

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

RESPONSE TO WRITTEN COMMENTS

on the Tentative Order for
discharge of residual firework pollutants from public fireworks displays to surface waters
San Francisco Bay Region

The Regional Water Board received written comments from San Francisco Bay Keeper on March 13, 2026, regarding a draft NPDES permit (tentative order) distributed for public comment on February 11, 2026.

Regional Water Board staff has summarized all the comments, shown below in *italics* (paraphrased for brevity), and followed each comment with staff's response. For the full content and context of the comments, refer to the comment letter. To request a copy of the comment letter, please contact Marcos De la Cruz at marcos.delacruz@waterboards.ca.gov or 510-622-2365.

All revisions to the tentative order are shown with underline text for additions and strikethrough ~~text~~ for deletions. This document also contains staff-initiated revisions.

Comment 1: *Fact Sheet Table F-2, which summarizes the number of fireworks displays and waste collected each year for displays covered under the current permit between 2020 and 2024, must be revised to clearly reflect what is reported in discharger Fireworks Display Reports. According to those monitoring reports, most collected waste is expressed as wet weight instead of the dry weights in Table F-2. Additionally, Table F-2 does not include waste collection data from areas other than receiving waters, despite this information being available in the monitoring reports, thus minimizing the total amount of waste generated and collected.*

Response: We agree. We revised Attachment F Table F-2 to distinguish dry weights from wet weights for the waste collected and reported by the discharger from both receiving waters and non-receiving water areas. We also added recent monitoring data for 2025 we received after the Tentative Order was distributed for public comment, as follows on the next page. Finally, we revised the Fireworks Display Report Form (Attachment C section 4 of the Tentative Order) to standardize more detailed reporting for waste collection so data can be consistently summarized in the future (see response to Comment 2).

Table F-2. Summary of Fireworks Discharges

Year	Number of Fireworks Displays	Total Ordnance (lbs)	Collected Waste (lbs) [1]
2020 [2]	0	0	0
2021	11	8,254 ₃	169 ₅₉
2022	23	13,444 ₀₇	493 ₂₀₀ [3]
2023	25	11,237 ₆	333 ₂₈ [4]
2024	15	9,228	282 ₁ [5]
2025	10	7,674	706 [6]

Footnotes:

- [1] Waste collected from receiving waters. Weights for 2021 and 2022 are expressed as dry weight. Weights for 2023-2025 are expressed as wet weight.
- [2] No Dischargers were enrolled in 2020.
- [3] In 2022, the sole Discharger enrolled in the previous order also reported a total collection weight of 72 lbs from onshore areas that included fireworks debris and pre-existing trash.
- [4] In 2023, the sole Discharger enrolled in the previous order also reported a total collection weight of 7.5 pounds from onshore areas that included firework debris and pre-existing trash. The Discharger also provided photographic evidence of receiving water waste collection for seven fireworks display events without reporting weights.
- [5] In 2024, the sole Discharger enrolled in the previous order reported a total debris collection weight of 3,420 pounds from non-receiving water areas. This included debris from barge decks, cardboard shipping cartons, and multi-shot carcasses.
- [6] In 2025, the sole Discharger enrolled in the previous order reported a total collection weight of 7.5 pounds from non-receiving water areas for a single firework display event. This included pre-existing trash.

Comment 2: *In 2024, the sole discharger enrolled under the permit reported waste collection data from barge decks consisting of fireworks debris, spent multi-shot devices, and cardboard shipping that represented about a third of the total ordnance used in fireworks displays. However, section 4 of the Fireworks Display Report Form (Attachment C of the Tentative Order) requires waste collection data from only receiving waters and non-receiving water areas. The latter should be broken down to more specific categories to allow dischargers to report on waste collected from barge decks and adjacent piers or land. This would allow better data characterization of waste collected by dischargers because it can provide important information regarding the effectiveness of best management practices.*

Response: We agree. We revised Attachment C section 4 of the Tentative Order to detail the location and type of waste collected after conducting fireworks displays. We also revised Attachment C section 4 to detail the initial gross weight of firework material placed at the firing site before conducting the fireworks display as follows on the next page.

4. FIREWORKS INFORMATION

Number of Aerial Fireworks Used:		Maximum Shell Size Used (inches):	
Number of Low Level Fireworks Used:		Type (check all that apply):	<input type="checkbox"/> Mines <input type="checkbox"/> Romans <input type="checkbox"/> Comets <input type="checkbox"/> Cakes
Number of Set Piece Fireworks:		Type (check all that apply):	<input type="checkbox"/> Sets <input type="checkbox"/> Devices
<p><u>Gross Explosive Weight</u> : Estimate the total weight of fireworks material subject to dispersal located at the fireworks launch area immediately before conducting the fireworks display. This may include weight of fuses, cardboard or paper casings [i.e., shell], and next explosive weight, but exclude other materials such as mortar tubes or racks).</p>			
<u>Gross Explosive Weight (lbs):</u>			
<u>Net Explosive Weight (lbs) (see definition in Attachment A)</u>			
Were alternative fireworks used?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
<p>Were the entire firing range (including the fireworks launching area and adjacent shorelines, quays, docks, and fireworks fallout area), barges (if used), and adjacent surface waters inspected and cleaned of particulate matter and debris from ignited and un-ignited pyrotechnic material within 24 hours following the display?</p>			
<input type="checkbox"/> Yes <input type="checkbox"/> No (if No, explain):			
<p><u>Were there unexpected conditions (e.g., adverse weather) that delayed post-firework display cleanup operations?</u></p>			
<input type="checkbox"/> Yes (if Yes, explain): <input type="checkbox"/> No			
Cleanup Date (mm/dd/yyyy):		Cleanup Start Time (hh:mm):	Cleanup End Time (hh:mm)
<p><u>Firework-Related Waste Collection</u></p>			

