ALAMEDA COUNTY FLOOD CONTROL AND
WATER CONSERVATION DISTRICT, ZONE 7
ALAMEDA COUNTY WATER DISTRICT
COACHELLA VALLEY WATER DISTRICT
METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
SANTA CLARA VALLEY WATER DISTRICT
TULARE LAKE BASIN WATER STORAGE
DISTRICT
SAN LUIS & DELTA-MENDOTA WATER
AUTHORITY
WESTLANDS WATER DISTRICT

See List of Counsel for Water Agencies in Attachment 1

BEFORE THE

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

In the Matter of the Public Water Agencies' Petition for Review of Action and Failure to Act by Regional Water Quality Control Board, San Francisco Bay Region, in Adopting Waste Discharge Requirements Order No. R2-2012-0017 (NPDES No. CA0037699) for Vallejo Sanitation and Flood Control District Treatment Plant.

SWRCB/OCC File No. _____

PETITION FOR REVIEW AND STATEMENT OF POINTS AND AUTHORITIES (Water Code § 13320)

The California Water Code declares:

> No discharge of waste into the waters of the state, whether or not the discharge is made pursuant to waste discharge requirements, shall create a vested right to continue the discharge. All discharges of waste into waters of the state are privileges, not rights.

(Water Code § 13263(g).) And the California Constitution declares:

> It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare.

(Cal. Const., Art. X, § 2.)

Petitioners the Alameda County Flood Control and Water Conservation District, Zone 7, Alameda County Water District, the Coachella Valley Water District, the Metropolitan Water District of Southern California, the Santa Clara Valley Water District, the Tulare Lake Basin

Water Storage District, the San Luis & Delta-Mendota Water Authority, and the Westlands Water District (collectively "Petitioners" or "Public Water Agencies"), in accordance with section 13320 of the Water Code and sections 2050 *et seq.* of Title 23 of the California Code of Regulations, hereby petition the State Water Resources Control Board ("State Water Board") for review of Waste Discharge Requirements Order No. R2-2012-0017 (NPDES No. CA0037699) of the San Francisco Bay Regional Water Quality Control Board ("Regional Water Board") and action or inaction of the Regional Board associated therewith.

I.

PETITION FOR REVIEW

1. NAME, ADDRESS, TELEPHONE NUMBER, AND EMAIL ADDRESS OF THE PETITIONERS

Petitioners' contact information is as follows:

Alameda County Flood Control and Water Conservation District, Zone 7 ("Zone 7")
c/o Jill Duerig
100 North Canyons Parkway
Livermore, CA 94551
Telephone: (925) 454-5000

Please send all Zone 7 correspondence to:

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Alameda County Water District ("ACWD")
c/o Doug Chun
43885 South Grimmer Boulevard
Fremont, CA 94538
Telephone: (510) 688-4200

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Please send al ACWD correspondence to:

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Coachella Valley Water District ("CVWD")
c/o Steve Robbins
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Metropolitan Water District of Southern California ("MWD")
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Please send all MWD correspondence to:

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Sr. Deputy General Counsel
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Santa Clara Valley Water District ("SCVWD")
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5750 Almaden Expressway
San Jose, CA 95118-3686
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Please send all SCVWD correspondence to:

Anthony T. Fulcher
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SANTA CLARA VALLEY WATER DISTRICT
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Tulare Lake Basin Water Storage District ("TLBWSD")
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Please send all TLBWSD correspondence to:

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San Luis & Delta-Mendota Water Authority ("SLDMWA")
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Please send all SLDMWA correspondence to:

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Westlands Water District ("WWD")
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Please send all WWD correspondence to:

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2. THE SPECIFIC ACTION OR INACTION OF THE REGIONAL BOARD WHICH PETITIONERS REQUEST THAT THE STATE WATER BOARD REVIEW

The Public Water Agencies petition the State Water Board to review the Regional Water Board's adoption of Order No. R2-2012-0017 (NPDES No. CA0037699), Waste Discharge Requirements for the Vallejo Sanitation and Flood Control District Treatment Plant ("Permit"), and action or inaction related thereto, as more fully described herein. A true and correct copy of the Permit is attached hereto as Exhibit A.

3. THE DATE ON WHICH THE REGIONAL WATER BOARD ACTED OR REFUSED TO ACT

The date on which the Regional Water Board acted or refused to act is February 8, 2012.

4. A STATEMENT OF THE REASONS THE ACTION OR FAILURE TO ACT WAS INAPPROPRIATE OR IMPROPER

A full and complete statement of the reasons why the Regional Water Board's actions were inappropriate or improper is provided in the accompanying Statement of Points and Authorities, which is incorporated herein by this reference.

5. THE MANNER IN WHICH PETITIONERS ARE AGGRIEVED

The Public Water Agencies are aggrieved by the actions or inactions of the Regional Water Board because they and the families, farmers, workplaces and other customers in their service areas will continue suffering harm from disruption of State Water Project ("SWP") and federal Central Valley Project ("CVP") water supply availability due to the degradation of receiving water quality by the discharge of ammonium and other wastes from Vallejo Sanitation and Flood Control District's ("Discharger") Treatment Plant. The discharge of ammonium and

other wastes from the Discharger's Treatment Plant into portions of California's San Francisco Bay/Sacramento-San Joaquin River Delta Estuary ("Bay-Delta Estuary" or "Bay-Delta")—including Mare Island Strait, Carquinez Strait and thence into Suisun Bay and San Pablo Bay—harms aquatic life, including phytoplankton, zooplankton, Delta smelt and longfin smelt. Delta smelt and longfin smelt are protected under the federal Endangered Species Act ("ESA") and/or the California Endangered Species Act ("CESA"). Regulations enforced to protect those species, as well as other species that depend upon the Bay-Delta Estuary, have caused severe restrictions on the availability of SWP and CVP water for delivery to the Public Water Agencies for use on millions of acres of prime farmland and by more than 25 million Californians living in two-thirds of the state's households from the greater San Francisco Bay Area to San Diego.

6. THE SPECIFIC ACTION REQUESTED BY PETITIONER

The Public Water Agencies request that the State Water Board review the record, the Permit (including its findings), and this Petition, and that the State Water Board issue an order or orders accomplishing all of the following:

Vacate and revise the requirements of the Permit (as discussed below in the Statement of Points and Authorities), and make related, consistent, and conforming revisions. The revised Permit requirements requested by Petitioners are set forth in Exhibit B to this Petition.

7. A STATEMENT OF POINTS AND AUTHORITIES IN SUPPORT OF LEGAL ISSUES RAISED IN THIS PETITION

The Public Water Agencies provide below a Statement of Points and Authorities in Support of the legal issues raised in this Petition.

8. A STATEMENT THAT THIS PETITION WAS SENT TO THE REGIONAL WATER BOARD

A true and correct copy of this Petition was mailed by First Class mail on March 9, 2012, to the Regional Water Board at the following address:

Bruce H. Wolfe
Executive Officer
San Francisco Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

As a courtesy, a true and correct copy of the Petition was also mailed to the parties on the attached service list, which includes the Discharger.

9. A STATEMENT AS TO WHETHER PETITIONER RAISED THE SUBSTANTIVE ISSUES OR OBJECTIONS IN THE PETITION TO THE REGIONAL BOARD

The substantive issues or objections raised in this Petition were raised before the Regional Water Board.

II.

STATEMENT OF POINTS AND AUTHORITIES

A. Introduction

The Permit requires State Water Board review and modification to prevent harm to Bay-Delta aquatic life and to help restore and protect the largest single source of fresh water supply in all California. Permit review and amendment is needed to prevent the Discharger from discharging an average of 1,000 pounds per day of harmful ammonium into the Napa River mouth and Bay-Delta Estuary. The Public Water Agencies maintain that overwhelming evidence supports Permit conditions requiring the Discharger to install ammonium removal treatment technology, which is available and practicable. In the alternative—and consistent with another discharge permit the Regional Water Board approved the same day for a nearby treatment plant operated by the Central Contra Costa Sanitary District ("CCCSD")—the Public Water Agencies ask the State Water Board to modify the Permit to require the Discharger to complete specific studies to characterize its contribution to aquatic life impacts and to define a work plan for upgrading the Discharger's Treatment Plant to stop those impacts in the shortest practicable

time.[1]

B. Background

1. The Discharger's Service Area And Treatment Plant

The Discharger's Treatment Plant processes municipal and industrial sewage collected from throughout the City of Vallejo. (Permit at F-4.) The Discharger's current service area population is approximately 117,000. (*Id.*)

The Discharger constructed its Treatment Plant in 1959 to provide primary treatment and upgraded the Treatment Plant in 1988 to provide secondary treatment.[2] The Treatment Plant includes screens, aerated grit removal, primary sedimentation by circular and rectangular clarifiers, biological treatment using trickling filters followed by aeration basins, secondary clarification, disinfection by chlorination with sodium hypochlorite or by ultraviolet light, and dechlorination by sodium bisulfite. (Permit at F-4.) Solids removed from the wastewater stream are hauled off site for disposal. (*Id.*)

The Treatment Plant has an average dry weather flow ("ADWF") design capacity of 15.5 million gallons per day ("MGD"). (Permit at 3, F-3.) The ADWF in 2010 was 10.5 MGD, which leaves 5 MGD of secondary treatment capacity available to serve new land uses at Mare Island or elsewhere in the service area. (*Id.*) The Treatment Plant's wet weather capacity is 35 MGD for full secondary treatment, with an additional 25 MGD of primary treatment capacity. (*Id.*) The

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[1] The Public Water Agencies request that the State Water Board take official notice of, and consider, the CCCSD permit, which the Regional Water Board approved on February 8, 2012, at the same meeting where the Discharger's Permit was approved. A true and correct copy of the CCCSD permit is attached hereto as Exhibit C. While the CCCSD permit is a legal order that should be subject to official notice, just like a State Water Board order, to the extent that the permit might be viewed as extra-record evidence, Petitioners request that the State Water Board admit and consider the CCCSD permit pursuant to Water Code section 13320 and section 2050.6 of Title 23 of the California Code of Regulations. The CCCSD permit is relevant. As explained in Petitioners' Statement of Points and Authorities, the CCCSD permit shows Regional Water Board approval of an alternative permitting approach addressing ammonium discharge impacts without immediately imposing ammonium effluent limits. The CCCSD permit was not approved until February 8, 2012, so the Public Water Agencies could not have submitted the CCCSD permit to the Regional Water Board prior to its November 23, 2011, deadline for submitting comments on the Discharger's draft Permit.

[2] *See* http://www.vsfcd.com/history.htm.

maximum daily wet weather flow between October 2006 and December 2010 was 43.3 MGD. (*Id.*)

During wet weather, flows up to approximately 35 MGD receive secondary treatment. (*Id.*) Flows in excess of 35 MGD and up to 60 MGD are treated in primary sedimentation basins, blended with secondary treated wastewater, disinfected and discharged. (*Id.*) Under normal operating conditions, wastewater is discharged to Carquinez Strait through Discharge Point No. 001. (*Id.*) When wet weather flows exceed 30 MGD, wastewater is discharged into Carquinez Strait through Discharge Point No. 001 and also is discharged into Mare Island Strait through Discharge Point No. 002. (*Id.*) During such conditions, a flow-splitting device sends only secondary-treated and disinfected wastewater into Mare Island Strait (Discharge Point No. 002), while a disinfected blend of primary- and secondary-treated wastewater is discharged into Carquinez Strait (Discharge Point No. 001). (*Id.*)

From 2008 through 2010, the Treatment Plant experienced 17 events in which a total of 80 million gallons of secondary-treated wastewater were discharged into the Mare Island Strait. (Permit, Table F-3 at p. F-6.) Such discharges are likely to increase and become a regular part of operations in the future. The Permit creates a procedure for the Regional Water Board's executive officer to approve the discharge of up to 15.5 MGD of wastewater into the Mare Island Strait under year-round conditions. (Permit at pp. 13-14, F-5.) At an ADWF rate of 15.5 MGD, the Treatment Plant discharges at least 1,000 pounds per day of ammonium into receiving waters. (February 8, 2012, Regional Water Board staff PowerPoint presentation ["Staff Presentation"], slide No. 8 [a copy of which is attached hereto as Exhibit E].)

2. The Special Character Of The Receiving Waters

Delta smelt and longfin smelt often occupy the receiving waters that the Discharger uses to dispose of ammonium and other wastes in the municipal and industrial sewage processed by the Treatment Plant. These fish species are found above, at and below the Treatment Plant's two points of discharge. The receiving waters include the Napa River, Mare Island Strait, Carquinez Strait, Suisun Bay and San Pablo Bay.

Tidal Action Expands The Ammonium Discharge Zone of Impact: The Napa River flows through Mare Island Strait and thence into Carquinez Strait, where incoming tides push receiving waters upstream (into the Napa River and into Suisun Bay) and the outgoing tides spike receiving waters with a double dose of ammonium. (*See* Permit at p. B-1 [facility map]; Staff Presentation, slide No. 4 [regional map]; Permit at p. F-21 [acknowledging complex receiving water hydrology] and p. F-24 [acknowledging tidal impact on waste concentrations in receiving waters]; Mixing Zone Study Report, Vallejo Sanitation and Flood Control District, LimnoTech, March 22, 2011, at p. 10 [acknowledging tidal return of pollutants in Mare Island Strait].) As a result, the zone of impacts from the discharge of ammonium and other wastes is above, at and below the points of discharge.

The Water Quality Control Plan for the San Francisco Bay Basin ("Basin Plan") designates beneficial uses of receiving waters in the Napa River, Mare Island Strait, Carquinez Strait, Suisun Bay and San Pablo Bay. (*See* Basin Plan, Figure 1-1 [map depicting water bodies subject to Basin Plan].) Designated beneficial uses of the Napa River include: Preservation of rare and endangered species; cold and warm water fish habitat; spawning habitat; fish migration; and water contact recreation. (Basin Plan, Table 2-1.) Designated beneficial uses of Mare Island Strait include: Preservation of rare and endangered species; fish migration; estuarine habitat; ocean commercial and sport fishing; and water contact recreation. (*Id.*) Designated beneficial uses of Carquinez Strait include: preservation of rare and endangered species; fish spawning; fish migration; estuarine habitat; ocean commercial and sport fishing; and water contact recreation. (*Id.*) Designated beneficial uses of San Pablo Bay include: preservation of rare and endangered species; fish spawning; fish migration; estuarine habitat; ocean commercial and sport fishing; and water contact recreation. (Basin Plan, Table 2-1.) Designated beneficial uses of Suisun Bay include: preservation of rare and endangered species; fish spawning; fish migration; estuarine habitat; ocean commercial and sport fishing; and water contact recreation. (*Id.*)

The Basin Plan's Narrative Objectives Prohibit Ammonium Discharge Impacts: The Basin Plan establishes the following narrative water quality objectives protecting beneficial uses of the Napa River, Mare Island Strait, Carquinez Strait, San Pablo Bay and Suisun Bay:

- 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. (Basin Plan, § 3.3.3.)

- All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce significant alterations in population or community ecology or receiving water biota. In addition, the health and life history characteristics of aquatic organisms in waters affected by controllable water quality factors shall not differ significantly from those for the same waters in areas unaffected by controllable water quality factors. (Basin Plan, § 3.3.8.)

  - All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms. Detrimental responses include, but are not limited to, decreased growth rate and decreased reproductive success of resident or indicator species. There shall be no acute toxicity in ambient waters. Acute toxicity is defined as a median of less than 90 percent survival, or less than 70 percent survival, 10 percent of the time, of test organisms in a 96-hour static or continuous flow test.

  - There shall be no chronic toxicity in ambient waters. Chronic toxicity is a detrimental biological effect on growth rate, reproduction, fertilization success, larval development, population abundance, community composition, or any other relevant measure of the health of an organism, population, or community.

  - Attainment of this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, or toxicity tests (including those described in Chapter 4), or other methods selected by the Water Board. The Water Board will also consider other relevant information and numeric criteria and guidelines for toxic substances developed by other agencies as appropriate.

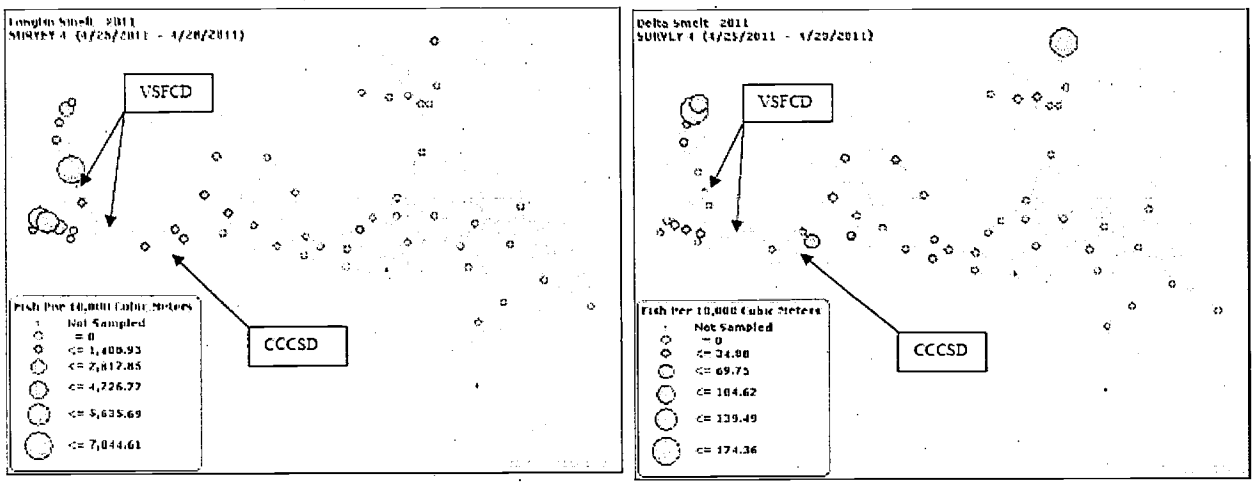
  - The health and life history characteristics of aquatic organisms in waters affected by controllable water quality factors shall not differ significantly from those for the same waters in areas unaffected by controllable water quality factors.

(Basin Plan at 3-3 to 3-6.) The Basin Plan also establishes a numeric water quality objective for ammonia—the unionized fraction of total ammonia nitrogen—but does not establish a numeric objective for ammonium—the ionized fraction of total ammonia nitrogen that is the focus of the discharge impacts at issue in this proceeding. (Basin Plan at 3-5.)

State and/or Federally Protected Fish Species Occupy Receiving Waters Above, At and Below The Treatment Plant's Two Points of Discharge: Protected species occupying the receiving waters into which the Treatment Plant discharges ammonium and other wastes include Delta smelt and longfin smelt. Delta smelt is listed by the U.S. Fish and Wildlife Service

("USFWS") as a threatened species protected under the federal ESA. (58 Fed. Reg. 12854 [March 5, 1993]; *see also* 75 Fed. Reg. 17667 [April 7, 2010] [USFWS finding that reclassification as endangered is warranted, but precluded by other higher priority listing actions].) Longfin smelt is listed as a threatened species protected under CESA, (14 Cal. Code Regs. § 670.5(b)(2)), and is being considered for listing as threatened or endangered under the federal ESA, (76 Fed. Reg. 13121 [March 10, 2011]). The Permit fails to mention these fish species.

Carquinez Strait and Suisun Bay are within the critical habitat that the USFWS has designated for the Delta smelt. (59 Fed. Reg. 65256-65279 [1994].) Specifically, the Delta smelt's critical habitat encompasses the areas of all water, all submerged lands below ordinary high water, and the entire water column bounded by and contained in Carquinez Strait east of Carquinez Bridge, Suisun Bay, Goodyear, Suisun, Cutoff, First Mallard and Montezuma Sloughs, and the Sacramento-San Joaquin River Delta (as defined in Section 12220 of the California Water Code). (*Id.*) The area designated by the USFWS as critical habitat does not encompass all areas within the Bay-Delta Estuary where Delta smelt and longfin are found. Annual surveys by the California Department of Fish and Game ("DFG") show that a significant portion of the Delta smelt and longfin smelt populations occur in the Napa River, Mare Island Strait and San Pablo Bay. For example, **Figure 1**[3] shows smelt population concentrations in April 2011:



[3] These maps were presented to the Regional Water during the February 8, 2012, hearing, (*see* PWA Presentation, slide No. 3), and as part of a series of maps submitted as Figures 1-4 of the November 23, 2011, Public Water Agencies' written comments on the draft Permit.

The preceding two maps are part of a larger map series that the Public Water Agencies submitted to the Regional Water Board to show that these fish species are located above, at and below the points of discharge controlled by the Permit. (*See* February 8, 2012, Public Water Agencies PowerPoint presentation, slide No. 3; *see* Figures 1-4, attached to November 23, 2011, Public Water Agencies written comments to Regional Water Board on draft Permit.)

3. Proceedings Resulting In The Discharger's New Permit

Discharger Requests Renewal Of Prior Permit: The Discharger's last permit was issued in 2006 with a five-year term. (Permit at p. 3 [citing Order No. R2-2006-0056].) The Discharger applied for renewal of that permit in spring 2011, and the Regional Water Board proposed a draft Permit in fall 2011. (Permit at p. 3.) The Regional Water Board requested comments on the draft Permit by November 28, 2011, and the Public Water Agencies submitted written comments on November 23, 2011 ("PWA Comments"). (A copy of the PWA Comments is attached hereto as Exh. D and are incorporated herein by this reference.)

Public Water Agencies Request Permit Revisions Addressing Ammonium Discharge Impacts: The PWA Comments requested Permit revisions to stop the Treatment Plant from discharging ammonium that is impairing aquatic life beneficial uses of receiving waters in the Bay-Delta Estuary. Specifically, the PWA Comments urged the Regional Water Board to impose ammonium effluent limits requiring nitrification to remove ammonium from the discharge.

The requested Permit revisions were based on three main points. First, the draft Permit failed to control the Treatment Plant's significant discharge of ammonium. Second, the ammonium is being discharged directly into habitat occupied by Delta smelt and longfin smelt and their food prey, among other fish and wildlife. And third, the best available science shows that the discharge is: (1) contributing to ammonium levels that are toxic to copepods eaten by Delta smelt and longfin smelt; (2) contributing to ammonium levels that inhibit nitrogen uptake by diatoms and reduce diatom primary production (which reduces a key food source for copepods eaten by Delta smelt and longfin smelt); and (3) contributing to nutrient levels that are causing a shift in Bay-Delta algal communities by changing the ratios of different nutrients to favor

harmful, invasive species. (*See* PWA Comments.)

The PWA Comments observed that ammonium discharge impacts to diatoms and copepods violate narrative water quality objectives by impairing the aquatic life beneficial use of receiving waters, (*id.*), and that, in turn, the impact to diatoms and copepods harms Delta smelt and longfin smelt by depriving them of food needed to sustain and recover their populations, which constitutes an additional violation of the narrative water quality objective and impairment of the aquatic life beneficial use. (*Id.*) The PWA Comments also noted that regulation intended to protect fish species, including Delta smelt and longfin smelt, has resulted in restrictions on the ability to use the natural channels in the Bay-Delta Estuary to deliver water for drinking, commercial and industrial workplace use and for irrigation of millions of acres of farmland. (*Id.*) The latter beneficial use impairment affects more than 25 million Californians living in two-thirds of the state's households from the greater Bay Area, through the San Joaquin Valley and Central Coast, to Southern California. (*Id.*)

Leading scientists agree that the best available science shows ammonium discharges from sewage treatment plants have more than a reasonable potential to impair aquatic life beneficial use of Bay-Delta receiving waters. (*See* February 8, 2012, Public Water Agencies' PowerPoint presentation ["PWA Presentation"] at slide No. 5 [quoting Delta lead scientist Cliff Dahm advising Delta Stewardship Council, U.S.G.S. scientist James Cloern, and Romburg Tiburon Center scientist Frances Wilkerson].) The Regional Water Board's own senior staff have recently concluded that the best available science shows ammonium discharges are impairing aquatic life beneficial uses of the Bay-Delta Estuary. In June 2010, Regional Water Board Executive Officer Bruce Wolfe concluded:

> One of the primary hypotheses for the pelagic organism decline (POD) is a decline in food availability for POD species. Declines in diatom blooms in Suisun Bay have been well documented by the Interagency Ecological Program (IEP) and others. Studies on the relationship between nutrients and primary productivity in the estuary indicate that ammonia levels in Suisun Bay reduce both nitrate uptake and primary production rates (Wilkerson et al 2006, Dugdale et al 2007).

(PWA Presentation at slide No. 9 [quoting June 4, 2010, letter from Wolfe to Central Valley Regional Water Quality Control Board]; *see also id.* [quoting Regional Water Board Assistant

Executive Officer Dyan White for conclusion that "we do feel like we have strong reason to believe now that there are impacts that we are seeing within our region" from treatment plant ammonium discharges into the Bay-Delta].)

Despite the best available science showing the need for effluent limits on ammonium, the Public Water Agencies took a pragmatic approach by proposing two alternative permitting strategies. First, the Public Water Agencies proposed a continuance of the Permit approval proceeding to provide time to work with the Regional Water Board staff and Discharger to develop Permit conditions addressing ammonium discharge impacts. (PWA Comments at p. 13.) Second, the Public Water Agencies proposed Permit revisions that would set a time-line for the Discharger to characterize its Treatment Plant's specific contribution to Bay-Delta receiving water impacts, while requiring Treatment Plant upgrade planning that would position the Discharger to accomplish ammonium removal on approximately the same schedule as if the Permit required ammonium removal in the first instance. (PWA Comments at pp. 13-14.)

Permitting Staff Acknowledges Ammonium Impact Concern But Recommends No Action: The Regional Water Board prepared responses to the written comments submitted by the Public Water Agencies and the Discharger ("RTC" or "Response to Comments"). The RTC revealed that Regional Water Board staff were unwilling to propose to the Regional Water Board members that the Discharger address ammonium discharge impacts on the Bay-Delta Estuary. The staff were unwilling to address ammonium impacts, despite their acknowledgement that "available scientific information provides cause for concern." (RTC at pp. 14-15.) Consistent with the prior, recent conclusion of the Regional Water Board's executive officer and assistant executive officer that ammonium discharge impacts are harming aquatic life in Suisun Bay, Regional Water Board staff did not challenge the well-documented science showing how ammonium discharges harm the diatoms and copepods that are critical components of the food web sustaining fish, including the Delta smelt and longfin smelt. Rather, staff questioned the application of that science to the site-specific circumstances at the Treatment Plant's points of discharge, citing "significant mixing" due to tidal influence at "outfalls over six miles downstream of Suisun Bay." (RTC at 15.)

However, staff offered no evidence disputing that the ammonium concentrations measured in Treatment Plant effluent and in receiving waters exceed the ammonium impact thresholds defined by the scientific principles publicly affirmed by the Regional Water Board's executive officer and assistant executive officer. Further, staff offered no evidence showing that the Treatment Plant's discharge of ammonium into Mare Island Strait and Carquinez Strait is not causing or contributing to the harmful ammonium concentrations in the receiving waters.

Regional Water Board Follows Staff Recommendation: On February 8, 2012, the Regional Water Board conducted a public hearing and followed the recommendation of its staff. The Regional Water Board approved the Permit without imposing requirements to prevent ammonium discharge impacts on Bay-Delta aquatic life. The Permit fails to impose effluent limits requiring nitrification or to require the Discharger to complete the kinds of studies and plans that CCCSD will undertake pursuant its new permit.

C. <u>The Permit Unlawfully Fails To Address Ammonium Discharge Impacts</u>

The Regional Water Board erred by not taking steps to address ammonium in the Permit. The best available science shows that discharges of ammonium from treatment plants, including ammonium from the Discharger's Treatment Plant, are violating narrative water quality objectives and harming aquatic life beneficial uses. That science is set forth in the record of proceedings culminating in the Regional Water Board's issuance of the Permit. It is unrebutted. Indeed, the absence of any response to the science presented by the Public Water Agencies unquestionably fails to satisfy the Regional Board's obligations to make findings under *Topanga Ass'n for a Scenic Comm. v. County of Los Angeles* (1974) 11 Cal.3d 506. Accordingly, the State Water Board should revise the Permit, or direct the Regional Water Board to revise the Permit, to put the Discharger on an expeditious path to prevent ammonium discharge impacts from harming aquatic life.

The law directing how the Regional Water Board should have addressed ammonium is clear. The starting point is that all waste discharges are prohibited, unless a permitting authority exercises its discretion to authorize a particular discharge. "No discharge of waste into the waters of the state, whether or not the discharge is made pursuant to waste discharge requirements, shall

create a vested right to continue the discharge. All discharges of waste into waters of the state are privileges, not rights." (Water Code § 13263(g).) Accordingly, all discharge permits must include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and *narrative objectives*. (40 C.F.R. § 122.44(d)(1)(i).) The narrative objectives describe water quality conditions that must be attained through pollutant control measures and watershed management. (Basin Plan § 3.1.) In the San Francisco Bay Region, narrative water quality objectives include protecting against discharges that may impact beneficial uses, have toxic effects, and alter population abundance, community composition, or "any other relevant measure of the health of an aquatic organism, population, or community." (Basin Plan at §§ 3.3.8, 3.3.18.) In order "to determine if a water quality based effluent limitation is required" to comply with a narrative objective, the State Water Board requires regional water boards to consider a range of information, including "the potential toxic impact of discharge, ... water quality and beneficial uses of the receiving water, the presence of endangered or threatened species or critical habitat, and other information." (*See* State Water Resources Control Board, Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California at pp. 6-7 [2005] ["State Implementation Plan or SIP"].)

The Regional Water Board's application of those basic principles in its order approving the Permit must pass muster under the California Supreme Court's holding in *Topanga, supra*. *Topanga* requires the Regional Water Board to describe the evidence and law it has considered and to articulate its reasoning by stating relevant sub-conclusions supportive of its ultimate decision. (*Id.* at 516-517.) Providing an analytical roadmap with clear "roadsigns" is critical to reveal the decision points and rationales that an agency has distilled from a potentially vast and disconnected evidentiary record. (*Id.* at 516-517.) The State Water Board must review the Permit to determine if the Regional Water Board provided the roadmap that *Topanga* requires. If the conclusions supporting the Regional Water Board's decision to omit from the Permit any measures to address ammonium are not supported by evidence in the record, then the required roadmap is absent, and the State Water Board must revise the Permit or remand the Permit to the

Regional Water Board to revise. (*See In the Matter of Petition of City of San Diego (Waste Discharge Requirements Order No. R9-2002-0025 [NPDES No. CA0107409]* [August 15, 2002] [revising permit effluent limit because regional water board "failed to make findings" supporting limit, as required by *Topanga*]; *see also In the Matter of Own Motion Review of Waste Discharge Requirements for the University of California, Davis (Order No. R5-2008-0183 [NPDES No. CA0077895]* [March 16, 2010] [remanding permit to regional water board to correct inadequate reasonable potential analysis for non-priority pollutant].)

Here, in adopting the Permit, the Regional Water Board has failed to properly address the ammonium impacts evidence in the record. The Regional Water Board asserted, *without any citation, analysis, or evidentiary support* in the record, that the impacts are "not well understood." (Permit at F-26; *see also* Response to Comments at p. 15.) Respectfully, the administrative record shows that is not the case. The data, analyses and scientific literature in the administrative record show at least a reasonable potential for ammonium discharged by the Treatment Plant to cause or contribute to the impairment of beneficial uses by: (1) causing toxic effects on aquatic species; (2) inhibiting nitrogen uptake by diatoms and thereby reducing primary production; and (3) contributing to changes in the aquatic food web sustaining the ecosystem of the Bay-Delta Estuary. Moreover, the Treatment Plant discharges directly into receiving waters occupied by threatened Delta smelt and longfin smelt. Yet the Regional Water Board failed to consider the "presence of endangered or threatened species" in its water quality analysis for ammonium, despite the express requirement to do so. (SIP, *supra,* at pp. 6-7.) The ammonium impacts require an immediate and vigorous regulatory response to protect and restore aquatic life, including the Delta smelt and longfin smelt that occupy receiving waters above, at and below the Discharger's Treatment Plant outfalls.

1. Excessive Ammonium Has Been Shown To Be Toxic To Copepods

First, the Permit should be revised to incorporate effluent limits requiring ammonium removal, because the Discharger's Treatment Plant is discharging ammonium at concentrations acutely toxic to the copepods that serve as the primary food source for Delta smelt, longfin smelt and other aquatic life. (*See* PWA Comments at pp. 6-7; *see* Permit at p. F-26 ["Copepods are

important secondary producers, providing food for many fish"].) Thus, the discharge violates the narrative standard for toxicity in the Basin Plan.

Studies in the record before the Regional Water Board establish that low concentrations of untreated ammonium are toxic to copepods. Dr. Swee Teh, a Ph.D in Comparative Pathology and a Research Toxicologist and Pathologist in the Department of Anatomy, Physiology and Cell Biology, at the University of California at Davis,[4] has led research studying the effects of ammonium on the copepods *Eurytemora affinis* and *Pseudodiaptomus forbesi*, including research done during 2010-2011 at the direction of the Central Valley Regional Water Quality Control Board. (*See* S. Teh, et al., Final Report, Full Life-Cycle Bioassay Approach to Assess Chronic Exposure of *Pseudodiaptomus forbesi* to Ammonia/Ammonium – Submitted to C. Foe and M. Gowdy [March 4, 2011] ["Teh, Final Report 2011"], submitted with the PWA Comments.[5]) Dr. Teh and his team concluded that ammonium has "adverse effects … on the growth, reproduction,

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[4] Dr. Teh serves as the Interim Director of the Aquatic Toxicology Laboratory at the UC-Davis School of Veterinary Medicine, and is a UC-Davis Faculty Member for the Graduate Group in Ecology, the Center for Aquatic Biology and Aquaculture, the Center for Health and the Environment, and the John Muir Institute of Environment. Dr. Teh has over 20 years of field and laboratory research experience in aquatic toxicology, carcinogenesis, eco-toxicology, endocrine disruption, and biomarker studies. (Declaration of Dr. Swee Teh (April 29, 2011) ("Teh Decl."), ¶3, submitted with the PWA Comments.) His research has included studying various aspects of the aquatic ecosystem in the San Francisco Bay-Sacramento/San Joaquin River Delta (Bay-Delta). (*See Curriculum Vitae* of Dr. Swee Teh, Teh. Decl., Exhibit 1.) From 2005 to 2007, he served as the Chair of the Contaminant Work Team on the Pelagic Organism Decline for the Interagency Ecological Program in California. (Teh. Decl. ¶4.) He is a member of professional societies, including the American Society of Medical Technology and the American Society of Clinical Pathologists. (Teh. Decl. ¶4.) Dr. Teh conducted his work under the auspices of the Central Valley Regional Water Quality Control Board.

[5] The relevant research includes work summarized in the Teh Declaration and the Exhibits to that Declaration. Werner, et al., Pelagic Organism Decline (POD): Acute and Chronic Invertebrate and Fish Toxicity Testing in the Sacramento-San Joaquin Delta 2008-2010, Final Report Submitted to the California Department of Water Resources (July 24, 2010), (http://www.science.calwater.ca.gov/pdf/workshops/POD/Werner%20et%20al_2010_POD2008-2010_Final%20Report.pdf); (also at Teh Decl. Exhibit 3); Full Life-Cycle Bioassay Approach to Assess Chronic Exposure of P. forbesi to Ammonia/Ammonium to the Delta Pelagic Organism Decline Contaminants Work Team (July 6, 2010), Teh Decl. Exhibit 4; Letter from S. Teh to C. Foe (November 10, 2010), Teh Decl. Exhibit 5; S. Teh, et al., Final Report, Full Life-Cycle Bioassay Approach to Assess Chronic Exposure of *Pseudodiaptomus forbesi* to Ammonia/Ammonium – Submitted to C. Foe and M. Gowdy (March 4, 2011), Teh Decl. Exhibit 6 ("Teh, et al., 2011 Final Report); *see also* Presentation by Dr. Teh to the Central Valley Regional Water Quality Control Board, Ammonia Summit, available at http://www.waterboards.ca.gov/centralvalley/water_issues/delta_water_quality/ambient_ammonia_concentrations/index.shtml (August 18-19, 2009).

and survival of parents and progenies of *P. forbesi*" and that the effects have "implications on the abundance of this copepod as an important food source to larval fishes in the Delta." (Teh, et al., 2011 Final Report at 2.) Two independent test methods confirm this conclusion. First, using a 96-hour toxicity test, the researchers found 10 percent mortality occurred in invertebrate species exposed to ammonium concentrations in Bay-Delta receiving water. (Teh, et al., 2011 Final Report at 9-10.[6]) Second, life cycle tests assessed the impacts of different concentrations of ammonium on the ability of the copepod to reproduce and thrive. The life cycle tests showed that ammonium impacted adult *P. forbesi* reproduction at concentrations greater than or equal to 0.79 mg L^{-1}, while observed effects were present for nauplii and juveniles at ammonium concentrations as low as 0.36 mg L^{-1}.[7] According to Dr. Teh, "these results demonstrate that **ammonia significantly impacts populations of *P. forbesi*** as analyzed." (Teh, 2011 Final Report at 2 [emphasis in original].)

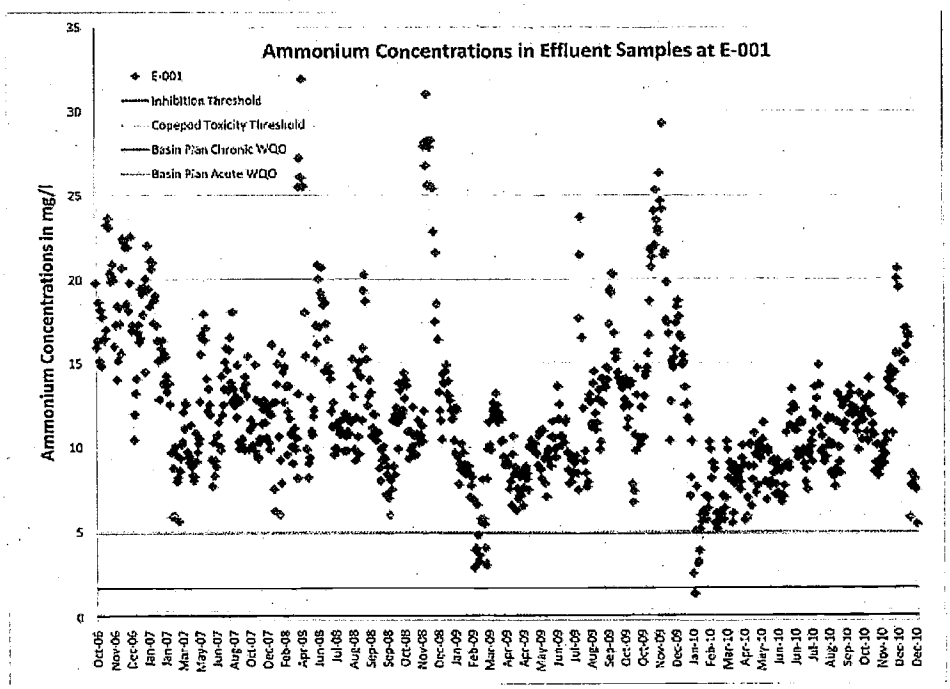

Figure 2 shows that the ammonium concentrations in the Discharger's effluent exceed the

[6] Dr. Teh's 96-hour bioassay test "closely followed the US EPA standard toxicity testing procedures. (US EPA-821-R-02-012; EPA-821-R-02-013)." (Teh. Decl. at ¶7.)

[7] Teh, S. Full Life-Cycle Bioassay Approach, *supra.*

toxicity level for copepods 100 percent of the time. (PWA Comments, Figure 5.) Indeed, most of the data range from 5.0 to 32.0 mg/L, or 15 to 90 times greater than the level that is toxic to copepods essential to the Bay-Delta food web.

The Regional Water Board does not specifically address Dr. Teh's work in its Permit or Response to Comments. (*See* RTC.) The Regional Water Board did not present any contrary data, literature or analyses evaluating or refuting Dr. Teh's conclusions and supporting scientific rationale concerning impacts of the ammonium in the discharge.[8] Instead, in one sentence, without references, data or analysis, the Regional Water Board merely asserts that "*ammonia*"[9] concentrations "observed in Suisun Bay" are "below the low observed effect concentration derived in the studies." (Response to Comments at 15.) Without providing any data or direct response, the Regional Water Board's assertion wholly fails to meet its duty under *Topanga*.

Regardless, the Regional Water Board's cursory analysis is entirely beside the point. The Permit authorizes the Discharger's Treatment Plant to discharge up to 30 million gallons per day of toxic effluent directly into Mare Island Strait and the Napa River,[10] (Permit at F-3 to F-6[11])

[8] General assertions were made in the hearing before the Regional Water Board about the accuracy of Dr. Teh's methodology. However, none of these assertions are supported by any evidence in the administrative record developed for the Regional Water Board, which is now on review by the State Water Board. In any event, as Dr. Teh's analyses explained, he repeated both tests and each time he confirmed the same results, which were provided to the Central Valley Regional Water Board. (Teh. Decl. at ¶12 [Dr. Teh "repeated the 96-hour acute toxicity laboratory tests" and again observed the "toxic effects"] and at ¶14 ["At the request of the Central Valley Regional Board," he "repeated the life cycle testing" and "confirmed [his] original conclusion of the effects of ammonia on the reproduction of P. forbesi and the number of nauplii surviving to the adult stage."].) Moreover, in testimony during the Regional Water Board hearing, Ms. Frances Brewster dispelled an apparent misunderstanding about Dr. Teh's analytical method by confirming, first, that he indeed used controls to help verify his results and conclusions and, second, that his scientific analyses help establish the ammonium reference toxicity for the test organism *P. forbesi.*

[9] *Ammonium* concentrations are the focus here, not ammonia.

[10] In fact, the Permit creates a special process whereby the Regional Water Board's executive officer may administratively authorize the Discharger to routinely dump secondarily treated sewage into Mare Island Strait/Napa River under year-round conditions in order to reduce Treatment Plant operating costs. (Permit at 13-14, F-5.) The special process seems to bypass the normal permit modification procedure and its opportunities for public participation.

[11] The Permit provides that when wet weather discharges exceed 30 MGD, the Treatment Plant may discharge up to an additional 30 MGD into Mare Island Strait/Napa River. (*Id.*) For example, in 2010 the Treatment Plant discharged 38.8 million gallons of secondarily treated sewage into Mare Island Strait/Napa River from January 19-22. (Permit at F-6 [Table F-3].)

which California Department of Fish and Game ("DFG") surveys show is habitat occupied by Delta smelt and longfin smelt. (*See* Figure 1, *supra.*) Yet the Regional Water Board never mentioned the DFG smelt surveys. Nor did the Regional Water Board assess the toxic effect of ammonium on the copepods that Delta smelt and longfin smelt eat in their habitat.

Put another way—in order to find no reasonable potential to cause or contribute to impairment of the aquatic life beneficial use of receiving waters, the Regional Water Board ignored the discharge constituent (ammonium) that is causing observed toxic impacts on copepods. The Regional Water Board's exclusive focus on receiving water concentrations of ammonia (the unionized form of total ammonia nitrogen) is misleading. It is beyond dispute that with respect to total ammonia nitrogen, "the unionized component is only a small fraction of the total ammonia-nitrogen to which organisms are exposed in the aquatic environment." (Teh. Decl. ¶15 and ¶16 [98-99 percent is ammonium—the *ionized* form of total ammonia nitrogen].) The rest is ionized ammonium. Thus, "[u]sing only the unionized fraction as the criterion," as the Regional Water Board did, is misleading and "would be inconsistent with the actual results" of Dr. Teh's work, which showed that the *total ammonia nitrogen, including the ammonium,* produced the toxic effects on copepods. (Teh. Decl. ¶16.[12]) Further, ignoring the ammonium would be inconsistent with U.S. Environmental Protection Agency ("U.S. EPA") guidance on ammonia. (*See* Teh. Decl. ¶16, *citing* the U.S. EPA's 1999 Update of Ambient Water Quality Criteria for Ammonia [EPA-822-R-99-014] [December 1999] [U.S. EPA 1999 Report.].) The U.S. EPA 1999 Report "strongly suggested the effects of pH on ammonia toxicity are due to the *joint toxicity* of ammonium ion (NH4 +) and unionized ammonia (NH3)." (Teh. Decl. ¶16.) To "not directly address ammonium" as the Regional Water Board did, ignores reality and defies common sense. Organisms are of course "exposed to total ammonia, and not just the unionized fraction, in the ambient environment." (Teh. Decl. ¶16.)

The Regional Water Board erred by ignoring the unrebutted record evidence showing ammonium discharge impacts on copepods.

[12] *See also* Declaration of Patricia M. Glibert, PhD (May 3, 2011) (submitted with Public Water Agencies' comments) (the correct constituent of concern is "ammonium").

2. The Excess Ammonium Is Inhibiting Nitrogen Uptake By Diatoms And Reducing Diatom Primary Production In The Bay-Delta

Second, the Permit should be revised to incorporate effluent limits requiring ammonium removal, because the ammonium loadings are disrupting the food web by inhibiting nitrogen uptake by diatoms in the Bay-Delta Estuary. The record evidence showing this impact is compelling and unrebutted.

Foremost, the scientific literature demonstrates that ammonium disrupts the natural processes essential to the primary production of phytoplankton in the Bay-Delta. Phytoplankton, including diatoms, form the base of the food web and are essential to a healthy aquatic ecosystem. (Permit at F-26 ["Diatoms are single cell algae that significantly contribute to primary production in Suisun Bay (the base of the food web)."].) Primary consumers, such as copepods (P. forbesi), rely on diatoms as their main source of food, and copepods, in turn, serve as a food source for other aquatic life, such as Delta smelt and longfin smelt. (*See* Permit at F-26 ["Diatoms are single-cell algae that significantly contribute to primary production in Suisun Bay (the base of the food web). Copepods are important secondary producers, providing food for many fish."]; see also Teh, et al., 2011 Final Report at 2 [copepods such as P. forbesi are "an important food source to larval fishes in the Delta"]; *see also* Parker, et al., 2012, at 2 [reduction of phytoplankton blooms and primary production is particularly important for the Northern [Bay-Delta Estuary], where food limitation has been demonstrated for zooplankton (Mueller-Solger et al., 2002) and fish species (Bennett and Moyle, 1996) and may be in part responsible for an overall "pelagic organism decline" (Sommer et al.,2007)."].) In published reports and articles, noted researchers, Drs. Richard Dugdale, Frances Wilkerson, Alexander Parker and others have found that ammonium from wastewater treatment plant discharges is inhibiting nitrogen uptake by diatoms and contributing to reduced diatom production in the Bay-Delta estuary.[13] (*See* PWA Comments,

[13] *See e.g.,* Parker, A.E., A.M. Marchi, J. Drexel-Davidson, R.C. Dugdale, and F.P. Wilkerson. Effect of ammonium and wastewater effluent on riverine phytoplankton in the Sacramento River, CA. Final Report to the State Water Resources Control Board; Wilkerson, F.P., R.C. Dugdale, V.E. Hogue and A. Marchi, 2006. Phytoplankton blooms and nitrogen productivity in San Francisco Bay, Estuaries and Coasts 29(3): 401-416; Dugdale, R.C., F.P. Wilkerson, V.E. Hogue and A. Marchi. 2007. The Role of ammonium and nitrate in spring bloom development in San Francisco Bay. *Estuarine. Coast and Shelf Science* 73: 17-29 ; Sommer, T., C. Armor, R. Baxter, R. Bruer, L. Brown, M. Chotkowski, S. Culberson, F. Feyrer, M. Gingras, B. Herbold, W.

Technical Memorandum at 1 [summarizing research]; *see also* Taberski, Dugdale, et al., SWAMP Monitoring Plan 2011-2012, *San Francisco Bay Region Work Plan; Monitoring Spring Phytoplankton Bloom Progression in Suisun Bay* at 1 [Dec. 2010] ["Work Plan"] at 1-3.[14]) Drs. Dugdale, Wilkerson and Parker are scientists and faculty with the Romberg Tiburon Center for Environmental Studies at San Francisco State University. Collectively they have many decades of experience investigating nutrient and phytoplankton dynamics.[15]

Indeed, Dr. Dugdale and his team have found that at an ammonium concentration of 4 μmol L^{-1} (equivalent to 0.056 mg L^{-1}) nitrate uptake is fully inhibited. As summarized in their report submitted for the record to the Regional Water Board:

> Our data indicate that ammonium above 4 μlmol L-1 (0.056 mg-N L-1) suppresses nitrate assimilation and primary production rates at concentrations as low as 0.014 mg- N L-1, with complete shutdown when concentrations reach 0.056 mg- N L-1.
>
> This ammonium-induced inhibition of nitrate uptake prevents algal blooms important to the health of aquatic life from developing when conditions are otherwise favorable.

(Dugdale, Wilkerson, and Parker, Brief Report in Response to Selected Issues Raised by Sacramento Regional County Sanitation District in Petition for Review of Discharge Permit Issued by the Central Valley Regional Water Quality Control Board at ¶1 [May 4, 2011] ["Dugdale Report"], submitted with the PWA Comments.)[16] Yet, the ammonium concentration

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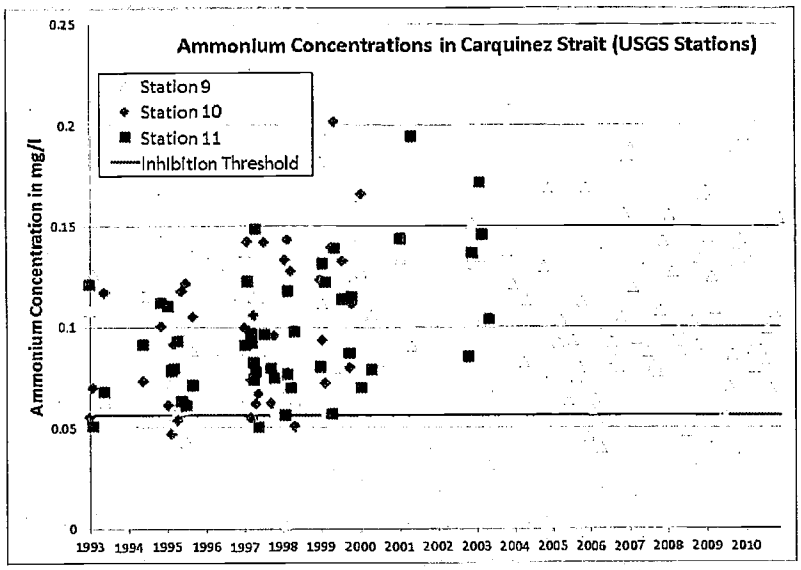
Kimmerer, A. Mueller-Solger, M. Nobriga and K. Souza. 2007. The Collapse of Pelagic Fishes in the Upper San Francisco Estuary, *Fisheries* 32(6):270-277; Glibert, P. 2010a. "Long-term changes in nutrient loading and stoichiometry and their relationships with changes in the food web and dominant pelagic fish species in the San Francisco Estuary, California," *Reviews in Fisheries Science.* 18(2):211 - 232.

[14] http://www.swrcb.ca.gov/water_issues/programs/swamp/docs/workplans/1112rb2wp.pdf.

[15] The *curriculum vitae* of Drs. Dugdale, Wilkerson, and Parker are Exhibit 1 to the Dugdale Report.

[16] *See also,* Wilkerson, et al. (2006) and Dugdale, et al. (2007) (submitted with the PWA Comments) which show that "bloom levels of chlorophyll are evident only when nitrate uptake occurs and that nitrate uptake only takes place at lower ambient ammonium concentrations." They conclude that ammonium concentrations greater than 4 μmol L-1 completely inhibit nitrate uptake by diatoms and thus suppress bloom formation. *See also,* Parker, et al. which observed a 55 percent decline in primary production in the Sacramento River below the Sacramento Regional Wastewater Treatment Plant compared to production above that plant's outfall. Parker, et al. concludes that "[t]he quantitative reduction in primary productivity and nitrogen uptake at various points in the river was predictable and strongly related with NH4 concentrations" and as such, "control of river nutrients, especially NH4 loading, is essential to management efforts to restore the river/estuary to a productive condition." (Parker, et al. was also provided in the Public Water

in Carquinez Strait consistently exceeds the inhibition threshold, as established by data from the federal government's United States Geological Survey ("USGS") monitoring stations 9, 10 and 11 located in Carquinez Strait in the immediate vicinity of the Vallejo discharge.



As shown by the collected data depicted in **Figure 3**, above, the complete ammonium inhibition concentration of 0.056 mg L^{-1} (indicated on the graph by the red line) is repeatedly exceeded and the point at which suppression begins (0.014 mg L-1) has always been exceeded over the course of almost two decades of monitoring. (PWA Comments, Figure 6.) These data demonstrate that the receiving water is impaired, as the ammonium concentrations are 4-5 times greater than the concentrations found to inhibit nitrogen uptake by diatoms and to reduce diatom production.

Importantly, there are similar data from the receiving water quality monitoring location in the lower Napa River. **Figure 4**, on the following page, shows receiving water ammonium concentration data collected from 1993 to 2001 by the Regional Monitoring Program ("RMP"). (PWA Comments, Figure 7.)

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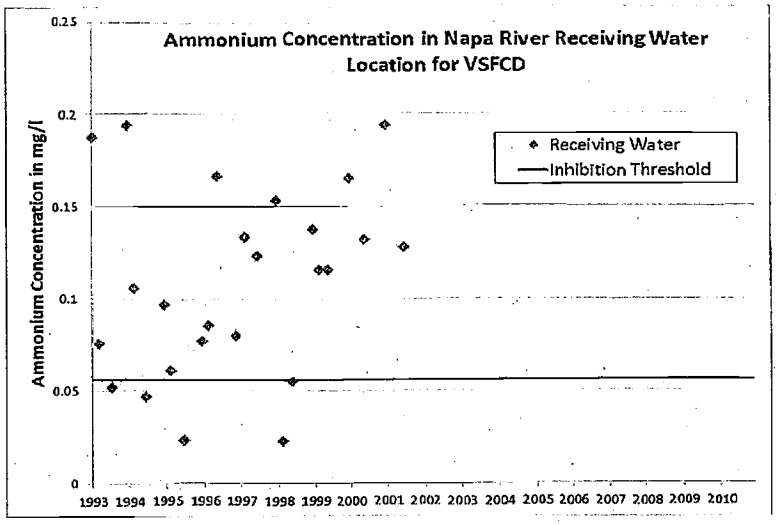
Agencies' comments to the Regional Board and cited as "in review." This paper has since been published. Parker, A.E., et al. Elevated ammonium concentrations from wastewater discharge depress primary productivity in the Sacramento River and the Northern San Francisco Estuary. Mar. Pollut. Bull. (2012) doi:10.1016/j.marpolbul.2011.12.016.)



These data similarly show that the Treatment Plant's receiving water generally has an ammonium concentration substantially above the inhibition threshold for nitrate uptake by diatoms. These are the only data in the record on this geographic zone of impact—and are data from the RMP's Napa River Station BD50, a receiving water station specifically located to monitor the Discharger.

Once again, the Regional Water Board offers no meaningful response to the preceding administrative record evidence showing receiving water impairment for aquatic life beneficial use. Aside from unsupported, conclusory assertions that Regional Water Board staff "do not agree that the existing information is sufficient" to require ammonium removal, (Response to Comments at 15), and that potential for ammonium inhibition "needs to be evaluated in the context of other possible factors that could also affect productivity," the Regional Water Board does not rebut the science and data. (*See* Response to Comments at 14-20.) Nor could they, as the studies provided in comments by the Public Water Agencies are clear and compelling and scientifically undisputed.

Moreover, studies showing ammonium suppressing phytoplankton are not new or unique to the Bay-Delta. (*See* Technical Memorandum at 1-2, submitted with the PWA Comments.) There is a large body of scientific research describing ammonium suppression of primary productivity, which was first observed as far back as the 1930s. (Technical Memorandum [citing Ludwig,

1938; Harvey, 1953].) Some of the early field demonstrations of this phenomenon were by MacIsaac and Dugdale (1969, 1972), followed by research in the Chesapeake Bay by McCarthy, et al. (1975). (*Id.*) Lomas and Glibert (1999a) in fact describe the threshold for initial inhibition of nitrate uptake at ammonium levels of 1 μmol L-1. (*Id.*) Ammonium suppression of nitrate uptake overwhelms cells with an excess of ammonium; and in doing so, alters the cells' ability to assimilate nitrate thereby suppressing primary productivity. This is particularly problematic for the Bay-Delta already a low producing estuary. (*Id.* [citing Jassby et al., 2002].)

The Regional Water Board staff has itself previously made plain that it agrees with the scientific principles of ammonium impacts developed and published by Drs. Dugdale, Wilkerson and Parker. As previously quoted, Regional Water Board Executive Officer Bruce Wolfe concluded in June 2010, "[s]tudies on the relationship between nutrients and primary productivity in the estuary indicate that ammonia levels in Suisun Bay reduce both nitrate uptake and primary production rates (Wilkerson et al 2006, Dugdale et al 2007)." (PWA Presentation, slide No. 9 [quoting June 4, 2010, Wolfe letter to Central Valley Regional Water].) Likewise, Regional Water Board Assistant Executive Officer Dyan Whyte concluded in December 2010 that after taking "a deeper dive into the science" and having "participated in studies and conducted our own studies," the Regional Water Board staff determined that "we have strong reason to believe now that there are impacts that we are seeing within our region, mainly in Suisun Bay," caused by the discharge of nutrients from wastewater treatment plants. (*See* PWA Presentation, slide No. 6 [quoting Whyte testimony at Central Valley Regional Water Board discharger permit proceeding].) Those same scientific principles apply to the discharge of nutrients by the Discharger's Treatment Plant into the Bay-Delta Estuary.[17]

Unable to directly challenge the scientific principles showing ammonium discharge impacts on aquatic life, the Regional Water Board cites a single telephone conversation to support its

[17] The Public Water Agencies do of course recognize that the size and location of the Sacramento Regional Wastewater Treatment Plant ("SRWTP") discharge distinguishes it from all other contributions of nutrients to the Bay-Delta. However, the basic scientific principles of nitrate suppression apply equally to the Discharger at issue here, as well as to other dischargers, like the SRWTP.

contention that the Treatment Plant's "discharge is unlikely to contribute significant amounts of ammonia to Suisun Bay" due to current, tide and dilution. (Permit at F-26.) That general assertion misses the mark for several reasons. For one, the Regional Water Board's position completely ignores the administrative record, which shows that the discharge of ammonium has the reasonable potential to cause or contribute to the violation of narrative water quality objectives protecting aquatic life in receiving waters in Mare Island Strait and Carquinez Strait. That record evidence is unrebutted. Assumptions about tides, currents and dilution are fine concepts, but receiving water quality sampling demonstrates that in the real world, the Discharger releases effluent with high ammonium concentrations, and the receiving water has ammonium concentrations that exceed documented aquatic life impact thresholds. (*See* Figures 2-4, *supra.*) The administrative record contains no evidence showing that the Treatment Plant discharge will not cause those impacts or that the prevailing current will simply wash away the problems arising from the discharge of 15.5 million gallons per day or more of effluent containing untreated nutrients, like ammonium.

Moreover, the simplistic reliance on a purported prevailing current does not address the complexities in hydrologic conditions of the immediate receiving waters. The Regional Water Board asserts that the "discharge to Mare Island Strait is also not expected to *substantially* affect Suisun Bay" – thereby acknowledging *some* impact – but because the "near surface current direction" is seaward, it then assumes receiving water beneficial uses will not be impaired. The Permit acknowledges that the hydrology in this area is a "very complex estuarine system with highly variable and seasonal upstream freshwater inflows and diurnal tidal saltwater inputs," (Permit at F-24), that there is a "three dimensional" aspect to the current "resulting from the interactions of tidal flushes and seasonal fresh water flows," (Permit at F-24), and that these "complex patterns … are most prevalent in the San Pablo Bay, Carquinez Strait, and Suisun Bay areas," but that the "locations of this mixing and interaction change …." (Permit at F-24.) Given the recognized hydrologic complexity of the receiving waters, it is inappropriate and improper for the Regional Water Board to rely upon vague notions of "current," reflected in a single telephone conversation, as the sole basis for decided not to protect aquatic life beneficial uses of receiving

waters, particularly in the face of hard data showing receiving water ammonium concentrations that harm diatoms and are toxic to copepods.

3. Nutrient Discharges Into the Bay-Delta Estuary Are Contributing To A Shift In Algal Communities By Changing The Nutrient Ratios To Favor Harmful, Invasive Species

Third, the Permit should be revised to incorporate effluent limits requiring ammonium removal, because the research of Dr. Patricia Glibert and other experts demonstrates that ammonium discharges have harmed aquatic life in the Bay-Delta Estuary by increasing the ratio of nitrogen to phosphorus in the receiving waters, which triggers impacts to the food web on which Bay-Delta aquatic life depends. (*See* Technical Memorandum at 4-8; *see also* Declaration of Patricia M. Glibert, PhD [May 3, 2011] ["Glibert. Decl."] [submitted with the PWA Comments].) Increasing ammonium discharges, particularly while phosphorus discharges have been declining, degrades water quality by changing the ratio between dissolved inorganic nitrogen and phosphorus, as well as the ratio between total nitrogen and total phosphorus. These ratios are known to have profound influences on food webs.[18]

Dr. Glibert is a world-renowned aquatic ecologist and nutrient biogeochemist with more than 30 years of experience working on issues related to nutrient loading, nutrient ratios, eutrophication, changes in trophic dynamics, harmful algae, and management implications of nutrient loading all over the world. Throughout her professional career, she has studied, and published on, nutrients and food web dynamics in systems ranging from laboratory cultures and experimental water enclosures to field sites. Her papers cover such topics as phytoplankton nutrient uptake and photosynthesis, nutrient excretion by zooplankton, harmful algal physiology, nutrient preferential use by phytoplankton, eutrophication, and global nutrient modeling, and she has conducted field investigations in ecosystems across the globe.[19]

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[18] *See* Ecological stoichiometry: The biology of elements from molecules to the biosphere. Princeton University Press, Princeton, N.J. Sterner and Elser (2002) ["Sterner, R. W. and J.J. Elser. 2002"] [concluding "Stoichiometry can either constrain trophic cascades by diminishing the chances of success of key species, or be a critical aspect of spectacular trophic cascades with large shifts in primary producer species and major shifts in ecosystem nutrient cycling."], submitted with the PWA Comments.)

[19] *See* Glibert Decl. at 1-2 and at Exhibit 1 (*curriculum vitae*), submitted with the PWA Comments. Dr. Glibert's research has ranged "from the Chesapeake Bay to the Southern Ocean,

Dr. Glibert's research indicates that changes in Delta smelt, longfin smelt and several other fish species' abundance are ultimately related to increasing ammonium loads from wastewater discharges. The Public Water Agencies detailed Dr. Glibert's work, and the extensive body of literature supporting it, in the record in the course of the Regional Water Board's Permit proceeding. (*See* Technical Memorandum at 4-8.) Briefly, in an analysis of 30 years of data from the Bay-Delta, Dr. Glibert (2010; Glibert et al., 2011) found that the variation in nutrient concentrations and ratios is highly correlated to variations in the base of the food web, primarily the composition of phytoplankton species, to variations in the composition of zooplankton species, to variations in the abundance of invasive clams, and to variations in the abundance of fish species. Thus, the analysis shows that excess ammonium contributes to the decline of native pelagic fish populations through variations in the phytoplankton (*i.e.,* diatoms) that support the zooplankton (*i.e.,* copepods, like *P. forbesi*) that serve as their food sources, while the ammonium also supports invasive species as "the literature demonstrates that abundance and toxicity of *Microcystis* are significantly enhanced by ammonium, particularly under high nutrient ratios." (Glibert Decl. at 4 and at 5-6.) Accordingly, Dr. Glibert has concluded that "[r]emediation of pelagic fish populations should be centered on reduction of nitrogen loads and reestablishment of balanced nutrient ratios delivered from point source discharges."[20] That is because "reductions in

from Florida Bay to coastal Australia and Brazil, from the Baltic Sea to the East China Sea, from Kuwait Bay to Long Island Sound, from Gulf of Oman to Hong Kong coastal waters, as well as many other sites, including San Francisco Bay/Sacramento-San Joaquin River Delta." (Glibert Decl. at 1.) Dr. Glibert received an honorary doctorate degree from Linnaeus University, Sweden (http://lnu.se/aboutlnu/1.45678/linnaeus-university-has-appointed-four-hon). In 2006, the Board of Regents of the University System of Maryland recognized Dr. Glibert with an award for "Excellence in research, scholarship and creative activity" - one of 3 such awards given to faculty from across the 17 campuses of the University System. She has published over 150 peer reviewed papers and book chapters which collectively have been cited over 4500 times. She serves or has served as an associate editor on three research journals, including as invited lead editor of a special issue of the Chinese Journal of Oceanology and Limnology related to eutrophication and algal blooms. She also serves as the co-chair of the U.S. National Harmful Algal Bloom (HAB) Committee, chair of the committee on eutrophication for the international GEOHAB Programme, and co-chair of the international SCOR/LOICZ Working Group on HABs and Eutrophication. She has consulted with the ministries of Kuwait and Oman on issues related to nutrient pollution and harmful algae, served as an independent advisor to the Chinese Academy of Sciences related to their studies of eutrophication, and serves, or has served, on numerous panels and advisory boards related to nutrient management for the federal government and the states of Florida and Maryland.

[20] Glibert, P. 2010a.

N (especially NH_4^+ [ammonium]) will allow organisms, from diatoms to fish, that cannot withstand high NH_4^+ (and/or that are outcompeted by NH_4^+ - tolerant organisms, such as various harmful dinoflagellates and cyanobacteria), to compete." (Glibert, et al., 2011). Accordingly, the addition to Bay-Delta receiving waters of ammonium from wastewater treatment plants, including from the Discharger's Treatment Plant, must be controlled to best ensure that the overall system can be fully restored. Indeed, overall:

> without a rebalancing of the N:P ratios, the food web cannot recover to one supportive of higher pelagic production. Without rebalancing of the N:P ratios, the benthic food web, driven by invasive weed production and invasive bivalves will continue to thrive. Without rebalancing the N:P ratio, fish communities will continue to be dominated by predators. The N:P balance can and should be lowered.

(Glibert Decl. at 47.)

The Regional Water Board has offered no meaningful response to the record evidence showing that reducing ammonium discharges is necessary to prevent ongoing harm to aquatic life beneficial uses of receiving waters. The sum and substance of the Regional Water Board's entire response is one conclusory sentence asserting that "scientists disagree about whether changing nutrient ratios are harming Suisun Bay algal communities." (RTC at 15.) There is, however, nothing in the administrative record to support that claim, and the analyses of Dr. Glibert have been peer reviewed and are in all respects sound. Indeed, the core notion underlying Dr. Glibert's work—that altering the nutrient ratios impacts aquatic life – is not even a new or novel proposition. Altering nutrient ratios has long been shown to influence phytoplankton community composition and the presence—or absence—of native species and vegetation, as extensive studies have repeatedly demonstrated in systems around the world, including: Hong Kong, Tunisia, Germany, Florida, Spain, Korea, Japan, and Washington, D.C. (Chesapeake Bay), among others. (*See* Technical Memorandum at 4-8 [discussing body of literature]; *see* Glibert, et al. (2011) [evaluating 30 different systems]; Glibert Decl. at 44-46 [highlighting support from "comparable systems"].)

4. Nutrient Removal Will Protect Aquatic Life Beneficial Uses

Thus, the Permit should be revised to incorporate effluent limits requiring ammonium removal, because the best available science—unrebutted by the Regional Water Board—shows the Treatment Plant's discharge has at least the reasonable potential to impair the beneficial use of receiving waters for aquatic life. Protecting aquatic life beneficial use, therefore, requires effluent limits controlling ammonium. Investing in nutrient removal would not just maintain the present impaired ecosystem, but would contribute to restoration of the overall health of aquatic life in the Bay-Delta, including the Mare Island Strait/Napa River habitat for Delta smelt and longfin smelt. That benefit is supported by an extensive body of literature documenting improvements in ecosystem functions in hydrologic systems where nutrient loading from wastewater treatment plants and other sources has been controlled and reduced. Reducing nutrient loading in the Chesapeake Bay, Tampa Bay and coastal areas of Denmark has proven to be effective at reversing the harmful effects of previously undertreated wastewater discharges and restoring the native systems. (*See* Technical Memorandum at 5-7 [discussing literature]; see Glibert, et al. (2011) and Glibert Decl. at 45 [noting improvements that resulted "following the removal of nutrients from wastewater effluent" discharged to Tampa Bay and "advancements in nitrogen sewage treatment" in Italy].)

