

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
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REVISED TENTATIVE ORDER R2-2023-00XX

**AMENDMENT OF WASTE DISCHARGE REQUIREMENTS
FOR MUNICIPAL DISCHARGERS TO UPDATE TOTAL RESIDUAL CHLORINE AND
OIL AND GREASE REQUIREMENTS**

WHEREAS the California Regional Water Quality Control Board, San Francisco Bay Region (Regional Water Board), finds the following:

1. The Regional Water Board issued waste discharge requirements that serve as National Pollutant Discharge Elimination System (NPDES) permits for the dischargers listed in Table 1 (Dischargers). These permits authorize the Dischargers to discharge treated wastewater from their respective facilities to waters of the United States under specific conditions.
2. On November 18, 2020, the Regional Water Board adopted Resolution R2-2020-0031 and amended the Basin Plan to remove the oil and grease limits for treatment facilities that provide secondary or advanced secondary treatment. Resolution R2-2020-0031 also amended the Basin Plan to eliminate the 0.0 mg/L chlorine effluent limit, and to establish numeric water quality objectives for chlorine and a process to implement the new objectives. On October 12, 2021, the Regional Water Board adopted a blanket permit amendment (Order R2-2021-0019) to implement Resolution R2-2020-0031 upon U.S. EPA approval of the chlorine-related Basin Plan changes. On June 5, 2023, the Regional Water Board withdrew its request for U.S. EPA approval of the chlorine water quality objectives so the requirements of Order R2-2021-0019 will not go into effect. This new Order replaces Order R2-2021-0019 and amends the orders in Table 1 to update their chlorine and oil and grease requirements based on existing Regional Water Board authority.
3. The Regional Water Board developed this Order's requirements based on available information. The Fact Sheet attached to this Order as Attachment F contains background information and rationale for this Order's requirements. It is hereby incorporated into this Order and therefore constitutes part of the findings for this Order.
4. This Order is exempt from the provisions of the California Environmental Quality Act pursuant to California Water Code section 13389.
5. The Regional Water Board notified the Dischargers and interested agencies and persons of its intent to consider adoption of this Order, and provided an opportunity to submit written comments.
6. In a public meeting, the Regional Water Board heard and considered all comments pertaining to this Order.

Table 1. Discharger Information

Discharger	NPDES Permit	Primary Order	Primary Order Expiration Date	Order Contains Oil and Grease Limits	Order Contains Chlorine Limits
Benicia, City of	CA0038091	R2-2019-0034	1/31/2025	X	X
Burlingame, City of, and North Bayside System Unit	CA0037788	R2-2023-0010	12/31/2028		X
Calistoga, City of	CA0037966	R2-2022-0010	4/30/2027		X
Central Marin Sanitation Agency	CA0038628	R2-2023-0006	6/30/2028		X
Crockett Community Services District, Port Costa Sanitary Dept.	CA0037885	R2-2018-0053	1/31/2024	X	X
Delta Diablo	CA0038547	R2-2019-0035	1/31/2025	X	X
East Bay Dischargers Authority	CA0037869	R2-2022-0023	8/31/2027		X
Union Sanitary District (Wet Weather Outfall)	CA0038733	R2-2020-0027	11/30/2025	X	X
Dublin San Ramon Services District	CA0037613	R2-2022-0024	8/31/2027		X
Livermore, City of	CA0038008	R2-2022-0025	8/31/2027		X
Livermore-Amador Valley Water Management Agency (Wet Weather Outfall)	CA0038679	R2-2021-0007	6/30/2026	X	X
Oro Loma and Castro Valley Sanitary Districts (Wet Weather Outfall)	CA0037559	R2-2018-0010	12/31/2023	X	X
East Bay Municipal Utility District	CA0037702	R2-2020-0024	10/31/2025	X	X
Fairfield-Suisun Sewer District	CA0038024	R2-2020-0012	4/30/2025	X	
Las Gallinas Valley Sanitary District	CA0037851	R2-2020-0022	8/31/2025	X	X
Marin County (Paradise Cove), Sanitary District No. 5 of	CA0037427	R2-2021-0017	11/30/2026	X	X
Marin County (Tiburon), Sanitary District No. 5 of	CA0037753	R2-2023-0018	11/30/2028		X
Millbrae, City of, and North Bayside System Unit	CA0037532	R2-2019-0009	4/30/2024	X	X
Napa Sanitation District	CA0037575	R2-2022-0003	3/31/2027		X
Novato Sanitary District	CA0037958	R2-2020-0019	8/31/2025	X	
Pacifica, City of	CA0038776	R2-2022-0029	11/30/2027		X
Palo Alto, City of	CA0037834	R2-2019-0015	5/31/2024	X	
Petaluma, City of	CA0037810	R2-2021-0008	6/30/2026	X	X
Pinole, City of	CA0037796	R2-2023-0008	7/31/2028		X
Rodeo Sanitary District	CA0037826	R2-2022-0037	1/31/2028		X
St. Helena, City of	CA0038016	R2-2021-0004	5/30/2026	X	X
San Francisco, City and County of (San Francisco International Airport), and North Bayside System Unit	CA0038318	R2-2018-0045	11/30/2023	X	X
San Jose and Santa Clara, cities of	CA0037842	R2-2020-0001	3/31/2025	X	X
San Leandro, City of	CA0038881	R2-2022-0006	5/31/2027		X
San Mateo, City of	CA0037541	R2-2023-0017	11/30/2028		X
Sausalito-Marín City Sanitary District	CA0038067	R2-2023-00xx			X
Sewerage Agency of Southern Marin	CA0037711	R2-2023-00xx			X
Silicon Valley Clean Water	CA0038369	R2-2023-0003	4/30/2028		X
Sonoma Valley County Sanitation District	CA0037800	R2-2019-0019	8/31/2024	X	X
South San Francisco and San Bruno, cities of, and North Bayside System Unit	CA0038130	R2-2019-0021	8/31/2024	X	X
Sunnyvale, City of	CA0037621	R2-2020-0002	3/31/2025	X	X
Treasure Island Development Authority	CA0110116	R2-2020-0020	7/31/2025	X	X
Vallejo Flood and Wastewater District	CA0037699	R2-2023-0001	3/31/2028		X

Discharger	NPDES Permit	Primary Order	Primary Order Expiration Date	Order Contains Oil and Grease Limits	Order Contains Chlorine Limits
West County Agency; West County Wastewater District; City of Richmond; and Richmond Municipal Sewer District No. 1	CA0038539	R2-2019-0003	3/31/2024	X	X
Yountville, Town of	CA0038121	R2-2020-0026	11/30/2025	X	X

THEREFORE, IT IS HEREBY ORDERED that Order R2-2021-0019 is rescinded upon the effective date of this Order, and, in order to meet the provisions contained in Water Code division 7 (commencing with § 13000) and regulations adopted thereunder, and the provisions of the federal Clean Water Act and regulations and guidelines adopted thereunder, the Dischargers listed in Table 1 shall comply with their respective orders listed in Table 1, as amended by this Order. This action in no way prevents the Regional Water Board from taking enforcement action for violations of the orders listed in Table 1.

1. For the orders denoted by an “X” in the “Order Contains Oil and Grease Limits” column in Table 1, the oil and grease effluent limits shall be removed, except for the Treasure Island Development Authority permit (Order R2-2020-0020).
2. For the orders denoted by an “X” in the “Order Contains Oil and Grease Limits” column in Table 1, the oil and grease effluent monitoring requirements shall be removed from the Monitoring and Reporting Programs attached to each order, except for the Treasure Island Development Authority permit (Order R2-2020-0020).
3. For the orders denoted by an “X” in the “Order Contains Chlorine Limits” column in Table 1, the total residual chlorine effluent limits shall be replaced with the one-hour average effluent limits in the table below.