<u>Firework-related waste collected from receiving water (lbs, wet weight):</u>		<u>Dry Weight, if any (lbs):</u>	
Waste Collected from areas other than receiving water (lbs, wet weight) <u>Firework-related waste collected from barge decks</u>	-	<u>Dry Weight (lbs):</u>	
<u>Firework-related waste collected from adjacent land and/or piers</u>	-	<u>Dry weight (lbs):</u>	
<u>Total Weight (lbs, wet weight):</u>		<u>Total Weight (lbs, dry weight):</u>	
<u>Non-Firework-Related Waste Collection (e.g., pre-existing trash)</u>			
<u>Non-firework-related waste collected from receiving water (lbs, wet weight):</u>		<u>Dry Weight, if any (lbs):</u>	
<u>Non-firework-related waste collected from barge decks</u>	-	<u>Dry weight (lbs):</u>	
<u>Non-firework-related waste collected from adjacent land and/or piers</u>	-	<u>Dry weight (lbs):</u>	
<u>Total Weight (lbs, wet weight):</u>		<u>Total Weight (lbs, dry weight):</u>	

Comment 3: *The Tentative Order requires post-fireworks display cleanup operations to occur as soon as practicable but within 24 hours following a display, presumably to account for safety conditions that may pose a risk to people conducting cleanup operations. However, most cleanup operations conducted under the previous order occurred within 1 hour of the display event — the exception being for two fireworks displays at Foster City Lagoon where cleanup occurred the following morning. Did the Regional Water Board inquire about why the Foster City Lagoon cleanup events were delayed? Since most cleanup operations were conducted immediately after the fireworks displays, it appears that allowing delayed cleanup operations beyond 1 hour due to safety concerns is unnecessary. Therefore, the Tentative Order must be revised to require cleanup operations within 1 hour after a fireworks display to maximize waste collection; if there is a safety concern, the Tentative Order should allow cleanup to be delayed to within 24 hours only if the discharger submits a safety-related explanation.*

Response: We disagree. Section 6.3.3.8 of the Tentative Order requires dischargers to conduct cleanup operations “as soon as practicable.” Therefore, any delay in cleanup operations would be because cleanup was not practicable, such as for safety reasons. We continue to allow for up to 24 hours for post-display cleanup operations because requiring cleanup to be within 1 hour of a display could inherently pressure dischargers

to forego safety precautions. Within 1 hour of most firework displays, conditions are dark, and unspent or partially-ignited fireworks could still be active, hot, or unstable. We did not inquire further on Foster City Lagoon post-display cleanup operations because the discharger, who has a history of cleaning up as soon as practicable, complied with the current permit and cleaned up within 24 hours. Nevertheless, understanding specific causes for cleanup delays will inform future management of post-display cleanup operations. Therefore, we revised Attachment C section 4 to include reporting conditions, such as safety concerns, that could delay cleanup operations. See Response to Comment 2.

Comment 4: *Fact Sheet Table F-1 (Firework Chemical Constituents) lists known chemicals used in fireworks, whereas Fact Sheet Table F-5 (Reasonable Potential Analysis – Water Quality), which relies on data collected by SeaWorld in Mission Bay in San Diego, lists a more limited set of constituents without adequate justification. The Regional Water Board should explain why these lists are not the same. If the reason is because SeaWorld did not analyze its water quality samples for the full suite of constituents used in fireworks, then the Regional Water Board should not rely on that data to support a reasonable potential analysis for the Fireworks General Permit. The Tentative Order should be revised to require dischargers to collect water quality samples for the full suite of chemical constituents used in fireworks.*

Response: We disagree. Table F-1 lists chemical elements that are used in fireworks. Many of those elements, such as carbon, calcium, cesium, lithium, magnesium, sodium, and sulfur, do not have water quality criteria, so monitoring data for those elements would not inform whether fireworks displays have reasonable potential to exceed numeric water quality criteria. As stated in section 4.3.3.3 of the Fact Sheet, Table F-5 lists pollutants known to be in fireworks and from which receiving water data are available. These data demonstrate that the chemical load from fireworks displays have a low impact on water quality (see response to Comment 5), and data for chemicals from which there are no numeric water quality would be consistent with existing data (i.e., the impact on water quality is low). Furthermore, the chemicals and other debris discharged from fireworks displays would not exceed narrative water-quality objectives, as described in Fact Sheet section 4.3.3.6. Except for chlorine, which is not discharged as free chlorine, all constituents in Table F-1 with water quality criteria were assessed in Table F-5. Table F-5 also includes some constituents from Table F-1 without water quality criteria because receiving water data were available. Therefore, the reasonable potential analysis is sufficient, and it is unnecessary to require fireworks vendors, who are untrained in water quality sampling, to conduct additional water quality monitoring. See also response to Comment 5, below.