For example, as shown by **Figure 5**, on the following page, within several years of nutrient removal at the Blue Plains wastewater treatment plant in Washington, D.C., "not only have native seagrasses begun to return following nitrogen reduction from the Blue Plains Wastewater Treatment Plant, but the invasive *Corbicula* has also declined (Jaworski et al., 2007; Cummins et al., 2010; Ruhl and Rybicki, 2010)." (Glibert Decl. at 45; *see* Technical Memorandum at 5-6.)

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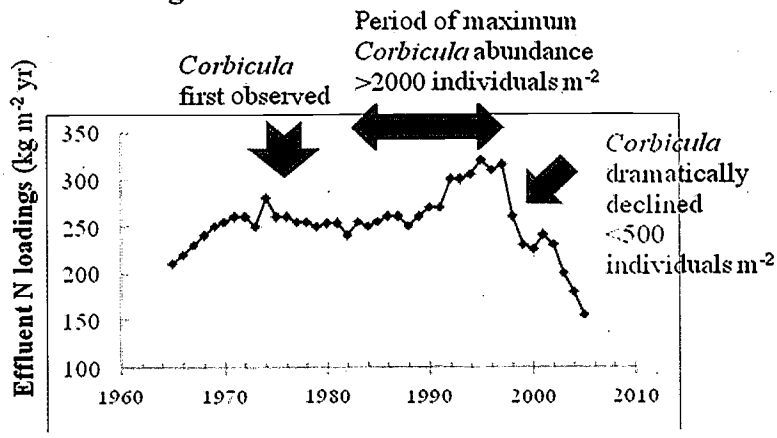
Potomac River: Corbicula abundance in relation to N loadings



Comparative relationships for the Potomac River showing the change in effluent N loading and the relative abundance of the invasive clam

Moreover, there is recent empirical evidence in this ecosystem demonstrating that reducing ammonium loadings improves the chance of diatom blooms essential to primary productivity in the Bay-Delta. In Suisun Bay, a diatom bloom reached chlorophyll concentrations of 30 µg L-1 during spring 2000 when ammonium concentrations declined to 1.9 µmol L-1. (Wilkerson et al. 2006.) Similarly, chlorophyll concentrations in Suisun Bay reached 35 µg L-1 during spring 2010 when ammonium concentrations declined to 0.5 µmol L-1. (Dugdale et al., 2011.) These blooms are comparable to spring chlorophyll levels from 1969-1977, (Ball and Arthur, 1979), when ammonium concentrations were much reduced—before substantial nutrient contributions were introduced into the Bay-Delta system. (Cloern and Cheng, 1981.)

Further, the technology to accomplish nutrient removal is readily available, a fact the Regional Water Board confirmed. (RTC at 14 ["We agree that technology for additional ammonia removal is available."].) In point of fact, control technology to remove ammonium (nitrification) already has been required at many other treatment plants discharging directly or indirectly into the Bay-Delta, including SRWTP, Stockton, Fairfield, Manteca, Tracy, Vacaville Easterly WWTP, Woodland, Lodi, Davis, Mountain House, and Galt. (PWA Comments, Table

1.) Thus, there is nothing novel or impracticable about requiring ammonium removal.

Crucially, the Treatment Plant discharge at issue here is particularly significant in that significant populations of Delta smelt and longfin smelt are found above, at and below, Vallejo's points of discharge. (Figure 1, *supra.*) That the Regional Water Board wholly failed to even address this fact and these data in any way is itself clear error and a reason for the State Water Board to grant the relief requested by this Petition. The decline of those listed fish species is causing severe restrictions on water supplies that harm more than 25 million Californians living in two-thirds of the state's households and that jeopardize farming on approximately 2 million acres of prime agricultural lands.

Discharging wastes into the waters of this State is a conditional privilege. (Water Code § 13262(g).) There is no vested right to continue discharging wastes. To that end, the Discharger has the burden to show, and the Regional Water Board has the burden to find based on evidence, that a discharge of wastes is not causing water quality impacts. Yet here, the Regional Water Board reversed those burdens and turned state and federal water law and this Permit process on its head. That burden-shifting should not be countenanced by the State Water Board. Instead, based on the evidence in the record, there is ample basis to establish a reasonable potential for impacts to beneficial uses. Accordingly, the Permit should include ammonium effluent limits preventing this Discharger from contributing to those observed impacts.

5. Antidegradation Policy Requires Ammonium Removal As Best Practical Treatment Or Control

The Permit should be revised to incorporate effluent limits requiring ammonium removal based on state and federal Antidegradation Policy. California's Antidegradation Policy is summarized in the State Water Board's 1990 Administrative Procedures Update ("APU"), which was meant to "provide guidance for the Regional Boards for implementing State Board Resolution No. 68-16 … and the Federal Antidegradation Policy, as set forth in 40 C.F.R. §

131.12." (APU 90-04, [July 1, 1990] at p. 1.) As such, the APU is designed to help the Regional Water Board implement both federal policy, 40 C.F.R. § 131.12, and the State Water Board's Antidegradation Policy, Resolution No. 68-16.

State Water Board Resolution 68-16 mandates that high water quality must be maintained unless the discharger can prove that lowering the water quality: (1) will provide "maximum benefit" to the state; (2) will not impair present or anticipated beneficial uses of the receiving water; and (3) will not violate water quality objectives. Additionally, discharges that increase the volume or concentration of waste in high quality waters must comply with discharge limits based on the "best practicable treatment or control" ("BPTC"), which ensures that no pollution or nuisance will occur and that the highest water quality will be maintained.

The Permit violates federal and state Antidegradation Policy by allowing degradation of receiving waters due to ammonium discharge. The Treatment Plant's current average actual discharge is 10.5 MGD. (Permit at p. F-4.) The Permit allows that discharge to physically increase by nearly 48 percent, to 15.5 MGD, above the existing discharge level. Although the Treatment Plant's ammonium discharge is impairing aquatic life beneficial uses (as described above), the Permit does not require any ammonium removal. By allowing at least a 48 percent increase in the discharge of ammonium, the Permit would allow increasing degradation of receiving waters from current conditions. Those receiving waters are habitat occupied by threatened Delta smelt and longfin smelt, by other fish and by the diatoms and copepods comprising the foundation of the food web sustaining all these species. The Permit allows the Treatment Plant discharge to further degrade habitat and harm Delta smelt, longfin smelt and other species. In so doing, it also further jeopardizes the largest single source of fresh water supply in all California.

The Public Water Agencies alerted the Regional Water Board that, prior to issuing the Discharger's Permit, federal and state Antidegradation Policy required the Regional Water Board: (1) to determine that permit conditions result in BPTC; and (2) to determine whether any water quality degradation that will result is permissible when balanced against the benefit to the public from issuing the Permit. Here, the Permit makes no findings with respect to BPTC and the

balancing of water quality degradation against any public benefit from allowing degradation. The Permit discloses no analysis showing how the degradation of receiving water quality from the continuation of the existing 10.5 MGD discharge level, and how the additional degradation from allowing a 48 percent increase in that discharge to 15.5 MGD complies with Antidegradation Policy. Nowhere does the Permit, or any other record document identified by the Regional Water Board, present a complete and legally adequate analysis of compliance with the Antidegradation Policy for this Treatment Plant discharge. Yet the law requires the Regional Water Board to conduct such an analysis when action on a discharge permit would cause either: (1) a substantial increase in mass emissions of a pollutant, even if the receiving waters are not polluted by the discharge; or (2) mortality or reproductive effects to resident species. (APU 90-004 at p. 3.) Such is the case here.

The Public Water Agencies raised the preceding Antidegradation Compliance problems in their written comments to the Regional Water Board. (PWA Comments at 11-12.) In response, the Regional Water Board contended that the Permit "could not possibly degrade Suisun Bay water quality with respect to ammonia." (RTC at 18.) According to the Regional Water Board, the Treatment Plant discharge will not degrade the quality of receiving waters, because the Permit "does not authorize any increase in effluent flow or ammonia concentrations beyond those the previous permit allowed." The problem with the Regional Water Board response is that Antidegradation Policy focuses on how discharges under the Permit will actually affect receiving water quality in the real world.

State Antidegradation Policy provides:

> Baseline quality is defined as the best quality of the receiving water that has existed since 1968 when considering Resolution No. 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.

(APU 90-04 at 4.) Here, while the Discharger's actual ongoing discharge of ammonium and other wastes has lowered Bay-Delta receiving water quality, that lowering was not "due to regulatory action consistent with State and federal antidegradation policies," because no complete

Antidegradation Policy analysis has apparently ever been conducted for the Treatment Plant.

Neither the Response to Comments nor any other information in the record before the Regional Water Board evidences, suggests or implies that a complete Antidegradation Policy compliance analysis has ever been completed for this Discharger. The Permit fails to refer to any such analysis and, instead, asserts a mere tautology:

> Because antidegradation requirements are met, there will be no lowering of water quality beyond the current level authorized in the previous permit, which is the baseline by which to measure whether degradation will occur. Therefore, further analysis in this permit is unnecessary, and findings authorizing degradation are thus unnecessary.

(Permit at F-32.) The prior permit (R2-2006-0056), approved in 2006, contains a four-sentence definition of Antidegradation Policy but neither provides nor references any complete Antidegradation Policy analysis. The permit approved in 2000 (R2-2000-0026) refers to Antidegradation Policy but neither provides nor references any analysis. Earlier permits seem to be utterly silent with respect to Antidegradation Policy compliance.

Furthermore, even assuming for argument that poorer receiving water quality was previously "permitted" does not support the Regional Water Board's decision to use 15.5 MGD as the baseline. Under APU 90-04, "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." (APU 90-04 at 4.) Accordingly, under this argument, the baseline would be the Discharger's approximately 10.5 MGD discharge, not the 15.5 MGD limit in its prior permit.[21]

In any event, the additional ammonium loading allowed from the discharge of up to 15.5 MGD under the Permit will degrade receiving water quality compared to either existing conditions (reflecting 10.5 MGD) or the Antidegradation Policy baseline predating existing conditions. As a result, the Permit should have provided that the Discharger "will be required to

[21] Notably, this statement from APU 90-04 comports with the California Environmental Quality Act, which does not allow the use of a prior permit's upper limit to be used as the baseline for determining the significance of environmental effects, if actual activity/performance under the old permit is lower than that maximum permitted level. (*See Comm. For A Better Environment v. South Coast Air Quality Mgt. Dist.* (2010) 48 Cal. 4th 310, 320-321.)

meet waste discharge requirements which will result in the best practicable treatment or control of the discharge . . . ." (State Water Board Res. No. 68-16, Statement of Policy With Respect to Maintaining High Quality Waters in California.) With respect to ammonium removal, nitrification already is either in place or required at most other municipal wastewater treatment plants discharging to the Bay-Delta. (*See* PWA Comments, Table 1.) Thus, ammonium removal by nitrification is BPTC required at the Discharger's Treatment Plant.

The Regional Water Board failed to perform a complete and legally adequate analysis demonstrating how the 15.5 MGD Treatment Plant discharge authorized by the Permit would comply with Antidegradation Policy, including ammonium effluent limits that require BPTC. That failure makes the Permit unlawful, because it authorizes the Discharger to degrade receiving water quality, to violate applicable water quality objectives, and to impair the aquatic life beneficial use of receiving water—all in violation of state and federal water quality protection law. To comply with Antidegradation Policy, the Permit should be revised to incorporate effluent limits requiring ammonium removal, in order to prevent degradation of receiving water quality to the point of impairing the aquatic life beneficial use.

D. In The Alternative, The Vallejo Permit Should Be Revised To Mirror The CCCSD Permit's Requirements To Confirm The Discharger's Contribution To Ammonium Impacts And To Plan Treatment Upgrades

In an effort to provide pragmatic alternatives for the Regional Water Board's consideration, the Public Water Agencies urged that the Permit at least impose a detailed, expeditious framework and timeline for addressing ammonium discharge impacts. The proposed framework has three components.

First, the Permit should include findings that the ammonium in the Treatment Plant discharge may be causing or contributing to aquatic life beneficial use impairment in the Napa River, Mare Island Strait, Carquinez Strait, San Pablo Bay and Suisun Bay and that, therefore, the Regional Water Board and the Discharger are committed to implementing studies to evaluate nutrient discharge impacts. The Permit should include a work plan and schedule for receiving water monitoring and associated studies, including sampling in the Napa River both upstream and

downstream from the point of discharge.[22]

Second, the Permit should set a clear reopening procedure for incorporation of ammonium effluent limits, with full public participation in the process, after the studies are completed and the data are published. The Permit should include deadlines to ensure the ammonium limits are reconsidered no later than 36 months after the Regional Water Board issues a final permit. That would be consistent with the CCCSD permit.[23]

Third, the Permit should set interim effluent limits consistent with the actual daily and monthly average maximum concentrations of ammonium in the Treatment Plant's discharge, with a modest margin for compliance. With the maximum observed concentration of ammonium according to the Regional Water Board in the range of 32 mg/L, there is no rational basis in the record for the Permit's limits of 44 mg/L (monthly) and 86 mg/L (daily maximum). (Permit F-27.)

Language implementing the preceding Permit revisions is set forth in Exhibit B to this Petition.

The Regional Water Board followed just such an approach in the discharge permit it approved for the Central Contra Costa Sanitary District, or CCCSD, treatment plant. The CCCSD permit committed the Discharger to work with the Regional Water Board to timely complete studies confirming its contribution to ammonium discharge impacts in receiving waters, while also completing a work plan for upgrading CCCSD's treatment plant to remove ammonium through nitrification. (*See* Regional Water Board Order No. R2-2012-0016 [NPDES No. CA0037648], attached hereto as Exhibit C.) Given the time typically required to complete physical construction of treatment plant upgrades, the permitting approach approved for CCCSD is expected to accomplish ammonium control in approximately the same time as would have occurred if CCCSD's new permit had immediately included ammonium effluent limits with a

[22] Receiving water monitoring and associated studies already are being undertaken or are committed to be undertaken for San Pablo Bay and Suisun Bay as a result of other Regional Water Board and other discharger actions.

[23] The Public Water Agencies originally proposed a shorter, 12-month reopener for the Discharger. Allowing three years would treat the Discharger the same as CCCSD.

time schedule order setting a reasonable compliance date.

As an alternative to immediately imposing ammonium effluent limits, there is no reason that the Regional Water Board should not have at least applied the CCCSD permitting approach to the Discharger at issue here. The Permit revisions required to do so are relatively simple. (*See* Exh. B [setting forth revisions proposed to specified Permit sections].) After all, the Regional Water Board approved the CCCSD permit on the same day, at the same meeting, as it approved the Discharger's Permit. The failure to approve even this alternative, compromise approach reflects an utterly inappropriate and improper Permit decision.

III.

CONCLUSION

In this case, the Regional Water Board has issued a Permit authorizing unabated ammonium discharges into Bay-Delta receiving waters occupied by threatened Delta smelt and longfin smelt. The record of proceedings contains unrebutted evidence demonstrating that ammonium concentrations in receiving waters used to assimilate the Discharger's wastes already exceed aquatic life impact thresholds. Unrebutted record evidence shows that ammonium concentrations in the Discharger's effluent far exceed those impact thresholds. And unrebutted record evidence shows that most other sewage treatment plants discharging to the Bay-Delta already are required to remove ammonium.

There is no valid reason rooted in fact or law that justifies approval of the Discharger's Permit without addressing ammonium impacts. In the face of the overwhelming record evidence, the Permit stands water law on its head by effectively treating the Discharger as if it has a vested right to use Bay-Delta receiving waters to assimilate ammonium and other wastes. As such, the Permit violates not only the California Water Code, (*see, e.g.,* Water Code § 13263(g) [no vested right to discharge wastes]), but Article X, section 2 of the California Constitution. Simply put, the Permit authorizes an unreasonable use of the State's most precious resource: Water. The consequences of that unreasonable use are statewide.

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For all the preceding reasons, the Public Water Agencies request that the State Water Board grant the relief requested herein.

DATED: March 9, 2012.

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DATED: March 9, 2012.

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DATED: March 9, 2012.

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DATED: March 9, 2012.

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ATTACHMENT 1

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WESTLANDS WATER DISTRICT

PROOF OF SERVICE

I, Terri Whitman, declare:

I am a citizen of the United States and employed in Sacramento County, California. I am over the age of eighteen years and not a party to the within-entitled action. My business address is 400 Capitol Mall, 27th Floor, Sacramento, California 95814. On March 9, 2012, I served a copy of the within document(s):

PETITION FOR REVIEW AND STATEMENT OF POINTS AND AUTHORITIES

☐ by transmitting via facsimile the document(s) listed above to the fax number(s) set forth below on this date before 5:00 p.m.

☒ by placing the document(s) listed above in a sealed envelope with postage thereon fully prepaid, the United States mail at Sacramento, California addressed as set forth below.

☐ by placing the document(s) listed above in a sealed Federal Express envelope and affixing a pre-paid air bill, and causing the envelope to be delivered to a Federal Express agent for delivery.

☐ by personally delivering the document(s) listed above to the person(s) at the address(es) set forth below.

☐ by transmitting via e-mail or electronic transmission the document(s) listed above to the person(s) at the e-mail address(es) set forth below.

See attached Service List

I am readily familiar with the firm's practice of collection and processing correspondence for mailing. Under that practice it would be deposited with the U.S. Postal Service on that same day with postage thereon fully prepaid in the ordinary course of business. I am aware that on motion of the party served, service is presumed invalid if postal cancellation date or postage meter date is more than one day after date of deposit for mailing in affidavit.

I declare under penalty of perjury under the laws of the State of California that the above is true and correct.

Executed on March 9, 2012, at Sacramento, California.

Terri Whitman

Service List

San Francisco Regional Water Quality Control Board: Bruce H. Wolfe Executive Officer San Francisco Regional Water Quality Control Board 1515 Clay Street, Suite 1400 Oakland, CA 94612 Telephone: (510) 622-2300 Facsimile: (510) 622-2460	Vallejo Sanitation and Flood Control District: Ron Matheson District Manager Vallejo Sanitation and Flood Control District 450 Ryder Street Vallejo, CA 94590 Telephone: (707) 644-8949 Facsimile: (707) 644-8975

EXHIBIT A

California Regional Water Quality Control Board
San Francisco Bay Region

Matthew Rodriquez
Secretary for Environmental Protection

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http://www.waterboards.ca.gov/sanfranciscobay

Edmund G. Brown, Jr.
Governor

ORDER NO. R2-2012-0017
NPDES NO. CA0037699

The following discharger is subject to waste discharge requirements set forth in this Order.

Table 1. Discharger Information

Discharger	Vallejo Sanitation and Flood Control District
Name of Facilities	Vallejo Sanitation and Flood Control District Wastewater Treatment Plant and its wastewater collection system
Facility Address	450 Ryder Street Vallejo, CA 94590 Solano County
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Quality Control Board have classified this discharge as a major discharge.	

Discharges from the discharge points identified below are subject to waste discharge requirements as set forth in this Order.

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Secondary treated effluent	38° 03' 53" N	122° 13' 42" W	Carquinez Strait
002	Secondary treated effluent	38° 05' 23" N	122° 15' 12" W	Mare Island Strait, a tributary to Carquinez Strait

Table 3. Administrative Information

This Order was adopted by the Regional Water Board on:	**February 8, 2012**
This Order shall become effective on:	**April 1, 2012**
This Order shall expire on:	**March 31, 2017**
The Discharger shall file a Report of Waste Discharge in accordance with title 23, California Code of Regulations, as application for issuance of new waste discharge requirements no later than:	**180 days prior to the Order expiration date**

I, Bruce H. Wolfe, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on the date indicated above.

Digitally signed by Bruce Wolfe
Date: 2012.02.10 14:48:16 -08'00'

Bruce H. Wolfe, Executive Officer

Contents

Tables

Attachments

I. FACILITY INFORMATION

The following Discharger is subject to the waste discharge requirements set forth in this Order:

Table 4. Facility Information

Discharger	Vallejo Sanitation and Flood Control District
Name of Facilities	Vallejo Sanitation and Flood Control District Wastewater Treatment Plant and its collection system
Facility Address	450 Ryder Street Vallejo, CA 94590 Solano County
Facility Contact, Title, and Phone	Ron Matheson, District Manager, (707) 644-8949 x211
Mailing Address	SAME
Type of Facility	Publicly Owned Treatment Works (POTW)
Facility Permitted Flow	15.5 million gallons per day (MGD)
Facility Design Flow	15.5 MGD Average Dry Weather Capacity 35.0 MGD Maximum Wet Weather Secondary Treatment Capacity 60.0 MGD Maximum Wet Weather Capacity

II. FINDINGS

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

A. Background. The Vallejo Sanitation and Flood Control District (hereinafter Discharger) is currently discharging under Order No. R2-2006-0056, as amended by Order No. R2-2010-0054, and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0037699. The Discharger submitted a Report of Waste Discharge, dated April 1, 2011, and applied for a NPDES permit reissuance to discharge treated wastewater from the Vallejo Sanitation and Flood Control District Wastewater Treatment Plant (Plant).

This discharge is also currently regulated under Order No. R2-2007-0077 (NPDES Permit CA0038849), as amended, which supersedes all requirements on mercury and polychlorinated biphenyls (PCBs) from wastewater discharges in the region. This Order does not affect the mercury and PCBs requirements in that permit.

B. Facility and Discharge Description. The Discharger owns and operates a collection system and secondary wastewater treatment facility. The treatment system consists of screens, aerated grit removal, primary sedimentation, biofiltration, biological aeration, mechanical skimming, secondary clarification, disinfection by chlorination and/or ultraviolet light, and dechlorination. Wastewater is discharged from Discharge Point No. 001 to the Carquinez Strait and from Discharge Point No. 002 to Mare Island Strait, both waters of the United States. Wastewater is discharged from Discharge Point No. 001 during normal operations. Discharge through Discharge Point No. 002 occurs only during wet weather when effluent flows exceed 30 MGD. Lime stabilization and gravity thickening are used to treat solids removed from the wastewater stream; belt filter presses are also used to dewater solids. The Discharger hauls and disposes of stabilized and dewatered biosolids off-site. Attachment B provides a topographic map of the area around the Facility. Attachment C provides a Plant flow schematic.

Upon Executive Officer approval pursuant to section VI.C.2.c. of this Order, wastewater may be discharged through Discharge Point No. 002 under year-round conditions. Further study of the financial requirements of improving the outfall for such discharges is required by the District before making a final decision.

C. **Legal Authorities.** This Order is issued pursuant to Clean Water Act (CWA) section 402 and implements regulations adopted by USEPA and California Water Code (CWC) Chapter 5.5, Division 7 (commencing with section 13370). It shall serve as an NPDES permit for point source discharges from the Facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to CWC Article 4, Chapter 4, Division 7 (commencing with section 13260).

D. **Background and Rationale for Requirements.** The Regional Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and other available information. The Fact Sheet (Attachment F), which contains background information and rationale for requirements of the Order, is hereby incorporated into this Order and constitutes part of the findings for this Order. Attachments A through E, and G and H, are also incorporated into this Order.

E. **California Environmental Quality Act (CEQA).** Under CWC section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA.

F. **Technology-Based Effluent Limitations.** CWA section 301(b) and NPDES regulations at Title 40 of the Code of Federal Regulations (40 CFR) section 122.44 require that permits include conditions meeting applicable technology-based requirements at minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Secondary Treatment Standards at 40 CFR 133. Technology-based effluent limitation development is discussed in the Fact Sheet (Attachment F).

G. **Water Quality-Based Effluent Limitations.** CWA section 301(b) and 40 CFR 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. NPDES regulations at 40 CFR 122.44(d)(1)(i) mandate that permits include effluent limitations for all pollutants that are or may be discharged at levels that have a Reasonable Potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard (Reasonable Potential). Where Reasonable Potential has been established for a pollutant that has no numeric objective, water quality-based effluent limitations (WQBELs) must be established using (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed State criterion or policy interpreting the State's narrative criterion, supplemented with other relevant information, as provided in 40 CFR 122.44(d)(1)(vi).

H. **Water Quality Control Plans.** *The Water Quality Control Plan for the San Francisco Bay Basin* (hereinafter Basin Plan) is the Regional Water Board's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives. The Basin Plan was duly adopted by the Regional Water Board and approved by the State

Water Resources Control Board (State Water Board), USEPA, and the Office of Administrative Law, as required. Requirements of this Order implement the Basin Plan. The Basin Plan identifies beneficial uses for the receiving waters for this discharge, Carquinez Strait and Mare Island Strait.

The Basin Plan 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. Because of marine influence in Carquinez Strait and Mare Island Strait, total dissolved solids levels exceed 3,000 milligrams per liter (mg/L) and thereby meet an exception to State Water Board Resolution No. 88-63. The MUN designation, therefore, does not apply to Carquinez Strait and Mare Island Strait.

The State Water Board's *Water Quality Control Plan for Enclosed Bays and Estuaries—Part 1, Sediment Quality* became effective on August 25, 2009. This plan supersedes other narrative sediment quality objectives, and establishes new sediment quality objectives and related implementation provisions for specifically defined sediments in most bays and estuaries.

Table 5 lists beneficial uses of Carquinez Strait and Mare Island Strait identified in the Basin Plan.

Table 5. Basin Plan Beneficial Uses of Carquinez Strait and Mare Island Strait

Discharge Point	Receiving Water Name	Beneficial Uses
Discharge Point 001	Carquinez Strait	Industrial Service Supply (IND) Ocean Commercial and Sport Fishing (COMM) Estuarine Habitat (EST) Fish Migration (MIGR) Preservation of Rare and Endangered Species (RARE) Fish Spawning (SPWN) Wildlife Habitat (WILD) Water Contact Recreation (REC1) Non-contact water Recreation (REC2) Navigation (NAV)
Discharge Point 002	Mare Island Strait	Ocean Commercial and Sport Fishing (COMM) Estuarine Habitat (EST) Fish Migration (MIGR) Preservation of Rare and Endangered Species (RARE) Wildlife Habitat (WILD) Water Contact Recreation (REC1) Non-contact water Recreation (REC2) Navigation (NAV)

I. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on December 22, 1992, and later amended it on May 4, 1995, and November 9, 1999. About 40 criteria in the NTR apply in California. On May 18, 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that applied in the State. USEPA amended the CTR on February 13, 2001. These rules contain water quality criteria for priority pollutants.

J. **State Implementation Policy.** On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (hereinafter State Implementation Policy or SIP). The SIP became effective on April 28, 2000, with respect to the priority pollutant criteria USEPA promulgated for California through the NTR and the priority pollutant objectives the Regional Water Board established in the Basin Plan. The SIP became effective on May 18, 2000, with respect to the priority pollutant criteria USEPA promulgated through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005, that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

K. **Alaska Rule.** On March 30, 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards become effective for CWA purposes (65 Fed. Reg. 24641 [April 27, 2000], codified at 40 CFR 131.21). Under the revised regulation (also known as the Alaska Rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000, may be used for CWA purposes, whether or not approved by USEPA.

L. **Stringency of Requirements for Individual Pollutants.** This Order contains both technology-based effluent limitations and WQBELs for individual pollutants. Derivation of these technology-based limitations is discussed in the Fact Sheet (Attachment F). This Order's technology-based pollutant restrictions implement the minimum applicable federal technology-based requirements. In addition, this Order contains effluent limitations more stringent than the minimum federal technology-based requirements as necessary to meet water quality standards.

In this Order, WQBELs implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant WQBELs are derived from the CTR, the CTR is the applicable standard pursuant to 40 CFR 131.38. The procedures for calculating the individual WQBELs for priority pollutants are based on the SIP, which USEPA approved on May 18, 2000. Most beneficial uses and water quality objectives contained in the Basin Plan were approved under State law and submitted to USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for the purposes of the CWA" pursuant to 40 CFR 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

M. **Antidegradation Policy**. NPDES regulations at 40 CFR 131.12 require that State water quality standards include an antidegradation policy consistent with federal policy. The State Water Board established California's antidegradation policy through State Water Board Resolution No. 68-16, which incorporates federal antidegradation policy where federal policy applies under federal law and requires that existing water quality be maintained unless degradation is justified based on specific findings. The Basin Plan incorporates by reference both State and federal antidegradation policies. As discussed in the Fact Sheet, the permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16.

N. **Anti-Backsliding Requirements.** CWA sections 402(o)(2) and 303(d)(4) and 40 CFR 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. As discussed in the Fact Sheet, the permitted discharge is consistent with these anti-backsliding requirements.

O. **Monitoring and Reporting.** NPDES regulations at 40 CFR 122.48 require that all NPDES permits specify requirements for recording and reporting monitoring results. CWC sections 13267 and 13383 authorize the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (MRP) in Attachment E establishes monitoring and reporting requirements to implement federal and State requirements.

P. **Standard and Special Provisions**. Attachment D contains standard provisions that apply to all NPDES permits in accordance with 40 CFR 122.41 and additional conditions that apply to specified categories of permits in accordance with 40 CFR 122.42. The Discharger must comply with all standard provisions and with those additional conditions that apply under 40 CFR 122.42. The Regional Water Board has also included in this Order special provisions that apply to the Discharger. The Fact Sheet (Attachment F) provides rationale for the special provisions contained in this Order.

Q. **Provisions and Requirements Implementing State Law.** No provisions or requirements in this Order are included to implement State law only. All provisions and requirements are required or authorized under the federal CWA; consequently, violations of these provisions and requirements are subject to the enforcement remedies available for NPDES violations.

R. **Notification of Interested Parties.** The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe Waste Discharge Requirements for the discharge and has provided them with an opportunity to submit written comments and recommendations. The Fact Sheet provides notification details.

S. **Consideration of Public Comment.** The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. The Fact Sheet provides public hearing details.

IT IS HEREBY ORDERED, that this Order supersedes Order No. R2-2006-0056, as amended, except for enforcement purposes, and, in order to meet the provisions contained in Division 7 of the California Water Code (commencing with section 13000) and regulations adopted thereunder, and the federal CWA provisions and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

III. DISCHARGE PROHIBITIONS

A. Discharge of treated wastewater at a location or in a manner different from that described in this Order is prohibited.

B. Discharge at any point at which the treated wastewater does not receive an initial dilution of at least 26:1 (nominal) is prohibited. Compliance shall be achieved by proper operation and maintenance of the discharge outfall to ensure that they (or any replacements, in whole or in part) are in good working order and are consistent with or can achieve better mixing than that described in the Fact Sheet (Attachment F). The Discharger shall address measures taken to ensure that in its application for permit reissuance.

C. The bypass of untreated or partially treated wastewater to waters of the United States is prohibited, except as provided for in sections I.G.2 and I.G.4 of Attachment D of this Order.

Blended wastewater is biologically treated wastewater blended with wastewater that has been diverted around biological treatment units or advanced treatment units. Such discharges are approved under the bypass conditions stated in 40 CFR 122.41(m)(4) when (1) the Discharger's peak wet weather influent flow volumes exceed the capacity of the secondary treatment units of 30 MGD, (2) the discharge complies with the effluent and receiving water limitations contained in this Order, and (3) the Discharger is in compliance with Provision VI.C.4.d of this Order. Furthermore, the Discharger shall operate its facility as designed and in accordance with the Operation & Maintenance Manual for the facility. This means it shall optimize storage and use of equalization units, and shall fully use the biological treatment units. The Discharger shall report incidents of blended effluent discharges in routine monitoring reports, and shall monitor this discharge as specified in the attached MRP (Attachment E) and Attachment G.

D. The average dry weather flow as measured at Discharge Point 001, station EFF-001, described in the attached MRP (Attachment E), shall not exceed 15.5 MGD. Actual average dry weather flow shall be determined for compliance with this prohibition over three consecutive dry weather months each year.

E. Any sanitary sewer overflow that results in a discharge of untreated or partially treated wastewater to waters of the United States is prohibited.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations for Conventional and Non-Conventional Pollutants

1. **Numeric Effluent Limitations for Conventional and Non-Conventional Pollutants.** Treated wastewater discharged at Discharge Point Nos. 001 and 002 shall comply with the following effluent limitations, with compliance measured at Monitoring Location EFF-001, as described in the attached MRP (Attachment E).

Table 6. Effluent Limitations for Conventional and Non-Conventional Pollutants

Parameter	Units	Final Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
CBOD	mg/L	25	40	---	---	---
TSS	mg/L	30	45	---	---	---
pH [1]	s.u.	---	---	---	6.0	9.0
Chlorine, Total Residual	mg/L	---	---	---	---	0.0 [2]
Oil and Grease	mg/L	10	---	20	---	---

Footnotes to Table 6:

(1) If the Discharger monitors pH continuously, pursuant to 40 CFR 401.17, the Discharger shall be in compliance with the pH limitation specified herein provided that both of the following conditions are satisfied: (i) the total time during which the pH values are outside the required range of pH values shall not exceed 7 hours and 26 minutes in any calendar month, and (ii) no individual excursion from the range of pH values shall exceed 60 minutes.

(2) The Discharger may elect to use a continuous on-line monitoring system for measuring flows, residual chlorine, and sodium bisulfite (or other dechlorinating chemical) dosage (including a safety factor) and concentration to prove that residual chlorine exceedances are false positives. If convincing evidence is provided, Regional Water Board staff may conclude that these false positives residual chlorine exceedances are not violations of this permit limitation.

2. **CBOD and TSS Percent Removal:** The arithmetic mean of the CBOD and TSS concentrations in effluent samples collected in each calendar month shall not exceed 15 percent of the arithmetic mean of the respective concentrations in influent samples collected at approximately the same times in the same calendar month. Compliance with this effluent limitation for Discharge Point Nos. 001 and 002 shall be determined at Monitoring Location EFF-001.

3. **Enterococcus Bacteria:** The geometric mean enterococcus density of all samples at Discharge Point Nos. 001 and 002 analyzed in each calendar month shall not exceed 35 MPN/100mL, with compliance measured at Monitoring Location EFF-001 as described in the attached MRP (Attachment E).

B. Effluent Limitations for Toxic Pollutants

Treated wastewater discharged at Discharge Point Nos. 001 and 002 shall comply with the following effluent limitations, with compliance measured at Monitoring Location EFF-001, as described in the attached MRP (Attachment E).

Table 7. Effluent Limitations for Toxic Pollutants

Parameter	Units	Final Effluent Limitations[1]	
		Average Monthly Effluent Limit (AMEL)	Maximum Daily Effluent Limit (MDEL)
Cyanide	µg/L	19	40
Copper	µg/L	89	119
Total Ammonia, as N	mg/L	44	86
Dioxin-TEQ	µg/L	1.4×10^{-8}	2.8×10^{-8}

Footnote to Table 7:
[1] Limitations for toxic pollutants apply to the average concentration of all samples collected during the averaging period (daily = 24-hour period; monthly = calendar month).

C. Whole Effluent Acute Toxicity

1. Representative effluent samples at Discharge Point Nos. 001 and 002, with compliance measured at Monitoring Location EFF-001, as described in the attached MRP, shall meet the following limits for acute toxicity. Bioassays shall be conducted in compliance with MRP section V.A. (Attachment E).

   The survival of organisms in undiluted combined effluent shall be:

   a. An eleven (11)-sample median value of not less than 90 percent survival, and

   b. An eleven (11)-sample 90th percentile value of not less than 70 percent survival.

2. These acute toxicity limitations are further defined as follows:

   a. **11-sample median.** A bioassay test showing survival of less than 90 percent represents a violation of this effluent limit if five or more of the past ten or fewer bioassay tests show less than 90 percent survival.

   b. **11-sample 90th percentile.** A bioassay test showing survival of less than 70 percent represents a violation of this effluent limit if one or more of the past ten or fewer bioassay tests show less than 70 percent survival.

3. Bioassays shall be performed using the most up-to-date USEPA protocol and the requirements described in the MRP, section V.A (Attachment E). Bioassays shall be conducted in compliance with *Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms,* currently 5th Edition (EPA-821-R-02-012).

4. If the Discharger can demonstrate to the Executive Officer's satisfaction that toxicity exceeding the levels cited above is caused by ammonia and that the ammonia in the discharge complies with effluent limitations, then such toxicity does not constitute a violation of this effluent limitation.

D. Whole Effluent Chronic Toxicity

The discharge shall not contain chronic toxicity at a level that would cause or contribute to toxicity in the receiving water. Chronic toxicity is a detrimental biological effect on growth rate, reproduction, fertilization success, larval development, or any other relevant measure of the health of an organism population or community. Compliance with this limitation shall be determined by analyses of indicator organisms and toxicity tests. This limitation applies to Discharge Point Nos. 001 and 002, and compliance shall be measured at Monitoring Location EFF-001 as described in MRP (Attachment E) section V.B.

V. RECEIVING WATER LIMITATIONS

The discharge shall not cause the following in either Carquinez Strait or Mare Island Strait.

A. The discharge shall not cause the following conditions to exist at any place:

1. Floating, suspended, or deposited macroscopic particulate matter or foams;

2. Bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses;

3. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;

4. Visible, floating, suspended, or deposited oil and other products of petroleum origin; and

5. Toxic or other deleterious substances to be present in concentrations or quantities that cause deleterious effects on wildlife, waterfowl, or other aquatic biota, or render any of these unfit for human consumption, either at levels created in the receiving waters or as a result of biological concentration.

B. The discharge of waste shall not cause the following limits to be exceeded within one foot of the water surface:

1. Dissolved Oxygen 5.0 mg/L, minimum

The median dissolved oxygen concentration for any three consecutive months shall not be less than 80 percent of the dissolved oxygen content at saturation. When natural factors cause concentrations less than those specified above, the discharge shall not cause further reduction in ambient dissolved oxygen concentrations.

2.	Dissolved Sulfide	Natural background levels
3.	pH	The pH shall not be depressed below 6.5 or raised above 8.5. The discharge shall not cause changes greater than 0.5 pH units at normal, ambient pH levels.
4.	Nutrients	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.

C. The discharge shall not cause a violation of any particular water quality standard for receiving waters adopted by the Regional or State Water Boards as required by the CWA and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to CWA section 303, or amendments thereto, the Regional Water Board may revise and modify this Order in accordance with such more stringent standards.

VI. PROVISIONS

A. Standard Provisions

1. Federal Standard Provisions. The Discharger shall comply with the Federal Standard Provisions included in Attachment D of this Order.

2. Regional Standard Provisions. The Discharger shall comply with all applicable items of the Regional Standard Provisions, and Monitoring and Reporting Requirements (Supplement to Attachment D) for NPDES Wastewater Discharge Permits (Attachment G), including amendments thereto.

B. MRP Requirements

The Discharger shall comply with the MRP (Attachment E) and future revisions thereto, including applicable sampling and reporting requirements in the two standard provisions listed in Provision VI.A, above.

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 present or future investigations demonstrate that the discharges governed by this Order will have, or will cease to 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 the San Francisco Bay estuary and contiguous water bodies (whether statewide, regional, or site-specific). In such cases, effluent limitations in this Order may be modified as necessary to reflect updated water quality objectives and waste load allocations

in TMDLs. Adoption of effluent limitations contained in this Order is not intended to restrict in any way future modifications based on legally adopted water quality objectives, TMDLs, or as otherwise permitted under Federal regulations governing NPDES permit modifications.

c. If translator or other water quality studies provide a basis for determining that permit conditions should be modified.

d. If an administrative or judicial decision on a separate NPDES permit or WDR addresses requirements similar to those applicable to this discharge.

e. Or as otherwise authorized by law.

The Discharger may request permit modification based on any of the circumstances described above. In any such request, the Discharger shall include an antidegradation and anti-backsliding analysis.

2. Special Studies and Additional Monitoring Requirements

a. Effluent Characterization Study and Report – Discharge Point Nos. 001 and 002

(1) Study Elements

The Discharger shall collect representative samples of the discharges as set forth below, with locations as defined in the MRP (Attachment E):

Discharge Points	Monitoring Station	Minimum Frequency
001 and 002	EFF-001	Once per calendar year

The samples shall be analyzed for the priority pollutants listed in Table C of the Regional Standard Provisions (Attachment G), except for those priority pollutants with effluent limitations where the MRP already requires more frequent monitoring. Compliance with this requirement shall be achieved in accordance with the specifications of Regional Standard Provisions (Attachment G) sections III.A.1 and III.A.2.

The Discharger shall evaluate on an annual basis if concentrations of any of these priority pollutants significantly increase over past performance. The Discharger shall investigate the cause of such increase. The investigation may include, but need not be limited to, an increase in monitoring frequency, monitoring of internal process streams, and monitoring of influent sources. The Discharger shall establish remedial measures addressing any increase resulting in Reasonable Potential to cause or contribute to an excursion above applicable water quality objectives. This requirement may be satisfied through identification of the constituent as a "pollutant of concern" in the Discharger's Pollutant Minimization Program, described in Provision VI.C.3.

(2) Reporting Requirements

(a) Routine Reporting.

The Discharger shall, within 30 days of receipt of analytical results, report in the transmittal letter for the appropriate monthly self-monitoring report the following:

(i) Indication that a sample or samples for this characterization study was or were collected; and

(ii) Identity of priority pollutants detected at or above their applicable water quality criteria (see Fact Sheet [Attachment F] Table F-9 for criteria), together with the detected concentrations of those pollutants.

(b) Annual Reporting

The Discharger shall provide a summary of the annual data evaluation and source investigation in the annual self-monitoring report.

(c) Final Report

The Discharger shall submit a final report that presents all these data to the Regional Water Board no later than 180 days prior to the Order expiration date. The final report shall be submitted with the application for permit reissuance.

b. Ambient Background Receiving Water Study

The Discharger shall collect or participate in collecting background ambient receiving water monitoring data for priority pollutants that are required to perform an RPA and to calculate effluent limitations. The data on the conventional water quality parameters (pH, salinity, and hardness) shall also be sufficient to characterize these parameters in the ambient receiving water at a point after the discharge has mixed with the receiving waters. This provision may be met through monitoring through the collaborative Bay Area Clean Water Agencies (BACWA) study, or a similar ambient monitoring program for San Francisco Bay. This Order may be reopened as appropriate, to incorporate effluent limitations or other requirements based on Regional Water Board review of these data.

The Discharger shall submit a final report that presents all the data to the Regional Water Board 180 days prior to Order expiration. This final report shall be submitted with the application for permit reissuance.

c. Mare Island Strait Diffuser Upgrade

Upon completion of facility upgrades, the Discharger shall submit the following documentation for Executive Officer approval prior to allowing an increase in the maximum allowable permitted dry weather flow rate at Discharge Point 002 at 15.5 MGD.

(1) An antidegradation analysis consistent with State Water Resources Control Board Administrative Procedures Update 90-004 (Antidegradation Policy Implementation for NPDES Permitting, July 1990). This analysis will include an examination of the following:

(a) Existing applicable water quality standards for the receiving waters.

(b) Ambient conditions in the receiving waters in comparison to applicable water quality standards.

(c) Incremental changes in constituent loadings resulting from the proposed change in discharge.

(d) Comparison of the proposed increase in loadings relative to other sources.

At a minimum, the analysis shall include the constituents listed in Table 7 of this Order (Cyanide, Total Ammonia, and Dioxin-TEQ).

(2) An Updated Modeling Report based on the actual installed new diffuser that supports the dilution ratio of 26:1;

(3) Certification that the upgraded diffuser and outfall have been constructed as designed and are available for use; and

(4) Updates to the Operations and Maintenance Manual and to the Contingency Plan that include the new diffuser and outfall facilities.

3. Best Management Practices and Pollutant Minimization Program

a. The Discharger shall continue to improve, in a manner acceptable to the Executive Officer, its existing Pollutant Minimization Program to promote minimization of pollutant loadings to the treatment plant and therefore to the receiving waters.

b. The Discharger shall submit an annual report, acceptable to the Executive Officer, no later than August 30 of each calendar year. Each annual report shall include at least the following information:

(1) *A brief description of the treatment plant, treatment plant processes, and service area.*

(2) *A discussion of the current pollutants of concern.* Periodically, the Discharger shall analyze its own situation to determine which pollutants are currently a problem and which pollutants may be potential future problems. This discussion shall include the reasons for choosing the pollutants.

(3) *Identification of sources for the pollutants of concern.* This discussion shall include how the Discharger intends to estimate and identify sources of the pollutants of concern. The Discharger shall also identify sources or potential sources not directly within the ability or authority of the Discharger to control, such as pollutants in the potable water supply and air deposition.

(4) *Identification of tasks to reduce the sources of the pollutants of concern.* This discussion shall identify and prioritize tasks to address the Discharger's pollutants of concern. The Discharger may implement tasks by itself or participate in group, regional, or national tasks that will address its pollutants of concern. The Discharger is strongly encouraged to participate in group, regional, or national tasks that will address

its pollutants of concern whenever it is efficient and appropriate to do so. A time line shall be included for the implementation of each task.

(5) *Outreach to employees.* The Discharger shall inform employees about the pollutants of concern, potential sources, and how they might be able to help reduce the discharge of these pollutants of concern into the treatment facilities. The Discharger may provide a forum for employees to provide input.

(6) *Continuation of Public Outreach Program.* The Discharger shall prepare a public outreach program to communicate pollution prevention to its service area. Outreach may include participation in existing community events such as county fairs, initiating new community events such as displays and contests during Pollution Prevention Week, conducting school outreach programs, conducting plant tours, and providing public information in newspaper articles or advertisements, radio or television stories or spots, newsletters, utility bill inserts, and web site. Information shall be specific to the target audiences. The Discharger shall coordinate with other agencies as appropriate.

(7) *Discussion of criteria used to measure Pollutant Minimization Program and task effectiveness.* The Discharger shall establish criteria to evaluate the effectiveness of its Pollutant Minimization Program. This shall also include a discussion of the specific criteria used to measure the effectiveness of each of the tasks in sections VI.C.3.b(3-6), above.

(8) *Documentation of efforts and progress.* This discussion shall detail all of the Discharger's activities in the Pollutant Minimization Program during the reporting year.

(9) *Evaluation of Pollutant Minimization Program and task effectiveness.* The Discharger shall use the criteria established in section VI.C.3.b(7), above, to evaluate the Program's and tasks' effectiveness.

(10) *Identification of specific tasks and time schedules for future efforts.* Based on the evaluation, the Discharger shall detail how it intends to continue or change its tasks in order to more effectively reduce the amount of pollutants to the treatment plant, and subsequently in its effluent.

c. Pollutant Minimization Program for Pollutants with Effluent Limitations

The Discharger shall develop and conduct a Pollutant Minimization Program as further described below when there is evidence that a priority pollutant is present in the effluent above an effluent limitation (e.g., sample results reported as DNQ when the effluent limitation is less than the MDL, sample results from analytical methods more sensitive than those methods required by this Order, presence of whole effluent toxicity, health advisories for fish consumption, results of benthic or aquatic organism tissue sampling) and either:

(1) A sample result is reported as DNQ and the effluent limitation is less than the RL; or

(2) A sample result is reported as ND and the effluent limitation is less than the MDL, using SIP definitions.

d. Pollutant Minimization Program Submittals for Pollutants with Effluent Limitations

If triggered by the reasons in c. above, the Discharger's Pollutant Minimization Program shall include, but not be limited to, the following actions and submittals acceptable to the Regional Water Board:

(1) An annual review and semi-annual monitoring of potential sources of the reportable priority pollutants, which may include fish tissue monitoring and other bio-uptake sampling, or alternative measures approved by the Executive Officer when it is demonstrated that source monitoring is unlikely to produce useful analytical data;

(2) Quarterly monitoring for the reportable priority pollutants in the influent to the wastewater treatment system, or alternative measures approved by the Executive Officer, when it is demonstrated that influent monitoring is unlikely to produce useful analytical data;

(3) Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutants in the effluent at or below the effluent limitations;

(4) Implementation of appropriate cost-effective control measures for the reportable priority pollutants, consistent with the control strategy; and

(5) The annual report required by section VI.C.3.b. of this Order shall specifically address the following items:

(a) All Pollutant Minimization Program monitoring results for the previous year;

(b) A list of potential sources of the reportable priority pollutants;

(c) A summary of all actions undertaken pursuant to the control strategy; and

(d) A description of actions to be taken in the following year.

4. Special Provisions for Municipal Facilities (POTWs Only)

a. Pretreatment Program Requirements

(1) The Discharger shall implement and enforce its approved pretreatment program in accordance with the substantive requirements in federal Pretreatment Regulations (40 CFR 403) and Attachment H. The Discharger's responsibilities include, but are not limited to the following:

(a) Enforcement of National Pretreatment Standards of 40 CFR 403.5 and 403.6;

(b) Implementation of its pretreatment program in accordance with legal authorities, policies, procedures, and financial provisions described in the General Pretreatment regulations (40 CFR 403) and its approved pretreatment program;

(c) Submission of reports to USEPA, the State Water Board, and the Regional Water Board, as described in Attachment H.

(d) Evaluate the need to revise local limits under 40 CFR 403.5(c)(1); and within 180 days after the effective date of this Order, submit a report acceptable to the Executive Officer describing the changes with a plan and schedule for implementation. To ensure no significant increase in the discharge of copper, and thus compliance with antidegradation requirements, the Discharger shall not consider eliminating or relaxing local limits for copper in this evaluation.

(2) The Discharger shall implement its approved pretreatment program and the program shall be an enforceable condition of this Order. If the Discharger fails to perform the pretreatment functions, the Regional Water Board, the State Water Board, or USEPA may take enforcement actions against the Discharger as authorized by the CWA.

b. Biosolids Management Practices Requirements

(1) All biosolids must be disposed of, managed, or reused through land application, in a municipal solid waste landfill, as a Class A compost, through a waste to energy facility, through another recognized and approved technology, or disposed of in a sludge-only landfill in accordance with 40 CFR 503. If the Discharger desires to dispose of biosolids by a different method, the Discharger shall submit a request for permit modification to USEPA 180 days before start-up of the alternative disposal practice. All the requirements in 40 CFR 503 are enforceable by USEPA whether or not they are stated in this NPDES permit or another permit issued to the Discharger. The Discharger shall copy the Regional Water Board on relevant correspondence and reports forwarded to USEPA regarding biosolids management practices.

(2) Biosolids treatment, storage and disposal or reuse shall not create a nuisance, such as objectionable odors or flies, or result in groundwater contamination.

(3) The Discharger shall take all reasonable steps to prevent or minimize any biosolids use or disposal which has a likelihood of adversely affecting human health or the environment.

(4) The discharge of biosolids shall not cause waste material to be in a position where it is or can be carried from the biosolids treatment and storage site and deposited in waters of the State.

(5) The biosolids treatment and storage site shall have facilities adequate to divert surface runoff from adjacent areas, to protect boundaries of the site from erosion, and to prevent any conditions that would cause drainage from the materials in the temporary storage site. Adequate protection is defined as protection from at least a 100-year storm and protection from the highest possible tidal stage that may occur.

(6) For biosolids applied to land, placed on a surface disposal site, or fired in an incinerator as defined in 40 CFR 503, the Discharger shall submit an annual report to USEPA and the Regional Water Board containing monitoring results and pathogen and vector attraction reduction requirements as specified by 40 CFR 503, postmarked by February 15 of each year, for the period of the previous calendar year.

(7) Biosolids disposed of in a municipal solid waste landfill shall meet the requirements of 40 CFR 258. In the annual Self-Monitoring Report, the Discharger shall include the amount of biosolids disposed and the landfill to which it was sent.

(8) This Order does not authorize permanent on-site biosolids or disposal activities. A Report of Waste Discharge shall be filed and the site brought into compliance with all applicable regulations prior to commencement of such activity.

(9) Biosolids Monitoring and Reporting Provisions of this Regional Water Board's Standard Provisions (Attachment G) apply to biosolids handling, disposal, and reporting practices.

(10) The Regional Water Board may amend this Order prior to expiration if changes occur in applicable State and federal biosolids regulations.

c. Sanitary Sewer Overflows and Sewer System Management Plan

The Discharger's collection system is part of the facility subject to this Order. As such, the Discharger shall properly operate and maintain its collection system (Attachment D, Federal Standard Provisions - Permit Compliance, subsection I.D). The Discharger shall report any noncompliance (Attachment D, Federal Standard Provision - Reporting, subsections V.E.1 and V.E.2) and mitigate any discharge from the Discharger's collection system in violation of this Order (Attachment D, Federal Standard Provisions - Permit Compliance, subsection I.C).

The General Waste Discharge Requirements for Wastewater Collection Agencies (General Collection System WDRs), State Water Board Order No. 2006-0003 DWQ, has requirements for operation and maintenance of collection systems and for reporting and mitigating sanitary sewer overflows. While the Discharger must comply with both the General Collection System WDRs and this Order, the General Collection System WDRs more clearly and specifically stipulate requirements for operation and maintenance, and for reporting and mitigating sanitary sewer overflows.

Implementation of the General Collection System WDRs requirements for proper operation and maintenance and mitigation of sanitary sewer overflows will satisfy the corresponding federal NPDES requirements specified in Attachment D (as supplemented by Attachment G) of this Order. Following notification and reporting requirements in the General Collection System WDRs will satisfy NPDES reporting requirements specified in Attachment D (as supplemented by Attachment G) of the Order for sanitary sewer overflows upstream of the Plant boundaries. Attachments D and G of this Order specify reporting requirements for unauthorized discharges from anywhere within the Plant downstream of the Plant boundaries.

d. Specific Tasks to Reduce Blending

The Discharger shall implement the following specific tasks to reduce blending:

Table 8. Specific Tasks to Reduce Blending

Task	Compliance Date
1. Collection System Storage Basins. Develop and implement standard operating procedures (SOPs) which optimize utilization of the Discharger's storage basins (Ryder Street and Sears Pump Station Storage Basins). The primary utility of the Discharger's storage basins is in preventing sanitary sewer overflows and this use takes precedence over reducing the discharge of blended effluent. Insofar as this primary use is not compromised, the Ryder Street Storage Basin and Sears Pump Station Storage Basin shall be operated to reduce short-duration discharges of blended effluent. Report on the implemented SOPs, the annual volume of blended effluent, and describe how the storage basin was managed to reduce duration and magnitude of wet weather diversions.	Report SOPs, Annual Volume and Usage of Collection System Storage Basins by February 1st of each year with the Annual Self-Monitoring Report
2. Upper Lateral Program. Make $450,000 per year available for direct reimbursements to property owners for repair or replacement of upper laterals, and conduct public outreach to promote the program. Report number of upper laterals repaired or replaced and public outreach efforts to promote program.	Report on Upper Lateral Program by February 1st of each year with the Annual Self-Monitoring Report; and include copy in annual collection system report that is due March 15th of each year
3. Collection System Improvements. Complete collection system improvements ($1.25 million per year). Include project descriptions, expenditures, and deviations, in annual report.	Report on Annual Collection System Improvements by February 1st of each year with the Annual Self-Monitoring Report; and include copy in annual collection system report that is due March 15th of each year
4. No Feasible Alternatives Analysis. The Discharger shall conduct a utility analysis if it seeks to continue to bypass peak wet weather flows around the secondary treatment units based on 40 CFR 122.41(m)(4)(i)(A)-(C). The utility analysis shall contain all elements described in USEPA's Peak Wet Weather policy, part 1 of the No Feasible Alternatives Analysis Process.	180 days prior to the Order expiration date.

5. Copper Action Plan

The Discharger shall implement pretreatment, source control, and pollution prevention for copper in accordance with the following tasks and time schedule:

Table 9. Copper Action Plan

Task	Compliance Date
1. Review Potential Copper Sources The Discharger shall submit an inventory of potential copper sources to the treatment plant.	Completed May 14, 2009
2. Implement Copper Control Program The Discharger shall submit a plan for and begin implementation of a program to reduce copper sources identified in *Review of Potential Copper Sources,* May 14, 2009. For publicly owned treatment works, the plan shall consist, at a minimum, of the following elements: a. Provide education and outreach to the public (e.g., focus on proper pool and spa maintenance and plumbers' roles in reducing corrosion). b. If corrosion is determined to be a significant copper source, work cooperatively with local water purveyors to reduce and control water corrosivity, as appropriate, and ensure that local plumbing contractors implement best management practices to reduce corrosion in pipes. c. Educate plumbers, designers, and maintenance contractors for pools and spas to encourage best management practices that minimize copper discharges.	Completed August 1, 2009
3. Implement Additional Measures If the Regional Water Board notifies the Discharger that the three-year rolling mean dissolved copper concentration of the receiving water exceeds **3.0** µg/L, then within 90 days of the notification, the Discharger shall evaluate its effluent copper concentration trend, and if it is increasing, develop and begin implementation of additional measures to control copper discharges. The Discharger shall report on the progress and effectiveness of actions taken, together with a schedule for actions to be taken in the next 12 months.	With annual pollution prevention report due August 30 following 90 days after notification
4. Undertake Studies to Reduce Copper Pollutant Impact Uncertainties The Discharger shall submit an updated study plan and schedule to conduct, or cause to be conducted, technical studies to investigate possible copper sediment toxicity and technical studies to investigate sublethal effects on salmonids. Specifically, the Discharger shall include the manner in which the above will be accomplished and describe the studies to be performed with an implementation schedule. To satisfy this requirement, dischargers may collaborate and conduct these studies as a group.	Completed August 30, 2011
5. Report Status of Copper Control Program The Discharger shall submit an annual report documenting copper control program implementation and addressing the effectiveness of the actions taken, including any additional copper controls required by Task 3, above, together with a schedule for actions to be taken in the next 12 months. Additionally, the Discharger shall report the findings and results of the studies completed, planned, or in progress under Task 4. Regarding the Task 4 studies, dischargers may collaborate and provide this information in a single report to satisfy this requirement for an entire group.	With annual pollution prevention report due August 30 each year

6. Cyanide Action Plan

The Discharger shall implement monitoring and surveillance, pretreatment, source control, and pollution prevention for cyanide in accordance with the following tasks and time schedule:

Table 10. Cyanide Action Plan

Task	Compliance Date
1. Review Potential Cyanide Contributors The Discharger shall submit an inventory of potential cyanide sources to the treatment plant (e.g., metal plating operations, hazardous waste recycling, etc.) If no cyanide sources are identified, Tasks 2 and 3 are not required, unless the Discharger receives a request to discharge detectable levels of cyanide to the sewer. If so, the Discharger shall notify the Executive Officer and implement Tasks 2 and 3.	Completed October 23, 2008
2. Implement Cyanide Control Program The Discharger shall submit a plan and begin implementation of a program to minimize cyanide discharges to its treatment plant consisting, at a minimum, of the following elements: a. Inspect each potential source to assess the need to include that contributing source in the control program. b. Inspect contributing sources included in the control program annually. Inspection elements may be based on USEPA guidance, such as Industrial User Inspection and Sampling Manual for POTWs (EPA 831-B-94-01). c. Develop and distribute educational materials to contributing sources and potential contributing sources regarding the need to prevent cyanide discharges. d. Prepare an emergency monitoring and response plan to be implemented if a significant cyanide discharge occurs. For purposes of this Order, a "significant cyanide discharge" is occurring if the plant's influent cyanide concentration exceeds 7.7 µg/L.	If necessary, with next annual pollution prevention report due August 30 (at least 90 days following receipt of request to discharge detectable cyanide to sewer)
3. Implement Additional Cyanide Control Measures If the Regional Water Board notifies the Discharger that ambient monitoring shows cyanide concentrations of 1.0 µg/L or higher in the main body of San Francisco Bay, then within 90 days of the notification, the Discharger shall commence actions to identify and abate cyanide sources responsible for the elevated ambient concentrations, and shall report on the progress and effectiveness of actions taken, together with a schedule for actions to be taken in the next 12 months.	With next annual pollution prevention report due August 30 (at least 90 days following notification)
4. Report Status of Cyanide Control Program The Discharger shall submit an annual report documenting cyanide control program implementation and addressing the effectiveness of actions taken, including any additional cyanide controls required Task 3, above, together with a schedule for actions to be taken in the next 12 months.	If necessary, with annual pollution prevention report due August 30 each year

VII. COMPLIANCE DETERMINATION

Compliance with effluent limitations for priority pollutants shall be determined using sample reporting protocols defined in Attachment A—Definitions, the MRP (Attachment E), Fact Sheet section VI, and the Regional Standard Provisions (Attachment G). For purposes of reporting and administrative enforcement by the Regional and State Water Boards, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

ATTACHMENT A – DEFINITIONS

Arithmetic Mean (μ), also called the average, is the sum of measured values divided by the number of samples. For ambient water concentrations, the arithmetic mean is calculated as follows:

$$\textbf{Arithmetic mean} = \mu = \Sigma x / n$$

where: Σx is the sum of the measured ambient water concentrations, and n is the number of samples.

Average Monthly Effluent Limitation (AMEL): the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL): the highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Bioaccumulative pollutants are those substances taken up by an organism from its surrounding medium through gill membranes, epithelial tissue, or from food and subsequently concentrated and retained in the body of the organism.

Carcinogenic pollutants are substances that are known to cause cancer in living organisms.

Coefficient of Variation (CV) is a measure of the data variability and is calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.

Daily Discharge: Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in this Order), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

Detected, but Not Quantified (DNQ) are those sample results less than the RL, but greater than or equal to the laboratory's MDL.

Dilution Credit is the amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

Effluent Concentration Allowance (ECA) is a value derived from the water quality criterion/objective, dilution credit, and ambient background concentration that is used, in conjunction with the coefficient of variation for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as waste load allocation (WLA) as used in USEPA guidance (Technical Support Document For Water Quality-based Toxics Control, March 1991, second printing, EPA/505/2-90-001).

Enclosed Bays means indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of San Francisco Bay. Enclosed bays include, but are not limited to, Humboldt Bay, Bodega Harbor, Tomales Bay, Drake's Estero, San Francisco Bay, Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay. Enclosed bays do not include inland surface waters or ocean waters.

Estimated Chemical Concentration is the estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

Estuaries means waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters shall be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuarine waters include, but are not limited to, the Sacramento-San Joaquin Delta, as defined in California Water Code section 12220, Suisun Bay, Carquinez Strait downstream to the Carquinez Bridge, and appropriate areas of the Smith, Mad, Eel, Noyo, Russian, Klamath, San Diego, and Otay rivers. Estuaries do not include inland surface waters or ocean waters.

Inland Surface Waters are all surface waters of the State that do not include the ocean, enclosed bays, or estuaries.

Instantaneous Maximum Effluent Limitation: the highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation: the lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

Maximum Daily Effluent Limitation (MDEL) means the highest allowable daily discharge of a pollutant, over a calendar day (or 24-hour period). For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the arithmetic mean measurement of the pollutant over the day.

Median is the middle measurement in a set of data. The median of a set of data is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of measurements (n) is odd, then the median = $X_{(n+1)/2}$. If n is even, then the median = $(X_{n/2} + X_{(n/2)+1})/2$ (i.e., the midpoint between the $n/2$ and $n/2+1$).

Method Detection Limit (MDL) is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in title 40 of the Code of Federal Regulations, Part 136, Attachment B, revised as of July 3, 1999.

Minimum Level (ML) is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Mixing Zone is a limited volume of receiving water that is allocated for mixing with a wastewater discharge where water quality criteria can be exceeded without causing adverse effects to the overall water body.

Not Detected (ND) are those sample results less than the laboratory's MDL.

Ocean Waters are the territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. Discharges to ocean waters are regulated in accordance with the State Water Board's California Ocean Plan.

Persistent pollutants are substances for which degradation or decomposition in the environment is nonexistent or very slow.

Pollutant Minimization Program (PMP) means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce all potential sources of a priority pollutant(s) through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The Regional Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to California Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

Pollution Prevention means any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant that is discharged into water and includes, but is not limited to, input change, operational improvement, production process change, and product reformulation (as defined in California Water Code section 13263.3). Pollution prevention does not include actions that merely shift a pollutant in wastewater from one environmental medium to another environmental medium, unless clear environmental benefits of such an approach are identified to the satisfaction of the State or Regional Water Board.

Reporting Level (RL) is the ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order. The MLs included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the Regional Water Board either from Appendix 4 of the SIP in accordance with section 2.4.2 of the SIP or established in accordance with section 2.4.3 of the SIP. The ML is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences.

Other factors may be applied to the ML depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied to the ML in the computation of the RL.

Sanitary Sewer Overflow is any overflow, spill, release, discharge, or diversion of untreated or partially treated wastewater from a sanitary sewer system. Sanitary sewer overflows include: (1) overflows or releases of untreated or partially treated wastewater that reach waters of the United States; (2) overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States; and (3) wastewater backups into buildings and on private property that are caused by blockages or flow conditions within the publically owned portion of a sanitary sewer system.

Satellite Collection System is the portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility that a sanitary sewer system is tributary to.

Source of Drinking Water is any water designated as municipal or domestic supply (MUN) in a Regional Water Board Basin Plan.

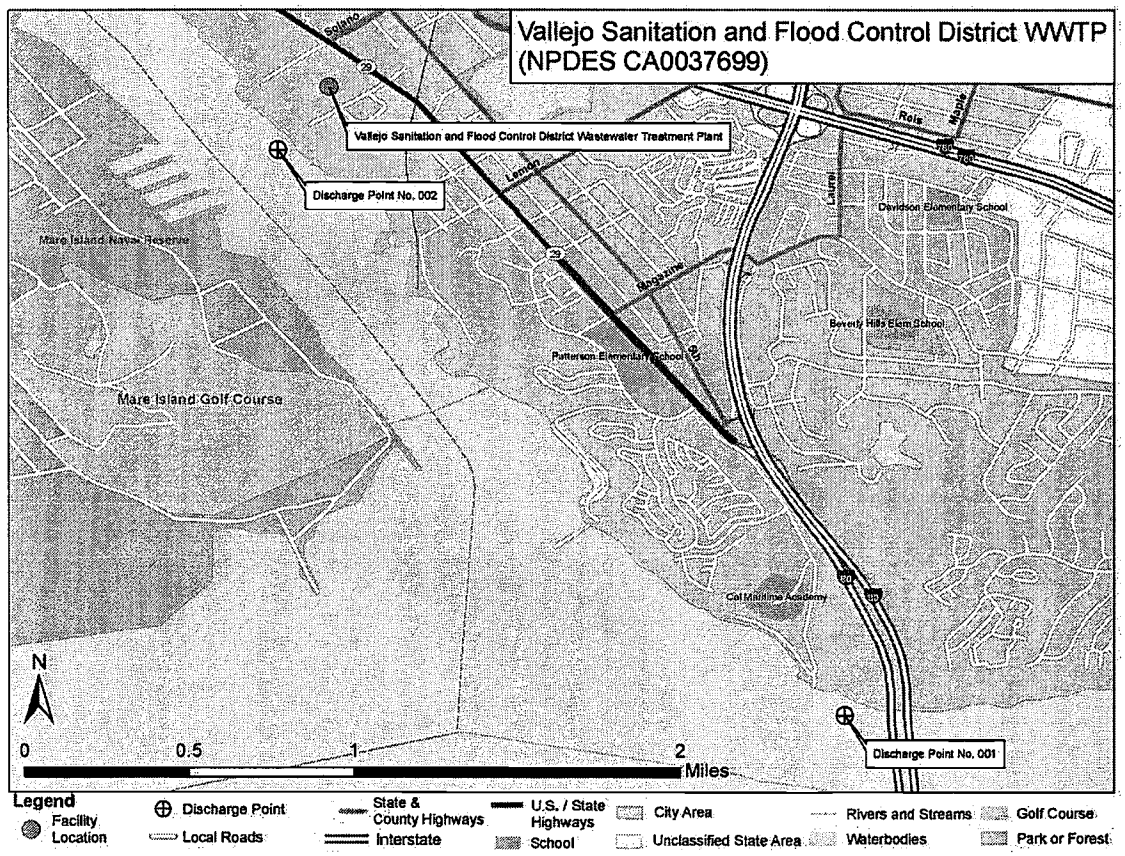
Standard Deviation (σ) is a measure of variability that is calculated as follows:

$$\sigma = (\sum[(x - \mu)^2]/(n-1))^{0.5}$$

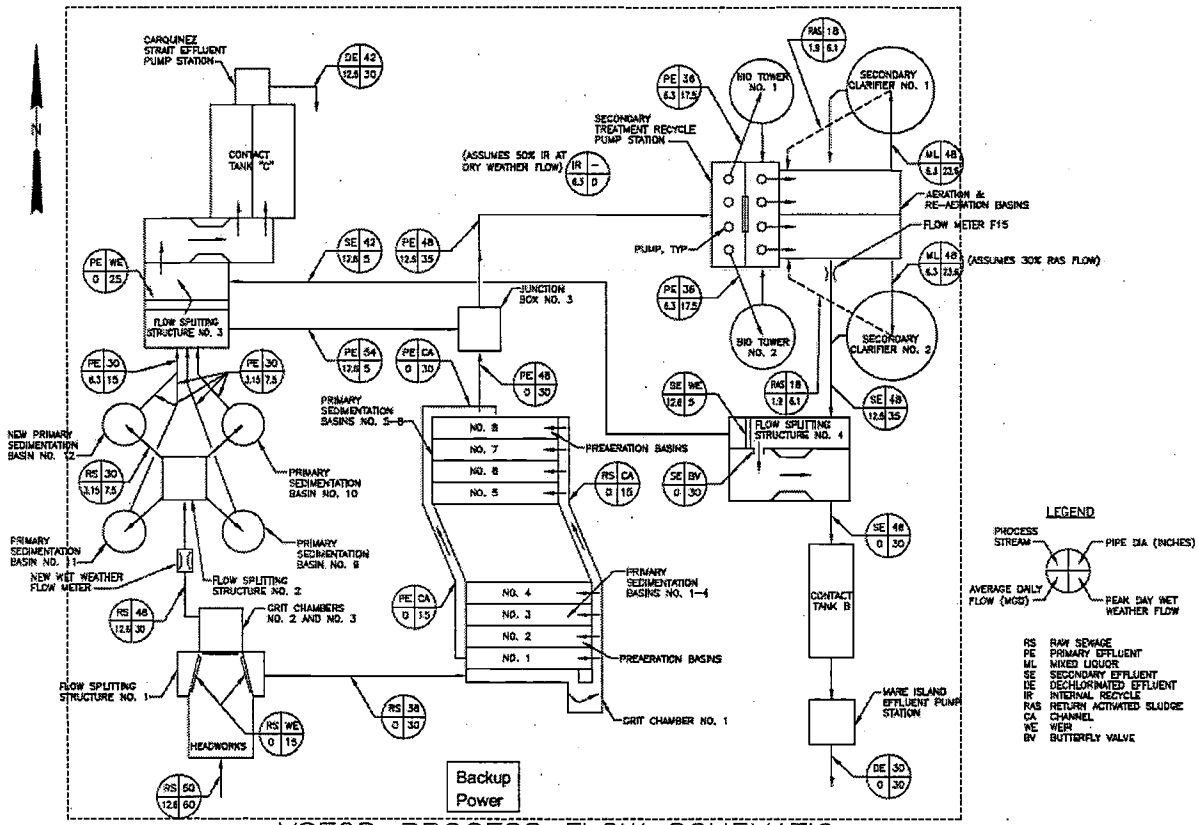
where:
x is the observed value;
μ is the arithmetic mean of the observed values; and
n is the number of samples.