Table 2. Total Residual Chlorine Effluent Limits

Discharger	One-hour Average (mg/L)
Benicia, City of	0.38
Burlingame, City of, and North Bayside System Unit	0.48
Calistoga, City of	0.019
Central Marin Sanitation Agency	0.56
Crockett Community Services District, Port Costa Sanitary Dept.	0.27
Delta Diablo	0.43
East Bay Dischargers Authority	0.98 ^[1]
Union Sanitary District Wet Weather Outfall	0.019
Dublin San Ramon Services District	0.98 ^[1]
Livermore, City of	0.98 ^[1]
Livermore-Amador Valley Water Management Agency Wet Weather Outfall	0.019
Oro Loma and Castro Valley Sanitary Districts Wet Weather Outfall	0.013
East Bay Municipal Utility District	0.42
Las Gallinas Valley Sanitary District	0.013
Marin County (Paradise Cove), Sanitary District No. 5 of	0.57
Marin County (Tiburon), Sanitary District No. 5 of	0.82

Discharger	One-hour Average (mg/L)
Millbrae, City of, and North Bayside System Unit	0.48
Napa Sanitation District	0.065
Pacifica, City of	0.019
Petaluma, City of	0.013
Pinole, City of	0.43
Rodeo Sanitary District	0.43
St. Helena, City of	0.019
San Francisco, City and County of (San Francisco International Airport), and North Bayside System Unit	0.48
San Jose and Santa Clara, cities of	0.013
San Leandro, City of	0.013
San Mateo, City of	0.34
Sausalito-Marín City Sanitary District	1.1
Sewerage Agency of Southern Marin	0.82
Silicon Valley Clean Water	0.53
Sonoma Valley County Sanitation District	0.013
South San Francisco and San Bruno, cities of, and North Bayside System Unit	0.48
Sunnyvale, City of	0.013
Treasure Island Development Authority	1.3
Vallejo Flood and Wastewater District	0.34
West County Agency; West County Wastewater District; City of Richmond; and Richmond Municipal Sewer District No. 1	1.8
Yountville, Town of	0.019

^[1] This limitation shall be replaced by a one-hour average effluent limitation of 0.94 mg/L on the first day of the month following East Bay Dischargers Authority satisfaction of Provision 6.3.5.1 (Commencement of Cargill Brine Discharge) in Order R2-2022-0023.

4. Each Discharger listed in Table 2 shall implement a Chlorine Process Control Plan by January 1, 2024. The Chlorine Process Control Plan shall ensure that each Discharger adds sufficient dechlorinating chemicals to target a chlorine residual of 0.0 mg/L at the discharge points described in the individual orders listed in Table 1. Each Discharger's Operation and Maintenance Manual shall include the information necessary to implement a Chlorine Process Control Plan.
5. Except where indicated below, the facilities with chlorine limits (see Table 1) shall conduct continuous total residual chlorine monitoring at all monitoring locations where the Monitoring and Reporting Programs attached to each order listed in Table 1 require chlorine monitoring. Total residual chlorine results shall be recorded at a frequency of not less than once every five minutes.
 - a. Crockett Community Services District, Port Costa Sanitary Department shall collect grab samples for total residual chlorine at least three times per week;
 - b. Union Sanitary District shall collect grab samples for total residual chlorine at least once every two hours at its wet weather outfall when discharging;
 - c. Livermore-Amador Valley Water Management Agency shall collect grab samples for total residual chlorine at least once every two hours at its wet weather outfall when discharging;

- d. Oro Loma and Castro Valley Sanitary Districts shall collect grab samples for total residual chlorine at least once every two hours at their wet weather outfall when discharging; and
 - e. The City of Petaluma shall collect grab samples for total residual chlorine at least twice daily, at least four hours apart, when dechlorinating naturally through the polishing wetlands. When at least a portion of the effluent is routed through the chlorine contact chamber, effluent concentrations shall be measured continuously.
6. For continuous monitoring, the minimum level for total residual chlorine analysis shall be no greater than 0.05 mg/L. To document compliance with the minimum level, Dischargers shall calibrate continuous total residual chlorine analyzers against grab samples as frequently as necessary to maintain accurate control and reliable operation.
 7. To determine compliance with the one-hour average effluent limits, Dischargers shall consider all readings recorded within each hour. The monitoring period shall begin every hour on the hour. All readings below the minimum level shall be treated as zeros for compliance determination. Dischargers shall calculate arithmetic means for each hour using all the readings for that hour. Dischargers shall report through data upload to CIWQS¹ the maximum one-hour arithmetic mean for each calendar day and any other arithmetic mean values that exceed the effluent limit. Dischargers shall retain documentation of chlorine results for at least three years.
 8. Dischargers may elect to use continuous on-line monitoring systems for measuring or determining that a residual dechlorinating agent (e.g., sodium bisulfite) is present. Such monitoring systems may be used to prove that anomalous residual chlorine exceedances measured by online chlorine analyzers are false positives and are not valid total residual chlorine detections because it is chemically improbable to have chlorine present in the presence of a dechlorinating agent. If the data from continuous total residual chlorine analyzers provide convincing evidence that chlorine residual exceedances are false positives, the exceedances shall not be violations of this Order's total residual chlorine effluent limits.
 9. If a continuous chlorine residual monitor malfunctions or is offline for essential maintenance, the Discharger shall substitute grab samples at the frequency specified in the Monitoring and Reporting Program of each order listed in Table 1 until the continuous chlorine residual monitor is back online. The Discharger shall report any substitution of grab sampling for continuous sampling in its monthly self-monitoring report.
 10. This Order shall become effective January 1, 2024.

I hereby certify that this Order with all attachments is a full, true, and correct copy of the Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on **date**.

Eileen White, Executive Officer

¹ CIWQS is the California Integrated Water Quality System (http://www.waterboards.ca.gov/water_issues/programs/ciwqs).

ATTACHMENT F – FACT SHEET

This Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order. As described in Finding 3 of the Order, the Regional Water Board incorporates this Fact Sheet as findings supporting the issuance of the Order.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the Dischargers' facilities:

Table F-1. Facility Information

Discharger	Facility Contact	Mailing Address	Effluent Description	Facility Design Flow (MGD)
Benicia, City of	Jeff Gregory, Wastewater Treatment Plant Supervisor, (707) 746-4336	614 East Fifth Street Benicia, CA 94510	Secondary	4.5
Burlingame, City of, and North Bayside System Unit	Manuel Molina, General Manager, (650) 425-0062	501 Primrose Burlingame, CA 04010	Secondary	5.5
Calistoga, City of	Derek Rayner, Public Works Director (707) 942-2828	414 Washington Street Calistoga, CA 94515	Secondary	0.84
Central Marin Sanitation Agency	Chris Finton, Treatment Plant Manager, (415) 459-1455 ext. 101	1301 Andersen Drive San Rafael, CA 94901	Secondary	10
Crockett Community Services District, Port Costa Sanitary Dept.	James Barnhill, Sanitary Department Manager, (510) 787-2992	P.O. Box 578 Crockett, CA 94525	Secondary	0.033
Delta Diablo	Amanda Roa, Environmental Program Manager, (925) 756-1940	2500 Pittsburg-Antioch Highway Antioch, CA 94509	Secondary	19.5
East Bay Dischargers Authority (City of Hayward, City of San Leandro, Oro Loma Sanitary District, Castro Valley Sanitary District, Union Sanitary District, Dublin San Ramon Services District, City of Livermore, and Livermore-Amador Valley Water Management Agency)	Jacqueline Zipkin, General Manager (510) 278-5910	2651 Grant Avenue San Lorenzo, CA 94580	Secondary	107.8
East Bay Municipal Utility District	Amit Mutsuddy, Director of Wastewater (510) 287-1149	P.O. Box 24055 Oakland, CA 94623	Secondary	120
Fairfield-Suisun Sewer District	Meg Herston, Environmental Compliance Engineer, (707) 428-9109	1010 Chadbourne Road Fairfield, CA 94535	Advanced Secondary	23.7
Las Gallinas Valley Sanitary District	Mel Liebmann, Plant Manager, (415) 472-1734	300 Smith Ranch Road San Rafael, CA 94903	Secondary	2.92
Livermore-Amador Valley Water Management Agency Wet Weather Outfall	Charles Weir, General Manager, (510) 410-5923	7051 Dublin Boulevard Dublin, CA 94568	Secondary	N/A
Marin County (Paradise Cove), Sanitary District No. 5 of	Tony Rubio, District Manager, (415) 435-1501 ext. 106	P.O. Box 227 Tiburon, CA 94920	Secondary	0.04

