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

STAFF SUMMARY REPORT (James Parrish)
MEETING DATE: May 8, 2019

ITEM **6**

SUBJECT: **Nutrients from Municipal Wastewater Treatment Facilities' Discharges to San Francisco Bay; Counties of Alameda, Contra Costa, Solano, Napa, Sonoma, Marin, San Francisco, San Mateo, and Santa Clara –** Reissuance of NPDES Permit

CHRONOLOGY: April 2014 - Permit issued

DISCUSSION: This Revised Tentative Order (Appendix A) would reissue the Nutrients Watershed Permit and build on the progress achieved from the 2014 issuance. It would increase municipal discharger support for scientific studies to characterize San Francisco Bay's response to nutrient loads. Further, it would require municipal dischargers to evaluate opportunities to reduce nutrient discharges using "green" solutions, like natural systems (e.g., wetlands) and wastewater recycling — opportunities that can provide multiple benefits beyond nutrient removal (e.g., protection against sea-level rise and removal of contaminants of emerging concern).

Although the Bay is not impaired by nutrients, it is a nutrient-enriched estuary with higher nitrogen and phosphorus concentrations than most estuaries in the world. Too much nitrogen and phosphorous can result in excessive phytoplankton growth, which can be associated with harmful algal blooms and low dissolved oxygen. In the Bay, nitrogen has the biggest influence on phytoplankton growth, and the Region's municipal wastewater treatment plants account for 65 percent of the Bay's total nitrogen loading.

Despite being nutrient rich, the Bay has resisted excessive phytoplankton growth due to its turbidity, which limits light penetration necessary for growth; strong tidal mixing, which limits periods of stratification necessary for phytoplankton to thrive at the Bay's surface; and filter-feeding clams, which graze on phytoplankton. However, increasing phytoplankton levels in the early 2000s indicate the Bay's resilience may be weakening, and the Region's expected population growth will continue to increase nitrogen loads.

Municipal dischargers and the scientific community have been collaborating with us to generate the scientific understanding necessary to inform nutrient management strategies to avoid Bay impairment. In 2014, the Board issued the first Nutrients Watershed Permit to provide a consistent approach for regulating the more than 40 municipal wastewater treatment plants within the

San Francisco Bay watershed. That permit required municipal dischargers to (1) support nutrient receiving water monitoring, modeling, and special studies to characterize the Bay's response to current and future nutrient loads; (2) monitor their effluent to characterize nutrient discharge concentrations and loads; and (3) evaluate opportunities to reduce nutrient discharges through treatment plant optimization and upgrades.

The Revised Tentative Order proposes to enhance the first and second requirements above. All municipal dischargers completed the required evaluation of treatment plant optimization and upgrades, so the third requirement would be replaced with a comparable requirement to evaluate opportunities to reduce nutrient discharges using wetlands systems, recycling, and other green solutions. The goal is to create a complete suite of nutrient reduction strategies to determine cost-effective actions with the most benefits.

Although the Revised Tentative Order does not establish effluent limits for nutrients, it sets the stage for the Board to consider nutrient load caps during the next permit reissuance. Specifically, the Revised Tentative Order includes planning level targets for nutrient discharge loads from each municipal discharger in 2024. These targets are based on current nutrient discharge loads plus 15 percent to account for population growth and other factors (e.g., expanded waste-to-energy programs). Establishing the targets now encourages early planning of nutrient reduction strategies that may be necessary to achieve potential future nutrient load caps. Further, the recognized current loads serve as a baseline to account for implementation of nutrient reduction actions during the proposed permit term.

We received nine comment letters (Appendix B) on a draft order circulated for public review, and we prepared responses to those comments (Appendix C). The Revised Tentative Order reflects revisions made in response to the comments.

The most significant comments pertained to the calculation of the planning level targets. Municipal dischargers noted that factors correlated to current nutrient discharge projections can change in the future and requested that such changes be considered before any load caps are established. We agree and will reconsider the factors affecting nutrient loads before proposing any load caps with the next permit reissuance.

We expect this item to remain uncontested.

RECOMMEN-DATION: Adoption of the Revised Tentative Order

APPENDICES: A. Revised Tentative Order
B. Comments
C. Response to Comments

Appendix A

Revised Tentative Order

REVISED TENTATIVE 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 Bay[1] 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.

Discharger	Facility Name	Facility Address	Minor/ Major
	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

Discharger	Facility Name	Facility Address	Minor/ 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

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Tables

Attachments

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) in this Order, the monitoring and reporting 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.

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 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

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 discharge reduction by natural systems (e.g., wetlands and horizontal levees) 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 level of work to complete the following for each Discharger's facility and subembayment:

- 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 any of the above sites that are associated with a defined Operational Landscape Unit[1].

The Scoping Plan shall also include a schedule to complete, within one year of submitting the Scoping Plan, the identification of all potential sites that could use natural systems.

b. Evaluation Plan and Implementation. If a Discharger identifies potential sites for natural systems as described in the Scoping Plan, 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 tasks:

- Description of all treatment plants, treatment plant processes, and service area;
- Estimation of nitrogen (total inorganic nitrogen) and phosphorous (total phosphorous) discharge reductions associated with each project or associated Operational Landscape Unit;
- 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) or associated Operational Landscape Unit;
- 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 start implementing the Evaluation Plan tasks for each identified site 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 for each site identified in the Scoping Plan, highlighting any adaptive changes made to the Evaluation Plan submitted in accordance with task b, above.

[1] Operational Landscape Units are delineated areas that provide specific ecosystem functions and services within the natural and built environment.
Definition by San Francisco Estuary Institute and SPUR, Operational Landscape Units for San Francisco Bay Approach Document, Revised January 2018, page 3.

d. Final Status Report. By July 1, 2023, the Dischargers shall submit, or cause to be submitted, a Final Status Report describing the tasks completed and findings for each site identified in the Scoping Plan. The Final Status Report shall also identify any remaining tasks or barriers for implementing an identified project.

3. Regional Evaluation of Potential Nutrient Discharge Reduction by Water 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 discharge reduction by water 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 level of work to identify opportunities for potential wastewater recycling (e.g., for irrigation) for each Discharger's facility and subembayment.

b. Evaluation Plan and Implementation. If a Discharger identifies 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 for the sites that are identified in the Scoping Plan. The evaluation shall include, but not be limited to, the following tasks:

- Description of all treatment plants, treatment plant processes, and service area;
- Estimation of nitrogen (total inorganic nitrogen) and phosphorous (total phosphorous) discharge reductions associated with each recycled water opportunity;
- Identification of ancillary adverse effects and ancillary benefits from each project (e.g., reduction of natural water resource diversion, reduction of potable water demand, or reduction of chemical fertilizer reliance);
- Assessment of the feasibility, efficacy, reliability, and cost-effectiveness of each opportunity; and
- Identification of potential challenges to implementing each opportunity (e.g., regulatory barriers).

The Dischargers shall start implementing the Evaluation Plan tasks for each identified site 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 for each Discharger that identified water recycling opportunities, highlighting any adaptive changes made to the Evaluation Plan submitted in accordance with task b, above. Status reports may be combined with status reports for Provision VI.C.2, 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.

4. 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, individually or in collaboration with other regional stakeholders, 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, individually or in collaboration with other regional stakeholders, 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 VI.C.4.a, 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.

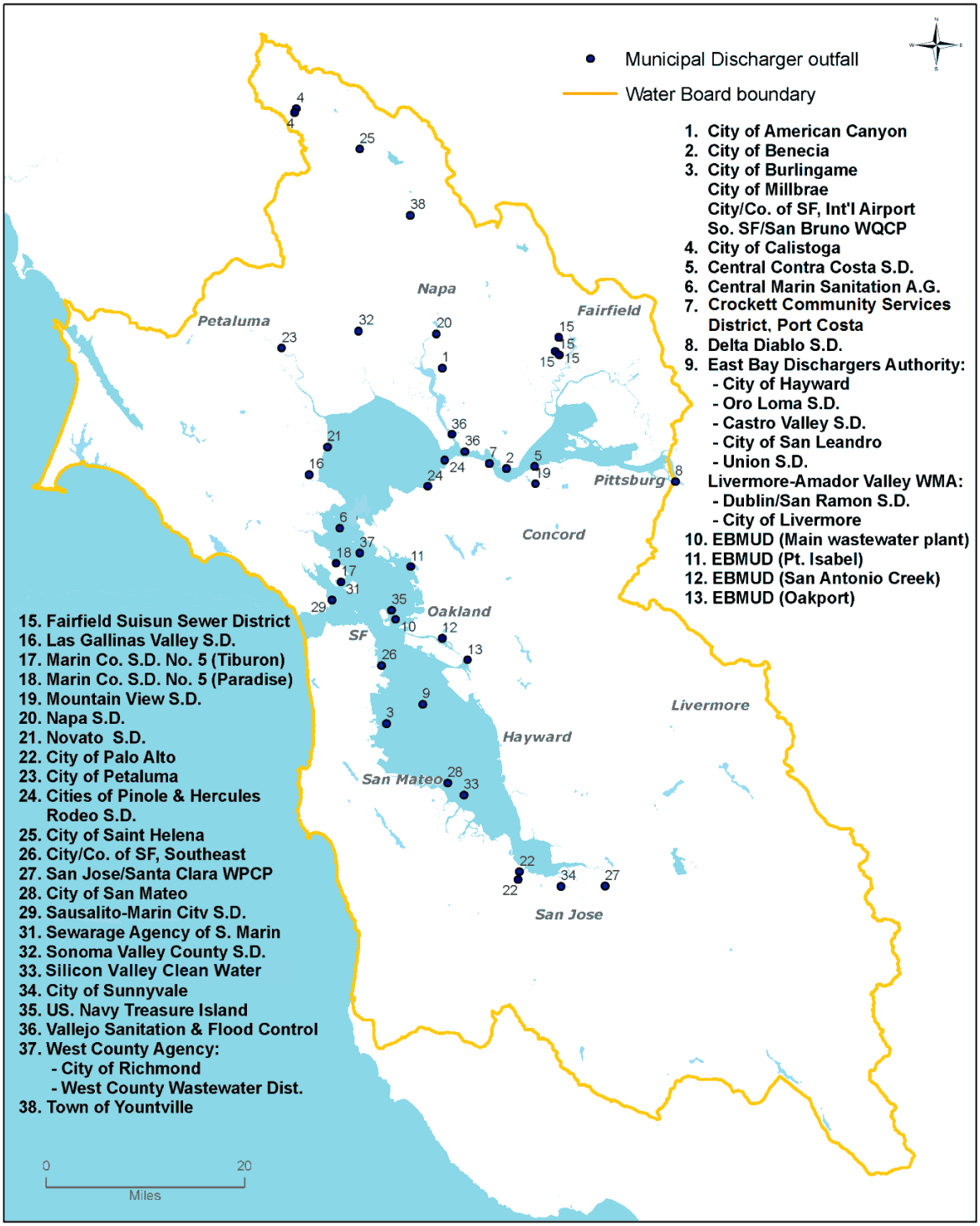
ATTACHMENT B – INDIVIDUAL NPDES PERMIT AND ORDER NUMBERS

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 Castro Valley Sanitary District	CA0037559	R2-2018-0010	3/14/2018	12/31/2023
Union S.D. Wet Weather Outfall	CA0038733	R2-2015-0045	11/18/2015	12/31/2020
East Bay Regional Parks District 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
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-Marin 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	R2-2019-003	5/8/2013	6/30/2018

Footnote:

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

ATTACHMENT C – MAP OF MUNICIPAL DISCHARGE 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.

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-weighed. 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, Total [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] 24-hour composites may be made up of four discrete grab samples collected over a 24-hour period and volumetrically or mathematically flow-weighed. During a 24-hour period, the samples may be collected only when the 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.

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 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.

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 January 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.4 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.4.

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 October 1 before the preceding year through September 30 of the preceding year and at least the previous five years of available data. 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.4 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 February 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.

ATTACHMENT F - FACT SHEET

Contents

Tables

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) 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	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
East Bay Municipal Utility District	Eileen White, Director of Wastewater (510) 287-1149	P.O. Box 24055 Oakland, CA 94623-1055	Secondary	120
Fairfield-Suisun Sewer District	Gregory G. Baatrup, General Manager (707) 428-9162	1010 Chadbourne Road Fairfield, CA 94534	Advanced Secondary	23.7

Discharger	Facility Contact, Title, and Phone	Mailing Address	Effluent Description	Facility Design Flow (MGD)
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
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 (650) 522-7386	330 West 20th Avenue San Mateo, CA 94403	Secondary	15.7
Sausalito-Marin 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

Discharger	Facility Contact, Title, and Phone	Mailing Address	Effluent Description	Facility Design Flow (MGD)
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, WPCP Division Manager (408) 730-7788	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, General Manager 510-222-6700	2910 Hilltop Drive Richmond, CA 94806	Secondary	28.5

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) 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	Jacqueline T. Zipkin, 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)	Yes	Estuarine
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 (415) 435-1501	2001 Paradise Drive Tiburon, CA 94920	No	Marine

Discharger	Authorized Person to Sign and Submit Reports	Billing Address	Pretreatment Program	Receiving Water Type
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	Estuarine
Rodeo Sanitary District	Steven S. Beall, District Manager (510) 799-2970	800 San Pablo Avenue Rodeo, CA 94572	No	Estuarine
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 20th Avenue San Mateo, CA 94403	Yes	Marine
Sausalito-Marin City Sanitary District	Omar Arias-Montez, 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

Discharger	Authorized Person to Sign and Submit Reports	Billing Address	Pretreatment Program	Receiving Water Type
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, WPCP Division Manager (408) 730-7788	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, General Manager 510-222-6700	2910 Hilltop Drive Richmond, CA 94806	Yes	Estuarine

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 Bay[3] 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 a potential threat to San Francisco Bay beneficial uses. Nitrogen is the growth-limiting nutrient of San Francisco Bay,[4] 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.[5]

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,[6] then leveled off, and may now be gradually declining. The cause of this

[3] San Francisco Bay, as the term is used in this Order, refers to the Sacramento/San Joaquin River Delta generally west of and including Montezuma Island, Suisun Bay, Carquinez Strait, San Pablo Bay, Central San Francisco Bay, Richardson Bay, Lower San Francisco Bay, and South San Francisco Bay.