Toxicity Reduction Evaluation (TRE) is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

ATTACHMENT B – FACILITY MAP



ATTACHMENT C – PROCESS FLOW DIAGRAM



VSFCD PROCESS FLOW SCHEMATIC

ATTACHMENT D –STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. (40 CFR § 122.41(a).)

2. The Discharger shall comply with effluent standards or prohibitions established under section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 CFR § 122.41(a)(1).)

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for the Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. (40 CFR § 122.41(c).)

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 CFR § 122.41(d).)

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by the Discharger only when necessary to achieve compliance with the conditions of this Order (40 CFR § 122.41(e)).

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 CFR § 122.41(g).)

2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations. (40 CFR § 122.5(c).)

F. Inspection and Entry

The Discharger shall allow the Regional Water Board, State Water Board, United States Environmental Protection Agency (USEPA), and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (40 CFR § 122.41(i); Wat. Code, § 13383):

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (40 CFR § 122.41(i)(1));

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (40 CFR § 122.41(i)(2));

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (40 CFR § 122.41(i)(3)); and

4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (40 CFR § 122.41(i)(4).)

G. Bypass

1. Definitions

   a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. (40 CFR § 122.41(m)(1)(i).)

   b. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 CFR § 122.41(m)(1)(ii).)

2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 CFR § 122.41(m)(2).)

3. Prohibition of bypass. Bypass is prohibited, and the Regional Water Board may take enforcement action against the Discharger for bypass, unless (40 CFR § 122.41(m)(4)(i)):

   a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 CFR § 122.41(m)(4)(i)(A));

   b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment

should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 CFR § 122.41(m)(4)(i)(B)); and

c. The Discharger submitted notice to the Regional Water Board as required under Standard Provisions – Permit Compliance I.G.5 below. (40 CFR § 122.41(m)(4)(i)(C).)

4. The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 CFR § 122.41(m)(4)(ii).)

5. Notice

a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass. (40 CFR § 122.41(m)(3)(i).)

b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). (40 CFR § 122.41(m)(3)(ii).)

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. (40 CFR § 122.41(n)(1).)

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 CFR § 122.41(n)(2).).

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 CFR § 122.41(n)(3)):

a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 CFR § 122.41(n)(3)(i));

b. The permitted facility was, at the time, being properly operated (40 CFR § 122.41(n)(3)(ii));

c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b below (24-hour notice) (40 CFR § 122.41(n)(3)(iii)); and

d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 CFR § 122.41(n)(3)(iv).)

3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 CFR § 122.41(n)(4).)

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition. (40 CFR § 122.41(f).)

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit. (40 CFR § 122.41(b).)

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional Water Board may require modification or revocation and reissuance of this Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 CFR § 122.41(l)(3); § 122.61.)

III. STANDARD PROVISIONS – MONITORING

A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 CFR § 122.41(j)(1).)

B. Monitoring results must be conducted according to test procedures under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503 unless other test procedures have been specified in this Order. (40 CFR § 122.41(j)(4); § 122.44(i)(1)(iv).)

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time. (40 CFR § 122.41(j)(2).)

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements (40 CFR § 122.41(j)(3)(i));

2. The individual(s) who performed the sampling or measurements (40 CFR § 122.41(j)(3)(ii));

3. The date(s) analyses were performed (40 CFR § 122.41(j)(3)(iii));

4. The individual(s) who performed the analyses (40 CFR § 122.41(j)(3)(iv));

5. The analytical techniques or methods used (40 CFR § 122.41(j)(3)(v)); and

6. The results of such analyses. (40 CFR § 122.41(j)(3)(vi).)

C. Claims of confidentiality for the following information will be denied (40 CFR § 122.7(b)):

1. The name and address of any permit applicant or Discharger (40 CFR § 122.7(b)(1)); and

2. Permit applications and attachments, permits and effluent data. (40 CFR § 122.7(b)(2).)

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, State Water Board, or USEPA within a reasonable time, any information which the Regional Water Board, State Water Board, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Regional Water Board, State Water Board, or USEPA copies of records required to be kept by this Order. (40 CFR § 122.41(h); Wat. Code, § 13267.)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or USEPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 CFR § 122.41(k).)

2. All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA). (40 CFR § 122.22(a)(3).).

3. All reports required by this Order and other information requested by the Regional Water Board, State Water Board, or USEPA shall be signed by a person described in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above (40 CFR § 122.22(b)(1));

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent

responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 CFR § 122.22(b)(2)); and

c. The written authorization is submitted to the Regional Water Board and State Water Board. (40 CFR § 122.22(b)(3).)

4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the Regional Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 CFR § 122.22(c).)

5. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." (40 CFR § 122.22(d).)

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 CFR § 122.22(l)(4).)

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices. (40 CFR § 122.41(l)(4)(i).)

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board. (40 CFR § 122.41(l)(4)(ii).)

4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. (40 CFR § 122.41(l)(4)(iii).)

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date. (40 CFR § 122.41(l)(5).)

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger become aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 CFR § 122.41(l)(6)(i).)

2. The following shall be included as information that must be reported within 24 hours under this paragraph (40 CFR § 122.41(l)(6)(ii)):

   a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 CFR § 122.41(l)(6)(ii)(A).)

   b. Any upset that exceeds any effluent limitation in this Order. (40 CFR § 122.41(l)(6)(ii)(B).)

3. The Regional Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours. (40 CFR § 122.41(l)(6)(iii).)

F. Planned Changes

The Discharger shall give notice to the Regional Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when (40 CFR § 122.41(l)(1)):

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in section 122.29(b) (40 CFR § 122.41(l)(1)(i)); or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this Order. (40 CFR § 122.41(l)(1)(ii).)

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application

process or not reported pursuant to an approved land application plan. (40 CFR§ 122.41(l)(1)(iii).)

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements. (40 CFR § 122.41(l)(2).)

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting V.C, V.D, and V.E above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E above. (40 CFR § 122.41(l)(7).)

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information. (40 CFR § 122.41(l)(8).)

VI. STANDARD PROVISIONS – ENFORCEMENT

A. The Regional Water Board is authorized to enforce the terms of this Order under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Publicly-Owned Treatment Works (POTWs)

All POTWs shall provide adequate notice to the Regional Water Board of the following (40 CFR § 122.42(b)):

1. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to sections 301 or 306 of the CWA if it were directly discharging those pollutants (40 CFR § 122.42(b)(1)); and

2. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of this Order. (40 CFR § 122.42(b)(2).)

3. Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW. (40 CFR § 122.42(b)(3).)

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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Tables

ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

National Pollutant Discharge Elimination System (NPDES) regulations at 40 CFR 122.48 require that all NPDES permits specify monitoring and reporting requirements. California Water Code (CWC) sections 13267 and 13383 also authorize the Regional Water Quality Control Board (Regional Water Board) to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements that implement the federal and State regulations.

I. GENERAL MONITORING PROVISIONS

A. The Discharger shall comply with this MRP. The Executive Officer may amend this MRP pursuant to 40 CFR 122.62, 122.63, and 124.5. If any discrepancies exist between this MRP and the Regional Standard Provisions (Attachment G), this MRP prevails.

B. The Discharger shall conduct all monitoring in accordance with Attachment D, section III, as supplemented by Attachment G of this Order. Equivalent test methods must be more sensitive than those specified in 40 CFR 136 and specified in the permit.

II. MONITORING LOCATIONS

The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order.

Table E-1. Monitoring Station Locations

Discharge Point No.	Monitoring Location Name	Monitoring Location Description
--	INF-001	At any point in the treatment facilities headworks at which all waste tributary to the treatment system is present, and preceding any phase of treatment.
001	EFF-001	At a point in the treatment facility at which all waste tributary to the discharge outfall into Carquinez Strait is present following adequate disinfection.
001	EFF-001b	At a point in the treatment facility at which all blended fully treated and primary treated waste tributary to the discharge outfall into Carquinez Strait is present (may be the same location as EFF-001).
002	EFF-002	At a point in the treatment facility at which all waste tributary to the discharge outfall into Mare Island Strait is present following adequate disinfection.
--	P-001 thru P-008	Land Observations: Points located at the corners and at midpoints along the perimeter (fence line) of the wastewater treatment facilities.

III. INFLUENT MONITORING REQUIREMENTS

The Discharger shall monitor the influent to the Plant at INF-001 as follows.

Table E-2. Plant Influent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow Rate [1]	MGD	Continuous	1/Day
Carbonaceous Biochemical Oxygen Demand (5-day @ 20 Deg. C) (CBOD)	mg/L	C-24	2/Week
Total Suspended Solids (TSS)	mg/L	C-24	2/Week

Parameter	Units	Sample Type	Minimum Sampling Frequency
Cyanide[2]	ug/L	Grab	1/Month

Footnotes to Table E-2:

Units:

MGD = million gallons per day
mg/L = milligrams per liter
µg/L = micrograms per liter
C-24 = 24-hour Composite

(1) For influent flows, the following information shall also be reported monthly:

Daily: Total daily flow volume (MG)
Daily: Daily average flow (MGD)
Monthly: Monthly average flow (MGD)
Monthly: Maximum daily flow (MGD)
Monthly: Minimum daily flow (MGD)
Monthly: Total flow volume (MG)

(2) Pretreatment monitoring required in Table E-5 may be used to satisfy this requirement.

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

The Discharger shall monitor the treated wastewater at EFF-001 as follows:

Table E-3. Effluent Monitoring, EFF-001

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow Rate[1, 1a]	MGD	Continuous	Continuous
CBOD[2]	mg/L	C-24	2/Week
TSS[2]	mg/L	C-24	2/Week
Oil and Grease[3]	mg/L	Grab	1/Quarter
pH[4]	s.u.	Continuous	Continuous
Chlorine, Total Residual[5]	mg/L	Continuous	Continuous
Enterococcus Bacteria	MPN/100mL	Grab	2/Week
Temperature	°C	Grab	1/Day
Dissolved Oxygen	mg/L & % saturation	Grab	1/Day
Total Ammonia[6]	mg/L as N	C-24	1/Month
Acute Toxicity[7]	% survival	C-24	1/Month
Chronic Toxicity[8]	TUc	C-24	1/Quarter
Cyanide, Total	µg/L	Grab	1/Month
Copper	µg/L	C-24	1/Month
2,3,7,8-TCDD & Congeners	pg/L	Grab	2/Year
1,2-Diphenylhydrazine	µg/L	Grab	1/5 Years
Remaining Priority Pollutants	µg/L	Grab	Once per permit term
Standard Observations[9]	--	--	1/Month

Footnotes to Table E-3:

Units:

MGD	=	million gallons per day
mg/L	=	milligrams per liter
s.u.	=	standard units
MPN/100 mL	=	Most Probable Number/100 mL
°C	=	degree Celsius
µg/L	=	micrograms per liter
C-24	=	24-hour composite
TU_c	=	chronic toxicity units, equal to 100/NOEL, where NOEL = IC_{25}, EC_{25}, or NOEC as discussed in the MRP (Attachment E)

(1) For effluent flows, the following information shall also be reported monthly:
Daily: Daily average flow (MGD)
Monthly: Monthly average flow (MGD)
Daily: Maximum daily flow (MGD)
Daily: Minimum daily flow (MGD)

(1a) During blending events the Discharger shall monitor flows, volume blended, TSS, bacteria, and other limited pollutants as required by Attachment G, section III.A.3.b(6), at monitoring point EFF-001b.

(2) The percent removal for CBOD and TSS shall be reported for each calendar month in accordance with Effluent Limitation IV.A.2.

(3) Each oil and grease sampling and analysis shall be conducted in accordance with USEPA Method 1664.

(4) If pH is monitored continuously, the minimum and maximum pH values for each day shall be reported in monthly self-monitoring reports.

(5) Chlorine residual shall be monitored continuously or, at a minimum, every hour. The Discharger shall report, on a daily basis, both maximum and minimum concentrations. If continuous monitoring is used, the Discharger may record discrete readings from the continuous monitoring every hour on the hour and report, on a daily basis, the maximum concentration observed following dechlorination. Total chlorine dosage (kg/day) shall be recorded on a daily basis.

(6) Monitoring for total ammonia shall occur concurrently with monitoring for temperature and pH in order to provide for determination of the un-ionized ammonia fraction.

(7) Acute bioassay test shall be performed in accordance with section V.A of this MRP.

(8) Critical Life Stage Toxicity Test shall be performed and reported in accordance with the Chronic Toxicity Requirements specified in section V.B of this MRP.

(9) Standard observations are specified in the Regional Standard Provisions (Attachment G).

B. Monitoring Location EFF-002

When discharging to Discharge Location 002, the Discharger shall monitor the treated wastewater at EFF-002 as follows:

Table E-4. Effluent Monitoring, EFF-002

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow Rate(1)	MGD	Continuous	1/Day
Standard Observations(2)	--	--	1/Day

Footnotes to Table E-4:

Units:

MGD = million gallons per day

(1) For effluent flows, the following information shall also be reported monthly:
Daily: Total daily flow volume (MG)
Daily: Daily average flow (MGD)
Monthly: Monthly average flow (MGD)
Monthly: Maximum daily flow (MGD)
Monthly: Minimum daily flow (MGD)
Monthly: Total flow volume (MG)

(2) Standard observations are specified in the Regional Standard Provisions (Attachment G).

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

Compliance with the following whole effluent toxicity monitoring requirements shall be evaluated at Monitoring Location EFF-001.

A. Whole Effluent Acute Toxicity

1. Compliance with the acute toxicity effluent limitations of this Order shall be evaluated by measuring survival of test organisms exposed to 96-hour continuous flow-through bioassays.

2. Test organisms shall be rainbow trout (*Oncorhynchus mykiss*) unless the Executive Officer specifies in writing otherwise.

3. All bioassays shall be performed using the most sensitive species based on the most recent screening test results and in accordance with the most up-to-date protocols in 40 CFR 136, currently in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms,* 5th Edition.

4. If the Discharger can demonstrate that specific identifiable substances in the discharge are rapidly rendered harmless upon discharge to the receiving water, compliance with the acute toxicity limitation may be determined after the test samples are adjusted to remove the influence of those substances. The Discharger must obtain written approval from the Executive Officer to authorize such an adjustment.

5. The sample shall be taken from secondary treated effluent after disinfection. Monitoring of the bioassay water shall include, on a daily basis, the following parameters: pH, dissolved oxygen, ammonia (if toxicity is observed), temperature, hardness, and alkalinity. These results shall be reported in the monthly Self-Monitoring Reports or as specified by the Regional Water Board.

   If a violation of acute toxicity requirements occurs, the bioassay test shall be repeated with new fish as soon as practical and shall be repeated until a test fish survival rate of 90 percent or greater is observed. If the control fish survival rate is less than 90 percent, the bioassay test shall be restarted with new fish and shall continue as soon as practical until an acceptable test is completed (i.e., control fish survival rate is 90 percent or greater).

B. Whole Effluent Chronic Toxicity

1. Chronic Toxicity Monitoring Requirements

   a. *Frequency.* The frequency of routine and accelerated chronic toxicity monitoring shall be as specified below.

      (1) Routine Monitoring: The Discharger shall collect 24-hour composite effluent samples at Monitoring Location EFF-001, as specified in Table E-3 above, for critical life stage toxicity testing as indicated below. For toxicity tests requiring renewals, 24-hour composite samples collected on consecutive days are required.

(2) Accelerated Monitoring: The Discharger shall accelerate monitoring to monthly after exceeding:

(a) a three-sample median of 10 TU_c[1], or;

(b) a single sample maximum of 20 TU_c.

The Executive Officer may specify a different frequency for accelerated monitoring based on the TU_c results.

(3) Return to routine monitoring if accelerated monitoring does not exceed either "trigger" in (2), above.

(4) If accelerated monitoring confirms consistent toxicity in excess of either "trigger" in (2), above, continue accelerated monitoring and initiate toxicity reduction evaluation (TRE) procedures in accordance with section B.3, below.

(5) Return to routine monitoring after implementing appropriate elements of the TRE, and either the toxicity drops below both "triggers" in (2), above, or, based on the TRE results, the Executive Officer authorizes a return to routine monitoring.

Monitoring conducted pursuant to a TRE effort shall satisfy the requirements for routine and accelerated monitoring while the TRE investigation is underway.

b. *Test Species*. The test species shall be abalone (*Haliotis rufescens*). The Executive Officer may change the test species if data suggest that another test species is more sensitive to the discharge.

c. *Methodology*. Sample collection, handling, and preservation shall be in accordance with USEPA protocols. In addition, bioassays shall be conducted in compliance with the most recently promulgated test methods, as shown in Appendix E-1 and *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms,* currently third edition (EPA-821-R-02-014) and *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, currently fourth Edition (EPA-821-R-02-013), with exceptions granted the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP). If specific identifiable substances in the discharge can be demonstrated by the Discharger as being rapidly rendered harmless upon discharge to the receiving waters, compliance with the chronic toxicity performance goal may be determined after the test samples are adjusted to remove the influence of those substances. The Discharger must obtain written approval from the Executive Officer to authorize such an adjustment.

d. *Dilution Series*. The Discharger shall conduct tests at 50%, 25%, 10%, 5%, and 2.5%. The "%" represents percent effluent as discharged. The Discharger may use the

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[1] A TU_c equals 100 divided by the no observable effect level (NOEL). The NOEL is determined from IC_{25}, EC_{25}, or NOEC values. These terms, their usage, and other chronic toxicity monitoring program requirements are defined in the MRP (Attachment E).

biological buffer MOPS (3-(N-Morpholino)propanesulfonic Acid) to control pH drift and ammonia toxicity caused by increasing pH during the test.

2. Chronic Toxicity Reporting Requirements

   a. *Routine Reporting.* Toxicity test results for the current reporting period shall include, at a minimum, for each test:

      (1) Sample dates

      (2) Test initiation date

      (3) Test species

      (4) End point values for each dilution (e.g. number of young, growth rate, percent survival)

      (5) No Observable Effect Level (NOEL) values in percent effluent. The NOEL shall equal the IC25 or EC25 (See Attachment E, Appendix E-1). If the IC25 or EC25 cannot be statistically determined, the NOEL shall be equal to the No Observable Effect Concentration (NOEC) derived using hypothesis testing. The NOEC is the maximum percent effluent concentration that causes no observable effect on test organisms based on critical life stage toxicity test.

      (6) IC_{15}, IC_{25}, IC_{40}, and IC_{50} values (or EC_{15}, EC_{25} ... etc.) in percent effluent

      (7) TUc values (100/NOEL, where NOEL = IC_{25}, EC_{25}, or NOEC as discussed in Appendix E-1)

      (8) Mean percent mortality (±s.d.) after 96 hours in 100% effluent (if applicable)

      (9) NOEL and LOEC values for reference toxicant tests

      (10) IC_{50} or EC_{50} values for reference toxicant tests

      (11) Available water quality measurements for each test (pH, dissolved oxygen, temperature, conductivity, hardness, salinity, ammonia)

   b. *Compliance Summary.* The results of the chronic toxicity testing shall be provided in the next Self-Monitoring Report and shall include a summary table of chronic toxicity data from at least eleven of the most recent samples. The information in the table shall include the items listed above under 2.a., item numbers (1), (3), (5), (6) (IC_{25} or EC_{25}), (7), and (8).

3. Chronic Toxicity Reduction Evaluation (TRE)

   a. *Generic TRE Work Plan.* To be ready to respond to toxicity events, the Discharger shall prepare a generic TRE work plan within 90 days of the effective date of this Order. The Discharger shall review and update the work plan as necessary to remain current and applicable to the discharge and discharge facilities.

   b. *Specific TRE Work Plan.* Within 30 days of receiving results of an accelerated monitoring test that shows continued exceedance of either trigger for accelerated monitoring, the Discharger shall submit a specific TRE work plan to the Regional Water Board, which shall be the generic work plan revised as appropriate for the toxicity event after consideration of available discharge data.

   c. *Initiate TRE.* Within 30 days receiving results of an accelerated monitoring test that shows continued exceedance of either trigger, the Discharger shall initiate a TRE in accordance with a TRE work plan that addresses any and all comments from the Executive Officer.

   d. The TRE shall be specific to the discharge and be in accordance with current technical guidance and reference materials, including USEPA guidance materials. The TRE shall be conducted as a tiered evaluation process, such as summarized below:

      (1) Tier 1 consists of basic data collection (routine and accelerated monitoring).

      (2) Tier 2 consists of evaluation of optimization of the treatment process including operation practices and in-plant process chemicals.

      (3) Tier 3 consists of a toxicity identification evaluation (TIE).

      (4) Tier 4 consists of evaluation of options for additional effluent treatment processes.

      (5) Tier 5 consists of evaluation of options for modifications of in-plant treatment processes.

      (6) Tier 6 consists of implementation of selected toxicity control measures, and follow-up monitoring and confirmation of implementation success.

   e. The TRE may be ended at any stage if monitoring finds there is no longer consistent toxicity (complying with Effluent Limitations section IV.D of this Order, and not exceeding trigger levels in this MRP section V.B.1.a(2)).

   f. The objective of the TIE shall be to identify the substance or combination of substances causing the observed toxicity. All reasonable efforts using currently available TIE methodologies shall be employed.

   g. As toxic substances are identified or characterized, the Discharger shall continue the TRE by determining the sources and evaluating alternative strategies for reducing or eliminating the substances from the discharge. All reasonable steps shall be taken to reduce toxicity to levels consistent with chronic toxicity evaluation parameters.

h. Many recommended TRE elements parallel required or recommended efforts of source control, pollution prevention, and storm water control programs. TRE efforts shall be coordinated with such efforts. To prevent duplication of efforts, evidence of complying with requirements or recommended efforts of such programs may be acceptable to comply with TRE requirements.

i. The Regional Water Board recognizes that chronic toxicity may be episodic and identification of causes of and reduction of sources of chronic toxicity may not be successful in all cases. The Regional Water Board's consideration of enforcement actions will be based in part on the Discharger's actions and efforts to identify and control or reduce sources of consistent toxicity.

VI. RECEIVING WATER MONITORING REQUIREMENTS

The Discharger shall continue to participate in the Regional Monitoring Program (RMP), which involves collection of data on pollutants and toxicity in water, sediment, and biota of the San Francisco Bay. Additional receiving water monitoring is not required under this Order so long as the Discharger adequately supports the Regional Monitoring Program.

VII. PRETREATMENT AND BIOSOLIDS REQUIREMENTS

The Discharger shall comply with the pretreatment requirements specified below for influent (at Monitoring Location INF-001), effluent (at Monitoring Location EFF-001), and biosolids monitoring. The Discharger shall report summaries of analytical results in annual and semi-annual pretreatment reports in accordance with Attachment H. At its option, the Discharger may also report biosolids analytical results in its eSMR by manual entry, by EDF/CDF, or as an attached file.

Table E-5. Pretreatment and Biosolids Monitoring Requirements

Constituents	Sample Locations and Frequencies[1]			Sample Type	
	INF-001	EFF-001	Biosolids	INF-001	Biosolids
Volatile Organic Compounds (VOC)	2/Year	2/Year	2/Year	grab	grabs[2a]
Base/Neutrals and acids extractable organic compounds (BNA)	2/Year	2/Year	2/Year	grab	grabs[2a]
Hexavalent Chromium[3]	1/Month	1/Month	2/Year	grab	grabs[2a]
Metals[4]	1/Month	1/Month	2/Year	24-hr Composite[2b]	grabs[2a]
Mercury	1/Month	1/Month	2/Year	grab	grabs[2a]
Cyanide	1/Month	1/Month	2/Year	grab	grabs[2a]

(1) The Discharger may elect to use the influent, and effluent monitoring conducted in accordance with Tables E-2, E-3, and E-4 to satisfy these pretreatment requirements, and sampling shall be conducted at whichever frequency is greater.

(2) a. The biosolids sample shall be a composite of the biosolids to be disposed. Biosolids collection and monitoring shall comply with the requirements specified in Attachment H, Appendix H-4. The Discharger shall also comply with the biosolids monitoring requirements of 40 CFR 503.

b. If an automatic compositor is used, the Discharger shall obtain 24-hour composite samples through flow-proportioned composite sampling. Alternatively, 24-hour composite samples may consist of discrete grab samples combined (volumetrically flow-weighted) prior to analysis or mathematically flow-weighted.

(3) The Discharger may elect to report total chromium instead of hexavalent chromium. Samples collected for total chromium measurements shall be 24-hour composites.

(4) The metals are arsenic, cadmium, copper, lead, nickel, silver, zinc, and selenium.

VIII. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

The Discharger shall comply with all Federal Standard Provisions (Attachment D) and Regional Standard Provisions (Attachment G) related to monitoring, reporting, and recordkeeping, with modifications shown in MRP section VIII.D below.

B. Self-Monitoring Reports (SMRs)

1. **SMR Format.** The Discharger shall electronically submit SMRs using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). The CIWQS website will provide additional directions for SMR submittal in the event of a service interruption for electronic submittal.

2. **SMR Due Dates and Contents.** The Discharger shall submit SMRs by the due dates, and with the contents, specified below:

   a. **Monthly SMRs** — Monthly SMRs shall be due 30 days after the end of each calendar month, covering that calendar month. The monthly SMR shall contain the applicable items described in sections V.B and V.C of both Attachments D and G of this Order. Standard observations include odor monitoring at land observation points specified in Table E-1: A sketch showing the locations of these stations shall accompany each SMR. See Provision VI.C.2.a (Effluent Characterization Study and Report) of this Order for information that must also be reported with the monthly SMR.

   b. **Annual SMR** — Annual SMRs shall be due February 1 each year, covering the previous calendar year. The annual SMR shall contain the items described in sections V.C.1.f.(2), V.C.1.f.(6) as applicable, and V.C.1.f.(7) of the Regional Standard Provisions (Attachment G). Information described in the other subsections of V.C.1.f of Attachment G is not required. See also Provisions VI.C.2.a (Effluent Characterization Study and Report), VI.C.4.b (Biosolids Management Practices), and VI.C.4.d (Specific Tasks to Reduce Blending) of the Order for requirements to submit reports with the annual SMR.

c. **Additional Specifications for Submitting SMRs to CIWQS** — If the Discharger submits SMRs to CIWQS, it shall submit analytical results and other information using one of the following methods:

Table E-6. SMR Reporting for CIWQS (eSMR)

Parameter	Method of Reporting	
	EDF/CDF data upload or manual entry	**Attached File**
All parameters identified in influent, effluent, and receiving water monitoring tables (except Dissolved Oxygen and Temperature)	Required for All Results	
Dissolved Oxygen Temperature	Required for Monthly Maximum and Minimum Results Only (1)	Discharger may use this method for all results or keep records
Cyanide Arsenic Cadmium Chromium Copper Lead Mercury Nickel Selenium Silver Zinc Dioxins and Furans (by U.S. EPA Method 1613)	Required for All Results (2)	
Antimony Berylium Thallium Pollutants by U.S. EPA Methods 601, 602, 608, 610, 614, 624, and 625	Not Required (unless identified in influent, effluent, or receiving water monitoring tables), But Encouraged (1)	Discharger may use this method and submit results with application for permit reissuance, unless data submitted by CDF/EDF upload
Volume and Duration of Blended Discharge (3)	Required for All Blended Effluent Discharges	
Analytical Method	Not Required (Discharger may select "data unavailable") (1)	
Collection Time Analysis Time	Not Required (Discharger may select "0:00") (1)	

Footnotes for Table E-6:

(1) The Discharger shall continue to monitor at the minimum frequency specified in the monitoring tables, keep records of the measurements, and make the records available upon request.

(2) These parameters require EDF/CDF data upload or manual entry regardless of whether monitoring is required by this MRP or other provisions of this Order (except for biosolids, sludge, or ash provisions).

(3) The requirement for volume and duration of blended discharge applies only if this Order authorizes the Discharger to discharge blended effluent.

3. **Monitoring Periods.** Monitoring periods for all required monitoring shall be completed as set forth in the table below:

Table E-7. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period
Continuous	Effective date of permit	All
1/Day	Effective date of permit	Midnight through 11:59 PM or any 24-hour period that reasonably represents a calendar day for purposes of sampling
1/Week	Effective date of permit	Sunday through Saturday
1/Month	Effective date of permit	First day of calendar month through last day of calendar month
1/Quarter	Effective date of permit	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31
2/Year	Effective date of permit	Once during November 1 through April 30 Once during May 1 through October 31
1/Year	Effective date of permit	Alternate between once during November 1 through April 30 (one year), and once during May 1 through October 31 (following year)
1/5 Years	Effective date of permit	Once during the permit term within 12 months prior to applying for permit reissuance.
Per Discharge Event	Effective date of permit	At a time when sampling can characterize the discharge event

4. **ML and MDL Reporting.** The Discharger shall report with each sample result the Reporting Level (RL) and Method Detection Limit (MDL) as determined by the procedure in 40 CFR 136. The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

   a. Sample results greater than or equal to the RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).

   b. Sample results less than the RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported. For purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ. The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (+/- a percentage of the reported value), numerical ranges (low to high), or any other means the laboratory considers appropriate.

   c. Sample results less than the laboratory's MDL shall be reported as "Not Detected" or ND.

   d. The Discharger shall instruct laboratories to establish calibration standards so that the minimum level (ML) value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the

Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

C. Discharge Monitoring Reports

1. As described in section VIII.B.1 above, at any time during the term of this Order, the State or Regional Water Board may notify the Discharger to electronically submit SMRs that will satisfy federal requirements for submittal of Discharge Monitoring Reports (DMRs). Once notified by the State or Regional Water Board, the Discharger shall submit hardcopy DMRs. Until such notification is given, the Discharger is not required to submit DMRs in accordance with the requirements described below.

2. DMRs must be signed and certified as required by the standard provisions (Attachment D). The Discharger shall submit the original DMR and one copy of the DMR to one of the addresses listed below:

Standard Mail	FedEx/UPS/Other Private Carriers
State Water Resources Control Board Division of Water Quality c/o DMR Processing Center PO Box 100 Sacramento, CA 95812-1000	State Water Resources Control Board Division of Water Quality c/o DMR Processing Center 1001 I Street, 15th Floor Sacramento, CA 95814

3. All discharge monitoring results must be reported on the official USEPA pre-printed DMR forms (EPA Form 3320-1). Forms that are self-generated will not be accepted unless they follow the exact same format of EPA Form 3320-1.

D. Modifications to Attachment G

1. Sections V.C.1.f. and V.C.1.g are revised as follows, and section V.C.1.h (Reporting data in electronic format) is deleted.

f. Annual self-monitoring report requirements

By the date specified in the MRP, the Discharger shall submit an annual report to the Regional Water Board covering the previous calendar year. The report shall contain the following:

1) Annual compliance summary table of treatment plant performance, including documentation of any blending events (this summary table is not required if the Discharger has submitted the year's monitoring results to CIWQS in electronic reporting format by EDF/CDF upload or manual entry);

2) Comprehensive discussion of treatment plant performance and compliance with the permit (this discussion shall include any corrective actions taken or planned, such as changes to facility equipment or operation practices that may be needed to achieve

compliance, and any other actions taken or planned that are intended to improve performance and reliability of the Discharger's wastewater collection, treatment, or disposal practices.);

3) Both tabular and graphical summaries of the monitoring data for the previous year if parameters are monitored at a frequency of monthly or greater (this item is not required if the Discharger has submitted the year's monitoring results to CIWQS in electronic reporting format by EDF/CDF upload or manual entry);

4) List of approved analyses, including the following:

   (i) List of analyses for which the Discharger is certified;
   (ii) List of analyses performed for the Discharger by a separate certified laboratory (copies of reports signed by the laboratory director of that laboratory shall not be submitted but be retained onsite); and
   (iii)List of "waived" analyses, as approved;

5) Plan view drawing or map showing the Discharger's facility, flow routing, and sampling and observation station locations;

6) Results of annual facility inspection to verify that all elements of the SWPP Plan are accurate and up to date (only required if the Discharger does not route all storm water to the headworks of its wastewater treatment plant); and

7) Results of facility report reviews (the Discharger shall regularly review, revise, and update, as necessary, the O&M Manual, the Contingency Plan, the Spill Prevention Plan, and Wastewater Facilities Status Report so that these documents remain useful and relevant to current practices. At a minimum, reviews shall be conducted annually. The Discharger shall include, in each Annual Report, a description or summary of review and evaluation procedures, recommended or planned actions, and an estimated time schedule for implementing these actions. The Discharger shall complete changes to these documents to ensure they are up-to-date.).

g. Report submittal
The Discharger shall submit SMRs addressed as follows, unless the Discharger submits SMRs electronically to CIWQS:

California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612
Attn: NPDES Wastewater Division

h. Reporting data in electronic format – Deleted

2. Sections V.E.2.a and V.E.2.c are revised as follows, and sections V.E.2.b (24-hour Certification) and V.E.2.d (Communication Protocol) are deleted:

2. Unauthorized Discharges from Municipal Wastewater Treatment Plants[2]
The following requirements apply to municipal wastewater treatment plants that experience an unauthorized discharge at their treatment facilities and supersede requirements imposed on the Discharger by the Executive Officer by letter of May 1, 2008.

a. Two (2)-Hour Notification

For any unauthorized discharges that enter a drainage channel or a surface water, the Discharger shall, as soon as possible, but not later than two (2) hours after becoming aware of the discharge, notify the California Emergency Management Agency (CalEMA currently 800-852-7550), the local health officers or directors of environmental health with jurisdiction over the affected water bodies, and the Regional Water Board. Timely notification by the Discharger to CalEMA also satisfies notification to the Regional Water Board. Notification shall include the following:

1) Incident description and cause;

2) Location of threatened or involved waterway(s) or storm drains;

3) Date and time the unauthorized discharge started;

4) Estimated quantity and duration of the unauthorized discharge (to the extent known), and the estimated amount recovered;

5) Level of treatment prior to discharge (e.g., raw wastewater, primary treated, undisinfected secondary treated, and so on); and

6) Identity of the person reporting the unauthorized discharge.

b. 24-hour Certification – Deleted

c. 5-day Written Report

Within five business days, the Discharger shall submit a written report that includes, in addition to the information required above, the following:

1) Methods used to delineate the geographical extent of the unauthorized discharge within receiving waters;

2) Efforts implemented to minimize public exposure to the unauthorized discharge;

3) Visual observations of the impacts (if any) noted in the receiving waters (e.g. fish kill, discoloration of water) and the extent of sampling if conducted;

4) Corrective measures taken to minimize the impact of the unauthorized discharge;

5) Measures to be taken to minimize the changes of a similar unauthorized discharge occurring in the future;

6) Summary of Spill Prevention Plan or O&M Manual modifications to be made, if necessary, to minimize the changes of future unauthorized discharges; and

7) Quantity and duration of the unauthorized discharge, and the amount recovered.

d. Communication Protocol - Deleted

APPENDIX E-1

CHRONIC TOXICITY
DEFINITION OF TERMS AND SCREENING PHASE REQUIREMENTS

I. Definition of Terms

A. No observed effect level (NOEL) for compliance determination shall be equal to IC_{25} or EC_{25}. If the IC_{25} or EC_{25} cannot be statistically determined, the NOEL shall be equal to the No Observable Effect Concentration (NOEC) derived using hypothesis testing.

B. Effective concentration (EC) is a point estimate of the toxicant concentration that would cause an adverse effect on a quantal, "all or nothing," response (such as death, immobilization, or serious incapacitation) in a given percent of the test organisms. If the effect is death or immobility, the term lethal concentration (LC) may be used. EC values may be calculated using point estimation techniques such as probit, logit, and Spearman-Karber. EC_{25} is the concentration of toxicant (in percent effluent) that causes a response in 25 percent of the test organisms.

C. Inhibition concentration (IC) is a point estimate of the toxicant concentration that would cause a given percent reduction in a nonlethal, nonquantal biological measurement, such as growth. For example, an IC_{25} is the estimated concentration of toxicant that would cause a 25 percent reduction in average young per female or growth. IC values may be calculated using a linear interpolation method such as USEPA's Bootstrap Procedure.

D. No observed effect concentration (NOEC) is the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specific time of observation. It is determined using hypothesis testing.

II. Chronic Toxicity Screening Phase Requirements

A. The Discharger shall perform screening phase monitoring:

1. Subsequent to any significant change in the nature of the effluent discharged through changes in sources or treatment, except those changes resulting from reductions in pollutant concentrations attributable to source control efforts, or

2. Prior to permit reissuance. Screening phase monitoring data shall be included in the NPDES permit application for reissuance. The information shall be as recent as possible, but may be based on screening phase monitoring conducted within 5 years before the permit expiration date.

B. Screening phase design shall, at a minimum, consist of the following elements:

1. Use of test species specified in Appendix E-2, attached, and use of the protocols referenced in those tables, or as approved by the Executive Officer.

2. Two stages:

a. Stage 1 shall consist of a minimum of one battery of tests conducted concurrently. Selection of the type of test species and minimum number of tests shall be based on Appendix E-2 (attached).

b. Stage 2 shall consist of a minimum of two test batteries conducted at a monthly frequency using the three most sensitive species based on the Stage 1 test results and as approved by the Executive Officer.

3. Appropriate controls.

4. Concurrent reference toxicant tests.

5. Dilution series with a control and five effluent concentrations (including 100% effluent) and using a dilution factor ≥ 0.5.

C. The Discharger shall submit a screening phase proposal acceptable to the Executive Officer. The proposal shall address each of the elements listed above. If within 30 days, the Executive Officer does not comment, the Discharger shall commence with screening phase monitoring.

APPENDIX E-2

SUMMARY OF TOXICITY TEST SPECIES REQUIREMENTS

Table AE-1. Critical Life Stage Toxicity Tests for Estuarine Waters

Species	(Scientific Name)	Effect	Test Duration	Reference
Alga	(Skeletonema costatum) (Thalassiosira pseudonana)	Growth rate	4 days	1
Red alga	(Champia parvula)	Number of cystocarps	7–9 days	3
Giant kelp	(Macrocystis pyrifera)	Percent germination; germ tube length	48 hours	2
Abalone	(Haliotis rufescens)	Abnormal shell development	48 hours	2
Oyster Mussel	(Crassostrea gigas) (Mytilus edulis)	Abnormal shell development; percent survival	48 hours	2
Echinoderms - Urchins Sand dollar	(Strongylocentrotus purpuratus, S. franciscanus) (Dendraster excentricus)	Percent fertilization	1 hour	2
Shrimp	(Americamysis bahia)	Percent survival; growth	7 days	3
Shrimp	(Holmesimysis costata)	Percent survival; growth	7 days	2
Topsmelt	(Atherinops affinis)	Percent survival; growth	7 days	2
Silversides	(Menidia beryllina)	Larval growth rate; percent survival	7 days	3

Toxicity Test References:

1. American Society for Testing Materials (ASTM). 1990. Standard Guide for Conducting Static 96-Hour Toxicity Tests with Microalgae. Procedure E 1218-90. ASTM, Philadelphia, PA.
2. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to West Coast Marine and Estuarine Organisms. EPA/600/R-95/136. August 1995.
3. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Marine and Estuarine Organisms. EPA/600/4-90/003. July 1994.

Table AE-2. Critical Life Stage Toxicity Tests for Fresh Waters

Species	(Scientific Name)	Effect	Test Duration	Reference
Fathead minnow	(Pimephales promelas)	Survival; growth rate	7 days	4
Water flea	(Ceriodaphnia dubia)	Survival; number of young	7 days	4
Alga	(Selenastrum capricornutum)	Final cell density	4 days	4

Toxicity Test Reference:

4. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, fourth Edition Chronic manual (EPA-821-R-02-013, October 2002).

Table AE-3. Toxicity Test Requirements for Stage One Screening Phase

Requirements	Receiving Water Characteristics		
	Discharges to Coast	Discharges to San Francisco Bay[2]	
	Ocean	Marine/Estuarine	Freshwater
Taxonomic diversity	1 Plant 1 invertebrate 1 fish	1 Plant 1 invertebrate 1 fish	1 Plant 1 invertebrate 1 fish
Number of tests of each salinity type: Freshwater[1] Marine/Estuarine	 0 4	 1 or 2 3 or 4	 3 0
Total number of tests	4	5	3

Footnotes to Table AE-3:

1. The freshwater species may be substituted with marine species if:
   a. The effluent salinity is above 1 part per thousand (ppt) greater than 95 percent of the time, or
   b. The effluent ionic strength (TDS or conductivity) at the test concentration used to determine compliance is documented to be toxic to the test species.
2. a. Marine/Estuarine refers to receiving water salinities greater than 1 ppt at least 95 percent of the time during a normal water year.
   b. Freshwater refers to receiving water with salinities less than 1 ppt at least 95 percent of the time during a normal water year.

ATTACHMENT F - FACT SHEET

Contents

Tables

ATTACHMENT F – FACT SHEET

As described in section II of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the Facility.

Table F-1. Facility Information

WDID	2 482012001
Discharger	Vallejo Sanitation and Flood Control District
Name of Facility	Vallejo Sanitation and Flood Control District Wastewater Treatment Plant and its collection system
Facility Address	450 Ryder Street Vallejo, CA 94590 Solano County
Facility Contact, Title, Phone	Ron Matheson, District Manager, (707) 644-8949 x211
Authorized Person to Sign and Submit Reports	Ronald J. Matheson, District Manager, (707) 644-8949
Mailing Address	Same
Billing Address	Same
Type of Facility	Publicly Owned Treatment Works (POTW)
Major or Minor Facility	Major
Threat to Water Quality	1
Complexity	A
Pretreatment Program	Yes
Reclamation Requirements	N/A
Watershed	San Pablo Basin
Facility Permitted Flow	15.5 million gallons per day (MGD), Maximum Dry Weather Design Flow
Facility Design Flow	15.5 MGD Average Dry Weather Capacity 35 MGD Maximum Wet Weather Secondary Treatment Capacity 60 MGD Maximum Wet Weather Capacity
Receiving Water	Carquinez and Mare Island Straits
Receiving Water Type	Estuarine

A. The Vallejo Sanitation and Flood Control District (hereinafter Discharger) is the owner and operator of the Vallejo Sanitation and Flood Control District Wastewater Treatment Plant (Plant) and its collection system. For the purposes of this Order, references to the "dischargers" or "permittee" in applicable federal and state laws, regulations, plans, and policies are held to be equivalent to references to the Discharger herein.

B. The Plant discharges wastewater to Carquinez Strait (Discharge Point No. 001) and Mare Island Strait (Discharge Point No. 002), both waters of the United States, and is currently regulated under Order No. R2-2006-0056, which was adopted on August 9, 2006, and expired on September 30, 2011. The terms of the previous Order automatically continued after the permit expiration date.

C. The Discharger filed a report of waste discharge and submitted an application for reissuance of its Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit on April 1, 2011.

II. FACILITY DESCRIPTION

A. Description of Wastewater and Biosolids Treatment

The Plant provides secondary treatment of wastewater from domestic and commercial sources within the City of Vallejo, the former Mare Island Naval Facility, and an adjacent unincorporated area. The Discharger's service area population is approximately 117,000 people. The Plant has an average dry weather design capacity of 15.5 MGD and a wet weather capacity of 35 MGD for full secondary treatment, with an additional 25 MGD primary treatment capacity. The maximum wet weather capacity is 60 MGD. The average dry weather flow in 2010 was 9.3 MGD. The maximum daily wet weather flow between October 2006 and December 2010 was 43.3 MGD.

The Discharger's wastewater collection system includes about 435 miles of sanitary sewer lines, and 36 pump stations. In 2005 and 2006, the Discharger completed significant capital improvement projects to the collection system to eliminate sanitary sewer overflows from two constructed wet weather overflow structures, the Sears Point Pump Station Overflow and the Ryder Street Overflow. The improvements included a 3 million gallon (MG) underground storage tank constructed to eliminate sanitary sewer overflows from the Sears Pump Station, and an 8.6 MG storage facility adjacent to the Plant to eliminate sanitary sewer overflows from the Ryder Street Pump Station. In addition to eliminating sanitary sewer overflows from these two locations, the Discharger intends to operate the pump station storage basins, when possible, in a manner similar to equalization basins to reduce blending at the Plant.

The Plant's treatment system consists of screens, aerated grit removal, primary sedimentation by circular and rectangular clarifiers, biological treatment using trickling filters followed by aeration basins, secondary clarification, disinfection by chlorination with sodium hypochlorite or by ultraviolet light, and dechlorination by sodium bisulfite.

Solids removed from the wastewater stream are treated by lime stabilization, gravity thickening, and dewatering by belt filter presses. Stabilized, dewatered biosolids are hauled away for off-site disposal through land application at the Discharger's Biosolids Utilization Project on Tubbs Island, Sonoma County. Biosolids are temporarily stockpiled at the Tubbs Island site, and subsequently spread and incorporated into the soil as a soil amendment on land used for agricultural crop production.

During wet weather conditions, flows up to approximately 35 MGD receive full secondary treatment. Flows in excess of approximately 35 MGD and up to 60 MGD are treated in the primary sedimentation basins, blended with secondary treatment effluent, and disinfected. Under normal operating conditions, effluent is typically discharged to Carquinez Strait through Discharge Point No. 001. When wet weather flows exceed 30 MGD, treated effluent is discharged through the outfall to Carquinez Strait (Discharge Point No. 001) and the outfall to Mare Island Strait (Discharge Point No. 002) using an automated split flow process. By means of automated flow splitting, the discharges to Discharge Point No. 002 consist of only fully secondary-treated, disinfected, and dechlorinated effluent, while the discharges through the Discharge Point No. 001 may consist of a disinfected blend of primary and secondary treated effluents. The purpose of the

split flow process is to minimize potential receiving water impacts. The discharges to Carquinez Strait receive greater initial dilution than the discharges to Mare Island Strait. With the split flow process, discharges to Mare Island Strait consist of only fully secondary-treated, disinfected, and dechlorinated effluent, in the least volume necessary.

Upon Executive Officer approval pursuant to section VI.C.2.c. of this Order, wastewater may be discharged through Discharge Point No. 002 under year-round conditions. The District requires further study of the financial requirements of improving the outfall for such discharges before making a final decision.

B. Discharge Points and Receiving Waters

Table F-2, below, identifies the locations of the discharge points and receiving waters.

Table F-2. Outfall Locations

Discharge Point No.	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Secondary Treated Municipal Wastewater and a blend of secondary and primary treated wastewater during wet weather	38° 03' 53" N	122° 13' 42" W	Carquinez Strait
002	Secondary Treated Municipal Wastewater	38° 05' 23" N	122° 15' 12" W	Mare Island Strait, a tributary to Carquinez Strait

1. **Discharge Point No. 001, Carquinez Strait.** Treated municipal wastewater is discharged to Carquinez Strait year-round through a submerged diffuser 400 feet from the north shore of Carquinez Strait and about 75 feet below the water surface near the north end of the Carquinez Bridge. The diffuser includes eight 16-inch diameter discharge ports spaced seven feet apart, angled 0 degrees from the vertical and 20 degrees from the horizontal, alternating on opposite sides of the diffuser. The dilution achieved by the diffuser was estimated using a default diffuser port contraction coefficient of 1.0 at a flow rate of 30 MGD. The discharge receives an initial dilution of approximately 41:1. The Facility discharged an average of 11 MGD of treated wastewater to Discharge Point No. 001 between October 2006 and December 2010. The maximum average daily discharge over this same period was 31 MGD.

2. **Discharge Point No. 002, Mare Island Strait.** Secondary-treated, disinfected, and dechlorinated wastewater is discharged to Mare Island Strait when wet weather peak flows are greater than 30 MGD, when the hydraulic capacity of Discharge Point No. 001 has been exceeded, or as approved by the Executive Officer. The discharge is through a submerged diffuser about 100 feet from the east shore of Mare Island Strait at a depth of 3 feet one hour after low slack tide, and receives an initial dilution of at least 26:1. The diffuser includes three 12-inch diameter discharge ports fitted with variable-width port valves; the effective port diameter at the 99th percentile flow rate of 3.07 MGD through this outfall from 2005 through 2010 is 5.8 inches. The ports are spaced 5 feet apart, angled 11.5 degrees downward from the horizontal and oriented perpendicular to the current direction. The dilution achieved

by the diffuser was estimated using a default diffuser port contraction coefficient of 1.0. During the period from October 2006 through December 2010, 17 discharge events occurred from Discharge Point No. 002. The following table presents the dates on which the discharges occurred and the volume of effluent discharged.

Table F-3. Discharges to Mare Island Strait

Date	Total Discharge Event Volume (million gallons)	Total Annual Volume (million gallons)
01/04/08	7.1	25.3
01/05/08	1.6	
01/25/08	7.8	
01/26/08	4.7	
01/27/08	4.1	
02/22/09	1.3	11.5
02/23/09	0.8	
03/03/09	4.3	
03/04/09	0.4	
03/05/09	2.5	
10/13/09	2.2	
01/19/10	13.1	43.2
01/20/10	12.0	
01/21/10	12.4	
01/22/10	1.3	
06/23/10	2.1	
12/19/10	2.3	

C. Summary of Existing Requirements and Self-Monitoring Report Data

Effluent limitations applicable to Discharge Point Nos. 001 and 002 contained in the previous Order (Order No. R2-2006-0056), as amended by Order No. R2-2010-0054 (which implements copper and cyanide site specific objectives), and representative monitoring data from the term of the previous Order are presented below.

Table F-4. Previous Effluent Limitations and Monitoring Data from Discharge Point Nos. 001 and 002

Parameter	Units	Effluent Limitations			Monitoring Data (From May 2007-November 2011)		
		Monthly Average	Weekly Average	Daily Maximum	Highest Monthly Average	Highest Weekly Average	Highest Daily Discharge
Carbonaceous Biochemical Oxygen Demand (5-day @ 20 Deg. C) (CBOD)	mg/L	25	40	---	15	22	---
Total Suspended Solids (TSS)	mg/L	30	45	---	19	22	---
pH	s.u.	6.0-9.0			6.4 - 7.8		
Oil and Grease	mg/L	10	---	20	5.7	---	7.1

Parameter	Units	Effluent Limitations			Monitoring Data (From May 2007-November 2011)		
Total Residual Chlorine	mg/L	---	---	0.0	---	---	ND
Copper[1]	µg/L	66	--	49	9.6	---	10
Cyanide[2]	µg/L	19	--	40	4.8	---	4.8

Footnotes to Table F-4:

µg/L = micrograms per liter
mg/L = milligrams per liter
s.u. = Standard Units
MPN/100 mL = Most probable number/100 mL
ND = Non-Detect

(1) On January 6, 2009, USEPA approved site specific objectives for copper, making the previous Order's alternative copper effluent limitations effective, as shown in this table.

(2) On July 22, 2008, USEPA approved a cyanide site-specific objective for San Francisco Bay, making the previous Order's alternative cyanide effluent limitations effective, as shown in this table.

D. Compliance Summary

1. **Compliance with Numeric Effluent Limitations.** The Discharger violated its numeric effluent limitations seven times during the previous Order term, as described below.

   All of these violations were the result of a single acute toxicity episode. The Discharger's acute toxicity bioassays from December 4, 2006, to January 22, 2007, resulted in zero percent survival six times (December 4, 11, 18, and 26, 2006, and January 2 and 8, 2007), followed by a result of 80 percent survival on January 16, 2007, before recovering to 100 percent survival on January 22, 2007. Over this period, the Discharger violated the 11-sample median limitation of at least 90 percent survival twice (January 8 and 16, 2007), and the 11-sample 90th percentile limitation of at least 70 percent survival five times (December 11, 18, and 26, 2006; January 2 and 8, 2007).

   The Discharger started accelerated monitoring consisting of weekly acute toxicity bioassays after the initial bioassay failure, continuing through February 5, 2007, before returning to routine monthly bioassays. The Discharger also contracted Pacific Ecorisk laboratory to do a Toxicity Identification Evaluation (TIE) after the December 18, 2006, bioassay. The TIE ended when bioassay results returned to normal, and the Discharger submitted a final report on March 20, 2007. The TIE concluded that the toxicity was mainly due to ammonia, although another toxicant may have been present. Ammonia levels were higher than normal over this period, but still within permit limitations. CBOD and TSS levels were also higher than normal, but still within permit limitations, and may also have contributed. The Discharger's analyses for priority and CTR pollutants found nothing unusual. The Discharger reported no impacts to the receiving waters as a result of the increased ammonia, CBOD, and TSS levels.

   In its final report, the Discharger attributed the higher than normal ammonia, CBOD, and TSS levels to modifications made to the biotowers from May to August 2006. The biotower modifications included new top layers of biotower media, new distribution arms, and domed covers. After the modifications were completed, the biotowers took several months to redevelop a microorganism population adequate for normal CBOD, TSS, and ammonia removal. The report indicated that CBOD and TSS levels decreased at the end of December

2006, while ammonia levels decreased in January 2007, consistent with bioassay results returning to compliance.

The acute toxicity effluent violations are not subject to mandatory minimum penalties because the previous Order included pollutant-specific water quality-based effluent limitations for toxic pollutants. No further enforcement action was taken because the Discharger's response to the acute toxicity episode was appropriate and timely.

3. **Compliance with Monitoring Requirements.** The Discharger also had two minor monitoring violations during the term of the previous Order. The Discharger missed the required odor monitoring in July 2008; and did not collect a fecal coliform sample during a short (12-minute) discharge of blended effluent to Carquinez Strait on December 28, 2010. The Regional Water Board took informal enforcement in both cases.

E. Planned Changes

The Discharger plans to investigate the possibility of discharging to the Mare Island Strait outfall (Discharge Point 002) under year-round conditions. This would require improvement of the Mare Island Strait outfall to continue to achieve a dilution ratio of 26:1 at design effluent flows. Approval by the Executive Officer would be required to begin discharging to Mare Island Strait year-round. The Discharger plans to study the technical and financial feasibility of this project further before implementing it.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the requirements and authorities described in this section.

A. Legal Authorities

This Order is issued pursuant to Clean Water Act (CWA) section 402 and implementing regulations adopted by USEPA, and CWC Chapter 5.5, Division 7 (commencing with section 13370). It serves as an NPDES permit for point source discharges from the Facility to surface waters. This Order also serves as WDRs pursuant to CWC Article 4, Chapter 4, Division 7 (commencing with section 13260).

B. California Environmental Quality Act (CEQA)

Under CWC section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans.** The *Water Quality Control Plan for the San Francisco Bay Basin* (hereinafter Basin Plan) is the Regional Water Board's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes implementation programs to achieve water quality objectives. The Basin Plan was adopted by the Regional Water Board, and approved by the State Water Resources Control Board (State Water

Board), the Office of Administrative Law, and USEPA. Requirements of this Order implement the Basin Plan.

The Basin Plan 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. Because of marine influence, total dissolved solids levels in Carquinez Strait exceed 3,000 milligrams per liter (mg/L) and thereby meet an exception to State Water Board Resolution No. 88-63. The MUN designation therefore does not apply to Carquinez Strait and Mare Island Strait.

The State Water Board's *Water Quality Control Plan for Enclosed Bays and Estuaries—Part 1, Sediment Quality* became effective on August 25, 2009. This plan supersedes other narrative sediment quality objectives, and establishes new sediment quality objectives and related implementation provisions for specifically defined sediments in most bays and estuaries.

Table F-5 lists the beneficial uses of Carquinez Strait and Mare Island Strait specifically identified in the Basin Plan.

Table F-5. Basin Plan Beneficial Uses of Carquinez Strait

Discharge Point No.	Receiving Water Name	Beneficial Uses
001	Carquinez Strait	Industrial Service Supply (IND) Ocean Commercial and Sport Fishing (COMM) Estuarine Habitat (EST) Fish Migration (MIGR) Preservation of Rare and Endangered Species (RARE) Fish Spawning (SPWN) Wildlife Habitat (WILD) Water Contact Recreation (REC1) Non-contact water Recreation (REC2) Navigation (NAV)
002	Mare Island Strait	Ocean Commercial and Sport Fishing (COMM) Estuarine Habitat (EST) Fish Migration (MIGR) Preservation of Rare and Endangered Species (RARE) Wildlife Habitat (WILD) Water Contact Recreation (REC1) Non-contact water Recreation (REC2) Navigation (NAV)

2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on December 22, 1992, and amended it on May 4, 1995, and November 9, 1999. About 40 criteria in the NTR applied in California. On May 18, 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that apply in the State. USEPA amended the CTR on February 13, 2001. These rules contain water quality criteria for priority toxic pollutants.

3. **State Implementation Policy.** On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (hereinafter State Implementation Policy or SIP). The SIP became effective on April 28, 2000, with respect to the priority pollutant criteria USEPA promulgated for California through the NTR and the priority pollutant objectives the Regional Water Board established in the Basin Plan. The SIP became effective on May 18, 2000, with respect to the priority pollutant criteria USEPA promulgated through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005, that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

4. **Alaska Rule.** On March 30, 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards become effective for CWA purposes (40 CFR 131.21, 65 Fed. Reg. 24641 [April 27, 2000]). Under the revised regulation (also known as the Alaska Rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000, may be used for CWA purposes, whether or not approved by USEPA.

5. **Stringency of Requirements for Individual Pollutants.** This Order contains both technology-based and water quality based effluent limitations for individual pollutants. Derivation of these technology-based limitations is discussed in this Fact Sheet. This Order's technology-based pollutant restrictions implement the minimum applicable federal technology-based requirements and the requirements of the Basin Plan. In addition, this Order contains effluent limitations more stringent than the minimum federal technology-based requirements as necessary to meet water quality standards.

   Water Quality Based Effluent Limits (WQBELs) have been derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant WQBELs were derived from the CTR, the CTR is the applicable standard pursuant to 40 CFR 131.38. The procedures for calculating individual WQBELs for priority pollutants are based on the SIP, which was approved by USEPA on May 18, 2000. All beneficial uses and water quality objectives contained in the Basin Plan were approved under State law and submitted to USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for the purposes of the CWA" pursuant to 40 CFR 131.21(c)(1).

6. **Antidegradation Policy.** NPDES regulations at 40 CFR 131.12 require that State water quality standards include an antidegradation policy consistent with federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16, which incorporates federal antidegradation policy where it applies under federal law and requires that existing water quality be maintained unless degradation is justified based on specific findings. The Basin Plan incorporates by reference both State and federal antidegradation policies.

7. **Anti-Backsliding Requirements.** CWA sections 402(o)(2) and 303(d)(4) and 40 CFR 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. All limitations and requirements of this Order are consistent with CWA anti-backsliding requirements.

D. Impaired Water Bodies on CWA 303(d) List

On June 28, 2007, USEPA gave final approval to a list of impaired water bodies 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. In November 2010, USEPA partially approved an updated 303(d) list. Where it has not done so already, the Regional Water Board plans to adopt Total Maximum Daily Loads (TMDLs) for water bodies 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 water bodies. Mare Island Strait does not appear on the list of impaired water bodies. Carquinez Strait appears on the list for the following parameters: chlordane, DDT, dieldrin, dioxin compounds (including 2,3,7,8-TCDD), furan compounds, invasive species, mercury, PCBs, dioxin-like PCBs, and selenium. TMDLs have been established for mercury and PCBs. Facility mercury and PCB discharges are regulated by Regional Water Board Order No. R2-2007-0077, which implements the mercury and PCBs TMDLs.

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 that are discharged into waters of the United States. Control of pollutants is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the NPDES regulations: 40 CFR 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 CFR 122.44(d) requires that permits include WQBELs to attain and maintain applicable numeric and narrative water quality objectives to protect receiving water beneficial uses.

Several specific factors affecting the development of limitations and requirements in this Order are discussed below.

A. Discharge Prohibitions

1. **Discharge Prohibition III.A (Discharge of treated wastewater at a location or in a manner different from that described in this Order is prohibited):** This prohibition is based on 40 CFR 122.21(a), duty to apply, and CWC section 13260, which requires filing a Report of Waste Discharge before discharges can occur. Discharges not described in the permit application and Report of Waste Discharge, and subsequently in this Order, are prohibited.

2. **Discharge Prohibition III.B (Minimum initial dilution of 26:1):** This Order allows a dilution credit of 26:1 in the calculation of one or more WQBELs, based on information of dilution achieved by the Discharger's current outfall to Mare Island Strait. This prohibition is necessary to ensure that the assumptions used to derive the dilution credit remain substantially the same so that the limitations are protective of water quality.

3. **Discharge Prohibition III.C (No bypass or overflow of untreated or partially treated wastewaters):** This prohibition is based on 40 CFR 122.41(m) and has been retained from the previous Order. This prohibition allows bypass of peak wet weather flows above 30 MGD that are recombined with secondary treatment flows and discharged at EFF-001, which meets the conditions at 40 CFR 122.41(m)(4)(i)(A)-(C) as detailed below.

   During significant storm events, high flows can overwhelm certain parts of the wastewater treatment process and may cause damage or failure of the system. Operators of wastewater treatment plants must manage these high flows to both ensure the continued operation of the treatment process and to prevent backups and overflows of raw wastewater in basements or on city streets. USEPA recognizes that peak wet weather flow diversions around secondary treatment units at publically owned treatment works serving separate sanitary sewer conveyance systems may be necessary in some circumstances.

   In December 2005, USEPA invited public comment on its *Proposed Peak Wet Weather Policy*, which provides interpretation of 40 CFR 122.41(m) and guidance by which wet weather diversions in NPDES permits may be approved by the Regional Water Board (retrievable at http://cfpub.epa.gov/npdes/wetweather.cfm). This proposed policy would require that discharges still meet all the requirements of NPDES permits, and encourages municipalities to make investments in ongoing maintenance and capital improvements to improve their system's long-term performance.

   USEPA's *Proposed Peak Wet Weather Policy* states, "If the criteria of 40 CFR 122.41(m)(4)(i)(A)-(C) are met, the Regional Water Board can approve peak wet weather diversions that are not recombined with flow from the secondary treatment units." Based upon the following information, the Discharger's anticipated bypass meets the criteria in 40 CFR 122.41(m)(4)(i)(A)-(C); therefore, this Order contains conditional approval for the discharge of blended wastewater.

   (A) Bypass unavoidable to prevent loss of life, personal injury, or severe property damage. The Discharger evaluated all feasible alternatives to bypasses and determined that, with peak wet weather flows above 35 MGD, bypasses are unavoidable to prevent backups and overflow of raw sewage in basements or on city streets, which could result in severe property damage or personal injury.

   (B) No feasible alternatives to bypass. In 1988, the Discharge initiated a program to manage its wet weather flows in a cost-effective manner to protect public health and water quality, and accelerated this program in 1999. In 2000, the Discharger submitted a comprehensive analysis of its existing facilities to the Regional Water Board (Engineering Feasibility Study, October 2000, Carollo Engineers), and subsequently developed and implemented a program to reduce wet weather flows. The Discharger implemented capital improvement projects at a cost of $60 million for construction of new storage basins, increased capacity for wet weather treatment, and reduction of inflow/infiltration throughout the collection system. In 2003, the Discharger completed improvements to the secondary treatment process units, increasing the wet weather secondary capacity from 30 MGD to 35 MGD. In 2006, the Discharger completed the Ryder Street Storage Basin, an 8.6 million gallon storage facility to prevent sanitary overflows. The Ryder Street Storage Basin may also be used to equalize flows to the

treatment plant under certain conditions and reduce the occurrences of wet weather diversions around secondary treatment.

As part of the Discharger's Report of Waste Discharge, the Discharger submitted a *No Feasible Alternatives Analysis*, dated March 30, 2011. The analysis is consistent with USEPA's draft policy.

Since 2005, the Discharger has invested $12 million in replacing and rehabilitating portions of its collection system in order to maintain the system in working order and reduce the magnitude of infiltration and inflow experienced in the system. The Discharger has committed to an additional annual expenditure of $1.25 million to further rehabilitate the collection system.

(C) Notice provided at least ten days before bypass. The Discharger has submitted notice to the Regional Water Board as required under Federal Standard Provision – Permit Compliance I.G.5

4. **Discharge Prohibition III.D (Average dry weather flow not to exceed dry weather design flow):** This prohibition is based on the historic and tested reliable treatment capacity of the Facility. Exceedance of the Facility's average dry weather design flow, as described in Table F-1 of this Fact Sheet, may result in lowering the reliability of achieving compliance with water quality requirements unless the Discharger demonstrates otherwise through an antidegradation study.

5. **Discharge Prohibition III.E (No sanitary sewer overflows to waters of the United States):** Basin Plan Discharge Prohibition No. 15 (Basin Plan Table 4-1) and the CWA prohibit the discharge of wastewater to surface waters except as authorized under an NPDES permit. Publicly-owned treatment works must achieve secondary treatment standards, at a minimum, and any more stringent limitations necessary to achieve water quality standards (33 U.S.C. § 1311[b][1][B and C]). Therefore, a sanitary sewer overflow that results in the discharge of raw sewage, or sewage not meeting secondary treatment requirements, to surface waters is prohibited under the CWA and the Basin Plan.

B. Technology-Based Effluent Limitations

1. Scope and Authority

CWA section 301(b) requires USEPA to develop secondary treatment standards (the level of effluent quality attainable through application of secondary or equivalent treatment) for publicly-owned treatment works. USEPA promulgated its technology-based effluent guidelines at 40 CFR 133. These secondary treatment regulations include the following minimum requirements for publicly owned treatment works that apply to this discharge. At the option of the permitting authority, effluent limitations for CBOD may be substituted for limitations for BOD.

Table F-6 Secondary Treatment Requirements

Parameter	Units	30-Day Average	7-Day Average
CBOD[(1)]	mg/L	25	40
TSS	mg/L	30	45
CBOD and TSS	% Removal	85	--
pH	Standard units	6.0 – 9.0	

Footnotes to Table F-6:

(1) The requirements for CBOD are substituted in lieu of the requirements for BOD (30 mg/L 30-day average and 45 mg/L 7-day average). This is consistent with secondary treatment standards in 40 CFR 133 and Basin Plan Table 4-2.

2. Effluent Limitations for Conventional and Non-Conventional Pollutants

This Order retains the effluent limitations for conventional and non-conventional pollutants from the previous Order. The basis for these limitations is explained below.

a. **CBOD and TSS.** Secondary treatment standards from 40 CFR 133 for CBOD and TSS, including the 85 percent removal requirement, are technologically feasible for secondary wastewater treatment technologies. NPDES regulations at 40 CFR 122.45(d) specify that discharge limitations for publically-owned treatment works are to be stated as average weekly limitations and average monthly limitations, unless impracticable. CBOD and TSS effluent limitations are representative of the level of treatment the Plant should be able to meet. Therefore, the average monthly percent removal of CBOD and TSS is not to be less than 85 percent. These technology-based limitations are the same as the previous Order.

b. **pH.** The effluent limitations for pH are based on secondary treatment standards from 40 CFR 133 and on Basin Plan Table 4-2 for deep water dischargers. These limitations are the same as the previous Order.

c. **Total Residual Chlorine.** The residual chlorine effluent limitation is based on Basin Plan Table 4-2 and is consistent with the previous Order. The allowance for determination of false positives using continuous devices is based on the fact that continuous instruments occasionally will have anomalous spikes, and it is chemically improbable to have free chlorine present in the presence of sodium bisulfite.

d. **Oil and Grease.** The oil and grease effluent limitations are required by Basin Plan section 4.5.5.1 and Basin Plan Table 4-2 for all discharges to inland surface waters and enclosed bays and estuaries of the San Francisco Bay Region. These limitations are the same as the previous Order.

e. **Enterococcus Bacteria.** The enterococcus bacteria effluent limitation is based on Basin Plan Table 4-2A

C. Water Quality-Based Effluent Limitations (WQBELs)

WQBELs have been derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal

law. USEPA also approved the SIP procedures for calculating individual WQBELs prior to May 1, 2001. USEPA approved the Basin Plan provisions for calculating WQBELs on May 29, 2000. Most beneficial uses and Basin Plan water quality objectives were approved under State law and submitted to and approved by USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the [Clean Water] Act" pursuant to 40 CFR 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than those required by CWA water quality standards.