Discharger	Facility Contact	Mailing Address	Effluent Description	Facility Design Flow (MGD)
Marin County (Tiburon), Sanitary District No. 5 of	Tony Rubio, District Manager, (415) 435-1501 ext. 106	2001 Paradise Drive Tiburon, CA 94920	Secondary	0.98
Millbrae, City of, and North Bayside System Unit	Sam Bautista, Public Works Director, (650) 259-2347	621 Magnolia Avenue Millbrae, CA 94030	Secondary	3.0
Napa Sanitation District	Timothy Healy, General Manager, (707) 258-6000	1515 Soscol Ferry Road Napa, CA 94558	Secondary	15.4
Novato Sanitary District	Sandeep Karkal, General Manager, (415) 892-1694	500 Davidson Street Novato, CA 94945	Secondary	7.0
Pacifica, City of	Maria Aguilar, Plant Manager, (415) 336-4750	170 Santa Maria Avenue Pacifica, CA 94044	Advanced Secondary	4.0
Palo Alto, City of	James Allen, Plant Manager, (650) 329-2243	2501 Embarcadero Way Palo Alto, CA 94303	Advanced Secondary	39
Petaluma, City of	Matthew Pierce, Operations Supervisor, (707) 776-3726	202 N. McDowell Blvd. Petaluma, CA 94954	Secondary	6.7
Pinole, City of	Josh Binder, Plant Manager (510) 724-8964	2131 Pear Street Pinole, CA 94564	Secondary	4.06
Rodeo Sanitary District	Steve Beall, District Manager, (510) 799-2970	800 San Pablo Avenue Rodeo, CA 94572	Secondary	1.14
St. Helena, City of	Joseph Leach, Director of Public Works, (707) 968-2629	1572 Railroad Avenue St. Helena, CA 94574	Secondary	0.50
San Francisco, City and County of (San Francisco International Airport), and North Bayside System Unit	Jennifer Acton, Environmental Operations Manager, (650) 455-9241	P.O. Box 8097 San Francisco, CA 94128	Secondary	2.2
San Jose and Santa Clara, cities of	Eric Dunlavey, Wastewater Compliance Program Manager, (408) 635-4017	700 Los Esteros Road San Jose, CA 95134	Advanced Secondary	167
San Leandro, City of Treatment Wetland	Hayes Morehouse, Plant Manager, (510) 577-3437	3000 Davis Street San Leandro, CA 94577	Secondary	0.95
San Mateo, City of	Michael Sutter, Operations Superintendent, (650) 522-7380	330 West 20 th Avenue San Mateo, CA 94403	Secondary	15.7
Sausalito-Marín City Sanitary District	Jeffrey Kingston, General Manager, (415) 332-0244	1 East Road Sausalito, CA 94965	Secondary	1.8
Sewerage Agency of Southern Marin	Mark Rushwaya, Wastewater Treatment Plant Director, (415) 384-4825	26 Corte Madera Avenue Mill Valley, CA 94941	Secondary	3.6
Silicon Valley Clean Water	Monte Hamamoto, Chief Operating Officer, (650) 832-6266	1400 Radio Road Redwood City, CA 94065	Secondary	29
Sonoma Valley County Sanitation District	Frank Mello, Operations Coordinator, (707) 521-1843	404 Aviation Blvd. Santa Rosa, CA 95403	Secondary	3.0
South San Francisco and San Bruno, cities of, and North Bayside System Unit	Brian Schumacker, Plant Superintendent, (650) 829-3844	195 Belle Air Road South San Francisco, CA 94080	Secondary	13
Sunnyvale, City of	Rohan Wikramanayake, Water Pollution Control Plant Division Manager, (408) 730-7788	P.O. Box 3707 Sunnyvale, CA 94088	Advanced Secondary	29.5

Discharger	Facility Contact	Mailing Address	Effluent Description	Facility Design Flow (MGD)
Treasure Island Development Authority	Amy Chastain, Regulatory Compliance Manager, San Francisco Public Utilities Commission, (415) 554-1683	1 Avenue of the Palms, Suite 241 San Francisco, CA 94130	Secondary	2.0
Union Sanitary District Wet Weather Outfall	Armando Lopez, Treatment and Disposal Services Manager, (510) 477-7517	5072 Benson Road Union City, CA 94587	Secondary	N/A
Vallejo Flood and Wastewater District	Jennifer Harrington, Environmental Services Director, (707) 644-7806	450 Ryder Street Vallejo, CA 94590	Secondary	15.5
West County Agency; West County Wastewater District; City of Richmond; and Richmond Municipal Sewer District No. 1	Andrew Clough, Agency Manager, (510) 222-6700	2910 Hilltop Drive Richmond, CA 94806	Secondary	28.5
Yountville, Town of	John Ferons, Public Works Director, (707) 944-8851	6550 Yount Street Yountville, CA 94599	Advanced Secondary	0.55

II. BACKGROUND

Until recently, Basin Plan Table 4-2 contained effluent limitations for oil and grease. On November 18, 2020, the Regional Water Board adopted Resolution R2-2020-0031 and amended the Basin Plan to remove the oil and grease limits for treatment facilities that provide secondary or advanced secondary treatment. The State Water Resources Control Board approved this amendment on May 18, 2021, and the Office of Administrative Law approved it on October 22, 2021.

Chlorine can be toxic to aquatic life, and Basin Plan section 3.3.18 contains a narrative water quality objective to protect aquatic life from toxicity:

All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms. ... There shall be no acute toxicity in ambient waters.

Basin Plan Table 4-2 also contains an effluent limitation of 0.0 mg/L for total residual chlorine. Resolution R2-2020-0031 amended the Basin Plan to eliminate the 0.0 mg/L chlorine effluent limit, and to establish numeric water quality objectives for chlorine and a process to implement the new objectives. U.S. EPA approval is needed for these changes to become effective. On October 12, 2021, the Regional Water Board adopted a blanket permit amendment (Order R2-2021-0019) to implement Resolution R2-2020-0031 upon U.S. EPA approval.

On June 5, 2023, the Regional Water Board withdrew its request for U.S. EPA approval of the chlorine water quality objectives so the requirements of Order R2-2021-0019 will not go into effect. This new Order replaces Order R2-2021-0019 and amends the orders in Table 1 to update their chlorine and oil and grease requirements based on existing Regional Water Board authority.

III. RATIONALE FOR CHANGES

A. Oil and Grease Requirements

For the facilities listed in Table 1 of this Order (except for the Treasure Island Development Authority treatment plant), this Order eliminates effluent limits and associated monitoring requirements for oil and grease. The Basin Plan amendment that eliminated the requirement for oil and grease effluent limits became effective on October 22, 2021, the date the Office of Administrative Law approved it. Technology-based oil and grease limits are unnecessary for wastewater that undergoes at least secondary treatment because treatment facilities that achieve the Secondary Treatment Standards of 40 C.F.R. section 133 should not contain significant levels of oil and grease. Primary and secondary clarifiers have skimming devices that remove floatables from wastewater. Microorganisms in the biological portion of wastewater treatment metabolize oils attached to solids. These microorganisms settle out in secondary clarifiers. Biochemical oxygen demand and total suspended solids are better indicators of wastewater treatment performance.