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

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

[6] 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.

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.[7] 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.[7] 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,[8] 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
Baywide [1]	**45,700**	**970**	**10,820**	**15,900**	**74,000**	**62**

Footnote:

[1] Baywide totals may not add up due to rounding.

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

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

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 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 will also consider exploring a nutrient credit trading system between Dischargers.

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 Strategy. 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

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		-
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-Marin 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 ≥ 10 MGD [2]	**48,000 (91%)**	**3,600 (88%)**	-

Footnote:

[1] The annual average includes loads to 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. This Order allows 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 due to the current uncertainties in the extent that nutrients are causing or contributing to adverse effects in San Francisco Bay.

Based on the most up-to-date scientific findings, the Regional Water Board will consider establishing effluent limitations when reissuing this Order 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 effluent limitations on a subembayment scale (e.g., establishing subembayment load caps), as determined through the efforts required by

Provision VI.C.4 of this Order, and with consideration of cost-effective and feasible nutrient management solutions. The Regional Water Board also expects to explore a framework for nutrient credit trading for evaluating compliance with nutrient load caps by subembayment.

As a precursor to potential effluent limitations, 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 effluent limitations so that they can implement necessary early actions to reduce nutrients in their current or future facility planning efforts (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.

For purposes of this Order, current performance is defined by the maximum dry season average of total inorganic nitrogen data the major Dischargers collected between May 1, 2014, and September 30, 2017. 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).

The load targets were determined by adding a 15 percent buffer to the current nutrient discharge performance (i.e., the maximum dry season average between May 1, 2014, and September 30, 2017) to account for population growth. For information purposes, the Dischargers' current total inorganic nitrogen performance and 2024 total inorganic nitrogen load targets are shown below:

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

Discharger	Current Performance Dry Season (May 1 – September 30) between May 1, 2014 – September 30, 2017 Maximum Dry Season Average [1]	2024 Dry Season Average Load Targets Current Performance + (Current Performance × 15% growth buffer)
	kg/day	
American Canyon, City of	80	92
Benicia, City of	240	280
Burlingame, City of	290	330
Central Contra Costa Sanitary District	3,700	4,300
Central Marin Sanitation Agency	1,200	1,400
Delta Diablo	1,500	1,700
East Bay Dischargers Authority	8,400 [2]	9,600
Hayward, City of		
San Leandro, City of		

Discharger	Current Performance Dry Season (May 1 – September 30) between May 1, 2014 – September 30, 2017 Maximum Dry Season Average [1]	2024 Dry Season Average Load Targets Current Performance + (Current Performance × 15% growth buffer)
	kg/day	
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	11,000
Fairfield-Suisun Sewer District	1,100	1,200
Las Gallinas Valley Sanitary District	[3]	-
Millbrae, City of	290	340
Mt. View Sanitary District	120	140
Napa Sanitation District	[3]	-
Novato Sanitary District	[3]	-
Palo Alto, City of	2,600	3,000
Petaluma, City of	[3]	-
Pinole, City of	340	390
Rodeo Sanitary District	31	35
San Francisco (San Francisco International Airport), City and County of	340	400
San Francisco (Southeast Plant), City and County of	11,000	12,000
San Jose and Santa Clara, Cities of	5,300	6,100
San Mateo, City of	1,500	1,700
Sausalito-Marin City Sanitary District	150	170
Sewerage Agency of Southern Marin	190	220
Silicon Valley Clean Water	2,500	2,900
Sonoma Valley County Sanitation District	[3]	-
South San Francisco and San Bruno, Cities of	920	1,100
Sunnyvale, City of	630	730
U.S. Department of Navy (Treasure Island)	21	24
Vallejo Flood and Wastewater District	900	1,000

Discharger	Current Performance Dry Season (May 1 – September 30) between May 1, 2014 – September 30, 2017 Maximum Dry Season Average [1]	2024 Dry Season Average Load Targets Current Performance + (Current Performance × 15% growth buffer)
	kg/day	
West County Agency; West County Wastewater District; City of Richmond; and Richmond Municipal Sewer District No. 1	1,000	1,200

Footnotes:

[1] Load targets may not exactly compute from current performance values due to rounding. Calculations were completed prior to rounding. When comparing load targets and measured loads, measured loads will first be rounded in the same manner as the load targets.

[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 implement effluent limitations in 2024 based on nutrient discharge performance, scientific conclusions from monitoring, load response modeling, or the establishment of nutrient water quality objectives will be used to determine what effluent limitations are appropriate at that time. The Regional Water Board also expects that, if effluent limitations in 2024 are necessary and based on performance, such limitations would be based on performance between May 1, 2014, to September 30, 2017, as projected in Table F-5, to ensure that Dischargers who have taken early actions to reduce nutrient discharges during this Order term are not penalized with more stringent 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 decreased recycled water demand, increased biosolids management, increased daytime worker population, or new or expanded waste-to-energy programs[9]).

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. Any Discharger who significantly reduces nutrient loads during this Order term will be considered for recognition as an early actor. Dischargers who have already committed to taking early action during this Order term are listed below:

[9] To reduce methane emissions from landfills, Senate Bill No. 1383 requires a 75 percent statewide reduction in organic waste disposal from 2014 levels by 2025.

Table F-6. Dischargers Taking Early Action

Discharger	Early Action Project	Expected Total Inorganic Nitrogen Results
Central Contra Costa Sanitary District	**Description:** The Discharger may implement 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 will 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 2023.	Load reduction: >40% Concentration: <15 mg/L
City and County of San Francisco (San Francisco International Airport)	**Description:** The Discharger will add sequencing batch reactor tanks to its existing three sequencing batch reactor tanks to implement biological nutrient removal. **Schedule:** Completion of the additional sequencing batch reactor tanks by 2022.	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	Load reduction: >20% Concentration: <12 mg/L

	Program, the Discharger is replacing its secondary treatment facilities with a Modified Ludzak-Ettinger process. A portion of this new system will consist of 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. **Schedule:** Completion by 2025.	
U.S. Department of Navy (Treasure Island) [1]	**Description:** The Discharger will replace its treatment plant with a new water recycling facility that will incorporate nitrification and denitrification in its treatment processes and will produce an average dry weather flow of 1.3 MGD of Title 22 disinfected tertiary-treated recycled water. The incorporation of denitrification and the resulting increase in recycled water production are expected to significantly reduce nitrogen loading. **Schedule:** Completion by 2022.	Concentration: <8.1 mg/L

Footnote:

[1] The U.S. Department of Navy plans to transfer ownership of the Treasure Island Wastewater Treatment Plant to the City and County of San Francisco. The City and County of San Francisco will own the new treatment plant and associated nutrient reduction upgrades.

Dischargers who cannot immediately comply with any effluent limitations imposed in 2024 could apply for a compliance schedule if they meet the requirements of State Resolution No. 2008-0025 (Compliance Schedule Policy). To obtain compliance schedules, Dischargers must, among other requirements, 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). In addition to meeting the requirements of the Compliance Schedule Policy, a Discharger who commits to robust master planning efforts to reduce nutrient discharges could 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, 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), 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

This Order requires major Dischargers to evaluate, by themselves or in collaboration with others, the potential for natural systems (e.g., wetlands creation) to reduce nutrient loads to San Francisco Bay. This information is necessary to understand the extent that Dischargers, individually and on a subembayment scale, may be able to reduce nutrient loads while providing additional environmental and societal benefits (e.g., removal of emerging contaminants, creation of habitat, or protection against sea level rise). The Regional Water Board will consider establishing nutrient effluent limitations in 2024 based on performance, 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 from Provision VI.C.3 and the Bay 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 potential effluent limitations on a subembayment scale and in a cost-effective manner. If nutrient reductions are required for San Francisco Bay, the Regional Water Board's overarching goal would be to achieve nutrient load reductions through implementation of a regional plan encompassing cost-effective and multiple-benefit nutrient reduction options. This Order requires major Dischargers to evaluate nutrient reduction opportunities through natural systems, which would be a component of such a plan. The Regional Water Board recognizes the efficiency of collaborating on large-scale study efforts. On behalf of the Dischargers, BACWA has identified $500,000 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.[10]

[10] 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.

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 because Dischargers with a facility design flow less than 10 MGD may also be contributing to localized impacts in San Francisco Bay. Therefore, major Dischargers with flows greater than or equal to 1.0 MGD and less than or equal to 10 MGD may 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 NPDES dischargers. It also authorizes the Regional Water Board to require NPDES dischargers to provide other information as may be reasonably required.

3. Regional Evaluation of Potential Nutrient Discharge Reduction by Water Recycling

This Order requires major Dischargers to evaluate, by themselves or in collaboration with others, the potential for water recycling to reduce nutrient loads to San Francisco Bay. This information is necessary to understand the extent that Dischargers, individually and on a subembayment scale, may be able to reduce nutrient loads while providing additional environmental and societal benefits (e.g., reduced natural water resource diversion, reduced demand for potable water, or reduced discharges of contaminants of emerging concern). The Regional Water Board expects that the results from this provision, in conjunction with the results from Provision VI.C.2 and the Bay 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 potential effluent limitations on a subembayment scale and in a cost-effective manner, and will help identify an approach for developing a regional master plan that addresses multiple environmental benefits. If nutrient reductions are required for San Francisco Bay, the Regional Water Board's overarching goal would be to achieve nutrient load reductions through implementation of a regional plan encompassing cost-effective and multiple-benefit nutrient reduction options. This Order requires major Dischargers to evaluate nutrient reduction opportunities through wastewater recycling, which would be a component of such a plan.

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 water recycling because Dischargers with a facility design flow less than 10 MGD may also be contributing to localized impacts in San Francisco Bay. Therefore, major Dischargers with flows greater than or equal to 1.0 MGD and less than or equal to 10 MGD may 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 NPDES dischargers. It also authorizes the Regional Water Board to require NPDES dischargers to provide other information as may be reasonably required.

4. 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 million[11] 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 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

[11] 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.

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 NPDES dischargers. It also authorizes the Regional Water Board to require NPDES dischargers to provide other information as may be reasonably required.

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.

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.

Appendix B

Comments

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

March 28, 2019

Michael Montgomery, Executive Officer
ATTENTION: James Parrish
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Re: U.S. EPA comments on the draft NPDES permit for nutrients from municipal wastewater discharges to San Francisco Bay (NPDES No. CA0038873)

Dear Mr. Montgomery,

Thank you for the opportunity to review and comment on the draft NPDES permit for nutrients from municipal wastewater discharges to San Francisco Bay (NPDES No. CA0038873), herein referred to as the nutrients watershed permit. We support adoption of the permit as currently proposed. The 2014 nutrients watershed permit outlined, among other requirements, monitoring and special study provisions to evaluate potential nutrient discharge reduction by treatment optimization and side-stream treatments. We note that the proposed draft permit enhances and accelerates the efforts made since 2014 by including two new special study provisions to evaluate potential nutrient reductions via natural systems (i.e. non-grey scape approaches) or by water recycling. These additional special studies in the draft permit will increase the understanding of potential control measures available to reduce external nutrient loads.

The draft permit is part of the Regional Board's multi-year effort to identify management actions necessary to protect the San Francisco Bay beneficial uses. EPA agrees with the Regional Board that several years may be necessary to determine an appropriate level of nutrient control and to identify actions needed to protect the Bay. However, during this permit term, EPA encourages the Regional Board to continue work with relevant stakeholders[1] so that the development of necessary regulatory actions and policies can occur to inform the 2024 nutrients watershed permit. Development of potential regulatory actions, including the establishment of performance-based nutrient effluent limits, is consistent with the Regional Board's Nutrient Management Strategy for San Francisco Bay[2] and was contemplated by the 2014 nutrients watershed permit.

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[1] Relevant stakeholders include the Bay Association of Clean Water Agencies (BACWA), San Francisco Estuary Institute, Baykeeper, the 37 publicly owned treatment plants, and other interested parties.

[2] San Francisco Bay Regional Water Quality Control Board Nutrient Management Strategy for San Francisco Bay, November 2012. This Strategy was a 5-year strategy to consider, among other factors, alternative regulatory scenarios and specifying nutrient limits in NPDES permits. https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/planningtmdls/amendments/estuarineNNE/Nutrient_Strategy%20November%202012.pdf

To help inform future management actions, EPA supports the proposed approach to include nutrient load targets that may be the basis of future effluent limitations. Specifically, EPA supports the proposed methodology to calculate nutrient load targets based on current dry season performance and a 15% buffer that accounts for population growth. Such an approach creates the flexibility needed to develop a potential nutrient credit trading framework and is consistent with EPA's 2019 water quality trading policy memorandum.[3] EPA's new trading memo outlines six market-based principles such as water quality credits and offset banking for future use, where banking and credits can be used to promote early adoption of pollutant reduction practices. This concept is directly supported by the inclusion of the nutrient load targets in the draft permit.

We commend the Regional Board for making substantial progress on reducing nutrient loads to the Bay through this permitting action. We appreciate the opportunity to provide input on the draft permit. If you would like to discuss these comments, please contact Becky Mitschele of my staff at (415) 972-3492.