Comment 5: *It is unclear whether the Tentative Order's use of SeaWorld's monitoring data from Mission Bay in San Diego is appropriate for evaluating water quality impacts for receiving water bodies in the San Francisco Bay Region, such as Lake Chabot, McCovey Cove, Foster City Lagoon, and others. For example, Lake Chabot, used for fireworks displays by Six Flags Discovery Kingdom, is a freshwater body that does not experience tidal mixing, unlike that of Mission Bay. Furthermore, the Regional Water*

Board should clarify whether fireworks displays may continue in Lake Chabot in the future.

Response: The Tentative Order's use of SeaWorld's monitoring data from Mission Bay is appropriate. While Mission Bay is a tidally influenced marine embayment and Lake Chabot is a freshwater reservoir that does not experience tidal mixing, SeaWorld's monitoring data is still appropriate to assess water quality impacts from fireworks displays. SeaWorld's data is not intended to demonstrate how receiving waters with similar hydrodynamic conditions as Mission Bay assimilate fireworks pollutants. Rather, SeaWorld's data demonstrates that the pollutant load from firework discharges is low and therefore has a low impact on receiving waters, regardless of the hydrodynamic conditions of the receiving waters.

U.S. EPA's *Technical Support Document for Water Quality-based Toxics Control* allows the use of best available information in the absence of discharger-specific data to assess pollutant discharges and their impacts on receiving waters. In the absence of site-specific monitoring data for each fireworks display location, the Regional Water Board relied on SeaWorld's data as the best available information documenting water quality conditions associated with fireworks displays.

The monitoring conducted by SeaWorld measured chemical concentrations commonly associated with fireworks (e.g., copper, barium, and strontium) in the receiving water before and after fireworks events. Importantly, the results indicated that changes in receiving water concentrations for these constituents were minimal and remained below applicable water quality criteria shortly after the events. These findings demonstrated that the total chemical load entering the water from fireworks displays is relatively small and are consistent with what we know of the fate of chemicals in fireworks: most of the load combusts into gases and light ash, diffuse, and disperse. While hydrodynamic conditions such as tidal mixing may influence the rate at which constituents disperse or dilute, SeaWorld's monitoring data provide useful information regarding the potential magnitude and persistence of fireworks-related pollutants in receiving waters.

Furthermore, the fireworks displays that would be authorized under the Tentative Order are short-duration and infrequent — less frequent than the shows by SeaWorld in Mission Bay; as explained in Fact sheet section 4.3.3.1, SeaWorld's data is representative of the worst-case conditions for the San Francisco Bay Region. The Tentative Order would also require implementation of best management practices, including debris recovery, to minimize pollutant inputs. Taken together, the available monitoring data, the limited duration and frequency of fireworks displays, and the required best management practices support the Regional Water Board's determination that the permitted activity is not expected to cause or contribute to exceedances of applicable water quality standards and additional water quality sampling is not necessary.

Finally, Six Flags Discovery Kingdom no longer conducts fireworks displays at Lake Chabot. However, given the conclusions from the available data described above,

dischargers may continue to perform fireworks displays over this receiving water subject to the requirements of the Tentative Order.

Comment 6: The Regional Water Board should revise the Tentative Order to explain the impact of trash contributions from fireworks displays on San Francisco Bay and how the Tentative Order reduces these contributions because San Francisco Bay is impaired by trash.

Response: We agree. We revised Attachment F section 3.4 of the Tentative Order as follows:

On December 13, 2024, U.S. EPA approved a revised list of impaired waters pursuant to CWA section 303(d), which requires identification of specific water bodies where it is expected that water quality standards will not be met after implementation of technology-based effluent limitations on point sources. This list includes San Francisco Bay as a waterbody impaired by mercury, PCBs, selenium, chlordane, DDT, dieldrin, dioxin and furan compounds, trash, and invasive species... TMDLs establish wasteload allocations for point sources and load allocations for nonpoint sources and are established to achieve water quality standards.

The SIP requires effluent limitations for all 303(d)-listed pollutants to be consistent with TMDLs and associated wasteload allocations... A TMDL for diazinon and pesticide-related toxicity in San Francisco Bay Area urban creeks became effective May 21, 2007, which does not contain wasteload allocations for residual fireworks discharges because they are not known to be sources of diazinon or pesticide-related toxicity. Finally, residual fireworks discharges are a source of trash because fireworks contain paper or cardboard casings and fuses that are subject to disintegration and dispersal upon detonation. ~~Additionally, d~~Discharges regulated through this Order are not expected to contribute to any water quality impairment, including from trash, because the requirements of Provision ~~5-4~~ 6.3 (Best Management Practices) of this Order will sufficiently control potential pollutant discharges.