The Dischargers in Fact Sheet Table F-1 provide secondary or advanced secondary treatment and, as shown in Fact Sheet Table F-2, have consistently complied with the effluent limits for oil and grease. These data show that Dischargers do not have a reasonable potential to discharge oil and grease at levels that could result in a visible film or coating on the surface of receiving waters or on objects in the waters, that cause nuisance, or that otherwise adversely affect beneficial uses (i.e., levels that exceed the narrative oil and grease objective in Basin Plan section 3.3.7). Therefore, water quality-based oil and grease limits are unnecessary for these facilities. The Treasure Island Development Authority is the one exception. It has reported oil and grease exceedances due to the skimming devices in its primary and secondary clarifiers being episodically out of service. Therefore, this Order does not remove oil and grease effluent limitations from the Treasure Island Development Authority's permit. By 2024, San Francisco plans to construct, operate, and maintain a new wastewater treatment plant (the Treasure Island Water Resource Recovery Facility) to replace the existing plant. The Treasure Island Development Authority plans to decommission the existing plant when the new plant becomes operational. Once the new treatment plant becomes operational, the Regional Water Board may reconsider the need for oil and grease effluent limitations.

Table F-2. Previous Oil and Grease Effluent Limits and Monitoring Data

Discharger	Average Monthly Limit (mg/L)	Maximum Daily Limit (mg/L)	Long-Term Average (mg/L)	Highest Value (mg/L) ^[1]
Benicia, City of	10	20	ND ^[2]	ND ^[3]
Crockett Community Services District, Port Costa Sanitary Dept.	10	20	1.6	7.5
Delta Diablo	10	20	1.5	2.3
Union Sanitary District Wet Weather Outfall	----	20	----	----
LAVWMA Wet Weather Outfall	----	20	ND ^[2]	ND ^[3]

Discharger	Average Monthly Limit (mg/L)	Maximum Daily Limit (mg/L)	Long-Term Average (mg/L)	Highest Value (mg/L) ^[1]
Oro Loma and Castro Valley Sanitary Districts Wet Weather Outfall	5	10	ND ^[2]	2.9
East Bay Municipal Utility District	10	20	ND ^[2]	1.8
Fairfield-Suisun Sewer District	----	10	ND ^[2]	ND ^[3]
Las Gallinas Valley Sanitary District	10	20	ND ^[2]	3.5
Marin County (Paradise Cove), Sanitary District No. 5 of	10	20	5.0	5.0
Millbrae, City of, and North Bayside System Unit	10	20	ND ^[2]	3.1
Novato Sanitary District	10	20	ND ^[2]	3.0
Palo Alto, City of	5	10	ND ^[2]	1.7
Petaluma, City of	10	20	ND ^[2]	ND ^[3]
St. Helena, City of	10	20	2.1	4.4
San Francisco, City and County of (San Francisco International Airport), and North Bayside System Unit	10	20	ND ^[2]	2.6
San Jose and Santa Clara, Cities of	5	10	ND ^[2]	ND ^[3]
Sonoma Valley County Sanitation District	10	20	2.7	11 ^[4]
South San Francisco and San Bruno, Cities of, and North Bayside System Unit	10	20	3.3	16 ^[4]
Sunnyvale, City of	5	10	ND ^[2]	1.5
Treasure Island Development Authority	10	20	ND ^[2]	35
West County Wastewater District	10	20	ND ^[2]	ND ^[3]
City of Richmond; and Richmond Municipal Sewer District No. 1	10	20	4.1	7.0
Yountville, Town of	10	20	ND ^[2]	ND ^[3]

Footnotes:

- ^[1] The highest value is the highest reported daily maximum value from 2020 through 2022.
- ^[2] If at least half the values were non-detect.
- ^[3] All values were non-detect.
- ^[4] The Discharger collected additional samples to document compliance with the average monthly effluent limitation.

B. Water Quality-Based Effluent Limits for Chlorine

As explained in Fact Sheet section III.C, this Order replaces effluent limitations that were based on the 0.0 mg/L residual chlorine limitation listed in Basin Plan Table 4-2 with less stringent effluent limitations as allowed by Basin Plan section 4.5.3. This Order establishes water quality-based effluent limitations based on the Basin Plan’s narrative toxicity objective. The permits denoted by an “X” in the “Order Contains Chlorine Limits” column in Table 1 of this Order have a reasonable potential to cause or contribute to exceedances of the narrative toxicity objective

because these municipal wastewater treatment plants use chlorine for disinfection and must apply a dechlorinating chemical, typically liquid sodium bisulfite, to remove residual chlorine from their wastewater effluent. According to 40 C.F.R. section 122.44(d)(1)(i), permits must include effluent limitations for all pollutants that are or may be discharged at levels that have a reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric objective, water quality-based effluent limitations must be established using (1) U.S. EPA criteria guidance under Clean Water Act (CWA) section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting a narrative criterion, supplemented with relevant information. This Order establishes water quality-based effluent limits for chlorine based on a translation of the narrative toxicity objective that uses U.S. EPA criteria guidance under CWA section 304(a), specifically U.S. EPA's *Ambient Water Quality Criteria for Chlorine – 1984* (EPA 440/5-84-030). These criteria are shown in Table F-3 below:

Table F-3. Ambient Water Quality Criteria for Chlorine

Receiving Water Type	4-Day Average (mg/L)	1-Hour Average (mg/L)
Marine or Estuarine	0.0075	0.013
Freshwater	0.011	0.019

The limits in this Order are derived from the one-hour average criterion because chlorine dissipates quickly once entering the receiving water. Thus, it is unlikely that discharges that meet one-hour effluent limitations will have chlorine concentrations that persist in the receiving water long enough to cause the four-day water quality objective to be exceeded.

This Order establishes chlorine mixing zones for deep water Dischargers and the Napa Sanitation District based on initial dilution. This is consistent with Basin Plan section 4.5.1, which allows for numeric water quality-based effluent limits to account for allowable dilution credits. Basin Plan section 4.5.3 indicates that in developing and setting water quality-based effluent limits for toxic pollutants all attempts shall be made to ensure consistency among permits when exercising best professional judgment. For total residual chlorine, a mixing zone corresponding to a conservative estimate of actual initial dilution was used to represent acute conditions. This is justified because chlorine is a non-persistent pollutant that quickly disperses and degrades to a non-toxic state.¹ As such, cumulative toxicity associated with chlorine from other unrelated discharges is unlikely.

These mixing zones are explained below and in the Fact Sheets attached to the orders listed in Table 1 of this Order. For each Discharger where this Order establishes a mixing zone, a site-specific mixing zone study evaluated the spatial extent of mixing under conservative conditions. The spatial extent of each mixing zone is described below (see Table F-5); the mixing zones are small and do not overlap. This Order does not establish total residual chlorine mixing zones for

¹ U.S. EPA's *Ambient Water Quality Criteria for Chlorine* (EPA 440/5-84-030) indicates that the half-lives for total residual chlorine and chlorine-produced oxidants are short in most waters. According to the Canada Environmental Protection Act, 1999 *Priority Substances List Assessment Report*, the half-life for combined residual chlorine, total residual chlorine, and total residual oxidant usually ranges from about 0.03 to 1.0 days under natural environmental conditions.

any shallow water discharger except for Napa Sanitation District, which has a multi-port diffuser that induces rapid mixing.²

To account for the dilution that occurs within mixing zones, this Order uses a simplified equation from State Implementation Policy section 1.4 because background concentrations for total residual chlorine are assumed to be zero:

$$ECA = (D+1) \times C$$

Where ECA = effluent concentration allowance (effluent limit),
 D = dilution factor (parts receiving water for each part effluent)
 C = water quality objective

The table below presents the applicable water quality criteria (as translated from the narrative toxicity objective), dilution factor, and effluent limit for each Discharger.