Sincerely,

Elizabeth Sablad

Elizabeth Sablad, Manager
NPDES Permits Section

[3] U.S. EPA 2019 memorandum to Regional Administrators updating the agency's water quality trading policy to promote market-based mechanisms for improving water quality. https://www.epa.gov/sites/production/files/2019-02/documents/trading-policy-memo-2019.pdf

CENTRAL MARIN SANITATION AGENCY

Jason R. Dow P.E.
General Manager

1301 Andersen Drive, San Rafael, CA 94901-5339 Phone (415) 459-1455 Fax (415) 459-3971 www.cmsa.us

March 25, 2019

James Parrish
1515 Clay Street, Suite 1400
Oakland, CA 94612
(510) 622-2451

Via Email: James.Parrish@waterboards.ca.gov

Subject: Tentative Order for Waste Discharge Requirements for Nutrients from Municipal Wastewater Discharges to the San Francisco Bay (NPDES Permit No. CA0038873)

Central Marin Sanitation Agency (CSMA) appreciates the opportunity to comment on the Tentative Order for Waste Discharge Requirements for Nutrients from Municipal Wastewater Discharges to the San Francisco Bay (NPDES Permit No. CA0038873).

CMSA's comment pertains to the current performance loads and the load targets that are shown in Table F-5. The Water Board notes on page F-16 that "Before implementing any load targets as effluent limitations, the Regional Water Board may adjust them if necessary (e.g., to account for decreased recycled water demand, increased biosolids management, increased daytime worker population, or new or expanded waste-to-energy programs)." CMSA wishes to bring to the Water Board's attention that we anticipate an increase in our load factor over time as a result of the expansion of our Agency's organic waste receiving program.

CMSA recently received a Permission to Operate letter from PG&E that authorizes delivery of renewable power to the electric utility grid, which we will sell to Marin Clean Energy (MCE) under an existing power purchase agreement. This spring we anticipate receiving renewable power certification from the California Energy Commission, and will be initiating a co-digestion pilot study to determine the maximum organic waste loading rate to our two anaerobic digesters. Concurrent to the study, we plan to slowly increase our organic waste program to achieve energy self-sufficiency and begin to deliver power to MCE. If the results of the pilot study are favorable, allowing a high level of organic loading to the digesters, we will continue to increase the organic waste loading with more food waste, FOG, and other liquid organic materials for additional biogas generation and power production. CMSA's organic waste program aligns with the State's goals of reducing greenhouse gas emissions, diverting organic waste from landfills, and generating more renewable power.

While we understand that Water Board staff does not wish to adjust the current performance or targets based on potential changes that have some degree of uncertainty, we respectfully request that the Water Board acknowledge in response to comments that both CMSA's current performance and load target will be reconsidered prior to implementation of any load caps in the future, should the expected increase in nutrient loads occur as anticipated.

CMSA appreciates the opportunity to comment on the Tentative Order and thanks you for your continued dedication to a collaborative regional approach on nutrients management.

Respectfully submitted,

Jason Dow, P.E.
General Manager

cc: BACWA Executive Board
David R. Williams, BACWA Executive Director

March 28, 2019

Water Pollution Control Plant
1444 Borregas Avenue
Sunnyvale, CA 94088-3707
TDD/TYY 408-730-7501
sunnyvale.ca.gov

James Parrish
1515 Clay Street, Suite 1400
Oakland, CA 94612
(510) 622-2451

VIA EMAIL: James.Parrish@waterboards.ca.gov

Re: Tentative Order for Waste Discharge Requirements for Nutrients from Municipal Wastewater Discharges to the San Francisco Bay (NPDES Permit No. CA0038873)

Dear Mr. Parrish:

The City of Sunnyvale (Sunnyvale) appreciates the opportunity to comment on the Tentative Order for Waste Discharge Requirements for Nutrients from Municipal Wastewater Discharges to the San Francisco Bay (NPDES Permit No. CA0038873).

Sunnyvale's comment pertains to the current performance loads and the load targets that are shown in Table F-5. The Water Board notes on page F-16 that "Before implementing any load targets as effluent limitations, the Regional Water Board may adjust them if necessary (e.g., to account for decreased recycled water demand, increased biosolids management, increased daytime worker population, or new or expanded waste-to-energy programs)." Sunnyvale wishes to bring to the Water Board's attention at this time that we will likely be constructing a new Food Waste Facility as part of the Sunnyvale Cleanwater Program (SCWP), and are expecting growth and development in the area to continue and the production of recycled water to fluctuate widely in response to weather patterns and construction interferences from the SCWP.

Each of these factors are expected to contribute to potential increases in TIN loads from Sunnyvale. However, the uncertainties surrounding growth and development projections and recycled water demand, coupled with the Food Waste Facility being in the preliminary design stage, preclude quantification of the potential TIN load increases at this time. While we understand that Water Board staff does not wish to adjust the current performance or targets at this time based on potential changes that have some degree of uncertainty, we respectfully request that the Water Board acknowledge in response to comments that both Sunnyvale's current performance and load target will be reconsidered prior to implementation of any load caps in the future, should the expected increase in loads occur as anticipated.

Sunnyvale appreciates the opportunity to comment on the Tentative Order and thanks you for your continued dedication to a collaborative regional approach on nutrients management. Please contact me at 408-730-7785 with any questions or comments regarding this matter.

Sunnyvale

Sincerely,

Ramana

Ramana Chinnakotla
Director of Environmental Services Department

cc: BACWA Executive Board
David R. Williams, BACWA Executive Director

EBDA

EAST BAY DISCHARGERS AUTHORITY
2651 Grant Avenue
San Lorenzo, CA 94580-1841
(510) 278-5910
FAX (510) 278-6547

A Joint Powers Public Agency

March 29, 2019

Mr. James Parrish, Environmental Scientist
NPDES Wastewater Division
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612
James.Parrish@waterboards.ca.gov

Re: Tentative Order for Waste Discharge Requirements for Nutrients from Municipal Wastewater Discharges to the San Francisco Bay (NPDES Permit No. CA0038873)

Dear Mr. Parrish:

The East Bay Dischargers Authority (EBDA) appreciates the opportunity to comment on the Tentative Order for Waste Discharge Requirements for Nutrients from Municipal Wastewater Discharges to the San Francisco Bay (NPDES Permit No. CA0038873). EBDA is a joint powers agency that discharges treated effluent from approximately one million East Bay residents via a deep water outfall in San Francisco Bay under NPDES Permit No. CA0037869, and we are a permittee under the proposed order.

EBDA wishes to commend Water Board staff for their leadership in facilitating the collaborative process resulting in this Tentative Order. At every step, it was abundantly apparent how dedicated and thoughtful Water Board staff was in considering what would truly result in the best outcomes for the Bay and in allowing science to drive decision-making. EBDA appreciates the cooperative approach, and we look forward to continued collaboration on implementation of this permit and beyond.

EBDA's specific comments relate to the dry season inorganic nitrogen load discharge and associated load target found in Table F-5. The Water Board notes on page F-16 that "Before implementing any load targets as effluent limitations, the Regional Water Board may adjust them if necessary (e.g., to account for decreased recycled water demand…)." EBDA wishes to bring to the Water Board's attention at this time that we are expecting a decrease in recycled water demand during this permit cycle that will result in an increase to nitrogen discharges, and that we would accordingly seek a revision to our baseline and load target before any effluent limits are developed in 2024.

The City of Hayward, an EBDA member agency, currently provides recycled water to Calpine for use at its Russell City Energy Center (RCEC) power plant, which sits adjacent to the Hayward Water Pollution Control Facility (WPCF). Per the attached process flow diagram, the recycled water is used in a cooling tower, and the resulting blowdown is a concentrated brine that is crystalized and hauled offsite. The nitrogen in this recycled water diversion is therefore never returned to the Hayward WPCF or the EBDA

pipeline. Over the past several years, Calpine's use of RCEC has varied greatly, and over the next five years, a significant decline in use is expected as renewable energy further offsets the need for the gas-fired power plant. As a result, the nitrogen that is currently diverted from Hayward's effluent via water recycling at RCEC is expected to decline, resulting in a higher nitrogen load to EBDA.

The table below shows dry season loads diverted to RCEC over the 2014-2017 timeframe used to establish current performance:

	EBDA TIN Load*	Total Inorganic Nitrogen (TIN) Load Diverted to RCEC	EBDA TIN Load without RCEC Diversion
	kg/day		
Jul '14	8,001	120	8,121
Aug '14	7,623	225	7,848
Sep '14	7,581	225	7,806
May '15	8,534	228	8,762
Jun '15	8,328	308	8,636
Jul '15	8,283	260	8,543
Aug '15	8,305	214	8,519
Sep '15	8,459	277	8,736
May '16	8,008	89	8,097
Jun '16	7,611	88	7,699
Jul '16	7,948	102	8,050
Aug '16	7,303	34	7,336
Sep '16	8,306	NA	8,306
May '17	8,226	24	8,250
Jun '17	7,516	66	7,582
Jul '17	6,999	99	7,098
Aug '17	6,963	111	7,074
Sep '17	6,255	118	6,373

*Includes loads to Hayward Marsh.

As illustrated above, at peak diversion (2.2 MGD), as much as 308 kg/day was diverted to RCEC. If this diversion were removed, it would result in a 3.7% increase to EBDA's load for that month (June 2015).

Current performance per Table F-5 was calculated based on the max dry season average, which in EBDA's case was 2015, resulting in an average load of 8382 kg/day, or 8400 kg/day when rounded. The average load diverted to RCEC in the 2015 dry season was 257 kg/day, which would have brought EBDA's load to 8600 kg/day, and would increase EBDA's 2024 dry season average load target from 9600 kg/day to 9900 kg/day.

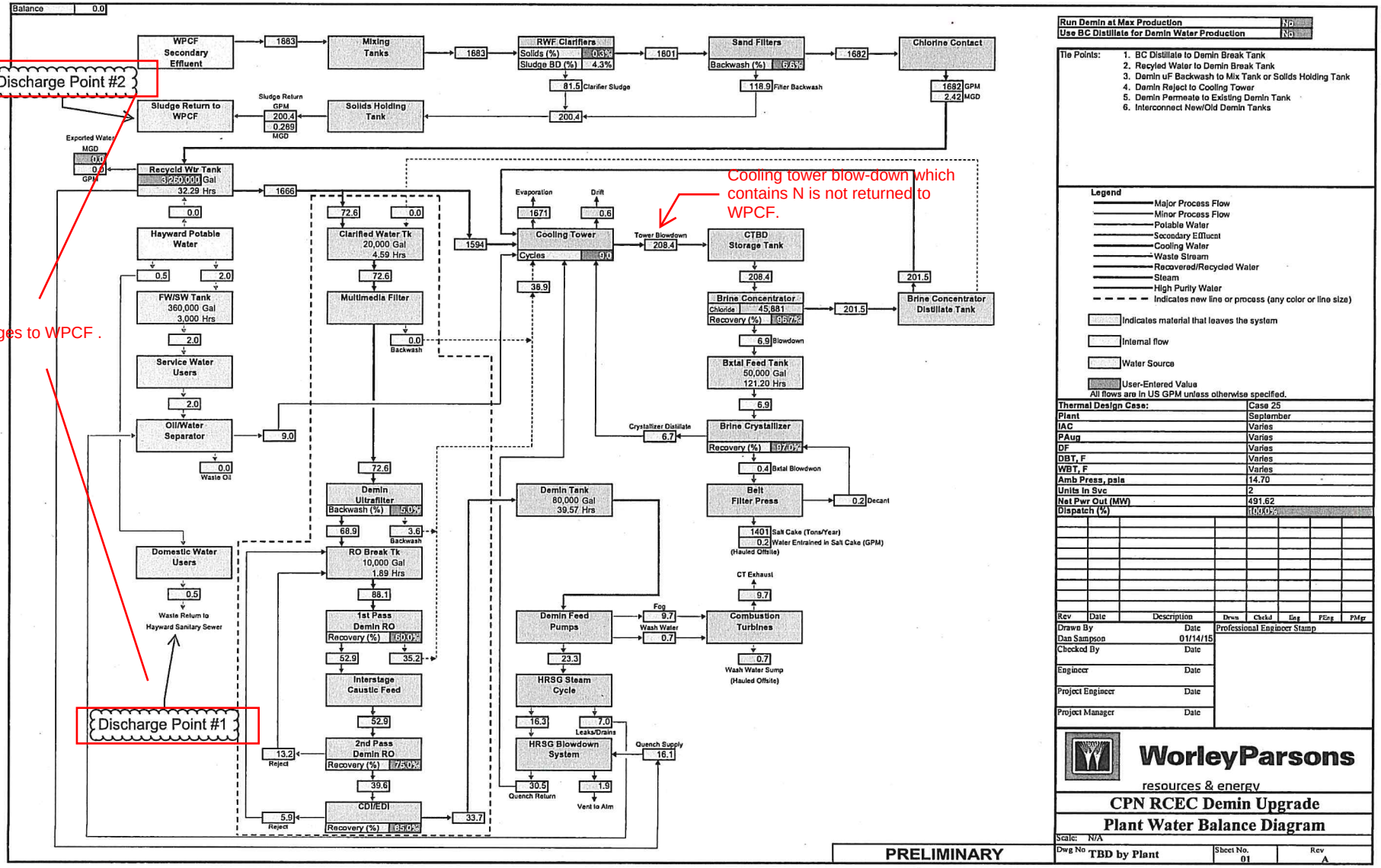
While we understand that Water Board staff does not wish to adjust baselines or targets at this time based on potential changes that have some degree of uncertainty, we respectfully request that the Water Board acknowledge in response to comments that both EBDA's baseline and target will be adjusted upward prior to implementation of any load caps or associated trading scheme in 2024, should the decrease in diversion to RCEC occur as anticipated.