1. Scope and Authority

a. NPDES regulations at 40 CFR 122.44(d)(1)(i) require permits to include WQBELs for pollutants, including toxicity, that are or may be discharged at levels that cause, have Reasonable Potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. As specified in 40 CFR 122.44(d)(1)(i), permits are required to include WQBELs for all pollutants "which the Director determines are or may be discharged at a level that will cause, have the Reasonable Potential to cause, or contribute to an excursion above any State water quality standard."

The process for determining "Reasonable Potential" and calculating WQBELs when necessary is intended (1) to protect the receiving water beneficial uses as specified in the Basin Plan, and (2) to achieve applicable water quality objectives contained in the CTR, NTR, and Basin Plan.

b. NPDES regulations and the SIP provide the basis to establish Maximum Daily Effluent Limitations (MDELs).

(1) NPDES Regulations. NPDES regulations at 40 CFR 122.45(d) state, "For continuous discharges all permit effluent limitations, standards, and prohibitions, including those necessary to achieve water quality standards, shall *unless impracticable* be stated as maximum daily and average monthly discharge limitations for all discharges other than publicly owned treatment works."

(2) SIP. SIP section 1.4 requires that WQBELs be expressed as MDELs and average monthly effluent limitations (AMELs).

c. MDELs are necessary in this Order to protect against acute water quality effects. The MDELs prevent fish kills or mortality to aquatic organisms.

2. Applicable Beneficial Uses and Water Quality Objectives

The water quality objectives that apply to the receiving waters for this discharge are from the Basin Plan; the CTR, established by USEPA at 40 CFR 131.38; and the NTR, established by USEPA at 40 CFR 131.36. Some pollutants have water quality objectives established by more than one of these sources.

a. Basin Plan. The Basin Plan specifies numeric water quality objectives for 10 priority toxic pollutants, as well as narrative water quality objectives for toxicity and

bioaccumulation in order to protect beneficial uses. The pollutants for which the Basin Plan specifies numeric objectives are arsenic, cadmium, chromium (VI), copper in marine and freshwater, lead, mercury, nickel, silver, zinc, and cyanide. The narrative toxicity objective states, in part, "All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms." The bioaccumulation objective states, in part, "Controllable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life. Effects on aquatic organisms, wildlife, and human health will be considered." Effluent limitations and provisions contained in this Order are based on available information designed to implement these water quality objectives.

b. **CTR.** The CTR specifies numeric aquatic life criteria for 23 priority toxic pollutants and numeric human health criteria for 57 priority toxic pollutants. These criteria apply to all inland surface waters and enclosed bays and estuaries of the San Francisco Bay Region, although Basin Plan Tables 3-3 and 3-4 include numeric water quality objectives for certain of these priority toxic pollutants that supersede the CTR criteria (except in the South Bay south of the Dumbarton Bridge). Human health criteria are further identified as for consumption of "water and organisms" and "organisms only." Because the receiving waters are not designated for the MUN beneficial use, the CTR criteria applicable to "organisms only" are used for this RPA.

c. **NTR.** The NTR establishes numeric aquatic life criteria for selenium, numeric aquatic life and human health criteria for cyanide, and numeric human health criteria for 33 other toxic organic pollutants for waters of San Francisco Bay upstream to, and including, Suisun Bay and the Sacramento River-San Joaquin River Delta. This includes the receiving water for this Discharger.

d. **Basin Plan Receiving Water Salinity Policy.** The Basin Plan and CTR state that the receiving water salinity characteristics (i.e., freshwater vs. saltwater) are to be considered in determining the applicable water quality objectives. Freshwater criteria apply to discharges to waters with salinities equal to or less than one part per thousand (ppt) at least 95 percent of the time. Saltwater criteria apply to discharges to waters with salinities equal to or greater than 10 ppt at least 95 percent of the time in a normal water year. For discharges to waters with salinities in between these two categories, or tidally influenced fresh waters that support estuarine beneficial uses, the criteria shall be the lower of the salt or freshwater criteria (the freshwater criteria for some metals are calculated based on ambient hardness) for each substance.

The receiving waters for Discharge Point Nos. 001 and 002, Carquinez Strait and Mare Island Strait, are estuarine environments based on salinity data generated through the Regional Monitoring Program (RMP) at Napa River (BD50) sampling station between 1993 and 2001. In that period, the receiving water's minimum salinity was 0 ppt, its maximum salinity was 20 ppt, and its average salinity was 9.0 ppt. Because the salinity was greater than 10 ppt in 44 percent of receiving water samples and less than 1 ppt in 19 percent of receiving water samples, the objectives for saltwater and freshwater from the Basin Plan, NTR, and CTR apply to this discharge and were used for the Reasonable Potential analysis.

e. **Receiving Water Hardness.** The Discharger sampled the receiving water near Discharge Point Nos. 001 and 002 from March 2003 through November 2005. The minimum hardness observed during this period was 470 mg/L as $CaCO_3$. These findings are consistent with hardness values collected by the RMP at Napa River (BD50) since April 1999. To calculate the water quality objectives for hardness dependent metals, a hardness of 400 mg/L as $CaCO_3$ was used, as this is the maximum hardness the CTR recommends.

f. **Site-Specific Metal Translators.** NPDES regulations at 40 CFR 122.45(c) require effluent limitations for metals to be expressed as total recoverable metal. Since water quality objectives for metals are typically expressed in the dissolved form, translators must be used to convert metals concentrations from dissolved to total recoverable and vice versa. In the CTR, USEPA establishes default translators that may be used in NPDES permits. However, site-specific conditions, such as water temperature, pH, suspended solids, and organic carbon, greatly impact the form of metal (dissolved, filterable, or otherwise) present in the water and therefore available to cause toxicity. In general, the dissolved form is most available and more toxic to aquatic life than filterable forms. Site-specific translators can be developed to account for site-specific conditions, thereby preventing exceedingly stringent or under protective water quality objectives.

Basin Plan Table 7.2.1-2 establishes site-specific metal translators for copper for deep water discharges north of the Dumbarton Bridge. Site-specific nickel translators are available for deep water discharges to San Francisco Bay (*North of Dumbarton Bridge Copper and Nickel Development and Selection of Final Translators* [2005]). These translators are based on samples from four sampling events at thirteen stations between 2000 and 2001. The previous Order included nickel translators based on this translator study. This Order retains the site-specific translators from the previous Order for nickel and uses site-specific metal translators for copper from Basin Plan Table 7.2.1-2, as shown in Table F-7, below.

Table F-7. Site-Specific Metal Translators

Constituent	AMEL Translator	MDEL Translator
Copper	0.38	0.66
Nickel	0.27	0.57

g. **Sediment Quality Objectives.** The *Water Quality Control Plan for Enclosed Bays and Estuaries—Part 1, Sediment Quality* contains a narrative water quality objective: "Pollutants in sediments shall not be present in quantities that, alone or in combination, are toxic to benthic communities in bays and estuaries of California." This water quality objective is to be implemented by integrating three lines of evidence: sediment toxicity, benthic community condition, and sediment chemistry. The Policy requires that if the Regional Water Board determines that a discharge has Reasonable Potential to cause or contribute to an exceedance of this water quality objective, it is to impose the water quality objective as a receiving water limit.

3. Determining the Need for WQBELs

Assessing whether a pollutant has Reasonable Potential is the fundamental step in determining whether or not a WQBEL is required.

a. **Reasonable Potential Analysis (RPA).** For priority pollutants and most other toxic pollutants, the RPA identifies the observed maximum effluent concentration (MEC) for each pollutant based on effluent concentration data. There are three triggers in determining Reasonable Potential according to SIP section 1.3.

(1) The first trigger is activated if the MEC is greater than the lowest applicable water quality objective (MEC ≥ water quality objective), which has been adjusted, if appropriate, for pH, hardness, and translator data. If the MEC is greater than the adjusted water quality objective, then that pollutant has Reasonable Potential, and a WQBEL is required.

(2) The second trigger (Trigger 2) is activated if the observed maximum ambient background concentration (B) is greater than the adjusted water quality objective (B > water quality objective) and the pollutant is detected in any of the effluent samples.

(3) The third trigger (Trigger 3) is activated if a review of other information determines that a WQBEL is required to protect beneficial uses, even though both MEC and B are less than the water quality objective. A limitation may be required under certain circumstances to protect beneficial uses.

b. **Effluent Data.** The Discharger's data for priority pollutants was analyzed along with the nature of the discharge to determine if the discharge has Reasonable Potential. The RPA was based on the effluent monitoring data collected from October 2006 through December 2010 at Monitoring Location EFF-001. Reasonable Potential and WQBELs developed on the basis of these data are applicable to both Discharge Point Nos. 001 and 002.

c. **Ambient Background Data.** Ambient background values are used in the RPA and in the calculation of effluent limitations. For the RPA, ambient background concentrations are the observed maximum detected water column concentrations. The SIP states that, for calculating WQBELs, ambient background concentrations are either the observed maximum ambient water column concentrations or, for objectives intended to protect human health from carcinogenic effects, the arithmetic mean of observed ambient water concentrations. The RMP station at Yerba Buena Island, located in the Central Bay, has been monitored for most of the inorganic (CTR constituent numbers 1–15) and some of the organic (CTR constituent numbers 16–126) toxic pollutants, and these data were used as background data in performing this RPA.

The RMP has not analyzed all the constituents listed in the CTR. On May 15, 2003, a group of several San Francisco Bay Region dischargers (known as the Bay Area Clean Water Agencies, or BACWA) submitted a collaborative receiving water study, entitled the *San Francisco Bay Ambient Water Monitoring Interim Report*. This study includes monitoring results from sampling events in 2002 and 2003 for the remaining priority pollutants not monitored by the RMP. The RPA was conducted and the WQBELs were calculated using RMP data from 1993 through 2008 for inorganics and organics at the Yerba Buena Island RMP station, and additional data from *Ambient Water Monitoring: Final CTR Sampling Update Report* (BACWA, June 15, 2004).

d. Reasonable Potential Determination. The MECs, most stringent applicable water quality objectives, and background concentrations used in the RPA are presented below, along with the RPA result (yes or no) for each pollutant analyzed. Reasonable Potential was not determined for all pollutants because water quality objectives do not exist for all pollutants and monitoring data was not available for others. The RPA determined that cyanide and ammonia demonstrate Reasonable Potential by Trigger 1. Copper and Dioxin TEQ have Reasonable Potential by Trigger 3.

Table F-8. Summary of RPA Results

CTR #	Priority Pollutants	MEC or Minimum DL [1],[2] (µg/L)	Governing Water Quality Objective (WQO)/WQC (µg/L)	Maximum Background or Minimum DL [1],[2] (µg/L)	RPA Results [3]
1	Antimony	0.6	4,300	1.8	No
2	Arsenic	2	36	2.5	No
3	Beryllium	<0.006	No Criteria	0.22	Uo - No Criteria
4	Cadmium	0.09	3.37	0.13	No
5a	Chromium (III)	1.5	644	Not Available	No
5b	Chromium (VI)	1.5	11	4.4	No
6	**Copper**	**10**	**14.2**	**2.5**	**Yes[4]**
7	Lead	0.5	8.5	0.8	No
9	Nickel	4.3	30	3.7	No
8	Mercury (303d listed)[5]	--	--	--	--
10	Selenium (303d listed)	2	5	0.39	No
11	Silver	0.3	2.2	0.052	No
12	Thallium	0.1	6.3	0.21	No
13	Zinc	26	86	5.1	No
14	**Cyanide**	**4.8**	**2.9**	**<0.4**	**Yes**
15	Asbestos	Not Available	No Criteria	Not Available	Uo - No Criteria
16	2,3,7,8-TCDD (Dioxin) (303d listed)	$<2.1x10^{-7}$	$1.4x10^{-8}$	$2.7x10^{-8}$	No[5]
	Dioxin TEQ (303d listed)	**$<5x10^{-6}$**	**$1.4x10^{-8}$**	**$5.3x10^{-8}$**	**Yes**
17	Acrolein	<0.5	780	<0.50	No
18	Acrylonitrile	<0.58	0.66	0.03	No
19	Benzene	<0.03	71	<0.05	No
20	Bromoform	0.2	360	<0.5	No
21	Carbon Tetrachloride	<0.04	4.4	0.06	No
22	Chlorobenzene	<0.03	21,000	<0.5	No
23	Chlorodibromomethane	0.22	34	<0.05	No
24	Chloroethane	<0.03	No Criteria	<0.5	Uo - No Criteria
25	2-Chloroethylvinyl Ether	<0.1	No Criteria	<0.5	Uo - No Criteria
26	Chloroform	1.9	No Criteria	<0.5	Uo - No Criteria
27	Dichlorobromomethane	0.6	46	<0.05	No
28	1,1-Dichloroethane	<0.04	No Criteria	<0.05	Uo - No Criteria
29	1,2-Dichloroethane	<0.04	99	0.04	No
30	1,1-Dichloroethylene	<0.07	3.2	<0.5	No
31	1,2-Dichloropropane	<0.03	39	<0.05	No
32	1,3-Dichloropropylene	<0.03	1,700	<0.5	No
33	Ethylbenzene	<0.04	29,000	<0.5	No
34	Methyl Bromide	<0.06	4,000	<0.5	No
35	Methyl Chloride	0.2	No Criteria	<0.5	Uo - No Criteria
36	Methylene Chloride (Dichloromethane)	0.28	1,600	22	No

CTR #	Priority Pollutants	MEC or Minimum DL [1],[2] (µg/L)	Governing Water Quality Objective (WQO)/WQC (µg/L)	Maximum Background or Minimum DL [1],[2] (µg/L)	RPA Results [3]
37	1,1,2,2-Tetrachloroethane	<0.04	11	<0.05	No
38	Tetrachloroethylene	<0.04	8.85	<0.05	No
39	Toluene	2.8	200,000	<0.3	No
40	1,2-Trans-Dichloroethylene	<0.06	140,000	<0.5	No
41	1,1,1-Trichloroethane	<0.03	No Criteria	<0.5	Uo - No Criteria
42	1,1,2-Trichloroethane	<0.05	42	<0.05	No
43	Trichloroethylene	<0.05	81	<0.5	No
44	Vinyl Chloride	<0.06	525	<0.5	No
45	Chlorophenol	<0.7	400	<1.2	No
46	2,4-Dichlorophenol	<0.7	790	<1.3	No
47	2,4-Dimethylphenol	<0.8	2,300	<1.3	No
48	2-Methyl-4,6-Dinitrophenol	<0.6	765	<1.2	No
49	2,4-Dinitrophenol	<0.6	14,000	<0.7	No
50	2-Nitrophenol	<0.6	No Criteria	<1.3	Uo - No Criteria
51	4-Nitrophenol	<0.6	No Criteria	<1.6	Uo - No Criteria
52	3-Methyl-4-Chlorophenol	<0.6	No Criteria	<1.1	Uo - No Criteria
53	Pentachlorophenol	<0.6	7.9	<1	No
54	Phenol	<0.6	4,600,000	<1.3	No
55	2,4,6-Trichlorophenol	<0.6	6.5	<1.3	No
56	Acenaphthene	<0.03	2,700	0.0019	No
57	Acenaphthylene	<0.02	No Criteria	0.0013	Uo - No Criteria
58	Anthracene	<0.02	110,000	0.00059	No
59	Benzidine	<1	0.00054	<0.0015	No
60	Benzo(a)Anthracene	<0.02	0.049	0.0053	No
61	Benzo(a)Pyrene	0.03	0.049	0.0033	No
62	Benzo(b)Fluoranthene	0.03	0.049	0.0046	No
63	Benzo(ghi)Perylene	<0.02	No Criteria	0.0045	Uo - No Criteria
64	Benzo(k)Fluoranthene	0.03	0.049	0.0018	No
65	Bis(2-Chloroethoxy)Methane	<0.7	No Criteria	<0.3	Uo - No Criteria
66	Bis(2-Chloroethyl)Ether	<0.8	1.4	<0.3	No
67	Bis(2-Chloroisopropyl)Ether	<0.6	170,000	Not Available	No
68	Bis(2-Ethylhexyl)Phthalate	5.5	5.9	<0.00015	No
69	4-Bromophenyl Phenyl Ether	<0.8	No Criteria	<0.23	Uo - No Criteria
70	Butylbenzyl Phthalate	1.6	5,200	0.0056	No
71	2-Chloronaphthalene	<0.9	4,300	<0.3	No
72	4-Chlorophenyl Phenyl Ether	<0.9	No Criteria	<0.3	Uo - No Criteria
73	Chrysene	<0.02	0.049	0.0028	No
74	Dibenzo(a,h)Anthracene	<0.02	0.049	0.00064	No
75	1,2-Dichlorobenzene	<0.9	17,000	<0.3	No
76	1,3-Dichlorobenzene	<0.8	2,600	<0.3	No
77	1,4-Dichlorobenzene	<0.7	2,600	<0.3	No
78	3,3-Dichlorobenzidine	<0.6	0.077	<0.001	No
79	Diethyl Phthalate	<0.6	120,000	<0.21	No
80	Dimethyl Phthalate	<0.7	2,900,000	<0.21	No
81	Di-n-Butyl Phthalate	<0.6	12,000	0.016	No
82	2,4-Dinitrotoluene	<0.6	9.1	<0.27	No
83	2,6-Dinitrotoluene	<0.6	No Criteria	<0.29	Uo - No Criteria
84	Di-n-Octyl Phthalate	2.5	No Criteria	<0.38	Uo - No Criteria
85	1,2-Diphenylhydrazine	<0.6	0.54	0.0037	No[5]
86	Fluoranthene	0.02	370	0.011	No

CTR #	Priority Pollutants	MEC or Minimum DL [1],[2] (µg/L)	Governing Water Qnality Objective (WQO)/WQC (µg/L)	Maximum Background or Minimum DL [1],[2] (µg/L)	RPA Resnlts [3]
87	Fluorene	<0.02	14,000	0.0021	No
88	Hexachlorobenzene	<0.7	0.00077	0.000022	No
89	Hexachlorobutadiene	<0.7	50	<0.3	No
90	Hexachlorocyclopentadiene	<0.8	17,000	<0.3	No
91	Hexachloroethane	<0.6	8.9	<0.2	No
92	Indeno(1,2,3-cd) Pyrene	<0.02	0.049	0.0040	No
93	Isophorone	<0.7	600	<0.3	No
94	Naphthalene	<0.02	No Criteria	0.013	Uo - No Criteria
95	Nitrobenzene	<0.7	1,900	<0.25	No
96	N-Nitrosodimethylamine	<0.8	8.1	<0.3	No
97	N-Nitrosodi-n-Propylamine	<0.6	1.4	<0.001	No
98	N-Nitrosodiphenylamine	<0.6	16	<0.001	No
99	Phenanthrene	<0.03	No Criteria	0.0095	Uo - No Criteria
100	Pyrene	<0.02	11,000	0.019	No
101	1,2,4-Trichlorobenzene	<0.8	No Criteria	<0.3	Uo - No Criteria
102	Aldrin	<0.002	0.00014	$2.8x10^{-6}$	No
103	alpha-BHC	<0.002	0.013	0.00050	No
104	beta-BHC	<0.002	0.046	0.00041	No
105	gamma-BHC (Lindane)	<0.002	0.063	0.00070	No
106	delta-BHC	<0.002	No Criteria	0.000053	Uo - No Criteria
107	Chlordane (303d listed)	<0.002	0.00059	0.00018	No
108	4,4-DDT (303d listed)	<0.005	0.00059	0.00017	No
109	4,4-DDE	<0.003	0.00059	0.00069	No
110	4,4-DDD	<0.003	0.00084	0.00031	No
111	Dieldrin (303d listed)	<0.003	0.00014	0.00026	No
112	alpha-Endosulfan	<0.003	0.0087	0.000031	No
113	beta-Endosulfan	<0.003	0.0087	0.000069	No
114	Endosulfan Sulfate	<0.002	240	0.000082	No
115	Endrin	<0.002	0.0023	0.000040	No
116	Endrin Aldehyde	<0.002	0.81	Not Available	No
117	Heptachlor	<0.003	0.00021	0.000019	No
118	Heptachlor Epoxide	<0.002	0.00011	0.000094	No
126	Toxaphene	<0.19	0.0002	Not Available	No
119-125	PCBs sum (303d listed)[5]	--	--	--	--
	Chlorpyrifos	<0.02	0.014	Not Available	No
	Diazinon	<0.02	0.82	Not Available	No
	Tributyltin	<0.00017	0.0074	0.0022	No
	Total PAHs	Not Available	15	0.084	Cannot Determine
	Total Ammonia (mg/L N)	**32**	**1.7**	**0.19**	**Yes**

CTR #	Priority Pollutants	MEC or Minimum DL [1],[2] (µg/L)	Governing Water Quality Objective (WQO)/WQC (µg/L)	Maximum Background or Minimum DL [1],[2] (µg/L)	RPA Results [3]

Footnotes to Table F-8:

(1) The MEC or maximum background concentration is the actual detected concentration unless there is a "<" sign before it, in which case the value shown is the minimum detection level.

(2) The MEC or maximum background concentration is "Not Available" when there are no monitoring data for the constituent.

(3) RPA Results = Yes, if MEC => WQO/WQC, or B > WQO/WQC and MEC is detected;

= No, if MEC and B are < WQO/WQC or all effluent data are undetected;

= Undetermined (Uo), if no criteria have been promulgated;

= Cannot Determine, if there are insufficient data.

(4) Basin Plan section 7.2.2.2 requires that individual NPDES permits for municipal and industrial wastewater treatment facilities include copper WQBELs.

(5) SIP section 1.3 excludes from its RPA procedure priority pollutants for which a TMDL has been developed. TMDLs have been developed for mercury and PCBs in San Francisco Bay. Mercury and PCBs from wastewater discharges are regulated by NPDES Permit No. CA0038849 (currently Regional Water Board Order No. R2-2007-0077), which implements the San Francisco Bay Mercury and PCB TMDLs.

(6) The method detection limit used by the Discharger is greater than the applicable criteria; interim monitoring will be established.

(1) **Constituents with limited data.** In some cases, Reasonable Potential cannot be determined because effluent data are limited, or ambient background concentrations are unavailable. Provision VI.C.2.a of this Order requires the Discharger to continue to monitor effluent for these constituents using analytical methods that provide the best feasible detection limits. When additional data become available, further RPA will be conducted to determine whether to add numeric effluent limitations to this permit or to continue monitoring.

(2) **Pollutants with no Reasonable Potential.** WQBELs are not included in this Order for constituents that do not demonstrate Reasonable Potential; however, monitoring for such pollutants is still required. If concentrations of these constituents are found to have increased significantly, this Order requires the Discharger to investigate the sources of the increase (see Provision VI.C.2.a and Provision VI.C.3.b(3) of this Order). This Order also requires the Discharger to implement remedial measures if the increases pose a threat to water quality in the receiving water (see Provision VI.C.3.b(4) of this Order).

4. WQBEL Calculations

a. Pollutants with Reasonable Potential. WQBELs were developed for the pollutants that were determined to have Reasonable Potential to cause or contribute to water quality objective exceedances. The WQBELs were calculated based on water quality objectives and the procedures specified in SIP section 1.4. The water quality objectives used for each pollutant with Reasonable Potential are discussed below.

b. Dilution Credit. The Carquinez Strait and Mare Island Strait outfalls (Discharge Point Nos. 001 and 002) are designed to achieve a minimum initial dilution of 10:1. The Discharger's dilution study (*Mixing Zone Study Report, Vallejo Sanitation and Flood*

Control District, LimnoTech, March 22, 2011) estimated that discharges to Carquinez Strait and Mare Island Strait achieve initial dilutions of 41:1 and 26:1, respectively, within approximately 56 feet and 14 feet of the respective outfalls. Thus, the discharge generally achieves much greater than 10:1 dilution.

The SIP provides the basis for dilution credits. Based on review of RMP monitoring data for San Francisco Bay, there is variability in the receiving water, and the hydrology of the receiving water is very complex. Therefore, there is uncertainty associated with the representative nature of the appropriate ambient background data for effluent limitation calculations. Pursuant to SIP section 1.4.2.1, "dilution credit may be limited or denied on a pollutant-by-pollutant basis...." Therefore, a conservative 10:1 dilution credit for non-bioaccumulative priority pollutants (except ammonia) and zero dilution credit for bioaccumulative pollutants on the 303(d) list of impaired waters are necessary to protect beneficial uses. The detailed bases for each dilution credit are explained below.

(1) **Bioaccumulative Pollutants**. For certain bioaccumulative pollutants, dilution credit is significantly restricted or denied, based on available data on pollutant concentrations in aquatic organisms, sediment, and the water column. Specifically, these pollutants include chlordane, DDT, dieldrin, dioxin and furan compounds, mercury, PCBs, and selenium. These pollutants appear on the 303(d) list for Carquinez Strait.

Tissue samples taken from fish in San Francisco Bay show the presence of these pollutants at concentrations greater than screening levels (*Contaminant Concentrations in Fish from San Francisco Bay,* May 1997). The results of a 1994 San Francisco Bay pilot study, presented in *Contaminated Levels in Fish Tissue from San Francisco Bay* (Regional Water Board, 1994) also showed elevated levels of chemical contaminants in fish tissue. The Office of Environmental Health and Hazard Assessment (OEEHA) completed a preliminary review of the data in the 1994 report. In December 1994, the OEHHA issued an interim consumption advisory covering certain fish species in San Francisco Bay due to pollutant levels, including those of dioxins and furans, in fish tissue. OEHHA has updated this advisory by its May 2011 report *Health Advisory and Safe Eating Guidelines for San Francisco Bay Fish and Shellfish,* which still suggests insufficient assimilative capacity in San Francisco Bay for 303(d)-listed pollutants.

(2) **Non-Bioaccumulative Pollutants (Except Ammonia)**. For non-bioaccumulative pollutants, except ammonia, a conservative dilution credit of 10:1 (D = 9) has been assigned. The 10:1 credit is consistent with the previous Order and is based, in part, on Basin Plan Prohibition 1 (Table 4-1), which prohibits discharges with less than 10:1 dilution. SIP section 1.4.2 allows for limiting the dilution credit for the following reasons:

(a) SIP section 1.4.3 allows background conditions to be determined on a discharge-by-discharge or water body-by-water body basis. A water body-by-water body approach is taken here due to inherent uncertainties in characterizing ambient background conditions in a complex estuarine system on a discharge-by-discharge basis. The Yerba Buena Island RMP monitoring station, relative to other RMP

stations, fits SIP guidance criteria for establishing background conditions. Taken together with restrictions on dilution credits, a far-field background station is appropriate because San Francisco Bay is a very complex estuarine system with highly variable and seasonal upstream freshwater inflows and diurnal tidal saltwater inputs. The SIP requires that background water quality data be representative of the ambient receiving water that will mix with the discharge. Water quality data from the Yerba Buena Island monitoring station is representative of the water that will mix with the discharge.

(b) Because of the complex hydrology of San Francisco Bay, a mixing zone has not been established. There are uncertainties in accurately determining an appropriate mixing zone. The models used to predict dilution have not considered the three dimensional nature of San Francisco Bay currents resulting from the interaction of tidal flushes and seasonal fresh water outflows. Being heavier and colder than fresh water, ocean salt water enters San Francisco Bay on a twice-daily tidal cycle, generally beneath the warmer fresh water that flows seaward. When these waters mix and interact, complex circulation patterns occur due to varying densities of the fresh and ocean waters. The complex patterns occur throughout San Francisco Bay, but are most prevalent in the San Pablo Bay, Carquinez Strait, and Suisun Bay areas. The locations of this mixing and interaction change, depending on the strength of each tide. Additionally, sediment loads from the Central Valley change on a long-term basis, affecting the depth of different parts of San Francisco Bay, resulting in alteration of flow patterns, mixing, and dilution at the outfall.

(3) Ammonia. For ammonia, a conservative estimated actual initial dilution was used to calculate the effluent limitations. This is justified because ammonia, a non-persistent pollutant, quickly disperses and degrades to a non-toxic state, and cumulative toxicity effects are unlikely. In the Mixing Zone Study Report (Vallejo Sanitation and Flood Control District, 2011), the Discharger developed dilution estimates for the Facility's discharges from Discharge Point Nos. 001 and 002. The Facility has a dry weather design capacity of 15.5 MGD with an average dry weather discharge rate of 10.8 MGD. Flows are discharged from Discharge Point No. 001 until wet weather flows exceed 30 MGD. When wet weather flows exceed 30 MGD, the excess flow is discharged from Discharge Point No. 002. The study estimated the actual initial dilution ratio at Discharge Point No. 001 to be 41:1 (D = 40), and at Discharge Point No. 002 to be 26:1 (D = 25). Therefore, this Order establishes the more conservative dilution of 26:1 to achieve compliance with water quality objectives.

c. Development of WQBELs for Specific Pollutants

The following limits apply to both Discharge Points 001 and 002. They are calculated to be protective the receiving water at Discharge Point 002, where there is the least dilution.

(1) Cyanide

(a) Water Quality Objectives. The most stringent applicable water quality objectives for cyanide are the Basin Plan's site-specific chronic and acute marine water quality objectives, 2.9 µg/L and 9.4 µg/L, respectively.

(b) RPA Results. This Order establishes effluent limitations for cyanide because the MEC of 4.8 µg/L exceeds the most stringent applicable water quality objective, demonstrating Reasonable Potential by Trigger 1.

(c) WQBELs. WQBELs for cyanide, calculated using SIP procedures with a coefficient of variation (CV) of 0.46 and a dilution credit of 10:1 (D = 9), are an AMEL of 22 µg/L and an MDEL of 39 µg/L. The previous Order contained an AMEL of 19 µg/L and an MDEL of 40 µg/L. This Order retains the previous limits because the more stringent AMEL will require somewhat better performance over the long run.

(d) Anti-backsliding. Anti-backsliding requirements are satisfied because the WQBELs in this Order are the same as those in the previous Order.

(2) Copper

(a) Copper Water Quality Objectives. The most stringent applicable water quality objectives for copper are the Basin Plan site-specific chronic and acute marine water quality objectives, 6.0 and 9.4 micrograms per liter (µg/L), respectively, expressed as dissolved metal. Converting these water quality objectives to total recoverable metal using site-specific translators of 0.38 (chronic) and 0.66 (acute) results in a chronic water quality objective of 16 µg/L and an acute water quality objective of 14 µg/L.

(b) RPA Results. This Order establishes effluent limitations for copper because Basin Plan section 7.2.1.2 requires that individual NPDES permits for municipal and industrial wastewater treatment facilities include copper WQBELs.

(c) Copper WQBELs. WQBELs for copper, calculated according to SIP procedures using a CV of 0.18 and a dilution credit of D = 9, are an AMEL of 92 µg/L and an MDEL of 119 µg/L. After the copper site-specific objectives took effect, the previous permit established an AMEL of 49 µg/L and an MDEL of 66 µg/L. However, these limits were calculated without applying the site-specific metals translators. Applying the site-specific translators would have resulted in alternate limits of 89 ug/L (AMEL) and 119 ug/L (MDEL). This Order retains the more stringent corrected limits.

(d) Anti-backsliding. Anti-backsliding requirements are satisfied because the copper WQBELs meet the exception at CFR 122.44(l)(i)(B)(2) that allow WQBELs less stringent than those in the previous permit if technical mistakes were made in its issuance.

(3) Ammonia

In water, ammonia exists in two forms: un-ionized ammonia (NH_3) and ammonium (ionized ammonia, NH_4^+). Together, these forms are referred to as "total ammonia." The relative proportion between the two forms depends on pH, temperature, and salinity. The Basin Plan contains WQOs for un-ionized ammonia, but there are no numeric WQOs for ammonium. The potential impacts of Suisun Bay ammonium are of increasing concern but not well understood. Recent studies indicate that ammonium may affect Suisun Bay through at least two mechanisms: effects on diatoms and effects on copepods. Diatoms are single-cell algae that significantly contribute to primary production in Suisun Bay (the base of the food web). Copepods are important secondary producers, providing food for many fish.

The discharge is unlikely to contribute significant amounts of ammonia to Suisun Bay. The discharge is buoyant and tends toward the surface. The typical near-surface tidal current velocity in deep San Francisco Bay channels, such as Carquinez Strait, is approximately 1.5 feet per second (average). This would result in an expected travel time from Carquinez Strait Bridge to Benicia Bridge of approximately 6 hours under the most extreme conditions (D. Schoellhamer, U.S. Geological Survey, telephone conversation, December 7, 2011). In addition, residual currents in Carquinez Strait, mainly due to a gravitational circulation cell in the Strait, are seaward at the surface (D. Schoellhamer and J. Burau, 1998); thus, the average current direction in Carquinez Strait is seaward, away from Suisun Bay (D. Schoellhamer, December 7, 2011).

For these reasons, the total ammonia WQBELs described below implement only un-ionized ammonia WQOs. They do not directly address ammonium.

(a) Un-ionized Ammonia Water Quality Objectives. The Basin Plan contains water quality objectives for un-ionized ammonia (as N) of 0.025 mg/L as an annual median and 0.16 mg/L as a maximum. These water quality objectives were translated from un-ionized ammonia concentrations to equivalent total ammonia concentrations (as nitrogen) since (1) sampling and laboratory methods are not available to analyze for un-ionized ammonia, and (2) the fraction of total ammonia that exists in the toxic un-ionized form depends on the pH, salinity, and temperature of the receiving water. To translate the Basin Plan un-ionized ammonia objective, pH, salinity, and temperature data from 1993 through 2008 were used from the nearest RMP station to the outfall, the Napa River RMP Station (BD50). The following equations were used to determine the fraction of total ammonia that would exist in the toxic un-ionized form in the estuarine receiving water, where the various measurements were taken from 1993-2001 (USEPA, 1989, Ambient Water Quality Criteria for Ammonia (Saltwater)–1989, EPA Publication 440/5-88-004):

For salinity > 10 ppt: fraction of $NH_3 = \frac{1}{1+10^{(pK-pH)}}$

Where:

$$pK = 9.245 + 0.116(I) + 0.0324(298 - T) + \frac{0.0415(P)}{(T)}$$

$$I = \text{Molal ionic strength of saltwater} = \frac{19.9273(S)}{(1{,}000 - 1.005109[S])}$$

S = Salinity (parts per thousand)

T = Temperature in degrees Kelvin

P = Pressure (one atmosphere)

$$\text{For salinity} < 1 \text{ ppt: fraction of } NH_3 = \frac{1}{1 + 10^{(pK - pH)}}$$

Where:

$$pK = 0.09018 + 2729.92 / T$$

T = Temperature in degrees Kelvin

The 90th percentile and median un-ionized ammonia fractions from 1993 to 2008 were used to express the acute and chronic un-ionized ammonia water quality objectives as total ammonia concentrations for both high and low saline waters. The lowest resulting acute and chronic water quality objectives were used in this RPA. This approach is consistent with USEPA guidance on translating dissolved metal water quality objectives to total recoverable metal water quality objectives (USEPA, 1996, *The Metals Translator: Guidance for Calculating a Total Recoverable Limit from a Dissolved Criterion,* EPA Publication 823-B-96-007).

The equivalent total ammonia acute and chronic water quality criteria are 4.9 mg/L and 1.6 mg/L, respectively.

(b) RPA Results. Basin Plan section 4.5.5.2 indicates that WQBELs are to be calculated according to the SIP. Basin Plan section 3.3.20 refers to ammonia as a toxic pollutant. Therefore, the SIP methodology was used to perform the RPA and to calculate effluent limitations for ammonia. This Order establishes effluent limitations for total ammonia because the MEC of 32 mg/L exceeds the most stringent applicable translated water quality objective for this pollutant, demonstrating Reasonable Potential by Trigger 1.

(c) WQBELs. The most stringent total ammonia WQBELs, calculated according to SIP procedures using a CV of 0.38 and a dilution of 26:1 (D = 25), are an AMEL of 44 mg/L and an MDEL of 86 mg/L. Statistical adjustments were made to the WQBEL calculations because:

- the Basin Plan's chronic water quality objective for un-ionized ammonia is based on an annual median instead of the typical 4-day average;

- the SIP assumes a 4-day average concentration and monthly sampling frequency of 4 days per month to calculate effluent limitations based on chronic criteria, whereas a 365-day average and a monitoring frequency of 30 days per month, reflecting the actual basis of the water quality objective and actual sampling frequency, were used here.

These statistical adjustments are supported by USEPA's *Water Quality Criteria; Notice of Availability; 1999 Update of Ambient Water Quality Criteria for Ammonia,* published on December 22, 1999, in the Federal Register.

Following the SIP methodology, the maximum ambient background total ammonia concentration was used to calculate effluent limitations based on the acute objective, and the median background total ammonia concentration was used to calculate effluent limitations based on the chronic objective. Because the Basin Plan's chronic un-ionized ammonia objective is an annual median, the median background concentration is more representative of ambient conditions than a daily maximum.

(d) Anti-backsliding. Anti-backsliding requirements are satisfied because the previous Order did not include WQBELs for ammonia.

(4) Dioxin – TEQ

(a) Water Quality Objective. The Basin Plan narrative water quality objective for bioaccumulative substances states, "Many pollutants can accumulate on particulates, in sediments, or bioaccumulate in fish and other aquatic organisms. Controllable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life. Effects on aquatic organisms, wildlife, and human health will be considered."

Because it is the consensus of the scientific community that dioxins and furans associate with particulates, accumulate in sediments, and bioaccumulate in the fatty tissue of fish and other organisms, the Basin Plan's narrative bioaccumulation water quality objective is applicable to these pollutants. Elevated levels of dioxins and furans in fish tissue in San Francisco Bay demonstrate that the narrative bioaccumulation water quality objective is not being met. USEPA has therefore included Carquinez Strait as impaired by dioxin and furan compounds in the current 303(d) listing of receiving waters where water quality objectives are not being met after imposition of applicable technology-based requirements.

The CTR establishes a numeric water quality objective for 2,3,7,8-tetrachlorinated dibenzo-p-dioxin (2,3,7,8-TCDD) of 1.4×10^{-8} µg/L for the protection of human health, when aquatic organisms are consumed. When the CTR was promulgated, USEPA stated its support of the regulation of other dioxin and dioxin-like compounds through the use of toxic equivalents (TEQs) in NPDES permits. For California waters, USEPA stated specifically, "if the discharge of dioxin or dioxin-like compounds has Reasonable Potential to cause or contribute to a

violation of a narrative criterion, numeric WQBELs for dioxin or dioxin-like compounds should be included in NPDES permits and should be expressed using a TEQ scheme" [65 Fed. Reg. 31682, 31695 (2000)].

This Order uses a TEQ scheme based on a set of toxic equivalency factors (TEFs) the World Health Organization (WHO) developed in 1998, and a set of bioaccumulation equivalency factors (BEFs) USEPA developed for the Great Lakes region (40 CFR132, Appendix F) to convert the concentration of any congener of dioxin or furan into an equivalent concentration of 2,3,7,8-TCDD. The CTR criterion is used as a criterion for dioxin-TEQ because dioxin-TEQ represents a toxicity weighted concentration equivalent to 2,3,7,8-TCDD, thus translating the narrative bioaccumulation objective into a numeric criterion appropriate for the RPA.

To determine if the discharge of dioxin or dioxin-like compounds has Reasonable Potential to cause or contribute to a violation of the Basin Plan's narrative bioaccumulation water quality objective, TEFs and BEFs were used to express the measured concentrations of 16 dioxin congeners in effluent and background samples as 2,3,7,8-TCDD. These "equivalent" concentrations were then compared to the CTR numeric criterion for 2,3,7,8-TCDD (1.4×10^{-8} µg/L). Although the 1998 WHO scheme includes TEFs for dioxin-like PCBs, they are not included in this Order's TEQ scheme. The CTR has established a specific water quality standard for PCBs, and dioxin-like PCBs are included in the analysis of total PCBs.

(b) RPA Results. Dioxin and dioxin-like compounds have been detected in the effluent, and the receiving waters are listed as impaired due to dioxin and furan bioaccumulation. Because the dioxins in the discharge could cause or contribute to an exceedance of the Basin Plan's bioaccumulation water quality objective, there is Reasonable Potential based on Trigger 3.

(c) WQBELs. WQBELs for dioxin-TEQ, calculated according to SIP procedures with a default CV of 0.6 and no dilution credit, are an AMEL of 1.4×10^{-8} µg/L and an MDEL of 2.8×10^{-8} µg/L.

(d) Anti-backsliding. Antibacksliding requirements are satisfied because there were no limits for dioxin-TEQ in the previous Order.

d. Effluent Limitation Calculations

The following table shows the WQBEL calculations for cyanide, and ammonia at Discharge Point Nos. 001 and 002, with compliance measured at Monitoring Locations EFF-001 and EFF-002, respectively.

Table F-9. WQBEL Calculations

PRIORITY POLLUTANTS	Cyanide	Copper	Dioxin TEQ (303d listed)	Total Ammonia (acute)	Total Ammonia (chronic)
Units	**µg/L**	**ug/L**	**ug/L**	**mg/L as N**	**mg/L as N**
Basis and Criteria type	CTR HH	Basin Plan SSO	CTR HH	Basin Plan Aquatic Life	Basin Plan Aquatic Life
Criteria -Acute	-----	-----	-----	4.9	-----
Criteria -Chronic	-----	-----	-----	-----	1.7
SSO Criteria -Acute	9.4	3.9	-----	-----	-----
SSO Criteria -Chronic	2.9	2.5	-----	-----	-----
Water Effects ratio (WER)	1	2.4	1	1	1
Lowest Water Quality Objective	2.9	14	1.4E-08	4.9	1.7
Site Specific Translator - MDEL	-----	0.66	-----	-----	-----
Site Specific Translator - AMEL	-----	0.38	-----	-----	-----
Dilution Factor (D) (If Applicable)	9	9	0	20	20
No. Of Samples Per Month	4	4	4	4	30
Aquatic Life Criteria Analysis Required? (Y/N)	Y	Y	N	Y	Y
HH Criteria Analysis Required? (Y/N)	Y	N	Y	N	N
Applicable Acute Water Quality Objective	9.4	14	-----	4.9	-----
Applicable Chronic Water Quality Objective	2.9	16	-----	-----	1.7
HH criteria	220,000	-----	1.4E-08	-----	-----
Background (Maximum Conc. for Aquatic Life calc)	<0.40	2.5		0.19	0.12
Background (Average Conc. for Human Health calc)	<0.40	-----	3.0E-08	-----	-----
Is the pollutant on the 303d list and/or bioaccumulative (Y/N)?	N	N	Y	N	N
ECA acute	90	119		123	-----
ECA chronic	25	135		-----	41
ECA HH	2,199,996	-----	1.4E-08	-----	-----
No. of data points <10 or at least 80 percent of data reported non detect? (Y/N)	N	N	Y	N	N
Avg of effluent data points	2.2	6.9	1.7E-09	12	12
Std Dev of effluent data points	1.0	1.2	1.3E-09	4.6	4.6
CV calculated	0.46	0.18	N/A	0.38	0.38
CV (Selected) - Final	0.46	0.18	0.60	0.38	0.38
ECA acute mult99	0.39	0.67		0.46	-----
ECA chronic mult99	0.60	0.81		-----	0.96
LTA acute	36	80		56	-----

PRIORITY POLLUTANTS	Cyanide	Copper	Dioxin TEQ (303d listed)	Total Ammonia (acute)	Total Ammonia (chronic)
Units	µg/L	ug/L	ug/L	mg/L as N	mg/L as N
LTA chronic	15	110		-----	39
minimum of LTAs	15	80		56	39
AMEL mult95	1.4	1.2	1.6	1.3	1.1
MDEL mult99	2.5	1.5	3.1	2.2	2.2
AMEL (aq life)	22	92		75	44
MDEL(aq life)	39	119		123	86
MDEL/AMEL Multiplier	1.8	1.3	2.0	1.6	2.0
AMEL (human hlth)	2.2E+06	-----	1.4.E-08	----	----
MDEL (human hlth)	3.9E+06	-----	2.8.E-08	----	----
minimum of AMEL for Aq. life vs HH	22	92	1.4E-08	75	44
minimum of MDEL for Aq. Life vs HH	39	119	2.8E-08	123	86
Current limit in permit (30-day average)	19	89(1)	-----	-----	-----
Current limit in permit (daily)	40	119(1)	-----	-----	-----
Final limit - AMEL	19	89	1.4E-08	75	44
Final limit - MDEL	40	119	2.8E-08	123	86
Max Effl Conc (MEC)	4.8	10	3.4E-09	32	32

(1) Corrected using site-specific translator for copper as described in Fact Sheet section IV.C.4.c.(2)(c) and (d).

5. Whole Effluent Acute Toxicity

This Order retains from the previous Order effluent limitations for whole effluent acute toxicity based on Basin Plan Table 4-3. Compliance is evaluated based on 96-hour continuous flow-through bioassays. All bioassays are to be performed according to USEPA-approved methods in 40 CFR 136, *Methods for Measuring the Acute Toxicity of Effluents and Receiving Water*, 5th Edition.

6. Whole Effluent Chronic Toxicity

a. **Permit Requirements.** This Order contains a narrative effluent limitation for chronic toxicity based on the Basin Plan's narrative objective. The Order also includes requirements for chronic toxicity monitoring to ensure attainment of the Basin Plan narrative toxicity objective, and a monitoring "trigger" for initiation of accelerated monitoring requirements when exceeded. The Discharger is required to implement a chronic toxicity reduction evaluation (TRE) in some circumstances. These permit requirements for chronic toxicity are consistent with CTR and SIP requirements.

b. Screening Phase Study. The Discharger conducted a chronic toxicity screening study (*Vallejo Sanitation and Flood Control District Wastewater Treatment Facility Effluent Chronic Toxicity Screening Study*, May 2010) to identify the indicator organism most sensitive to the final effluent. Results showed that abalone (*Haliotis rufescens*) was most sensitive during each of the three bioassay episodes. For this reason, the Monitoring and Reporting Program (MRP) specifies abalone (*Haliotis rufescens*) as the chronic toxicity test species to be used during chronic toxicity testing. The Discharger is required to conduct another chronic toxicity screening study as described in MRP Appendix E-1 (Attachment E) during the term of this Order to determine whether the most sensitive species changes.

c. Chronic Toxicity Triggers. This Order includes the following chronic toxicity triggers: a three sample median value of 10 chronic toxicity units (TUc) and a single sample maximum of 20 TUc.

d. Permit Reopener. The Regional Water Board may consider amending this Order to include numeric toxicity limits if the Discharger fails to aggressively implement all reasonable control measures included in its TRE work plan following detection of consistent significant non-artifactual toxicity.

D. Anti-backsliding and Antidegradation

The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. This Order continues the status quo with respect to the level of discharge authorized in the previous permit and thus there will be no change in water quality beyond the level authorized in the last permit. The limitations in this Order comply with antidegradation requirements because they hold the Discharger to performance levels that will neither cause nor contribute to water quality impairment, nor to further water quality degradation. This is because this Order does not provide for an increase in the permitted design flow, allow for a reduced level of treatment, or increase effluent limitations.

This Order does not retain mercury effluent limitations because the Discharger's mercury discharges are regulated by Regional Board Order No. R2-2007-0077, which implements the San Francisco Bay Mercury TMDL and establishes wasteload allocations for industrial and municipal mercury discharges. Order No. R2-2007-0077 complies with federal and State antidegradation requirements.

Because antidegradation requirements are met, there will be no lowering of water quality beyond the current level authorized in the previous permit, which is the baseline by which to measure whether degradation will occur. Therefore, further analysis in this permit is unnecessary, and findings authorizing degradation are thus unnecessary.

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

The receiving water limitations in sections V.A and V.B of the Order are based on the narrative and numeric water quality objectives in Basin Plan Chapter 3. This Order does not retain the un-ionized ammonia receiving water limitation because this Order instead establishes a WQBEL for ammonia.

The receiving water limitations in section V.C of the Order require compliance with federal and State water quality standards.

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

The principal purposes of a monitoring program by a discharger are to:

- document compliance with waste discharge requirements and prohibitions established by the Regional Water Board;
- facilitate self-policing by a discharger in the prevention and abatement of pollution arising from waste discharge;
- develop or assist in the development of limitations, discharge prohibitions, national standards of performance, pretreatment and toxicity standards, and other standards; and,
- prepare water and wastewater quality inventories.

The MRP is a standard requirement in almost all NPDES permits issued by the Regional Water Board, including this Order. It contains definitions of terms and sets out requirements for reporting of routine monitoring data in accordance with NPDES regulations, the CWC, and Regional Water Board policies. The MRP also defines the sampling stations and frequency, the pollutants to be monitored, and additional reporting requirements. Pollutants to be monitored include all parameters for which effluent limitations are specified. Monitoring for additional constituents, for which no effluent limitations are established, is also required to provide data for future completion of RPAs.

A. Influent Monitoring Requirements

Influent monitoring is necessary for the prevention and abatement of potential pollution arising in the treatment plant influent. Influent monitoring requirements for CBOD and TSS and continuous monitoring of the influent flow are unchanged from the previous Order to allow determination of compliance with CBOD and TSS percent removal limitations in section IV.A of the Order.

B. Effluent Monitoring Requirements

The MRP retains most effluent monitoring requirements from the previous Order. Changes in effluent monitoring are summarized as follows.

- The MRP retains routine monitoring for priority pollutants with effluent limitations (cyanide, copper, total ammonia, and dioxin-TEQ). Monitoring for all other priority toxic pollutants is required to characterize the discharge pursuant to the characterization study required by Provision VI.C.2(a).
- Routine monitoring is not retained for tributyltin because it no longer demonstrates Reasonable Potential.
- Routine monitoring for mercury is not retained because it is now regulated separately under Order No. R2.-2007-0077.

- Monitoring was established for 1,2-Diphenylhydrazine because the method detection limitation for this parameter is less than the water quality criteria and effluent data are unavailable.

C. Whole Effluent Toxicity Testing Requirements

1. Whole Effluent Acute Toxicity

Monthly 96-hour continuous flow-through bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity. The MRP requires the use of the rainbow trout (*Oncrhynchus mykiss*) as the bioassay test species.

2. Whole Effluent Chronic Toxicity

This Order requires the Discharger to conduct quarterly chronic toxicity testing. The Discharger conducted an effluent toxicity screening study during the term of the previous Order. The study indicated that red abalone, *Haliotis rufescens*, is the most sensitive species for chronic toxicity testing. The Discharger is to repeat the chronic toxicity screening prior to permit expiration, as described in MRP Appendix E-1 (Attachment E).

D. Regional Monitoring Program.

On April 15, 1992, the Regional Water Board adopted Resolution No. 92-043, directing the Executive Officer to implement the San Francisco Bay Regional Monitoring Program for Trace Substances. Subsequently, the Executive Officer required major permit holders in the Region, under authority of CWC section 13267, to report on the water quality of the estuary. These permit holders responded by participating in a collaborative effort through the San Francisco Estuary Institute. This effort has come to be known as the Regional Monitoring Program (RMP). This Order specifies that the Discharger shall continue to participate in the RMP, which involves collection of data on pollutants and toxicity in the water, sediment, and biota of the estuary.

E. Pretreatment and Biosolids Requirements.

The pretreatment monitoring requirements for influent, effluent, and biosolids are retained from the previous Order and are required to assess compliance with the Discharger's USEPA-approved pretreatment program. Biosolids monitoring is required pursuant to 40 CFR 503.

This Order specifies the sampling type for pretreatment monitoring. Specifically, this Order requires multiple grabs (instead of 24-hour composites) for BNA, VOCs, cyanide, and hexavalent chromium. Composites made up of discrete grabs for these parameters to minimize potential losses during automatic composting. VOCs are volatile and cyanide and BNAs are somewhat volatile. Hexavalent chromium is chemically unstable.

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions (Provision VI.A)

Standard Provisions, which in accordance with 40 CFR 122.41and 122.42 apply to all NPDES discharges and must be included in every NPDES permit, are provided in Attachments D of this

Order. NPDES regulations at 40 CFR 123.25(a)(12) allow the State to omit or modify conditions to impose more stringent requirements. The Regional Standard Provisions (Attachment G) supplement the Federal Standard Provisions. In accordance with 40 CFR 123.25, this Order omits federal conditions that address enforcement authority specified in 40 CFR 122.41(j)(5) and (k)(2) because the enforcement authority under the CWC is more stringent. In lieu of these conditions, this Order incorporates by reference CWC section 13387(e).

B. MRP Requirements (Provision VI.B)

The Discharger is required to monitor the permitted discharges in order to evaluate compliance with permit conditions. Monitoring requirements are contained in the MRP (Attachment E), Federal Standard Provisions (Attachment D), and Regional Standard Provisions (Attachment G). This provision requires compliance with these provisions and is authorized by 40 CFR 122.41(h) and (j) and CWC sections 13267 and 13383.

The table below summarizes routine monitoring requirements. This table is for informational purposes only. Actual requirements are specified in the MRP and other applicable provisions of this Order.

Table F-10. Monitoring Requirements Summary

Parameter	Influent INF-001	Effluent EFF-001, EFF-001b, or EFF-002	Sludge and Biosolids	Receiving Water
Flow	Continuous	Continuous		Support RMP
CBOD	2/Week	2/Week		
TSS	2/Week	2/Week		
Oil and Grease		1/Quarter		
pH		Continuous		Support RMP
Chlorine, Total Residual		Continuous		
Acute Toxicity		1/Month		Support RMP
Chronic Toxicity		1/Quarter		Support RMP
Enterococcus		2/Week		Support RMP
Dissolved Oxygen		1/Day		Support RMP
Temperature		1/Day		Support RMP
Copper		1/Month		Support RMP
Cyanide	1/Month	1/Month	2/Year	Support RMP
Ammonia		1/Month		Support RMP
2,3.7,8-TCDD & Congeners		2/Year		Support RMP
1,2-Diphenylhydrazine		1/5 Years		
Standard Observations		1/Month		Support RMP
All other priority pollutants		1/permit term		Support RMP
Volatile Organic Compounds	2/Year	2/Year	2/Year	
Base/Neutrals and acids extractable organic compounds (BNA)	2/Year	2/Year	2/Year	

Parameter	Influent INF-001	Effluent EFF-001, EFF-001b, or EFF-002	Sludge and Biosolids	Receiving Water
Hexavalent Chromium	1/Month	1/Month	2/Year	
Metals	1/Month	1/Month	2/Year	
Mercury	1/Month	1/Month	2/Year	
Metric tons/year			See p. G-14	
Paint filter test			See pp. G-14 & 15	

C. Special Provisions (Provision VI.C)

1. Reopener Provisions

These provisions are based on 40 CFR 122.63 and allow modification of this Order and its effluent limitations as necessary in response to updated water quality objectives, regulations, or other new relevant information that may be established in the future and other circumstances allowed by law.

2. Special Studies and Additional Monitoring Requirements

a. **Effluent Characterization Study.** This Order does not include effluent limitations for the selected constituents addressed in the Regional Standard Provisions (Attachment G) that do not demonstrate Reasonable Potential, but this provision requires the Discharger to continue monitoring for these pollutants as described in the Regional Standard Provisions. If concentrations of these constituents increase significantly, this provision requires the Discharger to investigate the sources of such increases, and establish remedial measures to address any increase that results in Reasonable Potential to cause or contribute to an excursion above water quality standards. This provision is based on the Basin Plan, the SIP, and CWC section 13267.

b. **Ambient Background Receiving Water Study.** This provision is based on the Basin Plan, the SIP, and the Regional Standard Provisions (Attachment G). As indicated in this Order, this requirement may be met by participating in the collaborative BACWA study. This provision is necessary to provide data for future RPAs.

c. **Mare Island Strait Diffuser Upgrade.** This provision is required to support the Discharger possibly using the Mare Island Strait outfall (Discharge Point 002) for discharges under year-round conditions (currently allowed only for Discharge Point 001 at Carquinez Strait). This would require improving the Mare Island Strait outfall to achieve an initial dilution of at least 26:1 at the Plant's design flow. The Discharger plans to do further analysis of the technical and financial feasibility of this project before proceeding. This provision requires the Discharger to submit documentation demonstrating the following:

(1) Compliance with federal and State antidegradation requirements, including State Water Resources Control Board Administrative Procedures Update 90-004 (Antidegradation Policy Implementation for NPDES Permitting, July 1990).

(2) The upgraded diffuser achieves a dilution ratio of at least 26:1;

(3) The upgraded diffuser and outfall have been constructed as designed and are available for use; and

(4) The Operations and Maintenance Manual and to the Contingency Plan have been updated to include the new diffuser and outfall facilities.

3. Best Management Practices and Pollution Minimization Program

This provision is based on Basin Plan section 4.13.2 and SIP section 2.4.5.

4. Special Provisions for Municipal Facilities (POTWs Only)

a. Pretreatment Program Requirements. This provision requires the Discharger to implement and enforce its approved pretreatment program in accordance with federal pretreatment regulations (40 CFR 403).

b. Biosolids Management Practices Requirements. This provision is based on Basin Plan Chapter 4 and 40 CFR 257 and 503.

c. Sanitary Sewer Overflows and Sewer System Management Plan. This provision is to explain this Order's requirements as they relate to the Discharger's collection system, and to promote consistency with the State Water Resources Control Board's Statewide General Waste Discharge Requirements for Sanitary Sewer Overflow and related Monitoring and Reporting Program (Order No. 2006-0003-DWQ).

The General Order requires public agencies that own or operate sanitary sewer systems with greater than one mile of pipes or sewer lines to enroll for coverage under the General Order. The General Order requires agencies to develop sanitary sewer management plans and report all sanitary sewer overflows, among other requirements and prohibitions. Furthermore, the General Order contains requirements for operation and maintenance of collection systems and for reporting and mitigating sanitary sewer overflows. Inasmuch that the Discharger's collection system is part of the system that is subject to this Order, certain standard provisions apply as specified in Provisions, section VII.C.4. The Discharger must comply with both the General Order and this Order. The Discharger and public agencies that are discharging wastewater into the Facility were required to enroll under the General Order by December 1, 2006.

The State Water Board amended the General Order on February 20, 2008, in Order No. WQ 2008-0002-EXEC, to strengthen the notification and reporting requirements for sanitary sewer overflows. The Regional Water Board issued a 13267 letter on May 1, 2008, requiring dischargers to comply with the new notification requirements. The Regional Standard Provisions (Attachment G) contains the same notification and reporting requirements for spills from wastewater treatment facilities.

d. Specific Tasks to Reduce Blending. This provision is based on 40 CFR 122.41(m) and USEPA's *Proposed Peak Wet Weather Policy* (December 2005). The previous Order

required the Discharger to submit a No Feasible Alternatives Analysis. These provisions require the Discharger to implement specific tasks to reduce the occurrence of blending based on the Discharger's No Feasible Alternatives Analysis, dated March 30, 2011.

The tasks include a requirement to submit a No Feasible Alternatives Analysis. USEPA's *Proposed Wet Weather Policy* sets forth a set of requirements and specific analyses that the Discharger must complete in order to determine whether their peak wet weather flow blending discharge should be considered a bypass under 40 CFR 122.41(m) and whether any feasible alternatives to blending are available to the Discharger. These analyses are intended to address the criteria designating bypass status at 40 CFR 122.41(m)(4)(i)(A)-(C). The Regional Water Board will use the "No Feasible Alternatives Analysis" to review and approve or deny the peak wet weather diversions based on the determination of whether there are feasible alternatives to those diversions. If these criteria are met and no feasible alternative exists, the Regional Water Board may approve peak wet weather flow diversions around secondary treatment units in a NPDES permit for discharges from a POTW treatment plant as an anticipated bypass under 40 CFR 122.41(m)(4)(ii).

5. Copper Action Plan

This provision is based on Basin Plan section 7.2.1.2. It is necessary to ensure that use of copper site-specific objectives is consistent with antidegradation policies.

6. Cyanide Action Plan

This provision is based on Basin Plan section 4.7.2.2. It is necessary to ensure that use of cyanide site-specific objectives is consistent with antidegradation policies.

VIII. PUBLIC PARTICIPATION

The Regional Water Board is considering the issuance of WDRs that will serve as an NPDES permit for the Facility discharges. As a step in the WDR adoption process, the Regional Water Board has developed tentative WDRs. The Regional Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Regional Water Board notified the Discharger and interested agencies and persons of its intent to prescribe WDRs for the discharge and provided them with an opportunity to submit written comments and recommendations. Notification was provided through **the Vallejo Times-Herald** on **October 27, 2011**.

B. Written Comments

Staff determinations are tentative. Interested persons are invited to submit written comments concerning these tentative WDRs. Comments must be submitted either in person or by mail to the Executive Office at the Regional Water Board at the address above on the cover page of this Order, Attention: **John H. Madigan**.

To be fully responded to by staff and considered by the Regional Water Board, written comments must be received at the Regional Water Board offices by **5:00 pm** on **November 28, 2011**.

C. Public Hearing

The Regional Water Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date: February 8, 2012
Time: 9:00 AM
Location: Elihu Harris State Office Building
1515 Clay Street, 1st Floor Auditorium
Oakland, CA 94612

Contact: **John H. Madigan, 510-622-2405**, email **JMadigan@waterboards.ca.gov.**

Interested persons are invited to attend. At the public hearing, the Regional Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our Web address is http://www.waterboards.ca.gov/sanfranciscobay where one can access the current agenda for changes in dates and locations.

D. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Resources Control Board to review the decision of the Regional Water Board regarding the final WDRs. The petition must be submitted within 30 days of the Regional Water Board's action to the following address:

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

E. Information and Copying

The Report of Waste Discharge, related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., except from noon to 1:00 p.m., Monday through Friday. Copying of documents may be arranged through the Regional Water Board by calling 510-622-2300.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the NPDES permit should contact the Regional Water Board, reference Vallejo Sanitation and Flood Control District Wastewater Treatment Plant, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this Order may be directed to **John H. Madigan at 510-622-2405** (email at **JMadigan@waterboards.ca.gov).**.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ATTACHMENT G
REGIONAL STANDARD PROVISIONS, AND MONITORING AND REPORTING REQUIREMENTS (SUPPLEMENT TO ATTACHMENT D)

For

NPDES WASTEWATER DISCHARGE PERMITS

March 2010

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

REGIONAL STANDARD PROVISIONS, AND MONITORING AND REPORTING REQUIREMENTS (SUPPLEMENT TO ATTACHMENT D)

FOR

NPDES WASTEWATER DISCHARGE PERMITS

APPLICABILITY

This document applies to dischargers covered by a National Pollutant Discharge Elimination System (NPDES) permit. This document does not apply to Municipal Separate Storm Sewer System (MS4) NPDES permits.

The purpose of this document is to supplement the requirements of Attachment D, Standard Provisions. The requirements in this supplemental document are designed to ensure permit compliance through preventative planning, monitoring, recordkeeping, and reporting. In addition, this document requires proper characterization of issues as they arise, and timely and full responses to problems encountered. To provide clarity on which sections of Attachment D this document supplements, this document is arranged in the same format as Attachment D.

I. STANDARD PROVISIONS - PERMIT COMPLIANCE

A. Duty to Comply

Not Supplemented

B. Need to Halt or Reduce Activity Not a Defense

Not Supplemented

C. Duty to Mitigate

This supplements I.C. of Standard Provisions (Attachment D)

1. Contingency Plan

The Discharger shall maintain a Contingency Plan as originally required by Regional Water Board Resolution 74-10 and as prudent in accordance with current municipal facility emergency planning. The Contingency Plan shall describe procedures to ensure that existing facilities remain in, or are rapidly returned to, operation in the event of a process failure or emergency incident, such as employee strike, strike by suppliers of chemicals or maintenance

services, power outage, vandalism, earthquake, or fire. The Discharger may combine the Contingency Plan and Spill Prevention Plan into one document. Discharge in violation of the permit where the Discharger has failed to develop and implement a Contingency Plan as described below will be the basis for considering the discharge a willful and negligent violation of the permit pursuant to California Water Code Section 13387. The Contingency Plan shall, at a minimum, contain the provisions of a. through g. below.

a. Provision of personnel for continued operation and maintenance of sewerage facilities during employee strikes or strikes against contractors providing services.

b. Maintenance of adequate chemicals or other supplies and spare parts necessary for continued operations of sewerage facilities.

c. Provisions of emergency standby power.

d. Protection against vandalism.

e. Expeditious action to repair failures of, or damage to, equipment and sewer lines.

f. Report of spills and discharges of untreated or inadequately treated wastes, including measures taken to clean up the effects of such discharges.

g. Programs for maintenance, replacement, and surveillance of physical condition of equipment, facilities, and sewer lines.

2. Spill Prevention Plan

The Discharger shall maintain a Spill Prevention Plan to prevent accidental discharges and minimize the effects of such events. The Spill Prevention Plan shall:

a. Identify the possible sources of accidental discharge, untreated or partially treated waste bypass, and polluted drainage;

b. Evaluate the effectiveness of present facilities and procedures, and state when they became operational; and

c. Predict the effectiveness of the proposed facilities and procedures, and provide an implementation schedule containing interim and final dates when they will be constructed, implemented, or operational.

This Regional Water Board, after review of the Contingency and Spill Prevention Plans or their updated revisions, may establish conditions it deems necessary to control accidental discharges and to minimize the effects of such events. Such conditions may be incorporated as part of the permit upon notice to the Discharger.

D. Proper Operation & Maintenance

This supplements I.D of Standard Provisions (Attachment D)

1. Operation and Maintenance (O&M) Manual

The Discharger shall maintain an O&M Manual to provide the plant and regulatory personnel with a source of information describing all equipment, recommended operational strategies, process control monitoring, and maintenance activities. To remain a useful and relevant document, the O&M Manual shall be kept updated to reflect significant changes in treatment facility equipment and operational practices. The O&M Manual shall be maintained in usable condition and be available for reference and use by all relevant personnel and the Regional Water Board.

2. Wastewater Facilities Status Report

The Discharger shall regularly review, revise, or update, as necessary, its Wastewater Facilities Status Report. This report shall document how the Discharger operates and maintains its wastewater collection, treatment, and disposal facilities to ensure that all facilities are adequately staffed, supervised, financed, operated, maintained, repaired, and upgraded as necessary to provide adequate and reliable transport, treatment, and disposal of all wastewater from both existing and planned future wastewater sources under the Discharger's service responsibilities.

3. Proper Supervision and Operation of Publicly Owned Treatment Works (POTWs)

POTWs shall be supervised and operated by persons possessing certificates of appropriate grade pursuant to Division 4, Chapter 14, Title 23 of the California Code of Regulations.

E. Property Rights

Not Supplemented

F. Inspection and Entry

Not Supplemented

G. Bypass

Not Supplemented

H. Upset

Not Supplemented

I. Other

This section is an addition to Standard Provisions (Attachment D)

1. Neither the treatment nor the discharge of pollutants shall create pollution, contamination, or nuisance as defined by California Water Code Section 13050.

2. Collection, treatment, storage, and disposal systems shall be operated in a manner that precludes public contact with wastewater, except in cases where excluding the public is infeasible, such as private property. If public contact with wastewater could reasonably occur on public property, warning signs shall be posted.

3. If the Discharger submits a timely and complete Report of Waste Discharge for permit reissuance, this permit continues in force and effect until a new permit is issued or the Regional Water Board rescinds the permit.

J. Storm Water

This section is an addition to Standard Provisions (Attachment D)

These provisions apply to facilities that do not direct all storm water flows from the facility to the wastewater treatment plant headworks.

1. Storm Water Pollution Prevention Plan (SWPP Plan)

The SWPP Plan shall be designed in accordance with good engineering practices and shall address the following objectives:

a. To identify pollutant sources that may affect the quality of storm water discharges; and

b. To identify, assign, and implement control measures and management practices to reduce pollutants in storm water discharges.

The SWPP Plan may be combined with the existing Spill Prevention Plan as required in accordance with Section C.2. The SWPP Plan shall be retained on-site and made available upon request of a representative of the Regional Water Board.