Table F-4. Water Quality Based Effluent Limits for Total Residual Chlorine

Discharger	Receiving Water Type	Water Quality Criteria (mg/L)	Dilution Factor	Effluent Limit (one-hour average, mg/L)
Benicia, City of	Estuarine	0.013	28	0.38
Burlingame, City of, and North Bayside System Unit	Marine	0.013	36	0.48
Calistoga, City of	Freshwater	0.019	0	0.019
Central Marin Sanitation Agency	Estuarine	0.013	42	0.56
Crockett Community Services District, Port Costa Sanitary Dept.	Estuarine	0.013	20	0.27
Delta Diablo	Estuarine	0.013	32	0.43
East Bay Dischargers Authority	Marine	0.013	74	0.98 ^[1]
Union Sanitary District Wet Weather Outfall	Freshwater	0.019	0	0.019
Dublin San Ramon Services District	Marine	0.013	74	0.98 ^[1]
Livermore, City of	Marine	0.013	74	0.98 ^[1]
Livermore-Amador Valley Water Management Agency Wet Weather Outfall	Freshwater	0.019	0	0.019

² Order R2-2022-0003 (Fact Sheet section 4.3.5.2) describes mixing and dilution at the Napa Sanitation District outfall, as summarized in Fact Sheet section III.B.10 of this Order.

Discharger	Receiving Water Type	Water Quality Criteria (mg/L)	Dilution Factor	Effluent Limit (one-hour average, mg/L)
Oro Loma and Castro Valley Sanitary Districts Wet Weather Outfall	Marine	0.013	0	0.013
East Bay Municipal Utility District	Marine	0.013	31	0.42
Las Gallinas Valley Sanitary District	Estuarine	0.013	0	0.013
Marin County (Paradise Cove), Sanitary District No. 5 of	Marine	0.013	43	0.57
Marin County (Tiburon), Sanitary District No. 5 of	Marine	0.013	62	0.82
Millbrae, City of, and North Bayside System Unit	Marine	0.013	36	0.48
Napa Sanitation District	Estuarine	0.013	4	0.065
Pacifica, City of	Freshwater	0.019	0	0.019
Petaluma, City of	Estuarine	0.013	0	0.013
Pinole, City of	Estuarine	0.013	32	0.43
Rodeo Sanitary District	Estuarine	0.013	32	0.43
St. Helena, City of	Freshwater	0.019	0	0.019
San Francisco, City and County of (San Francisco International Airport), and North Bayside System Unit	Marine	0.013	36	0.48
San Jose and Santa Clara, Cities of	Estuarine	0.013	0	0.013
San Leandro, City of	Marine	0.013	0	0.013
San Mateo, City of	Marine	0.013	25	0.34
Sausalito-Marín City Sanitary District	Marine	0.013	83	1.1
Sewerage Agency of Southern Marin	Marine	0.013	62	0.82
Silicon Valley Clean Water	Marine	0.013	40	0.53
Sonoma Valley County Sanitation District	Estuarine	0.013	0	0.013

Discharger	Receiving Water Type	Water Quality Criteria (mg/L)	Dilution Factor	Effluent Limit (one-hour average, mg/L)
South San Francisco and San Bruno, Cities of, and North Bayside System Unit	Marine	0.013	36	0.48
Sunnyvale, City of	Estuarine	0.013	0	0.013
Treasure Island Development Authority	Marine	0.013	102	1.3
Vallejo Flood and Wastewater District	Estuarine	0.013	25	0.34
West County Agency; West County Wastewater District; City of Richmond; and Richmond Municipal Sewer District No. 1	Marine	0.013	140	1.8
Yountville, Town of	Freshwater	0.019	0	0.019

^[1] This limitation will be replaced by a one-hour average effluent limitation of 0.94 mg/L on the first day of the month following East Bay Dischargers Authority satisfaction of Provision 6.3.5.1 (Commencement of Cargill Brine Discharge) in Order R2-2022-0023.

To ensure that the total residual chlorine within these mixing zones will not be lethal to aquatic organisms, each study used to support a dilution factor greater than zero documents that an adrift organism would pass through the mixing zone within 15 minutes or less, as recommended by U.S. EPA's *Technical Support Document for Water Quality-based Toxics Control*, March 1991, EPA/505/2-90-001. Furthermore, the mixing zones established in this Order will not harm benthic organisms because the treated effluent is discharged via deepwater and/or multipoint diffusers that are above the bottom surface and are positively buoyant in the receiving waters. | Delta Diablo is one exception as it may, for short periods, have a negatively buoyant discharge, as discussed below. For discharges to relatively small receiving waters (i.e., New York Slough, Napa River, and Mare Island Strait), each mixing zone study includes an additional analysis to establish that the size of the mixing zone is small relative to the size of the water body.

1. **City of Benicia.** A study titled *Benicia WWTP Effluent Initial Dilution at Long-term Average, Design, and Peak Daily Flow Rates* (November 2012) used the U.S. EPA supported Visual Plumes model to support a minimum initial dilution of 29:1 (D=28) for acute water quality criteria. To confirm the mixing zone would not be lethal to aquatic organisms, the study estimated a travel time of less than 10 minutes for an organism adrift within the receiving water.
2. **North Bayside System Unit (including Burlingame, Millbrae, San Francisco International Airport, and South San Francisco and San Bruno).** These wastewater treatment plants share an outfall in Lower San Francisco Bay. A study titled *Near-field Mixing Zone and Dilution Analysis for the North Bayside System Unit Outfall Diffuser to Lower San Francisco Bay* (May 18, 2018) used the U.S. EPA approved CORMIX model to

support a minimum initial dilution of 37:1 (D=36) for acute criteria. To confirm the mixing zone would not be lethal to aquatic organisms, the study estimated a travel time of less than two minutes for an organism adrift within the receiving water.

3. **Central Marin Sanitation Agency.** A study titled *Mixing Zone Study Report Central Marin Sanitation Agency* (September 29, 2011) used the U.S. EPA supported Visual Plumes model to support a minimum initial dilution of 43:1 (D=42) for acute criteria. The study predicted that initial dilution would occur within 13 feet of the outfall. This short distance indicates that the mixing zone would not be lethal to aquatic organisms since the travel time for organisms adrift within the receiving water is expected to be less than a few minutes.
4. **Crockett Community Services District (Port Costa).** A study titled *Near-field Mixing Zone and Dilution Analysis for the Port Costa WWTP Outfall to Carquinez Strait* (May 29, 2018) used the U.S. EPA approved CORMIX model to support a minimum initial dilution of 21:1 (D=20) for acute criteria. To confirm the mixing zone would not be lethal to aquatic organisms, the study estimated a travel time of less than one minute for an organism adrift within the receiving water.
5. **Delta Diablo.** A study titled *Mixing Zone Modeling for Delta Diablo WWTP Outfall to New York Slough – Current and Future Discharge Conditions* (August 20, 2019) used the U.S. EPA approved CORMIX model to support a minimum initial dilution of 33:1 (D=32) for acute criteria. To confirm the mixing zone would not be lethal to aquatic organisms, the study estimated a travel time of 12 minutes or less for an organism adrift within the receiving water.

The mixing zone established for Delta Diablo will not compromise the integrity of the receiving water because it is small relative to the size of New York Slough. The mixing zone extends about 150 feet from each discharge port. The average width of New York Slough in the vicinity of the discharge is about 1,000 feet.