In addition, we note that communities in EBDA's service area, particularly within Hayward and Union Sanitary District (USD), are projecting population growth beyond the 2% annual growth expected in the Bay region. During the term of this permit, USD expects its growth in nutrient loading to average between 2.5% and 3.0% based on the number of single-family dwellings, multifamily dwellings, commercial and industrial real estate either planned, entitled or currently under construction. This growth would result in an additional 438 kg/d to 525 kg/d in TIN discharged via EBDA. Similarly, Hayward is anticipating at least 2.2% growth. EBDA requests that to the extent this growth materializes, the Water Board consider further adjustments to EBDA's load target.

Thank you for your consideration, and thanks again for your commitment to a collaborative regional approach to managing nutrients in San Francisco Bay. If you have any questions, please contact me at 510-278-5910 or jzipkin@ebda.org.

Sincerely,

Jacqueline T. Zipkin, P.E.
General Manager



RCEC Process Flow Diagram

San Francisco
Water Power Sewer
Services of the San Francisco Public Utilities Commission

525 Golden Gate Avenue, 13th Floor
San Francisco, CA 94102
T 415.554.3155
F 415.554.3161
TTY 415.554.3488

April 2, 2019

James Parrish
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

SUBJECT: WASTE DISCHARGE REQUIREMENTS FOR NUTRIENTS FROM MUNICIPAL WASTEWATER DISCHARGES TO SAN FRANCISCO BAY (NPDES No. CA0038873)

Dear Mr. Parrish,

Thank you for the opportunity to provide comments on the draft Waste Discharge Requirements for Nutrients from Municipal Wastewater Discharges to San Francisco Bay ("Nutrient Watershed Permit"). The San Francisco Public Utilities Commission (SFPUC) appreciates and supports this permit and the underlying intent to further development and implementation of the San Francisco Bay Nutrient Strategy. In addition to our comments, please note that the SFPUC supports and incorporates by reference comments submitted concurrently by the Bay Area Clean Water Agencies (BACWA).

The fact sheet of the draft Nutrient Watershed Permit establishes a year 2024 planning target of 12,000 kilograms (kg) per day of total inorganic nitrogen (TIN) loading for the Southeast Water Pollution Control Plant (SEP). The SFPUC wishes to bring to the attention of the San Francisco Regional Water Quality Control Board (Water Board) additional information related to the SFPUC's projected attainment of that target, consistent with the language in the draft Nutrient Watershed Permit related to potential future adjustments in planning targets (*see* page F-16, "e.g., to account for decreased recycled water demand, increased biosolids management, increased daytime worker population, or new or expanded waste to energy programs").

The SFPUC is poised to begin construction of new biosolids digester facilities at SEP, a project that accounts for at least $1.3 billion of the Wastewater Enterprise's $5 billion ten-year capital plan. The new facilities will use thermal hydrolysis to produce Class A biosolids that can be more sustainably reused than Class B, increase biogas generation and utilization, and reduce the tonnage of biosolids that must be trucked out of the City. This technology is also projected to increase TIN concentrations and loading by approximately two percent once the facility is operational (approximately 2026). Based on this assumption and an estimated 1.3%

annual population increase, the SFPUC currently projects that the proposed load targets will be exceeded shortly after project start up in 2026.

Construction of any nitrogen removal technologies at SEP – whether sidestream or full stream treatment –cannot feasibly begin until after construction of the biosolids project and SEP headworks replacement project are complete, which would be beyond the timeframe of this proposed action. These projects present significant construction challenges because they require available physical space within SEP for construction activities, such as staging and laydown. Additionally, the timeframe for construction of any facilities for new treatment technologies will be affected by the need (1) to demolish existing facilities to make land available and (2) to follow necessary multi-year project planning, environmental review, design, and contracting processes.

The SFPUC recognizes that when and how the load targets will be utilized in the future, how population growth and various projects will affect TIN loading, and how technologies will develop in the coming five to ten years are currently unclear. However, the multi-benefit biosolids project will bring about an increase in TIN in the SEP effluent. Accordingly, SFPUC requests the Regional Water Board acknowledge the need for an increase in future load targets (or effluent limit loads) during reissuance of the next Nutrient Watershed Permit. SFPUC will work with the Regional Water Board staff during the next reissuance regarding projected load changes due to the project.

Additionally, the SFPUC asks that the Water Board consider USEPA's policies supporting and encouraging an integrated planning framework for implementing multiple initiatives for system improvements and environmental protection, including implementation of future nutrient reductions.
The SFPUC's capital investment demands and drivers are highly complex. These drivers include reinvestment in the existing system – which includes two all-weather treatment plants, one wet weather facility, approximately 1,000 miles of gravity sewers, eight large pump stations, 36 combined sewer discharge (CSD) outfalls, and four deep-water outfalls – to ensure continued reliability. Drivers also include potential changes in how combined sewer systems are regulated thirty years after adoption of the CSO Control Policy, and measures needed to adapt the combined sewer system to highly uncertain changes in sea level and storm intensity. If a substantial capital investment is needed to reduce nitrogen discharges at SEP, the timing of that investment will need to be carefully considered in light of all other capital program drivers and affordability.

Greg Norby
Assistant General Manager
Wastewater Enterprise

Delta Diablo

A CALIFORNIA SPECIAL DISTRICT

April 2, 2019

VIA ELECTRONIC MAIL

Mr. James Parrish, Environmental Scientist
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

SUBJECT: TENTATIVE ORDER FOR WASTE DISCHARGE REQUIREMENTS FOR NUTRIENTS FROM MUNICIPAL WASTEWATER DISCHARGES TO THE SAN FRANCISCO BAY (NPDES PERMIT NO. CA0038873)

Dear Mr. Parrish:

Delta Diablo (District) appreciates the opportunity to comment on the Tentative Order for Waste Discharge Requirements for Nutrients from Municipal Wastewater Discharges to the San Francisco Bay (NPDES Permit No. CA0038873).

Delta Diablo is a California special district that provides water resource recovery services to the City of Antioch, the City of Pittsburg, and the unincorporated community of Bay Point. These services include secondary treatment of wastewater, recycled water production and distribution, pollution prevention, energy recovery, beneficial reuse of biosolids, street sweeping, and household hazardous waste collection. Serving over 213,000 residents and encompassing 54 square miles, the District is an award-winning agency with a mission to protect public health and the environment.

The District's comments pertain to current performance loads and the load targets that are shown in Table F-5. The Regional Water Board notes on page F-16 that "Before implementing any load targets as effluent limitations, the Regional Water Board may adjust them if necessary (e.g., to account for decreased recycled water demand, increased biosolids management, increased daytime worker population, or new or expanded waste-to-energy programs)." The District wishes to bring two potential factors to the Regional Water Board's attention at this time as each factor would increase nutrient loads.

The District is currently designing the East County Bioenergy Project (ECBP), which is an organics co-digestion project under a public-private partnership with a local waste hauler, Mt. Diablo Resource Recovery (MDRR), and a technology provider, Anaergia, Inc. This project would divert approximately 114 tons per day of organics from local landfills in support of state-mandated diversion goals under SB 1383, while allowing the District to become energy self-sufficient by producing excess biogas that could be used for electricity export, renewable natural gas pipeline injection, and/or renewable vehicle fuel. The organic material would be extracted from municipal solid waste through a pre-processing line at MDRR that produces a slurry for co-digestion at the District's wastewater treatment plant. The ECBP received $4 million in grant funding through CalRecycle's Organics Grant Program during the fiscal year 2017/18 grant

cycle. The final decision to implement the project will be based on overall financial viability and the ability to secure agreements with the project partners.

Since 2001, the District has operated a Recycled Water Facility (RWF) that provides tertiary-treated water to customers in its service area for industrial and irrigation purposes. In 2018, the District recycled 6.2 MGD (49%) of its average influent flow of 12.6 MGD. Approximately 90% of recycled water flow is provided to Calpine for cooling water use at two large power plants with the remaining recycled water used for landscape irrigation at various parks and a golf course. Uncertainty exists regarding long-term Calpine facility operation due to the expiration of the District's recycled water supply agreement with Calpine in 2030. If Calpine facilities cease operation, this would significantly reduce the financial feasibility of providing recycled water to irrigation customers only. In addition, the District does not have certainty regarding long-term operation of existing irrigation customers as evidenced by the closing of the Delta View Golf Course in Pittsburg in 2018.

If the organics co-digestion project should occur, the District expects its average dry season inorganic nitrogen load would increase by approximately 343 kg/day. Losing recycled water customers would increase the inorganic nitrogen load by approximately 156 kg/day.

While we understand that Regional Water Board staff does not wish to adjust the current performance or targets at this time based on potential changes that have some degree of uncertainty, the District respectfully requests that the Regional Water Board acknowledge, in response to comments, that both the District's current performance and load target will be reconsidered prior to implementation of any load caps in the future, should the expected increase in loads occur due to implementation of the ECBP or loss of recycled water customers.

The District appreciates the opportunity to comment on the Tentative Order and thanks you for your continued dedication to a collaborative regional approach on nutrients management. As a member of the Bay Area Clean Water Agencies (BACWA), the District also supports BACWA's comments on the Tentative Order by reference. Please feel free to contact Amanda Roa via email at amandar@deltadiablo.org for further information or clarification.

Sincerely,

Vince De Lange
General Manager

AWR:drb

cc: Dean Eckerson, Delta Diablo
Amanda Roa, Delta Diablo
Brian Thomas, Delta Diablo
District File

LAVWMA Livermore-Amador Valley
Water Management Agency

April 2, 2019

Mr. James Parrish, Environmental Scientist
NPDES Wastewater Division
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612
James.Parrish@waterboards.ca.gov

Tentative Order for Waste Discharge Requirements for Nutrients from Municipal Wastewater Discharges to San Francisco Bay (NPDES Permit No CA0038873)

Dear Mr. Parrish:

The Livermore-Amador Valley Water Management Agency (LAVWMA) appreciates the efforts of Water Board staff to work cooperatively with the dischargers to develop the Tentative Order (TO) for Waste Discharge Requirements for Nutrients from Municipal Wastewater Discharges to San Francisco Bay (NPDES Permit No CA0038873). LAVWMA is a joint powers agency that includes Dublin San Ramon Services District, City of Livermore, and City of Pleasanton. The LAVWMA agencies discharge treated effluent to San Francisco Bay through the East Bay Dischargers Authority (EBDA) deep water outfall.

LAVWMA supports the comments on the TO that have been provided by EBDA and Bay Area Clean Water Agencies (BACWA). LAVWMA's specific comments on the TO include the following:

Section VI. Provisions. C. 3. Regional Evaluation of Potential Nutrient Discharge Reduction by Water Recycling

LAVWMA member agencies have already invested heavily in regional water recycling programs. Those programs should be allowed to be included and receive credit for the requirements outlined in this provision. For example, last year the LAVWMA agencies recycled approximately 37% of the effluent generated by the treatment plants. The percentage during peak irrigation season is substantially higher.

ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

Footnote 2 for Table E-4. Minimum Sampling Frequencies states: *Municipal Dischargers that discharge through the EBDA Common Outfall shall monitor their individual wastewater treatment plant influent and effluent at least once per quarter.* It is likely that the LAVWMA member agencies will monitor more frequently to result in a better annual estimate of the actual nutrient load discharged through the EBDA system. All such data will be reported through the Self-Monitoring Reporting system and the Discharge Monitoring Reports.

Section F. II. E. Nutrient Load Targets for Future Planning
Table F-5 of this section provides for a 15% buffer over current performance to account for population growth. This buffer seemed reasonable until recent developments at the State and local level. The Committee to House the Bay Area (CASA, not to be confused with California Association of Sanitation Agencies) and likely State legislation could usurp local planning agency efforts and result in substantially more growth than anticipated when this permit was developed.

Recognizing how difficult, if not impossible, it would be to estimate this potential additional growth, we are not suggesting that the 2024 targets be revised. Instead, LAVWMA suggests that some language be added to the permit that would allow the Water Board to account for this in establishing future load caps. Something like the following could be considered:

> *The Water Board recognizes that there may be State and local efforts to substantially increase growth in the Bay Area beyond that anticipated in this permit. Should dischargers be able to document that additional growth, the Water Board may reconsider the load caps currently listed as targets in Table F-5.*

Thank you for considering our comments. If you have any questions, please contact me at 510-410-5923, weir@lavwma.com

Sincerely,

Charles V. Weir
General Manager

c: LAVWMA Member Agencies
EBDA
BACWA

NOVATO SANITARY DISTRICT

500 DAVIDSON STREET * NOVATO * CALIFORNIA 94945 * PHONE (415) 892-1694 * FAX (415) 898-2279
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April 2, 2019

James Parrish
California Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612
(510) 622-2451

VIA EMAIL: James.Parrish@waterboards.ca.gov

Subject: Tentative Order for Waste Discharge Requirements for Nutrients from Municipal Wastewater Discharges to the San Francisco Bay (NPDES Permit No. CA0038873)

Dear Mr. Parrish:

Novato Sanitary District appreciates the opportunity to comment on the Tentative Order for Waste Discharge Requirements for Nutrients from Municipal Wastewater Discharges to San Francisco Bay (NPDES Permit No. CA0038873).

