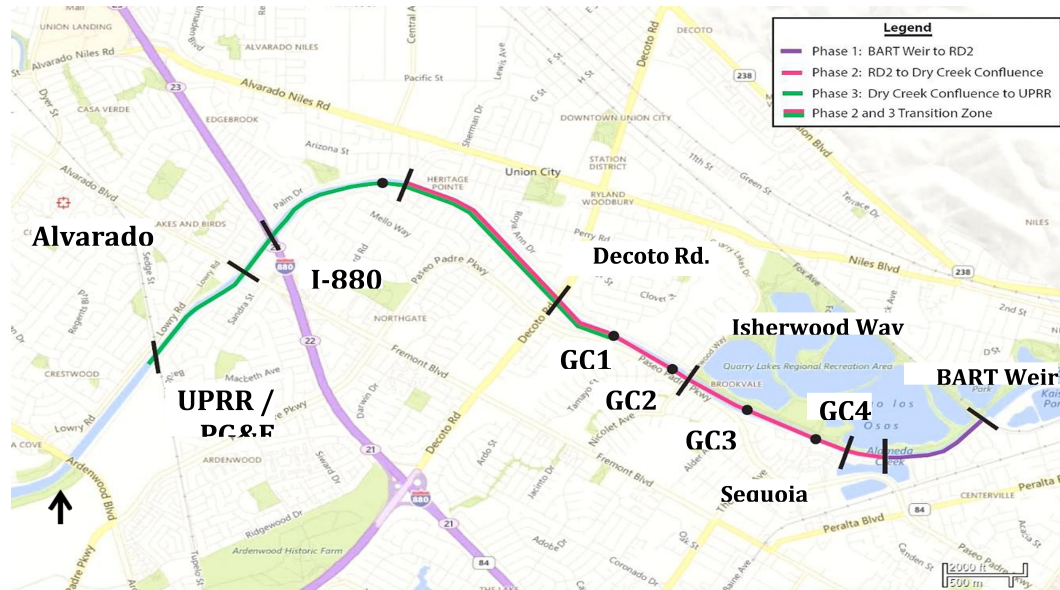
The Federal Project was designed within the context and the constraints of the time and focused on the conveyance of flood flows. Sediment transport and fish habitat were not considered in the design of the Federal Project. Prior to the Federal Project, the Creek supported a significant CCC steelhead run. The Federal Project removed riparian habitat essential to steelhead survival during spawning migrations and introduced barriers to fish passage. In addition, no consideration was given to designing a channel that was in fluvial geomorphic equilibrium with the watershed.

Since construction of the Federal Project, ongoing sediment deposition has required the District to conduct periodic dredging to maintain flood flow capacity. Because the Federal Project was not designed to be in geomorphic equilibrium with the watershed, some channel reaches have experienced significant incision. To control the incision, several large, concrete grade control structures were constructed across the bottom of the channel, but the inclusion of these structures in the channel has created additional barriers to fish passage. Between the grade control structures, channels are continuing to incise and threaten to undermine the grade control structures.

Project Implementation

The Project will be implemented in phases as depicted on the map below. The Certification issued to the District in July covered the first two phases. Phase 1 extends downstream from the BART weir to Rubber Dam #2 (RD2). Phase 2 extends downstream from RD2 to 0.7 miles downstream of Decoto Road. The future Phase 3 extends from the Dry Creek confluence to 600 feet downstream of the Union Pacific Railroad (UPRR) crossing, with some overlapping and reworking of the downstream Phase 2 channel to enable a better match of final low flow channel grades between the phases. Phase 3 is currently unfunded, but preliminary design and environmental work have been completed. A future Phase 4 will extend from just upstream of the