2. Source Identification

The SWPP Plan shall provide a description of potential sources that may be expected to add significant quantities of pollutants to storm water discharges, or may result in non-storm water discharges from the facility. The SWPP Plan shall include, at a minimum, the following items:

a. A topographical map (or other acceptable map if a topographical map is unavailable), extending one-quarter mile beyond the property boundaries of the facility, showing the wastewater treatment facility process areas, surface water bodies (including springs and wells), and discharge point(s) where the facility's storm water discharges to a municipal storm drain system or other points of discharge to waters of the State. The requirements of this paragraph may be included in the site map required under the following paragraph if appropriate.

b. A site map showing the following:

(1) Storm water conveyance, drainage, and discharge structures;

(2) An outline of the storm water drainage areas for each storm water discharge point;

(3) Paved areas and buildings;

(4) Areas of actual or potential pollutant contact with storm water or release to storm water, including but not limited to outdoor storage and process areas; material loading, unloading, and access areas; and waste treatment, storage, and disposal areas;

(5) Location of existing storm water structural control measures (i.e., berms, coverings, etc.);

(6) Surface water locations, including springs and wetlands; and

(7) Vehicle service areas.

c. A narrative description of the following:

(1) Wastewater treatment process activity areas;

(2) Materials, equipment, and vehicle management practices employed to minimize contact of significant materials of concern with storm water discharges;

(3) Material storage, loading, unloading, and access areas;

(4) Existing structural and non-structural control measures (if any) to reduce pollutants in storm water discharges; and

(5) Methods of on-site storage and disposal of significant materials.

d. A list of pollutants that have a reasonable potential to be present in storm water discharges in significant quantities.

3. Storm Water Management Controls

The SWPP Plan shall describe the storm water management controls appropriate for the facility and a time schedule for fully implementing such controls. The appropriateness and priorities of controls in the SWPP Plan shall reflect identified potential sources of pollutants. The description of storm water management controls to be implemented shall include, as appropriate:

a. Storm water pollution prevention personnel

Identify specific individuals (and job titles) that are responsible for developing, implementing, and reviewing the SWPP Plan.

b. Good housekeeping

Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm drain conveyance system.

c. Spill prevention and response

Identify areas where significant materials can spill into or otherwise enter storm water conveyance systems and their accompanying drainage points. Specific material handling procedures, storage requirements, and cleanup equipment and procedures shall be identified, as appropriate. The necessary equipment to implement a cleanup shall be available, and personnel shall be trained in proper response, containment, and cleanup of spills. Internal reporting procedures for spills of significant materials shall be established.

d. Source control

Source controls include, for example, elimination or reduction of the use of toxic pollutants, covering of pollutant source areas, sweeping of paved areas, containment of potential pollutants, labeling of all storm drain inlets with "No Dumping" signs, isolation or separation of industrial and non-industrial pollutant sources so that runoff from these areas does not mix, etc.

e. Storm water management practices

Storm water management practices are practices other than those that control the sources of pollutants. Such practices include treatment or conveyance structures, such as drop inlets, channels, retention and detention basins, treatment vaults, infiltration galleries, filters, oil/water separators, etc. Based on assessment of the potential of various sources to contribute pollutants to storm water discharges in significant quantities, additional storm water management practices to remove pollutants from storm water discharges shall be implemented and design criteria shall be described.

f. Sediment and erosion control

Measures to minimize erosion around the storm water drainage and discharge points, such as riprap, revegetation, slope stabilization, etc., shall be described.

g. Employee training

Employee training programs shall inform all personnel responsible for implementing the SWPP Plan. Training shall address spill response, good housekeeping, and material management practices. New employee and refresher training schedules shall be identified.

h. Inspections

All inspections shall be done by trained personnel. Material handling areas shall be inspected for evidence of, or the potential for, pollutants entering storm water discharges. A tracking or follow up procedure shall be used to ensure appropriate response has been

taken in response to an inspection. Inspections and maintenance activities shall be documented and recorded. Inspection records shall be retained for five years.

i. Records

A tracking and follow-up procedure shall be described to ensure that adequate response and corrective actions have been taken in response to inspections.

4. Annual Verification of SWPP Plan

An annual facility inspection shall be conducted to verify that all elements of the SWPP Plan are accurate and up-to-date. The results of this review shall be reported in the Annual Report to the Regional Water Board described in Section V.C.f.

K. Biosolids Management

This section is an addition to Standard Provisions (Attachment D)

Biosolids must meet the following requirements prior to land application. The Discharger must either demonstrate compliance or, if it sends the biosolids to another party for further treatment or distribution, must give the recipient the information necessary to ensure compliance.

1. Exceptional quality biosolids meet the pollutant concentration limits in Table III of 40 CFR Part 503.13, Class A pathogen limits, and one of the vector attraction reduction requirements in 503.33(b)(1)-(b)(8). Such biosolids do not have to be tracked further for compliance with general requirements (503.12) and management practices (503.14).

2. Biosolids used for agricultural land, forest, or reclamation shall meet the pollutant limits in Table I (ceiling concentrations) and Table II or Table III (cumulative loadings or pollutant concentration limits) of 503.13. They shall also meet the general requirements (503.12) and management practices (503.14) (if not exceptional quality biosolids) for Class A or Class B pathogen levels with associated access restrictions (503.32) and one of the 10 vector attraction reduction requirements in 503.33(b)(1)-(b)(10).

3. Biosolids used for lawn or home gardens must meet exceptional quality biosolids limits.

4. Biosolids sold or given away in a bag or other container must meet the pollutant limits in either Table III or Table IV (pollutant concentration limits or annual pollutant loading rate limits) of 503.13. If Table IV is used, a label or information sheet must be attached to the biosolids packing that explains Table IV (see 503.14). The biosolids must also meet the Class A pathogen limits and one of the vector attraction reduction requirements in 503.33(b)(1)-(b)(8).

II. STANDARD PROVISIONS – PERMIT ACTION

Not Supplemented

III. STANDARD PROVISIONS – MONITORING

A. Sampling and Analyses

This section is a supplement to III.A and III.B of Standard Provisions (Attachment D)

1. Use of Certified Laboratories

Water and waste analyses shall be performed by a laboratory certified for these analyses in accordance with California Water Code Section 13176.

2. Use of Appropriate Minimum Levels

Table C lists the suggested analytical methods for the 126 priority pollutants and other toxic pollutants that should be used, unless a particular method or minimum level (ML) is required in the MRP.

For priority pollutant monitoring, when there is more than one ML value for a given substance, the Discharger may select any one of the analytical methods cited in Table C for compliance determination, or any other method described in 40 CFR part 136 or approved by USEPA (such as the 1600 series) if authorized by the Regional Water Board. However, the ML must be below the effluent limitation and water quality objective. If no ML value is below the effluent limitation and water quality objective, then the method must achieve an ML no greater than the lowest ML value indicated in Table C. All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements.

3. Frequency of Monitoring

The minimum schedule of sampling analysis is specified in the MRP portion of the permit.

a. Timing of Sample Collection

(1) The Discharger shall collect samples of influent on varying days selected at random and shall not include any plant recirculation or other sidestream wastes, unless otherwise stipulated by the MRP.

(2) The Discharger shall collect samples of effluent on days coincident with influent sampling unless otherwise stipulated by the MRP or the Executive Officer. The Executive Officer may approve an alternative sampling plan if it is demonstrated to be representative of plant discharge flow and in compliance with all other permit requirements.

(3) The Discharger shall collect grab samples of effluent during periods of day-time maximum peak effluent flows (or peak flows through secondary treatment units for facilities that recycle effluent flows).

(4) Effluent sampling for conventional pollutants shall occur on at least one day of any multiple-day bioassay test the MRP requires. During the course of the test, on at least one day, the Discharger shall collect and retain samples of the discharge. In the event a bioassay test does not comply with permit limits, the Discharger shall analyze these

retained samples for pollutants that could be toxic to aquatic life and for which it has effluent limitations.

(a) The Discharger shall perform bioassay tests on final effluent samples; when chlorine is used for disinfection, bioassay tests shall be performed on effluent after chlorination-dechlorination; and

(b) The Discharger shall analyze for total ammonia nitrogen and calculate the amount of un-ionized ammonia whenever test results fail to meet the percent survival specified in the permit.

b. Conditions Triggering Accelerated Monitoring

(1) If the results from two consecutive samples of a constituent monitored in a 30-day period exceed the monthly average limit for any parameter (or if the required sampling frequency is once per month and the monthly sample exceeds the monthly average limit), the Discharger shall, within 24 hours after the results are received, increase its sampling frequency to daily until the results from the additional sampling show that the parameter is in compliance with the monthly average limit.

(2) If any maximum daily limit is exceeded, the Discharger shall increase its sampling frequency to daily within 24 hours after the results are received that indicate the exceedance of the maximum daily limit until two samples collected on consecutive days show compliance with the maximum daily limit.

(3) If final or intermediate results of an acute bioassay test indicate a violation or threatened violation (e.g., the percentage of surviving test organisms of any single acute bioassay test is less than 70 percent), the Discharger shall initiate a new test as soon as practical, and the Discharger shall investigate the cause of the mortalities and report its findings in the next self-monitoring report (SMR).

(4) The Discharger shall calibrate chlorine residual analyzers against grab samples as frequently as necessary to maintain accurate control and reliable operation. If an effluent violation is detected, the Discharger shall collect grab samples at least every 30 minutes until compliance with the limit is achieved, unless the Discharger monitors chlorine residual continuously. In such cases, the Discharger shall continue to conduct continuous monitoring as required by its permit.

(5) When a bypass occurs (except one subject to provision III.A.3.b.6 below), the Discharger shall monitor flows and collect samples on a daily basis for all constituents at affected discharge points that have effluent limitations for the duration of the bypass (including acute toxicity using static renewals), except chronic toxicity, unless otherwise stipulated by the MRP.

(6) Unless otherwise stipulated by the MRP, when a bypass approved pursuant to Attachment D, Standard Provisions, Sections I.G.2 or I.G.4, occurs, the Discharger shall monitor flows and, using appropriate procedures as specified in the MRP, collect and retain samples for affected discharge points on a daily basis for the

duration of the bypass. The Discharger shall analyze for total suspended solids (TSS) using 24-hour composites (or more frequent increments) and for bacteria indicators with effluent limitations using grab samples. If TSS exceeds 45 mg/L in any composite sample, the Discharger shall also analyze the retained samples for that discharge for all other constituents that have effluent limitations, except oil and grease, mercury, dioxin-TEQ, and acute and chronic toxicity. Additionally, at least once each year, the Discharger shall analyze the retained samples for one approved bypass discharge event for all other constituents that have effluent limitations, except oil and grease, mercury, dioxin-TEQ, and acute and chronic toxicity. This monitoring shall be in addition to the minimum monitoring specified in the MRP.

c. Storm Water Monitoring

The requirements of this section only apply to facilities that are not covered by an NPDES permit for storm water discharges and where not all site storm drainage from process areas (i.e., areas of the treatment facility where chemicals or wastewater could come in contact with storm water) is directed to the headworks. For storm water not directed to the headworks during the wet season (October 1 to April 30), the Discharger shall:

(1) Conduct visual observations of the storm water discharge locations during daylight hours at least once per month during a storm event that produces significant storm water discharge to observe the presence of floating and suspended materials, oil and grease, discoloration, turbidity, and odor, etc.

(2) Measure (or estimate) the total volume of storm water discharge, collect grab samples of storm water discharge from at least two storm events that produce significant storm water discharge, and analyze the samples for oil and grease, pH, TSS, and specific conductance.

The grab samples shall be taken during the first 30 minutes of the discharge. If collection of the grab samples during the first 30 minutes is impracticable, grab samples may be taken during the first hour of the discharge, and the Discharger shall explain in the Annual Report why the grab sample(s) could not be taken in the first 30 minutes.

(3) Testing for the presence of non-storm water discharges shall be conducted no less than twice during the dry season (May 1 to September 30) at all storm water discharge locations. Tests may include visual observations of flows, stains, sludges, odors, and other abnormal conditions; dye tests; TV line surveys; or analysis and validation of accurate piping schematics. Records shall be maintained describing the method used, date of testing, locations observed, and test results.

(4) Samples shall be collected from all locations where storm water is discharged. Samples shall represent the quality and quantity of storm water discharged from the facility. If a facility discharges storm water at multiple locations, the Discharger may sample a reduced number of locations if it establishes and documents through the

monitoring program that storm water discharges from different locations are substantially identical.

(5) Records of all storm water monitoring information and copies of all reports required by the permit shall be retained for a period of at least three years from the date of sample, observation, or report.

d. Receiving Water Monitoring

The requirements of this section only apply when the MRP requires receiving water sampling.

(1) Receiving water samples shall be collected on days coincident with effluent sampling for conventional pollutants.

(2) Receiving water samples shall be collected at each station on each sampling day during the period within one hour following low slack water. Where sampling during lower slack water is impractical, sampling shall be performed during higher slack water. Samples shall be collected within the discharge plume and down current of the discharge point so as to be representative, unless otherwise stipulated in the MRP.

(3) Samples shall be collected within one foot of the surface of the receiving water, unless otherwise stipulated in the MRP.

B. Biosolids Monitoring

This section supplements III.B of Standard Provisions (Attachment D)

When biosolids are sent to a landfill, sent to a surface disposal site, or applied to land as a soil amendment, they must be monitored as follows:

1. Biosolids Monitoring Frequency

Biosolids disposal must be monitored at the following frequency:

Metric tons biosolids/365 days	Frequency
0-290	Once per year
290-1500	Quarterly
1500-15,000	Six times per year
Over 15,000	Once per month

(Metric tons are on a dry weight basis)

2. Biosolids Pollutants to Monitor

Biosolids shall be monitored for the following constituents:

Land Application: arsenic, cadmium, copper, mercury, molybdenum, nickel, lead, selenium, and zinc

Municipal Landfill: Paint filter test (pursuant to 40 CFR 258)

Biosolids-only Landfill or Surface Disposal Site (if no liner and leachate system): arsenic, chromium, and nickel

C. Standard Observations

This section is an addition to III of Standard Provisions (Attachment D)

1. Receiving Water Observations

The requirements of this section only apply when the MRP requires standard observations of the receiving water. Standard observations shall include the following:

a. *Floating and suspended materials* (e.g., oil, grease, algae, and other macroscopic particulate matter): presence or absence, source, and size of affected area.

b. *Discoloration and turbidity*: description of color, source, and size of affected area.

c. *Odor*: presence or absence, characterization, source, distance of travel, and wind direction.

d. *Beneficial water use*: presence of water-associated waterfowl or wildlife, fisherpeople, and other recreational activities in the vicinity of each sampling station.

e. *Hydrographic condition*: time and height of corrected high and low tides (corrected to nearest National Oceanic and Atmospheric Administration location for the sampling date and time of sample collection).

f. Weather conditions:

(1) Air temperature; and

(2) Total precipitation during the five days prior to observation.

2. Wastewater Effluent Observations

The requirements of this section only apply when the MRP requires wastewater effluent standard observations. Standard observations shall include the following:

a. *Floating and suspended material of wastewater origin* (e.g., oil, grease, algae, and other macroscopic particulate matter): presence or absence.

b. *Odor*: presence or absence, characterization, source, distance of travel, and wind direction.

3. Beach and Shoreline Observations

The requirements of this section only apply when the MRP requires beach and shoreline standard observations. Standard observations shall include the following:

a. *Material of wastewater origin*: presence or absence, description of material, estimated size of affected area, and source.

b. *Beneficial use*: estimate number of people participating in recreational water contact, non-water contact, or fishing activities.

4. Land Retention or Disposal Area Observations

The requirements of this section only apply to facilities with on-site surface impoundments or disposal areas that are in use. This section applies to both liquid and solid wastes, whether confined or unconfined. The Discharger shall conduct the following for each impoundment:

a. Determine the amount of freeboard at the lowest point of dikes confining liquid wastes.

b. Report evidence of leaching liquid from area of confinement and estimated size of affected area. Show affected area on a sketch and volume of flow (e.g., gallons per minute [gpm]).

c. Regarding odor, describe presence or absence, characterization, source, distance of travel, and wind direction.

d. Estimate number of waterfowl and other water-associated birds in the disposal area and vicinity.

5. Periphery of Waste Treatment and/or Disposal Facilities Observations

The requirements of this section only apply when the MRP specifies periphery standard observations. Standard observations shall include the following:

a. *Odor*: presence or absence, characterization, source, and distance of travel.

b. *Weather conditions*: wind direction and estimated velocity.

IV. STANDARD PROVISIONS – RECORDS

A. Records to be Maintained

This supplements IV.A of Standard Provisions (Attachment D)

The Discharger shall maintain records in a manner and at a location (e.g., wastewater treatment plant or Discharger offices) such that the records are accessible to the Regional Water Board. The minimum period of retention specified in Section IV, Records, of the Federal Standard Provisions shall be extended during the course of any unresolved litigation regarding the subject discharge, or when requested by the Regional Water Board or Regional Administrator of USEPA, Region IX.

A copy of the permit shall be maintained at the discharge facility and be available at all times to operating personnel.

B. Records of monitoring information shall include

This supplements IV.B of Standard Provision (Attachment D)

1. Analytical Information

Records shall include analytical method detection limits, minimum levels, reporting levels, and related quantification parameters.

2. Flow Monitoring Data

For all required flow monitoring (e.g., influent and effluent flows), the additional records shall include the following, unless otherwise stipulated by the MRP:

a. Total volume for each day; and

b. Maximum, minimum, and average daily flows for each calendar month.

3. Wastewater Treatment Process Solids

a. For each treatment unit process that involves solids removal from the wastewater stream, records shall include the following:

(1) Total volume or mass of solids removed from each collection unit (e.g., grit, skimmings, undigested biosolids, or combination) for each calendar month or other time period as appropriate, but not to exceed annually; and

(2) Final disposition of such solids (e.g., landfill, other subsequent treatment unit).

b. For final dewatered biosolids from the treatment plant as a whole, records shall include the following:

(1) Total volume or mass of dewatered biosolids for each calendar month;

(2) Solids content of the dewatered biosolids; and

(3) Final disposition of dewatered biosolids (disposal location and disposal method).

4. Disinfection Process

For the disinfection process, these additional records shall be maintained documenting process operation and performance:

a. For bacteriological analyses:

(1) Wastewater flow rate at the time of sample collection; and

(2) Required statistical parameters for cumulative bacterial values (e.g., moving median or geometric mean for the number of samples or sampling period identified in this Order).

b. For the chlorination process, when chlorine is used for disinfection, at least daily average values for the following:

(1) Chlorine residual of treated wastewater as it enters the contact basin (mg/L);

(2) Chlorine dosage (kg/day); and

(3) Dechlorination chemical dosage (kg/day).

5. Treatment Process Bypasses

A chronological log of all treatment process bypasses, including wet weather blending, shall include the following:

a. Identification of the treatment process bypassed;

b. Dates and times of bypass beginning and end;

c. Total bypass duration;

d. Estimated total bypass volume; and

e. Description of, or reference to other reports describing, the bypass event, the cause, the corrective actions taken (except for wet weather blending that is in compliance with permit conditions), and any additional monitoring conducted.

6. Treatment Facility Overflows

This section applies to records for overflows at the treatment facility. This includes the headworks and all units and appurtenances downstream. The Discharger shall retain a chronological log of overflows at the treatment facility and records supporting the information provided in section V.E.2.

C. Claims of Confidentiality

Not Supplemented

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

Not Supplemented

B. Signatory and Certification Requirements

Not Supplemented

C. Monitoring Reports

This section supplements V.C of Standard Provisions (Attachment D)

1. Self-Monitoring Reports

For each reporting period established in the MRP, the Discharger shall submit an SMR to the Regional Water Board in accordance with the requirements listed in this document and at the frequency the MRP specifies. The purpose of the SMR is to document treatment performance, effluent quality, and compliance with the waste discharge requirements of this Order.

a. Transmittal letter

Each SMR shall be submitted with a transmittal letter. This letter shall include the following:

(1) Identification of all violations of effluent limitations or other waste discharge requirements found during the reporting period;

(2) Details regarding violations: parameters, magnitude, test results, frequency, and dates;

(3) Causes of violations;

(4) Discussion of corrective actions taken or planned to resolve violations and prevent recurrences, and dates or time schedule of action implementation (if previous reports have been submitted that address corrective actions, reference to the earlier reports is satisfactory);

(5) Data invalidation (Data should not be submitted in an SMR if it does not meet quality assurance/quality control standards. However, if the Discharger wishes to invalidate any measurement after it was submitted in an SMR, a letter shall identify the measurement suspected to be invalid and state the Discharger's intent to submit, within 60 days, a formal request to invalidate the measurement. This request shall include the original measurement in question, the reason for invalidating the measurement, all relevant documentation that supports invalidation [e.g., laboratory sheet, log entry, test results, etc.], and discussion of the corrective actions taken or planned [with a time schedule for completion] to prevent recurrence of the sampling or measurement problem.);

(6) If the Discharger blends, the letter shall describe the duration of blending events and certify whether blended effluent was in compliance with the conditions for blending; and

(7) Signature (The transmittal letter shall be signed according to Section V.B of this Order, Attachment D – Standard Provisions.).

b. Compliance evaluation summary

Each report shall include a compliance evaluation summary. This summary shall include each parameter for which the permit specifies effluent limitations, the number of samples taken during the monitoring period, and the number of samples that exceed applicable effluent limitations.

c. Results of analyses and observations

(1) Tabulations of all required analyses and observations, including parameter, date, time, sample station, type of sample, test result, method detection limit, method minimum level, and method reporting level, if applicable, signed by the laboratory director or other responsible official.

(2) When determining compliance with an average monthly effluent limitation and more than one sample result is available in a month, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of detected but not quantified (DNQ) or non-detect (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

(a) The data set shall be ranked from low to high, reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

(b). The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

If a sample result, or the arithmetic mean or median of multiple sample results, is below the reporting limit, and there is evidence that the priority pollutant is present in the effluent above an effluent limitation and the Discharger conduct a Pollutant Minimization Program, the Discharger shall not be deemed out of compliance.

(3) Dioxin-TEQ Reporting: The Discharger shall report for each dioxin and furan congener the analytical results of effluent monitoring, including the quantifiable limit (reporting level), the method detection limit, and the measured concentration. The Discharger shall report all measured values of individual congeners, including data qualifiers. When calculating dioxin-TEQ, the Discharger shall set congener concentrations below the minimum levels (ML) to zero. The Discharger shall calculate and report dioxin-TEQs using the following formula, where the MLs, toxicity equivalency factors (TEFs), and bioaccumulation equivalency factors (BEFs) are as provided in Table A:

$$\text{Dioxin-TEQ} = \Sigma (C_x \times TEF_x \times BEF_x)$$

where: C_x = measured or estimated concentration of congener x

TEF_x = toxicity equivalency factor for congener x
BEFx = bioaccumulation equivalency factor for congener *x*

Table A

Minimum Levels, Toxicity Equivalency Factors, and Bioaccumulation Equivalency Factors

Dioxin or Furan Congener	Minimum Level (pg/L)	1998 Toxicity Equivalency Factor (TEF)	Bioaccumulation Equivalency Factor (BEF)
2,3,7,8-TCDD	10	1.0	1.0
1,2,3,7,8-PeCDD	50	1.0	0.9
1,2,3,4,7,8-HxCDD	50	0.1	0.3
1,2,3,6,7,8-HxCDD	50	0.1	0.1
1,2,3,7,8,9-HxCDD	50	0.1	0.1
1,2,3,4,6,7,8-HpCDD	50	0.01	0.05
OCDD	100	0.0001	0.01
2,3,7,8-TCDF	10	0.1	0.8
1,2,3,7,8-PeCDF	50	0.05	0.2
2,3,4,7,8-PeCDF	50	0.5	1.6
1,2,3,4,7,8-HxCDF	50	0.1	0.08
1,2,3,6,7,8-HxCDF	50	0.1	0.2
1,2,3,7,8,9-HxCDF	50	0.1	0.6
2,3,4,6,7,8-HxCDF	50	0.1	0.7
1,2,3,4,6,7,8-HpCDF	50	0.01	0.01
1,2,3,4,7,8,9-HpCDF	50	0.01	0.4
OCDF	100	0.0001	0.02

d. Data reporting for results not yet available

The Discharger shall make all reasonable efforts to obtain analytical data for required parameter sampling in a timely manner. Certain analyses require additional time to complete analytical processes and report results. For cases where required monitoring parameters require additional time to complete analytical processes and reports, and results are not available in time to be included in the SMR for the subject monitoring period, the Discharger shall describe such circumstances in the SMR and include the data for these parameters and relevant discussions of any observed exceedances in the next SMR due after the results are available.

e. Flow data

The Discharger shall provide flow data tabulation pursuant to Section IV.B.2.

f. Annual self monitoring report requirements

By the date specified in the MRP, the Discharger shall submit an annual report to the Regional Water Board covering the previous calendar year. The report shall contain the following:

(1) Annual compliance summary table of treatment plant performance, including documentation of any blending events;

(2) Comprehensive discussion of treatment plant performance and compliance with the permit (This discussion shall include any corrective actions taken or planned, such as changes to facility equipment or operation practices that may be needed to achieve compliance, and any other actions taken or planned that are intended to improve performance and reliability of the Discharger's wastewater collection, treatment, or disposal practices.);

(3) Both tabular and graphical summaries of the monitoring data for the previous year if parameters are monitored at a frequency of monthly or greater;

(4) List of approved analyses, including the following:

(a) List of analyses for which the Discharger is certified;

(b) List of analyses performed for the Discharger by a separate certified laboratory (copies of reports signed by the laboratory director of that laboratory shall not be submitted but be retained onsite); and

(c) List of "waived" analyses, as approved;

(5) Plan view drawing or map showing the Discharger's facility, flow routing, and sampling and observation station locations;

(6) Results of annual facility inspection to verify that all elements of the SWPP Plan are accurate and up to date (only required if the Discharger does not route all storm water to the headworks of its wastewater treatment plant); and

(7) Results of facility report reviews (The Discharger shall regularly review, revise, and update, as necessary, the O&M Manual, the Contingency Plan, the Spill Prevention Plan, and Wastewater Facilities Status Report so that these documents remain useful and relevant to current practices. At a minimum, reviews shall be conducted annually. The Discharger shall include, in each Annual Report, a description or summary of review and evaluation procedures, recommended or planned actions, and an estimated time schedule for implementing these actions. The Discharger shall complete changes to these documents to ensure they are up-to-date.).

g. Report submittal

The Discharger shall submit SMRs to:

California Regional Water Quality Control Board
San Francisco Bay Region

1515 Clay Street, Suite 1400
Oakland, CA 94612
Attn: NPDES Wastewater Division

h. Reporting data in electronic format

The Discharger has the option to submit all monitoring results in an electronic reporting format approved by the Executive Officer. If the Discharger chooses to submit SMRs electronically, the following shall apply:

(1) Reporting Method: The Discharger shall submit SMRs electronically via a process approved by the Executive Officer (see, for example, the letter dated December 17, 1999, "Official Implementation of Electronic Reporting System [ERS]" and the progress report letter dated December 17, 2000).

(2) Monthly or Quarterly Reporting Requirements: For each reporting period (monthly or quarterly as specified in the MRP), the Discharger shall submit an electronic SMR to the Regional Water Board in accordance with the provisions of Section V.C.1.a-e, except for requirements under Section V.C.1.c(1) where ERS does not have fields for dischargers to input certain information (e.g., sample time). However, until USEPA approves the electronic signature or other signature technologies, dischargers that use ERS shall submit a hard copy of the original transmittal letter, an ERS printout of the data sheet, and a violation report (a receipt of the electronic transmittal shall be retained by the Discharger). This electronic SMR submittal suffices for the signed tabulations specified under Section V.C.1.c(1).

(3) Annual Reporting Requirements: Dischargers who have submitted data using the ERS for at least one calendar year are exempt from submitting the portion of the annual report required under Section V.C.1.f(1) and (3).

D. Compliance Schedules

Not supplemented

E. Twenty-Four Hour Reporting

This section supplements V.E of Standard Provision (Attachment D)

1. Spill of Oil or Other Hazardous Material Reports

a. Within 24 hours of becoming aware of a spill of oil or other hazardous material that is not contained onsite and completely cleaned up, the Discharger shall report by telephone to the Regional Water Board at (510) 622-2369.

b. The Discharger shall also report such spills to the State Office of Emergency Services [telephone (800) 852-7550] only when the spills are in accordance with applicable reporting quantities for hazardous materials.

c. The Discharger shall submit a written report to the Regional Water Board within five working days following telephone notification unless directed otherwise by the Regional Water Board. A report submitted electronically is acceptable. The written report shall include the following:

(1) Date and time of spill, and duration if known;

(2) Location of spill (street address or description of location);

(3) Nature of material spilled;

(4) Quantity of material involved;

(5) Receiving water body affected, if any;

(6) Cause of spill;

(7) Estimated size of affected area;

(8) Observed impacts to receiving waters (e.g., oil sheen, fish kill, water discoloration);

(9) Corrective actions taken to contain, minimize, or clean up the spill;

(10) Future corrective actions planned to be taken to prevent recurrence, and schedule of implementation; and

(11) Persons or agencies notified.

2. Unauthorized Discharges from Municipal Wastewater Treatment Plants[1]

The following requirements apply to municipal wastewater treatment plants that experience an unauthorized discharge at their treatment facilities and are consistent with and supersede requirements imposed on the Discharger by the Executive Officer by letter of May 1, 2008, issued pursuant to California Water Code Section 13383.

a. Two (2)-Hour Notification

For any unauthorized discharges that result in a discharge to a drainage channel or a surface water, the Discharger shall, as soon as possible, but not later than two (2) hours after becoming aware of the discharge, notify the State Office of Emergency Services (telephone 800-852-7550), the local health officers or directors of environmental health with jurisdiction over the affected water bodies, and the Regional Water Board. The notification to the Regional Water Board shall be via the Regional Water Board's online reporting system at www.wbers.net, and shall include the following:

(1) Incident description and cause;

[1] California Code of Regulations, Title 23, Section 2250(b), defines an unauthorized discharge to be a discharge, not regulated by waste discharge requirements, of treated, partially treated, or untreated wastewater resulting from the intentional or unintentional diversion of wastewater from a collection, treatment or disposal system.

(2) Location of threatened or involved waterway(s) or storm drains;

(3) Date and time the unauthorized discharge started;

(4) Estimated quantity and duration of the unauthorized discharge (to the extent known), and the estimated amount recovered;

(5) Level of treatment prior to discharge (e.g., raw wastewater, primary treated, undisinfected secondary treated, and so on); and

(6) Identity of the person reporting the unauthorized discharge.

b. 24-hour Certification

Within 24 hours, the Discharger shall certify to the Regional Water Board, at www.wbers.net, that the State Office of Emergency Services and the local health officers or directors of environmental health with jurisdiction over the affected water bodies have been notified of the unauthorized discharge.

c. 5-Day Written Report

Within five business days, the Discharger shall submit a written report, via the Regional Water Board's online reporting system at www.wbers.net, that includes, in addition to the information required above, the following:

(1) Methods used to delineate the geographical extent of the unauthorized discharge within receiving waters;

(2) Efforts implemented to minimize public exposure to the unauthorized discharge;

(3) Visual observations of the impacts (if any) noted in the receiving waters (e.g., fish kill, discoloration of water) and the extent of sampling if conducted;

(4) Corrective measures taken to minimize the impact of the unauthorized discharge;

(5) Measures to be taken to minimize the chances of a similar unauthorized discharge occurring in the future;

(6) Summary of Spill Prevention Plan or O&M Manual modifications to be made, if necessary, to minimize the chances of future unauthorized discharges; and

(7) Quantity and duration of the unauthorized discharge, and the amount recovered.

d. Communication Protocol

To clarify the multiple levels of notification, certification, and reporting, the current communication requirements for unauthorized discharges from municipal wastewater treatment plants are summarized in Table B that follows.

Table B

Summary of Communication Requirements for Unauthorized Discharges[1] from Municipal Wastewater Treatment Plants

Dischargers are required to:	Agency Receiving Information	Time frame	Method for Contact
1. Notify	California Emergency Management Agency (Cal EMA)	As soon as possible, but not later than **2 hours** after becoming aware of the unauthorized discharge.	Telephone – (800) 852-7550 (obtain a control number from Cal EMA)
	Local health department	As soon as possible, but not later than **2 hours** after becoming aware of the unauthorized discharge.	Depends on local health department
	Regional Water Board	As soon as possible, but not later than **2 hours** after becoming aware of the unauthorized discharge.	Electronic[2] www.wbers.net
2. Certify	Regional Water Board	As soon as possible, but not later than **24 hours** after becoming aware of the unauthorized discharge.	Electronic[3] www.wbers.net
3. Report	Regional Water Board	Within **5 business days** of becoming aware of the unauthorized discharge.	Electronic[4] www.wbers.net

F. Planned Changes

Not supplemented

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1 California Code of Regulations, Title 23, Section 2250(b), defines an unauthorized discharge to be a discharge, not regulated by waste discharge requirements, of treated, partially treated, or untreated wastewater resulting from the intentional or unintentional diversion of wastewater from a collection, treatment or disposal system.

2 In the event that the Discharger is unable to provide online notification within 2 hours of becoming aware of an unauthorized discharge, it shall phone the Regional Water Board's spill hotline at (510) 622-2369 and convey the same information contained in the notification form. In addition, within 3 business days of becoming aware of the unauthorized discharge, the Discharger shall enter the notification information into the Regional Water Board's online system in electronic format.

3 In most instances, the 2-hour notification will also satisfy 24-hour certification requirements. This is because the notification form includes fields for documenting that OES and the local health department have been contacted. In other words, if the Discharger is able to complete all the fields in the notification form within 2 hours, certification requirements are also satisfied. In the event that the Discharger is unable to provide online certification within 24 hours of becoming aware of an unauthorized discharge, it shall phone the Regional Water Board's spill hotline at (510) 622-2369 and convey the same information contained in the certification form. In addition, within 3 business days of becoming aware of the unauthorized discharge, the Discharger shall enter the certification information into the Regional Water Board's online system in electronic format.

4 If the Discharger cannot satisfy the 5-day reporting requirements via the Regional Water Board's online reporting system, it shall submit a written report (preferably electronically in pdf) to the appropriate Regional Water Board case manager. In cases where the Discharger cannot satisfy the 5-day reporting requirements via the online reporting system, it must still complete the Regional Water Board's online reporting requirements within 15 calendar days of becoming aware of the unauthorized discharge.

G. Anticipated Noncompliance

Not supplemented

H. Other Noncompliance

Not supplemented

I. Other Information

Not supplemented

VI. STANDARD PROVISIONS – ENFORCEMENT

Not Supplemented

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

Not Supplemented

VIII. DEFINITIONS

This section is an addition to Standard Provisions (Attachment D)

More definitions can be found in Attachment A of this NPDES Permit.

1. Arithmetic Calculations

   a. Geometric mean is the antilog of the log mean or the back-transformed mean of the logarithmically transformed variables, which is equivalent to the multiplication of the antilogarithms. The geometric mean can be calculated with either of the following equations:

   $$\text{Geometric Mean} = Anti\log\left(\frac{1}{N}\sum_{i=1}^{N} Log(C_i)\right)$$

   or

   $$\text{Geometric Mean} = (C_1 * C_2 * \ldots * C_N)^{1/N}$$

   Where "N" is the number of data points for the period analyzed and "C" is the concentration for each of the "N" data points.

   b. Mass emission rate is obtained from the following calculation for any calendar day:

   $$\text{Mass emission rate (lb/day)} = \frac{8.345}{N}\sum_{i=1}^{N} Q_i C_i$$

   $$\text{Mass emission rate (kg/day)} = \frac{3.785}{N}\sum_{i=1}^{N} Q_i C_i$$

In which "N" is the number of samples analyzed in any calendar day and "Qi" and "Ci" are the flow rate (MGD) and the constituent concentration (mg/L) associated with each of the "N" grab samples that may be taken in any calendar day. If a composite sample is taken, "Ci" is the concentration measured in the composite sample and "Qi" is the average flow rate occurring during the period over which the samples are composited. The daily concentration of a constituent measured over any calendar day shall be determined from the flow-weighted average of the same constituent in the combined waste streams as follows:

$$C_d = \text{Average daily concentration} = \frac{1}{Q_t}\sum_{i=1}^{N} Q_i C_i$$

In which "N" is the number of component waste streams and "Q" and "C" are the flow rate (MGD) and the constituent concentration (mg/L) associated with each of the "N" waste streams. "Q_t" is the total flow rate of the combined waste streams.

c. Maximum allowable mass emission rate, whether for a 24-hour, weekly 7-day, monthly 30-day, or 6-month period, is a limitation expressed as a daily rate determined with the formulas in the paragraph above, using the effluent concentration limit specified in the permit for the period and the specified allowable flow.

d. POTW removal efficiency is the ratio of pollutants removed by the treatment facilities to pollutants entering the treatment facilities (expressed as a percentage). The Discharger shall determine removal efficiencies using monthly averages (by calendar month unless otherwise specified) of pollutant concentration of influent and effluent samples collected at about the same time and using the following equation (or its equivalent):

Removal Efficiency (%) = 100 × [1-(Effluent Concentration/Influent Concentration)]

2. Biosolids means the solids, semi-liquid suspensions of solids, residues, screenings, grit, scum, and precipitates separated from or created in wastewater by the unit processes of a treatment system. It also includes, but is not limited to, all supernatant, filtrate, centrate, decantate, and thickener overflow and underflow in the solids handling parts of the wastewater treatment system.

3. Blending is the practice of recombining wastewater that has been biologically treated with wastewater that has bypassed around biological treatment units.

4. Bottom sediment sample is (1) a separate grab sample taken at each sampling station for the determination of selected physical-chemical parameters, or (2) four grab samples collected from different locations in the immediate vicinity of a sampling station while the boat is anchored and analyzed separately for macroinvertebrates.

5. Composite sample is a sample composed of individual grab samples collected manually or by an automatic sampling device on the basis of time or flow as specified in the MRP. For flow-based composites, the proportion of each grab sample included in the composite sample shall be within plus or minus five percent (+/-5%) of the representative flow rate of the waste stream being measured at the time of grab sample collection. Alternatively, equal volume grab samples may be individually analyzed with the flow-weighted average calculated by averaging flow-weighted ratios

of each grab sample analytical result. Grab samples comprising time-based composite samples shall be collected at intervals not greater than those specified in the MRP. The quantity of each grab sample comprising a time-based composite sample shall be a set of flow proportional volumes as specified in the MRP. If a particular time-based or flow-based composite sampling protocol is not specified in the MRP, the Discharger shall determine and implement the most representative sampling protocol for the given parameter subject to Executive Officer approval.

6. Depth-integrated sample is defined as a water or waste sample collected by allowing a sampling device to fill during a vertical traverse in the waste or receiving water body being sampled. The Discharger shall collect depth-integrated samples in such a manner that the collected sample will be representative of the waste or water body at that sampling point.

7. Flow sample is an accurate measurement of the average daily flow volume using a properly calibrated and maintained flow measuring device.

8. Grab sample is an individual sample collected in a short period of time not exceeding 15 minutes. Grab samples represent only the condition that exists at the time the wastewater is collected.

9. Initial dilution is the process that results in the rapid and irreversible turbulent mixing of wastewater with receiving water around the point of discharge.

10. Overflow is the intentional or unintentional spilling or forcing out of untreated or partially treated wastes from a transport system (e.g., through manholes, at pump stations, and at collection points) upstream from the treatment plant headworks or from any part of a treatment plant facility.

11. Priority pollutants are those constituents referred to in 40 CFR Part 122 as promulgated in the Federal Register, Vol. 65, No. 97, Thursday, May 18, 2000, also known as the California Toxics Rule, the presence or discharge of which could reasonably be expected to interfere with maintaining designated uses.

12. Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage. It excludes infiltration and runoff from agricultural land.

13. Toxic pollutant means any pollutant listed as toxic under federal Clean Water Act section 307(a)(1) or under 40 CFR 401.15.

14. Untreated waste is raw wastewater.

15. Waste, waste discharge, discharge of waste, and discharge are used interchangeably in the permit. The requirements of the permit apply to the entire volume of water, and the material therein, that is disposed of to surface and ground waters of the State of California.

Table C

List of Monitoring Parameters and Analytical Methods

CTR No.	Pollutant/Parameter	Analytical Method[1]	Minimum Levels[2] (µg/l)											
			GC	GCMS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
1.	Antimony	204.2					10	5	50	0.5	5	0.5		1000
2.	Arsenic	206.3				20		2	10	2	2	1		1000
3.	Beryllium						20	0.5	2	0.5	1			1000
4.	Cadmium	200 or 213					10	0.5	10	0.25	0.5			1000
5a.	Chromium (III)	SM 3500												
5b.	Chromium (VI)	SM 3500				10	5							1000
	Chromium total[3]	SM 3500					50	2	10	0.5	1			1000
6.	Copper	200.9					25	5	10	0.5	2			1000
7.	Lead	200.9					20	5	5	0.5	2			10,000
8.	Mercury	1631 (note)[4]												
9.	Nickel	249.2					50	5	20	1	5			1000
10.	Selenium	200.8 or SM 3114B or C						5	10	2	5	1		1000
11.	Silver	272.2					10	1	10	0.25	2			1000
12.	Thallium	279.2					10	2	10	1	5			1000
13.	Zinc	200 or 289					20		20	1	10			
14.	Cyanide	SM 4500 CN^- C or I				5								
15.	Asbestos (only required for dischargers to MUN waters)[5]	0100.2 [6]												
16.	2,3,7,8-TCDD and 17 congeners (Dioxin)	1613												
17.	Acrolein	603	2.0	5										
18.	Acrylonitrile	603	2.0	2										
19.	Benzene	602	0.5	2										
33.	Ethylbenzene	602	0.5	2										
39.	Toluene	602	0.5	2										
20.	Bromoform	601	0.5	2										
21.	Carbon Tetrachloride	601	0.5	2										
22.	Chlorobenzene	601	0.5	2										
23.	Chlorodibromomethane	601	0.5	2										
24.	Chloroethane	601	0.5	2										
25.	2-Chloroethylvinyl Ether	601	1	1										
26.	Chloroform	601	0.5	2										
75.	1,2-Dichlorobenzene	601	0.5	2										
76.	1,3-Dichlorobenzene	601	0.5	2										
77.	1,4-Dichlorobenzene	601	0.5	2										
27.	Dichlorobromomethane	601	0.5	2										
28.	1,1-Dichloroethane	601	0.5	1										
29.	1,2-Dichloroethane	601	0.5	2										
30.	1,1-Dichloroethylene or 1,1-Dichloroethene	601	0.5	2										
31.	1,2-Dichloropropane	601	0.5	1										
32.	1,3-Dichloropropylene or 1,3-Dichloropropene	601	0.5	2										
34.	Methyl Bromide or Bromomethane	601	1.0	2										

CTR No.	Pollutant/Parameter	Analytical Method[1]	Minimum Levels[2] (µg/l)											
			GC	GCMS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
35.	Methyl Chloride or Chloromethane	601	0.5	2										
36.	Methylene Chloride or Dichlorormethane	601	0.5	2										
37.	1,1,2,2-Tetrachloroethane	601	0.5	1										
38.	Tetrachloroethylene	601	0.5	2										
40.	1,2-Trans-Dichloroethylene	601	0.5	1										
41.	1,1,1-Trichloroethane	601	0.5	2										
42.	1,1,2-Trichloroethane	601	0.5	2										
43.	Trichloroethene	601	0.5	2										
44.	Vinyl Chloride	601	0.5	2										
45.	2-Chlorophenol	604	2	5										
46.	2,4-Dichlorophenol	604	1	5										
47.	2,4-Dimethylphenol	604	1	2										
48.	2-Methyl-4,6-Dinitrophenol or Dinitro-2-methylphenol	604	10	5										
49.	2,4-Dinitrophenol	604	5	5										
50.	2-Nitrophenol	604		10										
51.	4-Nitrophenol	604	5	10										
52.	3-Methyl-4-Chlorophenol	604	5	1										
53.	Pentachlorophenol	604	1	5										
54.	Phenol	604	1	1		50								
55.	2,4,6-Trichlorophenol	604	10	10										
56.	Acenaphthene	610 HPLC	1	1	0.5									
57.	Acenaphthylene	610 HPLC		10	0.2									
58.	Anthracene	610 HPLC		10	2									
60.	Benzo(a)Anthracene or 1,2 Benzanthracene	610 HPLC	10	5										
61.	Benzo(a)Pyrene	610 HPLC		10	2									
62.	Benzo(b)Fluoranthene or 3,4 Benzofluoranthene	610 HPLC		10	10									
63.	Benzo(ghi)Perylene	610 HPLC		5	0.1									
64.	Benzo(k)Fluoranthene	610 HPLC		10	2									
74.	Dibenzo(a,h)Anthracene	610 HPLC		10	0.1									
86.	Fluoranthene	610 HPLC	10	1	0.05									
87.	Fluorene	610 HPLC		10	0.1									
92.	Indeno(1,2,3-cd) Pyrene	610 HPLC		10	0.05									
100.	Pyrene	610 HPLC		10	0.05									
68.	Bis(2-Ethylhexyl)Phthalate	606 or 625	10	5										
70.	Butylbenzyl Phthalate	606 or 625	10	10										
79.	Diethyl Phthalate	606 or 625	10	2										
80.	Dimethyl Phthalate	606 or 625	10	2										
81.	Di-n-Butyl Phthalate	606 or 625		10										
84.	Di-n-Octyl Phthalate	606 or 625		10										
59.	Benzidine	625		5										
65.	Bis(2-Chloroethoxy)Methane	625		5										
66.	Bis(2-Chloroethyl)Ether	625	10	1										
67.	Bis(2-Chloroisopropyl)Ether	625	10	2										
69.	4-Bromophenyl Phenyl Ether	625	10	5										
71.	2-Chloronaphthalene	625		10										
72.	4-Chlorophenyl Phenyl Ether	625		5										

CTR No.	Pollutant/Parameter	Analytical Method[1]	Minimum Levels[2] (µg/l)											
			GC	GCMS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
73.	Chrysene	625		10	5									
78.	3,3'-Dichlorobenzidine	625		5										
82.	2,4-Dinitrotoluene	625	10	5										
83.	2,6-Dinitrotoluene	625		5										
85.	1,2-Diphenylhydrazine (note)[7]	625		1										
88.	Hexachlorobenzene	625	5	1										
89.	Hexachlorobutadiene	625	5	1										
90.	Hexachlorocyclopentadiene	625	5	5										
91.	Hexachloroethane	625	5	1										
93.	Isophorone	625	10	1										
94.	Naphthalene	625	10	1	0.2									
95.	Nitrobenzene	625	10	1										
96.	N-Nitrosodimethylamine	625	10	5										
97.	N-Nitrosodi-n-Propylamine	625	10	5										
98.	N-Nitrosodiphenylamine	625	10	1										
99.	Phenanthrene	625		5	0.05									
101.	1,2,4-Trichlorobenzene	625	1	5										
102.	Aldrin	608	0.005											
103.	α-BHC	608	0.01											
104.	β-BHC	608	0.005											
105.	γ-BHC (Lindane)	608	0.02											
106.	δ-BHC	608	0.005											
107.	Chlordane	608	0.1											
108.	4,4'-DDT	608	0.01											
109.	4,4'-DDE	608	0.05											
110.	4,4'-DDD	608	0.05											
111.	Dieldrin	608	0.01											
112.	Endosulfan (alpha)	608	0.02											
113.	Endosulfan (beta)	608	0.01											
114.	Endosulfan Sulfate	608	0.05											
115.	Endrin	608	0.01											
116.	Endrin Aldehyde	608	0.01											
117.	Heptachlor	608	0.01											
118.	Heptachlor Epoxide	608	0.01											
119-125	PCBs: Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260	608	0.5											
126.	Toxaphene	608	0.5											

Footnotes to Table C:

1 The suggested method is the USEPA Method unless otherwise specified (SM = Standard Methods). The Discharger may use another USEPA-approved or recognized method if that method has a level of quantification below the applicable water quality objective. Where no method is suggested, the Discharger has the discretion to use any standard method.

2 Minimum levels are from the *State Implementation Policy*. They are the concentration of the lowest calibration standard for that technique based on a survey of contract laboratories. Laboratory techniques are defined as follows: GC = Gas Chromatography; GCMS = Gas Chromatography/Mass Spectrometry; LC = High Pressure Liquid Chromatography; Color = Colorimetric; FAA = Flame Atomic Absorption; GFAA = Graphite Furnace Atomic Absorption; ICP = Inductively Coupled Plasma; ICPMS = Inductively Coupled Plasma/Mass Spectrometry; SPGFAA = Stabilized Platform Graphite Furnace Atomic Absorption (i.e., U.S. EPA 200.9); Hydride = Gaseous Hydride Atomic Absorption; CVAA = Cold Vapor Atomic Absorption; DCP = Direct Current Plasma.

3 Analysis for total chromium may be substituted for analysis of chromium (III) and chromium (VI) if the concentration measured is below the lowest hexavalent chromium criterion (11 ug/l).

4 The Discharger shall use ultra-clean sampling (USEPA Method 1669) and ultra-clean analytical methods (USEPA Method 1631) for mercury monitoring. The minimum level for mercury is 2 ng/l (or 0.002 ug/l).

5 MUN = Municipal and Domestic Supply. This designation, if applicable, is in the Findings of the permit.

6 Determination of Asbestos Structures over 10 [micrometers] in Length in Drinking Water Using MCE Filters, U.S. EPA 600/R-94-134, June 1994.

7. Measurement for 1,2-diphenylhydrazine may use azobenzene as a screen: if azobenzene is measured at >1 ug/l, then the Discharger shall analyze for 1,2-diphenylhydrazine.

H

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ATTACHMENT H
PRETREATMENT PROGRAM PROVISIONS

For

NPDES POTW WASTEWATER DISCHARGE PERMITS

March 2011
(Corrected May 2011)

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Attachment H: Pretreatment Program Provisions

A. The Discharger shall be responsible and liable for the performance of all Control Authority pretreatment requirements contained in 40 CFR 403, including any regulatory revisions to Part 403. Where a Part 403 revision is promulgated after the effective date of the Discharger's permit and places mandatory actions upon the Discharger as Control Authority but does not specify a timetable for completion of the actions, the Discharger shall complete the required actions within six months from the issuance date of this permit or six months from the effective date of the Part 403 revisions, whichever comes later.

(If the Discharger cannot complete the required actions within the above six-month period due to the need to process local adoption of sewer use ordinance modifications or other substantial pretreatment program modifications, the Discharger shall notify the Executive Officer in writing at least 60 days prior to the six-month deadline. The written notification shall include a summary of completed required actions, an explanation for why the six-month deadline cannot be met, and a proposed timeframe to complete the rest of the required actions as soon as practical but not later than within twelve months of the issuance date of this permit or twelve months of the effective date of the Part 403 revisions, whichever comes later. The Executive Officer will notify the Discharger in writing within 30 days of receiving the request if the extension is not approved.)

The United States Environmental Protection Agency (USEPA), the State and/or other appropriate parties may initiate enforcement action against a nondomestic user for noncompliance with applicable standards and requirements as provided in the Clean Water Act (Act).

B. The Discharger shall enforce the requirements promulgated under Sections 307(b), 307(c), 307(d) and 402(b) of the Act with timely, appropriate and effective enforcement actions. The Discharger shall cause nondomestic users subject to Federal Categorical Standards to achieve compliance no later than the date specified in those requirements or, in the case of a new nondomestic user, upon commencement of the discharge.

C. The Discharger shall perform the pretreatment functions as required in 40 CFR 403 and amendments or modifications thereto including, but not limited to:

1. Implement the necessary legal authorities to fully implement the pretreatment regulations as provided in 40 CFR 403.8(f)(1);

2. Implement the programmatic functions as provided in 40 CFR 403.8(f)(2);

3. Publish an annual list of nondomestic users in significant noncompliance as provided per 40 CFR 403.8(f)(2)(viii);

4. Provide for the requisite funding and personnel to implement the pretreatment program as provided in 40 CFR 403.8(f)(3); and

5. Enforce the national pretreatment standards for prohibited discharges and categorical standards as provided in 40 CFR 403.5 and 403.6, respectively.

D. The Discharger shall submit annually a report to USEPA Region 9, the State Water Board and the Regional Water Board describing its pretreatment program activities over the previous calendar year. In the event that the Discharger is not in compliance with any conditions or requirements of the Pretreatment Program, the Discharger shall also include the reasons for noncompliance and a plan and schedule for achieving compliance. The report shall contain, but is not limited to, the information specified in Appendix H-1 entitled, "Requirements for Pretreatment Annual Reports." The annual report is due each year on February 28th.

E. The Discharger shall submit a pretreatment semiannual report to USEPA Region 9, the State Water Board and the Regional Water Board describing the status of its significant industrial users (SIUs). The report shall contain, but is not limited to, information specified in Appendix H-2 entitled, "Requirements for Pretreatment Semiannual Reports." The semiannual report is due July 31st for the period January through June. The information for the period July through December of each year shall be included in the Annual Report identified in Appendix H-1. The Executive Officer may exempt a Discharger from the semiannual reporting requirements on a case by case basis subject to State Water Board and USEPA's comment and approval.

F. The Discharger shall conduct the monitoring of its treatment plant's influent, effluent, and sludge (biosolids) as described in Appendix H-4 entitled, "Requirements for Influent, Effluent and Sludge (Biosolids) Monitoring." (The term "biosolids," as used in this Attachment, shall have the same meaning as wastewater treatment plant "sludge" and will be used from this point forward.) The Discharger shall evaluate the results of the sampling and analysis during the preparation of the semiannual and annual reports to identify any trends. Signing the certification statement used to transmit the reports shall be deemed to certify the Discharger has completed this data evaluation. A tabulation of the data shall be included in the pretreatment annual report as specified in Appendix H-4. The Executive Officer may require more or less frequent monitoring on a case by case basis.

APPENDIX H-1

REQUIREMENTS FOR PRETREATMENT ANNUAL REPORTS

The Pretreatment Annual Report is due each year on February 28 and shall contain activities conducted during the previous calendar year. The purpose of the Annual Report is to:

1. Describe the status of the Discharger's pretreatment program; and

2. Report on the effectiveness of the program, as determined by comparing the results of the preceding year's program implementation.

The report shall contain, at a minimum, the following information:

A. Cover Sheet

The cover sheet shall include:

1. All the names and National Pollutant Discharge Elimination Discharge System (NPDES) permit numbers of all the Dischargers that are part of the Pretreatment Program;

2. The name, address and telephone number of a pretreatment contact person;

3. The period covered in the report;

4. A statement of truthfulness; and

5. The dated signature of a principal executive officer, ranking elected official, or other duly authorized employee who is responsible for overall operation of the Publicly Owned Treatment Works (POTW) (40 CFR 403.12(m)).

B. Introduction

This section shall include:

1. Any pertinent background information related to the Discharger and/or the nondomestic user base of the area;

2. List of applicable interagency agreements used to implement the Discharger's pretreatment program (e.g., Memoranda of Understanding (MOU) with satellite sanitary sewer collection systems); and

3. A status summary of the tasks required by a Pretreatment Compliance Inspection (PCI), Pretreatment Compliance Audit (PCA), Cleanup and Abatement Order (CAO), or other pretreatment-related enforcement actions required by the Regional Water Board or

USEPA. A more detailed discussion can be referenced and included in the section entitled, "Program Changes," if needed.

C. Definitions

This section shall include a list of key terms and their definitions that the Discharger uses to describe or characterize elements of its pretreatment program or the Discharger may provide a reference to its website if the applicable definitions are available on-line.

D. Discussion of Upset, Interference and Pass Through

This section shall include a discussion of Upset, Interference or Pass Through incidents, if any, at the Discharger's treatment plant(s) that the Discharger knows of or suspects were caused by nondomestic user discharges. Each incident shall be described, at a minimum, consisting of the following information:

1. A description of what occurred;
2. A description of what was done to identify the source;
3. The name and address of the nondomestic user responsible;
4. The reason(s) why the incident occurred;
5. A description of the corrective actions taken; and
6. An examination of the local and federal discharge limits and requirements for the purposes of determining whether any additional limits or changes to existing requirements may be necessary to prevent other Upset, Interference or Pass Through incidents.

E. Influent, Effluent and Biosolids Monitoring Results

The Discharger shall evaluate the influent, effluent and biosolids monitoring results as specified in Appendix H-4 in preparation of this report. The Discharger shall retain the analytical laboratory reports with the Quality Assurance and Quality Control (QA/QC) data validation and make these reports available upon request.

This section shall include:

1. Description of the sampling procedures and an analysis of the results (see Appendix H-4 for specific requirements);
2. Tabular summary of the compounds detected (compounds measured above the detection limit for the analytical method used) for the monitoring data generated during the reporting year as specified in Appendix H-4;

3. Discussion of the investigation findings into any contributing sources of the compounds that exceed NPDES limits; and

4. Graphical representation of the influent and effluent metal monitoring data for the past five years with a discussion of any trends.

F. Inspection, Sampling and Enforcement Programs

This section shall include at a minimum the following information:

1. Inspections: Summary of the inspection program (e.g., criteria for determining the frequency of inspections and inspection procedures);

2. Sampling Events: Summary of the sampling program (e.g., criteria for determining the frequency of sampling and chain of custody procedures); and

3. Enforcement: Summary of Enforcement Response Plan (ERP) implementation including dates for adoption, last revision and submission to the Regional Water Board.

G. Updated List of Regulated SIUs

This section shall contain a list of all of the federal categories that apply to SIUs regulated by the Discharger. The specific categories shall be listed including the applicable 40 CFR subpart and section, and pretreatment standards (both maximum and average limits). Local limits developed by the Discharger shall be presented in a table including the applicability of the local limits to SIUs. If local limits do not apply uniformly to SIUs, specify the applicability in the tables listing the categorical industrial users (CIUs) and non-categorical SIUs. Tables developed in Sections 7A and 7B can be used to present or reference this information.

1. CIUs - Include a table that alphabetically lists the CIUs regulated by the Discharger as of the end of the reporting period. This list shall include:

   a. Name;

   b. Address;

   c. Applicable federal category(ies);

   d. Reference to the location where the applicable federal categorical standards are presented in the report;

   e. Identify all deletions and additions keyed to the list submitted in the previous annual report. All deletions shall be briefly explained (e.g., closure, name change, ownership change, reclassification, declassification); and

   f. Information, calculations and data used to determine the limits for those CIUs for which a combined waste stream formula is applied.

2. Non-categorical SIUs - Include a table that alphabetically lists the SIUs not subject to any federal categorical standards that were regulated by the Discharger as of the end of the reporting period. This list shall include:

   a. Name;

   b. Address;

   c. A brief description of the type of business;

   d. Identify all deletions and additions keyed to the list submitted in the previous annual report. All deletions shall be briefly explained (e.g., closure, name change, ownership change, reclassification, declassification); and

   e. Indicate the applicable discharge limits (e.g., different from local limits) to which the SIUs are subject and reference to the location where the applicable limits (e.g., local discharge limits) are presented in the report.

H. SIU (categorical and non-categorical) Compliance Activities

The information required in this section may be combined in the table developed in Section 7 above.

1. **Inspection and Sampling Summary:** This section shall contain a summary of all the SIU inspections and sampling activities conducted by the Discharger and sampling activities conducted by the SIU over the reporting year to gather information and data regarding SIU compliance. The summary shall include:

   a. The number of inspections and sampling events conducted for each SIU by the Discharger;

   b. The number of sampling events conducted by the SIU. Identify SIUs that are operating under an approved Total Toxic Organic (TTO) Management Plan;

   c. The quarters in which the above activities were conducted; and

   d. The compliance status of each SIU, delineated by quarter, and characterized using all applicable descriptions as given below:

      (1) Consistent compliance;

      (2) Inconsistent compliance;

      (3) Significant noncompliance;

(4) On a compliance schedule to achieve compliance, (include the date final compliance is required);

(5) Not in compliance and not on a compliance schedule; and

(6) Compliance status unknown, and why not.

2. **Enforcement Summary:** This section shall contain a summary of SIU compliance and enforcement activities during the reporting year. The summary may be included in the summary table developed in section 8A and shall include the names and addresses of all SIUs affected by the actions identified below. For each notice specified in enforcement action "i" through "iv," indicate whether it was for an infraction of a federal or local standard/limit or requirement.

   a. Warning letters or notices of violations regarding SIUs' apparent noncompliance with or violation of any federal pretreatment categorical standards and/or requirements, or local limits and/or requirements;

   b. Administrative Order regarding the SIUs' apparent noncompliance with or violation of any federal pretreatment categorical standards and/or requirements, or local limits and/or requirements;

   c. Civil actions regarding the SIUs' apparent noncompliance with or violation of any federal pretreatment categorical standards and/or requirements, or local limits and/or requirements;

   d. Criminal actions regarding the SIUs' apparent noncompliance with or violation of any federal pretreatment categorical standards and/or requirements, or local limits and/or requirements;

   e. Assessment of monetary penalties. Identify the amount of penalty in each case and reason for assessing the penalty;

   f. Order to restrict/suspend discharge to the Discharger; and

   g. Order to disconnect the discharge from entering the Discharger.

3. **July-December Semiannual Data:** For SIU violations/noncompliance during the semiannual reporting period from July 1 through December 31, provide the following information:

   a. Name and facility address of the SIU;

   b. Indicate if the SIU is subject to Federal categorical standards; if so, specify the category including the subpart that applies;

   c. For SIUs subject to Federal Categorical Standards, indicate if the violation is of a categorical or local standard; and

d. Indicate the compliance status of the SIU for the two quarters of the reporting period.

e. For violations/noncompliance identified in the reporting period, provide:

(1) The date(s) of violation(s);

(2) The parameters and corresponding concentrations exceeding the limits and the discharge limits for these parameters; and

(3) A brief summary of the noncompliant event(s) and the steps that are being taken to achieve compliance.

I. Baseline Monitoring Report Update

This section shall provide a list of CIUs added to the pretreatment program since the last annual report. This list of new CIUs shall summarize the status of the respective Baseline Monitoring Reports (BMR). The BMR must contain the information specified in 40 CFR 403.12(b). For each new CIU, the summary shall indicate when the BMR was due; when the CIU was notified by the Discharger of this requirement; when the CIU submitted the report; and/or when the report is due.

J. Pretreatment Program Changes

This section shall contain a description of any significant changes in the Pretreatment Program during the past year including, but not limited to:

1. Legal authority;

2. Local limits;

3. Monitoring/ inspection program and frequency;

4. Enforcement protocol;

5. Program's administrative structure;

6. Staffing level;

7. Resource requirements;

8. Funding mechanism;

9. If the manager of the Discharger's pretreatment program changed, a revised organizational chart shall be included; and

10. If any element(s) of the program is in the process of being modified, this intention shall also be indicated.

K. Pretreatment Program Budget

This section shall present the budget spent on the Pretreatment Program. The budget, either by the calendar or fiscal year, shall show the total expenses required to implement the pretreatment program. A brief discussion of the source(s) of funding shall be provided. In addition, the Discharger shall make available upon request specific details on its pretreatment program expense amounts such as for personnel, equipment, and chemical analyses.

L. Public Participation Summary

This section shall include a copy of the public notice as required in 40 CFR 403.8(f)(2)(viii). If a notice was not published, the reason shall be stated.

M. Biosolids Storage and Disposal Practice

This section shall describe how treated biosolids are stored and ultimately disposed. If a biosolids storage area is used, it shall be described in detail including its location, containment features and biosolids handling procedures.

N. Other Pollutant Reduction Activities

This section shall include a brief description of any programs the Discharger implements to reduce pollutants from nondomestic users that are not classified as SIUs. If the Discharger submits any of this program information in an Annual Pollution Prevention Report, reference to this other report shall satisfy this reporting requirement.

O. Other Subjects

Other information related to the Pretreatment Program that does not fit into any of the above categories should be included in this section.

P. Permit Compliance System (PCS) Data Entry Form

The annual report shall include the PCS Data Entry Form. This form shall summarize the enforcement actions taken against SIUs in the past year. This form shall include the following information:

1. Discharger's name,
2. NPDES Permit number,
3. Period covered by the report,
4. Number of SIUs in significant noncompliance (SNC) that are on a pretreatment compliance schedule,
5. Number of notices of violation and administrative Order issued against SIUs,

6. Number of civil and criminal judicial actions against SIUs,

7. Number of SIUs that have been published as a result of being in SNC, and

8. Number of SIUs from which penalties have been collected.

APPENDIX H-2

REQUIREMENTS FOR JANUARY-JUNE PRETREATMENT SEMIANNUAL REPORT

The pretreatment semiannual report is due on July 31st for pretreatment program activities conducted from January through June unless an exception has been granted by the Regional Water Board's Executive Officer (e.g., pretreatment programs without any SIUs may qualify for an exception to the pretreatment semiannual report). Pretreatment activities conducted from July through December of each year shall be included in the Pretreatment Annual Report as specified in Appendix H-1. The pretreatment semiannual report shall contain, at a minimum the following information:

A. Influent, Effluent and Biosolids Monitoring

The influent, effluent and biosolids monitoring results shall be evaluated in preparation of this report. The Discharger shall retain analytical laboratory reports with the QA/QC data validation and make these reports available upon request. The Discharger shall also make available upon request a description of its influent, effluent and biosolids sampling procedures. Violations of any parameter that exceed NPDES limits shall be identified and reported. The contributing source(s) of the parameters that exceed NPDES limits shall be investigated and discussed.

B. Significant Industrial User Compliance Status

This section shall contain a list of all Significant Industrial Users (SIUs) that were not in consistent compliance with all pretreatment standards/limits or requirements for the reporting period. For the reported SIUs, the compliance status for the previous semiannual reporting period shall be included. Once the SIU has determined to be out of compliance, the SIU shall be included in subsequent reports until consistent compliance has been achieved. A brief description detailing the actions that the SIU undertook to come back into compliance shall be provided.

For each SIU on the list, the following information shall be provided:

1. Name and facility address of the SIU
2. Indicate if the SIU is subject to Federal categorical standards; if so, specify the category including the subpart that applies.
3. For SIUs subject to Federal Categorical Standards, indicate if the violation is of a categorical or local standard.
4. Indicate the compliance status of the SIU for the two quarters of the reporting period.
5. For violations/noncompliance identified in the reporting period, provide:
   a. The date(s) of violation(s);

b. The parameters and corresponding concentrations exceeding the limits and the discharge limits for these parameters; and

c. A brief summary of the noncompliant event(s) and the steps that are being taken to achieve compliance.

C. Discharger's Compliance with Pretreatment Program Requirements

This section shall contain a discussion of the Discharger's compliance status with the Pretreatment Program Requirements as indicated in the latest Pretreatment Compliance Audit (PCA) Report or Pretreatment Compliance Inspection (PCI) Report. It shall contain a summary of the following information:

1. Date of latest PCA or PCI report;
2. Date of the Discharger's response;
3. List of unresolved issues; and
4. Plan(s) and schedule for resolving the remaining issues.

APPENDIX H-3

SIGNATURE REQUIREMENTS FOR PRETREATMENT ANNUAL AND SEMIANNUAL REPORTS

The pretreatment annual and semiannual reports shall be signed by a principal executive officer, ranking elected official, or other duly authorized employee who is responsible for the overall operation of the Discharger [POTW - 40 CFR 403.12(m)]. Signed copies of the reports shall be submitted to the Regional Administrator at USEPA, the State Water Board, and the Regional Water Board at the following addresses unless the Discharger is instructed by any of these agencies to submit electronic copies of the required reports:

Pretreatment Program Reports
Clean Water Act Compliance Office (WTR-7)
Water Division
Pacific Southwest Region
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105-3901

Submit electronic copies only to State and Regional Water Boards:

Pretreatment Program Manager
Regulatory Unit
State Water Resources Control Board
Division of Water Quality-15th Floor
1001 I Street
Sacramento, CA 95814

DMR@waterboards.ca.gov
NPDES_Wastewater@waterboards.ca.gov

Pretreatment Coordinator
NPDES Wastewater Division
SF Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

(Submit the report as a single Portable Document Format (PDF) file to the Pretreatment Coordinator's folder in the Regional Water Board's File Transfer Protocol (FTP) site. The instructions for using the FTP site can be found at the following internet address: http://www.waterboards.ca.gov/sanfranciscobay/publications_forms/documents/FTP_Discharger_Guide-12-2010.pdf.)

APPENDIX H-4

REQUIREMENTS FOR INFLUENT, EFFLUENT AND BIOSOLIDS MONITORING

The Discharger shall conduct sampling of its treatment plant's influent, effluent and biosolids at the frequency shown in **Table E-5** of the Monitoring and Reporting Program (MRP, Attachment E). When sampling periods coincide, one set of test results, reported separately, may be used for those parameters that are required to be monitored by both the influent and effluent monitoring requirements of the MRP and the Pretreatment Program. The Pretreatment Program monitoring reports as required in Appendices H-1 and H-2 shall be transmitted to the Pretreatment Program Coordinator.