The District's comment pertains to the current performance loads, and the load targets that are shown in Table F-5. The table does not list a dry season load for the District; as noted in footnote 3 of Table F-5, the District is currently prohibited from discharging to San Pablo Bay during the dry season (defined as June 1 through August 31 in the District's individual NPDES permit No. CA0037958). The Water Board notes on page F-16 that "Before implementing any load targets as effluent limitations, the Regional Water Board may adjust them if necessary (e.g., to account for decreased recycled water demand, increased biosolids management, increased daytime worker population, or new or expanded waste-to-energy programs)."

Based on previous communication with you, the District is comfortable with the understanding that the absence of a load target in Table F-5 of the Tentative Order does not equate to an allocation of zero, but rather is an indication that no target was calculated due to the current dry season discharge prohibition. Our expectation is that an allocation may need to be developed for the District upon completion of modifications to our outfall, which will be accompanied by year-round discharge to a proposed new marsh to be developed by the State Coastal Conservancy (SCC) on the Bel Marin Keys Unit V property in southeast Novato. The State Coastal Conservancy intends to begin construction on the first phase of the Bel Marin Keys Unit V restoration project later in 2019. Upon completion of the SCC's project, the District will begin discharging year-round to the marsh, as already documented in Provision VI.C.5.b of our current

NPDES permit (Order No. R2-2015-0034). Once the District is closer to commencing year-round discharge, we anticipate working with the Water Board to develop an appropriate dry season inorganic nitrogen load target for the District and its subembayment. Please let us know if this understanding and expectation on our part is not consistent with your prior communications to us.

Once again, the District appreciates the opportunity to comment on the Tentative Order and thanks you for your continued dedication to a collaborative Regional approach on nutrients management.

Sincerely,

Sandeep Karkal
General Manager-Chief Engineer

cc: BACWA Executive Board
David R. Williams, BACWA Executive Director

April 2, 2019

James Parrish
1515 Clay Street, Suite 1400
Oakland, CA 94612
(510) 622-2451

VIA EMAIL: James.Parrish@waterboards.ca.gov

Subject: BACWA Comments - Tentative Order for Waste Discharge Requirements for Nutrients from Municipal Wastewater Discharges to the San Francisco Bay (NPDES Permit No. CA0038873)

Enclosed: Increased load factors Master Document

Dear Mr. Parrish:

The Bay Area Clean Water Agencies (BACWA) appreciates the opportunity to comment on the Tentative Order for Waste Discharge Requirements for Nutrients from Municipal Wastewater Discharges to the San Francisco Bay, NPDES Permit No. CA0038873 (Tentative Order). BACWA is a joint powers agency whose members own and operate publicly-owned treatment works (POTWs) and sanitary sewer systems that collectively provide sanitary services to over 7.1 million people in the nine-county San Francisco Bay Area. BACWA members are public agencies, governed by elected officials and managed by professionals who protect the environment and public health.

BACWA would like to state our continued support for the Nutrient Management Strategy (NMS) that is the bedrock of nutrient planning and policy in the San Francisco Bay Region. This cooperative approach in the Bay Area for managing nutrients has received national attention and been praised for its collaboration amongst multiple stakeholders. The NMS received a National Environmental Achievement Award in 2019 from the National Association of Clean Water Agencies. This Tentative Order provides a logical next step to further the NMS process. It will increase support for the science program to accelerate our understanding of nutrient impacts in the San Francisco Bay, and inform science-based decision making for subsequent permit terms.

BACWA would also like to express our appreciation to Regional Water Board Staff for their willingness to work with our members throughout the Nutrient Watershed Permit development process. They have made it a priority to understand the implications of the data presented in our Group Annual Reports, and to review the findings of the *Nutrient Reduction Study – Potential*

Nutrient Reduction by Treatment Optimization, Sidestream Treatment, Treatment Upgrades, and Other Means, completed by BACWA as required by the first Nutrient Watershed Permit. Regional Water Board Staff have kept the lines of communication open throughout the process of developing this second nutrient watershed permit, from agreement on key tenets, to drafting of permit language. This commitment to permittee engagement has allowed BACWA, in turn, to reach consensus among our diverse member agencies.

While overall, this Tentative Order represents a sound and well-considered next step in the development of nutrient management strategies for the San Francisco Bay Region, BACWA is providing the comments herein to further clarify and refine the permit language.

1. **Not all facilities will have opportunities to implement natural systems for nutrient removal**

   In Section VI.C.2.a on page 7, the Tentative Order states, "*The Scoping Plan shall include, but is not limited to, the level of work to complete the following for each Discharger's facility and subembayment:*" BACWA notes that natural systems will not be feasible at several facilities, either due to constraints in land availability or geography, or because recycled water diversion from discharge precludes sustaining a wetland. It is expected that these facilities where natural systems are infeasible will be identified during the implementation of the Scoping Plan and exempted from further evaluation.

2. **Clarification of Annual Reporting requirements and timing is recommended**

   The Tentative Order Monitoring and Reporting Program (MRP) currently lists February 1 (Attachment E, Section IV.B.1.b) and October 1 (Attachment E, Section IV.V.1.c) as the deadlines for the Annual Report and optional Group Annual Report, respectively. BACWA believes this is an error and those two deadlines should be changed to January 1 and February 1, respectively. The Tentative Order changes the reporting period from the permit year (July 1 through June 30) in the previous Nutrient Watershed Permit, to the new permit year (October 1 through September 30). As such, BACWA will update the data presentation in the Group Annual Report, due February 1, to reflect this shifted timing.

   The Group Annual Report will now be due in the calendar year two years after the beginning of the reporting period, and in the next calendar year after the end of the reporting period. For example, for the water year beginning October 1, **2018**, and ending September 30, **2019**, the Group Annual Report will be due February 1, **2020**. We recommend that the text in Section IV.B.1.b.ii of the MRP be clarified as follows:

   The summary tables shall cover October 1 <u>before</u> ~~of~~ the preceding year through September 30 of the <u>preceding</u> ~~current~~ year and at least the previous five years.

This Tentative Order establishes different constituent monitoring requirements compared to the first Nutrient Watershed Permit, and new effluent monitoring requirements for agencies with capacities that are greater than or equal to 10 mgd. BACWA notes that influent monitoring data will only be available subsequent to July 1, 2019, and cannot be reported for the five years prior, as specified in the text. It is also BACWA's understanding that no further reporting will be necessary for effluent TKN and effluent soluble reactive phosphorus, which were required to be monitored in the effluent during the first watershed permit term, but are discontinued in the Tentative Order. Therefore, these constituents will not be reported in the Group Annual Report due February 1, 2020.

3. Future nutrient trading should not yet be constrained to subembayments

Section I.D of the Fact Sheet states "*The Regional Water Board will also consider exploring a nutrient credit trading system between Dischargers within subembayments.*" Since the science program is ongoing and nutrient reduction objectives have not yet been established, it is too early to state that trading should be limited to agencies within the same subembayment. For example, if the science program establishes that coastal impacts should be the major driver for nutrient limitations, it may be appropriate for trading to occur between agencies in the North and South San Francisco Bay. We also understand that as part of the NMS scientific investigations, the actual boundaries of the current subembayments (generally defined by bridges) may be adjusted to better reflect parameters related to nutrients. As such, BACWA recommends that "*within subembayments*" be removed from the above sentence.

4. Nutrient load increases are driven by factors beyond population growth

Section II.E of the Fact Sheet states,

> "*Before implementing any load targets as effluent limitations, the Regional Water Board may adjust them if necessary (e.g., to account for decreased recycled water demand, increased biosolids management, increased daytime worker population, or new or expanded waste-to-energy programs).*"

BACWA appreciates that the Regional Water Board recognizes that agencies are subject to factors, often beyond their control, that will impact their nutrient loads. Additionally, POTWs are being encouraged by air regulators to help the State meet its renewable energy and organics diversion goals for reducing greenhouse gas emissions. As many agencies are planning new or expanded waste to energy programs, this is will be one of the largest drivers of increased nutrient loads in the next five years.

Several of our members submitted to Regional Water Board Staff brief descriptions of the factors that may impact their loads over the next permit term. The Master List of

these factors is attached to this comment letter[1]. The agencies included in this Master List are:

- Central Contra Costa Sanitary District
- Central Marin Sanitation Agency
- Delta Diablo
- Dublin San Ramon Services District
- East Bay Municipal Utility District
- Fairfield-Suisun Sewer District
- Hayward, City of
- Palo Alto, City of
- San Francisco Public Utilities Commission, Southeast Plant
- Sunnyvale, City of
- Union Sanitary District

Several of these agencies also plan to submit their own comment letter that will describe the factors leading to increased loads at their facilities in greater detail, along with a request that their current performance and load targets be reconsidered if their loads increase due to these factors.

One element that is not discussed in the Tentative Order is the inherent variability in the nutrient load data. Several agencies have examined their data and identified significant variability in their nutrient loads. These agencies were not able to directly correlate all of the year-to-year changes with any one factor such as population growth, or other obvious factors leading to load changes such as change in recycled water demand, or change in a waste to energy program. These agencies also noted that nutrient loads not only vary from year-to-year but can also vary significantly from one sampling date to the next. Since the Regional Water Board used the maximum dry season load from the past four years of data to calculate the current performance for each agency, some of that inherent annual variability is captured within that calculation. However, four years is a relatively small sample size, and it is expected that, moving forward, it will not be uncommon to see single dry seasons where agencies exceed their load targets, even when prior and subsequent dry seasons are well below those load targets. Prior to adoption of the next permit, it will be necessary for BACWA and the Regional Water Board to have a discussion about how to account for nutrient load variability when considering potential nutrient load caps and the impact on upgrades that will cost millions to billions of dollars.

[1] Note that when information on increased loads was gathered from our members, BACWA was expecting that current performance and load targets would be based on dissolved inorganic nitrogen (DIN), rather than total organic nitrogen (TIN), as appears in the Tentative Order. Most agencies submitted estimates of increased loads based on DIN, but the numbers are expected to be equivalent to TIN.

5. The nutrient watershed permit is not an appropriate vehicle to launch a regional wetlands master plan

In Section VI.C.2 of the Fact Sheet, the Tentative Order describes the *Nutrient Reduction Study – Potential Nutrient Reduction by Treatment Optimization, Sidestream Treatment, Treatment Upgrades, and Other Means* completed by BACWA in the first Nutrient Watershed Permit term, as well as the special studies required in the Tentative Order, then states that, "*[a]s an outgrowth of these studies, Dischargers should consider developing a regional master plan that addresses multiple environmental benefits.*" The language is repeated in Section VI.C.3. Such a regional master plan would not be possible without partnerships among governmental land management agencies, water agencies, environmental groups, and the scientific community. While a regional master plan is a laudable goal, we believe it is inappropriate to advocate for such a plan in a permit regulating only POTWs.

In lieu of the language above, BACWA recommends that the following language be inserted into the Fact Sheet Section VI.C.2: "If nutrient reduction is required for the San Francisco Bay, *the Water Board's overarching goal would be to have nutrient load reductions achieved through the implementation of a regional plan that is cost-effective and provides multiple benefits. In this Order, Major dischargers are required to evaluate one component of such a plan, namely the potential for natural systems (e.g. wetlands, etc.) to reduce nutrient loads to the Bay.*" The language about regional master planning should also be removed from Section VI.C.3.

6. The threshold for influent monitoring should be greater than 10 mgd

BACWA recommends that the threshold for influent monitoring be set at greater than 10 mgd, rather than greater than or equal to 10 mgd, as proposed in the Tentative Order. Making this recommended change would exclude Central Marin Sanitation Agency (CMSA) from influent monitoring requirements. CMSA has a stable population, and their discharges have minimal impact on the San Francisco Bay due to their discharge location near the Golden Gate.

7. Additional minor editorial comments

BACWA has the following minor comments and recommended corrections:

a. Footnote 1 to Table E-1 is missing a closing parenthesis.

b. In Table F-1, please correct the contact phone number for the City of Sunnyvale as follows: (408) 730-<u>7788</u>~~7751~~.

c. In the Fact Sheet Section II.E, immediately beneath Table F-5, the text states, "*Although the Regional Water Board expects to implement effluent limitations in 2024 based on nutrient discharge performance, scientific conclusions from monitoring, load response modeling, or*

the establishment of nutrient water quality objectives could result in more or less stringent effluent limitations." In the existing Nutrient Watershed Permit and in this proposed TO, there are no effluent limitations, therefore, there cannot be "more" or "less" stringent effluent limitations in the future permit. BACWA recommends rewording the above sentence as follows: "*Although the Regional Water Board expects to consider establishing performance-based effluent limitations in 2024, scientific conclusions from monitoring, load response modeling, and the establishment of nutrient water quality objectives will be used to determine what, if any, effluent limitations are required at that time*."

d. In Section VI.C.2 and VI.C.3 of the fact sheet, the phrase "smaller major discharger" is used to describe agencies whose nutrient loads likely do not impact the Bay as a whole but may have local impacts. To make the language more precise, BACWA recommends that smaller major" should be replaced with "major dischargers with flows greater than or equal to 1.0 mgd and less than 10 mgd" (or, if the recommendation in item 6, above is adopted, "major dischargers with flows greater than or equal to 1.0 mgd and less than or equal to 10 mgd").

e. In Table F-6, please update the completion date for the City of Palo Alto's project from 2022 to 2023.

BACWA appreciates the opportunity to comment on the Tentative Order and thanks you for your continued dedication to a collaborative Regional approach on nutrients management.