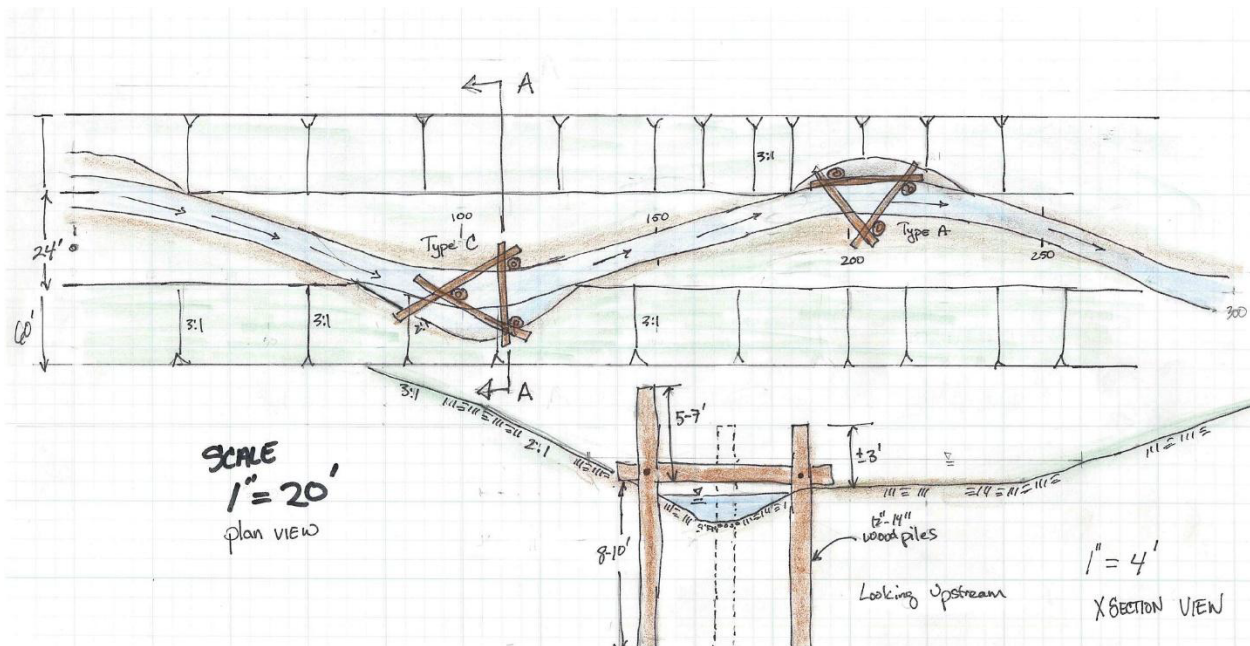
Ardenwood Boulevard crossing of the Creek to the downstream outlet in San Francisco Bay. Phase 4 planning, engineering, and environmental work is being initiated in cooperation with the U.S. Fish and Wildlife Service and State Coastal Conservancy, and includes coordination with the Eden Landing Project, which is a part of the South Bay Salt Pond Restoration Project. Phases 3 and 4 are expected to undergo final design and construction within the next 5 to 10 years.



The Project will modify the bottom of the existing 230-foot wide flood control channel by excavating a meandering, trapezoidal sediment transport channel. Concentrating lower flows in the sediment transport channel will provide the energy necessary to move sediment downstream. The sediment transport channel will closely follow the alignment of an existing low flow channel that has naturally established within the flood control channel; this channel appears to be in geomorphic equilibrium with the watershed.

Within the sediment transport channel's 24-foot-wide bottom width, a fish passage channel will be excavated. Existing grade control structures will be modified to remove impediments to fish passage and to accommodate the sediment transport and fish passage channels. The small cross-section of the fish passage channel will provide sufficient depth for fish passage during periods of low flow in the Creek.

To assist fish migration, velocity breaks, pools, and habitat enhancement structures are incorporated into the design of the fish passage channel. These enhancements include the installation of log habitat structures that are designed to provide localized scour to create pool habitat. Even if the fish migration channel is periodically inundated with sediment moving downstream, the sediment transport channel will provide significantly improved fish passage conditions compared to the existing channel.