A. Reduction of Monitoring Frequency

The minimum frequency of Pretreatment Program influent, effluent, and biosolids monitoring shall be dependant on the number of significant industrial users (SIUs) identified in the Discharger's Pretreatment Program as indicated in Table H-1.

T	**Table H-1: Minimum Frequency of Pretreatment Program Monitoring**		
N	Number of SIUs	Mi	Minimum Frequency
≤	≤ 5	O	Once every five years
>	> 5 and < 50	O	Once every year
≥	≥ 50	T	Twice per year

If the Discharger's required monitoring frequency is greater than the minimum specified in Table H-1, the Discharger may request reduced monitoring frequency for that constituent(s)as part of its application for permit reissuance if it meets the following criteria:

The monitoring data for the constituent(s) consistently show non-detect (ND) levels for the effluent monitoring and very low (i.e., near ND) levels for influent and biosolids monitoring for a minimum of eight previous years' worth of data.

The Discharger's request shall include tabular summaries of the data and a description of the trends in the industrial, commercial, and residential customers in the Discharger's service area that demonstrate control over the sources of the constituent(s). The Regional Water Board may grant a reduced monitoring frequency in the reissued permit after considering the information provided by the Discharger and any other relevant information.

B. Influent and Effluent Monitoring

The Discharger shall monitor for the parameters using the required sampling and test methods listed in **Table E-5** of the MRP. Any test method substitutions must have received prior written Executive Officer approval. Influent and Effluent sampling locations shall be the same as those sites specified in the MRP.

The influent and effluent samples should be taken at staggered times to account for treatment plant detention time. Appropriately staggered sampling is considered consistent with the requirement for collection of effluent samples coincident with influent samples in Section III.A.3.a(2) of Attachment G. All samples must be representative of daily operations. Sampling and analysis shall be performed in accordance with the techniques prescribed in 40 CFR 136 and amendments thereto. For effluent monitoring, the reporting limits for the individual parameters shall be at or below the minimum levels (MLs) as stated in the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (2000) [also known as the State Implementation Policy (SIP)]; any revisions to the MLs shall be adhered to. If a parameter does not have a stated minimum level, then the Discharger shall conduct the analysis using the lowest commercially available and reasonably achievable detection levels.

The following report elements should be used to submit the influent and effluent monitoring results. A similarly structured format may be used but will be subject to Regional Water Board approval. The monitoring reports shall be submitted with the Pretreatment Annual Report identified in Appendix H-1.

1. Sampling Procedures, Sample Dechlorination, Sample Compositing, and Data Validation (applicable quality assurance/quality control) shall be performed in accordance with the techniques prescribed in 40 CFR 136 and amendments thereto. The Discharger shall make available upon request its sampling procedures including methods of dechlorination, compositing, and data validation.

2. A tabulation of the test results for the detected parameters shall be provided.

3. Discussion of Results – The report shall include a complete discussion of the test results for the detected parameters. If any pollutants are detected in sufficient concentration to upset, interfere or pass through plant operations, the type of pollutant(s) and potential source(s) shall be noted, along with a plan of action to control, eliminate, and/or monitor the pollutant(s). Any apparent generation and/or destruction of pollutants attributable to chlorination/dechlorination sampling and analysis practices shall be noted.

C. Biosolids Monitoring

Biosolids should be sampled in a manner that will be representative of the biosolids generated from the influent and effluent monitoring events except as noted in (C) below. The same parameters required for influent and effluent analysis shall be included in the biosolids analysis. The biosolids analyzed shall be a composite sample of the biosolids for final disposal consisting of:

1. Biosolids lagoons – 20 grab samples collected at representative equidistant intervals (grid pattern) and composited as a single grab, or

2. Dried stockpile – 20 grab samples collected at various representative locations and depths and composited as a single grab, or

3. Dewatered biosolids- daily composite of 4 representative grab samples each day for 5 days taken at equal intervals during the daily operating shift taken from a) the dewatering units or b) from each truckload, and shall be combined into a single 5-day composite.

The USEPA manual, POTW Sludge Sampling and Analysis Guidance Document, August 1989, containing detailed sampling protocols specific to biosolids is recommended as a guidance for sampling procedures. The USEPA manual Analytical Methods of the National Sewage Sludge Survey, September 1990, containing detailed analytical protocols specific to biosolids, is recommended as a guidance for analytical methods.

In determining if the biosolids is a hazardous waste, the Discharger shall adhere to Article 2, "Criteria for Identifying the Characteristics of Hazardous Waste," and Article 3, "Characteristics of Hazardous Waste," of Title 22, California Code of Regulations, Sections 66261.10 to 66261.24 and all amendments thereto.

The following report elements should be used to submit the biosolids monitoring results. A similarly structured form may be used but will be subject to Regional Water Board approval. The results shall be submitted with the Pretreatment Annual Report identified in Appendix H-1.

1. Sampling Procedures and Data Validation (applicable quality assurance/quality control) shall be performed in accordance with the techniques prescribed in 40 CFR 136 and amendments thereto. The Discharger shall make available upon request its biosolids sampling procedures and data validation methods.

2. Test Results – Tabulate the test results for the detected parameters and include the percent solids.

3. Discussion of Results –Include a complete discussion of test results for the detected parameters. If the detected pollutant(s) is reasonably deemed to have an adverse effect on biosolids disposal, a plan of action to control, eliminate, and/or monitor the pollutant(s) and the known or potential source(s) shall be included. Any apparent generation and/or destruction of pollutants attributable to chlorination/dechlorination sampling and analysis practices shall be noted.

The Discharger shall also provide a summary table presenting any influent, effluent or biosolids monitoring data for non-priority pollutants that the Discharger believes may be causing or contributing to interference, pass through or adversely impacting biosolids quality.

EXHIBIT B

PETITIONERS' PROPOSED REVISIONS TO DISHARGER'S PERMIT

Change No. 1: This change revises the reopener provisions of the Permit and the explanation for them in the Fact Sheet to be more specific regarding the circumstances under which the Regional Water Board could reopen the Permit with respect to ammonia related issues.

Revise Section VI.C.1 of the Permit as follows:

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 present or future investigations demonstrate that the discharges governed by this Order have or will have a reasonable potential to cause or contribute to, or will cease to have, adverse impacts on water quality or beneficial uses of the receiving waters.

* * *

c. If data, results, or other information developed in connection with translator, dilution, or other water quality studies (such as, but not limited to, studies related to Napa River ammonium effects, including, but not limited to, studies conducted pursuant to Provision VI.C.5.c) provide a basis for determining that a permit condition, such as but not limited to ammonia effluent limitations, should be modified.

The Discharger may request permit modification based on any of the circumstances described above. With any such request, the Discharger shall include an antidegradation and antibacksliding analysis.

Revise Permit Attachment F (Fact Sheet), Section VII.C.1 as follows:

1. Reopener Provisions

These provisions are based on 40 CFR 122.63 and allow modification of this Order and its effluent limitations as necessary in response to updated WQOs, regulations, or other new relevant information that may be established in the future and other circumstances allowed by law. Regional Water Board staff intends to reassess the appropriateness of the total ammonia effluent limitations in Table 7 of the Order by May 1, 2015. The permit may be reopened at any time under the circumstances set forth in Provision VI.C.1 of the Order.

Change No. 2: This change adds new provisions to the Final Order and explanations for them to the Fact Sheet. The new provisions require the District to conduct studies related to its ammonia-related effects on Napa River and Mare Island Straight and its ability to reduce ammonia discharges.

Add Sections VI.C.5.c and VI.C.5.d to the Permit as follows (for legibility, this completely new text is not underlined):

c. Nutrient Discharge Work Plan, Studies, and Reports

i. Draft Work Plan. By July 1, 2012, the Discharger shall submit to the Regional Water Board a draft work plan to conduct the studies listed in item c.iii, below, to evaluate further the effects of ammonia, ammonium, and other nutrients in the discharge. The Discharger may complete these studies itself or in conjunction with others, including but not limited to the State and Federal Contractors Water Agency, the State Water Contractors, and the San Luis & Delta-Mendota Water Authority (collectively, "Water Contractors"); the Bay Area Clean Water Agencies; and the Regional Water Board. The draft work plan shall call for the studies to be completed no later than September 1, 2014.

The draft work plan shall delineate a process to disseminate study results for stakeholder review. The Discharger shall distribute the draft work plan to stakeholders, including but not limited to the Water Contractors.

ii. Final Work Plan. By September 1, 2012, the Discharger shall submit a final work plan that incorporates Executive Officer feedback.

iii. Work Plan Elements. The work plan shall include schedules and commitments to fund the following:

(a) Collection of representative effluent samples sufficient to characterize nutrient forms, concentrations, and loads. The data to be obtained shall include the form and ratios of nitrogen and phosphorus, including organic and inorganic nitrogen and phosphorus.

(b) Collection of representative receiving water samples sufficient to characterize Discharger contributions to nutrient forms, concentrations and loads in the Napa River, Mare Island Straight, and locations downstream of the point of discharge. The data to be obtained shall include the form and ratios of nitrogen and phosphorus, including organic and inorganic nitrogen and phosphorus

(c) A study to understand the effect of Discharger effluent on phytoplankton abundance and productivity within the Napa River and Mare Island Straight using three different experimental approaches: (1) River characterization of inorganic nutrients and phytoplankton (2) Experimental grow-outs to investigate the time course of potential phytoplankton bloom development in the Napa River upstream and downstream of the Discharger's point of discharge (3) Effluent addition experiments to evaluate

whether the Discharger's effluent alters primary production and phytoplankton nitrogen uptake. The study shall use a methodology acceptable to the Executive Officer.

(c) Collaborative studies evaluating the role of ammonia and ammonium in primary productivity and zooplankton abundance, the significance of nutrient ratios, nutrient fate and transport, and the role of sediment biogeochemistry in nutrient fluxes. Such studies would include, for example, a determination whether sampling locations adequately characterize the potential impact of Vallejo's discharge as well as those studies committed to by the Bay Area Clean Water Agencies to be conducted by the Aquatic Science Center and San Francisco Estuary Institute (Chastain, Bay Area Clean Water Agencies, "Nutrient Strategy Development and Implementation: A proposal to BACWA and the San Francisco Bay Regional Water Quality Control Board," January 18, 2012).

iv. **Final Report.** The Discharger shall implement the final work plan described in item c.ii, above, and by November 1, 2014, submit a final report acceptable to the Executive Officer regarding the results of the studies completed pursuant to the final work plan.

d. Facilities Plan

i. **Work Plan.** By August 1, 2012, the Discharger shall submit a work plan to evaluate alternative treatment technologies to remove ammonia from the discharge, including nitrification technologies. The evaluation shall include facilities planning for a range of potential ammonia effluent limits and pilot scale systems analyses. The Discharger shall evaluate the suitability of the Facility and property owned or controlled by the Discharger to provide land necessary for ammonia treatment and removal.

ii. **Report.** By February 28, 2014, the Discharger shall provide a report acceptable to the Executive Officer containing the conclusions of the studies completed pursuant to item d.i, above.

Add Attachment F (Fact Sheet) Sections VII.C.5.c and VII.C.5.d as follows (again, for legibility, this completely new text is not underlined):

c. Nutrient Discharge Work Plan, Studies, and Reports

This provision is intended to ensure that sufficient information is available in a timely manner to conduct reasonable potential analyses for ammonia and ammonium, and if necessary to revise the water quality-based effluent limits in this Order. This provision is authorized by CWC section 13267.

d. Facilities Plan

This provision is intended to obtain information regarding the Discharger's ability to remove ammonia from the discharge and is authorized by CWC section 13267.

EXHIBIT C

Matthew Rodriguez
Secretary for
Environmental Protection

California Regional Water Quality Control Board

San Francisco Bay Region

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Edmund G. Brown, Jr.
Governor

ORDER NO. R2-2012-0016
NPDES NO. CA0037648

The following discharger and discharges from the discharge point identified below are subject to waste discharge requirements set forth in this Order.

Table 1. Discharger Information

Discharger	Central Contra Costa Sanitary District
Name of Facility	Central Contra Costa Sanitary District Wastewater Treatment Plant and its associated wastewater collection system
CIWQS Place Number	213875
Facility Address	5019 Imhoff Place, Martinez, CA 94553 Contra Costa County
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Quality Control Board have classified this discharge as a major discharge.	

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Secondary Treated Municipal Wastewater	38º 02′ 44″ N	122º 05′ 55″ W	Suisun Bay

Table 3. Administrative Information

This Order was adopted by the Regional Water Quality Control Board on:	February 8, 2012
This Order shall become effective on:	April 1, 2012
This Order shall expire on:	March 31, 2017
The Discharger shall file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations, as application for re-issuance of waste discharge requirements no later than:	September 30, 2016

I, Bruce H. Wolfe, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on the date indicated above.

_____

Bruce H. Wolfe**,** Executive Officer

Contents

Tables

Attachments

I. FACILITY INFORMATION

The following Discharger is subject to the waste discharge requirements set forth in this Order:

Table 4. Facility Information

Discharger	Central Contra Costa Sanitary District
Name of Facility	Central Contra Costa Sanitary District Wastewater Treatment Plant and its associated wastewater collection system
Facility Address	5019 Imhoff Place, Martinez CA 94553 Contra Costa County
CIWQS Place Number	213875
CIWQS Party Number	220151
Facility Contact, Title, and Phone	Margaret P. Orr P.E., Director of Plant Operations, 925-228-9500
Mailing Address	5019 Imhoff Place, Martinez, CA 94553
Type of Facility	Publicly Owned Treatment Works
Facility Design Flow	53.8 million gallons per day (MGD) (average dry weather flow) 250 MGD (peak wet weather influent design flow)
Service Area	Danville, Lafayette, Martinez, Moraga, Orinda, Pleasant Hill, San Ramon, Walnut Creek, Concord, Clayton, and adjacent unincorporated areas, including Alamo, Blackhawk, Clyde, and Pacheco
Service Population	455,000

II. FINDINGS

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

A. Background. Central Contra Costa Sanitary District (hereinafter the Discharger) is currently discharging under Order No. R2-2007-0008 (CIWQS Regulatory Measure No. 319679), National Pollutant Discharge Elimination System (NPDES) Permit No. CA0037648. The Discharger submitted a Report of Waste Discharge dated June 1, 2011, and applied for an NPDES permit reissuance to discharge treated wastewater from its Wastewater Treatment Plant to waters of the State and the United States. The discharge is also regulated under Regional Water Board Order No. R2-2007-0077 (NPDES Permit No. CA0038849), as amended by Order No. R2-2011-0012, which superseded all requirements on mercury and polychlorinated biphenyls (PCBs) from wastewater discharges. This Order does not affect the mercury and PCBs permit.

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and State laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. Facility Description and Discharge Location

1. **Facility Description.** The Discharger owns and operates the Central Contra Costa Sanitary District Wastewater Treatment Plant (hereinafter the Plant) and its associated wastewater collection system (hereinafter collectively the Facility). The Plant, located north of Concord and east of Martinez, (see Attachment B) provides secondary treatment of domestic,

commercial, and industrial wastewater for Danville, Lafayette, Martinez, Moraga, Orinda, Pleasant Hill, San Ramon, Walnut Creek, Concord, Clayton, and adjacent unincorporated areas, including Alamo, Blackhawk, Clyde, and Pacheco. The population of the service area is approximately 455,000. From April 2007 through December 2010, the maximum daily influent flow rate was 141 MGD and the average daily flow rate was 38.7 MGD. Both rates are well within the permitted 53.8 MGD average dry weather flow and 250 MGD peak wet weather design flow. Twenty-two (22) significant industrial users also discharge to the Facility and these discharges are regulated by the Facility's pretreatment program.

2. **Collection System.** The Discharger's wastewater collection system includes approximately 1,500 miles of pipeline, ranging from 6 to 102 inches in diameter, and 16 wastewater pumping stations. This collection system is part of the Facility covered by this Order. The City of Concord, separate from the Discharger, owns and maintains the collection system within most of Concord's city limits and the City of Clayton.

3. **Treatment Description.** Treatment processes consist of screening, grit removal, primary sedimentation, secondary biological treatment, secondary clarification and ultraviolet (UV) disinfection. These steps are shown in the process flow diagram in Attachment C.

4. **Discharge Point.** Secondary-treated wastewater is discharged at Discharge Point 001 to Suisun Bay about 3.5 miles from the Facility via a submerged outfall equipped with a multiport diffuser. The location of the outfall diffuser is approximately 1600 feet offshore at an average depth of approximately 24 feet. The diffuser is 6 feet in diameter and imbedded 4 feet into the sediment. The diffuser is oriented nearly perpendicular to the shoreline. It consists of 11 upward-facing ports separated 11.5 feet on center, for a total length of 115 feet.

   The Plant has holding basins for temporary storage of wet weather flows, with a combined volume of 170 million gallons. These basins are used to store excess wastewater after primary treatment when inflow exceeds the Plant's secondary treatment capacity. When flows subside, the stored wastewater is routed back to the headworks for full treatment.

5. **Recycled Water.** In 2010, the Discharger diverted approximately 600 million gallons of UV-disinfected effluent from its outfall to its Recycling Plant where the effluent was tertiary treated through sand/anthracite filtration and chlorine disinfection. This recycled water volume represents about 4% of the total wastewater treated. Recycled water is stored in a covered seven million gallon reservoir prior to distribution. Recycled water customers include landscape irrigators, corporation yards, private soil farms, concrete recycling and batch plants, and the county animal shelter. Recycled water activities are regulated under Regional Water Board Order No. 96-011.

6. **Biosolids Management.** Secondary sludge is thickened via dissolved air flotation, combined with primary sludge and lime, dewatered by centrifuges, and incinerated onsite. Ash is hauled by a contractor to an offsite recycling facility and used as a soil amendment. If Facility incinerators are inoperable, biosolids are diverted to sludge storage facilities and then hauled to local landfills or to the East Bay Municipal Utility District for treatment and disposal.

7. **Stormwater Discharge.** The Discharger is not required to be covered under the State Water Resources Control Board's (State Water Board) statewide industrial stormwater NPDES permit (NPDES General Permit No. CAS000001). All stormwater flows in contact with equipment or wastewater at the Plant and the pump stations serving the Plant are collected and directed to the headworks for treatment.

Attachment B provides a map of the area around the Plant. Attachment C provides a flow schematic of the Plant.

C. Legal Authorities. This Order is issued pursuant to Clean Water Act (CWA) section 402 and implements regulations adopted by the USEPA and chapter 5.5, division 7 of the California Water Code (CWC), commencing with section 13370. It serves as an NPDES permit for point source discharges from the Facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to CWC article 4, chapter 4, division 7 (commencing with section 13260).

D. Background and Rationale for Requirements. The Regional Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and other available information. The Fact Sheet (Attachment F), which contains background information and rationale for requirements of the Order, is hereby incorporated into this Order and constitutes part of the findings for this Order. Attachments A through E, G, and H, are also incorporated into this Order.

E. California Environmental Quality Act (CEQA). Under CWC section 13389, this action to adopt an NPDES permit is exempt from Chapter 3 of CEQA.

F. Technology-Based Effluent Limitations. CWA section 301(b) and NPDES regulations at Title 40 of the Code of Federal Regulations section 122.44 (40 CFR 122.44) require that permits include conditions meeting applicable technology-based requirements at minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Secondary Treatment Standards at 40 CFR 133. Further discussion of the technology-based effluent limitations is included in the Fact Sheet (Attachment F).

G. Water Quality-Based Effluent Limitations (WQBELs). CWA section 301(b) and NPDES regulations at 40 CFR 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. NPDES regulations at 40 CFR 122.44(d)(1)(i) mandate that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established using (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion (WQC), such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in 40 CFR 122.44(d)(1)(vi).

H. Water Quality Control Plan. *The Water Quality Control Plan for the San Francisco Bay Basin* (hereinafter the Basin Plan) is the Regional Water Board's master water quality control planning document. It designates beneficial uses and water quality objectives (WQOs) for waters of the State, including surface and groundwater. It also includes implementation programs to achieve WQOs. The Basin Plan was duly adopted by the Regional Water Board and approved by the State Water Board, the Office of Administrative Law, and USEPA. Requirements of this Order implement the Basin Plan.

Basin Plan beneficial uses for Suisun Bay are listed in the table below.

Table 5. Basin Plan Beneficial Uses

Receiving Water Name	Beneficial Uses
Suisun Bay	Industrial Service Supply (IND) Industrial Process Supply (PROC) Commercial, and Sport Fishing (COMM) Estuarine Habitat (EST) Fish Migration (MIGR) Preservation of Rare and Endangered Species (RARE) Fish Spawning (SPWN) Wildlife Habitat (WILD) Water Contact Recreation (REC1) Non-Contact Water Recreation (REC2) Navigation (NAV)

The State Water Board's *Water Quality Control Plan for Enclosed Bays and Estuaries—Part 1,Sediment Quality* became effective on August 25, 2009. This plan supersedes other narrative sediment quality objectives and establishes new sediment quality objectives and related implementation provisions for specifically defined sediments in most bays and estuaries.

I. National Toxics Rule (NTR) and California Toxics Rule (CTR). USEPA adopted the NTR on December 22, 1992, and later amended it on May 4, 1995, and November 9, 1999. About 40 criteria in the NTR apply in California. On May 18, 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that applied in the State. The CTR was amended on February 13, 2001. These rules contain WQC for priority pollutants.

J. State Implementation Policy. On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (hereinafter the State Implementation Policy [SIP]). The SIP became effective on April 28, 2000, with respect to the priority pollutant criteria promulgated through the NTR and to the priority pollutant objectives established in the Basin Plan. The SIP became effective on May 18, 2000, with respect to the priority pollutant criteria USEPA promulgated through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005, that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

K. Alaska Rule. On March 30, 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards become effective for CWA purposes. [65 Fed. Reg. 24641 (April 27, 2000), codified at 40 CFR 131.21]. Under the revised regulation (also known as the Alaska Rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000, may be used for CWA purposes, whether or not approved by USEPA.

L. Stringency of Requirements for Individual Pollutants. This Order contains both technology-based and WQBELs for individual pollutants. The technology-based effluent limitations consist of restrictions on carbonaceous biochemical oxygen demand (CBOD), total suspended solids (TSS), and pH. These technology-based limitations are discussed further in the Fact Sheet (Attachment F). This Order's technology-based pollutant restrictions on CBOD, TSS, and pH implement the minimum applicable federal technology-based requirements and are more stringent than the minimum federal technology-based requirements only as necessary to meet water quality standards.

WQBELs have been derived to implement WQOs that protect beneficial uses. Both the beneficial uses and the WQOs have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant WQBELs were derived from the CTR, the CTR is the applicable standard pursuant to 40 CFR 131.38. On May 18, 2000, USEPA approved the procedures for calculating individual WQBELs for priority pollutants based on the SIP. Most beneficial uses and WQOs contained in the Basin Plan were approved under State law and submitted to USEPA. Any WQOs and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for the purposes of the CWA" pursuant to 40 CFR 131.21(c)(1).

M. Antidegradation Policy. NPDES regulations at 40 CFR 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 in State Water Board Resolution No. 68-16, which incorporates the federal antidegradation policy where the federal policy applies under federal law and requires that existing quality of waters 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.

N. Anti-Backsliding Requirements. CWA sections 402(o)(2) and 303(d)(4) and NPDES regulations at 40 CFR 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed.

O. Endangered Species Act. 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 sections 2050 to 2097) or the federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the State. The Discharger is responsible for meeting

all requirements of applicable State and federal law pertaining to threatened and endangered species.

P. Monitoring and Reporting. NPDES regulations at 40 CFR 122.48 require that all NPDES permits specify requirements for recording and reporting monitoring results. CWC sections 13267 and 13383 authorize the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (MRP, Attachment E) establishes monitoring and reporting requirements to implement federal and State requirements.

Q. Standard and Special Provisions. Attachment D contains Federal Standard Provisions that apply to all NPDES permits in accordance with 40 CFR 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR 122.42. The Discharger must comply with all standard provisions and with those additional conditions that apply under 40 CFR 122.42. The Discharger must also comply with the Regional Standard Provisions provided in Attachment G. The Regional Water Board has also included in this Order special provisions applicable to the Discharger. The attached Fact Sheet (Attachment F) provides rationales for the special provisions.

R. Provisions and Requirements Implementing State Law. None of the requirements in this Order are included to implement State law only.

S. Notification of Interested Parties. The Regional Water Board notified the Discharger and interested agencies and persons of its intent to prescribe WDRs for the discharge and provided them with an opportunity to submit written comments and recommendations. The Fact Sheet (Attachment F) provides details of the notification.

T. Consideration of Public Comment. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. The Fact Sheet (Attachment F) provides details of the public hearing.

IT IS HEREBY ORDERED, that this Order supersedes Order No. R2-2007-0008, except for enforcement purposes, and, in order to meet the provisions contained in CWC Division 7 (commencing with section 13000) and regulations adopted thereunder, and the provisions of the federal Clean Water Act (CWA) and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

III. DISCHARGE PROHIBITIONS

A. Discharge of treated wastewater at a location or in a manner different from that described in this Order is prohibited.

B. Discharge at any point at which the treated wastewater does not receive an initial dilution of at least 44:1 (nominal) is prohibited. Compliance shall be achieved by proper operation and maintenance of the discharge outfall to ensure that it (or its replacement, in whole or in part) is in good working order and is consistent with, or can achieve better mixing, than that described in the Fact Sheet (Attachment F). The Discharger shall address measures taken to ensure this in its application for permit reissuance.

C. The bypass of untreated or partially treated wastewater to waters of the United States is prohibited, except as provided for in the conditions stated in Subsections I.G of Attachment D of this Order.

D. The average dry weather effluent flow, measured at monitoring station EFF-001 as described in the attached MRP (Attachment E), shall not exceed 53.8 MGD. Actual average dry weather flow shall be determined for compliance with this prohibition over three consecutive dry weather months each year.

E. Any sanitary sewer overflow that results in a discharge of untreated or partially treated wastewater to waters of the United States is prohibited.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations for Conventional and Non-Conventional Pollutants

The Discharger shall maintain compliance with the effluent limitations contained in Table 6 at Discharge Point 001, with compliance measured at Monitoring Location EFF-001, as described in the attached MRP (Attachment E).

Table 6. Conventional and Non-Conventional Pollutant Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Carbonaceous BOD 5-day @ 20°C (BOD_5)	mg/L	25	40	---	---	---
Total Suspended Solids (TSS)	mg/L	30	45	---	---	---
BOD and TSS percent removal [1]	%	85 minimum	---	---	---	---
Oil and Grease	mg/L	10	---	20	---	---
pH[2]	s.u	---	---	---	6.0	9.0
Enterococcus Bacteria	colonies per 100 mL	35[3]	---	---	---	---

Unit Abbreviations:

mg/L = milligrams per liter
s.u. = standard units
mL = milliliters

Footnotes to Table 6:

[1] 85 Percent Removal. The arithmetic mean of $CBOD_5$ at 20°C and TSS, by concentration, for effluent samples collected in each calendar month shall not exceed 15 percent of the arithmetic mean of the respective values, by concentration, for influent samples collected at INF-001 as described in the MRP (Attachment E) at approximately the same times during the same period.

[2] pH. If the Discharger monitors pH continuously, pursuant to 40 CFR 401.17, the Discharger shall be in compliance with the pH limitation specified herein provided that both of the following conditions are satisfied: (i) the total time during which the pH values are outside the required range of pH values shall not exceed 7 hours and 26 minutes in any calendar month; and (ii) no individual excursion from the range of pH values shall exceed 60 minutes.

[3] Enterococcus Bacteria. The monthly geometric mean shall not exceed 35 colonies per 100 mL.

B. Toxic Substances Effluent Limitations

The Discharger shall maintain compliance with the effluent limitations contained in Table 7 at Discharge Point 001, with compliance determined at Monitoring Location EFF-001, as described in the attached MRP (Attachment E).

Table 7. Toxic Pollutant Effluent Limitations

Constituent	Units	Effluent Limitations[1,2]	
		Average Monthly	Maximum Daily
Copper	µg/L	89	120
Cyanide	µg/L	22	39
Dioxin-TEQ	µg/L	1.4×10^{-8}	2.8×10^{-8}
Acrylonitrile	µg/L	6.3	13
Bis(2-ethylhexyl)phthalate	µg/L	55	170
Total Ammonia, as N	mg/L	65	84
Total Ammonia, as N	kg/day	5500	

Unit Abbreviations:

µg/L = micrograms per liter
mg/L = milligrams per liter
kg/day = kilograms per day

Footnotes to Table 7:

[1] Limitations apply to the average concentration of all samples collected during the averaging period (daily = 24-hour period; monthly = calendar month).

[2] All limitations for metals are expressed as total recoverable metals.

C. Whole Effluent Toxicity

1. Whole Effluent Acute Toxicity

a. Representative samples of the effluent at Discharge Point 001, with compliance measured at EFF-001 as described in the MRP (Attachment E), shall meet the following limits for acute toxicity. Bioassays shall be conducted in compliance with MRP section V.A (Attachment E.)

(1) An eleven (11) – sample median value of not less than 90 percent survival; and
(2) An eleven (11) – sample 90th percentile value of not less than 70 percent survival.

b. These acute toxicity limitations are further defined as follows:

(1) **11-sample median**. A bioassay test showing survival of less than 90 percent represents a violation of this effluent limit, if five or more of the past ten or less bioassay tests show less than 90 percent survival.

(2) **11-sample 90th percentile**. A bioassay test showing survival of less than 70 percent represents a violation of this effluent limit, if one or more of the past ten or less bioassay tests show less than 70 percent survival.

c. Bioassays shall be performed using the most up-to-date USEPA protocols and species as specified in MRP section V.A. Bioassays shall be conducted in compliance with *Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms*, currently 5th Edition (EPA-821-R-02-012), with exceptions granted by the Executive Officer, with exceptions granted by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP) upon the Discharger's request with justification.

2. Whole Effluent Chronic Toxicity

The discharge shall not contain chronic toxicity at a level that would cause or contribute to toxicity in the receiving water. Chronic toxicity is a detrimental biological effect of growth rate, reproduction, fertilization success, larval development, or any other relevant measure of the health of an organism population or community. Compliance with this limit shall be determined by analysis of indicator organisms and toxicity tests measured at EFF-001 as described in the MRP.

V. RECEIVING WATER LIMITATIONS

The discharges shall not cause the following in the receiving water:

A. The discharge of waste shall not cause the following conditions to exist in waters of the State at any place:

1. Floating, suspended, or deposited macroscopic particulate matter or foams;

2. Bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses;

3. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;

4. Visible, floating, suspended, or deposited oil or other products of petroleum origin; and

5. Toxic or other deleterious substances to be present in concentrations or quantities that cause deleterious effects on wildlife, waterfowl, or other aquatic biota, or that render any of these unfit for human consumption, either at levels created in the receiving waters or as a result of biological concentration.

B. The discharge of waste shall not cause the following limits to be exceeded in waters of the State at any place within 1 foot of the water surface:

1. Dissolved Oxygen — 7.0 mg/L, minimum

Furthermore, the median dissolved oxygen concentration for any three consecutive months shall not be less than 80% of the dissolved oxygen content at saturation. When natural factors cause concentrations less than that specified above, the discharge shall not cause further reduction in ambient dissolved oxygen concentrations.

2.	Dissolved Sulfide	Natural background levels
3.	pH	The pH shall not be depressed below 6.5 or raised above 8.5. The discharge shall not cause changes greater than 0.5 pH units in normal ambient pH levels.
4.	Nutrients	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.

C. The discharge shall not cause a violation of any particular water quality standard for receiving waters adopted by the Regional Water Board or the State Water Board as required by the CWA and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to CWA section 303, or amendments thereto, the Regional Water Board may revise and modify this Order in accordance with such more stringent standards.

VI. PROVISIONS

A. Standard Provisions

1. **Federal Standard Provisions.** The Discharger shall comply with Federal Standard Provisions included in Attachment D of this Order.

2. **Regional Standard Provisions.** The Discharger shall comply with all applicable items of the Regional Standard Provisions, and Monitoring and Reporting Requirements (Supplement to Attachment D) for NPDES Wastewater Discharge Permits (Attachment G), including amendments thereto.

B. MRP Requirements

The Discharger shall comply with the MRP (Attachment E), and future revisions thereto, including applicable sampling and reporting requirements in the standard provisions listed in Provision VI.A above.

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 present or future investigations demonstrate that the discharges governed by this Order have or will have a reasonable potential to cause or contribute to, or will cease to have, adverse impacts on water quality or beneficial uses of the receiving waters.

b. If new or revised WQOs or total maximum daily loads (TMDLs) come into effect for the San Francisco Bay Estuary and contiguous water bodies (whether Statewide, regional, or site-specific). In such cases, effluent limitations in this Order will be

modified as necessary to reflect updated WQOs and waste load allocations in TMDLs. Adoption of effluent limitations contained in this Order is not intended to restrict in any way future modifications based on legally adopted WQOs or TMDLs, or as otherwise permitted under federal regulations governing NPDES permit modifications.

c. If data, results, or other information developed in connection with translator, dilution, or other water quality studies (such as, but not limited to, studies related to Suisun Bay ammonium effects, including, but not limited to, studies conducted pursuant to Provision VI.C.5.c) provide a basis for determining that a permit condition, such as but not limited to ammonia effluent limitations, should be modified.

d. If State Water Board precedential decisions, new policies, new laws, or new regulations on chronic toxicity or total chlorine residual become available.

e. If an administrative or judicial decision on a separate NPDES permit or WDRs addresses requirements similar to this discharge.

f. If the Discharger requests adjustments in effluent limits due to the implementation of a stormwater diversion pursuant to the Municipal Regional Stormwater Permit (Order No. R2-2009-0074), for redirecting dry weather and first flush discharges from the storm drain system to the sanitary sewer system as a stormwater pollutant control strategy.

g. Or as otherwise authorized by law.

The Discharger may request permit modification based on any of the circumstances described above. With any such request, the Discharger shall include an antidegradation and antibacksliding analysis.

2. Effluent Characterization Study and Report

a. Study Elements

The Discharger shall collect representative samples of the discharge at EFF-001, as defined MRP (Attachment E), at least once per year.

The samples shall be analyzed for the priority pollutants listed in Table C of the Regional Standard Provisions (Attachment G), except for those priority pollutants with effluent limitations where monitoring is already required by the MRP. Compliance with this requirement shall be achieved in accordance with the specifications of Regional Standard Provisions (Attachment G) sections III.A.1 and III.A.2.

The Discharger shall evaluate on an annual basis if concentrations of any of these priority pollutants significantly increase over past performance. The Discharger shall investigate the cause of such increase. The investigation may include, but need not

be limited to, an increase in monitoring frequency, monitoring of internal process streams, or monitoring of influent sources. The Discharger shall establish remedial measures addressing any increase resulting in reasonable potential to cause or contribute to an excursion above applicable water quality objectives. This requirement may be satisfied through identification of the constituent as a "pollutant of concern" in the Discharger's Pollutant Minimization Program, described in Provision VI.C.3.

b. Reporting Requirements

(1) Routine Reporting

The Discharger shall, within 30 days of receipt of analytical results, report in the transmittal letter for the appropriate monthly self-monitoring report the following:

(a) Indication that a sample or samples for this characterization study was or were collected; and

(b) Identity of priority pollutants detected above their applicable water quality criteria (see Fact Sheet [Attachment F] Table F-8 for the criteria), together with the detected concentrations of those pollutants.

(2) Annual Reporting

The Discharger shall provide a summary of the annual data evaluation and source investigation in the annual self-monitoring report.

(3) Final Report

The Discharger shall submit a final report that presents all these data to the Regional Water Board no later than 180 days prior to the Order expiration date. The final report shall be submitted with the application for permit reissuance.

3. Best Management Practices and Pollutant Minimization Program

a. The Discharger shall continue to improve, in a manner acceptable to the Executive Officer, its existing Pollutant Minimization Program to promote minimization of pollutant loadings to the treatment plant and therefore to the receiving waters.

b. The Discharger shall submit an annual report, acceptable to the Executive Officer, no later than February 28 of each calendar year. Each annual report shall include at least the following information:

(1) *A brief description of the treatment plant, treatment plant processes and service area*.

(2) *A discussion of the current pollutants of concern.* Periodically, the Discharger shall analyze its own situation to determine which pollutants are currently a

problem and which pollutants may be potential future problems. This discussion shall include the reasons for choosing the pollutants.

(3) *Identification of sources for the pollutants of concern*. This discussion shall include how the Discharger intends to estimate and identify sources of the pollutants. The Discharger shall also identify sources or potential sources not directly within the ability or authority of the Discharger to control, such as pollutants in the potable water supply and air deposition.

(4) *Identification of tasks to reduce the sources of the pollutants of concern.* This discussion shall identify and prioritize tasks to address the Discharger's pollutants of concern. The Discharger may implement the tasks by itself or participate in group, regional, or national tasks that will address its pollutants of concern. The Discharger is strongly encouraged to participate in group, regional, or national tasks that will address its pollutants of concern whenever it is efficient and appropriate to do so. A time line shall be included for the implementation of each task.

(5) *Outreach to employees.* The Discharger shall inform employees about the pollutants of concern, potential sources, and how they might be able to help reduce the discharge of these pollutants of concern into the treatment facilities. The Discharger may provide a forum for employees to provide input.

(6) *Continuation of Public Outreach Program.* The Discharger shall prepare a public outreach program to communicate pollution prevention to its service area. Outreach may include participation in existing community events such as county fairs, initiating new community events such as displays and contests during Pollution Prevention Week, conducting school outreach programs, conducting plant tours, and providing public information in newspaper articles or advertisements, radio or television stories or spots, newsletters, utility bill inserts, and web site. Information shall be specific to the target audiences. The Discharger shall coordinate with other agencies as appropriate.

(7) *Discussion of criteria used to measure Pollutant Minimization Program and task effectiveness*. The Discharger shall establish criteria to evaluate the effectiveness of its Pollutant Minimization Program. This section shall discuss the specific criteria used to measure the effectiveness of each of the tasks in sections VI.C.3.b.(3), (4), (5), and (6).

(8) *Documentation of efforts and progress.* This discussion shall detail all of the Discharger's Pollutant Minimization Program activities during the reporting year.

(9) *Evaluation of Pollutant Minimization Program and task effectiveness.* This Discharger shall use the criteria established in section VI.C.3.b.(7) to evaluate the Program's and tasks' effectiveness.

(10) *Identification of specific tasks and time schedules for future efforts.* Based on the evaluation, the Discharger shall detail how it intends to continue or change its tasks in order to more effectively reduce the amount of pollutants to the treatment plant, and subsequently in its effluent.

c. Pollutant Minimization Program for Pollutants with Effluent Limitations

The Discharger shall develop and conduct a Pollutant Minimization Program as further described below when there is evidence that a priority pollutant is present in the effluent above an effluent limitation (e.g., sample results reported as DNQ when the effluent limitation is less than the MDL, sample results from analytical methods more sensitive than those methods required by this Order, presence of whole effluent toxicity, health advisories for fish consumption, results of benthic or aquatic organism tissue sampling) and either:

(1) A sample result is reported as DNQ and the effluent limitation is less than the RL; or

(2) A sample result is reported as ND and the effluent limitation is less than the MDL, using SIP definitions.

d. Pollutant Minimization Program Submittals for Pollutants with Effluent Limitations

If triggered by the reasons in section VI.C.3.c, above, the Discharger's Pollutant Minimization Program shall include, but not be limited to, the following actions and submittals acceptable to the Regional Water Board:

(1) Annual review and semi-annual monitoring of potential sources of the reportable priority pollutants, which may include fish tissue monitoring and other bio-uptake sampling, or alternative measures approved by the Executive Officer when it is demonstrated that source monitoring is unlikely to produce useful analytical data;

(2) Quarterly monitoring for the reportable priority pollutants in the influent to the wastewater treatment system, or an alternative measures approved by the Executive Officer, when it is demonstrated that influent monitoring is unlikely to produce useful analytical data;

(3) Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutants in the effluent at or below the effluent limitation;

(4) Implementation of appropriate cost-effective control measures for the reportable priority pollutants, consistent with the control strategy; and

(5) Annual report required by section VI.C.3.b above, shall specifically address the following items:

(a) All Pollutant Minimization Program monitoring results for the previous year;

(b) List of potential sources of the reportable priority pollutants;

(c) Summary of all actions undertaken pursuant to the control strategy; and

(d) Description of actions to be taken in the following year.

4. Special Provisions for POTWs

a. Pretreatment Program

The Discharger shall implement and enforce its approved pretreatment program in accordance with federal Pretreatment Regulations (40 CFR 403), pretreatment standards promulgated under CWA sections 307(b), 307(c), and 307(d), pretreatment requirements specified under 40 CFR 122.44(j), and the requirements in Attachment H, "Pretreatment Requirements." The Discharger's responsibilities include, but are not limited to:

(1) Enforcement of National Pretreatment Standards of 40 CFR 403.5 and 403.6;

(2) Implementation of its pretreatment program in accordance with legal authorities, policies, procedures, and financial provisions described in the National Pretreatment Program (40 CFR 403).

(3) Submission of reports to the State Water Board and the Regional Water Board as described in Attachment H, "Pretreatment Requirements."

(4) Evaluation of the need to revise local limits under 40 CFR 403.5(c)(1) and, within 180 days after the effective date of this Order, submission of a report acceptable to the Executive Officer describing the changes, with a plan and schedule for implementation. To ensure no significant increase in copper discharges, and thus compliance with antidegradation requirements, the Discharger shall not consider eliminating or relaxing local limits for copper in this evaluation.

b. Biosolids Management Practices

(1) All biosolids shall be disposed of, managed or reused in a municipal solid waste landfill, through land application, as a Class A compost, through a waste to energy facility, or other recognized and approved technology, disposed of in a sludge-only landfill or fired in a sewage sludge incinerator in accordance with 40 CFR Part 503.

(2) Biosolids treatment, storage and disposal or reuse shall not create a nuisance, such as objectionable odors or flies, or result in groundwater contamination.

(3) The biosolids treatment and storage site shall have facilities adequate to divert surface runoff from adjacent areas, to protect boundaries of the site from erosion,

and to prevent any conditions that would cause drainage from the materials in the temporary storage site. Adequate protection is defined as protection from at least a 100-year storm and protection from the highest possible tidal stage that may occur.

(4) Biosolids disposed of in a municipal solid waste landfill shall meet the requirements of 40 CFR Part 258. In the annual Self-Monitoring Report, the Discharger shall include the amount of biosolids disposed and the landfill to which it was sent.

(5) This Order does not authorize permanent on-site biosolids storage or disposal. A Report of Waste Discharge shall be filed and the site brought into compliance with all applicable regulations prior to commencement of any such activity.

c. Sanitary Sewer Overflows and Sewer System Management Plan

The Discharger's collection system is part of the Facility that is subject to this Order. As such, the Discharger shall properly operate and maintain its collection system (Attachment D, Standard Provisions - Permit Compliance, subsection I.D). The Discharger shall report any noncompliance (Attachment D, Standard Provision - Reporting, sections V.E.1 and V.E.2) and mitigate any discharge from the Discharger's collection system in violation of this Order (Attachment D, Standard Provisions - Permit Compliance, section I.C).

The General Waste Discharge Requirements for Wastewater Collection Agencies, State Water Board Order No. 2006-0003 DWQ (General Collection System WDRs), has requirements for operation and maintenance of collection systems and for reporting and mitigating sanitary sewer overflows. While the Discharger must comply with both the General Collection System WDRs and this Order, the General Collection System WDRs more clearly and specifically stipulates requirements for operation and maintenance and for reporting and mitigating sanitary sewer overflows.

Implementation of the General Collection System WDRs requirements for proper operation and maintenance and mitigation of spills will satisfy the corresponding federal NPDES requirements specified in Attachment D (as supplemented by Attachment G) of this Order. Following notification and reporting requirements in the General Collection System WDRs will satisfy NPDES reporting requirements specified in Attachment D (as supplemented by Attachment G) of the Order for sewage spills from the collection system upstream of the Plant boundaries. Attachments D and G of this Order specify reporting requirements for unauthorized discharges from anywhere within the Plant downstream of the Plant boundaries.

5. Other Special Provisions

a. Copper Action Plan

The Discharger shall implement pretreatment, source control, and pollution

prevention for copper in accordance with the following tasks and time schedule.

Table 8. Copper Action Plan

Task	Compliance Date
1. Review Potential Copper Sources The Discharger shall submit an inventory of potential copper sources to the treatment plant.	March 1, 2012
2. Implement Copper Control Program The Discharger shall submit a plan for and begin implementation of a program to reduce copper sources identified in Task 1. The plan shall consists, at a minimum, of the following elements: a. Provide education and outreach to the public (e.g., focus on proper pool and spa maintenance and plumbers' roles in reducing corrosion.) b. If corrosion is determined to be a significant copper source, work cooperatively with local water purveyors to reduce and control water corrosivity, as appropriate, and ensure that local plumbing contractors implement best management practices to reduce corrosion in pipes. c. Educate plumbers, designers, and maintenance contractors for pools and spas to encourage best management practices that minimize copper discharges.	With the annual pollution prevention report due February 28, 2013.
3. Implement Additional Measures If the Regional Water Board notifies the Discharger that the three-year rolling mean copper concentration of the receiving water exceeds 2.8 µg/L, then within 90 days of the notification, the Discharger shall evaluate the effluent copper concentration trend, and if it is increasing, develop and begin implementation of additional measures to control copper discharges. The Discharger shall report on the progress and effectiveness of action taken together with a schedule for actions to be taken in the next 12 months.	With the annual pollution prevention report due February 28 following 90 days after notification.
4. Undertake Studies to Reduce Copper Pollutant Impact Uncertainties The Discharger shall submit an updated study plan and schedule to conduct or cause to be conducted technical studies to investigate possible copper sediment toxicity and technical studies to investigate sublethal effects on salmonids. Specifically, the Discharger shall include the manner in which the above will be accomplished and describe the studies to be performed with an implementation schedule. To satisfy this requirement, the Discharger may collaborate and conduct these studies as a group.	Study Plan already submitted by Bay Area Clean Water Agencies satisfies this requirement
5. Report Status of Copper Control Program The Discharger shall submit an annual report documenting copper control program implementation and addressing the effectiveness of the actions taken including any additional copper controls required by Task 3 above, together with a schedule for actions to be taken in the next 12 months. Additionally, the Discharger shall report the findings and results of the studies completed, planned, or in progress under Task 4. Regarding Task 4 studies dischargers may collaborate and provide this information in a single report to satisfy this requirement for an entire group.	With annual pollution prevention report due February 28 each year, commencing February 28, 2014.

b. Cyanide Action Plan

The Discharger shall implement monitoring and surveillance, pretreatment, source control and pollution prevention for cyanide in accordance with the following tasks and time schedule.

Table 9. Cyanide Action Plan

Task	Compliance Date
1. Review Potential Cyanide Sources The Discharger shall submit an inventory of potential cyanide sources to the treatment plant. If no cyanide sources are identified, Tasks 2 and 3 are not required, unless the Discharger receives a request to discharge detectable levels of cyanide to the sewer. If so, the Discharger shall notify the Executive Officer and implement Tasks 2 and 3.	Completed 2008
2. Implement Cyanide Control Program The Discharger shall submit a plan and begin implementation of a program to minimize cyanide discharges to its treatment plant consisting, at a minimum, of the following elements: a. Inspect each potential source to assess the need to include that contributing source in the control program. b. Inspect contributing sources included in the control program annually. Inspection elements may be based on USEPA guidance, such as Industrial User Inspection and Sampling Manual for POTWs (EPA 831-B-94-01). c. Develop and distribute educational materials to contributing sources and potential contributing sources regarding the need to prevent cyanide discharges. d. Prepare an emergency monitoring and response plan to be implemented if a significant cyanide discharge occurs.	With annual pollution prevention report due February 28, 2012
3. Implement Additional Cyanide Control Measures If the Regional Water Board notifies the Discharger that ambient monitoring shows cyanide concentrations are 1.0 µg/L or higher in the main body of San Francisco Bay, then within 90 days of the notification, the Discharger shall commence actions to identify and abate cyanide sources responsible for the elevated ambient concentrations, and shall report on the progress and effectiveness of actions taken, together with a schedule for actions to be taken in the next 12 months.	With next annual pollution prevention report due February 28 (at least 90 days following notification)
4. Report Status of Cyanide Control Program The Discharger shall submit an annual report documenting cyanide control program implementation and addressing the effectiveness of actions taken, including any additional cyanide controls required by Task 3, above, together with a schedule for actions to be taken in the next 12 months.	With annual pollution prevention report due February 28 each year

c. Nutrient Discharge Work Plan, Studies, and Reports

i. **Draft Work Plan.** By June 1, 2012, the Discharger shall submit to the Regional Water Board a draft work plan to conduct the studies listed in item c.iii, below, to evaluate further the effects on Suisun Bay of ammonia, ammonium, and other nutrients in its discharge. The Discharger may complete these studies itself or in conjunction with others, including but not limited to the State and Federal

Contractors Water Agency, the State Water Contractors, and the San Luis & Delta-Mendota Water Authority (collectively, "Water Contractors"); the Bay Area Clean Water Agencies; and the Regional Water Board. The draft work plan shall call for the studies to be completed no later than September 1, 2014.

The draft work plan shall delineate a process to disseminate study results for stakeholder review. The Discharger shall distribute the draft work plan to stakeholders, including but not limited to the Water Contractors.

ii. Final Work Plan. By August 1, 2012, the Discharger shall submit a final work plan that incorporates Executive Officer feedback on the draft work plan.

iii. Work Plan Elements. The work plan shall include schedules and commitments to fund the following:

(a) Surface Water Ambient Monitoring Program sampling and associated studies set forth in *San Francisco Bay Region Work Plan, Monitoring Spring Phytoplankton Bloom Progression in Suisun Bay* (Taberski, Dugdale, et al., SWAMP Monitoring Plan 2011-2012, December 2010). The Discharger shall commit technical expertise, laboratory support, and funding for the studies. Specifically, the Discharger shall fund an additional sample site to characterize the San Joaquin River delta input, analyze samples for nutrients and metals, and fund analysis for pesticides.

(b) Collection of representative effluent samples sufficient to characterize nutrient forms, concentrations, and loads. The data to be obtained shall include the form and ratios of nitrogen and phosphorus, including organic and inorganic nitrogen and phosphorus. (Regional Water Board staff intends to obtain such information soon from most wastewater dischargers in the Region.)

(c) Collaborative study of the Discharger's contribution to ammonium concentrations in Suisun Bay and related toxicity to copepods in the context of Suisun Bay. These studies shall include, to the extent possible, an evaluation of acute toxicity to copepod larvae (nauplii) and full life cycle toxicity. The study shall use a methodology acceptable to the Executive Officer.

(d) Collaborative studies evaluating the role of ammonia and ammonium in primary productivity and zooplankton abundance, the significance of nutrient ratios, nutrient fate and transport, and the role of sediment biogeochemistry in nutrient fluxes. Such studies would include, for example, a determination whether sampling locations adequately characterize the potential impact of the Discharger's discharge and those studies committed to by the Bay Area Clean Water Agencies to be conducted by the Aquatic Science Center and the San Francisco Estuary Institute (Chastain, Bay Area Clean Water Agencies, "Nutrient Strategy Development and Implementation: A proposal to

BACWA and the San Francisco Bay Regional Water Quality Control Board," January 18, 2012).

iv. **Final Report.** The Discharger shall implement the final work plan described in item c.ii, above, and, by November 1, 2014, submit a final report acceptable to the Executive Officer regarding the results of the studies completed pursuant to the final work plan.

d. Facility Plan and Site Characterization

i. **Work Plan.** By July 1, 2012, the Discharger shall submit a work plan to evaluate alternative treatment technologies to remove ammonia from its discharge, including nitrification technologies. The evaluation shall include facility planning for a range of potential ammonia effluent limits and pilot scale systems analyses. The Discharger shall evaluate the suitability of the Facility and property owned or controlled by the Discharger to provide land necessary for ammonia treatment and removal. As part of this evaluation, the Discharger shall conduct sampling to characterize sufficiently the portion of its property where materials previously placed for disposal would have to be managed to develop a nitrification treatment train.

ii. **Report.** By February 28, 2014, the Discharger shall provide a report acceptable to the Executive Officer containing the conclusions of the studies completed pursuant to item d.i, above.

VII.COMPLIANCE DETERMINATION

Compliance with effluent limitations for priority pollutants shall be determined using sample reporting protocols defined in Attachment A—Definitions, the MRP (Attachment E), Fact Sheet section VI, and the Regional Standard Provisions (Attachment G). For purposes of reporting and administrative enforcement by the Regional and State Water Boards, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

ATTACHMENT A – DEFINITIONS

Arithmetic Mean (μ)
Also called the average, is the sum of measured values divided by the number of samples. For ambient water concentrations, the arithmetic mean is calculated as follows:

Arithmetic mean = $\mu = \Sigma x / n$ where: Σx is the sum of the measured ambient water concentrations, and n is the number of samples.

Average Monthly Effluent Limitation (AMEL)
The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL)
The highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Bioaccumulative
Those substances taken up by an organism from its surrounding medium through gill membranes, epithelial tissue, or from food and subsequently concentrated and retained in the body of the organism.

Carcinogenic
Carcinogenic pollutants are substances that are known to cause cancer in living organisms.

Coefficient of Variation (*CV*)
CV is a measure of the data variability and is calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.

Daily Discharge
Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in this Order), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

Detected, but Not Quantified (DNQ)
DNQ are those sample results less than the RL, but greater than or equal to the laboratory's MDL.

Dilution Credit
Dilution Credit is the amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

Effluent Concentration Allowance (ECA)
ECA is a value derived from the water quality criterion/objective, dilution credit, and ambient background concentration that is used, in conjunction with the coefficient of variation for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as waste load allocation (WLA) as used in USEPA guidance (Technical Support Document For Water Quality-based Toxics Control, March 1991, second printing, EPA/505/2-90-001).

Enclosed Bays
Enclosed Bays means indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of San Francisco Bay. Enclosed bays include, but are not limited to, Humboldt Bay, Bodega Harbor, Tomales Bay, Drake's Estero, San Francisco Bay, Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay. Enclosed bays do not include inland surface waters or ocean waters.

Estimated Chemical Concentration
The estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

Estuaries
Estuaries means waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters shall be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuarine waters include, but are not limited to, the Sacramento-San Joaquin Delta, as defined in California Water Code section 12220, Suisun Bay, Carquinez Strait downstream to the Carquinez Bridge, and appropriate areas of the Smith, Mad, Eel, Noyo, Russian, Klamath, San Diego, and Otay rivers. Estuaries do not include inland surface waters or ocean waters.

Inland Surface Waters
All surface waters of the State that do not include the ocean, enclosed bays, or estuaries.

Instantaneous Maximum Effluent Limitation
The highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation
The lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

Maximum Daily Effluent Limitation (MDEL)
The highest allowable daily discharge of a pollutant, over a calendar day (or 24-hour period). For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the arithmetic mean measurement of the pollutant over the day.

Median
The middle measurement in a set of data. The median of a set of data is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of measurements (n) is odd, then the median = $X_{(n+1)/2}$. If n is even, then the median = $(X_{n/2} + X_{(n/2)+1})/2$ (i.e., the midpoint between the $n/2$ and $n/2+1$).

Method Detection Limit (MDL)
MDL is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in title 40 of the Code of Federal Regulations (40 CFR), Part 136, Attachment B, revised as of July 3, 1999.

Minimum Level (ML)
ML is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Mixing Zone
Mixing Zone is a limited volume of receiving water that is allocated for mixing with a wastewater discharge where water quality criteria can be exceeded without causing adverse effects to the overall water body.

Not Detected (ND)
Sample results less than the laboratory's MDL.

Ocean Waters
The territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. Discharges to ocean waters are regulated in accordance with the State Water Board's California Ocean Plan.

Persistent Pollutants
Persistent pollutants are substances for which degradation or decomposition in the environment is nonexistent or very slow.

Pollutant Minimization Program (PMP)
PMP means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce all potential sources of a priority pollutant(s) through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The Regional Water

Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to California Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

Pollution Prevention
Pollution Prevention means any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant that is discharged into water and includes, but is not limited to, input change, operational improvement, production process change, and product reformulation (as defined in California Water Code section 13263.3). Pollution prevention does not include actions that merely shift a pollutant in wastewater from one environmental medium to another environmental medium, unless clear environmental benefits of such an approach are identified to the satisfaction of the State or Regional Water Board.

Reporting Level (RL)
RL is the ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order. The MLs included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the Regional Water Board either from Appendix 4 of the SIP in accordance with section 2.4.2 of the SIP or established in accordance with section 2.4.3 of the SIP. The ML is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the ML depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied to the ML in the computation of the RL.

Satellite Collection System
The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility that a sanitary sewer system is tributary to.

Source of Drinking Water
Any water designated as municipal or domestic supply (MUN) in a Regional Water Board Basin Plan.

Standard Deviation (σ)
Standard Deviation is a measure of variability that is calculated as follows:

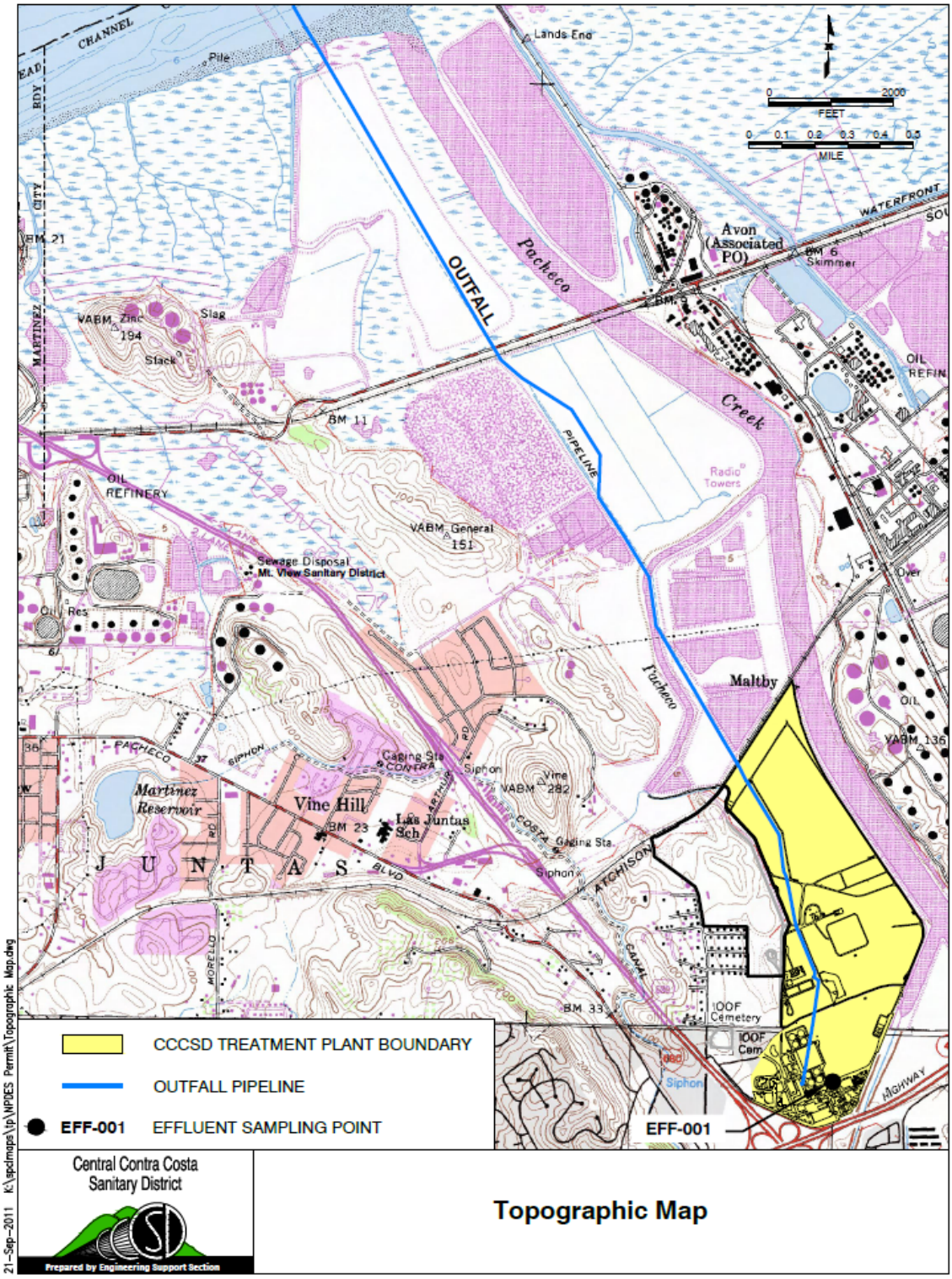
$$\sigma = (\sum[(x - \mu)^2]/(n - 1))^{0.5}$$

where:
x is the observed value;
μ is the arithmetic mean of the observed values; and
n is the number of samples.

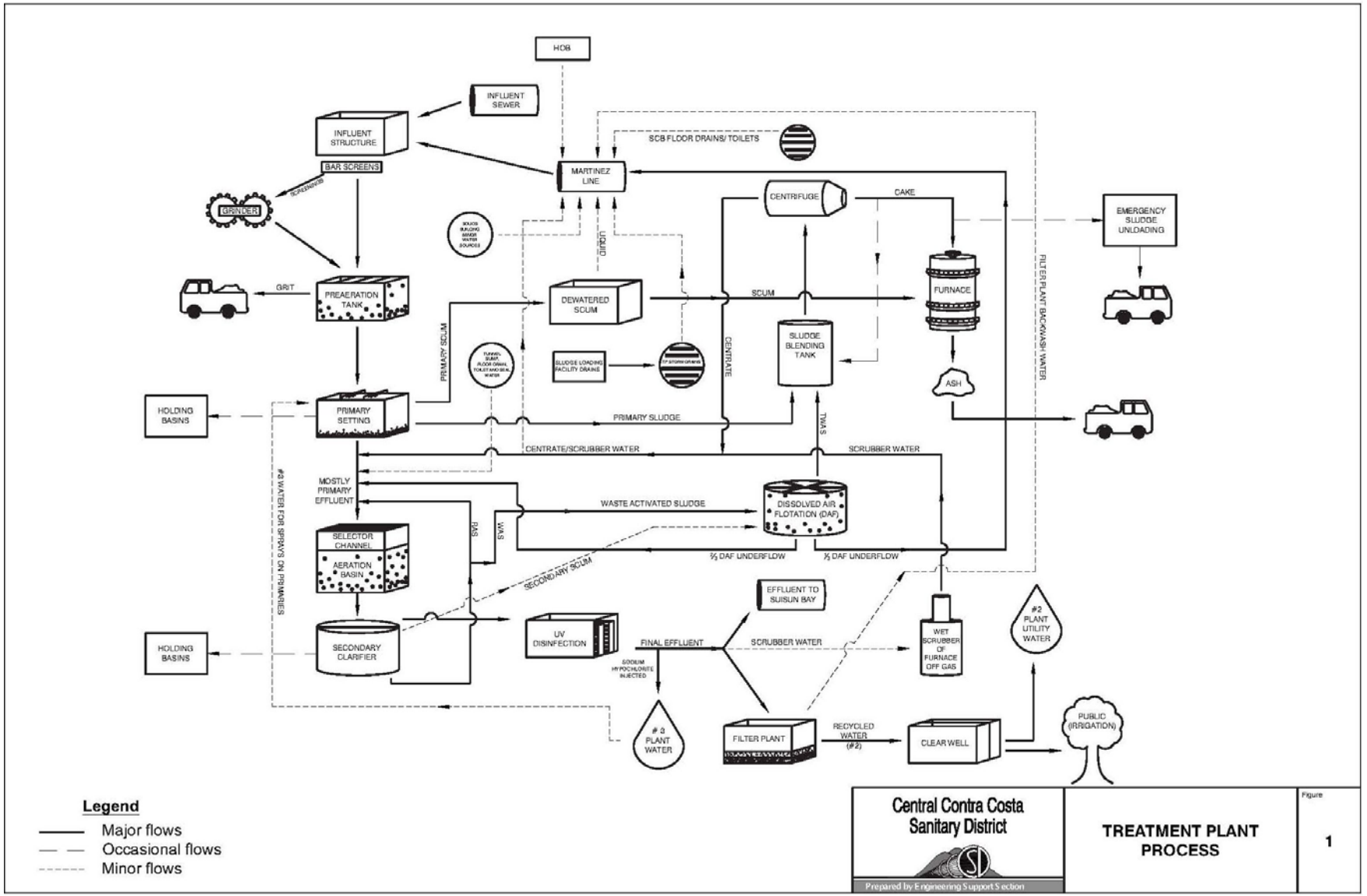
Toxicity Reduction Evaluation (TRE)
TRE is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific

chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

ATTACHMENT B – FACILITY MAP



ATTACHMENT C – PROCESS FLOW DIAGRAM



ATTACHMENT D –STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. (40 CFR 122.41(a)).

2. The Discharger shall comply with effluent standards or prohibitions established under section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 CFR 122.41(a)(1)).

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. (40 CFR 122.41(c).)

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 CFR 122.41(d).)

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order (40 CFR 122.41(e)).

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 CFR 122.41(g).)

2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations. (40 CFR 122.5(c).)

F. Inspection and Entry

The Discharger shall allow the Regional Water Board, State Water Board, USEPA and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (40 CFR 122.41(i); Wat. Code, § 13383):

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (40 CFR 122.41(i)(1));

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (40 CFR 122.41(i)(2));

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (40 CFR 122.41(i)(3)); and

4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (40 CFR 122.41(i)(4).)

G. Bypass

1. Definitions

   a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. (40 CFR 122.41(m)(1)(i).)

   b. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 CFR 122.41(m)(1)(ii).)

2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 CFR 122.41(m)(2).)

3. Prohibition of bypass. Bypass is prohibited, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless (40 CFR 122.41(m)(4)(i)):

   a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 CFR 122.41(m)(4)(i)(A));

   b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent

a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 CFR 122.41(m)(4)(i)(B)); and

c. The Discharger submitted notice to the Regional Water Board as required under Standard Provisions – Permit Compliance I.G.5 below. (40 CFR 122.41(m)(4)(i)(C).)

4. The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 CFR 122.41(m)(4)(ii).)

5. Notice

   a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass. (40 CFR 122.41(m)(3)(i).)

   b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). (40 CFR 122.41(m)(3)(ii).)

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. (40 CFR 122.41(n)(1).)

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 CFR 122.41(n)(2).).

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 CFR 122.41(n)(3)):

   a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 CFR 122.41(n)(3)(i));

   b. The permitted facility was, at the time, being properly operated (40 CFR 122.41(n)(3)(ii));

   c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b below (24-hour notice) (40 CFR 122.41(n)(3)(iii)); and

   d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 CFR 122.41(n)(3)(iv).)

3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 CFR 122.41(n)(4).)

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition. (40 CFR 122.41(f).)

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit. (40 CFR 122.41(b).)

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional Water Board may require modification or revocation and reissuance of this Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 CFR 122.41(l)(3); 122.61.)

III. STANDARD PROVISIONS – MONITORING

A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 CFR 122.41(j)(1).)

B. Monitoring results must be conducted according to test procedures under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503 unless other test procedures have been specified in this Order. (40 CFR 122.41(j)(4); 122.44(i)(1)(iv).)

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time. (40 CFR 122.41(j)(2).)

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements (40 CFR 122.41(j)(3)(i));

2. The individual(s) who performed the sampling or measurements (40 CFR 122.41(j)(3)(ii));

3. The date(s) analyses were performed (40 CFR 122.41(j)(3)(iii));

4. The individual(s) who performed the analyses (40 CFR 122.41(j)(3)(iv));

5. The analytical techniques or methods used (40 CFR 122.41(j)(3)(v)); and

6. The results of such analyses. (40 CFR 122.41(j)(3)(vi).)

C. Claims of confidentiality for the following information will be denied (40 CFR 122.7(b)):

1. The name and address of any permit applicant or Discharger (40 CFR 122.7(b)(1)); and

2. Permit applications and attachments, permits and effluent data. (40 CFR 122.7(b)(2).)

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, State Water Board, or USEPA within a reasonable time, any information which the Regional Water Board, State Water Board, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Regional Water Board, State Water Board, or USEPA copies of records required to be kept by this Order. (40 CFR 122.41(h); Wat. Code, § 13267)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or USEPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 CFR 122.41(k))

2. All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA). (40 CFR 122.22(a)(3)).

3. All reports required by this Order and other information requested by the Regional Water Board, State Water Board, or USEPA shall be signed by a person described in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above (40 CFR 122.22(b)(1));

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 CFR 122.22(b)(2)); and

c. The written authorization is submitted to the Regional Water Board and State Water Board. (40 CFR 122.22(b)(3))

4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the Regional Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 CFR 122.22(c))

5. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification:

   "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." (40 CFR 122.22(d))

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 CFR 122.22(l)(4))

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices. (40 CFR 122.41(l)(4)(i))

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board. (40 CFR 122.41(l)(4)(ii))

4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. (40 CFR 122.41(l)(4)(iii))

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date. (40 CFR 122.41(l)(5))

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 CFR 122.41(l)(6)(i).)

