



San Francisco Bay Regional Water Quality Control Board

ORDER No. R2-2019-00XX
NPDES No. CA0038873

WASTE DISCHARGE REQUIREMENTS FOR NUTRIENTS FROM MUNICIPAL WASTEWATER DISCHARGES TO SAN FRANCISCO BAY

The following dischargers are subject to waste discharge requirements (WDRs) set forth in this Order, for the purpose of regulating nutrient discharges to San Francisco Bay¹ and its contiguous bay segments:

Table 1. Discharger Information

Discharger	Facility Name	Facility Address	Minor/ Major
American Canyon, City of	Wastewater Treatment and Reclamation Facility	151 Mezzetta Court American Canyon, CA 94503	Major
Benicia, City of	Benicia Wastewater Treatment Plant	614 East Fifth Street Benicia, CA 94510	Major
Burlingame, City of	Burlingame Wastewater Treatment Plant	1103 Airport Boulevard Burlingame, CA 94010	Major
Central Contra Costa Sanitary District	Central Contra Costa Sanitary District Wastewater Treatment Plant	5019 Imhoff Place Martinez, CA 94553	Major
Central Marin Sanitation Agency	Central Marin Sanitation Agency Wastewater Treatment Plant	1301 Andersen Drive San Rafael, CA 94901	Major
Crockett Community Services District	Port Costa Wastewater Treatment Plant	End of Canyon Lake Drive Port Costa, CA 94569	Minor
Delta Diablo	Delta Diablo Wastewater Treatment Plant	2500 Pittsburg-Antioch Highway Antioch, CA 94509	Major
East Bay Dischargers Authority (EBDA); Cities of Hayward and San Leandro; Oro Loma Sanitary District; Castro Valley Sanitary District; Union Sanitary District; East Bay Regional Parks District; Livermore-Amador Valley Water Management Agency; Dublin San Ramon Services District; and City of Livermore	EBDA Common Outfall	EBDA Common Outfall 14150 Monarch Bay Drive San Leandro, CA 94577	Major
	Hayward Water Pollution Control Facility		
	San Leandro Water Pollution Control Plant		
	Oro Loma/Castro Valley Sanitary Districts Water Pollution Control Plant		
	Raymond A. Boege Alvarado Wastewater Treatment Plant		
	Hayward Marsh		
	Livermore-Amador Valley Water Management Agency Export and Storage Facilities		
	Dublin San Ramon Services District Wastewater Treatment Plant		

¹ San Francisco Bay consists of the Sacramento/San Joaquin River Delta, Suisun Bay, Carquinez Strait, San Pablo Bay, Central San Francisco Bay, Richardson Bay, Lower San Francisco Bay, and South San Francisco Bay.

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	City of Livermore Water Reclamation Plant		
East Bay Municipal Utility District	East Bay Municipal Utility District, Special District No. 1 Wastewater Treatment Plant	2020 Wake Avenue Oakland, CA 94607	Major
Fairfield-Suisun Sewer District	Fairfield-Suisun Wastewater Treatment Plant	1010 Chadbourne Road Fairfield, CA 94534	Major
Las Gallinas Valley Sanitary District	Las Gallinas Valley Sanitary District Sewage Treatment Plant	300 Smith Ranch Road San Rafael, CA 94903	Major
Marin County (Paradise Cove), Sanitary District No. 5 of	Paradise Cove Treatment Plant	3700 Paradise Drive Tiburon, CA 94920	Minor
Marin County (Tiburon), Sanitary District No. 5 of	Wastewater Treatment Plant	2001 Paradise Drive Tiburon, CA 94920	Minor
Millbrae, City of	Water Pollution Control Plant	400 East Millbrae Avenue Millbrae, CA 94030	Major
Mt. View Sanitary District	Mt. View Sanitary District Wastewater Treatment Plant	3800 Arthur Road Martinez, CA 94553	Major
Napa Sanitation District	Soscol Water Recycling Facility	1515 Soscol Ferry Road Napa, CA 94558	Major
Novato Sanitary District	Novato Sanitary District Wastewater Treatment Plant	500 Davidson Street Novato, CA 94945	Major
Palo Alto, City of	Palo Alto Regional Water Quality Control Plant	2501 Embarcadero Way Palo Alto, CA 94303	Major
Petaluma, City of	Municipal Wastewater Treatment Plant	3890 Cypress Drive Petaluma, CA 94954	Major
Pinole, City of	Pinole-Hercules Water Pollution Control Plant	11 Tennent Avenue Pinole, CA, 94564	Major
Rodeo Sanitary District	Rodeo Sanitary District Water Pollution Control Facility	800 San Pablo Avenue Rodeo, CA 94572	Major
San Francisco (San Francisco International Airport), City and County of	Mel Leong Treatment Plant, Sanitary Plant	Bldg. 924 Clearwater Drive San Francisco, CA 94128	Major
San Francisco (Southeast Plant), City and County of	Southeast Water Pollution Control Plant	750 Phelps Street San Francisco, CA 94124	Major
San Jose and Santa Clara, Cities of	San Jose/Santa Clara Water Pollution Control Plant	700 Los Esteros Road San Jose, CA 95134	Major
San Mateo, City of	City of San Mateo Wastewater Treatment Plant	2050 Detroit Drive San Mateo, CA 94404	Major
Sausalito-Marin City Sanitary District	Sausalito-Marin City Sanitary District Wastewater Treatment Plant	1 East Road Sausalito, CA 94965	Major
Sewerage Agency of Southern Marin	Sewerage Agency of Southern Marin Wastewater Treatment Plant	450 Sycamore Avenue Mill Valley, CA 94941	Major
Silicon Valley Clean Water	Silicon Valley Clean Water Wastewater Treatment Plant	1400 Radio Road Redwood City, CA 94065	Major
Sonoma Valley County Sanitation District	Municipal Wastewater Treatment Plant	22675 8th Street East Sonoma, CA 95476	Major
South San Francisco and San Bruno, Cities of	South San Francisco and San Bruno Water Quality Control Plant	195 Belle Air Road South San Francisco, CA 94080	Major
Sunnyvale, City of	Sunnyvale Water Pollution Control Plant	1444 Borregas Avenue, Sunnyvale, CA 94089	Major
U.S. Department of Navy (Treasure Island)	Treasure Island Wastewater Treatment Plant	1220 Avenue M San Francisco, CA 94130	Major

Vallejo Flood and Wastewater District	Vallejo Flood and Wastewater District Wastewater Treatment Plant	450 Ryder Street Vallejo, CA 94590	Major
West County Agency; West County Wastewater District; City of Richmond; and Richmond Municipal Sewer District	West County Agency Combined Outfall	2910 Hilltop Drive Richmond, CA 94806	Major
	West County Wastewater District Treatment Plant		
	Richmond Municipal Sewer District Water Pollution Control Plant		

Table 2. Discharge Locations

Discharge locations are specified in the individual NPDES permits listed in Attachment B.

Table 3. Administrative Information

This Order was adopted on:	[DATE]
This Order shall become effective on:	July 1, 2019
This Order shall expire on:	June 30, 2024

I, Michael Montgomery, Executive Officer, do 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 the date indicated above.

Michael Montgomery, Executive Officer

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I. FACILITY INFORMATION

Information describing the facilities subject to this Order is summarized in Tables 1 and in Fact Sheet (Attachment F) sections I and II.

II. FINDINGS

The California Regional Water Quality Control Board, San Francisco Bay Region (Regional Water Board), finds:

- A. Legal Authorities.** This Order serves as WDRs pursuant to California Water Code article 4, chapter 4, division 7 (commencing with § 13260). This Order is also issued pursuant to federal Clean Water Act (CWA) section 402 and implementing regulations adopted by U.S. EPA and Water Code chapter 5.5, division 7 (commencing with § 13370). It shall serve as a National Pollutant Discharge Elimination System (NPDES) permit for point source discharges of nutrients from the Discharger facilities listed in Attachment B to surface waters.
- B. Background and Rationale for Requirements.** The Regional Water Board developed the requirements in this Order based on information the Dischargers submitted, information obtained through monitoring and reporting programs, and other available information. The Fact Sheet contains background information and rationales for this Order's requirements and is hereby incorporated into and constitutes findings for this Order. Attachments B, C, and E are also incorporated into this Order.
- C. Notification of Interested Parties.** The Regional Water Board notified the Dischargers and interested agencies and persons of its intent to prescribe these WDRs and provided an opportunity to submit written comments and recommendations. The Fact Sheet provides details regarding the notification.
- D. Consideration of Public Comment.** The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharges. The Fact Sheet provides details regarding the public hearing.

THEREFORE, IT IS HEREBY ORDERED that Order No. R2-2014-0014 (previous order) is rescinded upon the effective date of this Order, except for enforcement purposes, and, in order to meet the provisions of Water Code division 7 (commencing with § 13000) and regulations adopted thereunder and the provisions of the CWA and regulations and guidelines adopted thereunder, the Dischargers shall comply with the requirements in this Order. This action in no way prevents the Regional Water Board from taking enforcement action for past violations of the previous order.

III. DISCHARGE PROHIBITIONS

This Order does not establish additional discharge prohibitions beyond those in the individual NPDES permits listed in Attachment B.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

This Order does not establish additional effluent limitations and discharge specifications beyond those in the individual NPDES permits listed in Attachment B.

V. RECEIVING WATER LIMITATIONS

This Order retains the nutrients receiving water limitations specified in the individual NPDES permits listed in Attachment B.

VI. PROVISIONS

A. Standard Provisions

The Dischargers shall comply with the standard provisions in Attachments D and G (as amended) of their individual NPDES permits listed in Attachment B of this Order.

B. Monitoring and Reporting

The Dischargers shall comply with the Monitoring and Reporting Program (Attachment E) provisions of their individual NPDES permits listed in Attachment B of this Order and any future revisions thereto. The Dischargers shall also comply with applicable sampling and reporting requirements in Attachments D and G (as amended) of their individual NPDES permits listed in Attachment B of this Order.

Commented [A1]: Should reference Att E of this Order since there are additional requirements beyond our individual permits.

C. Special Provisions

1. Reopener Provisions

The Regional Water Board may modify or reopen this Order prior to its expiration date in any of the following circumstances as allowed by law:

- a. If the discharges governed by this Order have or will have a reasonable potential to cause or contribute to, or will cease to have, adverse impacts on water quality or beneficial uses of the receiving waters;
- b. If new or revised water quality objectives or total maximum daily loads (TMDLs) come into effect for San Francisco Bay and contiguous water bodies (whether statewide, regional, or site-specific);
- c. If State Water Board precedential decisions, new policies, new laws, or new regulations are adopted;
- d. If an administrative or judicial decision on a separate NPDES permit or WDRs addresses requirements similar to those in this Order; or
- e. As otherwise authorized by law.

2. Regional Evaluation of Potential Nutrient Discharge Reduction by Natural Systems and Recycling

The major Dischargers listed in Table 1 shall, individually or in collaboration with other regional stakeholders, evaluate options and develop planning-level costs for nutrient

Commented [A2]: Final language pending joint meeting with BACWA and SFEI.