Furthermore, the mixing for Delta Diablo will not harm benthic organisms. In October 2023, Delta Diablo may start accepting about 2.0 million gallons per day of reverse osmosis concentrate from the City of Antioch's Brackish Water Desalination Project. During the summer months when recycled water demand is high, Delta Diablo may recycle 100 percent of its treated wastewater and only discharge cooling water blowdown and industrial brine mixed with reverse osmosis concentrate. This may occur about three days of each year when the weather is very warm. During these periods, it is possible that the discharge could be negatively buoyant if salinity levels in New York Slough are near historical maximum concentrations. In these conditions, the discharge plume would rise due to momentum and then sink to the bottom of New York Slough. As this is rarely expected to occur, Delta Diablo's discharge should not prevent benthic organisms from residing near its diffuser.

6. **East Bay Dischargers Authority (including Dublin San Ramon Services District and City of Livermore).** Six wastewater treatment plants share the East Bay Dischargers Authority outfall. Four are regulated under Order R2-2022-0023 (the City of Hayward's Water Pollution Control Plant, the City of San Leandro's Water Pollution Control Plant, the Oro Loma and Castro Valley Sanitary Districts Water Pollution Control Plant, and the Union Sanitary District's Wastewater Treatment Plant). Two are regulated by separate orders. The

Dublin San Ramon Services District's treatment plant is regulated under Order R2-2022-0024 and the City of Livermore's treatment plant is regulated under Order R2-2022-0025. A study titled *East Bay Dischargers Authority Common Outfall Summary of Dilution Modeling Conditions and Results* (April 2021) used the U.S. EPA approved CORMIX model to support a minimum initial dilution of 75:1 (D=74) and after East Bay Dischargers Authority accepts Cargill brine 72:1 (D=71) for acute criteria. To ensure the mixing zone would not be lethal to aquatic organisms, the edge of mixing zone was selected using a travel time of less than 15 minutes for an organism adrift within the receiving water.

7. **East Bay Municipal Utility District.** A study titled *East Bay Municipal Utility District Main Wastewater Treatment Plant Outfall Dilution Study Update* (May 2020) used the U.S. EPA approved CORMIX model to support a minimum initial dilution of 32:1 (D=31) for acute criteria. To ensure the mixing zone would not be lethal to aquatic organisms, the edge of mixing zone was selected using a travel time of less than 15 minutes for an organism adrift within the receiving water.
8. **Sanitary District No. 5 of Marin County (Paradise Cove).** A study titled *Mixing Zone Study Report Sanitary District No. 5 of Marin County* (January 28, 2011) used the U.S. EPA supported Visual Plumes model to support a minimum initial dilution of 44:1 (D=43) for acute criteria. The study predicted that initial dilution would occur within 10 feet of the outfall. This short distance indicates that the mixing zone would not be lethal to aquatic organisms since the travel time for organisms adrift within the receiving water is expected to be less than a few minutes.
9. **Sanitary District No. 5 of Marin County (Tiburon) and Sewerage Agency of Southern Marin.** These two wastewater treatment plants share an outfall in Raccoon Strait (within Central San Francisco Bay). A study titled *Mixing Zone and Dilution Credit Study for the Sewerage Agency of Southern Marin and Sanitary District No. 5 of Marin County Combined Outfall Diffuser* (July 2, 2020) used the U.S. EPA approved CORMIX model to support a minimum initial dilution of 63:1 (D=62) for acute criteria. To confirm the mixing zone would not be lethal to aquatic organisms, the study estimated a travel time of about eight minutes for an organism adrift within the receiving water.
10. **Napa Sanitation District.** A study titled *Review of State Water Resources Control Board Modeling of Napa Sanitation District Discharge to the Napa River* (September 19, 2009) used U.S. EPA approved CORMIX model to support a minimum initial dilution of 5:1 (D=4) for acute criteria. The study predicted the initial dilution would occur within a 23-foot radius around each of the three discharge ports of the outfall. To confirm the mixing zone would not be lethal to aquatic organisms, the study estimated a travel time of less than 15 minutes for an organism adrift within the receiving water.

The mixing zone established for the Napa Sanitation District will not compromise the integrity of the receiving water because it is small relative to the size of the Napa River. The mixing zones are about 46 feet in diameter, centered on three discharge ports. The average width of the Napa River in the vicinity of the discharge is about 330 feet, and the length of the Napa River downstream of the outfall is 13 miles, or over 68,000 feet.

11. **City of Pinole and Rodeo Sanitary District.** These two wastewater treatment plants share an outfall in San Pablo Bay. A study titled *Near-field Mixing Zone and Dilution Analysis for Chronic Toxicity Discharge Conditions and Current Diffuser Characteristics* (April 14, 2017) used the U.S. EPA approved CORMIX model to support a minimum initial dilution of 33:1 (D=32) for acute criteria. To confirm the mixing zone would not be lethal to aquatic organisms, the study estimated a travel time of about seven minutes for an organism adrift within the receiving water.
12. **City of San Mateo.** A study titled *City of San Mateo and Estero Municipal Improvement District Water Quality Control Plant Mixing Zone and Dilution Credit Study* (July 18, 2022) used the U.S. EPA supported CORMIX model to support a minimum initial dilution of 26:1 (D=25) for acute criteria. To confirm the mixing zone would not be lethal to aquatic organisms, the study estimated a travel time of less than 15 minutes for an organism adrift within the receiving water.
13. **Sausalito-Marín City Sanitary District.** A study titled *Dilution Modeling Results for Sausalito-Marín City Sanitary District Discharge to San Francisco Bay* (July 5, 2007) used the U.S. EPA supported Visual Plumes model to support a minimum initial dilution of 84:1 (D=83) for acute criteria. The study predicted that initial dilution would occur within about 20 feet of the outfall. This short distance indicates that the mixing zone would not be lethal to aquatic organisms since the travel time for organisms adrift within the receiving water is expected to be less than a few minutes.
14. **Silicon Valley Clean Water.** A study titled *Mixing Zone and Dilution Credit Study for the Silicon Valley Clean Water Wastewater Treatment Plant Outfall Diffuser* (October 21, 2022) used the U.S. EPA approved CORMIX model to support a minimum initial dilution of 41:1 (D=40) for acute criteria. To confirm the mixing zone would not be lethal to aquatic organisms, the study estimated a travel time of about two minutes for an organism adrift within the receiving water,
15. **Treasure Island Development Authority.** A study titled *Dilution Model for the Treasure Island Outfall* (September 8, 2009) used the U.S. EPA supported Visual Plumes model to support a minimum initial dilution of 103:1 (D=102) for acute criteria. To confirm the mixing zone would not be lethal to aquatic organisms, the study indicated that the plume attains a maximum initial dilution within a few minutes.
16. **Vallejo Flood and Wastewater District.** This facility has two outfalls. A study titled *Mixing Zone Study Report, Vallejo Sanitation District* (March 22, 2011) used the U.S. EPA supported Visual Plumes model to support a minimum initial dilution at the Carquinez Strait outfall of 41:1 (D=40) for acute criteria. A study titled *Mixing Zone Study Report for Mare Island Strait Diffuser* (July 18, 2014) used the U.S. EPA supported Visual Plumes model to support a minimum initial dilution at the Mare Island Strait outfall of 26:1 (D=25) for acute criteria. The studies predicted that initial dilution would occur within about 56 feet of the Carquinez Strait outfall and about 40 feet of the Mare Island Strait outfall. These short distances indicate that mixing zones will not be lethal to aquatic organisms since the travel time for organisms adrift within the receiving water is expected to be less than a few minutes.

The mixing zone established for the Vallejo Flood and Wastewater District’s discharge to Mare Island Strait will not compromise the integrity of the receiving water because it is small relative to the size of Mare Island Strait. The mixing zone extends about 40 feet from the diffuser. The width of Mare Island Strait in the vicinity of the discharge is about 1,300 feet.