2. The following shall be included as information that must be reported within 24 hours under this paragraph (40 CFR 122.41(l)(6)(ii)):

   a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 CFR 122.41(l)(6)(ii)(A).)

   b. Any upset that exceeds any effluent limitation in this Order. (40 CFR 122.41(l)(6)(ii)(B).)

3. The Regional Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours. (40 CFR 122.41(l)(6)(iii).)

F. Planned Changes

The Discharger shall give notice to the Regional Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when (40 CFR 122.41(l)(1)):

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in section 122.29(b) (40 CFR 122.41(l)(1)(i)); or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this Order. (40 CFR 122.41(l)(1)(ii).)

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 CFR 122.41(l)(1)(iii).)

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements. (40 CFR 122.41(l)(2).)

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting V.C, V.D, and V.E above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E above. (40 CFR 122.41(l)(7).)

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information. (40 CFR 122.41(l)(8).)

VI. STANDARD PROVISIONS – ENFORCEMENT

A. The Regional Water Board is authorized to enforce the terms of this Order under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Publicly-Owned Treatment Works (POTWs)

All POTWs shall provide adequate notice to the Regional Water Board of the following (40 CFR 122.42(b)):

1. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to sections 301 or 306 of the CWA if it were directly discharging those pollutants (40 CFR 122.42(b)(1)); and

2. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of this Order. (40 CFR 122.42(b)(2).)

3. Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW. (40 CFR 122.42(b)(3).)

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

Contents

Tables

ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

National Pollutant Discharge Elimination System (NPDES) regulations at 40 CFR 122.48 require that all NPDES permits specify monitoring and reporting requirements. California Water Code (CWC) sections 13267 and 13383 also authorize the Regional Water Quality Control Board (hereinafter the Regional Water Board) to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements that implement the federal and State regulations.

I. GENERAL MONITORING PROVISIONS

A. The Discharger shall comply with this MRP. The Executive Officer may amend this MRP pursuant to 40 CFR 122.62, 122.63, and 124.5. If any discrepancies exist between this MRP and the Regional Standard Provisions (Attachment G), this MRP prevails.

B. The Discharger shall conduct all monitoring in accordance with Attachment D, section III, as supplemented by Attachment G of this Order. Equivalent test methods must be more sensitive than those specified in 40 CFR 136 and must be specified in the permit.

II. MONITORING LOCATIONS

The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order.

Table E-1. Monitoring Station Locations

Type of Sampling Location	Monitoring Location Name	Monitoring Location Description
Influent	INF-001	At any point in the treatment facility headworks at which all waste tributary to that plant is present and preceding any phase of treatment. Recycle streams from internal treatment plant processes may be included in the flow for this sampling station.
Effluent	EFF-001	At any point in the treatment facility between the point of discharge and the point at which all flow tributary to the outfall is present.
Biosolids	BIO-001	Sludge monitoring in the treatment facility.

III. INFLUENT MONITORING REQUIREMENTS

The Discharger shall monitor influent to the Plant at Monitoring Location INF-001 as follows:

Table E-2. Influent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow[1]	MGD	Continuous	Continuous/D
$CBOD_5$	mg/L	C-24	2/Week
TSS	mg/L	C-24	2/Week

Legend for Table E-2
Unit Abbreviations:
MG = million gallons
MGD = million gallons per day
mg/L = milligrams per liter

Sample Type:
C-24 = 24-hour composite
Sampling Frequency:
Continuous/D = measured continuously, and recorded and reported daily
2/Week = Two times per week

Footnote for Table E-2

[1] Flow Monitoring. Flow shall be monitored continuously, and the following information shall be reported in self-monitoring reports for each month:

- Daily average flow (MGD)
- Total daily flow volume (MG)
- Monthly average flow (MGD)
- Total monthly flow volume (MG)
- Maximum and minimum daily average flow rates (MGD) and time of occurrence

IV. EFFLUENT MONITORING REQUIREMENTS

The Discharger shall monitor discharges of treated wastewater from the Plant at EFF-001 as follows.

Table E-3. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow[1]	MGD	Continuous	Continuous/D
$CBOD_5$	mg/L	C-24	2/Week
TSS	mg/L	C-24	2/Week
CBOD and TSS % Removal[2]	%	Calculate	1/Month
Oil and Grease[3]	mg/L	Grab	2/Year
pH [4]	s.u.	Grab	1/Day or Continuous/D
Dissolved Oxygen	mg/L	Grab	1/Day
Dissolved Sulfides[5]	mg/L	Grab	1/Day
Temperature	°C	Grab	1/Day
Enterococcus Bacteria	Colonies/100 mL	Grab	2/Week
Acute Toxicity[6]	% Survival	Flow through	1/Month
Chronic Toxicity[7]	TUc	C-24	Quarterly
Ammonia	mg/L as N	C-24	1/Month
Copper	µg/L	C-24	1/Month
Cyanide	µg/L	Grab	1/Month
Dioxin-TEQ	µg/L	Grab	2/Year
Acrylonitrile	µg/L	Grab	2/Year
Bis(2-ethylhexyl)phthalate	µg/L	Grab	2/Year

Legend to Table E-3:

Unit Abbreviations:
MG = million gallons
MGD = million gallons per day
s.u. = standard units
mg/L = milligrams per liter
mg/L as N = milligrams per liter as nitrogen
MPN/100 mL = most probable number per 100 milliliters
°F = degrees Fahrenheit
TUc = chronic toxicity units
µg/L = micrograms per liter
Sample Type:
C-24 = 24-hour composite

Sampling Frequency:

Continuous/D	= measured continuously, and recorded and reported daily
1/Day	= Once per day
2/Week	= Two times per week
3/Week	= Three times per week
5/Week	= Five times per week
1/Month	= Once per month
1/2 Months	= Once every two months
1/Year	= Once per year
2/Year	= Twice per year

Footnotes to Table E-3:

[1] Flow Monitoring. Flow shall be monitored continuously, and the following information shall be reported in self-monitoring reports for each month:
- Daily average flow (MGD)
- Total daily flow volume (MG)
- Monthly average flow (MGD)
- Total monthly flow volume (MG)
- Maximum and minimum daily average flow rates (MGD) and time of occurrence

[2] CBOD and TSS % Removal. The percent removal for CBOD and TSS shall be reported for each calendar month in accordance with Effluent Limitation IV.A.1. Samples for CBOD and TSS shall be collected simultaneously with influent samples.

[3] Oil and Grease. Each oil and grease sampling and analysis event shall be conducted in accordance with Standard Methods 21st Ed.

[4] pH. If pH is monitored continuously, the minimum and maximum pH values for each day shall be reported in monthly Self-Monitoring Reports (SMRs).

[5] Dissolved Sulfides. Measured when dissolved oxygen concentration is less than 2.0 mg/L.

[6] Acute toxicity. Acute bioassay tests shall be performed in accordance with section V.A of this MRP.

[7] Chronic toxicity. Critical life stage toxicity tests shall be performed and reported in accordance with the Chronic Toxicity Requirements of specified in section V.B of this MRP.

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

The Discharger shall monitor whole effluent acute and chronic toxicity at EFF-001 as follows:

A. Whole Effluent Acute Toxicity

1. Compliance with the acute toxicity effluent limitations of this Order shall be evaluated by measuring survival of test organisms exposed to 96-hour continuous flow-through bioassays at Monitoring Location EFF-001.

2. Test organisms shall be fathead minnow (*Pimephales promelas*) or rainbow trout (*Oncorhynchus mykiss*) unless the Executive Officer specifies otherwise in writing.

3. All bioassays shall be performed according to the most up-to-date protocols in 40 CFR 136, currently *Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms,* 5th Edition.

4. If specific identifiable substances in the discharge can be demonstrated by the Discharger as being rapidly rendered harmless upon discharge to the receiving water, compliance with the acute toxicity limit may be determined after the test samples are adjusted to remove the influence of those substances. Written approval from the Executive Officer must be obtained to authorize such an adjustment.

5. The sample may be taken from final secondary effluent prior to disinfection. Monitoring of the bioassay water shall include, on a daily basis, the following parameters: pH, dissolved oxygen, ammonia (if toxicity is observed), temperature, hardness, and alkalinity. These

results shall be reported. If a violation of acute toxicity requirements occurs, the bioassay test shall be repeated with new fish as soon as practical and shall be repeated until a test fish survival rate of 90 percent or greater is observed. If the control fish survival rate is less than 90 percent, the bioassay test shall be restarted with new fish and shall continue as soon as practical until an acceptable test is completed (i.e., control fish survival rate is 90 percent or greater).

B. Whole Effluent Chronic Toxicity

1. Chronic Toxicity Monitoring Requirements

a. Sampling. The Discharger shall collect 24-hour composite samples of the effluent at monitoring location EFF-001, for critical life stage toxicity testing as indicated below. For toxicity tests requiring renewals, 24-hour composite samples collected on consecutive days are required.

b. Test Species. The test species shall be either *Selenastrum capricornutum* (green algae) or *Americamysis bahia* (mysid shrimp). The Discharger shall conduct a screening chronic toxicity test as described in Appendix E-1 following any significant change in the nature of the effluent or prior to application for permit renewal. The most sensitive species shall be used thereafter for routine chronic toxicity monitoring. The Executive Officer may authorize a change to another test species if the Discharger's chronic toxicity screening data suggest that another test species is more sensitive to the discharge.

c. Frequency. The frequency of routine and accelerated chronic toxicity monitoring shall be as specified below:

(1) Undertake routine monitoring *quarterly*.

(2) Accelerate monitoring to *monthly* after exceeding a three-sample median of 10 TU_c[1] or a single sample maximum of 20 TU_c. The Executive Officer may specify a different frequency for accelerated monitoring based on the TU_c results.

(3) Return to routine monitoring if accelerated monitoring does not exceed either trigger in (2), above.

(4) If accelerated monitoring confirms consistent toxicity in excess of either trigger in (2), above, continue accelerated monitoring and initiate toxicity reduction evaluation (TRE) procedures in accordance with section B.3, below.

(5) Return to routine monitoring after implementing appropriate elements of the TRE, and either the toxicity drops below both triggers in (2), above, or, based on the TRE results, the Executive Officer authorizes a return to routine monitoring.

Monitoring conducted pursuant to a TRE effort shall satisfy the requirements for routine and accelerated monitoring while the TRE investigation is underway.

[1] A TU_c equals 100 divided by the no observable effect level (NOEL). The NOEL is determined from IC_{25}, EC_{25}, or NOEC values. These terms, their usage, and other chronic toxicity monitoring program requirements are defined in the MRP (Attachment E).

d. Methodology. Sample collection, handling, and preservation shall be in accordance with USEPA protocols. In addition, bioassays shall be conducted in compliance with the most recently promulgated test methods, as shown in Appendix E-1. These are *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms,* currently fourth Edition (EPA-821-R-02-013), with exceptions granted the Discharger in writing by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP). If specific identifiable substances in the discharge can be demonstrated by the Discharger as being rapidly rendered harmless upon discharge to the receiving water, compliance with the chronic toxicity limit may be determined after the test samples are adjusted to remove the influence of those substances. Written approval from the Executive Officer must be obtained to authorize such an adjustment.

e. Dilution Series. The Discharger shall conduct tests with a control and five effluent concentrations (including 100% effluent) using a dilution factor ≥ 0.5. Test sample pH in each dilution in the series may be controlled to the level of the effluent sample as received prior to being salted up.

2. Chronic Toxicity Reporting Requirements

a. Routine Reporting. Toxicity test results for the current reporting period shall include, at a minimum, for each test:

(1) Sample date

(2) Test initiation date

(3) Test species

(4) End point values for each dilution (e.g., number of young, growth rate, percent survival)

(5) No Observable Effect Level (NOEL) values in percent effluent. The NOEL shall equal to the IC_{25} or EC_{25} (see Appendix E-1). If the IC_{25} or EC_{25} cannot be statistically determined, the NOEL shall equal to the No Observable Effect Concentration (NOEC) derived using hypothesis testing. The NOEC is the maximum percent effluent concentration that causes no observable effect on test organisms based on a critical life stage toxicity test.

(6) IC_{15}, IC_{25}, IC_{40}, and IC_{50} values (or EC_{15}, EC_{25} ... etc.) as percent effluent

(7) TUc values ($TU_c = 100/NOEL$).

(8) Mean percent mortality (±s.d.) after 96 hours in 100% effluent (if applicable)

(9) NOEC and LOEC values for reference toxicant tests

(10) IC_{50} or EC_{50} values for reference toxicant tests

(11) Available water quality measurements for each test (pH, dissolved oxygen, temperature, conductivity, hardness, salinity, ammonia)

b. Compliance Summary. The results of the chronic toxicity testing shall be provided in the self-monitoring report as TUc's.

3. Chronic Toxicity Reduction Evaluation (TRE)

a. The Discharger shall prepare a generic TRE work plan within 90 days of the effective date of this Order to be ready to respond to toxicity events. The Discharger shall review and update the work plan as necessary so that it remains current and applicable to the discharge and discharge facilities.

b. Within 30 days of exceeding either chronic toxicity trigger, the Discharger shall submit to the Regional Water Board a TRE work plan, which shall be the generic work plan revised as appropriate for this toxicity event after consideration of available discharge data.

c. Within 30 days of the date of completion of the accelerated monitoring tests observed to exceed either trigger, the Discharger shall initiate a TRE in accordance with a TRE work plan that incorporates any and all comments from the Executive Officer.

d. The TRE shall be specific to the discharge and be in accordance with current technical guidance and reference materials, including USEPA guidance materials. The TRE shall be conducted as a tiered evaluation process, such as summarized below:

(1) Tier 1 consists of basic data collection (routine and accelerated monitoring).

(2) Tier 2 consists of evaluation of optimization of the treatment process, including operation practices and in-plant process chemicals.

(3) Tier 3 consists of a toxicity identification evaluation (TIE).

(4) Tier 4 consists of evaluation of options for additional effluent treatment processes.

(5) Tier 5 consists of evaluation of options for modifications of in-plant treatment processes.

(6) Tier 6 consists of implementation of selected toxicity control measures, and follow-up monitoring and confirmation of implementation success.

e. The TRE may be ended at any stage if monitoring finds there is no longer consistent toxicity (complying with requirements of Provision IV.C.2 of the Order).

f. The objective of the TIE shall be to identify the substance or combination of substances causing the observed toxicity. All reasonable efforts using currently available TIE methodologies shall be employed.

g. As toxic substances are identified or characterized, the Discharger shall continue the TRE by determining the sources and evaluating alternative strategies for reducing or eliminating the substances from the discharge. All reasonable steps shall be taken to reduce toxicity to levels consistent with chronic toxicity evaluation parameters.

h. Many recommended TRE elements parallel required or recommended efforts of source control, pollution prevention, and storm water control programs. TRE efforts should be coordinated with such efforts. To prevent duplication of efforts, evidence of complying with requirements or recommended efforts of such programs may be acceptable to comply with TRE requirements.

i. The Regional Water Board recognizes that chronic toxicity may be episodic and identification of causes of and reduction of sources of chronic toxicity may not be successful in all cases. Consideration of enforcement action by the Regional Water Board will be based in part on the Discharger's actions and efforts to identify and control or reduce sources of consistent toxicity.

VI. RECEIVING WATER MONITORING REQUIREMENTS

The Discharger shall continue to participate in the RMP, which involves collection of data on pollutants and toxicity in San Francisco Bay water, sediment, and biota. The Discharger's participation and support of the RMP is the basis for not including receiving water monitoring requirements in this permit.

VII. PRETREATMENT AND BIOSOLIDS MONITORING REQUIREMENTS

The Discharger shall comply with the pretreatment requirements specified below for influent (at Monitoring Location INF-001), effluent (at Monitoring Location EFF-001), and biosolids monitoring (at Monitoring Location BIO-001). The Discharger shall report summaries of analytical results in annual and semi-annual pretreatment reports in accordance with Attachment H.

Table E-4. Pretreatment and Biosolids Monitoring Requirements

Constituents	Sampling Frequency			Sample Type[4]	
	Influent INF-001	Effluent EFF-001[3]	Biosolids BIO-001	INF-001 and EFF-001	Biosolids BIO-001
VOC	2/Year	2/Year	2/Year	Grab	Grab [4c]
BNA	2/Year	2/Year	2/Year	Grab	Grab [4c]
Organophosphorus Pesticides	2/Year	2/Year	2/Year	24-hr Composite[4a]	Grab [4c]
Metals[1]	1/Month	1/Month	2/Year	24-hr Composite[4a]	Grab [4c]
Hexavalent Chromium[2]	1/Month	1/Month	2/Year	Grab	Grab [4c]
Mercury	1/Month	1/Month	2/Year	24-hr Composite[4a,4b]	Grab [4c]
Cyanide	1/Month	1/Month	2/Year	Grab	Grab [4c]

Legend for Table E-4:
Constituents:
VOC volatile organic compounds
BNA base/neutrals and acids extractable organic compounds
Sampling Frequency:
1/month once per month
2/year twice per year

Footnotes for Table E-4:
[1] The metals are arsenic, cadmium, copper, lead, nickel, silver, zinc, and selenium.
[2] The Discharger may elect to report total chromium instead of hexavalent chromium. Sample collection for total chromium measurements shall be 24-hour composite sampling.
[3] Effluent monitoring conducted in accordance with Table E-3 can be used to satisfy these pretreatment monitoring requirements.

[4] Sample types:

a. 24-hour composite samples may be made up discrete grab samples and may be combined (volumetrically flow-weighted) prior to analysis, or they may be mathematically flow-weighted. If an automatic compositor is used, 24-hour composite samples must be obtained through flow-proportioned composite sampling.

b. Automatic compositors are allowed for mercury if either (1) the compositing equipment (hoses and containers) comply with ultraclean specifications, or (2) appropriate equipment blank samples demonstrate that the compositing equipment has not contaminated the sample.

c. The biosolids sample shall be a composite of the biosolids to be disposed. Biosolids collection and monitoring shall comply with the requirements specified in Attachment H, Appendix H-4. The Discharger shall also comply with the biosolids monitoring requirements of 40 CFR 503.

VIII. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

The Discharger shall comply with all Federal Standard Provisions (Attachment D) and Regional Standard Provisions (Attachment G) related to monitoring, reporting, and recordkeeping, with modifications shown in VIII.D below.

B. Self Monitoring Reports (SMRs)

1. **SMR Format.** The Discharger shall electronically submit SMRs using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). The CIWQS website will provide additional directions for SMR submittals in the event of a service interruption for electronic submittal.

2. **SMR Due Dates and Contents.** The Discharger shall submit SMRs by the due dates, and with the contents, specified below:

   a. Monthly SMRs — Monthly SMRs shall be due 30 days after the end of each calendar month, covering that calendar month. The monthly SMR shall contain the applicable items described in sections V.B and V.C of both Attachments D and G of this Order. See Provision VI.C.6.b (Effluent Characterization Study and Report) of this Order for information that must also be reported with the monthly SMR.

   b. Annual SMR — Annual SMRs shall be due February 1 each year, covering the previous calendar year. The annual SMR shall contain the items described in sections V.C.1.f .(2), V.C.1.f .(6) as applicable, and V.C.1.f .(7) of the Regional Standard Provisions (Attachment G). Information described in the other subsections of V.C.1.f of Attachment G is not required. See also Provision VI.C.2.b(2) (Effluent Characterization Study and Report) for requirements to submit reports with the annual SMR.

   c. Additional Specifications for Submitting SMRs to CIWQS — The Discharger shall submit analytical results and other information using one of the following methods:

Table E-5. SMR Reporting for CIWQS

Parameter	Method of Reporting	
	EDF/CDF data upload or manual entry	Attached File
All parameters identified in influent, effluent, and receiving water monitoring tables (except	Required for All Results	

Dissolved Oxygen and Temperature)		
Dissolved Oxygen Temperature	Required for Monthly Maximum and Minimum Results Only [1]	Discharger may use this method for all results or keep records
Cyanide Arsenic Cadmium Chromium Copper Lead Mercury Nickel Selenium Silver Zinc Dioxins and Furans (by U.S. EPA Method 1613)	Required for All Results [2]	
Antimony Berylium Thallium Pollutants by U.S. EPA Methods 601, 602, 608, 610, 614, 624, and 625	Not Required (unless identified in influent, effluent, or receiving water monitoring tables), But Encouraged [1]	Discharger may use this method and submit results with application for permit reissuance, unless data submitted by CDF/EDF upload
Analytical Method	Not Required (Discharger may select "data unavailable") [1]	
Collection Time Analysis Time	Not Required (Discharger may select "0:00") [1]	

Footnotes for Table E-5:

[1] The Discharger shall continue to monitor at the minimum frequency specified in the monitoring tables, keep records of the measurements, and make the records available upon request.

[2] These parameters require EDF/CDF data upload or manual entry regardless of whether monitoring is required by this MRP or other provisions of this Order (except for biosolids, sludge, or ash provisions).

3. **Monitoring Periods.** Monitoring periods for all required monitoring shall be completed as set forth in the table below:

Table E-6. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period
Continuous	Permit effective date	All
1/Day	Permit effective date	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.
2/Week 4/Week 5/Week	Permit effective date	Sunday through Saturday
1/Month	Permit effective date	First day of calendar month through last day of calendar month
1/2 Months	Permit effective date	First day of calendar month through last day of next calendar month
1/Year	Permit effective date	January 1through December 31
2/Year	Permit effective date	Once during the wet season (typically November 1 – April 30) and once during the dry season (typically May 1 through October 31)

4. **ML and MDL Reporting.** The Discharger shall report with each sample result the Reporting Level (RL) and Method Detection Limit (MDL) as determined by the procedure in 40 CFR 136. The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

   a. Sample results greater than or equal to the RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).

   b. Sample results less than the RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported. For purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (+/- a percentage of the reported value), numerical ranges (low to high), or any other means the laboratory considers appropriate.

   c. Sample results less than the laboratory's MDL shall be reported as "Not Detected" or ND.

   d. The Discharger shall instruct laboratories to establish calibration standards so that the minimum level (ML) value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

C. Discharge Monitoring Reports

1. As described in section VIII.B.1 above, at any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit SMRs that will satisfy federal requirements for submittal of Discharge Monitoring Reports (DMRs.) Until such notification is given, the Discharger shall submit DMRs in accordance with the requirements described below.

2. Once notified by the State or Regional Water Board, the Discharger shall submit hard copy DMRs. DMRs must be signed and certified as required by the Standard Provisions (Attachment D). The Discharger shall submit the original DMR and one copy of the DMR to one of the addresses listed below:

Standard Mail	FedEx/UPS/Other Private Carriers
State Water Resources Control Board Division of Water Quality c/o DMR Processing Center PO Box 100 Sacramento, CA 95812-1000	State Water Resources Control Board Division of Water Quality c/o DMR Processing Center 1001 I Street, 15th Floor Sacramento, CA 95814

3. All discharge monitoring results must be reported on the official USEPA pre-printed DMR forms (EPA Form 3320-1). Forms that are self-generated will not be accepted unless they follow the exact same format of EPA Form 3320-1.

D. Modifications to Attachment G

1. Attachment G sections V.C.1.f and V.C.1.g are revised as follows, and section V.C.1.h (Reporting data in electronic format) is deleted.

f. Annual self-monitoring report requirements

By the date specified in the MRP, the Discharger shall submit an annual report to the Regional Water Board covering the previous calendar year. The report shall contain the following:

1) Annual compliance summary table of treatment plant performance, including documentation of any blending events (this summary table is not required if the Discharger has submitted the year's monitoring results to CIWQS in electronic reporting format by EDF/CDF upload or manual entry);

2) Comprehensive discussion of treatment plant performance and compliance with the permit (This discussion shall include any corrective actions taken or planned, such as changes to facility equipment or operation practices that may be needed to achieve compliance, and any other actions taken or planned that are intended to improve performance and reliability of the Discharger's wastewater collection, treatment, or disposal practices.);

3) Both tabular and graphical summaries of the monitoring data for the previous year if parameters are monitored at a frequency of monthly or greater (this item is not required if the Discharger has submitted the year's monitoring results to CIWQS in electronic reporting format by EDF/CDF upload or manual entry);

4) List of approved analyses, including the following:

(i) List of analyses for which the Discharger is certified;

(ii) List of analyses performed for the Discharger by a separate certified laboratory (copies of reports signed by the laboratory director of that laboratory shall not be submitted but be retained onsite); and

(iii) List of "waived" analyses, as approved;

5) Plan view drawing or map showing the Discharger's facility, flow routing, and sampling and observation station locations;

6) Results of annual facility inspection to verify that all elements of the SWPP Plan are accurate and up to date (only required if the Discharger does not route all storm water to the headworks of its wastewater treatment plant); and

7) Results of facility report reviews (The Discharger shall regularly review, revise, and update, as necessary, the O&M Manual, the Contingency Plan, the Spill Prevention Plan, and Wastewater Facilities Status Report so that these documents remain useful and relevant to

current practices. At a minimum, reviews shall be conducted annually. The Discharger shall include, in each Annual Report, a description or summary of review and evaluation procedures, recommended or planned actions, and an estimated time schedule for implementing these actions. The Discharger shall complete changes to these documents to ensure they are up-to-date.).

g. Report submittal

The Discharger shall submit SMRs addressed as follows, unless the Discharger submits SMRs electronically to CIWQS:

California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612
Attn: NPDES Wastewater Division

2. Attachment G sections V.E.2, V.E.2.a, and V.E.2.c are revised as follows, and sections V.E.2.b (24-hour Certification) and V.E.2.d (Communication Protocol) are deleted.

2. Unauthorized Discharges from Municipal Wastewater Treatment Plants[2]

The following requirements apply to municipal wastewater treatment plants that experience an unauthorized discharge at their treatment facilities and supersede requirements imposed on the Discharger by the Executive Officer by letter of May 1, 2008.

a. Two (2)-Hour Notification

For any unauthorized discharges that enter a drainage channel or a surface water, the Discharger shall, as soon as possible, but not later than two (2) hours after becoming aware of the discharge, notify the California Emergency Management Agency (CalEMA currently 800-852-7550), the local health officers or directors of environmental health with jurisdiction over the affected water bodies, and the Regional Water Board. Timely notification by the Discharger to CalEMA also satisfies notification to the Regional Water Board. Notification shall include the following:

1) Incident description and cause;

2) Location of threatened or involved waterway(s) or storm drains;

3) Date and time the unauthorized discharge started;

4) Estimated quantity and duration of the unauthorized discharge (to the extent known), and the estimated amount recovered;

[2] California Code of Regulations, Title 23, Section 2250(b), defines an unauthorized discharge to be a discharge, not regulated by waste discharge requirements, of treated, partially treated, or untreated wastewater resulting from the intentional or unintentional diversion of wastewater from a collection, treatment or disposal system.

5) Level of treatment prior to discharge (e.g., raw wastewater, primary treated, undisinfected secondary treated, and so on); and

6) Identity of the person reporting the unauthorized discharge.

b. 24-hour Certification – Deleted

c. 5-day Written Report

Within five business days, the Discharger shall submit a written report that includes, in addition to the information required above, the following:

1) Methods used to delineate the geographical extent of the unauthorized discharge within receiving waters;

2) Efforts implemented to minimize public exposure to the unauthorized discharge;

3) Visual observations of the impacts (if any) noted in the receiving waters (e.g., fish kill, discoloration of water) and the extent of sampling if conducted;

4) Corrective measures taken to minimize the impact of the unauthorized discharge;

5) Measures to be taken to minimize the chances of a similar unauthorized discharge occurring in the future;

6) Summary of Spill Prevention Plan or O&M Manual modifications to be made, if necessary, to minimize the chances of future unauthorized discharges; and

7) Quantity and duration of the unauthorized discharge, and the amount recovered.

d. Communication Protocol – Deleted

APPENDIX E-1
CHRONIC TOXICITY
DEFINITION OF TERMS AND SCREENING PHASE REQUIREMENTS

I. Definition of Terms

A. No observed effect level (NOEL) for compliance determination is equal to IC_{25} or EC_{25}. If the IC_{25} or EC_{25} cannot be statistically determined, the NOEL shall be equal to the NOEC derived using hypothesis testing.

B. Effective concentration (EC) is a point estimate of the toxicant concentration that would cause an adverse effect on a quantal, "all or nothing," response (such as death, immobilization, or serious incapacitation) in a given percent of the test organisms. If the effect is death or immobility, the term lethal concentration (LC) may be used. EC values may be calculated using point estimation techniques such as probit, logit, and Spearman-Karber. EC_{25} is the concentration of toxicant (in percent effluent) that causes a response in 25 percent of the test organisms.

C. Inhibition concentration (IC) is a point estimate of the toxicant concentration that would cause a given percent reduction in a nonlethal, nonquantal biological measurement, such as growth. For example, an IC_{25} is the estimated concentration of toxicant that would cause a 25 percent reduction in average young per female or growth. IC values may be calculated using a linear interpolation method such as USEPA's Bootstrap Procedure.

D. No observed effect concentration (NOEC) is the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specific time of observation. It is determined using hypothesis testing.

II. Chronic Toxicity Screening Phase Requirements

A. The Discharger shall perform screening phase monitoring:

1. Subsequent to any significant change in the nature of the effluent discharged through changes in sources or treatment, except those changes resulting from reductions in pollutant concentrations attributable to source control efforts, or

2. Prior to permit reissuance. Screening phase monitoring data shall be included in the NPDES permit application for reissuance. The information shall be as recent as possible, but may be based on screening phase monitoring conducted within 5 years before the permit expiration date.

B. Design of the screening phase shall, at a minimum, consist of the following elements:

1. Use of test species specified in Appendix E-2, attached, and use of the protocols referenced in those tables, or as approved by the Executive Officer.

2. Two stages:
   a. Stage 1 shall consist of a minimum of one battery of tests conducted concurrently. Selection of the type of test species and minimum number of tests shall be based on Appendix E-2 (attached).

b. Stage 2 shall consist of a minimum of two test batteries conducted at a monthly frequency using the three most sensitive species based on the Stage 1 test results and as approved by the Executive Officer.

3. Appropriate controls.

4. Concurrent reference toxicant tests.

5. Dilution series of 100%, 50%, 25%, 12.5%, 6.25%, and 0 %, where "%" is percent effluent as discharged, or as otherwise approved the Executive Officer.

C. The Discharger shall submit a screening phase proposal acceptable to the Executive Officer. The proposal shall address each of the elements listed above. If within 30 days, the Executive Officer does not comment, the Discharger shall commence with screening phase monitoring.

APPENDIX E-2
SUMMARY OF TOXICITY TEST SPECIES REQUIREMENTS

Table AE-1. Critical Life Stage Toxicity Tests for Estuarine Waters

Species	(Scientific Name)	Effect	Test Duration	Reference
Alga	*(Skeletonema costatum)* *(Thalassiosira pseudonana)*	Growth rate	4 days	1
Red alga	*(Champia parvula)*	Number of cystocarps	7–9 days	3
Giant kelp	*(Macrocystis pyrifera)*	Percent germination; germ tube length	48 hours	2
Abalone	*(Haliotis rufescens)*	Abnormal shell development	48 hours	2
Oyster Mussel	*(Crassostrea gigas)* *(Mytilus edulis)*	Abnormal shell development; percent survival	48 hours	2
Echinoderms - Urchins Sand dollar	*(Strongylocentrotus purpuratus, S. franciscanus)* *(Dendraster excentricus)*	Percent fertilization	1 hour	2
Shrimp	*(Americamysis bahia)*	Percent survival; growth	7 days	3
Shrimp	*(Holmesimysis costata)*	Percent survival; growth	7 days	2
Topsmelt	*(Atherinops affinis)*	Percent survival; growth	7 days	2
Silversides	*(Menidia beryllina)*	Larval growth rate; percent survival	7 days	3

Toxicity Test References:

1. American Society for Testing Materials (ASTM). 1990. Standard Guide for Conducting Static 96-Hour Toxicity Tests with Microalgae. Procedure E 1218-90. ASTM, Philadelphia, PA.

2. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to West Coast Marine and Estuarine Organisms. EPA/600/R-95/136. August 1995.

3. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Marine and Estuarine Organisms. EPA/600/4-90/003. July 1994.

Table AE-2. Critical Life Stage Toxicity Tests for Fresh Waters

Species	(Scientific Name)	Effect	Test Duration	Reference
Fathead minnow	*(Pimephales promelas)*	Survival; growth rate	7 days	4
Water flea	*(Ceriodaphnia dubia)*	Survival; number of young	7 days	4
Alga	*(Selenastrum capricornutum)*	Final cell density	4 days	4

Toxicity Test Reference:

4. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, fourth Edition Chronic manual (EPA-821-R-02-013, October 2002).

Table AE-3. Toxicity Test Requirements for Stage One Screening Phase

Requirements	Receiving Water Characteristics		
	Discharges to Coast	Discharges to San Francisco Bay[1]	
	Ocean	Marine/Estuarine	Freshwater
Taxonomic diversity	1 plant 1 invertebrate 1 fish	1 plant 1 invertebrate 1 fish	1 plant 1 invertebrate 1 fish
Number of tests of each salinity type: Freshwater[2] Marine/Estuarine	0 4	1 or 2 3 or 4	3 0
Total number of tests	4	5	3

[1] (a) Marine refers to receiving water salinities greater than 1 part per thousand (ppt) at least 95 percent of the time during a normal water year.
(b) Freshwater refers to receiving water with salinities less than 1 ppt at least 95 percent of the time during a normal water year.
(b) Estuarine refers to receiving water salinities that fall between those of marine and freshwater, as described above.

[2] The freshwater species may be substituted with marine species if:
(a) The salinity of the effluent is above 1 ppt greater than 95 percent of the time, or
(b) The ionic strength (TDS or conductivity) of the effluent at the test concentration used to determine compliance is documented to be toxic to the test species.

ATTACHMENT F - FACT SHEET

Contents

Tables

ATTACHMENT F – FACT SHEET

As described in section II of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for dischargers in California. Only those sections or subsections of this Order that are specifically identified as "not applicable" have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as "not applicable" fully apply to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the Central Contra Costa Wastewater Treatment Plant (Plant):

Table F-1. Facility Information

WDID	2 071008001
CIWQS Place ID	213875
Discharger	Central Contra Costa Sanitary District
Name of Facility	Central Contra Costa Sanitary District Wastewater Treatment Plant and its associated wastewater collection system
Facility Address	5019 Imhoff Place, Martinez, CA 94553
	Contra Costa County
Facility Contact, Title, Phone	Margaret P. Orr, P.E., Director of Plant Operations, (925) 228-9500
Authorized Person to Sign and Submit Reports	Same as above
Mailing Address	5019 Imhoff Place, Martinez, CA 94553
Billing Address	Same as Mailing Address
Type of Facility	Publicly Owned Treatment Works (POTW)
Major or Minor Facility	Major
Threat to Water Quality	1
Complexity	B
Pretreatment Program	Yes
Reclamation Requirements	Regional Water Board Order No. 96-011
Mercury and PCBs Discharge Requirements	Regional Water Board Order No. R2-2007-0077
Facility Permitted Flow	53.8 million gallons per day (MGD) (average daily dry weather flow)
Facility Design Flow	53.8 MGD (average dry weather flow) 250 MGD (peak wet weather influent design flow)
Watershed	Suisun
Receiving Water	Suisun Bay
Receiving Water Type	Estuarine
Service Area	Danville, Lafayette, Martinez, Moraga, Orinda, Pleasant Hill, San Ramon, Walnut Creek, Concord, Clayton, and adjacent unincorporated areas, including Alamo, Blackhawk, Clyde, and Pacheco
Service Area Population	455,000

A. Central Contra Costa Sanitary District (hereinafter the Discharger) is the owner and operator of the Plant, a Publicly Owned Treatment Works, and its associated sewage collection system

(collectively, the Facility). The Plant provides secondary treatment of wastewater collected from its service area and discharges it to Suisun Bay.

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. Discharge of treated wastewater from the Plant to Suisun Bay, a water of the State and the United States, is currently regulated by Order No. R2-2007-0008 (NPDES Permit No. CA0037648), which was adopted on January 23, 2007, became effective on April 1, 2007, and expires on March 31, 2012.

C. The Discharger filed a Report of Waste Discharge (ROWD) and submitted a complete application for renewal of its waste discharge requirements (WDRs) and NPDES permit dated June 1, 2011.

II. FACILITY DESCRIPTION

A. Description of Wastewater and Biosolids Treatment

1. **Facility Description.** The Discharger owns and operates the Central Contra Costa Sanitary District Wastewater Treatment Plant (hereinafter the Plant) and its associated wastewater collection system (hereinafter collectively the Facility). The Plant, located north of Concord and east of Martinez, (See Attachment B) provides secondary treatment of domestic, commercial, and industrial wastewater for Danville, Lafayette, Martinez, Moraga, Orinda, Pleasant Hill, San Ramon, Walnut Creek, Concord, Clayton, and adjacent unincorporated areas, including Alamo, Blackhawk, Clyde, and Pacheco. The population of the service area is approximately 455,000. From April 2007 through December 2010, the maximum daily influent flow rate was 141 MGD and the average daily flow rate was 38.7 MGD. Both rates are well within the permitted 53.8 MGD average dry weather flow and 250 MGD peak wet weather influent design flow. Twenty-two (22) significant industrial users also discharge to the Facility, and these discharges are regulated by the Facility's pretreatment program.

2. **Collection System.** The Discharger's wastewater collection system includes approximately 1,500 miles of pipeline, ranging from 6 to 102 inches in diameter, and 16 wastewater pumping stations. The City of Concord separately maintains the collection system within most of Concord's city limits and the City of Clayton.

3. **Treatment Description.** Treatment processes consist of screening, grit removal, primary sedimentation, secondary biological treatment, secondary clarification and ultraviolet (UV) disinfection. These steps are shown in the process flow diagram in Attachment C.

4. **Discharge Point.** Secondary-treated wastewater is discharged at Discharge Point 001 to Suisun Bay about 3.5 miles from the Facility via a submerged outfall equipped with a multiport diffuser. The location of the outfall diffuser is approximately 1600 feet offshore at an average depth of approximately 24 feet. The diffuser is 6 feet in diameter and imbedded 4 feet into the sediment. The diffuser is oriented nearly perpendicular to the shoreline. It consists of 11 upward-facing ports separated 11.5 feet on center, for a total length of 115 feet.

The Plant has holding basins for temporary storage of wet weather flows, with a combined volume of 170 million gallons. These basins are used to store excess wastewater after primary treatment when inflow exceeds the Plant's secondary treatment capacity. When flows subside, the stored wastewater is routed back to the headworks for full treatment.

5. **Recycled Water.** In 2010, the Discharger diverted approximately 600 million gallons of UV-disinfected effluent from the outfall to the Recycling Plant for tertiary treatment through sand/anthracite filtration and chlorine disinfection. This recycled water volume represents about 4% of the total wastewater treated. Recycled water is stored in a covered seven million gallon reservoir prior to distribution. Recycled water customers include landscape irrigators, corporation yards, private soil farms, concrete recycling and batch plants, and the county animal shelter. Recycled water activities are regulated under Regional Water Board Order No. 96-011.

6. **Biosolids Management.** Secondary sludge is thickened via dissolved air flotation, combined with primary sludge and lime, dewatered by centrifuges, and incinerated on-site. Ash is hauled by a contractor to an off-site recycling facility and used as a soil amendment. If Facility incinerators are inoperable, biosolids may be hauled to local landfills for disposal or to an East Bay Municipal Utility District site for treatment prior to disposal.

7. **Stormwater Discharge.** The Discharger is not required to be covered under the State Water Board's statewide industrial stormwater NPDES permit (NPDES General Permit No. CAS000001). All stormwater flows in contact with equipment or sewage at the Plant and the pump stations serving the Plant are collected and directed to the headworks for treatment.

8. **Outfall Pipe Maintenance.** About every 5 to 10 years, during the dry season, the Discharger drains and inspects its 3.5-mile long, 72-inch reinforced concrete outfall pipe to verify the alignment and assess the physical integrity of the pipe joint seals. During this time, fully-treated effluent is diverted to a holding basin and then discharged to Walnut Creek from a concrete weir at the holding basin. This maintenance project was last done in 2003, and it took 18 weeks to dewater the outfall, inspect it, repair the damaged joints, and return it to service. The Discharger has informed the Regional Water Board that an inspection (and any necessary repairs identified as a result) will have to be completed again during this permit cycle to ensure the integrity of the outfall. The fully treated effluent will be discharged to Walnut Creek via a new concrete weir structure at the holding basin. The Discharger expects that the diversion time will be similar to the last event, although it could vary depending on the extent of repairs needed. This bypass is necessary for unavoidable maintenance and is subject to Federal Standard Provisions, section I.G (Attachment D).

B. Discharge Point and Receiving Waters

The location of the discharge point and the receiving waters are shown below:

Table F-2. Outfall Locations

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Secondary Treated Municipal Wastewater	38º 02′ 44″ N	122º 05′ 55″ W	Suisun Bay

Suisun Bay is located within the Suisun watershed. Suisun Bay is a tidally influenced, estuarine waterbody. The discharge to Suisun Bay is a deep water discharge and receives a minimum of 10:1 initial dilution.

C. Summary of Existing Requirements and Self-Monitoring Report Data

Effluent limitations applicable to Discharge Point 001 contained in the previous Order (Order No. R2-2007-0008) and representative monitoring data from the term of the previous permit are presented below.

Table F-3. Historic Effluent Limitations and Monitoring Data for Conventional and Non-Conventional Pollutants

Parameter	Units	Effluent Limitations			Monitoring Data (From 04/07- 02/11)
		Monthly Average	Weekly Average	Daily Maximum	Highest Daily Discharge
5-day Carbonaceous Biological Oxygen Demand ($CBOD_5$)	mg/L	25	40	50	27
Total Suspended Solids (TSS)	mg/L	30	45	60	20
Oil and Grease	mg/L	10	---	20	4.4
pH	s.u.	6.0 – 9.0 at all times			6.8 – 8.0
Enterococcus Bacteria	Colonies/ 100 mL	35[1]	---	---	2400

Legend to Table F-3:
Unit Abbreviations:

mg/L = milligrams per liter
s.u. = standard units
mL = = milliliters

Footnotes to Table F-3:
< = Non-Detect

[1] The enterococci limitation is expressed as a monthly geometric mean.

Table F-4. Historic Effluent Limitations and Monitoring Data for Toxic Pollutants

Parameter	Units	Effluent Limitations		Monitoring Data (From 04/07 – 02/11)
		Monthly Average	Daily Maximum	Highest Daily
Copper	µg/L	14	20	12
Lead	µg/L	3.5	8.2	1.1
Cyanide	µg/L	20	45	6.7
Acrylonitrile	µg/L	6.3	13	1.1
Dioxin-TEQ	µg/L	1.4×10^{-8}	2.8×10^{-8}	1.2×10^{-9}

Legend to Table F-4:
Unit Abbreviations:

µg/L = micrograms per liter

D. Compliance Summary

1. **Compliance with Numeric Effluent Limits.** The Discharger has not exceeded any effluent limitation during the previous permit term.

2. **Compliance with Previous Permit Provisions.** The Discharger has completed all special activities required by the previous permit provisions.

E. Planned Changes

No changes are planned during this Order's term.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

This Order's requirements are based on the requirements and authorities described in this section.

A. Legal Authorities

This Order is issued pursuant to federal Clean Water Act (CWA) section 402 and implementing regulations adopted by the USEPA and chapter 5.5, division 7, of the California Water Code (CWC), commencing with section 13370. It serves as an NPDES permit for point source discharges from the Facility to surface waters. This Order also serves as waste discharge requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the CWC (commencing with section 13260).

B. California Environmental Quality Act (CEQA)

Under CWC section 13389, this action to issue an NPDES permit is exempt from Chapter 3 of CEQA.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plan.** *The Water Quality Control Plan for the San Francisco Bay Basin* (hereinafter the Basin Plan) is the Regional Water Board's master water quality control planning document. It designates beneficial uses and water quality objectives (WQOs) for waters of the State, including surface and groundwater. It also includes implementation programs to achieve WQOs. The Basin Plan was duly adopted by the Regional Water Board and approved by the State Water Resources Control Board (State Water Board), the Office of Administrative Law, and USEPA. Requirements of this Order implement the Basin Plan.

   The Basin Plan 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. Because of the marine influence on Suisun Bay, total dissolved solids levels exceed 3,000 mg/L and thereby meet an exception to State Water Board Resolution No. 88-63. The MUN designation therefore does not apply to the receiving water. The Basin Plan beneficial uses of Suisun Bay are listed below.

Table F-5. Basin Plan Beneficial Uses

Receiving Water Name	Beneficial Uses
Suisun Bay	Industrial Service Supply (IND) Industrial Process Supply (PROC) Commercial, and Sport Fishing (COMM) Estuarine Habitat (EST) Fish Migration (MIGR) Preservation of Rare and Endangered Species (RARE) Fish Spawning (SPWN) Wildlife Habitat (WILD) Water Contact Recreation (REC1) Non-Contact Water Recreation (REC2) Navigation (NAV)

The State Water Board's *Water Quality Control Plan for Enclosed Bays and Estuaries—Part 1, Sediment Quality* became effective on August 25, 2009. This plan supersedes other narrative sediment quality objectives and establishes new sediment quality objectives and related implementation provisions for specifically defined sediments in most bays and estuaries.

2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on December 22, 1992, and amended it on May 4, 1995, and November 9, 1999. About 40 criteria in the NTR and apply in California. On May 18, 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that applied in the State. The CTR was amended on February 13, 2001. These rules contain water quality criteria (WQC) for priority toxic pollutants.

3. **State Implementation Policy.** On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (hereinafter the State Implementation Policy [SIP]). The SIP became effective on April 28, 2000, with respect to the priority pollutant criteria promulgated through the NTR and to the WQOs established in the Basin Plan. The SIP became effective on May 18, 2000, with respect to the priority pollutant criteria promulgated through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005 that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

4. **Alaska Rule.** On March 30, 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards (WQS) become effective for CWA purposes [65 Fed. Reg. 24641 (April 27, 2000), codified at 40 CFR 131.21]. Under the revised regulation (also known as the Alaska Rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000, may be used for CWA purposes, whether or not approved by USEPA.

5. **Antidegradation Policy.** 40 CFR 131.12 requires that state WQS include an antidegradation policy consistent with the federal policy. The State Water Board established California's

antidegradation policy in State Water Board Resolution 68-16, which incorporates the federal antidegradation policy where the federal policy applies under federal law and requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies.

6. **Anti-Backsliding Requirements.** CWA sections 402(o)(2) and 303(d)(4) and 40 CFR 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed.

D. Impaired Water Bodies on CWA 303(d) List

In November 2006, pursuant to CWA section 303(d), USEPA approved a revised list of impaired water bodies 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. In November 2010, USEPA partially approved an updated 303(d) list. Where it has not done so already, the Regional Water Board plans to adopt Total Maximum Daily Loads (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 waterbodies. The SIP requires that final effluent limitations for all 303(d)-listed pollutants be consistent with TMDLs and associated wasteload allocations.

Suisun Bay is listed as an impaired waterbody. The pollutants impairing Suisun Bay are chlordane, DDT, dieldrin, exotic species, dioxins and furans, mercury, nickel, PCBs, and selenium. On February 12, 2008, the USEPA approved a TMDL for mercury in the San Francisco Bay. On March 29, 2010, the USEPA approved a TMDL for PCBs in San Francisco Bay. The TMDLs for mercury and PCBs are incorporated into the Basin Plan and apply to this discharge. Mercury and PCBs discharges from the Facility are regulated by Regional Water Board Order No. R2-2007- 0077 as amended by Regional Water Board Order No. R2-2011-0012.

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 that are 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 in the NPDES regulations: 40 CFR section 122.44(a) requires that permits include applicable technology-based limitations and standards; and section 122.44(d) requires that permits include water quality-based effluent limitations (WQBELs) to attain and maintain applicable numeric and narrative WQC to protect the beneficial uses of the receiving water.

Several specific factors affecting the development of limitations and requirements in this Order are discussed as follows:

A. Discharge Prohibitions

1. **Discharge Prohibition III.A (No discharge other than that described in this Order):** This prohibition is based on 40 CFR 122.21(a), "Duty to Apply," and CWC section 13260, which requires filing an application and Report of Waste Discharge before a discharge can occur. Discharges not described in the permit application and Report of Waste Discharge, and subsequently in this Order, are prohibited.

2. **Discharge Prohibition III.B (No discharge receiving less than 44:1 dilution):** This Order allows a dilution credit of 44:1 in the calculation of one or more water quality-based effluent limitations, based on information of dilution achieved by the Discharger's current outfall. Thus, this prohibition is necessary to ensure that the assumptions used to derive the dilution credit remain substantially the same so that the limitations are protective of water quality.

3. **Discharge Prohibition III.C (Bypass or overflow of untreated or partially treated wastewaters to waters of the U.S. is prohibited, except as provided for in section I.G of Attachment D):** This prohibition is based on 40 CFR 122.41(m). See Federal Standard Provisions, Attachment D, section G.

4. **Discharge Prohibition III.D (Average dry weather flow not to exceed permitted dry weather flow):** This prohibition is based on the design treatment capacity of the Facility treatment system. The permitted average dry weather flow rate is 53.8 MGD. Exceedance of the Plant's average dry weather flow could result in lowering the reliability of achieving compliance with water quality requirements.

5. **Discharge Prohibition III.E (No sanitary sewer overflows):** Basin Plan Discharge Prohibition 15 (Table 4-1) and the CWA prohibit the discharge of wastewater to surface waters except as authorized under an NPDES permit. Publicly owned treatment works must achieve secondary treatment at a minimum and any more stringent limitations necessary to meet water quality standards [33 U.S.C. § 1311 (b)(1)(B and C)]. A sanitary sewer overflow that results in the discharge of raw sewage, or wastewater not meeting this Order's effluent limitations, to surface waters is therefore prohibited under the CWA and the Basin Plan.

B. Conventional and Non-Conventional Pollutant Limitations

1. Scope and Authority

CWA section 301(b) and 40 CFR 122.44 require that permits include conditions meeting technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet the minimum federal technology-based requirements based on Secondary Treatment Standards at 40 CFR 133, which are summarized below. The 30-day average percent removal for BOD_5 (or $CBOD_5$) and TSS, by concentration, is not to be less than 85 percent. The Basin Plan contains additional requirements for certain pollutants.

Table F-6. Secondary Treatment Requirements

Parameters	Monthly Average	Weekly Average
BOD_5	30 mg/L	45 mg/L
$CBOD_5$ [1]	25 mg/L	40 mg/L

TSS	30 mg/L	45 mg/L
pH	6.0 – 9.0 standard units	

Footnotes for Table F-6:
[1] At the option of the permitting authority, $CBOD_5$ effluent limitations may be substituted for BOD_5 limitations.

2. Effluent Limitations for Conventional and Non-conventional Pollutants

a. $CBOD_5$ and TSS. The effluent limitations for $CBOD_5$ and TSS, including the 85 percent removal requirement, are required by the secondary treatment standards requirements.

b. Oil and Grease. Basin Plan Table 4-2 requires the oil and grease effluent limitations in this Order.

c. pH. Secondary treatment regulations and Basin Plan Table 4-2 require the pH limitation in this Order for deep water discharges.

d. Enterococcus Bacteria. The enterococcus bacteria effluent limitations are based on Basin Plan Table 4-2A.

C. Water Quality-Based Effluent Limitations (WQBELs) for Toxic Substances

WQBELs have been derived for toxic pollutants to implement WQOs that protect beneficial uses. Both the beneficial uses and the WQOs have been approved pursuant to federal law. The procedures for calculating individual WQBELs are based on the SIP and the Basin Plan. Most Basin Plan beneficial uses and WQOs were approved under State law and submitted to and approved by USEPA prior to May 30, 2000. Any WQOs and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the [Clean Water] Act" pursuant to 40 CFR 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than those required by CWA water quality standards.

1. Scope and Authority

a. NPDES regulations at 40 CFR 122.44(d)(1)(i) mandate that permits include effluent limitations for all pollutants that are or may be discharged at levels that have reasonable potential to cause or contribute to an excursion of a water quality standard, including numeric and narrative objectives within a standard. As specified in 40 CFR 122.44(d)(1)(i), permits are required to include WQBELs for all pollutants "which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard."

The process for determining "reasonable potential" and calculating WQBELs when necessary is intended to protect the designated beneficial uses of the receiving water as specified in the Basin Plan, and achieve applicable WQOs contained in the CTR, NTR, and other state plans and policies.

b. NPDES regulations and the SIP provide the basis to establish Maximum Daily Effluent Limitations (MDELs).

(1) NPDES Regulations. NPDES regulations at 40 CFR 122.45(d) state, "For continuous discharges all permit effluent limitations, standards, and prohibitions, including those necessary to achieve water quality standards, shall *unless impracticable* be stated as MDELs and average monthly discharge limitations (AMELs) for all discharges other than publicly owned treatment works."

(2) SIP. SIP section 1.4 requires WQBELs to be expressed as MDELs and AMELs.

c. MDELs are used in this Order to protect against acute water quality effects. The MDELs are necessary for preventing fish kills or mortality to aquatic organisms.

2. Beneficial Uses and WQOs

The WQOs applicable to the receiving water for this discharge are from the Basin Plan; the CTR, established by USEPA at 40 CFR 131.38; and the NTR, established by USEPA at 40 CFR 131.36. Some pollutants have WQOs established by more than one of these sources.

a. Basin Plan. The Basin Plan specifies numeric WQOs for 10 priority toxic pollutants, as well as narrative WQOs for toxicity and bioaccumulation in order to protect beneficial uses. The pollutants for which the Basin Plan specifies numeric objectives are arsenic, cadmium, chromium (VI), copper in marine and freshwater, lead, mercury, nickel, silver, zinc, and cyanide. The narrative toxicity objective states, "All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms." The bioaccumulation objective states, "Controllable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life. Effects on aquatic organisms, wildlife, and human health will be considered." Effluent limitations and provisions contained in this Order are designed to implement these objectives, based on available information.

b. CTR. The CTR specifies numeric aquatic life criteria for 23 priority toxic pollutants and numeric human health criteria for 57 priority toxic pollutants. These criteria apply to all inland surface waters and enclosed bays and estuaries of the San Francisco Bay Region, although Basin Plan Tables 3-3 and 3-4 include numeric objectives for certain of these priority toxic pollutants that supersede CTR criteria (except in the South Bay south of the Dumbarton Bridge). Human health criteria are further identified as for "water and organisms" and for "organisms only." The CTR criteria applicable to "organisms only" apply to the receiving water because it is not a source of drinking water.

c. NTR. The NTR establishes numeric aquatic life criteria for selenium and numeric human health criteria for 33 toxic organic pollutants for waters of San Francisco Bay upstream to and including Suisun Bay and the Sacramento River-San Joaquin River Delta.

d. Sediment Quality Objectives. The *Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1, Sediment Quality* contains a narrative WQO, "Pollutants in sediments shall not be present in quantities that, alone or in combination, are toxic to benthic communities in bays and estuaries of California." This WQO is to be implemented by integrating three lines of evidence: sediment toxicity, benthic community condition, and sediment chemistry. The policy requires that if the Regional Water Board determines that

a discharge has reasonable potential to cause or contribute to an exceedance of this WQO, it is to impose the WQO as a receiving water limit.

e. Basin Plan Receiving Water Salinity Policy. The Basin Plan (like the CTR and the NTR) states that the salinity characteristics (i.e., freshwater vs. saltwater) of the receiving water are to be considered in determining the applicable WQOs. Freshwater criteria apply to discharges to waters with salinities equal to or less than one part per thousand (ppt) at least 95 percent of the time. Saltwater criteria apply to discharges to waters with salinities equal to or greater than 10 ppt at least 95 percent of the time in a normal water year. For discharges to water with salinities between these two categories, or tidally influenced freshwaters that support estuarine beneficial uses, the WQOs are the lower of the salt or freshwater WQOs (the latter calculated based on ambient hardness) for each substance.

The receiving water for discharge from the facility is Suisun Bay, an estuarine water body based on salinity data collected by the San Francisco Estuary Institute (SFEI) Regional Monitoring Program (RMP). Historically, the RMP conducted sampling at 26 locations throughout the San Francisco Bay region. In 2002, the system was redesigned to incorporate random sampling in place of the 26 established locations. Salinity data collected from March 1993 to August 2001 at the Pacheco Creek (BF10) station and additional random sampling at various locations within Suisun Bay collected from July 2002 to July 2008 indicate that the salinity was less than 1 ppt in 29 percent of the samples and greater than 10 ppt in 18 percent of the samples in Suisun Bay. The waters of Suisun Bay are therefore classified as estuarine, and the reasonable potential analysis and effluent limitations in this Order are based on the more stringent of the fresh and saltwater WQOs.

f. Receiving Water Hardness. Ambient hardness data collected at the Pacheco Creek (BF10) RMP station from February 1995 to August 2001 and additional random sampling at various locations within Suisun Bay collected from August 2003 to August 2006 were used to calculate freshwater WQOs that are hardness dependent. To calculate the WQOs for hardness dependent metals, the data set was censored to cap hardness values above 400 mg/L as $CaCO_3$ at 400 mg/L. The resulting data set of 19 values was used to calculate an adjusted geometric mean, which is the value that 30 percent of the measurements fall below. The calculated hardness value was 146 mg/L as $CaCO_3$.

g. Site-Specific Metals Translators. NPDES regulations at 40 CFR 122.45(c) require that effluent limitations for metals be expressed as total recoverable metal. Since applicable WQOs for metals are typically expressed as dissolved metal, translators must be used to convert metals concentrations from dissolved to total recoverable and vice versa. The CTR includes default translators; however, site-specific conditions, such as water temperature, pH, suspended solids, and organic carbon greatly affect the form of metal (dissolved, non-filterable, or otherwise) present in the water and therefore available to cause toxicity. In general, the dissolved form of the metal is more available and more toxic to aquatic life than non-filterable forms. Site-specific translators can be developed to account for site-specific conditions, thereby preventing exceedingly stringent or under protective WQOs. For deep water discharges north of Dumbarton Bridge, the Basin Plan translators for copper are 0.38 (AMEL) and 0.66 (MDEL).

3. Determining the Need for WQBELs

Assessing whether a pollutant has reasonable potential to exceed a WQO in the water body is the fundamental step in determining whether or not a WQBEL is required.

a. Reasonable Potential Methodology

For priority pollutants and most other toxic pollutants, the reasonable potential Analysis (RPA) identifies the observed maximum effluent concentration (MEC) for each pollutant based on effluent concentration data. There are three triggers in determining reasonable potential according to SIP section 1.3.

(1) The first trigger (Trigger 1) is activated if the MEC is greater than or equal to the lowest applicable WQO (MEC ≥ WQO), which has been adjusted, if appropriate, for pH, hardness, and translator data. If the MEC is greater than or equal to the adjusted WQO, then that pollutant has reasonable potential, and a WQBEL is required.

(2) The second trigger (Trigger 2) is activated if the observed maximum ambient background concentration (B) is greater than the adjusted WQO (B > WQO), and the pollutant is detected in any of the effluent samples.

(3) The third trigger (Trigger 3) is activated if a review of other information determines that a WQBEL is required to protect beneficial uses, even though both MEC and B are less than the WQO.

b. Effluent Data

The Discharger's priority pollutant data and the nature of the discharge were analyzed to determine if the discharge has reasonable potential. The RPA is based on effluent monitoring data collected by the Discharger from April 2007 through January 2011 for most inorganic pollutants, and from May 2007 to December 2010 for most organic pollutants.

c. Ambient Background Data

The SIP states that, for calculating WQBELs, ambient background concentrations are either the observed maximum ambient water column concentrations or, for objectives intended to protect human health from carcinogenic effects, the arithmetic mean of observed ambient water concentrations. Ambient background concentrations are the observed maximum detected water column concentrations for aquatic life protection.

On May 15, 2003, a group of San Francisco Bay Region dischargers known as the Bay Area Clean Water Agencies, or BACWA, submitted a collaborative receiving water study, entitled the *San Francisco Bay Ambient Water Monitoring Interim Report* (2003). This study includes monitoring results from sampling events in 2002 and 2003 for the remaining priority pollutants not monitored by the RMP. This study included the Yerba Buena Island RMP station. Additional data were provided from the BACWA *Ambient Water Monitoring: Final CTR Sampling Update* report, dated June 15, 2004.

For priority pollutants, the RPA was conducted and WQBELs were calculated using RMP data from 1993 through 2009 at the Yerba Buena Island RMP station (BC10), and additional data from the BACWA receiving water study. For ammonia, the RPA was conducted and WQBELs were calculated using receiving water data collected by the Discharger at six monitoring locations between April 2007 and January 2011.

d. RPA for Toxic Pollutants

The MECs, most stringent applicable WQO, and background concentrations used in the RPA are presented in the following table, along with the RPA results (yes or no) for each pollutant. Reasonable potential was not determined for all pollutants because there are not applicable WQOs for all pollutants, and monitoring data are not available for others. Based on a review of the effluent data collected during the previous permit term from April 2007 through January 2011, the pollutants that exhibit reasonable potential at Discharge Point 001 are cyanide, acrylonitrile, bis(2-ethylhexyl)phthalate, and total ammonia by Trigger 1; and copper and dioxin-TEQ by Trigger 3.

Table F-7. Reasonable Potential Analysis Summary

CTR #	Priority Pollutants	Governing WQO (µg/L)	MEC or Minimum DL [1][2] (µg/L)	Maximum Background or Minimum DL [1][2] (µg/L)	RPA Results [3]
1	Antimony	4300	0.55	1.8	No
2	Arsenic	36	1.89	2.46	No
3	Beryllium	No Criteria	0.03	0.215	Ud
4	Cadmium	1.5	0.11	0.1268	No
5a	Chromium (III)	282	2.5	Not Available	No
5b	Chromium (VI)	11	2.5	4.4	No
6	Copper	5.9	12	2.55	Yes [4]
7	Lead	5.2	1.1	0.8040	No
8	Mercury (303(d) listed)[4]	---	---	0.0086	---
9	Nickel (303d listed)	30	2.65	3.73	No
10	Selenium (303(d) listed)	5.0	1.27	0.39	No
11	Silver	2.2	0.8	0.052	No
12	Thallium	6.3	< 0.01	0.21	No
13	Zinc	86	54.3	5.1	No
14	Cyanide	2.9	6.7	< 0.4	Yes
15	Asbestos	No Criteria	--	Not Available	Ud
16	2,3,7,8-TCDD (303(d) listed)	1.4E-08	< 7.5E-07	Not Available	No
	Dioxin TEQ (303(d) listed)	1.4E-08	1.2E-09	7.10E-09	Yes
17	Acrolein	780	<0.40	< 0.5	No
18	Acrylonitrile	0.66	1.1	0.03	Yes
19	Benzene	71	< 0.20	0.05	No
20	Bromoform	360	0.2	0.5	No
21	Carbon Tetrachloride	4.4	< 0.29	0.06	No
22	Chlorobenzene	21000	0.2	0.5	No
23	Chlorodibromomethane	34	0.3	0.05	No
24	Chloroethane	No Criteria	< 0.20	0.5	Ud
25	2-Chloroethylvinyl ether	No Criteria	< 0.20	0.5	Ud
26	Chloroform	No Criteria	0.8	0.5	Ud
27	Dichlorobromomethane	46	< 0.25	0.05	No
28	1,1-Dichloroethane	No Criteria	< 0.20	0.05	Ud
29	1,2-Dichloroethane	99	0.2	0.04	No
30	1,1-Dichloroethylene	3.2	< 0.28	< 0.5	No

CTR #	Priority Pollutants	Governing WQO (µg/L)	MEC or Minimum DL [1][2] (µg/L)	Maximum Background or Minimum DL [1][2] (µg/L)	RPA Results [3]
31	1,2-Dichloropropane	39	< 0.20	< 0.05	No
32	1,3-Dichloropropylene	1700	< 0.20	< 0.5	No
33	Ethylbenzene	29000	< 0.20	< 0.5	No
34	Methyl Bromide	4000	4.4	< 0.5	No
35	Methyl Chloride	No Criteria	1.2	< 0.5	Ud
36	Methylene Chloride	1600	< 0.30	22	No
37	1,1,2,2-Tetrachloroethane	11	0.2	< 0.05	No
38	Tetrachloroethylene	8.9	< 0.40	< 0.05	No
39	Toluene	200000	5.3	< 0.3	No
40	1,2-Trans-Dichloroethylene	140000	< 0.20	< 0.5	No
41	1,1,1-Trichloroethane	No Criteria	< 0.25	< 0.5	Ud
42	1,1,2-Trichloroethane	42	< 0.20	< 0.05	No
43	Trichloroethylene	81	< 0.07	< 0.5	No
44	Vinyl Chloride	525	< 0.25	< 0.5	No
45	2-Chlorophenol	400	< 0.10	< 1.2	No
46	2,4-Dichlorophenol	790	0.3	< 1.3	No
47	2,4-Dimethylphenol	2300	< 0.8	< 1.3	No
48	2-Methyl- 4,6-Dinitrophenol	765	< 0.2	< 1.2	No
49	2,4-Dinitrophenol	14000	< 0.4	< 0.7	No
50	2-Nitrophenol	No Criteria	< 0.1	< 1.3	Ud
51	4-Nitrophenol	No Criteria	< 0.5	< 1.6	Ud
52	3-Methyl 4-Chlorophenol	No Criteria	3.4	< 1.1	Ud
53	Pentachlorophenol	7.9	< 0.6	< 1	No
54	Phenol	4600000	1.9	< 1.3	No
55	2,4,6-Trichlorophenol	6.5	< 0.4	< 1.3	No
56	Acenaphthene	2700	< 0.030	0.0019	No
57	Acenaphthylene	No Criteria	0.21	0.0013	Ud
58	Anthracene	110000	< 0.030	0.0006	No
59	Benzidine	0.00054	< 4.1	< 0.0015	No
60	Benzo(a)Anthracene	0.049	< 0.020	0.0053	No
61	Benzo(a)Pyrene	0.049	< 0.020	0.00029	No
62	Benzo(b)Fluoranthene	0.049	< 0.020	0.0046	No
63	Benzo(ghi)Perylene	No Criteria	< 0.020	0.0027	Ud
64	Benzo(k)Fluoranthene	0.049	< 0.020	0.0015	No
65	Bis(2-Chloroethoxy)Methane	No Criteria	< 0.30	< 0.3	Ud
66	Bis(2-Chloroethyl)Ether	1.4	< 0.10	< 0.3	No
67	Bis(2-Chloroisopropyl)Ether	170000	< 0.10	Not Available	No
68	Bis(2-Ethylhexyl)Phthalate	5.9	21.9	< 0.5	Yes
69	4-Bromophenyl Phenyl Ether	No Criteria	< 0.1	< 0.23	Ud
70	Butylbenzyl Phthalate	5200	0.8	< 0.52	No
71	2-Chloronaphthalene	4300	< 0.2	< 0.3	No
72	4-Chlorophenyl Phenyl Ether	No Criteria	< 0.1	< 0.3	Ud
73	Chrysene	0.049	< 0.02	0.0024	No
74	Dibenzo(a,h)Anthracene	0.049	< 0.03	0.00064	No
75	1,2-Dichlorobenzene	17000	0.3	< 0.8	No
76	1,3-Dichlorobenzene	2600	0.2	< 0.8	No
77	1,4-Dichlorobenzene	2600	0.3	< 0.8	No
78	3,3 Dichlorobenzidine	0.077	< 0.3	< 0.001	No
79	Diethyl Phthalate	120000	0.7	< 0.24	No
80	Dimethyl Phthalate	2900000	< 0.1	< 0.24	No
81	Di-n-Butyl Phthalate	12000	0.5	< 0.5	No
82	2,4-Dinitrotoluene	9.1	< 0.1	< 0.27	No
83	2,6-Dinitrotoluene	No Criteria	< 0.1	< 0.29	Ud

CTR #	Priority Pollutants	Governing WQO (µg/L)	MEC or Minimum DL [1][2] (µg/L)	Maximum Background or Minimum DL [1][2] (µg/L)	RPA Results [3]
84	Di-n-Octyl Phthalate	No Criteria	< 0.1	< 0.38	Ud
85	1,2-Diphenylhydrazine	0.54	< 0.1	0.27	No
86	Fluoranthene	370	1.12	0.29	No
87	Fluorene	14000	0.14	0.38	No
88	Hexachlorobenzene	0.00077	< 0.1	0.0000202	No
89	Hexachlorobutadiene	50	< 0.2	< 0.3	No
90	Hexachlorocyclopentadiene	17000	< 2.6	< 0.31	No
91	Hexachloroethane	8.9	< 0.2	< 0.2	No
92	Indeno(1,2,3-cd)Pyrene	0.049	< 0.02	0.004	No
93	Isophorone	600	< 0.2	< 0.3	No
94	Naphthalene	No Criteria	1.3	0.0023	Ud
95	Nitrobenzene	1900	< 0.3	< 0.25	No
96	N-Nitrosodimethylamine	8.1	< 0.4	< 0.3	No
97	N-Nitrosodi-n-Propylamine	1.4	< 0.3	< 0.001	No
98	N-Nitrosodiphenylamine	16	< 0.1	< 0.001	No
99	Phenanthrene	No Criteria	< 0.02	0.0061	Ud
100	Pyrene	11000	0.05	0.0051	No
101	1,2,4-Trichlorobenzene	No Criteria	< 0.2	< 0.3	Ud
102	Aldrin	0.00014	< 0.002	4.04E-06	No
103	Alpha-BHC	0.013	< 0.002	0.000413	No
104	Beta-BHC	0.046	< 0.002	0.0007034	No
105	Gamma-BHC	0.063	0.02	0.000042	No
106	Delta-BHC	No Criteria	< 0.002	0.00018	Ud
107	Chlordane (303(d) listed)	0.00059	< 0.003	0.000066	No
108	4,4'-DDT (303(d) listed)	0.00059	< 0.003	0.000693	No
109	4,4'-DDE (linked to DDT)	0.00059	< 0.003	0.000313	No
110	4,4'-DDD	0.00084	< 0.003	0.000264	No
111	Dieldrin (303d listed)	0.00014	< 0.002	0.000031	No
112	Alpha-Endosulfan	0.0087	< 0.003	0.000069	No
113	beta-Endolsulfan	0.0087	< 0.003	0.0000819	No
114	Endosulfan Sulfate	240	< 0.002	0.000036	No
115	Endrin	0.0023	< 0.002	Not Available	No
116	Endrin Aldehyde	0.81	< 0.002	0.000019	No
117	Heptachlor	0.00021	< 0.003	0.00002458	No
118	Heptachlor Epoxide	0.00011	< 0.002	0.000413	No
119-125	PCBs sum (303(d) listed)	---	Not Available	Not Available	---
126	Toxaphene	0.0002	< 0.19	Not Available	No
	Tributylin	0.0074	Not Available	< 0.001	No
	Total PAHs	15	1.3	0.26	No
	Total Ammonia [4]	1.6 mg/L	30.2 mg/L	2.4 mg/L	Yes

Footnotes to Table F-7:

[1] The Maximum Effluent Concentration (MEC) and maximum background concentration are the actual detected concentrations unless preceded by a "<" sign, in which case the value shown is the minimum detection level (DL).
[2] The MEC or maximum background concentration is "Not Available" when there are no monitoring data for the constituent.
[3] RPA Results = Yes, if MEC > WQC, B > WQC and MEC is detected, or Trigger 3;
= No, if MEC and B are < WQC or all effluent data are undetected;
= Undetermined (Ud), if no criteria have been promulgated or there are insufficient data.
[4] Copper has reasonable potential by trigger 3 pursuant to Basin Plan Section 7.2.
[5] Units for Total Ammonia are milligrams per liter.

e. Constituents with limited data. In some cases, reasonable potential cannot be determined because effluent data are limited, or ambient background concentrations are unavailable. The Discharger will continue to monitor for these constituents in the effluent using analytical methods that provide the best feasible detection limits. When additional data become available, further RPA will be conducted to determine whether numeric effluent limitations are necessary.

f. Pollutants with No Reasonable Potential. WQBELs are not included in this Order for constituents that do not demonstrate reasonable potential; however, monitoring for those pollutants is still required. If concentrations of these constituents are found to have increased significantly, the Discharger will be required to investigate the sources of the increases. Remedial measures are required if the increases pose a threat to receiving water quality.

g. RPA for Sediment Quality Objective. Pollutants in some receiving water sediments may be present in quantities that alone or in combination are toxic to benthic communities. Efforts are underway to identify stressors causing such conditions. However, to date there is no evidence directly linking compromised sediment conditions to the discharges subject to this Order; therefore the Regional Water Board cannot draw a conclusion about reasonable potential for the discharges to cause or contribute to exceedances of the sediment quality objectives. Nevertheless, the Discharger continues to participate in the RMP, which monitors San Francisco Bay sediment and seeks to identify stressors responsible for degraded sediment quality. Thus far, the monitoring has provided only limited information about potential stressors and sediment transport. The Regional Water Board is exploring options for obtaining additional information that may inform future RPAs.