Commented [A3]: this whole section on the Regional Study has been re-written by the WB and is being reviewed by BACWA's NST

discharge reduction by natural systems and wastewater recycling as described below. These requirements do not apply to the minor Dischargers listed in Table 1.

a. Scoping Plan. By December 1, 2019, the Dischargers shall, individually or in collaboration with regional stakeholders, submit a Scoping Plan describing the level of work proposed to conduct the evaluation. The Scoping Plan shall include, but is not limited to, the following for each Discharger's facility and subembayment:

- Description of all treatment plants, treatment plant processes, and service area;
- Identification of sites, if any, for potential wetlands treatment systems;
- Identification of sites, if any, for potential wetlands creation or enhancement;
- Identification of sites, if any, for potential horizontal levee creation; and
- Identification of opportunities for potential wastewater recycling (e.g., for irrigation).

b. Evaluation Plan and Implementation. If a Discharger identifies potential sites or opportunities, it shall proceed with an evaluation for its facility and subembayment. By July 1, 2020, the Discharger shall, individually or in collaboration with regional stakeholders, submit an Evaluation Plan and schedule describing the methods and means for conducting the evaluation. The evaluation shall include, but not be limited to, the following:

- Estimation of nitrogen (total inorganic nitrogen) and phosphorous (total phosphorous) reductions associated with each project;
- Identification of ancillary adverse effects and ancillary benefits from each project (e.g., removal of emerging contaminants, creation of habitat, or protection against sea level rise);
- Assessment of the feasibility, efficacy, reliability, and cost-effectiveness of each project; and
- Identification of potential challenges to implementing each project (e.g., regulatory barriers).

The Dischargers shall implement the Evaluation Plan within 45 days of submittal.

c. Status Reports. By July 1, 2021, and again by July 1, 2022, the Dischargers shall submit, or cause to be submitted, a status report describing the tasks completed, preliminary findings, and tasks yet to be completed, highlighting any adaptive changes made to the Evaluation Plan submitted in accordance with task b, above.

d. Final Report. By July 1, 2023, the Dischargers shall submit, or cause to be submitted, a Final Report describing the results of their evaluations.

3. Monitoring, Modeling, and Subembayment Studies

Each Discharger listed in Table 1 shall conduct, or cause to be conducted, studies to address the potential adverse impacts of nutrients on San Francisco Bay beneficial uses. The studies shall include the efforts described below:

- a. Support Receiving Water Monitoring for Nutrients.** The Dischargers shall collaborate with other regional stakeholders to support receiving water monitoring for nutrients. These efforts shall supplement the monitoring the Regional Monitoring Program and others already undertake, by providing the following:
- i.** A network of nutrient monitoring locations to track nutrient concentrations, dissolved oxygen, and phytoplankton biomass in San Francisco Bay;
 - ii.** Adequate data to support modeling of nutrient fate and transport in San Francisco Bay; and
 - iii.** Studies furthering the understanding of harmful algae bloom development, including, at a minimum, monitoring for algae species and toxins.
- b. Support Science Plan Development and Implementation.** The Dischargers shall collaborate with other regional stakeholders to support further development, updating, and implementation of the science plan to implement the San Francisco Bay Nutrient Management Strategy and support consideration of future management actions, including the development of nutrient water quality objectives. The science plan shall include studies necessary for San Francisco Bay as a whole as well as address issues identified for specific subembayments. The modeling described in task ~~C.3.aa, above,~~ shall inform the science plan and any future management actions.

By February 1, 2020, the Dischargers shall submit, or cause to be submitted, an updated science plan and schedule for proposed studies, and annually update and revise the plan and schedule as necessary by February 1 of each subsequent year.

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ATTACHMENT B – INDIVIDUAL NPDES PERMIT AND ORDER NUMBERS

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Discharger	NPDES Permit No.	Existing Order No. ^[1]	Existing Order Adoption Date	Existing Order Expiration Date
American Canyon, City of	CA0038768	R2-2017-0008	4/12/2017	5/31/2022
Benicia, City of	CA0038091	R2-2014-0023	6/11/2014	7/31/2019
Burlingame, City of	CA0037788	R2-2018-0024	6/13/2018	7/31/2023
Central Contra Costa Sanitary District	CA0037648	R2-2017-0009	4/12/2017	5/31/2022
Central Marin Sanitation Agency	CA0038628	R2-2018-0003	1/10/2018	2/28/2023
Crockett Community Services District, Port Costa Sanitary Dept.	CA0037885	R2-2018-0053	12/12/2018	1/31/2024
Delta Diablo Sanitation District	CA0038547	R2-2014-0030	8/13/2014	9/30/2019
East Bay Dischargers Authority	CA0037869	R2-2017-0016	5/10/2017	6/30/2022
Oro Loma Sanitary District	CA0037559	R2-2018-0010	3/14/2018	12/31/2023
Castro Valley Sanitary District	CA0038733	R2-2015-0045	11/18/2015	12/31/2020
Union S.D. Wet Weather Outfall	CA0038733	R2-2015-0045	11/18/2015	12/31/2020
East Bay Regional Parks District	CA0038636	R2-2011-0058	9/14/2011	10/31/2016
Union S.D. Hayward Marsh	CA0038636	R2-2011-0058	9/14/2011	10/31/2016
Dublin San Ramon Services District	CA0037613	R2-2017-0017	5/10/2017	6/30/2022
City of Livermore	CA0038008	R2-2017-0018	5/10/2017	6/30/2022
LAVWMA Wet Weather Outfall	CA0038679	R2-2016-0015	4/13/2016	5/31/2021
East Bay Municipal Utility District	CA0037702	R2-2015-0018	5/13/2015	6/30/2020
Fairfield-Suisun Sewer District	CA0038024	R2-2015-0013	3/11/2015	4/30/2020
Las Gallinas Valley Sanitary District	CA0037851	R2-2015-0021	5/13/2015	6/30/2020
Marin County (Paradise Cove), Sanitary District No. 5 of	CA0037427	R2-2016-0042	10/12/2016	11/30/2021
Marin County (Tiburon), Sanitary District No. 5 of	CA0037753	R2-2018-0038	8/8/2018	9/30/2023
Millbrae, City of	CA0037532	R2-2013-0037	12/11/2013	1/31/2019
Mt. View Sanitary District	CA0037770	R2-2016-0023	5/11/2016	6/30/2021
Napa Sanitation District	CA0037575	R2-2016-0035	7/13/2016	8/31/2021
Novato Sanitary District	CA0037958	R2-2015-0034	7/8/2015	8/31/2020
Palo Alto, City of	CA0037834	R2-2014-0024	6/11/2014	7/31/2019
Petaluma, City of	CA0037810	R2-2016-0014	4/13/2016	5/31/2021
Pinole, City of	CA0037796	R2-2018-0004	2/14/2018	3/31/2023
Rodeo Sanitary District	CA0037826	R2-2017-0034	9/13/2017	10/31/2022
Saint Helena, City of	CA0038016	R2-2016-0003	1/13/2016	2/28/2021
San Francisco (San Francisco International Airport), City and County of	CA0038318	R2-2018-0045	10/10/2018	11/30/2023
San Francisco (Southeast Plant), City and County of	CA0037664	R2-2013-0029	8/14/2013	9/30/2018
San Jose and Santa Clara, Cities of	CA0037842	R2-2014-0034	9/10/2014	10/31/2019
San Mateo, City of	CA0037541	R2-2018-0016	5/9/2018	6/30/2023
Sausalito-Marín City Sanitary District	CA0038067	R2-2018-0025	6/13/2018	7/31/2023
Sewerage Agency of Southern Marin	CA0037711	R2-2018-0039	8/8/2018	9/30/2023
Silicon Valley Clean Water	CA0038369	R2-2018-0005	2/14/2018	3/31/2023
Sonoma Valley County Sanitary District	CA0037800	R2-2014-0020	5/14/2014	6/30/2019
South San Francisco and San Bruno, Cities of	CA0038130	R2-2014-0012	4/9/2014	5/31/2019
Sunnyvale, City of	CA0037621	R2-2014-0035	9/10/2014	10/31/2019
U.S. Department of Navy, Treasure Island	CA0110116	R2-2015-0004	1/21/2015	3/31/2020
Vallejo Flood and Wastewater District	CA0037699	R2-2017-0035	9/13/2017	10/31/2022
West County Agency; West County Wastewater District; City of Richmond; and Richmond Municipal Sewer District	CA0038539	R2-2013-0016	5/8/2013	6/30/2018

San Francisco Bay Nutrients Watershed Permit

Municipal Wastewater Dischargers

Order No. R2-2019-00XX
NPDES No. CA0038873

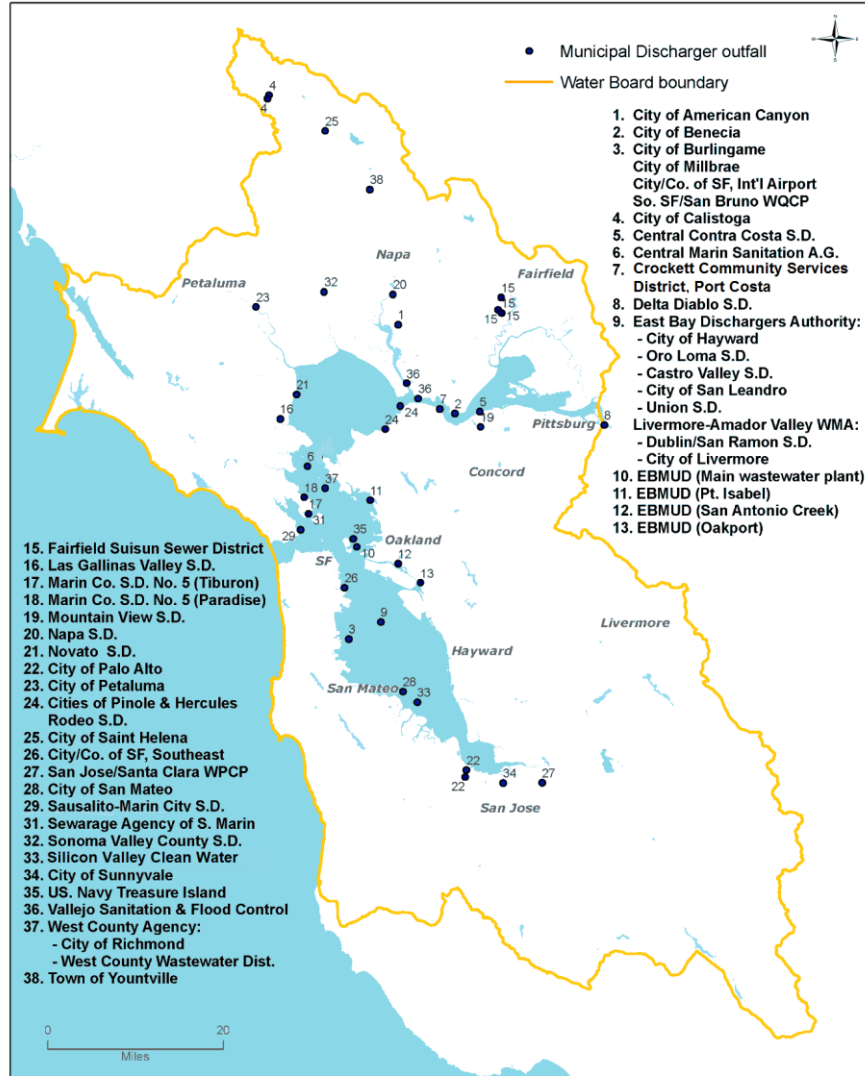
Footnote:

^[1] The orders shown are for the primary permit reissuance and do not include permit amendments.