17. **West County Agency (including West County Wastewater District and City of Richmond).** These two wastewater treatment plants share an outfall in Central San Francisco Bay. A study titled *West County Agency Common Outfall Summary of Dilution Modeling Conditions and Results* (May 2021) used the U.S. EPA approved CORMIX model to support a minimum initial dilution of 141:1 (D=140) for acute criteria. To confirm the mixing zone would not be lethal to aquatic organisms, the study estimated a travel time of about eight minutes for an organism adrift within the receiving water.

Table F-5 includes the location of each outfall, the distance the mixing zone extends from the outfall, and the distance to the closest nearby outfall. This shows that mixing zones are very small relative to the water body and do not overlap.

Table F-5. Extent of Mixing Zones

Discharger	Outfall Location	Distance from Shoreline (feet)	Distance from outfall to edge of mixing zone (feet)	Closest Nearby Outfall (miles)
City of Benicia	Carquinez Strait	500	50	1.8
North Bayside System Unit	Lower San Francisco Bay	5,300	97	4.15
Central Marin Sanitation Agency	Central San Francisco Bay	8,000	13	2.3
Port Costa	Carquinez Strait	60	3.4	1.8
Delta Diablo	New York Slough	500	150	17.1
East Bay Dischargers Authority	Lower San Francisco Bay	37,000	405	4.15
East Bay Municipal Utility District	Central San Francisco Bay	5,600	405	1.03
Paradise Cove	Central San Francisco Bay	400	10	1.95
Tiburon and Sewerage Agency of Southern Marin	Raccoon Strait in Central San Francisco Bay	850	285	1.95
Napa Sanitation District	Napa River	160	23	10.25
City of Pinole and Rodeo Sanitary District	San Pablo Bay	3,800	180	2.44

Discharger	Outfall Location	Distance from Shoreline (feet)	Distance from outfall to edge of mixing zone (feet)	Closest Nearby Outfall (miles)
City of San Mateo	Lower San Francisco Bay	3,700	20	2.1
Sausalito-Marin City Sanitary District	Central San Francisco Bay	300	20	2.3
Silicon Valley Clean Water	Lower San Francisco Bay	6,700	110	2.1
Treasure Island Development Authority	Central San Francisco Bay	300	18	1.03
Vallejo Flood and Wastewater District	Carquinez Strait and Mare Island Strait	400 and 250	56 and 40	2.2
West County Agency	Central San Francisco Bay	8,200	341	2.3

C. Replacement of Basin Plan Table 4-2 Chlorine Effluent Limits

This Order replaces the 0.0 mg/L effluent limitation for residual chlorine listed in Basin Plan Table 4-2 with the less stringent limitations discussed above. Basin Plan section 4.5.3 allows less stringent effluent limitations when certain conditions are met, stating, “The Water Board will consider establishing less stringent limitations, consistent with state and federal laws, for any discharge where it can be conclusively demonstrated through a comprehensive program approved by the Water Board that such limitations will not result in unacceptable adverse impacts on the beneficial uses of the receiving water.” These conditions are met. As explained in Fact Sheet section IV, the less stringent limitations are consistent with state and federal laws. Furthermore, the requirements of this Order (specifically Provisions 4 through 9) are a comprehensive program that will ensure that these limitations will not result in unacceptable adverse impacts on the beneficial uses of receiving waters. Chlorine is a non-persistent pollutant that quickly degrades to a non-toxic state, and the mixing zones described in Fact Sheet section III.B are very small relative to the size of the receiving waters, as demonstrated by Table F-5. This Order also requires each Discharger to implement a Chlorine Process Control Plan to target a chlorine residual of 0.0 mg/L at the discharge point. This will ensure that chlorine will typically not be present in discharge and, if chlorine is detected, the duration of such discharges will be relatively short.

This Order removes the 0.0 mg/L chlorine limit to address the over-application of sodium bisulfite that results in extra operational cost and can decrease dissolved oxygen concentrations and depress pH in the effluent and receiving water. Municipal wastewater treatment plants that use chlorine to disinfect must apply a dechlorinating chemical, typically liquid sodium bisulfite, to remove residual chlorine and comply with the residual chlorine effluent limitation. Because wastewater is a complex mixture and the 0.0 mg/L effluent limitation from Basin Plan Table 4-2

is an instantaneous maximum (i.e., no amount may be discharged, ever), wastewater treatment plant operators routinely add sodium bisulfite in amounts well beyond what would theoretically neutralize residual chlorine.

Since the Regional Water Board began imposing the 0.0 mg/L instantaneous chlorine limitation, there have been significant improvements in chlorine process control. For example, instead of collecting periodic grab samples to evaluate compliance, continuous monitoring devices that evaluate chlorine residual levels at least every five minutes are now commonplace. The less stringent effluent limitations for chlorine included in this Order, coupled with the improved process control, will ensure that beneficial uses are protected.

D. Chlorine Monitoring Requirements

In accordance with Water Code section 13383, this Order revises the chlorine monitoring requirements of the permits denoted by an “X” in the “Order Contains Chlorine Limits” column in Table 1 of this Order. This Order replaces all monitoring requirements for chlorine, except for how frequently dischargers must collect grab samples if continuous analyzers are offline. To ensure that Dischargers carefully manage chlorine and dechlorination dosing, Dischargers should conduct continuous monitoring to assess compliance with the total residual chlorine effluent limits, which are expressed as one-hour averages. The minimum level for continuous devices should not be greater than 0.05 mg/L to document that each Discharger uses sufficiently sensitive methods. Any measured values below the minimum level should be treated as zeros.

Since continuous monitoring devices can sometimes report false positive values, this Order allows Dischargers to use on-line monitoring systems to measure the presence of a dechlorinating agent (e.g., sodium bisulfite). The presence of a dechlorinating agent may be used to prove that anomalous chlorine results are false positives and not valid detections because it is chemically improbable to have chlorine present in the presence of a dechlorinating agent. If a continuous chlorine residual monitor malfunctions or is offline for essential maintenance, this Order allows dischargers to substitute grab samples at the frequency specified in the Monitoring and Reporting Program of each order listed in Table 1 until the continuous chlorine residual monitor is back online.

In some cases, Dischargers are unable to continuously monitor chlorine. For smaller, seasonal, or intermittent discharge facilities, or for facilities that rely on natural dechlorination in ponds or wetlands rather than chemical addition, less frequent monitoring is appropriate. These Dischargers may collect grab samples instead. The table below lists Dischargers not required to conduct continuous chlorine monitoring, the basis for their exceptions, and how frequently grab samples must be collected.

Table F-6. Continuous Chlorine Monitoring Exceptions

Discharger	Basis for Exception	Minimum Grab Sampling Frequency
City of Petaluma	This facility discharges seasonally and uses natural dechlorination by routing	Twice daily, at least four hours apart, when dechlorinating through the polishing wetlands.