Respectfully Submitted,

David R. Williams, P.E.
Executive Director
Bay Area Clean Water Agencies

Enclosure: Early Actors Template

cc: BACWA Executive Board

Factors impacting nutrient loads by 2024

BACWA Information Template

The Regional Water Board intends to establish Planning Level Targets (PLTs) for nutrient loads in the 2019 Watershed Permit Fact Sheet. These PLTs will likely be based on reported loads for each agency from 2014 to 2018, plus a buffer for growth. In the October 2018 survey distributed by BACWA, most agencies anticipate population growth at or below 2% per year. While it was originally envisioned that the PLTs would be based on Total Nitrogen loads, it is likely they will be based on dissolved inorganic nitrogen (DIN) loads[1].

Several agencies have expressed that they anticipate other factors, beyond simple population growth, which will impact their nutrient loads, including some of the following:

- Accepting biosolids from another agency
- Loss of a major recycled water customer
- New or expanded waste to energy program
- Large increase in daytime worker population commuting from out of Region
- Population growth above 2% per year

If your agency would like to provide information to the Regional Water Board on factors that may contribute to increased loads by 2024 by other than simple population growth, please fill out this information template:

Name of Agency: Central Contra Costa Sanitary District
Description of factor that will increase nutrient loads: Central San is expecting to host a bioenergy demonstration facility that will divert approximately 3.3 dry U.S. metric tons per day from Central San's current solids handling facilities (or approximately 7-8% by mass of the total solids generated) in order to generate biofuels. During the operation of this demonstration facility, there would be a liquid stream generated from the processed solids that would be returned to Central San's treatment plant. This liquid stream is expected to consist of a higher nutrient load than the liquid stream that would otherwise be returned to Central San's treatment plant if the solids were not diverted to the HYPOWERS demonstration facility. This demonstration project, referred to as HYPOWERS, is currently led by the Water Research Foundation (WRF) and is in the planning and preliminary design phase of a project partially funded by the Department of Energy (DOE FOA-0001232).
Timeline for change: Current draft schedule includes approximately 2 years of operation during Calendar Years 2021-2022. This increase in nutrient loads is expected to be temporary and would only occur during pilot operation from 2021-2022.

[1] Note that when information on increased loads was gathered from our members, BACWA was expecting that current performance and load targets would be based on dissolved inorganic nitrogen (DIN), rather than total organic nitrogen (TIN), as appears in the Tentative Order. Most agencies submitted estimates of increased loads based on DIN, but the numbers are expected to be equivalent to TIN.

Changes in Loading

1. **Projected increase in loads as a result of the other factors (DIN in kg/d, calculated on an annual basis):** Approximately 50 kg/d
2. **Percent increase in DIN loads compared to 2018 loads (%):** Approximately 1%

Name of Agency: Central Marin Sanitation Agency

Description of factor that will increase nutrient loads: CMSA operates an existing food waste and FOG to energy program that began initial operations in 2014 and reached steady-state/routine operations in 2016, and has been operating at a relatively constant level since. CMSA is in the early planning stages of expanding this program and exploring options for importing and processing additional FOG and possible additional food waste streams, in order to increase CMSA's renewable energy production and help achieve critical State objectives related to landfill organics diversion and reduction of greenhouse gas emissions. Historically CMSA has noted a strong correlation between the amount of food waste imported and the amount of TIN in its effluent. At this time, it is uncertain if the program will ever be able to be successfully expanded as many potential hurdles still exist. However, should those hurdles be successfully addressed and should CMSA proceed with expanding this program, it is projected that CMSA's TIN load to the bay may increase as a result.

Timeline for change: It is expected that this change, if implemented, would likely occur in the 2019-2024 or possibly the 2024-2029 time periods.

Changes in Loading

1. **Projected increase in loads as a result of the other factors (DIN in kg/d, calculated on an annual basis):** See below
2. **Percent increase in DIN loads compared to 2018 loads (%):**Too many uncertainties around the potential program expansion exist at this time to provide an accurate estimate. CMSA's limitations in digestion capacity could provide a potential upper boundary to program expansion. As an upper boundary, CMSA's total TIN load due to this potential project could yield a 100-300 percent increase as compared to 2018 loads. However, that presents a fairly conservative, "worst-case" upper boundary estimate that is subject to significant uncertainty and a very low probability of ever materializing. A more modest program expansion may have a higher probability of occurrence and may result in only a 10 to 20 percent increase in TIN load as compared to 2018 loads.

Name of Agency: - Delta Diablo

Key Assumptions: Delta Diablo (District) understands that the RWB intends to base future Planning Level Targets (PLTs) on dissolved inorganic nitrogen (DIN) loading during the dry weather season (May 1 – September 30). Based on this revised approach, the District estimated a DIN-based PLT of 1,741 kg DIN/d ("Baseline PLT") using similar methodology applied by the RWB in its October 2018 initial analysis. Note that DIN is assumed to be roughly equivalent to total inorganic nitrogen (TIN) for the purposes of this analysis. The section below provides the basis and rationale for further increasing this proposed dry weather season PLT to address: 1) potential loss of recycled water irrigation customers, and 2) co-digestion of diverted organics in support of state-mandated regulatory requirements.

In addition, the District is proposing a change in the calculation of the Baseline PLT because the dataset included significant time periods during which two Calpine power plants were partially nitrifying and denitrifying recycled water provided by the District due to unstable process operations. Because blowdown flows from the cooling towers are returned to the District's effluent prior to discharge, this had the effect of underestimating current nutrient loading to the Delta for the purposes of this analysis. In addition, a PLT adjustment factor is needed to account for loss of a recycled water irrigation customer in 2018, as described below. Following exclusion of data collected during the Calpine process events and application of the adjustment factor, the "Updated PLT" is estimated at 1,953 kg DIN/d (i.e., +212 kg DIN/d from Baseline PLT).

Description of Factor that will Increase Nutrient Loads

1) Potential Loss of Recycled Water Irrigation Customers: Since 2001, the District has operated a Recycled Water Facility (RWF) that provides tertiary-treated water to customers in its service area for industrial and irrigation purposes. In 2018, the District recycled 6.2 MGD (49%) of its average influent flow of 12.6 MGD. Approximately 90% of recycled water flow is provided to Calpine for cooling water use at two large power plants with the remaining 10% used for landscape irrigation at various parks and a golf course. Uncertainty exists regarding long-term Calpine facility operation due to its recent acquisition by Energy Capital Partners and expiration of the District's recycled water supply agreement with Calpine in 2025. If Calpine facility operation ceases, this would significantly reduce the financial feasibility of providing recycled water to irrigation customers only. In addition, the District does not have certainty regarding long-term operation of existing irrigation customers as evidenced by the closing of the Delta View Golf Course in Pittsburg in 2018.

2) Co-digestion of Diverted Organics: The District is currently completing design of the East County Bioenergy Project (ECBP), which is an organics co-digestion project under a public-private partnership with Mt. Diablo Resource Recovery (local waste hauler) and Anaergia, Inc. (technology provider). This project would divert approximately 114 tons per day of organic waste from local landfills in support of state-mandated diversion goals under SB 1383, while allowing the District to become energy self-sufficient with excess electricity sold to the local power grid. Although the District has completed environmental documentation highlighting the project's benefits in reducing greenhouse gas emissions, it would elevate effluent nutrient loading due to acceptance of organic waste.

The current ECBP capital cost estimate is approximately $30 million, which is exerting financial pressure on overall economic viability due to limited tipping fee and electricity sales revenue needed to offset the initial capital outlay and projected operating costs, along with technological, regulatory, and operational risks. This cost estimate does not include a sidestream treatment process (i.e., ammonia stripping with chemical addition) estimated at $4.5-5.0 million to potentially reduce effluent nutrient loading. The District is requesting RWB consideration of an allowance for increased nutrient loading with deferred implementation of a sidestream treatment project in future years based on ECBP expansion or exceeding established PLTs.

Timeline for change:

1) Potential Loss of Recycled Water Irrigation Customers: As referenced, the recycled water supply agreement with Calpine expires in 2030. Calpine is required to notify the District by 2025 of its intentions regarding contract extension and could conceivably terminate prior to 2025 (with 180-day notice) if significant infrastructure capital investments are required without a long-term facility

operation goal. In addition, the District could lose existing recycled water irrigation customers at any time, exemplified by the loss of the Delta View Golf Course last year.

2) Co-digestion of Diverted Organics: The District is nearing completion of 30% design with development of feedstock supply and design-build contract agreements in progress. If the project proceeds, construction completion is expected in January 2022.

Changes in Loading

1) Potential Loss of Recycled Water Irrigation Customers: The estimated additional load is 156 kg DIN/d, which represents an increase of 8% from the Updated PLT of 1,953 kg DIN/d. Note that the nutrient loading impact is greater because the dry weather analytical period coincides with the highest irrigation customer recycled water demand.

2) Co-digestion of Diverted Organics: Additional effluent ammonia loading is estimated at 343 kg NH_3-N/d. Assuming that DIN is roughly equivalent to ammonia loading, this represents a 18% increase from the Updated PLT of 1,953 kg DIN/d.

Summary

Baseline PLT = 1,741 kg DIN/d (District translation of October 2018 RWB TN-based PLT)
Add 212 kg DIN/d (data correction for nitrification/denitrification at power plants and adjustment factor for loss of recycled water irrigation customer in 2018)
Updated PLT = 1,953 kg DIN/d

Add 156 kg DIN/d (8%) (allowance for potential loss of recycled water irrigation customers)
Add 343 kg DIN/d (18%) (allowance for co-digestion of diverted organics)
District Requested PLT = 2,452 kg DIN/d

Name of Agency: Dublin San Ramon Services District

Description of factor that will increase nutrient loads:

- DSRSD will explore bring in Fats, Oils, and Grease (FOG) into the Digestion process
- DSRSD will explore bring in food and other wastes for conversion to energy.
- DSRSD will construct a dewatering facility

Timeline for change:

- FOG within 2 years
- Other Waste to energy products > 5 years
- Dewatering facility 2 – 5 years (currently biosolids are applied to facultative sludge lagoons with final disposal in an Onsite Land Disposal Facility)

Changes in Loading

1. **Projected increase in loads as a result of the other factors (DIN in kg/d, calculated on an annual basis):** *Unknown*
2. **Percent increase in DIN loads compared to 2018 loads (%):***Unknown*

Name of Agency: East Bay Municipal Utility District (EBMUD)

Description of factor that will increase nutrient loads:
Growth in EBMUD's Resource Recovery (R2) Program is expected to increase nutrient loads as EBMUD works to help the State meet its renewable energy and organics diversion goals for reducing greenhouse gas emissions.

Employment growth is another potential factor for the EBMUD wastewater service area.

Timeline for change:
Significant growth in food waste digestion is expected within the next 5-6 years, especially with the implementation of the SB1383 (2025) and AB1826.

Changes in Loading

1. **Projected increase in loads as a result of the other factors (DIN in kg/d, calculated on an annual basis):**
2. **Percent increase in DIN loads compared to 2018 loads (%):**

It's challenging to estimate nutrient load increase especially for the R2 Program, due to significant uncertainties in future regulations and market competition.

Name of Agency: Fairfield-Suisun Sewer District (1)

Description of factor that will increase nutrient loads:
FSSD's primarily recycles water to farmland surrounding the FSSD treatment facility. Historical volume ranges from --- to ----. The farmers decide the crops based on marketability. Irrigation needs are dependent on crops and weather. Farmers vary water demand with no minimum take. If the water is not recycled, it flows to the receiving water. Because of the drought-proof water supply secured by water suppliers in the FSSD service area, there is no need for additional recycled water and therefore, no intended expansion of recycled water program to divert nitrogen via recycled water.

Timeline for change:
Underway

Changes in Loading

1. **Projected increase in loads as a result of the other factors (DIN in kg/d, calculated on an annual basis):** DIN Increase are unquantified at this time and are highly dependent on quantity. Absence of recycled water could increase DIN in effluent by xxx to xxx kg/d
2. **Percent increase in DIN loads compared to 2018 loads (%):**

Name of Agency: Fairfield-Suisun Sewer District (2)

Description of factor that will increase nutrient loads:
FSSD in its public private partnership with Lystek International developed the OMRC-Fairfield facility to process up to 150,000 wet tons per year of biosolids into marketable products. The OMRC is processing around 50,000 wet tons per year into a biofertilizer. Lystek intends to expand services to other agencies in the Bay Area, including accepting and processing biosolids and organics into marketable products. Processing may include 1) recycling treated solids back to digester for additional treatment and additional energy recovery and 2) digesting sludges, biosolids, and other

organics in an under-utilized FSSD anaerobic digester. Digesting with subsequent dewatering may result in additional DIN from dewatering sidestream flow.

Timeline for change:

Underway – Approximately 6 agencies are relying on OMRC facility, processing around 50,000 wt/y of Class B biosolids. Additionally, Lystek has contracted with the City of Palo Alto to process 8,500 wt/y of their non-digested, dewatered biosolids. Operation is expected in Q1 2019. Processing is expected to include digestion of the Palo Alto solids, dewatering, and producing

Lystek continues to expand services using the OMRC-Fairfield facility. As Bay Area entities realize the implications of regulatory changes to organics management, the OMRC will continue to expand over the next 5 to 10 years.

Changes in Loading

1. **Projected increase in loads as a result of the other factors (DIN in kg/d, calculated on an annual basis):** DIN Increase are unquantified at this time and are highly dependent on quantity. Sidestream increases are expected to increase DIN in effluent by 200 to 400 kg/d
2. **Percent increase in DIN loads compared to 2018 loads (%):**

Name of Agency: City of Hayward

Description of factor that will increase nutrient loads:

The City of Hayward currently provides recycled water to Calpine for use at its Russell City Energy Center (RCEC) power plant, which sits adjacent to the Hayward Water Pollution Control Facility (WPCF). The recycled water is used in a cooling tower, and the resulting blowdown is a concentrated brine that is crystalized and hauled offsite. The nitrogen in this recycled water diversion is therefore never returned to the Hayward WPCF or the EBDA pipeline. Over the past several years, Calpine's use of RCEC has varied greatly, and over the next five years, a significant decline in use is expected as renewable energy further offsets the need for the gas-fired power plant. As a result, the nitrogen that is currently diverted from Hayward's effluent via water recycling at RCEC is expected to decline, resulting in a higher nitrogen load to EBDA.