ATTACHMENT C – MAP OF MUNICIPAL DISCHARGE LOCATIONS

Commented [A5]: Oro Loma's local outfall is not shown. It is located directly to the west of the treatment facility.

Municipal Discharger outfall locations



ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

Clean Water Act section 308 and 40 C.F.R. sections 122.41(h), 122.41(j)-(l), 122.44(i), and 122.48 require that all NPDES permits specify monitoring and reporting requirements. Water Code sections 13267 and 13383 also authorize the Regional Water Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. This MRP establishes monitoring, reporting, and recordkeeping requirements that implement federal and State laws and regulations.

I. GENERAL MONITORING PROVISIONS

- A.** Dischargers shall comply with this MRP. The Executive Officer may amend this MRP pursuant to 40 C.F.R. sections 122.62, 122.63, and 124.5. If any discrepancies exist between this MRP and the “Regional Standard Provisions, and Monitoring and Reporting Requirements (Supplement to Attachment D) for NPDES Wastewater Discharge Permits” (Attachment G) in the individual permits listed in Attachment B of this Order, this MRP shall prevail.
- B.** Sampling is required during the entire year when discharging. Dischargers shall conduct all monitoring in accordance with Attachment D section III, as supplemented by Attachment G, of their individual permits listed in Attachment B of this Order. Equivalent test methods must be more sensitive than those specified in 40 C.F.R. section 136 and must be specified in this permit.

II. MONITORING LOCATIONS

The Dischargers shall establish the following monitoring locations to characterize loads and comply with other requirements in this Order:

Table E-1. Monitoring Locations

Sampling Location Type	Monitoring Location Name	Monitoring Location Description
Influent	Individual monitoring locations for influent wastewater (normally Monitoring Location INF-001) are specified in the MRPs of Dischargers' individual NPDES permits as listed in Attachment B of this Order. ^[1]	Individual monitoring location descriptions are provided in the MRPs of Dischargers' individual NPDES permits as listed in Attachment B of this Order.
Effluent	Individual monitoring locations for discharges of treated wastewater (normally Monitoring Location EFF-001) are specified in the MRPs of Dischargers' individual NPDES permits as listed in Attachment B of this Order. ^[2]	Individual monitoring location descriptions are provided in the MRPs of Dischargers' individual NPDES permits as listed in Attachment B of this Order.

Footnotes:

^[1] For the City and County of San Francisco (Southeast Plant), influent monitoring shall occur only during dry weather (i.e., not during wet weather, as defined in its individual NPDES permit as listed in Attachment B).

^[2] For the City and County of San Francisco (Southeast Plant), the monitoring location shall be Monitoring Location EFF-001A. For the Fairfield-Suisun Sewer District, the monitoring location shall be Monitoring Location E-001D. For the Hayward Marsh, the monitoring locations shall be C-2AE and C-2BE.

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III. INFLUENT AND EFFLUENT MONITORING REQUIREMENTS

The Dischargers shall monitor their individual treatment plant influent and effluent for nutrients as shown in Tables E-2, E-3, and E-4, below. Influent monitoring is not required for Dischargers with a facility design flow of less than or equal to 10 MGD (see Fact Sheet Table 1).

Table E-2. Influent Monitoring

Parameter ^[1]	Units	Sample Type ^[2]
Ammonia, Total	mg/L and kg/day as N	C-24
Total Kjeldahl Nitrogen	mg/L and kg/day as N	C-24
Nitrate-Nitrite ^[3]	mg/L and kg/day as N	C-24
Phosphorus, Total	mg/L and kg/day as P	C-24

Unit Abbreviations:

mg/L = milligrams per liter

kg/day as N = kilograms per day as nitrogen

kg/day as P = kilograms per day as phosphorus

Sampling Types and Frequencies:

C-24 = 24-hour composite

Footnotes:^[1] Influent samples shall be collected concurrently with effluent samples.^[2] 24-hour composites may be made up of four discrete grab samples collected over a 24-hour period and volumetrically or mathematically flow-weighted. During a 24-hour period, the samples may be collected only when the plant is staffed, if necessary.^[3] If, after two years, all nitrate-nitrite concentrations a Discharger measures are below 2.0 mg/L, the Discharger may discontinue influent monitoring for this parameter.**Table E-3. Effluent Monitoring**

Parameter	Units	Sample Type ^[1]
Ammonia, Total	mg/L and kg/day as N	C-24
Nitrate-Nitrite	mg/L and kg/day as N	C-24
Inorganic Nitrogen, <u>Total</u> ^[2]	mg/L and kg/day as N	Calculated
Phosphorus, Total	mg/L and kg/day as P	C-24

Unit Abbreviations:

mg/L = milligrams per liter

kg/day as N = kilograms per day as nitrogen

kg/day as P = kilograms per day as phosphorus

Sampling Types and Frequencies:

C-24 = 24-hour composite

Footnote:^[1] Dischargers may collect 24-hour composites made up of four discrete grab samples collected over a 24-hour period and volumetrically or mathematically flow-weighted. During these 24-hour periods, sample collection may limited to times when a plant is staffed, if necessary.^[2] Total Inorganic Nitrogen = Total Ammonia + Nitrate-Nitrite. Dischargers may use approved analytical techniques that require filtration for analyte measurements that comprise Total Inorganic Nitrogen.

Commented [A7]: one of the BACWA POTWs has a design flow of exactly 10 mgd and would prefer to have influent monitoring optional

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Commented [A8]: My lab folks tell me that adding "Total" here doesn't really mean anything and that just calling it Inorganic Nitrogen makes more sense. Also, Inorganic Nitrogen is a parameter that can be reported in CIWQS and TIN currently is not.

Commented [A9]: FYI - Per SFPUC lab staff: There is no difference between the two in solution as there is no way to measure nitrogen gas in solution. IN = Nitrate + Nitrite + Ammonia. TIN = Nitrate + Nitrite + Ammonia + Nitrogen (gas).

Commented [A10]: Given that, I suggest we recommend deleting "Total" so that we don't have to deal with reporting issues in CIWQS unless there is a good reason to retain it.

Commented [A11]: This footnote should match the language for influent. They are worded differently without clear intent to the difference.

Table E-4. Minimum Sampling Frequencies

Discharger Size	Minimum Sampling Frequency ^{[1], [2], [3], [4], [5]}
Major Dischargers (design flow ≥ 10 MGD)	Twice per month for effluent Once per quarter for influent
Major Dischargers (design flow ≤ 10 MGD)	Once per month for effluent
Minor Dischargers (design flow < 1.0 MGD)	Twice per year for effluent

Unit Abbreviations:

MGD = million gallons per day

Footnotes:

- ^[1] Samples need only to be collected when discharging (i.e., seasonal Dischargers shall collect samples only during the discharge season).
- ^[2] Municipal Dischargers that discharge through the EBDA Common Outfall shall monitor their individual wastewater treatment plant influent and effluent at least ~~twice per year~~ once per quarter.
- ^[3] Municipal Dischargers that discharge through the West County Agency Combined Outfall shall monitor their individual wastewater treatment plant influent and effluent at least once per quarter.
- ^[4] The East Bay Regional Parks District is not required to monitor influent and shall monitor effluent once per quarter.
- ^[5] The Livermore-Amador Valley Water Management Agency is not required to monitor influent or effluent, and the Union Sanitary District is not required to monitor effluent from its wet weather outfall.

Commented [A12]: One BACWA member has design flows of exactly 10 mgd and prefers to be grouped with plants less than 10 mgd

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IV. REPORTING REQUIREMENTS**A. General Monitoring and Reporting Requirements**

The Dischargers shall comply with all Standard Provisions (Attachments D and G of the Dischargers' individual NPDES permits) related to monitoring, reporting, and recordkeeping.

B. Individual Reporting in Self-Monitoring Reports (SMRs)**1. Reporting Nutrients Data**

- a. Routine SMRs.** Dischargers shall submit nutrients data collected to comply with this Order in the routine monthly or quarterly SMRs required in each Discharger's individual NPDES permit. Each SMR shall include all new nutrients monitoring results obtained since the last SMR was submitted. If a Discharger monitors nutrients more frequently than required by this Order at a monitoring location described in Table E-1, it shall include the results of such monitoring in the calculations and reporting for the relevant SMR.
- b. Annual Nutrients Report.** By September 1 of each year, each Discharger shall provide its nutrient information in a separate annual report or state that it is participating in a group report the Bay Area Clean Water Agencies (BACWA) will submit pursuant to section B.1.c, below. Each Discharger shall submit the following:
- i.** Documentation that the Discharger is complying with Provision VI.C.3 of the Order. If reporting in a group report pursuant to section IV.B.1.c, below, the Discharger shall submit certification that it has provided adequate support (i.e., contributed its portion of the required contribution) in accordance with Provision VI.C.3.

- ii. Summary tables depicting the Discharger's annual and monthly flows, nutrient concentrations, and nutrient mass loads, calculated as described in Attachment G section VIII.A (Arithmetic Calculations) of individual NPDES permits. The summary tables shall cover July 1 of the preceding year through June 30 of the current year. Each Discharger shall document its nutrient loads relative to other facilities covered by this Order that discharge into the same subembayment (i.e., Suisun Bay, San Pablo Bay, Central Bay, South Bay, and Lower South Bay). These subembayment delineations may be refined through Provision VI.C.3 of the Order, in which case each Discharger shall document loads relative to the most recent delineation. Nutrient data from other Dischargers may be obtained from the State Water Board's California Integrated Water Quality System (CIWQS) website (<https://www.waterboards.ca.gov/ciwqs/index.html>).
 - iii. Analysis of nutrient trends and load variability, and assessment as to whether nutrient mass discharges are increasing or decreasing.
 - iv. Status and plans for investigation if the trend analysis shows a significant change in nutrient loading. In such cases, the Discharger shall investigate the cause. In the annual reports, the Discharger shall set forth its plans for investigation and report its results, providing necessary updates in subsequent annual reports. The investigation shall include, at a minimum, whether treatment process changes, increasing or decreasing water reclamation, or changes in total influent flow related to water conservation, population growth, transient work community, new industry, or wet weather flows have reduced or increased nutrient discharges.
- c. **Optional Annual Group Nutrients Report.** As an alternative to submitting an individual Annual Nutrients Report in accordance with section IV.B.1.b, above, each Discharger may instead participate in a group report to be submitted by BACWA. By October 1 of each year, the Annual Group Nutrients Report shall include the information detailed in section IV.B.1.b.
2. **Monitoring Periods.** Monitoring periods for all required monitoring shall be as set forth below unless otherwise specified:

Table E-5. Monitoring Periods

Sampling Frequency	Monitoring Period Begins On...	Monitoring Period
Twice per month	Order effective date	First day of calendar month through last day of calendar month
Once per month		
Once per quarter	Closest January 1, April 1, July 1, or October 1 before or after Order effective date ^[1]	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31
Twice per year	Closest May 1 or October 1 before or after Order effective date ^[1]	October 1 through April 30 May 1 through September 30

Footnote:

^[1] Monitoring performed during the previous order term may be used to satisfy monitoring required by this Order.