Discharger	Basis for Exception	Minimum Grab Sampling Frequency
	effluent through polishing wetlands.	
Crockett Community Services District, Port Costa Sanitary Dept.	This is a small facility. It has a dry weather design capacity of 33,000 gallons per day.	Three times per week
Livermore-Amador Valley Water Management Agency Wet Weather Outfall	This facility only discharges intermittently during wet weather.	Once every two hours
Union Sanitary District Wet Weather Outfall	This facility only discharges intermittently during wet weather	Once every two hours
Oro Loma and Castro Valley Sanitary Districts Wet Weather Outfall	This facility only discharges intermittently during wet weather	Once every two hours

IV. DISCHARGE REQUIREMENT CONSIDERATIONS

- A. Anti-backsliding.** The term “anti-backsliding” refers to statutory and regulatory provisions that prohibit, except in limited circumstances, the renewal, reissuance, or modification of an existing NPDES permit to contain effluent limitations, permit conditions, or standards less stringent than those established in the previous order. While this Order does not retain effluent limits for oil and grease and establishes less stringent water quality-based effluent limits for total residual chlorine, it meets an exception to the prohibition against backsliding. Clean Water Act section 402(o) prohibits backsliding from an effluent limitation that is based on state standards, such as water quality standards or treatment standards, unless the change is consistent with Clean Water Act section 303(d)(4). Here, the previous oil and grease and total residual chlorine effluent limitations were based on state treatment standards. Clean Water Act section 303(d)(4)(B) says, for waters that meet water quality standards, effluent limitations may be revised if such revision is consistent with antidegradation policies. Thus, backsliding is allowed because the surface waters of the San Francisco Bay region are not impaired by chlorine or oil and grease, and the relaxed effluent limits are consistent with antidegradation policies as explained below.
- B. Antidegradation.** Federal regulations at 40 C.F.R. section 131.12 require that state water quality standards include an antidegradation policy consistent with federal requirements. The State Water Board’s “Statement of Policy with Respect to Maintaining High Quality of Waters in California” (Resolution 68-16) sets forth California’s antidegradation policy. A permitted discharge must be consistent with the antidegradation provision of 40 C.F.R. section 131.12 and State Water Board Resolution 68-16. These policies require that high quality waters be maintained unless degradation is justified based on specific findings. Where the federal antidegradation policy is applicable, the State Water Board has interpreted Resolution 68-16 to incorporate the federal antidegradation policy. The discharges authorized by this Order are consistent with the antidegradation provisions of Resolution 68-16 as explained below.

Under Resolution 68-16, where a receiving water is of higher quality than applicable water quality standards, the higher water quality must be maintained unless certain conditions are met. Any decrease in water quality must be consistent with the maximum benefit to the people of the State, must not unreasonably affect any current or anticipated beneficial uses, and must not result in lower water quality than that prescribed in the policies. Activities that produce an increased volume or concentration of waste and that discharge to existing high quality waters must meet waste discharge requirements that will “result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.”

The effluent limitations authorized by this Order are consistent with Resolution 68-18. This Order authorizes higher total residual chlorine limits, but any increases in chlorine discharges will be minor, spatially localized, temporally limited, and unlikely to be observable in the receiving waters, particularly outside the mixing zones, because chlorine dissipates rapidly in receiving waters and because this Order requires each Discharger to implement a Chlorine Process Control Plan that targets a chlorine residual of 0.0 mg/L at the discharge point. Thus, there will not be any significant reduction in water quality in receiving waters, which are high quality as it relates to chlorine. Under the State Water Resources Control Board’s Administrative Procedures Update No. 90-004 on the implementation of antidegradation policies in NPDES permits, a simple antidegradation analysis is sufficient where, as here, a discharge will not be adverse to the intent and purpose of state and federal antidegradation policies and any reduction in water quality will be spatially localized or limited (e.g., confined to a mixing zone), temporally limited with no long-term deleterious effects on water quality, and produce minor effects that will not result in a significant reduction of water quality, among other factors.

Assuming that there will be small increases in chlorine observable near discharge outfalls, they would be consistent with the maximum benefit to the people of the state because they will reduce the use and discharge of dechlorination chemicals, which generate greenhouse gas emissions during manufacturing and delivery, place oxygen demands on receiving waters when discharged, and unnecessarily generate additional costs for dischargers. The excess use of dechlorination chemicals costs Dischargers up to \$2 million per year (Bay Area Clean Water Agencies, September 29, 2023). These funds could be better invested in other important water quality projects. This revised approach for establishing chlorine effluent limitations thus reflects the updated understanding that overdosing with dechlorination chemicals is no longer the best practicable treatment or control of chlorine because of its adverse impacts to water quality.

Compliance with the new effluent limitations will not unreasonably affect current or anticipated beneficial uses because the chlorine water quality criteria implemented in this Order are protective of most aquatic life.³ To ensure that any migration corridors for threatened and endangered species will not be compromised, the mixing zones established in this Order are small relative to the sizes of the receiving water bodies (including the narrowest water bodies: New York Slough, the Napa River, and Mare Island Strait), allowing passage. In addition, this Order requires implementation of a Chlorine Process Control Plan and continuous monitoring

³ U.S. EPA’s *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* (EPA 822-R-85-100) indicates that aquatic organisms and their uses should not be affected unacceptably by the 304(a) numeric criteria except possibly where a locally important species is very sensitive.

(with a few exceptions noted in Table F-6) to assess whether discharges comply with the new limits based on a one-hour average, both of which ensure improved process control.

The elimination of the oil and grease effluent limits is also consistent with Resolution 68-16. The elimination of these limits is not expected to result in an increased volume or concentration of oil and grease in the discharge because those limits did not drive the secondary or advanced secondary treatment performance at the facilities listed in Table 1 of the Order. Thus, removal of oil and grease limits will not result in any lowering of water quality.

V. PUBLIC PARTICIPATION

- A. Notification of Interested Parties.** The Regional Water Board notified the dischargers listed in Table 1 of the Order, and other interested agencies and persons, of its intent to amend the permits listed in Table 1, and provided an opportunity to submit written comments and recommendations. The public had access to the agenda and any changes in dates and locations through the Regional Water Board’s website at <http://www.waterboards.ca.gov/sanfranciscobay>.

Water Code section 189.7 requires the Board to engage in certain outreach activities where waste discharges may have disproportionate water quality impacts in disadvantaged or tribal communities. This Order will not have such an impact because it will not adversely impact water quality as explained in Fact Sheet section IV.B. Water Code section 13149.2 requires specific findings related to potential environmental justice, tribal impact, and racial equity considerations for reissued individual WDRs that include time schedules for achieving compliance with water quality objectives. This Order does not contain such a time schedule; therefore, the findings are not required.

- B. Written Comments.** Interested persons were invited to submit written comments concerning the tentative permit amendment as explained through the notification process. Comments were to be submitted either in person, by-email, or by mail to the attention of Robert Schlipf. Written comments were due at the Regional Water Board office by 5:00 p.m. on **September 29, 2023**.

- C. Public Hearing.** The Regional Water Board held a public hearing on the tentative permit amendment during its meeting at the following date and time:

Date: **November 8, 2023**

Time: 9:00 a.m.

Contact: Robert Schlipf, (510) 622-2478, Robert.Schlipf@waterboards.ca.gov.

Interested persons were provided notice of the hearing and information on how to participate. During the public hearing, the Regional Water Board heard testimony pertinent to the tentative permit amendment.

Dates and venues can change. The current agenda and any changes are posted on the Regional Water Board web address is <http://www.waterboards.ca.gov/sanfranciscobay>.

- D. Reconsideration of Amendment.** Any person aggrieved by the Regional Water Board action may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, section 2050. The State Water Board must

receive the petition at the following address within 30 calendar days of the Regional Water Board action:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

A petition may also be filed by email at waterqualitypetitions@waterboards.ca.gov.

For instructions on how to file a petition for review, see http://www.waterboards.ca.gov/public_notices/petitions/water_quality/wqpetition_instr.shtml.

- E. Information and Copying.** Supporting documents and comments received are on file. To review these documents, contact Melinda Wong the Regional Water Board's custodian of records by calling (510) 622-2300 or emailing Melinda.Wong@waterboards.ca.gov. Document copying may be arranged.
- F. Register of Interested Persons.** Any person interested in being placed on the mailing list for information regarding NPDES permits should contact the Regional Water Board and provide a name, address, and phone number.
- G. Additional Information.** Requests for additional information or questions regarding this Order should be directed to Robert Schlipf at (510) 622-2478 or Robert.Schlipf@waterboards.ca.gov.