Example Fish Passage Enhancement Structure

The Creek channel configuration and constructed habitat features are designed to allow the channel to evolve over time into a geomorphically sustainable stream channel that balances flood control, channel maintenance requirements, sediment transport, and aquatic habitat improvements. The channel is expected to adjust slightly within the first few years as the fish passage channel adjusts and finds a stable equilibrium. The District will monitor the modified channel to confirm its overall stability and to track the persistence of the fish passage channel.

Enforcement Actions (Brian Thompson and Jessica Watkins)

The following tables show the proposed and settled enforcement actions since August's report. As the proposed settlements are pending and could come before the Water Board, ex parte communications are not allowed. Please refer to the [Pending Enforcement Liabilities and Penalties](#) webpage for more information on the details of the alleged violations and proposed settlements.

Proposed Settlements

The following are noticed for a 30-day public comment period. If no significant comment is received by the deadline, the Executive Officer will sign an order implementing the settlement.

| Discharger | Violation(s) | Proposed Penalty | Comment Deadline |
|---|-----------------------------|-------------------------|-------------------------|
| Mission Rock Horizontal Sub (Phase 1) LLC | Discharge limit violations. | \$24,000 | September 12, 2022 |
| North Marin Water District | Discharge limit violations. | \$12,000 ¹ | September 12, 2022 |
| Sewerage Agency of Southern Marin | Discharge limit violations. | \$9,000 | September 12, 2022 |

1 The \$12,000 penalty would supplement Regional Monitoring Program studies. The Regional Monitoring Program is managed by the San Francisco Estuary Institute to collect water quality information in support of management decisions to restore and protect beneficial uses of the Region's waters.

Settled Actions

On behalf of the Board, Assistant Executive Officer Lisa Horowitz McCann approved the following:

| Discharger | Violation(s) | Imposed Penalty | Supplemental Environmental Project |
|-------------------------------------|---|------------------------|---|
| East Bay Municipal Utility District | Unauthorized discharge of 3,795,500 gallons of partially treated and chlorinated wastewater to waters of the United States. | \$816,000 | \$408,000 ¹ |

1 The penalty includes \$408,000 to fund a Regional Monitoring Program project named "San Francisco Bay Sediment Transport and Fate Modeling."

401 Water Quality Certification Applications Received (Abigail Smith)

The table below lists those applications received for Clean Water Act section 401 water quality certification from July 19 through August 23, 2022. A check mark in the right-hand column indicates a project with work that may be in BCDC jurisdiction.

| Project Name | City/Location | County | May have BCDC Jurisdiction |
|--|----------------------|---------------|-----------------------------------|
| Croak Road Ditch - Drainage Maintenance Project | Dublin | Alameda | |
| Vargas Plateau Pond 005-VPPND005 Restoration | Fremont | Alameda | |
| Vargas Plateau Pond 006-VPPND006 Restoration | Fremont | Alameda | |
| LogistiCenter at Enterprise | Hayward | Alameda | ✓ |
| Collier Canyon Remediation and Stabilization at Allen Property Reach | Livermore | Alameda | |
| SFPP LS16 SWML Integrity Digs CA-164 and CA-165 | Sunol | Alameda | |
| Shell Pond Swmu 4.18 Culvert Removal | Bay Point | Contra Costa | ✓ |
| Derelict Barge Removal– Sandpiper | Unincorporated | Contra Costa | ✓ |
| Ignacio Mare Island Phase 2 Tower Replacement | Novato | Marin | ✓ |
| Loch Lomond Marina Pile Replacement Project | San Rafael | Marin | ✓ |
| Angel Island Tiburon Ferry Piling Replacement | Tiburon | Marin | ✓ |
| Ocean Beach Climate Change Adaptation | San Francisco | San Francisco | |
| Pier 41 Fishing Pier Pile Repair and Maintenance | San Francisco | San Francisco | ✓ |