C. Discharge Monitoring Reports (DMRs)

DMRs are U.S. EPA reporting requirements. Dischargers shall electronically certify and submit DMRs together with SMRs using the Electronic Self-Monitoring Reports module eSMR 2.5 or the latest upgraded version. Electronic DMR submittal shall be in addition to electronic SMR submittal. Information about electronic DMR submittal is available at the DMR website at http://www.waterboards.ca.gov/water_issues/programs/discharge_monitoring.

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ATTACHMENT F - FACT SHEET

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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 section II.B 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. Municipal Facility Information

Discharger	Facility Contact, Title, and Phone	Mailing Address	Effluent Description	Facility Design Flow (MGD)
American Canyon, City of	Stacey Ambrose, Environmental Services Manager (707) 647-4542	151 Mezzetta Court American Canyon, CA 94503	Advanced Secondary	2.5
Benicia, City of	Jeff Gregory, Wastewater Treatment Plant Superintendent (707) 746-4790	614 East Fifth Street Benicia, CA 94510	Secondary	4.5
Burlingame, City of	Syed Murtuza, Director of Public Works (650) 558-7230	501 Primrose Burlingame, CA 94010	Secondary	5.5
Central Contra Costa Sanitary District	Ann K. Sasaki, Deputy General Manager (925) 228-9500	5019 Imhoff Place Martinez, CA 94553	Secondary	53.8
Central Marin Sanitation Agency	Jason Dow, General Manager (415) 459-1455	1301 Andersen Drive San Rafael, CA 94901	Secondary	10
Crockett Community Services District, Port Costa Sanitary Department	James Barnhill, Sanitary Department Manager (510) 787-2992	P.O. Box 578 Crockett, CA 94525	Secondary	0.033
Delta Diablo	Vince De Lange, General Manager (925) 756-1920	2500 Pittsburg-Antioch Highway Antioch, CA 94509	Secondary	19.5
East Bay Dischargers Authority (EBDA)	Jacqueline T. Zipkin (EBDA), General Manager (510) 278-5910 Matt Graul (EBRPD), Chief of Stewardship, (510) 544-2346	2651 Grant Avenue San Lorenzo, CA 94580 (EBDA) 3050 West Winton Road Hayward, CA 94545 (EBRPD)	Secondary	107.8
City of Hayward				
City of San Leandro				
Oro Loma and Castro Valley Sanitary Districts				
Union Sanitary District				
East Bay Regional Parks District (EBRPD)				
Livermore-Amador Valley Water Management Agency				
Dublin San Ramon Services District City of Livermore				
East Bay Municipal Utility District	Eileen White, Chris Dembiezak, Director of Wastewater Senior	P.O. Box 24055 Oakland, CA 94623-1055	Secondary	120

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	Environmental Health & Safety Specialist (510) 287-11490509			
Fairfield-Suisun Sewer District	Gregory G. Baatrup, General Manager (707) 428-9162	1010 Chadbourne Road Fairfield, CA 94534	Advanced Secondary	23.7
Las Gallinas Valley Sanitary District	Mel Liebmann, Plant Manager (415) 472-1734 ext. 26	300 Smith Ranch Road San Rafael, CA 94903	Secondary	2.92
Marin County (Paradise Cove), Sanitary District No. 5 of	Tony Rubio, Chief Plant Operator (415) 435-1501	P.O. Box 227 Tiburon, CA 94920	Secondary	0.04
Marin County (Tiburon), Sanitary District No. 5 of	Tony Rubio, Chief Plant Operator (415) 435-1501	2001 Paradise Drive Tiburon, CA 94920	Secondary	0.98
Millbrae, City of	Khee Lim, Public Works Director (650) 259-2347	621 Magnolia Avenue Millbrae, CA 94030	Secondary	3.0
Mt. View Sanitary District	Neal Allen, District Manager (925) 228-5635 ext. 32	P. O. Box 2757 Martinez, CA 94553	Advanced Secondary	3.2
Napa Sanitation District	James Keller, Operations Director/Plant Manager (707) 258-6020	1515 Soscol Ferry Road Napa, CA 94558	Secondary	15.4
Novato Sanitary District	Sandeep Karkal, Manager-Engineer (415-892-1694	500 Davidson Street Novato, CA 94945	Secondary	7.0
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) 776-3777	202 N. McDowell Blvd. Petaluma, CA 94954	Secondary	6.7
Pinole, City of	Ron Tobey, Plant Manager (510) 724-8963	2131 Pear Street Pinole, CA 94564	Secondary	4.06
Rodeo Sanitary District	Steven S. Beall, District Manager (510) 799-2970	800 San Pablo Avenue Rodeo, CA 94572	Secondary	1.14
Saint Helena, City of	Steven Palmer, Public Works Director (707) 967-2792	1480 Main Street St. Helena, CA 94574	Secondary	0.5
San Francisco (San Francisco International Airport), City and County of	Leroy Sisneros, Director of Facilities 650-821-5400	P.O. Box 8097 San Francisco, CA 94128	Secondary	2.2
San Francisco (Southeast Plant), City and County of	Amy Chastain, Regulatory Program Manager (415) 554-1683	525 Golden Gate Avenue, 13th Floor San Francisco, CA 94103	Secondary	85.4
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 Mateo, City of	Dean Wilson, Chief Plant Operator	330 West 20 th Avenue San Mateo, CA 94403	Secondary	15.7

Commented [A13]: Changed point of contact from Amit to Eric. Amit remains the contact person in F-2: authorized person to sign and submit reports.

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	(650) 522-7386			
Sausalito-Marín City Sanitary District	Jeffrey Kingston, General Manager (415) 331-4716	1 East Road Sausalito, CA 94965	Secondary	1.8
Sewerage Agency of Southern Marin	Mark Grushayev, General Manager (415) 384-4825	26 Corte Madera Ave. Mill Valley, CA 94941	Secondary	3.6
Silicon Valley Clean Water	Teresa Herrera, General Manager (650) 591-7121	1400 Radio Road Redwood City, CA 94065	Secondary	29
Sonoma Valley County Sanitation District	Pam Jeane, Assistant General Manager (707) 521-1864	Sonoma County Water Agency 404 Aviation Blvd. Santa Rosa, CA 95403	Secondary	3.0
South San Francisco and San Bruno, Cities of	Brian Schumacker, Plant Superintendent (650) 877-8555	195 Belle Air Road South San Francisco, CA 94080	Secondary	13
Sunnyvale, City of	Stephen Hogg Ramana Chinnakotla <RChinnakotla@sunnyvale.ca.gov> Bhavani Yerrapotu, WPCP Division Manager (408) 730-7751/7268	Sunnyvale Water Pollution Control Plant P.O. Box 3707 Sunnyvale, CA 94088-3707	Advanced Secondary	29.5
U.S. Department of Navy (Treasure Island)	Patricia A. McFadden, Base Operations Manager, San Francisco Bay Area (415) 743-4720	1 Avenue of the Palms, Suite 161 San Francisco, CA 94130	Secondary	2.0
Vallejo Flood and Wastewater District	Melissa Morton, District Manager (707) 644-8949	450 Ryder Street Vallejo, CA 94590	Secondary	15.5
West County Agency; West County Wastewater District; City of Richmond; and Richmond Municipal Sewer District	Lisa Malek-Zadeh, Interim Gen General Manager 510-222-6700	2910 Hilltop Drive Richmond, CA 94806	Secondary	28.5

Commented [A14]: Jeffrey Kingston is the GM, Omar Arias-Montez is the Operations Superintendent

Commented [A15]: Lisa has been confirmed by her Board as the new GM

Table F-2. Additional Municipal Facility Information

Discharger	Authorized Person to Sign and Submit Reports	Billing Address	Pretreatment Program	Receiving Water Type
American Canyon, City of	Stacey Ambrose, Environmental Services Manager (707) 647-4542	151 Mezzetta Court American Canyon, CA 94503	Yes	Estuarine
Benicia, City of	Jeff Gregory, Wastewater Treatment Plant Superintendent (707) 746-4790	614 East Fifth Street Benicia, CA 94510	Yes	Estuarine
Burlingame, City of	Michael Thompson, Chief Plant Operator (650) 342-3727	501 Primrose Burlingame, CA 94010	Yes	Marine
Central Contra Costa Sanitary District	Ann K. Sasaki, Deputy General Manager (925) 228-9500	5019 Imhoff Place Martinez, CA 94553	Yes	Estuarine
Central Marin Sanitation Agency	Jason Dow, General Manager (415) 459-1455	1301 Andersen Drive San Rafael, CA 94901	Yes	Estuarine
Crockett Community Services District, Port Costa Sanitary Department	James Barnhill, Sanitary Department Manager (510) 787-2992	P.O. Box 578 Crockett, CA 94525	No	Estuarine
Delta Diablo	Vince De Lange, General Manager (925) 756-1920	2500 Pittsburg-Antioch Highway Antioch, CA 94509	Yes	Estuarine
East Bay Dischargers Authority (EBDA)	Jacqueline T. Zipkin, General Manager (510) 278-5910 Matt Gaul (EBRPD), Chief of Stewardship, (510) 544-2346	2651 Grant Avenue San Lorenzo, CA 94580 (EBDA) 3050 West Winton Road Hayward, CA 94545 (EBRPD)	Yes	Estuarine
City of Hayward				
City of San Leandro				
Oro Loma and Castro Valley Sanitary Districts				
Union Sanitary District				
East Bay Regional Parks District (EBRPD)				
Livermore-Amador Valley Water Management Agency				
Dublin San Ramon Services District City of Livermore				
East Bay Municipal Utility District	Eileen White, Director of Wastewater (510) 287-1149	P.O. Box 24055, MS#702 Oakland, CA 94623-1055	Yes	Marine
Fairfield-Suisun Sewer District	Brian Hawley, Operations Manager (707) 428-9118	1010 Chadbourne Road Fairfield, CA 94534	Yes	Estuarine
Las Gallinas Valley Sanitary District	Mel Liebmann, Plant Manager (415) 472-1734 ext. 26	300 Smith Ranch Road San Rafael, CA 94903	No	Estuarine
Marin County (Paradise Cove), Sanitary District No. 5 of	Tony Rubio, Chief Plant Operator (415) 435-1501	P.O. Box 227 Tiburon, CA 94920	No	Marine
Marin County (Tiburon), Sanitary District No. 5 of	Tony Rubio, Chief Plant Operator	2001 Paradise Drive Tiburon, CA 94920	No	Marine