The City of Hayward's Sewer Collection System Master Plan (2015) projects that flows will increase by an annual rate of 2.2%. This increase takes into account population and job growth, including expansions by two of the City of Hayward's large users, California State University East Bay Hayward and Chabot College.

Timeline for change:

Within the next 5 years.

Changes in Loading*

1. **Projected increase in loads as a result of the other factors (DIN in kg/d, calculated on an annual basis):** 308 kg/d
2. **Percent increase in DIN loads compared to 2018 loads (%):** 3.7%

***** Does not include projected increase in nutrient loads due to population and job growth.

Name of Agency: Palo Alto, City of, Regional Water Quality Control Plant

Description of factor that will increase nutrient loads:

- Large increase in daytime worker population commuting from out of Region

Timeline for change:

Unsure, further evaluation is needed and planned in 2019.

Changes in Loading

1. **Projected increase in loads as a result of the other factors (DIN in kg/d, calculated on an annual basis):**
2. **Percent increase in DIN loads compared to 2018 loads (%):**

Unsure, further evaluation is needed and planned in 2019.

Name of Agency: – City and County of San Francisco - SFPUC - Southeast Plant

Description of factor that will increase nutrient loads:

Southeast Plant is implementing the Biosolids Digester Facility Project (BDFP) to upgrade its aging solids and gas handling processes. The new digestion processes will achieve higher volatile solids reduction, and will increase the nitrogen loading returning to liquid treatment processes.

Timeline for change:

BDFP construction will begin in 2019 and is scheduled to be commissioned in 2026.

Changes in Loading

1. **Projected increase in loads as a result of the other factors (TIN in kg/d, calculated on an annual basis):**

   The project change in TIN due to the project is **approximately 260 kg/d as N**. [year 2045 value, based on TIN values calculated from Environmental Impact Report for the SEP Biosolids Digester Facilities Project, Appendix HYD: Water Quality Analysis for the SEP Biosolids, Appendix B].

2. **Percent increase in TIN loads due to project (%):**
   We expect the project to increase TIN loads by approximately 2% in addition to other factors such as population growth [Percentage increase from project based on TIN values calculated from Environmental Impact Report for the SEP Biosolids Digester Facilities Project, Appendix HYD: Water Quality Analysis for the SEP Biosolids, Appendix B].

Name of Agency: Sunnyvale, City of, Water Pollution Control Plant

Description of factor that will increase nutrient loads:

The City of Sunnyvale is in the early stages of implementing the Sunnyvale Cleanwater Program (SCWP), a 30-year Capital Improvement Program to rebuild the Water Pollution Control Plant. The Master Plan for the SCWP includes a project to construct a Food Waste Facility. Design work for this project has not yet begun; however, a Preliminary Evaluation of the project began in early 2019, the purpose of which is to gather base design information and further the conceptual design process. Sunnyvale will have a better understanding of the potential changes to TIN loading rates as the design progresses.

Sunnyvale continues to experience a high degree of growth and development, especially in the northern part of the City near the location of the Water Pollution Control Plant. A large portion of this growth and development is projected to result in an increasing daytime workforce influx. There is a high degree of uncertainty surrounding these projections, which may result in increases in TIN loads that were not anticipated during the Master Plan or design phases and eventually surpass the 15% buffer allocated by this permit. Loadings from an increased daytime workforce would be in addition to increased loadings that would result from increases in permanent population, which might occur as a consequence of regional or State housing mandates.

Sunnyvale has been a producer and distributor of recycled water since the late 1990's. Currently, Sunnyvale produces and distributes around 250 MG of recycled water annually to more than 100 active sites. The system was primarily designed to service irrigation uses. As such, the amount of recycled water produced fluctuates from year-to-year, since demand is largely driven by weather patterns. Furthermore, construction interferences associated with the SCWP, or other Capital Improvement Projects, will likely result in years where little to no recycled water is produced. These could have broad reaching consequences since compliance with Permit Level Targets is based on TIN loads during the dry season, when recycled water production is at its highest (resulting is the lowest loads).

Timeline for change:

The Food Waste Facility is scheduled for completion within the next 5-10 years. Growth and development within Sunnyvale are projected to continue for at least the next 10 years. Recycled water production varies year-to-year and may be more heavily impacted by construction interference as the SCWP progresses and other Capital Improvement needs arise.

Changes in Loading

1. **Projected increase in loads as a result of the other factors (DIN in kg/d, calculated on an annual basis):**
2. **Percent increase in DIN loads compared to 2018 loads (%):**

Uncertain at this time. Increases from the Food Waste Facility will become more clear within the next 5 years as design progresses. Population and workforce growth will continue to be tracked by the City, as will changes in recycled water and projects that could result in interference of its production.

Name of Agency: Union Sanitary District

Description of factor that will increase nutrient loads:

During the next watershed permit the growth in nutrient loading is expected to average between 2.5% and 3.0% based on the number of single-family dwellings, multifamily dwellings, commercial and industrial real estate either planned, entitled or currently under construction.

Timeline for change:

We anticipate that this trend to continue for the next 5 years.

Changes in Loading

1. **Projected increase in loads as a result of the other factors (DIN in kg/d, calculated on an annual basis): 438 kg/d to 525 kg/d**
2. **Percent increase in DIN loads compared to 2018 loads (%): 12.5% to 15%**

Appendix C

Response to Comments

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

RESPONSE TO WRITTEN COMMENTS

on Tentative Order for
Waste Discharge Requirements for Nutrients
from Municipal Wastewater Discharges to San Francisco Bay

The Regional Water Board received written comments from the following groups and agencies regarding a tentative order distributed for public comment on March 1, 2019:

1. U.S. Environmental Protection Agency (March 28, 2019)
2. Central Marin Sanitation Agency (March 25, 2019)
3. City of Sunnyvale (March 28, 2019)
4. East Bay Dischargers Authority (March 29, 2019)
5. San Francisco Public Utilities Commission (April 2, 2019)
6. Delta Diablo (April 2, 2019)
7. Livermore-Amador Valley Water Management Agency (April 2, 2019)
8. Novato Sanitary District (April 2, 2019)
9. Bay Area Clean Water Agencies (April 2, 2019)

Regional Water Board staff has summarized the comments, shown below in *italics* (paraphrased for brevity), and followed each comment with staff's response. For the full content and context of the comments, please refer to the comment letters.

Revisions to the tentative order are shown with underline text for additions and strikethrough ~~text~~ for deletions. This document also contains staff-initiated revisions in addition to those arising from the response to comments.

U.S. Environmental Protection Agency (U.S. EPA)

U.S. EPA Comment: *U.S. EPA supports adoption of the Tentative Order. U.S. EPA notes that the Tentative Order includes two special study provisions for Dischargers to evaluate nutrient reduction opportunities through natural systems and wastewater recycling (Provisions VI.C.2 and VI.C.3 of the Tentative Order), which would enhance and accelerate efforts started with the 2014 issuance of the Nutrients Watershed Permit to evaluate nutrient reduction opportunities through wastewater treatment plant optimization and sidestream treatment. To inform future management decisions, U.S. EPA also supports the proposed approach to include nutrient load targets, which may be the basis for future effluent limitations. Specifically, U.S. EPA supports the proposed methodology to base load target calculations on dry season performance and adding a 15 percent buffer to account for population growth. Including nutrient load targets also creates the flexibility needed to develop a potential nutrient credit trading framework and is consistent with U.S. EPA's 2019 water quality trading memorandum.*

U.S. EPA agrees that several years may be necessary to determine an appropriate level of nutrient control and to identify appropriate nutrient management actions to protect San Francisco Bay's beneficial uses. U.S. EPA encourages the Regional Water Board to continue working with stakeholders to develop regulatory actions and policies to inform the next Nutrients Watershed Permit reissuance (expected in 2024).

Response: We appreciate U.S. EPA's support, and we intend to continue collaborating with stakeholders, including the San Francisco Bay Estuary Institute, San Francisco Baykeeper, the Bay Area Clean Water Agencies, U.S. EPA, and others, to determine the appropriate nutrient management actions to protect San Francisco Bay's beneficial uses.

Central Marin Sanitation Agency,
City of Sunnyvale,
East Bay Dischargers Authority,
San Francisco Public Utilities Commission,
Delta Diablo, and
Livermore-Amador Valley Water Management Agency

Comment: *The Tentative Order projects what future nutrient discharge loads from municipal dischargers will be in 2024 and proposes these projections as load targets in anticipation of the Regional Water Board potentially capping nutrient discharge loads to San Francisco Bay when it considers permit reissuance. These load targets are expressed as total inorganic nitrogen, the bioavailable and growth-limiting nutrient in San Francisco Bay, and they are intended to inform Dischargers of potential future effluent limitations to encourage implementing nutrient reduction strategies in their facility planning efforts.*

Six municipal dischargers request that the Regional Water Board acknowledge that uncertainties in population growth, recycled water demand, and other factors could potentially increase total inorganic nitrogen loads from their treatment plants beyond current projections. They request that the Regional Water Board reconsider these load targets in 2024 before implementing any nutrient load caps. The six municipal dischargers describe factors specific to their treatment plants that could increase total inorganic nitrogen discharges:

- *The Central Marin Sanitation Agency plans to increase organic waste loading to its plant to produce more power to achieve energy self-sufficiency and deliver power to Marin Clean Energy, an electricity provider. Expanding Central Marin Sanitation Agency's organic waste program aligns with the State's goals to reduce greenhouse gas emissions, divert organic waste from landfills, and generate more renewable energy.*

- *The City of Sunnyvale plans to construct a food waste facility that will increase organic loadings to its plant. It also expects its recycled water production to fluctuate because of variable weather patterns.*

- *The East Bay Dischargers Authority expects that one of its member agencies, the City of Hayward, will reduce the amount of treated wastewater it diverts to the Russell City Energy Center power plant for use as cooling water due to an increased demand in renewable energy. This could increase the East Bay Dischargers Authority's total inorganic nitrogen load to San Francisco Bay by over 3.5 percent.*

  The East Bay Dischargers Authority also expects that population growth will exceed the San Francisco Bay region's expected annual growth rate for two of its member agencies, the City of Hayward and Union Sanitary District, resulting in additional total inorganic nitrogen load increases.

- *The San Francisco Public Utilities Commission plans to construct new biosolids digester facilities at its Southeast Water Pollution Control Plant, which would produce Class A biosolids, increase energy production, and reduce the amount of biosolids to haul offsite. These new facilities are projected to increase its total inorganic nitrogen load by 2 percent, and construction of nitrogen removal technologies cannot feasibly begin until after the San Francisco Public Utilities Commission constructs new biosolids digester facilities.*

  The San Francisco Public Utilities Commission requests that the Regional Water Board consider U.S. EPA's policies that support and encourage an integrated planning framework for implementing multiple initiatives for system improvements and environmental protection; if a substantial capital investment is needed to reduce nitrogen discharges at the Southeast Water Pollution Control Plant, the timing of that investment would require careful consideration among other capital program drivers.

- *Delta Diablo is designing the East County Bioenergy Project, which would increase organic waste loading to its plant. The project would divert approximately 114 tons per day of organic waste from local landfills in support of Senate Bill No. 1383 and allow Delta Diablo to achieve energy self-sufficiency by producing biogas that could be used for electricity export, renewable natural gas pipeline injection, and renewable vehicle fuel. Delta Diablo expects that the East County Bioenergy Project will increase its dry season total inorganic nitrogen load by over 340 kilograms per day (kg/day).*

  Delta Diablo also operates a Recycled Water Facility and sends approximately 90 percent of its recycled water to two power plants for use as cooling water. The remaining recycled water is used at various parks and a golf course. Delta Diablo's agreement to provide recycled water to the power plants expires in 2030, and Delta Diablo is uncertain if the power plants will continue in operation. Delta Diablo is also uncertain regarding the continuing operation of its long-term irrigation customers. For example, the Delta View Golf Course recently closed. Delta Diablo expects that losing recycled water customers could increase its dry season total inorganic nitrogen load by over 150 kg/day.

- *The Livermore-Amador Valley Water Management Agency notes that State legislation could result in substantially more development and population growth than anticipated. It suggests that language be added to the Tentative Order that would allow the Regional Water Board to account for potential substantial population growth before implementing any nutrient load caps. (Additional Livermore-Amador Valley Water Management Agency comments are addressed below.)*

Response: We have not revised the Tentative Order. Before we propose nutrient load caps, we will consider changes in the factors we used to calculate the Tentative Order's load targets and the most up-to-date science regarding San Francisco Bay's potential responses to nutrients discharges. As stated in Fact Sheet (Attachment F) section II.E (page F-16), "Before implementing any load targets as effluent limitations, the Regional Water Board may adjust them if necessary (e.g., to account for decreased recycled water demand, increased biosolids management, increased daytime worker population, or new or expanded waste-to-energy programs)."