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	(415) 435-1501			
Millbrae, City of	Craig Centis, Public Works Superintendent (650) 259-2376	621 Magnolia Avenue Millbrae, CA 94030	No	Marine
Mt. View Sanitary District	Neal Allen, District Manager (925) 228-5635 ext. 32	P. O. Box 2757 Martinez, CA 94553	No	Estuarine
Napa Sanitation District	Tim Healy, General Manager (707) 258-6000	1515 Soscol Ferry Road Napa, CA 94558	Yes	Estuarine
Novato Sanitary District	Sandeep Karkal, Manager-Engineer (415-892-1694	500 Davidson Street Novato, CA 94945	Yes	Estuarine
Palo Alto, City of	James Allen, Plant Manager (650) 329-2243	2501 Embarcadero Way, Palo Alto, CA 94303	Yes	Estuarine
Petaluma, City of	Matthew Pierce, Operations Supervisor (707) 776-3777	202 N. McDowell Blvd. Petaluma, CA 94954	Yes	Estuarine
Pinole, City of	Ron Tobey, Plant Manager (510) 724-8963	2131 Pear Street Pinole, CA 94564	No	Marine
Rodeo Sanitary District	Steven S. Beall, District Manager (510) 799-2970	800 San Pablo Avenue Rodeo, CA 94572	No	Estuarine
Saint Helena, City of	Steven Palmer, Public Works Director (707) 967-2792	1480 Main Street St. Helena, CA 94574	No	Freshwater
San Francisco (San Francisco International Airport), City and County of	Leroy Sisneros, Director of Facilities 650-821-5400	P.O. Box 8097 San Francisco, CA 94128	Yes	Marine
San Francisco (Southeast Plant), City and County of	Greg Norby, Assistant General Manager (415) 554-2465	525 Golden Gate Avenue, 13th Floor San Francisco, CA 94103	Yes	Marine
San Jose and Santa Clara, Cities of	Amit K. Mutsuddy, Deputy Director (408) 635-2007	700 Los Esteros Road San Jose, CA 95134	Yes	Estuarine
San Mateo, City of	Dean Wilson, Chief Plant Operator (650) 522-7386	330 West 20 th Avenue San Mateo, CA 94403	Yes	Marine
Sausalito-Marin City Sanitary District	Jeffrey Kingston, General Manager (415) 331-4716	1 East Road Sausalito, CA 94965	No	Marine
Sewerage Agency of Southern Marin	Mark Grushayev, General Manager (415) 384-4825	26 Corte Madera Ave. Mill Valley, CA 94941	No	Marine
Silicon Valley Clean Water	Monte Hamamoto, Chief Operating Officer (650) 832-6266	1400 Radio Road Redwood City, CA 94065	Yes	Marine
Sonoma Valley County Sanitation District	Ryan Kirchner, Operations Coordinator (707) 495-6160	Sonoma County Water Agency 404 Aviation Blvd. Santa Rosa, CA 95403	No	Estuarine

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South San Francisco and San Bruno, Cities of	Brian Schumacker, Plant Superintendent (650) 877-8555	195 Belle Air Road South San Francisco, CA 94080 San Mateo County	Yes	Marine
Sunnyvale, City of	Stephen Hogg Ramana Chinnakotla Bhavani Yerrapotu , WPCP Division Manager (408) 730- 77517268	Sunnyvale Water Pollution Control Plant P.O. Box 3707 Sunnyvale, CA 94088-3707	Yes	Estuarine
U.S. Department of Navy (Treasure Island)	Patricia A. McFadden, Base Operations Manager, San Francisco Bay Area (415) 743-4720	1 Avenue of the Palms, Suite 161 San Francisco, CA 94130	No	Marine
Vallejo Flood and Wastewater District	Melissa Morton, District Manager (707) 644-8949	450 Ryder Street Vallejo, CA 94590	Yes	Estuarine
West County Agency; West County Wastewater District; City of Richmond; and Richmond Municipal Sewer District No. 1	Lisa Malek-Zadeh, Interim General Manager 510-222-6700	2910 Hilltop Drive Richmond, CA 94806	Yes	Estuarine

Commented [A16]: Lisa has been confirmed as the new GM

- A.** The Dischargers listed in Table 1 own and operate their respective wastewater treatment plants and collection systems. The Dischargers provide secondary or advanced secondary treatment of wastewater collected from their service areas. After treatment, the Dischargers discharge to San Francisco Bay² and its tributaries, which are waters of the United States within the San Francisco Bay watershed. Details of the wastewater treatment processes and discharges are described in the individual NPDES permits listed in Attachment B. Attachment C shows a map of the primary discharge locations subject to this Order.

For the purposes of this Order, references to “discharger” or “permittee” in applicable federal and State laws, regulations, plans, or policies are held to be equivalent to references to the Dischargers herein.

- B.** The Dischargers are regulated pursuant to NPDES Permit No. CA0038873. The Dischargers were previously subject to Order No. R2-2014-0014 (previous order).

The Dischargers are authorized to discharge nutrients subject to waste discharge requirements (WDRs) in this Order. Regulations at 40 C.F.R. section 122.46 limit the duration of NPDES permits to a fixed term not to exceed five years. Accordingly, Table 3 of this Order limits the effective period for this discharge authorization. Pursuant to California Code of Regulations, title 23, section 2235.4, the terms and conditions of an expired permit are automatically continued pending reissuance of the permit if the Dischargers comply with all requirements for continuation of expired permits. (40 C.F.R § 122.6(d))

- C.** This Order establishes requirements because municipal wastewater treatment plants are a significant source of nutrients to San Francisco Bay and nutrients pose at least a potential threat to San Francisco Bay beneficial uses. Nitrogen is the growth-limiting nutrient of San Francisco Bay,³ and municipal wastewater treatment plants account for about 62 percent of the annual average total inorganic nitrogen (the bioavailable form of nitrogen) load to San Francisco Bay.⁴

San Francisco Bay has long been recognized as nutrient-enriched. Despite this, the abundance of phytoplankton in the estuary is lower than what would be expected due to strong tidal mixing, which limits periods of stratification; high turbidity, which limits light penetration; and an abundant clam population, which feeds on the phytoplankton. However, recent data indicate an increase in phytoplankton biomass and a small decline in dissolved oxygen concentrations in many areas of the estuary, suggesting that San Francisco Bay’s historic resilience to the effects of nutrient enrichment may be weakening. The contributing factors for this decline include (1) natural oceanic oscillations that have increased benthic predators, thus reducing South San Francisco Bay’s clam population and clam grazing; and (2) decreases in suspended sediment that have resulted in a less turbid environment and increased light penetration:

- Beginning in the late 1990s, phytoplankton growth in South San Francisco Bay increased sharply through 2010, then leveled off, and may be gradually heading toward pre-2000

² San Francisco Bay consists of the Sacramento/San Joaquin River Delta, Suisun Bay, Carquinez Strait, San Pablo Bay, Central San Francisco Bay, Richardson Bay, Lower San Francisco Bay, and South San Francisco Bay.

³ San Francisco Estuary Institute, Scientific Foundation for the San Francisco Bay Nutrient Management Strategy, Draft FINAL, October 2014, page 65.

⁴ San Francisco Estuary Institute, External Nutrient Loads to San Francisco Bay, January 2014, Table 6, page 27.

levels.⁵ The cause of this increase appears to have been a significant increase in fish, shrimp, and crab predators attributed to a change in natural oceanic oscillations bringing colder waters to San Francisco Bay.

- In certain areas (e.g., Suisun Bay), turbidity has decreased up to 50 percent since 1975.⁶ The reasons appear to relate to decreases in sediment loads from the Sierra Nevada Mountains and Central Valley, and the amount of erodible material within San Francisco Bay. Even with the significant turbidity decrease in Suisun Bay, phytoplankton biomass production continues to be suppressed.

Spring phytoplankton blooms are relatively frequent in San Francisco Bay, and fall blooms are becoming more frequent. The reasons are unknown, but the increases could be the result of a less turbid environment and less clam grazing. While San Francisco Bay experiences strong tidal mixing, there are two periods each year, between March and April and between September and October, during which there is less tidal mixing.⁶ During these periods, salinity stratification can develop if there are sufficient freshwater inputs, as is typical during spring. More calm, clear days can lead to temperature stratification, as is typical during fall. Under these stratifying conditions, phytoplankton can remain in the light-rich zone of the upper water column and grow rapidly. Typically, these blooms are short-lived, lasting only 10 to 14 days and ending when tides increase and re-mix the water column.

Phytoplankton growth and biomass accumulation are currently limited much of the time by a lack of light, and biomass accumulation is further controlled by clam grazing. If these constraints continue to shift, increases in phytoplankton biomass could follow. Under this scenario, it may be necessary to limit the availability of essential nutrients. Therefore, it is necessary to understand (1) current and future nutrient loads from municipal dischargers, (2) the fate and cycling of these nutrients, (3) the potential for current or future adverse impacts (e.g., low dissolved oxygen or harmful algal blooms) from these nutrients, and (4) indicators of potential changes in the Bay's ability to assimilate nutrients and maintain its resilience to potential adverse nutrient-related impacts.

The contribution of municipal wastewater treatment plants to the total inorganic nitrogen load in San Francisco Bay varies depending on subembayment,⁷ as shown in the table below:

Table F-3. Annual Average Total Inorganic Nitrogen Loads (2006-2011)

Subembayment	Municipal (kg N/day)	Petroleum Refinery (kg N/day)	Municipal Stormwater (kg N/day)	Delta (kg N/day)	Total (kg N/day)	Municipal (%)
Lower South Bay	6,800	n/a	540	n/a	7,300	93
South Bay	19,400	n/a	670	n/a	20,000	97
Central Bay	11,700	n/a	160	n/a	11,800	99
San Pablo Bay & Carquinez Strait	2,200	840	7,480	n/a	10,600	21
Suisun Bay	5,600	130	1,970	15,900	23,600	24

⁵ Cloern, J.E., and A.D. Jassby (2012), "Drivers of change in estuarine-coastal ecosystems: Discoveries from four decades of study in San Francisco Bay," *Reviews of Geophysics*, 50, RG4001, page 21.

⁶ San Francisco Estuary Institute, Scientific Foundation for the San Francisco Bay Nutrient Management Strategy, October 2014, page 34.

⁷ San Francisco Estuary Institute, External Nutrient Loads to San Francisco Bay, January 2014, Table 6, page 27.

Baywide ^[1]	45,700	970	10,820	15,900	74,000	62
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Footnote:^[1] Baywide totals may not add up due to rounding.

D. Several years may be needed to determine an appropriate level of nutrient control and to identify management actions necessary to protect San Francisco Bay's beneficial uses. This Order is the second phase of what the Regional Water Board expects to be a multiple-permit-term effort. It continues to implement the regional assessment framework established by the previous order to facilitate collaboration on studies that will inform future nutrient management decisions and regulatory strategies. The overall purpose of this phase is to (1) track and evaluate treatment plant performance, (2) fund nutrient monitoring programs, (3) support load response modeling, and (4) evaluate, on an individual and subembayment scale, nutrient removal approaches using natural systems and wastewater recycling. These studies will increase the understanding of external nutrient loads, improve San Francisco Bay load-response models, support development of nutrient water quality objectives, and increase the certainty regarding whether any required nutrient removal at treatment plants might produce a desired outcome. In 2024, the Regional Water Board anticipates considering whether to establish performance-based nutrient effluent limitations, which could require implementation of treatment plant optimization or upgrades or other means to reduce nutrient loads to San Francisco Bay. This consideration will rely on the most recently available scientific findings. The Regional Water Board also anticipates considering a nutrient credit trading system between Dischargers within subembayments.

II. FACILITY DESCRIPTION

A. Wastewater Treatment

- 1. Locations and Service Areas.** The municipal wastewater treatment plants are located throughout the San Francisco Bay region and described in the individual permits listed in Attachment B.
- 2. Wastewater Treatment.** Municipal wastewater treatment plants provide secondary treatment, which includes screening, skimming, settling, and biological treatment. Some plants provide advanced secondary treatment, which can nitrify ammonia to make nitrate-nitrogen. Plants also denitrify at various levels, which removes total nitrogen from wastewater. The primary source of nutrients in municipal wastewater is human waste; therefore, most Dischargers have no practical way of controlling influent nutrient levels. Municipal wastewater treatment plants generally remove around 20 to 30 percent of the total nitrogen load in their influent.

B. Discharge Point and Receiving Waters

The municipal wastewater treatment plants discharge throughout San Francisco Bay, including Lower South San Francisco Bay, South San Francisco Bay, Central San Francisco Bay, San Pablo Bay, Carquinez Strait, Suisun Bay, and connected tributaries. Discharge points and receiving waters are described in the individual permits listed in Attachment B. Primary discharge points are also shown in Attachment C.

C. Previous Requirements

The previous order required the Dischargers to evaluate potential nutrient reduction options through treatment plant optimization, sidestream treatment, treatment plant upgrades, and other means. The Dischargers submitted a Nutrient Reduction Study on June 22, 2018, summarizing the results of their evaluations. The previous order also required the Dischargers to develop a science plan of necessary studies to support implementation of the San Francisco Bay Nutrient Management Study. The Dischargers submitted the Interim Science Plan for the San Francisco Bay Nutrient Management Strategy on January 31, 2015, and have since submitted annual updates. Since then, they have updated the plan and continue to implement the studies.

D. Existing Nutrient Discharge Data

The previous order required Dischargers to collect nutrients data. As shown below, the data show that approximately 90 percent of total inorganic nitrogen and total phosphorus discharges are from facilities that have permitted design flows of 10 million gallons per day (MGD) or greater.

Table F-4. Annual Average Nutrient Discharge Loads

Discharger	Annual Average Total Inorganic Nitrogen Load (kg/day)	Annual Average Total Phosphorus Load (kg/day)	Design Flow (MGD)
	July 1, 2014 - June 30, 2018		-
American Canyon, City of	42	26	2.5
Benicia, City of	240	19	4.5
Burlingame, City of	320	26	5.5
Central Contra Costa Sanitary District	3,800	120	53.8
Central Marin Sanitation Agency	940	94	10
Crockett Community Services District, Port Costa Sanitary Department	0.88	0.48	0.033
Delta Diablo	1,400	44	19.5
East Bay Dischargers Authority	8,800 ^[1]	590 ^[1]	107.8
Hayward, City of			
San Leandro, City of			
Oro Loma and Castro Valley Sanitary Districts			
Union Sanitary District			
East Bay Regional Parks District			
Livermore-Amador Valley Water Management Agency			
Dublin San Ramon Services District			
Livermore, City of			
East Bay Municipal Utility District	9,800	760	120
Fairfield-Suisun Sewer District	1,000	200	23.7
Las Gallinas Valley Sanitary District	250	38	2.92
Marin County (Paradise Cove), Sanitary District No. 5 of	2.1	0.40	0.04

Marin County (Tiburon), Sanitary District No. 5 of	55	8.4	0.98
Millbrae, City of	260	11	3.0
Mt. View Sanitary District	130	15	3.2
Napa Sanitation District	380	71	15.4
Novato Sanitary District	230	17	7.0
Palo Alto, City of	2,400	390	39
Petaluma, City of	27	38	6.7
Pinole, City of	310	20	4.06
Rodeo Sanitary District	35	8.3	1.14
San Francisco (San Francisco International Airport), City and County of	180	15	2.2
San Francisco (Southeast Plant), City and County of	9,500	260	85.4
San Jose and Santa Clara, Cities of	5,300	310	167
San Mateo, City of	1,300	130	15.7
Sausalito-Marín City Sanitary District	130	17	1.8
Sewerage Agency of Southern Marin	190	43	3.6
Silicon Valley Clean Water	2,500	220	29
Sonoma Valley County Sanitation District	150	35	3.0
South San Francisco and San Bruno, Cities of	990	150	13
Sunnyvale, City of	790	220	29.5
U.S. Department of Navy (Treasure Island)	16	4.0	2.0
Vallejo Flood and Wastewater District	930	120	15.5
West County Agency; West County Wastewater District; City of Richmond; and Richmond Municipal Sewer District No. 1	920	73	28.5
Aggregate Load (kg/day) ^[2]	53,000	4,000	-
Load from Facilities with Design Flow \geq 10 MGD ^[2]	48,000 (91%)	3,600 (88%)	-

Footnote:^[1] The annual average includes loads to the Hayward Marsh.^[2] Totals may not add up due to rounding.**E. Nutrient Load Targets for Future Planning**

As part of the San Francisco Bay Nutrient Management Strategy, the Regional Water Board is seeking to understand what nutrient loadings from municipal wastewater treatment plants are still protective of San Francisco Bay's beneficial uses through scientific studies and modeling. To allow time for scientific studies to determine what nutrient load reductions are necessary to protect San Francisco Bay and for Dischargers to evaluate cost-effective nutrient management opportunities, this Order does not establish effluent limitations.

Based on the most up-to-date scientific findings, the Regional Water Board will consider establishing performance-based effluent limitations in 2024 to prevent further increases in nutrient loads from municipal wastewater treatment plants. Because portions of San Francisco Bay share different nutrient sources and unique hydrodynamic characteristics, the Regional Water Board expects to evaluate compliance with any performance-based effluent limitations on a subembayment scale (e.g., establishing subembayment load caps), as determined through the efforts required by Provision VIC.3 of this Order, and with consideration of cost-effective and feasible nutrient management solutions. The Regional Water Board also expects to consider a framework for nutrient credit trading for evaluating compliance with nutrient load caps by subembayment.

Commented [A17]: I appreciated this change from AD1 to AD2; will flag other places that should be updated to reflect this language.

As a precursor to potential performance-based effluent limitations but mainly to facilitate the identification of which plants can be deemed early actors by achieving a significant reduction in nutrient loads by 2024; this Fact Sheet includes estimates of nutrient load targets that major Dischargers may be expected to meet by 2024 based on their current nutrient discharge performance and future population growth. The load targets are intended to forecast nutrient discharge performance in 2024 and to alert Dischargers of potential future performance-based effluent limitations so that they can implement necessary early actions to reduce nutrients in their current or future facility planning efforts (such as e.g., treatment plant upgrades or wetland creation as tertiary treatment). Because nitrogen is the growth-limiting nutrient for phytoplankton in San Francisco Bay, these load targets are expressed in terms of total inorganic nitrogen, the bioavailable form of nitrogen.

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For purposes of this Order, current performance is defined by the maximum dry season average of total inorganic nitrogen data the major Dischargers collected during the first four years of the previous order term, July 1, 2014, to June 30, 2018. The dry season is defined as the period between May 1 and September 30. The maximum dry season average appropriately defines current performance because it accounts for variability in nutrient discharges associated with changes from wastewater treatment pilot projects, waste-to-energy programs, and recycled water use. Only dry season discharge data were used because it more accurately represents treatment plant performance by excluding nutrient removal variability caused by increased influent flows and lower temperatures during wet weather, variables Dischargers cannot readily control. Consequently, Dischargers prohibited from discharging during the dry season by their individual permits do not have load targets (these Dischargers store or recycle their wastewater during the dry season).

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The load targets were determined by adding a ~~20~~15 percent buffer to the current nutrient discharge performance (i.e., the larger of the one-tailed t-test to calculate the 95 percent upper confidence limit of the mean or the maximum dry season average between July 1, 2014, and June 30, 2018) to account for population growth. The Dischargers' current total inorganic nitrogen performance and 2024 total inorganic nitrogen load targets are shown below:

Commented [A19]: even with a 15% buffer, actual data from POTWs show that large inter-annual variability in loads, not correlated with population, can exist therefore warranting the use of a bit higher buffer

Commented [A20]: due to unique variability in the 4 years of data, 3 POTWs had 95% UCL that were actually a bit higher than the max dry season from 2014-18

Table F-5. Dry Season Total Inorganic Nitrogen Load Discharges — Current Performance and 2024 Load Targets

Discharger	Current Performance	2024 Dry Season Average Load Targets
	Dry Season (May 1 – September 30) between July 1, 2014 – June 30, 2018	

	Maximum Dry Season Average ^[1]	Current Performance + (Current Performance × 2015% growth buffer)
		kg/day
American Canyon, City of	60	727069
Benicia, City of	270	3320310
Burlingame, City of	310290	370340
Central Contra Costa Sanitary District	3,700	44013004500
Central Marin Sanitation Agency	1,100	1,300
Delta Diablo	1,500	18001,700
East Bay Dischargers Authority		
Hayward, City of		
San Leandro, City of		
Oro Loma and Castro Valley Sanitary Districts		
Union Sanitary District	82008,100 ^[2]	98009,400
East Bay Regional Parks District		
Livermore-Amador Valley Water Management Agency		
Dublin San Ramon Services District		
Livermore, City of		
East Bay Municipal Utility District	9,8009,600	12,00011,30011,000
Fairfield-Suisun Sewer District	1,000	1,200
Las Gallinas Valley Sanitary District	^[3]	-
Millbrae, City of	280	3430320
Mt. View Sanitary District	120	140
Napa Sanitation District	^[3]	-
Novato Sanitary District	^[3]	-
Palo Alto, City of	2,600	31003,000
Petaluma, City of	^[3]	-
Pinole, City of	310	3780360
Rodeo Sanitary District	33	4039
San Francisco (San Francisco International Airport), City and County of	270	3230
San Francisco (Southeast Plant), City and County of	11,000	13,000
San Jose and Santa Clara, Cities of	4,900	598005,700
San Mateo, City of	1,500	178001,700
Sausalito-Marin City Sanitary District	150	180170
Sewerage Agency of Southern Marin	180	2120200
Silicon Valley Clean Water	2,5600	304002,900
Sonoma Valley County Sanitation District	^[3]	-

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San Francisco Bay Nutrients Watershed Permit

Municipal Wastewater Dischargers

Order No. R2-2019-00XX
NPDES No. CA0038873

South San Francisco and San Bruno, Cities of	950930	1,100
Sunnyvale, City of	560	670640
U.S. Department of Navy (Treasure Island)	21	2524
Vallejo Flood and Wastewater District	920	1,100
West County Agency; West County Wastewater District; City of Richmond; and Richmond Municipal Sewer District No. 1	990	1,2400

Footnotes:

- [1] Load targets may not exactly compute from current performance values due to rounding. In comparing load targets to actual loads during this Order term the period 2019 to 2024, rounding of actual loads shall be rounded to two significant digits is allowable.
- [2] The current performance includes total inorganic nitrogen loads to the Hayward Marsh.
- [3] The Discharger is prohibited from discharging during the dry season. The dry season discharge prohibition period is defined in its individual NPDES permit as listed in Attachment B.

Although the Regional Water Board expects to consider establishing implement performance-based effluent limitations in 2024, scientific conclusions from monitoring and load response modeling will be used to determine what, if any, effluent limitations are required at that time., or the establishment of nutrient water quality objectives could result in more or less stringent effluent limitations. The Regional Water Board also expects that, if performance-based effluent limitations in 2024 are necessary, such limitations would be based on performance during the period of the previous order term (July 1, 2014, to June 30, 2018), as projected in Table F-5 (referred to as “2024 Dry Season Average Load Targets”); to ensure that Dischargers that have taken early actions to reduce nutrient discharges during this Order term are not penalized with more stringent performance-based effluent limitations in 2024. Before implementing any load targets as effluent limitations, the Regional Water Board may adjust them if necessary (e.g., to account for effluent load variability, decreased recycled water demand, reduced nutrient load inputs from sources other than the Dischargers, increased biosolids management, increases in population including daytime worker population, or new or expanded waste-to-energy programs).