Livermore-Amador Valley Water Management Agency (LAVWMA)

LAVWMA Comment 1: *The member agencies of the Livermore-Amador Valley Water Management Agency have invested heavily in regional water recycling programs. Last year, the Dublin San Ramon Services District and the City of Livermore treatment plants collectively recycled approximately 37 percent of their effluent and recycled a substantially higher percentage during peak irrigation season. These agencies should receive recognition as early actors in the Tentative Order.*

Response: We commend the Dublin San Ramon Services District and the City of Livermore for their recycled water programs. However, our intent in recognizing early actors in the Tentative Order is to incentivize implementation of nutrient discharge reduction actions yet to occur by providing tangible recognition for these early actors to leverage support (e.g., funding) from their respective boards. Therefore, we only included agencies that intend to implement significant nutrient load reductions during the upcoming permit term.

LAVWMA Comment 2: *The member agencies of the Livermore-Amador Valley Water Management Agency expect to monitor their influent and effluent for nutrients more frequently than proposed in the Tentative Order to better characterize nutrient loads, and to report such data to the Regional Water Board.*

Response: We appreciate that these agencies intend to monitor nutrients more frequently than the Tentative Order would require.

Novato Sanitary District

Novato Sanitary District Comment: *The Novato Sanitary District notes that the Tentative Order does not include a nutrient load target for its treatment plant because the load targets are based off dry season data, and Novato's current NPDES permit (Order No. R2-2015-0034) prohibits Novato from discharging during the dry season. Novato seeks to confirm that having no nutrient load target now would not equate to no load allocation if these targets were implemented as effluent limitations in the future. It expects that it may need to discharge nutrients during dry weather in the future upon modifying its outfall. As planned, the change would result in year-round discharge to a proposed new marsh the State Coastal Conservancy hopes to develop on the Bel Marin Keys Unit V property. Construction is to commence later in 2019. The Novato Sanitary District anticipates working with the Regional Water Board to develop an appropriate nutrient load allocation if and when one is appropriate.*

Response: We agree that the absence of a nutrient load target in the Tentative Order would not equate to no nutrient load allocation in the future. We will develop an appropriate nutrient load allocation after Novato completes the outfall modifications and begins year-round discharge.

Bay Area Clean Water Agencies (BACWA)

BACWA Comment 1: *BACWA notes that not all municipal dischargers will have feasible opportunities to implement natural systems for nutrient removal because of constraints from land availability or geography, or because recycled water diversion precludes sustaining a wetland. BACWA expects that identifying the facilities where natural systems are infeasible will satisfy the Scoping Plan requirement under Provision VI.C.2 (Regional Evaluation of Potential Nutrient Discharge Reduction by Natural Systems) and those dischargers will be exempted from further evaluation.*

Response: We agree. If a discharger documents that natural systems are infeasible for its facility, it will satisfy the Scoping Plan requirements for Provision VI.C.2 and further evaluation will be unnecessary.

BACWA Comment 2: *BACWA notes that the Tentative Order would change some of the constituent monitoring requirements from the 2014 order, including adding influent monitoring. Consequently, BACWA wants to clarify that influent monitoring data will only be available subsequent to July 1, 2019, and therefore cannot be reported for the five years prior, as the Tentative Order would require. Further, BACWA understands that no additional reporting will be necessary for total Kjeldahl nitrogen and soluble reactive phosphorous effluent monitoring; therefore, these constituents will not be reported in the Group Annual Report.*

Additionally, BACWA recommends clarifying annual reporting requirements. The Tentative Order lists February 1 as the deadline for the Annual Report and October 1 as the deadline for the optional Group Annual Report. BACWA believes these deadlines should be changed to January 1 and February 1, respectively.

Response: We agree. We do not expect influent data to be reported prior to July 1, 2019, and no further effluent monitoring and reporting is required for total Kjeldahl nitrogen and soluble reactive phosphorous because we already have an adequate data set for these constituents. To clarify the annual reporting requirements, we revised Monitoring and Reporting Program (Attachment E) section IV.B.1.b (page E-4) as follows:

> **Annual Nutrients Report.** By ~~February~~ January 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. …
>
> ⋮
>
> **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 October 1 ~~of~~ before the preceding year through September 30 of the ~~current~~ preceding year and at least the previous five years of available data. …

We revised Monitoring and Reporting Program section IV.B.1.c (page E-5) as follows:

> **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~~ February 1 of each year, the Annual Group Nutrients Report shall include the information detailed in section IV.B.1.b.

BACWA Comment 3: *BACWA believes the Tentative Order should not yet constrain any future nutrient credit trading scheme by subembayments. Since nutrient objectives have not been established, it is too early to limit nutrient credit trading to agencies within the same subembayment. For example, if science determines that coastal impacts should be the major driver for nutrient effluent limitations, it could be appropriate for trading to occur between North and South San Francisco Bay agencies.*

Response: We agree and revised Fact Sheet section I.D (page F-11) as follows:

> 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. … The Regional Water Board will also consider exploring a nutrient credit trading system between Dischargers ~~within subembayments~~.

BACWA Comment 4: *Prior to implementing nutrient load caps or effluent limitations, BACWA believes the Regional Water Board needs to account for inherent nutrient load variability. BACWA appreciates that the Tentative Order recognizes that wastewater agencies are subject to factors, often beyond their control, that can affect their nutrient loads. However, BACWA points out that the nature of nutrient loading data is inherently variable and cannot always be correlated to obvious factors, such as population growth, changes in recycled water demand, or expanded waste-to-energy programs. Several wastewater agencies have identified significant variability in their nutrients data. BACWA recognizes that the use of the maximum dry season average data from the past four years to calculate nutrient load targets captures some inherent variability; however, four years' worth of data is a relatively small sample size. Consequently, BACWA expects that agencies may exceed their load targets during a single dry season but be well below their load targets during prior and subsequent dry seasons. Therefore, it will be necessary to account for inherent nutrient load variability when considering potential nutrient load caps.*

Response: We agree. In the future, we intend to continue collaborating with BACWA as we reissue this permit, just as we have done during the development of this Tentative Order. When we consider nutrient load caps as expected in 2024, we will have about 10 years of data, which should be adequate information to consider variability before implementing any nutrient load caps.

BACWA Comment 5: *BACWA believes that the Tentative Order is an inappropriate vehicle to launch a regional master planning effort as alluded to in Fact Sheet section VI.C.2 (Regional Evaluation of Potential Nutrient Discharge Reduction by Natural Systems, page F-22), which states that dischargers should consider developing a regional master plan that addresses multiple benefits as an extension of nutrient reduction evaluations completed and those required in the Tentative Order. While a regional master plan is a laudable goal, such an effort requires partnerships among governmental land management agencies, water agencies, environmental groups, and the scientific community. Therefore, BACWA believes it is inappropriate to advocate for such a plan in a permit regulating only wastewater agencies. BACWA proposes changes to Fact Sheet section VI.C.2. BACWA also recommends removing regional master planning language altogether from Fact Sheet section VI.C.3 (Regional Evaluation of Potential Nutrient Discharge Reduction by Water Recycling, page F-23).*

Response: We agree with BACWA's proposed changes to Fact Sheet section VI.C.2, but we disagree with removing such language altogether from Fact Sheet section VI.C.3. Water recycling can provide ancillary benefits, such as reducing potable water demand or natural water resource diversions, and we envision that a regional plan would encompass multiple-benefit nutrient reduction opportunities that include water recycling opportunities and their associated benefits. We revised Fact Sheet section VI.C.3 to include language similar to the language BACWA suggested for Fact Sheet section VI.C.2.

We revised Fact Sheet section VI.C.2 (page F-22) as follows:

> This Order requires major Dischargers to evaluate, by themselves or in collaboration with others, the potential for natural systems (e.g., wetlands creation) to reduce nutrient loads to San Francisco Bay. … The Regional Water

> Board expects that the results from this provision, in conjunction with the results from Provision VI.C.3 and the Bay 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 potential effluent limitations on a subembayment scale and in a cost-effective manner. ~~As an outgrowth of these studies, Dischargers should consider developing a regional master plan that addresses multiple environmental benefits~~ If nutrient reductions are required for San Francisco Bay, the Regional Water Board's overarching goal would be to achieve nutrient load reductions through implementation of a regional plan encompassing cost-effective and multiple-benefit nutrient reduction options. This Order requires major Dischargers to evaluate nutrient reduction opportunities through natural systems, which would be a component of such a plan. The Regional Water Board recognizes the efficiency of collaborating on large-scale study efforts. On behalf of the Dischargers, BACWA has identified $500,000 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. …

We revised Fact Sheet section VI.C.3 (page F-23) as follows:

> This Order requires major Dischargers to evaluate, by themselves or in collaboration with others, the potential for water recycling to reduce nutrient loads to San Francisco Bay. … The Regional Water Board expects that the results from this provision, in conjunction with the results from Provision VI.C.2 and the Bay 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 potential effluent limitations on a subembayment scale and in a cost-effective manner, and will help identify an approach for developing a regional master plan that addresses multiple environmental benefits. ~~As an outgrowth of these studies, Dischargers should consider developing a regional master plan that addresses multiple environmental benefits~~ If nutrient reductions are required for San Francisco Bay, the Regional Water Board's overarching goal would be to achieve nutrient load reductions through implementation of a regional plan encompassing cost-effective and multiple-benefit nutrient reduction options. This Order requires major Dischargers to evaluate nutrient reduction opportunities through wastewater recycling, which would be a component of such a plan. …

BACWA Comment 6: *BACWA believes that the threshold for influent monitoring should be for dischargers with a design flow greater than 10 million gallons per day (MGD). The Tentative Order proposes the influent monitoring threshold to be for dischargers with a design flow greater than or equal to 10 MGD. This change would exclude the Central Marin Sanitation Agency from the influent monitoring requirements, which is appropriate because the Central*

Marin Sanitation Agency has a stable population and its discharges likely have minimal impact on San Francisco Bay due to its proximity to the Golden Gate Bridge.

Response: We agree and revised Monitoring and Reporting Program section III (page E-3) as follows:

> 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).

We revised Fact Sheet section VII (second paragraph, page F-25) as follows:

> 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 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.

BACWA Comment 7: *BACWA recommends minor corrections to the Monitoring and Reporting Program and Fact Sheet.*

Response: We agree and revised Monitoring and Reporting Program Table E-1, footnote 1 (page E-2), as follows:

> 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).

We revised Fact Sheet Table F-1 (page F-5) as follows:

Table F-1. Municipal Facility Information

Discharger	Facility Contact, Title, and Phone	Mailing Address	Effluent Description	Facility Design Flow (MGD)
⋮	⋮	⋮	⋮	⋮
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

Discharger	Facility Contact, Title, and Phone	Mailing Address	Effluent Description	Facility Design Flow (MGD)
Sunnyvale, City of	Stephen Hogg, WPCP Division Manager (408) 730-775188	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
⋮	⋮	⋮	⋮	⋮

We revised Fact Sheet Table F-2 (page F-8) as follows:

Table F-2. Municipal Facility Information

Discharger	Authorized Person to Sign and Submit Reports	Billing Address	Pretreatment Program	Receiving Water Type
⋮	⋮	⋮	⋮	⋮
South San Francisco and San Bruno, Cities of	Brian Schumacker, Plant Superintendent (650) 877-8555	195 Belle Air Road South San Francisco, CA 94080	Yes	Marine
Sunnyvale, City of	Stephen Hogg, WPCP Division Manager (408) 730-775188	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
⋮	⋮	⋮	⋮	⋮

We revised Fact Sheet section II.E (first paragraph under Table F-5, page F-16) as follows:

> Although the Regional Water Board expects to implement effluent limitations in 2024 based on nutrient discharge performance, scientific conclusions from monitoring, load response modeling, or the establishment of nutrient water quality

objectives ~~could result in more or less stringent~~ will be used to determine what effluent limitations are appropriate at that time. The Regional Water Board also expects that, if effluent limitations in 2024 are necessary and based on performance, such limitations would be based on performance between May 1, 2014, to September 30, 2017….

We revised Fact Sheet Table F-6 (page F-17) as follows:

Table F-6. Dischargers Taking Early Action

Discharger	Early Action Project	Expected Total Inorganic Nitrogen Results
⋮	⋮	⋮
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 202~~2~~3.	Load reduction: >40% Concentration: <15 mg/L
City and County of San Francisco (San Francisco International Airport)	**Description:** The Discharger will add sequencing batch reactor tanks to its existing three sequencing batch reactor tanks to implement biological nutrient removal. **Schedule:** Completion of the additional sequencing batch reactor tanks by 2022.	Concentration: <15 mg/L
⋮	⋮	⋮

We revised Fact Sheet sections VI.C.2 (second paragraph, page F-23) and VI.C.3 (second paragraph, page F-23) as follows:

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 because Dischargers with a facility design flow less than 10 MGD may also be contributing to localized impacts in San Francisco Bay. Therefore, ~~smaller~~ major Dischargers with flows greater than or equal to 1.0 MGD and less than or equal to 10 MGD may also need to reduce their nutrient loads.

Staff Initiated Changes

Change 1: We revised Fact Sheet section II.C (page F-11) as follows:

> … The Dischargers submitted a Nutrient Reduction Study Strategy 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~~ Strategy. 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. …

Change 2: We revised Fact Sheet section II.E (first paragraph under Table F-5, page F-16) to cite a new footnote as follows:

> Although the Regional Water Board expects to implement effluent limitations in 2024 based on nutrient discharge performance, scientific conclusions from monitoring, load response modeling, or the establishment of nutrient water quality objectives will be used to determine what effluent limitations are appropriate at that time. … Before implementing any load targets as effluent limitations, the Regional Water Board may adjust them if necessary (e.g., to account for decreased recycled water demand, increased biosolids management, increased daytime worker population, or new or expanded waste-to-energy programs[9]).

We also added the new footnote:

> [9] To reduce methane emissions from landfills, Senate Bill No. 1383 requires a 75 percent statewide reduction in organic waste disposal from 2014 levels by 2025.