If the most up-to-date scientific information indicates that nutrient loads must be capped or reduced, the Regional Water Board will recognize early actions (i.e., Dischargers’ capital or operational improvements or other means that significantly reduce nutrient loads during this Order term) when considering compliance with nutrient load caps or reductions in a subembayment. This will likely result in findings that no further actions by these Dischargers will be necessary for the design life of the associated capital improvements, provided that other Dischargers can implement capital improvements to reduce nutrient loads below the subembayment cap. Dischargers committed to taking early action during this Order term are listed below:

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Table F-6. Dischargers Taking Early Action

Discharger	Early Action Project	Expected Total Inorganic Nitrogen Results
Central Contra Costa Sanitary District	Description: The Discharger is planning for implementation of <u>is planning for implementation of</u> nutrient removal and advanced recycled water treatment for about 20 MGD of its wastewater flow and sell the recycled water to the Contra Costa Water District, which would convey the recycled water to two refineries adjacent to the Discharger. Through agreements and other water storage and conveyance improvements, additional water supply would be made available to Santa Clara Valley Water District. In 2018, a Memorandum of Understanding was executed between the Discharger, the Contra Costa Water District, and the Santa Clara Valley Water District. Schedule: Completion by 2024.	Load reduction: >30%
City of Hayward	Description: The Discharger is will replace one of its two existing trickling filters with a biological nutrient removal process by converting existing solids contact tanks into anoxic and oxic basins, which would treat 50 percent of the treatment plant flow. Schedule: Completion by 2025.	Load reduction: >30% Concentration: <20 mg/L
Oro Loma and Castro Valley Sanitary Districts	Description: The Discharger is converting its existing activated sludge process to a Modified Ludzack-Ettinger Process. This new process will nitrify and denitrify all dry weather flows. This project includes the construction of a fourth aeration train, a retrofit of existing mechanical aerators to fine bubble diffusers, the installation of six high efficiency blowers, and all associated process instrumentation. Schedule: Completion by 2020.	Load reduction: >50% Concentration: <15 mg/L during dry weather
City of Palo Alto	Description: The Discharger will convert existing nitrifying aeration basins into a biological nutrient removal process. Schedule: Completion by 2022.	Load reduction: >40% Concentration: <15 mg/L
City of San Mateo	Description: The Discharger is adding membrane bioreactors for biological nutrient removal to its treatment plant as part of its Wastewater Treatment Plant Nutrient Removal and Wet Weather Flow Management Upgrade and Expansion Project. The biological nutrient removal process will have a design capacity of 21 MGD and the ability to treat up to 42 MGD during peak wet weather events. Schedule: Completion by 2024.	Load reduction: >50% Concentration: <15 mg/L
City of Sunnyvale	Description: The Discharger currently removes an annual average of approximately 60 percent of total nitrogen from its influent by using oxidation ponds year-round. As part of the Sunnyvale Cleanwater Program, the Discharger is replacing its secondary treatment facilities with a Modified Ludzak-Ettinger process. A portion of this new system will consist of	Load reduction: > 23 30% Concentration: <1 2 + mg/L

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	two aeration basins, four secondary clarifiers, and associated appurtenances. The system will operate in parallel with the existing secondary treatment system (oxidation ponds, fixed-growth reactor nitrification, and dissolved air flotation), where two-thirds of primary-treated flow will be treated by the Modified Ludzak-Ettinger process and the remaining one-third of the flow will be treated by the existing secondary treatment system. <u>The reduction estimate is also dependent on increases in recycled water production and does not account for potential food waste digestion.</u> Schedule: Completion by 2025.	
<u>San Francisco International Airport</u>	Description: <u>The Airport has performed process enhancements during the 2016-2019 period to achieve full nitrification as of January 2019 as part of our recycled water system planning; 95+% ammonia removal has been typical during 2018. The Airport anticipates design and construction of additional sequencing batch reactor (SBR) tanks to provide adequate system capacity and redundancy to the existing three SBRs, and anticipates incorporating nutrient removal in the design. The Airport has 90% design of an advanced water treatment plant (AWTP) with MF/RO/UV, which would lead to greater recycled water usage and reduce discharges to the Bay.</u>	<u>Load reduction:</u> <u>>50%</u> <u>Concentration: < 15 mg/L</u>
U.S. Department of Navy (Treasure Island)	Description: <u>The Discharger will redesign its treatment plant, which is expected to reduce annual total inorganic nitrogen concentrations.</u> Schedule: Completion by 2022.	Concentration: <10 mg/L

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Commented [A33]: Treasure Island will provide more information on what nutrient reduction additions it's planning and the estimated load reduction.**Commented [A34]:** From SFPUC (Jennie Pang): SFPUC will provide updated to the Regional Water Board (James Parrish) in separate communication.

Consistent with State Water Board Resolution No. 2008-0025, the Regional Water Board could establish compliance schedules for any Dischargers that cannot immediately comply with any effluent limitations if imposed in 2024. To obtain compliance schedules, Dischargers must demonstrate that they need time to implement actions necessary to comply with the effluent limitations (e.g., time to design and construct facilities and secure financing). Any Discharger who commits to robust master planning efforts to reduce nutrient discharges would be well positioned to justify and receive a compliance schedule.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

A. Legal Authorities

This Order serves as WDRs pursuant to California Water Code article 4, chapter 4, division 7 (commencing with § 13260) for discharges to waters of the State. This Order is also issued pursuant to Clean Water Act (CWA) section 402 and implementing regulations adopted by U.S. EPA, and Water Code chapter 5.5, division 7 (commencing with § 13370). It shall serve as

an NPDES permit for point source municipal discharges of nutrients to surface waters from the named facilities listed in Attachment B of this Order.

B. California Environmental Quality Act

Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resources Code division 13, chapter 3 (commencing with § 21100).

C. State and Federal Regulations, Policies, and Plans

- 1. Water Quality Control Plan.** The Regional Water Board adopted the *Water Quality Control Plan for the San Francisco Bay Basin* (Basin Plan), which designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. The Basin Plan's narrative biostimulatory substances objective states, "Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses." Requirements in this Order implement the Basin Plan. In addition, this Order implements State Water Board Resolution No. 88-63, which establishes State policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Beneficial uses applicable to San Francisco Bay and its tributaries are as shown below:

Table F-7. Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Uses
001	San Francisco Bay and its tributaries ^[1]	Agricultural Supply (AGR) Cold Freshwater Habitat (COLD) Ocean, Commercial, and Sport Fishing (COMM) Estuarine Habitat (EST) Industrial Service Supply (IND) Marine Habitat (MAR) Fish Migration (MIGR) Municipal and Domestic Supply (MUN) Navigation (NAV) Industrial Process Supply (PROC) Preservation of Rare and Endangered Species (RARE) Water Contact Recreation (REC1) Non-Contact Water Recreation (REC2) Shellfish Harvesting (SHELL) Fish Spawning (SPWN) Warm Freshwater Habitat (WARM) Wildlife Habitat (WILD)

Footnote:

^[1] Specific beneficial uses that apply to each discharge are identified in the individual NPDES permits listed in Attachment B.

- 2. Anti-Backsliding Requirements.** CWA sections 402(o) and 303(d)(4) and 40 C.F.R. section 122.44(l) restrict backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit be as stringent as those in the previous order, with some exceptions in which limitations may be relaxed. (See Fact Sheet section IV.D.1.)

3. **Antidegradation Policy.** Federal regulations at 40 C.F.R. section 131.12 require that state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy through State Water Board Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California*, which is deemed to incorporate the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. Permitted discharges must be consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution No. 68-16. (See Fact Sheet section IV.D.2.)
4. **Endangered Species Act Requirements.** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code §§ 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. §§ 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect beneficial uses, including protecting rare, threatened, or endangered species. The Discharger is responsible for meeting all Endangered Species Act requirements.

D. Impaired Waters on CWA 303(d) List

In July 2015, U.S. EPA approved a revised list of impaired California waters prepared 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. Where it has not done so already, the Regional Water Board plans to adopt TMDLs for pollutants on the 303(d) list. TMDLs establish wasteload allocations for point sources and load allocations for non-point sources and are established to achieve the water quality standards for the impaired waters. No San Francisco Bay segment is listed as impaired by nutrients.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants discharged into waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations: 40 C.F.R. section 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 C.F.R. section 122.44(d) requires that permits include water quality-based effluent limitations to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of receiving waters.

At this time, the Regional Water Board has determined that there is insufficient evidence to conclude that nutrients cause or contribute to excursions of the narrative water quality objective for biostimulatory substances. Therefore, this Order does not include water quality-based effluent limitations for nutrients and no additional discharge prohibitions beyond those already specified in the Dischargers' individual NPDES permits are necessary.

- A. Anti-backsliding.** This Order does not backslide because, like the previous order, it does not contain nutrient effluent limitations, nor does it relax effluent limitations in existing permits (those permits also do not include nutrient effluent limitations). Therefore, this Order complies with the anti-backsliding provisions of CWA sections 402(o) and 303(d)(4) and 40 C.F.R. section 122.44(l), which generally require effluent limitations in a reissued permit to be as stringent as those in the previous permit.
- B. Antidegradation.** Federal regulations at 40 C.F.R. section 131.12 require that state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy through State Water Board Resolution No. 68-16. This Order covers existing discharges, all of which have been covered by individual NPDES permits adopted in accordance with antidegradation policies. According to a State Water Board guidance memorandum (William Attwater, Chief Counsel, October 7, 1987), "...the federal antidegradation policy ordinarily does not apply to consideration of existing discharges, even if exceptions or variances from other applicable water quality objectives or effluent guidelines are required to permit the discharge to continue." According to the memorandum, considerations in determining whether to perform an antidegradation analysis include the following:
- whether there are new discharges or an expansion of existing facilities;
 - whether there would be a reduction in the level of treatment of an existing discharge;
 - whether an existing outfall has been relocated;
 - whether there has been a substantial increase in mass emissions; and
 - whether there has been a change in water quality from a point source or nonpoint source discharge or water diversion.

None of these conditions apply to this Order. Moreover, no antidegradation analysis is required when the Regional Water Board has no reason to believe that baseline water quality will be reduced. Baseline quality is the best quality of the receiving water that has existed since 1968 when considering Resolution 68-16, or since 1975 under the federal policy, unless subsequent lowering was due to regulatory action consistent with State and federal antidegradation policies.

If poorer water quality was permitted, the most recent water quality resulting from permitted action is the baseline water quality to be considered in any antidegradation analysis. Because all the individual NPDES permits were adopted in accordance with the antidegradation policies, the baseline for evaluating antidegradation is the existing water quality resulting from the individual permits. This Order does not allow for any increase in permitted design flow nor allow for any reduction in treatment. Therefore, no findings justifying degradation are necessary.

- C. Stringency of Requirements for Individual Pollutants.** This Order's discharge specifications are no more stringent than required to implement CWA requirements.

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

This Order retains receiving water limitations that apply to biostimulatory substances as set forth in the individual NPDES permits listed in Attachment B. These limitations are based on the Basin Plan's water quality objective for biostimulatory substances (Basin Plan section 3.3.3).

VI. RATIONALE FOR PROVISIONS

A. Standard Provisions

Attachment D of each individual NPDES permit contains standard provisions that apply to all NPDES permits in accordance with 40 C.F.R. section 122.41 and additional conditions applicable to specific categories of permits in accordance with 40 C.F.R. section 122.42. Dischargers must comply with these provisions.

In accordance with 40 C.F.R. section 123.25(a)(12), states may omit or modify conditions to impose more stringent requirements. Attachment G of each individual NPDES permit contains sampling and reporting requirements and additional standard provisions that supplement the federal standard provisions in Attachment D. This Order omits the federal conditions that address enforcement authority specified in 40 C.F.R. sections 122.41(j)(5) and (k)(2) because the State's enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates Water Code section 13387(e) by reference.

B. Monitoring and Reporting

CWA section 308 and 40 C.F.R. sections 122.41(h), 122.41(j)-(l), 122.44(i), and 122.48 require that NPDES permits specify monitoring and reporting requirements. Water Code sections 13267 and 13383 also authorize the Regional Water Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. The MRP establishes monitoring, reporting, and recordkeeping requirements that implement federal and State requirements. For more background regarding these requirements, see Fact Sheet section VII.

C. Special Provisions

1. Reopener Provisions

These provisions are based on 40 C.F.R. sections 122.62 and 122.63 and allow modification of this Order as necessary in response to updated water quality standards, regulations, or other new and relevant information that may become available in the future, and other circumstances as allowed by law.

2. Regional Evaluation of Potential Nutrient Discharge Reduction by Natural Systems and Recycling

This Order requires major Dischargers to evaluate, by themselves or in collaboration with others, the potential for natural systems (e.g., wetlands creation) and wastewater recycling to reduce nutrient loads to San Francisco Bay. This information is necessary to understand the extent that Dischargers may, individually and on a subembayment scale, be able to reduce nutrient loads while providing additional environmental and societal benefits (e.g., removal of emerging contaminants, protection against sea level rise, or reduced demand for potable water). The Regional Water Board anticipates establishing performance-based nutrient effluent limitations in 2024, with the possibility of more stringent effluent limitations if found necessary based on the most recently available scientific findings. The Regional Water Board expects that the results from this provision, in conjunction with the results of the Bay

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Area Clean Water Agencies' (BACWA's) *Nutrient Reduction Study – Potential Nutrient Reduction by Treatment Optimization, Sidestream Treatment, Treatment Upgrades, and Other Means* (June 22, 2018), will provide the Dischargers a range of nutrient reduction options to meet these effluent limitations on a subembayment scale and in a cost-effective manner. The Regional Water Board recognizes the efficiency of collaborating on large-scale study efforts. On behalf of the Dischargers, BACWA has identified \$TBD for collective efforts, and the Regional Water Board finds this amount to be an appropriate level of funding to support the studies identified in this provision.⁸

Major facilities are those with a design flow greater than or equal to 1.0 MGD. While most San Francisco Bay nutrient loads are from municipal wastewater treatment plants with design flows greater than 10 MGD, this Order requires all major facilities to evaluate the potential for nutrient load reduction by natural systems and wastewater recycling because Dischargers with a facility design flow of less than 10 MGD may also be contributing to localized impacts in San Francisco Bay. Therefore, it is possible that the smaller major Dischargers will also need to reduce their nutrient loads.

This provision is authorized by Clean Water Act section 1318(a) and Water Code section 13383. Clean Water Act section 1318(a) authorizes the collection of information necessary to carry out the objectives of the Clean Water Act, including but not limited to developing or assisting in the development of any effluent limitation, other limitation, prohibition, effluent standard, pretreatment standard, or standard of performance. Water Code section 13383 authorizes the Regional Water Board to establish monitoring, reporting, and recordkeeping requirements for wastewater dischargers.

3. Monitoring, Modeling, and Subembayment Studies

This Order requires the Dischargers to conduct, by themselves or in collaboration with others, studies to address the potential impacts of nutrients on San Francisco Bay beneficial uses. These studies would be supported by receiving water monitoring and modeling efforts. The Regional Water Board recognizes there are efficiencies from collaborating on large-scale studies. BACWA has identified \$2.2 million⁹ per year for five years for collective efforts, and the Regional Water Board finds this amount to be an appropriate level of funding to support receiving water monitoring and science plan development and implementation as described in this provision. If the Dischargers and BACWA are successful in securing additional resources, such as from grants or other agencies, for nutrient monitoring or studies identified in the science plan, the additional funding would not count toward the Dischargers' level of effort under this provision.

The Regional Water Board recognizes that, before and during the previous order term, the Dischargers have contributed over \$7 million directly and through the Regional Monitoring Program to fund scientific studies examining the impact of nutrients on San Francisco Bay and have conducted facility nutrient monitoring since July 2012. The Dischargers also

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⁸ The \$500,000 does not include costs to comply with other provisions of this Order or funds Dischargers otherwise contribute to the Regional Monitoring Program.

⁹ The \$2.2 million identified by BACWA does not include costs to comply with other provisions of this Order or funds Dischargers contribute to the Regional Monitoring Program.

collaborated with other regional stakeholders to develop a science plan and governance structure to guide scientific research on nutrient impacts through the San Francisco Bay Nutrient Management Strategy.

The San Francisco Bay Nutrient Management Strategy seeks to determine:

- Conditions in San Francisco Bay that would define nutrient impairment;
- Risks of nutrient impairment under future scenarios (i.e., if San Francisco Bay conditions change);
- Responses of San Francisco Bay habitats to nutrient loads;
- Contributions of individual nutrient sources to nutrient levels in San Francisco Bay; and
- Actions necessary to mitigate current or prevent future nutrient impairment.

Support for receiving water monitoring will provide necessary data to model San Francisco Bay nutrient loads, determine San Francisco Bay's response to nutrient loads, and inform the development and implementation of strategies to manage these nutrient loads (e.g., by implementing nutrient effluent limitations). Modeling efforts would determine San Francisco Bay's assimilative capacity and identify what nutrient discharges are protective of San Francisco Bay's beneficial uses based on the ecological response (e.g., excessive algal blooms leading to decreased dissolved oxygen). Furthermore, modeling could link response indicators to nutrient loads and identify management controls for a range of potential future conditions. In this way, modeling may be used to link nutrient loads with other factors (e.g., strength of tides, residence time, clam grazing, and increases and decreases in turbidity) and delineate subembayments based on the fate of nutrient loads under conditions unique to each San Francisco Bay segment. Understanding how such factors influence nutrient loads on a subembayment scale will provide more accurate information on the relative importance of reducing nutrient loads from certain Dischargers.

This provision is authorized by Clean Water Act section 1318(a) and Water Code section 13383. Clean Water Act section 1318(a) authorizes the collection of information necessary to carry out the objectives of the Clean Water Act, including but not limited to developing or assisting in the development of any effluent limitation, other limitation, prohibition, effluent standard, pretreatment standard, or standard of performance. Water Code section 13383 authorizes the Regional Water Board to establish monitoring, reporting, and recordkeeping requirements for wastewater dischargers.

VII. RATIONALE FOR MONITORING AND REPORTING PROGRAM (MRP)

Attachment E contains the MRP for this Order. It specifies monitoring locations, monitoring frequencies, and reporting requirements. The following provides the rationale for these requirements.

This Order requires Dischargers to monitor and report nitrogen and phosphorus in influent and effluent to track nutrient speciation entering their treatment plants, optimize nutrient removal efficiencies, inform treatment plant upgrade designs, and evaluate discharge trends. The specified monitoring frequencies reflect Discharger size. The MRP requires larger Dischargers to monitor more frequently because larger Dischargers have larger nutrient loads and because they have more resources to conduct the monitoring. As such, Dischargers with a facility design flow less than or equal to 10 MGD are not required to monitor influent for nitrogen and phosphorous.

Commented [A37]: BACWA has one member who happens to have a design flow of exactly 10 mgd

This Order also requires the Dischargers to support receiving water monitoring to enable load-response modeling, track nutrient trends over time, and identify harmful algae blooms and associated toxins. These requirements are necessary because San Francisco Bay may be becoming less resistant to nutrient discharges and municipal wastewater treatment facilities are the primary source of San Francisco Bay nutrient loads. Furthermore, the need for nutrient management controls can be informed by an improved understanding of the fate and transport of nutrients in San Francisco Bay.

Finally, this Order requires Dischargers to submit an annual report, either individually or as a group. Dischargers are required to summarize monitoring data and evaluate nutrient load and concentration trends. This information is necessary to monitor any changes in nutrient loads from the Dischargers' current performance. This will allow for a better understanding of why nutrient loads may change and help identify controllable measures for nutrient load reduction. Additionally, this Order requires that Dischargers report nutrient loads from their respective subembayments so they can evaluate load trends by subembayment and identify cost-effective nutrient load reduction approaches and generate a potential framework for a nutrient credit trading system.

VIII. PUBLIC PARTICIPATION

The Regional Water Board considered the issuance of WDRs that will serve as an NPDES permit for point source discharges of nutrients from the Dischargers' facilities. As a step in the WDR adoption process, Regional Water Board staff developed tentative WDRs and encouraged public participation in the WDR adoption process.

- A. Notification of Interested Parties.** The Regional Water Board notified the Dischargers and interested agencies and persons of its intent to prescribe WDRs for the discharges and provided an opportunity to submit written comments and recommendations. The Regional Water Board provided notification to the Dischargers and other interested parties by transmitting electronic copies of the tentative WDRs. In addition, the Regional Water Board published a notice through the *Oakland Tribune*. 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>.
- B. Written Comments.** Interested persons were invited to submit written comments concerning the tentative WDRs as explained through the notification process. Comments were to be submitted either in person or by mail to the Executive Officer at the Regional Water Board at 1515 Clay Street, Suite 1400, Oakland, California 94612, to the attention of James Parrish.

For full staff response and Regional Water Board consideration, the written comments were due at the Regional Water Board office by 5:00 p.m. on **April 2, 2019**.

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

Date: **May 8, 2019**

Time: 9:00 am

Location: Elihu Harris State Office Building
1515 Clay Street, 1st Floor Auditorium
Oakland, CA 94612

Contact: James Parrish, (510) 622-2381, James.Parrish@waterboards.ca.gov.

Interested persons were invited to attend. At the public hearing, the Regional Water Board heard testimony pertinent to the discharge, WDRs, and permit. For accuracy of the record, important testimony was requested to be in writing.

Dates and venues change. The Regional Water Board web address is <http://www.waterboards.ca.gov/sanfranciscobay>, where one could access the current agenda for changes in dates and locations.

D. Reconsideration of Waste Discharge Requirements. Any aggrieved person may petition the State Water Board to review the Regional Water Board decision regarding the final WDRs. 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

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. The tentative order, related supporting documents, and comments received are on file and may be inspected at the address above at any time between 9:00 a.m. and 5:00 p.m., Monday through Friday. Copying of documents may be arranged by calling (510) 622-2300.

F. Register of Interested Persons. Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Regional Water Board, reference the Facility, and provide a name, address, and phone number.

G. Additional Information. Requests for additional information or questions regarding this Order should be directed to James Parrish, at (510) 622-2381, or James.Parrish@waterboards.ca.gov.