4. WQBEL Calculations

a. Pollutants with Reasonable Potential. WQBELs were developed for the toxic and priority pollutants determined to have reasonable potential to cause or contribute to exceedances of the WQOs. The WQBELs were calculated based on WQOs and the procedures specified in SIP section 1.4. The WQOs used for each pollutant with reasonable potential are discussed below.

b. Dilution Credit. The SIP allows dilution credits for completely-mixed discharges, and under certain circumstances for incompletely-mixed discharges. The Discharger submitted a Near-field Mixing Zone and Dilution Analysis for the Central Contra Costa Sanitary District Outfall Diffuser to San Pablo Bay, dated May 27, 2011. The report presents the findings regarding the initial dilution of the discharge at the outfall.

The near-field dilution was estimated using the USEPA-supported CORMIX modeling package. The study used the average dry-weather flow rate to calculate a chronic dilution ratio and the 99th percentile daily flow rate to calculate an acute dilution ratio.

The study found that near-field mixing is complete at 125 feet from the diffuser center line. Initial dilutions estimated by CORMIX are:

44:1(D=43) at the permitted average dry weather flow rate (53.8 MGD), representing chronic conditions; and

34:1 (D=33) at the 99th percentile daily effluent flow rate (70.3 MGD), representing acute discharge conditions.

i. **Bioaccumulative Pollutants:** For certain bioaccumulative pollutants, dilution credit is significantly restricted or denied. This determination is based on available data on concentrations of these pollutants in aquatic organisms, sediment, and the water column. Specifically, these pollutants include chlordane, DDT, dieldrin, dioxin compounds, furan compounds, mercury, PCBs, and dioxin-like PCBs, which all appear on the CWA section 303(d) list for Suisun Bay because they impair beneficial uses. The following factors suggest insufficient assimilative capacity in San Francisco Bay for these pollutants.

Tissue samples taken from fish in San Francisco Bay show the presence of these pollutants at concentrations greater than screening levels (*Contaminant Concentrations in Fish from San Francisco Bay*, May 1997). The results of a 1994 San Francisco Bay pilot study, presented in *Contaminated Levels in Fish Tissue from San Francisco Bay* (Regional Water Board, 1994) also showed elevated levels of chemical contaminants in fish tissues. The Office of Environmental Health and Hazard Assessment completed a preliminary review of the data in the 1994 report and in December 1994 issued an interim consumption advisory covering certain fish species in San Francisco Bay due to the levels of some of these pollutants, including dioxins and pesticides (e.g. DDT). This advisory is still in effect. Therefore, dilution credits are denied for bioaccumulative pollutants on the 303(d) list for which there is lack of data on sources and significant uncertainty about how different sources of these pollutants contribute to bioaccumulation.

ii. **Non-Bioaccumulative Pollutants:** For non-bioaccumulative pollutants (except ammonia), a conservative dilution allowance of 10:1 (D = 9) has been assigned. The 10:1 dilution allowance is consistent with the previous permit and is based, in part, on Basin Plan Prohibition 1 (Table 4-1), which prohibits discharges with less than 10:1 dilution. SIP section 1.4.2 allows for limiting the dilution credit:

(1) A far-field background station is appropriate because San Francisco Bay is a very complex estuarine system with highly variable and seasonal upstream freshwater inflows and diurnal tidal saltwater inputs. SIP section 1.4.3 allows background conditions to be determined on a discharge-by-discharge or water body-by-water body basis. A water body-by-water body basis approach is taken here due to inherent uncertainties in characterizing ambient background conditions in a complex estuarine system on a discharge-by-discharge basis. The Yerba Buena Island RMP monitoring station, relative to other RMP stations, fits SIP guidance criteria for establishing background conditions. The SIP requires that background water quality data be representative of the ambient receiving water that will mix with the discharge. Water quality data from the Yerba Buena Island monitoring station is representative of the water that will mix with the discharge.

(2) Because of the complex hydrology of San Francisco Bay, a mixing zone has not been established. There are uncertainties in accurately determining an appropriate mixing zone. The models used to predict dilution have not considered the three dimensional nature of San Francisco Bay currents resulting from the interaction of

tidal flushes and seasonal fresh water outflows. Being heavier and colder than fresh water, ocean salt water enters San Francisco Bay on a twice-daily tidal cycle, generally beneath the warmer fresh water that flows seaward. When these waters mix and interact, complex circulation patterns occur due to the varying densities of the fresh and ocean waters. The complex patterns occur throughout San Francisco Bay, but are most prevalent in the San Pablo, Carquinez Straight, and Suisun Bay areas. The locations of this mixing and interaction change, depending on the strength of each tide. Additionally, sediment loads from the Central Valley change on a long-term basis, affecting the depth of different parts of San Francisco Bay, resulting in alteration of flow patterns, mixing, and dilution at the outfall.

(3) For ammonia, a non-bioaccumulative and non-persistent pollutant, a minimum initial dilution of 44:1 (D = 43) was used to represent chronic conditions (based on the Mixing Zone Study described above), and 34:1 (D=33) was used to represent acute conditions. In granting dilution for ammonia, the Regional Water Board considered that ammonia is not a persistent pollutant and the Basin Plan states, "In most instances, ammonia will be diluted or degraded to a nontoxic state fairly rapidly." As such, there is unlikely to be cumulative toxicity effects associated with discharges containing elevated concentrations of ammonia. Therefore, granting dilution credits based on actual initial dilution is protective of water quality.

c. Development of WQBELs for Specific Pollutants

(1) Copper

(a) WQOs. The Basin Plan contains chronic and acute marine WQOs for copper of 6.0 micrograms per liter (µg/L) and 9.4 µg/L, respectively, expressed as dissolved metal (site-specific objectives for San Francisco Bay). These WQOs were converted to total recoverable metal using the site-specific translators of 0.38 (chronic) and 0.66 (acute), as described in section IV.C.2.g, above. The resulting acute WQO is 14 µg/L and chronic WQO is 16 µg/L.

(b) RPA Results. This Order establishes effluent limitations for copper because of reasonable potential by Trigger 3, consistent with Basin Plan section 7.2

(c) WQBELs. WQBELs for copper, calculated according to SIP procedures with an effluent data coefficient of variation (CV) of 0.21 and a dilution credit of D = 9 (dilution ratio = 10:1), are an AMEL of 89 µg/L and an MDEL of 120 µg/L.

(d) Anti-backsliding. The copper limits in this Order are less stringent than those the previous order because they were calculated based on SSOs. CWA section 303(d)(4)(B) allows effluent limits to be revised for water bodies that meet water quality standards if such revisions are consistent with antidegradation policies. Suisun Bay meets its copper WQOs and the SSOs were designed to be protective of beneficial uses. Furthermore, the Basin Plan requires copper action plans for all discharges to Suisun Bay. Therefore, Suisun Bay will not be degraded by

copper discharges, antidegradation policies have been met, and revised copper limits are appropriate.

(2) Cyanide

(a) WQOs. The Basin Plan contains chronic and acute marine WQOs for cyanide of 2.9 µg/L and 9.4 µg/L, respectively (site-specific objectives for San Francisco Bay).

(b) RPA Results. This Order establishes effluent limitations for cyanide because the MEC (6.7 µg/L) exceeds the governing WQO (2.9 µg/L), demonstrating reasonable potential by Trigger 1.

(c) WQBELs. WQBELs for cyanide, calculated according to SIP procedures with an effluent data CV of 0.47 and a dilution credit of D = 9 (dilution ratio = 10:1), are an AMEL of 22 µg/L and an MDEL of 39 µg/L.

(d) Anti-backsliding. The cyanide limits in this Order are less stringent than those the previous order because they were calculated based on SSOs. CWA section 303(d)(4)(B) allows effluent limits to be revised for water bodies that meet water quality standards if such revisions are consistent with antidegradation policies. Suisun Bay meets its cyanide WQOs and the SSOs were designed to be protective of beneficial uses. Furthermore, the Basin Plan requires cyanide action plans for all discharges to Suisun Bay. Therefore, Suisun Bay will not be degraded by cyanide discharges, antidegradation policies have been met, and revised cyanide limits are appropriate.

(3) Dioxin – TEQ

(a) WQO. The Basin Plan narrative WQO for bioaccumulative substances states, "Many pollutants can accumulate on particulates, in sediments, or bioaccumulate in fish and other aquatic organisms. Controllable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life. Effects on aquatic organisms, wildlife, and human health will be considered."

Because it is the consensus of the scientific community that dioxins and furans associate with particulates, accumulate in sediments, and bioaccumulate in the fatty tissue of fish and other organisms, the Basin Plan's narrative bioaccumulation WQO is applicable to these pollutants. Elevated levels of dioxins and furans in fish tissue in San Francisco Bay demonstrate that the narrative bioaccumulation WQO is not being met. USEPA has therefore included Suisun Bay as impaired by dioxin and furan compounds in the current 303(d) listing of receiving waters, where water quality objectives are not being met after imposition of applicable technology-based requirements.

The CTR establishes a numeric WQO for 2,3,7,8-tetrachlorinated dibenzo-p-dioxin (2,3,7,8-TCDD) of 1.4×10^{-8} µg/L for the protection of human health, when aquatic organisms are consumed. When the CTR was promulgated, USEPA

stated its support of the regulation of other dioxin and dioxin-like compounds through the use of toxicity equivalencies (TEQs) in NPDES permits. For California waters, USEPA stated specifically, "if the discharge of dioxin or dioxin-like compounds has reasonable potential to cause or contribute to a violation of a narrative criterion, numeric WQBELs for dioxin or dioxin-like compounds should be included in NPDES permits and should be expressed using a TEQ scheme" [65 Fed. Reg. 31682, 31695 (2000)].

This Order uses a TEQ scheme based on a set of toxicity equivalency factors (TEFs) the World Health Organization (WHO) developed in 1998, and a set of bioaccumulation equivalency factors (BEFs) USEPA developed for the Great Lakes region (40 CFR132, Appendix F) to convert the concentration of any congener of dioxin or furan into an equivalent concentration of 2,3,7,8-TCDD. The CTR criterion is used as a criterion for dioxin-TEQ because dioxin-TEQ represents a toxicity weighted concentration equivalent to 2,3,7,8-TCDD, thus translating the narrative bioaccumulation objective into a numeric criterion appropriate for the RPA.

To determine if the discharge of dioxin or dioxin-like compounds has reasonable potential to cause or contribute to a violation of the Basin Plan's narrative bioaccumulation WQO, TEFs and BEFs were used to express the measured concentrations of 16 dioxin congeners in effluent and background samples as 2,3,7,8-TCDD. These "equivalent" concentrations were then compared to the CTR numeric criterion for 2,3,7,8-TCDD (1.4×10^{-8} µg/L). Although the 1998 WHO scheme includes TEFs for dioxin-like PCBs, they are not included in this Order's TEQ scheme. The CTR has established a specific water quality standard for PCBs, and dioxin-like PCBs are included in the analysis of total PCBs.

(b) RPA Results. Dioxin-TEQ has been detected in the effluent and the receiving waters are listed as impaired due to dioxin and furan bioaccumulations within the food web. Because the dioxin-TEQ in the discharge could cause or contribute to an exceedance of the Basin Plan's bioaccumulation WQO, there is reasonable potential based on Trigger 3.

(c) WQBELs. WQBELs for dioxin-TEQ, calculated according to SIP procedures with a default CV of 0.6 and no dilution credit, are an AMEL of 1.4×10^{-8} µg/L and an MDEL of 2.8×10^{-8} µg/L.

(d) Anti-backsliding. Antibacksliding requirements are satisfied because the limits for dioxin-TEQ are the same as the limits in the previous order.

(4) Acrylonitrile

(a) WQO. The CTR contains a human health WQO for acrylonitrile of 0.66 µg/L.

(b) RPA Results. This Order establishes effluent limitations for acrylonitrile because the MEC (1.1 µg/L) exceeds the WQO (0.66 µg/L), demonstrating reasonable potential by Trigger 1.

(c) WQBELs. WQBELs for acrylonitrile, calculated according to SIP procedures with a CV of 0.7 and a dilution credit of D = 9 (dilution ratio = 10:1), are an AMEL of 6.3 µg/L and an MDEL of 14 µg/L. However, the previous order contained an AMEL of 6.3 µg/L and an MDEL of 13 µg/L. The 13 µg/L MDEL is retained from the previous order.

(d) Antibacksliding. Antibacksliding requirements are satisfied because the limits for acrylonitrile are the same as the limits in the previous order.

(5) Bis(2-ethylhexyl)phthalate

(a) WQO. The CTR contains a human health WQO for bis(2-ehylhexyl)phthalate of 5.9 µg/L.

(b) RPA Results. This Order establishes effluent limitations for bis(2-ehylhexyl)phthalate because the MEC (22 µg/L) exceeds the WQO for this pollutant, demonstrating reasonable potential by Trigger 1.

(c) WQBELs. WQBELs for bis(2-ethylhexyl)phthalate, calculated according to SIP procedures with a CV of 2.6 and a dilution credit of D = 9 (dilution ratio = 10:1), are an AMEL of 55 µg/L and an MDEL of 170 µg/L.

(d) Antibacksliding. Antibacksliding requirements are satisfied because the previous order did not include effluent limitations for bis(2-ethylhexyl)phthalate.

(6) Total Ammonia

(a) WQOs. The Basin Plan contains WQOs for un-ionized ammonia of 0.025 mg/L as an annual median and 0.16 mg/L as a maximum upstream of the San Francisco Bay Bridge. These WQOs were translated from un-ionized ammonia concentrations to equivalent total ammonia concentrations (as nitrogen) since: (1) sampling and laboratory methods are not available to analyze for un-ionized ammonia; and (2) the fraction of total ammonia that exists in the toxic un-ionized form depends on the pH, salinity, and temperature of the receiving water.

To translate the Basin Plan un-ionized ammonia objectives, pH, salinity and temperature data were used from six receiving water monitoring stations collected by the Discharger between April 2007 and January 2011. The un-ionized fraction of total ammonia is calculated as follows:

For salinity > 10 ppt: fraction of $NH_3 = \frac{1}{1+10^{(pK-pH)}}$

Where:

$$pK = 9.245 + 0.116(I) + 0.0324\,(298 - T) + \frac{0.0415(P)}{(T)}$$

$$I = \text{Molal ionic strength of saltwater} = \frac{19.9273(S)}{(1{,}000 - 1.005109(S))}$$

S = Salinity (parts per thousand)

T = Temperature in degrees Kelvin

P = Pressure (one atmosphere)

The 90th percentile and median un-ionized ammonia fractions were then used to express the daily maximum and the annual average un-ionized objectives as acute and chronic total ammonia objectives, respectively. This approach is consistent with USEPA guidance on translating dissolved metal WQOs to total recoverable metal WQOs (USEPA, 1996, *The Metals Translator: Guidance for Calculating a Total Recoverable Limit from a Dissolved Criterion*, EPA Publication 823-B-96-007.)

The equivalent total ammonia acute and chronic WQOs are 5.0 mg/L and 1.6 mg/L, respectively.

(b) RPA Results. Basin Plan section 4.5.5.2 indicates that WQBELs are to be calculated according to the SIP. Basin Plan section 3.3.20 refers to ammonia as a toxic pollutant. Therefore, the SIP methodology was used to perform the RPA and to calculate effluent limitations for ammonia. This Order establishes effluent limitations for total ammonia because the MEC of 30.2 mg/L (as nitrogen) exceeds the most stringent applicable translated WQO for this pollutant, demonstrating reasonable potential by Trigger 1.

(c) WQBELs. Total ammonia WQBELs were calculated according to SIP procedures using both acute and chronic conditions, and the more stringent (chronic) results were chosen. The effluent data CV was 0.13 and the chronic dilution credit was D=43 (dilution ratio = 44:1). The resulting WQBELs are 84 mg/L (MDEL) and 65 mg/L (AMEL).

Statistical adjustments were made to the total ammonia WQBEL calculations because:

- the Basin Plan's chronic WQO for un-ionized ammonia is based on an annual median instead of the typical 4-day average; and

- the SIP assumes a 4-day average concentration and a monthly sampling frequency of 4 days per month to calculate effluent limitations based on chronic criteria, whereas a 365-day average and a monitoring frequency of 30 days per month (the maximum daily sampling frequency in a month since the averaging period for the chronic criteria is longer than 30 days) were used.

These statistical adjustments are supported by USEPA's *Water Quality Criteria; Notice of Availability; 1999 Update of Ambient Water Quality Criteria for Ammonia,* published on December 22, 1999, in the Federal Register. Following the SIP methodology, the maximum ambient background total ammonia concentration (2.4 mg/L) was used to calculate effluent limitations based on the acute criterion, and the median background total ammonia concentration

(0.15 mg/L) to calculate effluent limitations based on the chronic criterion. Because the Basin Plan's chronic un-ionized ammonia objective is an annual median, the median background concentration is more representative of ambient conditions than a daily maximum.

(d) Anti-backsliding. Anti-backsliding requirements are satisfied because the previous permit did not include WQBELs for total ammonia.

e. Effluent Limit Calculations

The following table shows the WQBEL calculations for copper, cyanide, dioxin-TEQ, acrylonitrile, bis(2-ethylhexyl)phthalate, and total ammonia.

Table F-8. WQBEL Calculations

Pollutant	Copper	Cyanide	Dioxin-TEQ	Acrylonitrile	Bis(2-ethylhexyl) phthalate	Ammonia (acute)	Ammonia (chronic)
Units	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L-N	mg/L-N
Basis and Criteria Type	BP SSOs	BP SSOs	BP narrative	CTR - HH	CTR - HH	BP aquatic life	BP aquatic life
Criteria – Acute	3.9	9.4	---	---	---	5.0	
Criteria – Chronic	2.5	2.9	---	---	---	---	1.6
HH criteria	---	220000	1.4E-08	0.66	5.9	---	---
Water Effects Ratio	2.4	1	1	1	1	1	1
Lowest WQO	5.9	2.9	1.4E-08	0.66	5.9	5.0	1.6
Site Specific Translator - MDEL	0.66	---	---	---	---	---	---
Site Specific Translator – AMEL	0.38	---	---	---	---	---	---
Dilution Factor (D)	9	9	0	9	9	33	43
No. of samples per month	4	4	4	4	4	4	30
Aquatic life analysis required?	Y	Y	N	N	N	Y	Y
HH analysis required?	N	Y	Y	Y	Y	N	N
Applicable Acute WQO	14	9.4	---	---	---	5.0	---
Applicable Chronic WQO	16	2.9	---	---	---	---	1.6
Background	2.6	0.4	7.1E-08	0.03	0.50	2.4	0.15
Is the pollutant on the 303(d) list?	N	N	Y	N	N	N	N
ECA acute	119	90.4	---	---	---	91	---
ECA chronic	135	25.4	---	---	---	---	64
ECA human health	---	2199996	1.4E-08	6.3	55	---	---
No. of data points <10, or at least 80% non-detect	N	N	Y	N	N	N	N
Average effluent concentration	7.5	2.7	---	0.4	2.2	23	23
Standard Deviation	1.6	1.3	---	0.3	5.7	2.91	2.91
CV calculated	0.21	0.47	---	0.7	2.6	0.13	0.13
CV selected	0.21	0.47	0.6	0.7	2.6	0.13	0.13
ECA acute mult99	0.63	0.39				0.75	
ECA chronic mult99	0.79	0.60					0.98
LTA acute	75.0	35.3				68	
LTA chronic	106.4	15.2					63
Minimum LTA	75.0	15.2				68	63

AMEL mult95	1.2	1.4	1.6	1.7	3.1	1.11	1.04
MDEL mult95	1.6	2.6	3.1	3.6	10	1.34	1.34
AMEL aquatic life	88.6	21.7				126	65
MDEL aquatic life	119	39.0				152	84
MDEL/AMEL multiplier	1.34	1.8	2.01	2.16	3.2	1.20	1.3
AMEL human health		2199996		6.3	55		
MDEL human health		3952332		14	174		
Final limit - AMEL	**89**	**22**	**1.4E-08**	**6.3**	**55**		**65**
Final limit - MDEL	**120**	**39**	**2.8E-08**	**13**	**170**		**84**

5. Whole Effluent Acute Toxicity

This Order includes effluent limitations for whole effluent acute toxicity based on Basin Plan Table 4-3. All bioassays are to be performed according to the USEPA approved method in 40 CFR 136, currently *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, 5th Edition. The approved test species currently specified in the Monitoring and Reporting Program (Attachment E) is the fathead minnow.

6. Whole Effluent Chronic Toxicity

a. Toxicity Objective. Basin Plan section 3.3.18 states, "There shall be no chronic toxicity in ambient waters. Chronic toxicity is a detrimental biological effect on growth rate, reproduction, fertilization success, larval development, population abundance, community composition, or any other relevant measure of the health of an organism, population, or community."

b. Reasonable Potential Analysis. The previous permit included chronic toxicity triggers of a single sample maximum of 20 TUc and a 3-sample median of 10 TUc, which would trigger accelerated chronic toxicity testing if exceeded. The Discharger conducted chronic toxicity testing every two months during the previous permit term using *Haliotis rufescens* and/or *Americamysis bahia*. Chronic toxicity testing results from April 2007 through January 2011 indicate the maximum single sample result was 19.6 TUc, and the maximum 3-sample median was 14.7 TUc. From July to December 2009, the Discharger exceeded the 3-sample median trigger several times, which triggered accelerated monitoring and a TIE. The TIE indicated that the cause of the toxicity was ammonia. Since then, with permission from Regional Water Board staff, the Discharger has been filtering its chronic toxicity samples through a Zeolite filter to remove ammonia. The Discharger has not exceeded chronic toxicity trigger levels since December 2009.

c. Permit Requirements. Chronic toxicity requirements are based on the narrative Basin Plan toxicity objective and are unchanged from the previous order.

d. Screening Phase Study and Monitoring Requirement. The Discharger is required to conduct a chronic toxicity screening phase study, as described in MRP Appendix E-1 (Attachment E) prior to permit issuance. The Discharger's July 19, 2011, chronic toxicity screening study indicated that *Selenastrum capricornutum* (green algae) or *Americamysis bahia* (mysid shrimp) were equally the most sensitive species. The MRP specifies that either species may be used for chronic toxicity testing during the permit term. The accelerated monitoring trigger levels are consistent with the previous permit and Table 4-6 of the Basin Plan.

7. Ammonia Mass Limit

This Order seeks to maintain existing ammonia treatment performance to avoid possible ammonium-related degradation of receiving water quality. In water, ammonia exists in two forms: un-ionized ammonia (NH_3) and ammonium (ionized ammonia, NH_4^+). Together, these forms are referred to as "total ammonia." The relative proportion between the two forms depends on pH, temperature, and salinity. The Basin Plan contains WQOs for un-ionized

ammonia of 0.025 mg/L as an annual median and 0.16 mg/L as a maximum upstream of the San Francisco Bay Bridge, but there are no numeric WQOs for ammonium. The total ammonia WQBELs described in section IV.C.4.c.6, above, implement only the un-ionized ammonia WQOs.

Recent studies indicate that ammonium may affect Suisun Bay through at least two mechanisms: effects on diatoms and effects on copepods. Diatoms are single-cell algae that significantly contribute to primary production in Suisun Bay (the base of the food web). Copepods are important secondary producers, providing food for many fish. The potential impacts of Suisun Bay ammonium are of increasing concern but not well understood. Suisun Bay is very complex hydrologically, chemically, and biologically, and these complexities make it difficult to determine the severity of any possible impacts. There is also insufficient information to weigh the relative contribution of the Discharger's ammonium discharges to those of other sources. While the Discharger is responsible for the largest ammonia load discharged directly to Suisun Bay, there are also many other sources, both local and upstream.

Studies are necessary to determine the potential extent of any possible ammonium impacts and to develop ammonium limitations, if necessary, that protect beneficial uses. These studies are currently in progress. In the meantime, this Order seeks to maintain current treatment performance and avoid any possible degradation of receiving water quality related to ammonium by establishing a performance-based limit of 5500 kg/day of total ammonia as a monthly average. This limit was calculated by multiplying the 95^{th} percentile ammonia concentration (27.2 mg/L) by the permitted dry weather flow (53.8 MGD) and a unit conversion factor of 3.785. The 95^{th} percentile concentration was calculated by transforming the ammonia data to obtain a normal distribution (using the square of the ammonia concentrations). Historical data indicates the Discharger can comply with this limit.

8. Anti-backsliding and Antidegradation

Effluent limitations in this Order that are less stringent than those in the previous permit or are not retained from the previous permit comply with anti-backsliding and antidegradation requirements for the reasons explained below:

- This Order does not retain the daily maximum effluent limits from the previous permit for $CBOD_5$ and TSS. These limits are inconsistent with federal secondary treatment standards and Table 4-2 of the Basin Plan. It is also inconsistent with 40 CFR 122.45(d) that excludes maximum daily limits for publically owned treatment works unless impracticable. The previous permit did not provide a rationale for these limits other than that they were retained from the permit before that one. Removal of daily maximum limits for $CBOD_5$ and TSS is exempt from antibacksliding pursuant to Clean Water Act 402(o)(2)(ii) to correct a technical or legal mistake in a technology-based limitation. Compliance with anti-degradation is assured by retaining the same weekly and monthly technology-based limits as the previous permit.

- This Order does not retain the mercury effluent limit in the previous permit because mercury discharges to San Francisco Bay are now regulated by Regional Water Board Order No. R2-2007-0077, which is a watershed permit that implements the San Francisco

Bay Mercury TMDL. Order No. R2-2007-0077 complied with anti-backsliding and antidegradation requirements.

- The previous permit contained effluent limitations for lead; however, the RPA shows that the discharge no longer demonstrates reasonable potential for this pollutant to cause or contribute to exceedances of the applicable WQOs. This Order, therefore, does not retain these limitations. Elimination of these limitations is consistent with State Water Board Order No. WQ 2001-16. Receiving water quality will not be degraded because the Discharger will maintain its current level of treatment.

- This Order contains copper and cyanide limits based on SSOs that were developed from new site-specific information for Suisun Bay and are less than those in the previous permit. However, CWA section 303(d)(4)(B) allows effluent limits to be revised for water bodies that meet water quality standards if such revisions are consistent with antidegradation policies. Suisun Bay meets its copper and cyanide WQOs and the SSOs were designed to be protective of beneficial uses. Furthermore, the Basin Plan requires copper and cyanide action plans for all discharges to Suisun Bay. Therefore, Suisun Bay will not be degraded by copper and cyanide discharges, antidegradation policies have been met, and revised copper and cyanide limits are appropriate.

- The previous permit contained a mass loading limitation for dioxin-TEQ in addition to the concentration-based limitation. The permit retains the concentration-based limitation but not the mass-based loading limitation. Because the concentration-based limitations are the same as those in the previous permit, and because the permit does not allow an increase in the permitted flow rate from the Facility, removal of the mass-based loading limits will not allow any increase in discharges of dioxin-TEQ from the Facility. Receiving water quality will not be degraded because the Discharger will maintain its current level of treatment.

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

Receiving water limitations V.A.1 and V.A.2 are based on the narrative and numeric objectives contained in Basin Plan Chapter 3. Receiving water limitation V.A.3 is retained from the previous permit and requires compliance with federal and State water quality standards.

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

The principal purposes of a monitoring program are to:

- Document compliance with waste discharge requirements and prohibitions established by the Regional Water Board,

- Facilitate self-policing by the Discharger in the prevention and abatement of pollution arising from waste discharge,

- Develop or assist in the development of limitations, discharge prohibitions, national standards of performance, pretreatment and toxicity standards, and other standards, and

- Prepare water and wastewater quality inventories.

The MRP is a standard requirement in almost all NPDES permits issued by the Regional Water Board, including this Order. It contains definitions of terms and sets out requirements for reporting routine monitoring data in accordance with NPDES regulations, the CWC, and State and Regional Water Board policies. The MRP also defines the sampling stations and frequency, the pollutants to be monitored, and additional reporting requirements. Pollutants to be monitored include all parameters for which effluent limitations are specified. Monitoring for additional constituents, for which no effluent limitations are established, is also required to provide data for future completion of RPAs.

The following provides the rationale for the monitoring and reporting requirements contained in the MRP for this facility:

A. Influent Monitoring

Influent monitoring requirements at INF-001 for $CBOD_5$ and TSS are unchanged from the previous permit to allow determination of compliance with this Order's 85% removal requirement. Flow monitoring is also retained to evaluate compliance with Prohibition III.D (average dry weather flow).

B. Effluent Monitoring

The MRP retains most effluent monitoring requirements at Monitoring Location EFF-001 from the previous permit. Changes in effluent monitoring are summarized as follows:

- The MRP retains routine monitoring for the toxic pollutants with effluent limitations (copper, cyanide, dioxin-TEQ, and acrylonitrile.) Monitoring for all other priority toxic pollutants is required to characterize the discharge pursuant to characterization study required by Provision VI.C.2.

- Routine effluent monitoring for bis(2-ethylhexyl)phthalate is established to determine compliance with the newly established effluent limitations.

- The MRP does not retain explicit monitoring requirements from the previous permit for EFF-002, EFF-003, EFF-004, and EFF-005 because additional monitoring at these locations are not necessary to assess permit compliance.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Monthly 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity. The MRP requires the use of either fathead minnow or rainbow trout as the bioassay test species.

2. **Chronic Toxicity.** This Order establishes the requirement for the Discharger to conduct chronic toxicity testing quarterly to ensure the discharge has acceptable levels of chronic toxicity. The Discharger conducted an effluent toxicity screening study during the previous permit term, which determined that *Selenastrum capricornutum* (green algae) and *Americamysis bahia* (mysid shrimp) were equally the most sensitive species. The permit therefore requires the use of either species as the testing species for chronic toxicity. The Discharger shall re-screen in accordance

with MRP Appendix E-1 (Attachment E) after any significant change in the nature of the effluent or prior to 180 days prior to the expiration of this Order.

D. Receiving Water Monitoring

The Discharger is not required to collect receiving water information as long as it continues to support the RMP program.

E. Pretreatment and Biosolids Monitoring

This Order specifies pretreatment and biosolids monitoring requirements to ensure compliance with pretreatment and biosolids regulations. The previous permit did not contain specific pretreatment and biosolids monitoring, but the Discharger continued to monitor biosolids anyway for the same pretreatment and biosolids parameters it had monitored before the previous permit. Composites made up of discrete grabs for several parameters are necessary because of the potential loss of the constituents during automatic compositing. Hexavalent chromium is chemically unstable. It, cyanide, and BNAs are also somewhat volatile. For these same reasons, discrete analyses are also necessary since constituents are subject to loss during compositing at the laboratory.

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions (Provision VI.A)

Standard Provisions, which in accordance with 40 CFR 122.41and 122.42 apply to all NPDES discharges and must be included in every NPDES permit, are provided in Attachments D of this Order. NPDES regulations at 40 CFR 122.41(a)(1) and (b) through (n) establish conditions that apply to all state-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. NPDES regulations at 40 CFR 123.25(a)(12) allow the state to omit or modify conditions to impose more stringent requirements. The Regional Standard Provisions (Attachment G) supplement the Federal Standard Provisions. In accordance with 40 CFR 123.25, this Order omits federal conditions that address enforcement authority specified in 40 CFR 122.41(j)(5) and (k)(2) because the CWC enforcement authority is more stringent. In lieu of these conditions, this Order incorporates by reference CWC section 13387(e).

B. MRP Requirements (Provision VI.B)

The Discharger is required to monitor the permitted discharge in order to evaluate compliance with permit conditions. Monitoring requirements are contained in the MRP (Attachment E), Federal Standard Provisions (Attachment D), and Regional Standard Provisions (Attachment G). This provision requires compliance with these documents and is authorized by 40 CFR 122.41(h) and (j), and CWC sections 13267 and 13383.

C. Special Provisions (Provision VI.C)

1. Reopener Provisions

These provisions are based on 40 CFR 122.63 and allow modification of this Order and its effluent limitations as necessary in response to updated WQOs, regulations, or other new

relevant information that may be established in the future and other circumstances allowed by law. Regional Water Board staff intends to reassess the appropriateness of the total ammonia effluent limitations in Table 7 of the Order by April 1, 2015. The permit may be reopened at any time under the circumstances set forth in Provision VI.C.1 of the Order.

2. Effluent Characterization Study and Report

This Order does not include effluent limitations for priority pollutants that do not demonstrate reasonable potential, but this provision requires the Discharger to continue monitoring for these pollutants as described in the Regional Standard Provisions (Attachment G) and as specified in the MRP (Attachment E). If concentrations of these constituents increase significantly, the Discharger must investigate the source of the increases and establish remedial measures if the increases result in reasonable potential to cause or contribute to an excursion above the applicable WQO. This requirement may be satisfied through identification of the constituent as a "pollutant of concern" in the Dischargers' Pollutant Minimization Program, described in Provision VI.C.3 of the Order. This provision is based on the SIP.

3. Best Management Practices and Pollutant Minimization Program

This provision for a Pollutant Minimization Program is based on Basin Plan Chapter 4 (section 4.13.2) and SIP Chapter 2 (section 2.4.5).

4. Special Provisions for POTWs

a. Pretreatment Program. This provision is based on 40 CFR 403 (General Pretreatment Regulations for Existing and New Sources of Pollution) and is retained from the previous permit. The Discharger implements a pretreatment program due to the nature and volume of industrial influent to the Plant.

b. Biosolids Management Practices. This provision is based on Basin Plan Chapter 4, section 4.17, and 40 CFR Parts 257 and 503, and is retained from the previous permit.

c. Sanitary Sewer Overflows and Sewer System Management Plan. This provision is to explain the Order's requirements as they relate to the Discharger's collection system, and to promote consistency with the State Water Board-adopted General Collection System WDRs (General Order, Order No. 2006-0003-DWQ).

The General Order requires public agencies that own or operate sanitary sewer systems with greater than one mile of pipes or sewer lines to enroll for coverage under the General Order. The General Order requires agencies to develop sanitary sewer management plans and report all sanitary sewer overflows, among other requirements and prohibitions. Furthermore, the General Order contains requirements for operation and maintenance of collection systems and for reporting and mitigating sanitary sewer overflows. Inasmuch that the Discharger's collection system is part of the system that is subject to this Order, certain standard provisions apply as specified in Provision VI.C.5. The Discharger must comply with both the General Order and this Order. The Discharger and public agencies that are discharging wastewater to the Facility were required to obtain enrollment for regulation under the General Order by December 1, 2006. The State

Water Board amended the General Order (No. WQ 2008-0002-EXEC) on February 20, 2008 to strengthen the notification and reporting requirements for sanitary sewer overflows.

5. Other Special Provisions

a. Copper Action Plan. This provision is based on Basin Plan section 7.2.1.2. It is necessary to ensure that use of copper site-specific objectives is consistent with antidegradation policies.

b. Cyanide Action Plan. This provision is based on Basin Plan section 4.7.2.2. It is necessary to ensure that use of cyanide site-specific objectives is consistent with antidegradation policies.

c. Nutrient Discharge Work Plan, Studies, and Reports. This provision is intended to ensure that sufficient information is available in a timely manner to conduct reasonable potential analyses for ammonia and ammonium, and if necessary to revise the water quality-based effluent limits in this Order. This provision is authorized by CWC section 13267.

d. Facility Plan and Site Characterization. This provision is intended to obtain information regarding the Discharger's ability to remove ammonia from the discharge and is authorized by CWC section 13267.

VIII. PUBLIC PARTICIPATION

The Regional Water Board is considering the issuance of WDRs that will serve as an NPDES permit for the Facility. As a step in the WDRs adoption process, Regional Water Board staff has developed tentative WDRs. The Regional Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe WDRs for the discharge and has provided them with an opportunity to submit written comments and recommendations. Notification was provided through the Contra Costa Times.

B. Written Comments

Staff determinations are tentative. Interested persons are invited to submit written comments concerning these tentative WDRs. Comments must be submitted either in person or by mail to the Executive Office at the Regional Water Board at the address provided on the cover page of this Order, to the attention of Vince Christian.

To receive full consideration and a written response, written comments must be received at the Regional Water Board offices by 5:00 p.m. on November 1, 2011.

C. Public Hearing

The Regional Water Board will hold a public hearing on the tentative WDRs during its regular meeting at the following date and time, and at the following location:

Date: February 8, 2012
Time: 9:00 am
Location: Elihu Harris State Office Building
1515 Clay Street, 1st Floor Auditorium
Oakland, CA 94612

Contact: Vince Christian, (510) 622-2336, email VChristian@waterboards.ca.gov

Interested persons are invited to attend. At the public hearing, the Regional Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

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

D. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Board to review the decision of the Regional Water Board regarding the final WDRs. The petition must be submitted within 30 days of the Regional Water Board's action to the following address:

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

E. Information and Copying

The Report of Waste Discharge, related documents, tentative effluent limitations, and special provisions, comments received, and other information 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 this 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 Vince Christian at 510-622-2336 or e-mail at VChristian@waterboards.ca.gov.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ATTACHMENT G

REGIONAL STANDARD PROVISIONS, AND MONITORING AND REPORTING REQUIREMENTS
(SUPPLEMENT TO ATTACHMENT D)

For

NPDES WASTEWATER DISCHARGE PERMITS

March 2010

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

REGIONAL STANDARD PROVISIONS, AND MONITORING AND REPORTING REQUIREMENTS (SUPPLEMENT TO ATTACHMENT D)

FOR

NPDES WASTEWATER DISCHARGE PERMITS

APPLICABILITY

This document applies to dischargers covered by a National Pollutant Discharge Elimination System (NPDES) permit. This document does not apply to Municipal Separate Storm Sewer System (MS4) NPDES permits.

The purpose of this document is to supplement the requirements of Attachment D, Standard Provisions. The requirements in this supplemental document are designed to ensure permit compliance through preventative planning, monitoring, recordkeeping, and reporting. In addition, this document requires proper characterization of issues as they arise, and timely and full responses to problems encountered. To provide clarity on which sections of Attachment D this document supplements, this document is arranged in the same format as Attachment D.

I. STANDARD PROVISIONS - PERMIT COMPLIANCE

A. Duty to Comply – Not Supplemented

B. Need to Halt or Reduce Activity Not a Defense – Not Supplemented

C. Duty to Mitigate – This supplements I.C. of Standard Provisions (Attachment D)

1. **Contingency Plan -** The Discharger shall maintain a Contingency Plan as originally required by Regional Water Board Resolution 74-10 and as prudent in accordance with current municipal facility emergency planning. The Contingency Plan shall describe procedures to ensure that existing facilities remain in, or are rapidly returned to, operation in the event of a process failure or emergency incident, such as employee strike, strike by suppliers of chemicals or maintenance services, power outage, vandalism, earthquake, or fire. The Discharger may combine the Contingency Plan and Spill Prevention Plan into one document. Discharge in violation of the permit where the Discharger has failed to develop and implement a Contingency Plan as described below will be the basis for considering the discharge a willful and negligent violation of the permit pursuant to California Water Code Section 13387. The Contingency Plan shall, at a minimum, contain the provisions of a. through g. below.

    a. Provision of personnel for continued operation and maintenance of sewerage facilities during employee strikes or strikes against contractors providing services.

    b. Maintenance of adequate chemicals or other supplies and spare parts necessary for continued operations of sewerage facilities.

c. Provisions of emergency standby power.

d. Protection against vandalism.

e. Expeditious action to repair failures of, or damage to, equipment and sewer lines.

f. Report of spills and discharges of untreated or inadequately treated wastes, including measures taken to clean up the effects of such discharges.

g. Programs for maintenance, replacement, and surveillance of physical condition of equipment, facilities, and sewer lines.

2. **Spill Prevention Plan** - The Discharger shall maintain a Spill Prevention Plan to prevent accidental discharges and minimize the effects of such events. The Spill Prevention Plan shall:

a. Identify the possible sources of accidental discharge, untreated or partially treated waste bypass, and polluted drainage;

b. Evaluate the effectiveness of present facilities and procedures, and state when they became operational; and

c. Predict the effectiveness of the proposed facilities and procedures, and provide an implementation schedule containing interim and final dates when they will be constructed, implemented, or operational.

This Regional Water Board, after review of the Contingency and Spill Prevention Plans or their updated revisions, may establish conditions it deems necessary to control accidental discharges and to minimize the effects of such events. Such conditions may be incorporated as part of the permit upon notice to the Discharger.

D. Proper Operation & Maintenance – This supplements I.D of Standard Provisions (Attachment D)

1. **Operation and Maintenance (O&M) Manual** - The Discharger shall maintain an O&M Manual to provide the plant and regulatory personnel with a source of information describing all equipment, recommended operational strategies, process control monitoring, and maintenance activities. To remain a useful and relevant document, the O&M Manual shall be kept updated to reflect significant changes in treatment facility equipment and operational practices. The O&M Manual shall be maintained in usable condition and be available for reference and use by all relevant personnel and Regional Water Board staff.

2. **Wastewater Facilities Status Report** - The Discharger shall regularly review, revise, or update, as necessary, its Wastewater Facilities Status Report. This report shall document how the Discharger operates and maintains its wastewater collection, treatment, and disposal facilities to ensure that all facilities are adequately staffed, supervised, financed, operated, maintained, repaired, and upgraded as necessary to provide adequate and reliable transport, treatment, and disposal of all wastewater from both existing and planned future wastewater sources under the Discharger's service responsibilities.

3. **Proper Supervision and Operation of Publicly Owned Treatment Works (POTWs)** - POTWs shall be supervised and operated by persons possessing certificates of appropriate grade pursuant to Division 4, Chapter 14, Title 23 of the California Code of Regulations.

E. Property Rights – Not Supplemented

F. Inspection and Entry – Not Supplemented

G. Bypass – Not Supplemented

H. Upset – Not Supplemented

I. Other – This section is an addition to Standard Provisions (Attachment D)

1. Neither the treatment nor the discharge of pollutants shall create pollution, contamination, or nuisance as defined by California Water Code Section 13050.

2. Collection, treatment, storage, and disposal systems shall be operated in a manner that precludes public contact with wastewater, except in cases where excluding the public is infeasible, such as private property. If public contact with wastewater could reasonably occur on public property, warning signs shall be posted.

3. If the Discharger submits a timely and complete Report of Waste Discharge for permit reissuance, this permit continues in force and effect until a new permit is issued or the Regional Water Board rescinds the permit.

J. Storm Water – This section is an addition to Standard Provisions (Attachment D)

These provisions apply to facilities that do not direct all storm water flows from the facility to the wastewater treatment plant headworks.

1. Storm Water Pollution Prevention Plan (SWPP Plan)

The SWPP Plan shall be designed in accordance with good engineering practices and shall address the following objectives:

a. To identify pollutant sources that may affect the quality of storm water discharges; and

b. To identify, assign, and implement control measures and management practices to reduce pollutants in storm water discharges.

The SWPP Plan may be combined with the existing Spill Prevention Plan as required in accordance with Section C.2. The SWPP Plan shall be retained on-site and made available upon request of a representative of the Regional Water Board.

2. Source Identification

The SWPP Plan shall provide a description of potential sources that may be expected to add significant quantities of pollutants to storm water discharges, or may result in non-storm water discharges from the facility. The SWPP Plan shall include, at a minimum, the following items:

a. A topographical map (or other acceptable map if a topographical map is unavailable), extending one-quarter mile beyond the property boundaries of the facility, showing the wastewater treatment facility process areas, surface water bodies (including springs and wells), and discharge point(s) where the facility's storm water discharges to a municipal storm drain system or other points of discharge to waters of the State. The requirements of this paragraph may be included in the site map required under the following paragraph if appropriate.

b. A site map showing the following:

1) Storm water conveyance, drainage, and discharge structures;

2) An outline of the storm water drainage areas for each storm water discharge point;

3) Paved areas and buildings;

4) Areas of actual or potential pollutant contact with storm water or release to storm water, including but not limited to outdoor storage and process areas; material loading, unloading, and access areas; and waste treatment, storage, and disposal areas;

5) Location of existing storm water structural control measures (i.e., berms, coverings, etc.);

6) Surface water locations, including springs and wetlands; and

7) Vehicle service areas.

c. A narrative description of the following:

1) Wastewater treatment process activity areas;

2) Materials, equipment, and vehicle management practices employed to minimize contact of significant materials of concern with storm water discharges;

3) Material storage, loading, unloading, and access areas;

4) Existing structural and non-structural control measures (if any) to reduce pollutants in storm water discharges; and

5) Methods of on-site storage and disposal of significant materials.

d. A list of pollutants that have a reasonable potential to be present in storm water discharges in significant quantities.

3. Storm Water Management Controls

The SWPP Plan shall describe the storm water management controls appropriate for the facility and a time schedule for fully implementing such controls. The appropriateness and priorities of controls in the SWPP Plan shall reflect identified potential sources of pollutants. The description of storm water management controls to be implemented shall include, as appropriate:

a. Storm water pollution prevention personnel

Identify specific individuals (and job titles) that are responsible for developing, implementing, and reviewing the SWPP Plan.

b. Good housekeeping

Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm drain conveyance system.

c. Spill prevention and response

Identify areas where significant materials can spill into or otherwise enter storm water conveyance systems and their accompanying drainage points. Specific material handling procedures, storage requirements, and cleanup equipment and procedures shall be identified, as appropriate. The necessary equipment to implement a cleanup shall be available, and personnel shall be trained in proper response, containment, and cleanup of spills. Internal reporting procedures for spills of significant materials shall be established.

d. Source control

Source controls include, for example, elimination or reduction of the use of toxic pollutants, covering of pollutant source areas, sweeping of paved areas, containment of potential pollutants, labeling of all storm drain inlets with "No Dumping" signs, isolation or separation of industrial and non-industrial pollutant sources so that runoff from these areas does not mix, etc.

e. Storm water management practices

Storm water management practices are practices other than those that control the sources of pollutants. Such practices include treatment or conveyance structures, such as drop inlets, channels, retention and detention basins, treatment vaults, infiltration galleries, filters, oil/water separators, etc. Based on assessment of the potential of various sources to contribute pollutants to storm water discharges in significant quantities, additional storm water management practices to remove pollutants from storm water discharges shall be implemented and design criteria shall be described.

f. Sediment and erosion control

Measures to minimize erosion around the storm water drainage and discharge points, such as riprap, revegetation, slope stabilization, etc., shall be described.

g. Employee training

Employee training programs shall inform all personnel responsible for implementing the SWPP Plan. Training shall address spill response, good housekeeping, and material management practices. New employee and refresher training schedules shall be identified.

h. Inspections

All inspections shall be done by trained personnel. Material handling areas shall be inspected for evidence of, or the potential for, pollutants entering storm water discharges. A tracking or follow up procedure shall be used to ensure appropriate response has been taken in response to an inspection. Inspections and maintenance activities shall be documented and recorded. Inspection records shall be retained for five years.

i. Records

A tracking and follow-up procedure shall be described to ensure that adequate response and corrective actions have been taken in response to inspections.

4. Annual Verification of SWPP Plan

An annual facility inspection shall be conducted to verify that all elements of the SWPP Plan are accurate and up-to-date. The results of this review shall be reported in the Annual Report to the Regional Water Board described in Section V.C.f.

K. Biosolids Management – This section is an addition to Standard Provisions (Attachment D)

Biosolids must meet the following requirements prior to land application. The Discharger must either demonstrate compliance or, if it sends the biosolids to another party for further treatment or distribution, must give the recipient the information necessary to ensure compliance.

1. Exceptional quality biosolids meet the pollutant concentration limits in Table III of 40 CFR Part 503.13, Class A pathogen limits, and one of the vector attraction reduction requirements in 503.33(b)(1)-(b)(8). Such biosolids do not have to be tracked further for compliance with general requirements (503.12) and management practices (503.14).

2. Biosolids used for agricultural land, forest, or reclamation shall meet the pollutant limits in Table I (ceiling concentrations) and Table II or Table III (cumulative loadings or pollutant concentration limits) of 503.13. They shall also meet the general requirements (503.12) and management practices (503.14) (if not exceptional quality biosolids) for Class A or Class B pathogen levels with associated access restrictions (503.32) and one of the 10 vector attraction reduction requirements in 503.33(b)(1)-(b)(10).

3. Biosolids used for lawn or home gardens must meet exceptional quality biosolids limits.

4. Biosolids sold or given away in a bag or other container must meet the pollutant limits in either Table III or Table IV (pollutant concentration limits or annual pollutant loading rate limits) of 503.13. If Table IV is used, a label or information sheet must be attached to the biosolids packing that explains Table IV (see 503.14). The biosolids must also meet the Class A pathogen limits and one of the vector attraction reduction requirements in 503.33(b)(1)-(b)(8).

II. STANDARD PROVISIONS – PERMIT ACTION – Not Supplemented

III. STANDARD PROVISIONS – MONITORING

A. Sampling and Analyses – This section is a supplement to III.A and III.B of Standard Provisions (Attachment D)

1. Use of Certified Laboratories

Water and waste analyses shall be performed by a laboratory certified for these analyses in accordance with California Water Code Section 13176.

2. Use of Appropriate Minimum Levels

Table C lists the suggested analytical methods for the 126 priority pollutants and other toxic pollutants that should be used, unless a particular method or minimum level (ML) is required in the MRP.

For priority pollutant monitoring, when there is more than one ML value for a given substance, the Discharger may select any one of the analytical methods cited in Table C for compliance determination, or any other method described in 40 CFR part 136 or approved by USEPA (such as the

1600 series) if authorized by the Regional Water Board. However, the ML must be below the effluent limitation and water quality objective. If no ML value is below the effluent limitation and water quality objective, then the method must achieve an ML no greater than the lowest ML value indicated in Table C. All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements.

3. Frequency of Monitoring

The minimum schedule of sampling analysis is specified in the MRP portion of the permit.

a. Timing of Sample Collection

1) The Discharger shall collect samples of influent on varying days selected at random and shall not include any plant recirculation or other sidestream wastes, unless otherwise stipulated by the MRP.

2) The Discharger shall collect samples of effluent on days coincident with influent sampling unless otherwise stipulated by the MRP or the Executive Officer. The Executive Officer may approve an alternative sampling plan if it is demonstrated to be representative of plant discharge flow and in compliance with all other permit requirements.

3) The Discharger shall collect grab samples of effluent during periods of day-time maximum peak effluent flows (or peak flows through secondary treatment units for facilities that recycle effluent flows).

4) Effluent sampling for conventional pollutants shall occur on at least one day of any multiple-day bioassay test the MRP requires. During the course of the test, on at least one day, the Discharger shall collect and retain samples of the discharge. In the event a bioassay test does not comply with permit limits, the Discharger shall analyze these retained samples for pollutants that could be toxic to aquatic life and for which it has effluent limits.

i. The Discharger shall perform bioassay tests on final effluent samples; when chlorine is used for disinfection, bioassay tests shall be performed on effluent after chlorination-dechlorination; and

ii. The Discharger shall analyze for total ammonia nitrogen and calculate the amount of un-ionized ammonia whenever test results fail to meet the percent survival specified in the permit.

b. Conditions Triggering Accelerated Monitoring

1) If the results from two consecutive samples of a constituent monitored in a 30-day period exceed the monthly average limit for any parameter (or if the required sampling frequency is once per month and the monthly sample exceeds the monthly average limit), the Discharger shall, within 24 hours after the results are received, increase its sampling frequency to daily until the results from the additional sampling show that the parameter is in compliance with the monthly average limit.

2) If any maximum daily limit is exceeded, the Discharger shall increase its sampling frequency to daily within 24 hours after the results are received that indicate the exceedance of the maximum daily limit until two samples collected on consecutive days show compliance with the maximum daily limit.

3) If final or intermediate results of an acute bioassay test indicate a violation or threatened violation (e.g., the percentage of surviving test organisms of any single acute bioassay test is less than 70 percent), the Discharger shall initiate a new test as soon as practical, and the Discharger shall investigate the cause of the mortalities and report its findings in the next self monitoring report (SMR).

4) The Discharger shall calibrate chlorine residual analyzers against grab samples as frequently as necessary to maintain accurate control and reliable operation. If an effluent violation is detected, the Discharger shall collect grab samples at least every 30 minutes until compliance with the limit is achieved, unless the Discharger monitors chlorine residual continuously. In such cases, the Discharger shall continue to conduct continuous monitoring as required by its permit.

5) When a bypass occurs (except one subject to provision III.A.3.b.6 below), the Discharger shall monitor flows and collect samples on a daily basis for all constituents at affected discharge points that have effluent limits for the duration of the bypass (including acute toxicity using static renewals), except chronic toxicity, unless otherwise stipulated by the MRP.

6) Unless otherwise stipulated by the MRP, when a bypass approved pursuant to Attachment D, Standard Provisions, Sections I.G.2 or I.G.4, occurs, the Discharger shall monitor flows and, using appropriate procedures as specified in the MRP, collect and retain samples for affected discharge points on a daily basis for the duration of the bypass. The Discharger shall analyze for total suspended solids (TSS) using 24-hour composites (or more frequent increments) and for bacteria indicators with effluent limits using grab samples. If TSS exceeds 45 mg/L in any composite sample, the Discharger shall also analyze the retained samples for that discharge for all other constituents that have effluent limits, except oil and grease, mercury, dioxin-TEQ, and acute and chronic toxicity. Additionally, at least once each year, the Discharger shall analyze the retained samples for one approved bypass discharge event for all other constituents that have effluent limits, except oil and grease, mercury, dioxin-TEQ, and acute and chronic toxicity. This monitoring shall be in addition to the minimum monitoring specified in the MRP.

c. Storm Water Monitoring

The requirements of this section only apply to facilities that are not covered by an NPDES permit for storm water discharges and where not all site storm drainage from process areas (i.e., areas of the treatment facility where chemicals or wastewater could come in contact with storm water) is directed to the headworks. For storm water not directed to the headworks during the wet season (October 1 to April 30), the Discharger shall:

1) Conduct visual observations of the storm water discharge locations during daylight hours at least once per month during a storm event that produces significant storm water discharge to observe the presence of floating and suspended materials, oil and grease, discoloration, turbidity, and odor, etc.

2) Measure (or estimate) the total volume of storm water discharge, collect grab samples of storm water discharge from at least two storm events that produce significant storm water discharge, and analyze the samples for oil and grease, pH, TSS, and specific conductance.

The grab samples shall be taken during the first 30 minutes of the discharge. If collection of the grab samples during the first 30 minutes is impracticable, grab samples may be taken

during the first hour of the discharge, and the Discharger shall explain in the Annual Report why the grab sample(s) could not be taken in the first 30 minutes.

3) Testing for the presence of non-storm water discharges shall be conducted no less than twice during the dry season (May 1 to September 30) at all storm water discharge locations. Tests may include visual observations of flows, stains, sludges, odors, and other abnormal conditions; dye tests; TV line surveys; or analysis and validation of accurate piping schematics. Records shall be maintained describing the method used, date of testing, locations observed, and test results.

4) Samples shall be collected from all locations where storm water is discharged. Samples shall represent the quality and quantity of storm water discharged from the facility. If a facility discharges storm water at multiple locations, the Discharger may sample a reduced number of locations if it establishes and documents through the monitoring program that storm water discharges from different locations are substantially identical.

5) Records of all storm water monitoring information and copies of all reports required by the permit shall be retained for a period of at least three years from the date of sample, observation, or report.

d. Receiving Water Monitoring

The requirements of this section only apply when the MRP requires receiving water sampling.

1) Receiving water samples shall be collected on days coincident with effluent sampling for conventional pollutants.

2) Receiving water samples shall be collected at each station on each sampling day during the period within one hour following low slack water. Where sampling during lower slack water is impractical, sampling shall be performed during higher slack water. Samples shall be collected within the discharge plume and down current of the discharge point so as to be representative, unless otherwise stipulated in the MRP.

3) Samples shall be collected within one foot of the surface of the receiving water, unless otherwise stipulated in the MRP.

B. Biosolids Monitoring – This section supplements III.B of Standard Provisions (Attachment D)

When biosolids are sent to a landfill, sent to a surface disposal site, or applied to land as a soil amendment, they must be monitored as follows:

1. Biosolids Monitoring Frequency

Biosolids disposal must be monitored at the following frequency:

Metric tons biosolids/365 days	**Frequency**
0-290	Once per year
290-1500	Quarterly
1500-15,000	Six times per year
Over 15,000	Once per month

(Metric tons are on a dry weight basis)

2. Biosolids Pollutants to Monitor

Biosolids shall be monitored for the following constituents:

Land Application: arsenic, cadmium, copper, mercury, molybdenum, nickel, lead, selenium, and zinc

Municipal Landfill: Paint filter test (pursuant to 40 CFR 258)

Biosolids-only Landfill or Surface Disposal Site (if no liner and leachate system): arsenic, chromium, and nickel

C. Standard Observations – This section is an addition to III of Standard Provisions (Attachment D)

1. Receiving Water Observations

The requirements of this section only apply when the MRP requires standard observations of the receiving water. Standard observations shall include the following:

a. *Floating and suspended materials* (e.g., oil, grease, algae, and other macroscopic particulate matter): presence or absence, source, and size of affected area.

b. *Discoloration and turbidity*: description of color, source, and size of affected area.

c. *Odor*: presence or absence, characterization, source, distance of travel, and wind direction.

d. *Beneficial water use*: presence of water-associated waterfowl or wildlife, fisherpeople, and other recreational activities in the vicinity of each sampling station.

e. *Hydrographic condition*: time and height of corrected high and low tides (corrected to nearest National Oceanic and Atmospheric Administration location for the sampling date and time of sample collection).

f. *Weather conditions*:

1) Air temperature; and

2) Total precipitation during the five days prior to observation.

2. Wastewater Effluent Observations

The requirements of this section only apply when the MRP requires wastewater effluent standard observations. Standard observations shall include the following:

a. *Floating and suspended material of wastewater origin* (e.g., oil, grease, algae, and other macroscopic particulate matter): presence or absence.

b. *Odor*: presence or absence, characterization, source, distance of travel, and wind direction.

3. Beach and Shoreline Observations

The requirements of this section only apply when the MRP requires beach and shoreline standard observations. Standard observations shall include the following:

a. *Material of wastewater origin*: presence or absence, description of material, estimated size of affected area, and source.

b. *Beneficial use*: estimate number of people participating in recreational water contact, non-water contact, or fishing activities.

4. Land Retention or Disposal Area Observations

The requirements of this section only apply to facilities with on-site surface impoundments or disposal areas that are in use. This section applies to both liquid and solid wastes, whether confined or unconfined. The Discharger shall conduct the following for each impoundment:

a. Determine the amount of freeboard at the lowest point of dikes confining liquid wastes.

b. Report evidence of leaching liquid from area of confinement and estimated size of affected area. Show affected area on a sketch and volume of flow (e.g., gallons per minute [gpm]).

c. Regarding odor, describe presence or absence, characterization, source, distance of travel, and wind direction.

d. Estimate number of waterfowl and other water-associated birds in the disposal area and vicinity.

5. Periphery of Waste Treatment and/or Disposal Facilities Observations

The requirements of this section only apply when the MRP specifies periphery standard observations. Standard observations shall include the following:

a. *Odor*: presence or absence, characterization, source, and distance of travel.

b. *Weather conditions*: wind direction and estimated velocity.

IV. STANDARD PROVISIONS – RECORDS

A. Records to be Maintained – This supplements IV.A of Standard Provisions (Attachment D)

The Discharger shall maintain records in a manner and at a location (e.g., wastewater treatment plant or Discharger offices) such that the records are accessible to Regional Water Board staff. The minimum period of retention specified in Section IV, Records, of the Federal Standard Provisions shall be extended during the course of any unresolved litigation regarding the subject discharge, or when requested by the Regional Water Board or Regional Administrator of USEPA, Region IX.

A copy of the permit shall be maintained at the discharge facility and be available at all times to operating personnel.

B. Records of monitoring information shall include – This supplements IV.B of Standard Provision (Attachment D)

1. Analytical Information

Records shall include analytical method detection limits, minimum levels, reporting levels, and related quantification parameters.

2. Flow Monitoring Data

For all required flow monitoring (e.g., influent and effluent flows), the additional records shall include the following, unless otherwise stipulated by the MRP:

a. Total volume for each day; and

b. Maximum, minimum, and average daily flows for each calendar month.

3. Wastewater Treatment Process Solids

a. For each treatment unit process that involves solids removal from the wastewater stream, records shall include the following:

1) Total volume or mass of solids removed from each collection unit (e.g., grit, skimmings, undigested biosolids, or combination) for each calendar month or other time period as appropriate, but not to exceed annually; and

2) Final disposition of such solids (e.g., landfill, other subsequent treatment unit).

b. For final dewatered biosolids from the treatment plant as a whole, records shall include the following:

1) Total volume or mass of dewatered biosolids for each calendar month;

2) Solids content of the dewatered biosolids; and

3) Final disposition of dewatered biosolids (disposal location and disposal method).

4. Disinfection Process

For the disinfection process, these additional records shall be maintained documenting process operation and performance:

a. For bacteriological analyses:

1) Wastewater flow rate at the time of sample collection; and

2) Required statistical parameters for cumulative bacterial values (e.g., moving median or geometric mean for the number of samples or sampling period identified in this Order).

b. For the chlorination process, when chlorine is used for disinfection, at least daily average values for the following:

1) Chlorine residual of treated wastewater as it enters the contact basin (mg/L);

2) Chlorine dosage (kg/day); and

3) Dechlorination chemical dosage (kg/day).

5. Treatment Process Bypasses

A chronological log of all treatment process bypasses, including wet weather blending, shall include the following:

a. Identification of the treatment process bypassed;

b. Dates and times of bypass beginning and end;

c. Total bypass duration;

d. Estimated total bypass volume; and

e. Description of, or reference to other reports describing, the bypass event, the cause, the corrective actions taken (except for wet weather blending that is in compliance with permit conditions), and any additional monitoring conducted.

6. Treatment Facility Overflows

This section applies to records for overflows at the treatment facility. This includes the headworks and all units and appurtenances downstream. The Discharger shall retain a chronological log of overflows at the treatment facility and records supporting the information provided in section V.E.2.

C. Claims of Confidentiality – Not Supplemented

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information – Not Supplemented

B. Signatory and Certification Requirements – Not Supplemented

C. Monitoring Reports – This section supplements V.C of Standard Provisions (Attachment D)

1. Self Monitoring Reports

For each reporting period established in the MRP, the Discharger shall submit an SMR to the Regional Water Board in accordance with the requirements listed in this document and at the frequency the MRP specifies. The purpose of the SMR is to document treatment performance, effluent quality, and compliance with the waste discharge requirements of this Order.

a. Transmittal letter

Each SMR shall be submitted with a transmittal letter. This letter shall include the following:

1) Identification of all violations of effluent limits or other waste discharge requirements found during the reporting period;

2) Details regarding violations: parameters, magnitude, test results, frequency, and dates;

3) Causes of violations;

4) Discussion of corrective actions taken or planned to resolve violations and prevent recurrences, and dates or time schedule of action implementation (if previous reports have been submitted that address corrective actions, reference to the earlier reports is satisfactory);

5) Data invalidation (Data should not be submitted in an SMR if it does not meet quality assurance/quality control standards. However, if the Discharger wishes to invalidate any measurement after it was submitted in an SMR, a letter shall identify the measurement suspected to be invalid and state the Discharger's intent to submit, within 60 days, a formal request to invalidate the measurement. This request shall include the original measurement in question, the reason for invalidating the measurement, all relevant documentation that supports invalidation [e.g., laboratory sheet, log entry, test results, etc.], and discussion of the corrective actions taken or planned [with a time schedule for completion] to prevent recurrence of the sampling or measurement problem.);

6) If the Discharger blends, the letter shall describe the duration of blending events and certify whether blended effluent was in compliance with the conditions for blending; and

7) Signature (The transmittal letter shall be signed according to Section V.B of this Order, Attachment D – Standard Provisions.).

b. Compliance evaluation summary

Each report shall include a compliance evaluation summary. This summary shall include each parameter for which the permit specifies effluent limits, the number of samples taken during the monitoring period, and the number of samples that exceed applicable effluent limits.

c. Results of analyses and observations

1) Tabulations of all required analyses and observations, including parameter, date, time, sample station, type of sample, test result, method detection limit, method minimum level, and method reporting level, if applicable, signed by the laboratory director or other responsible official.

2) When determining compliance with an average monthly effluent limitation and more than one sample result is available in a month, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of detected but not quantified (DNQ) or nondetect (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

i. The data set shall be ranked from low to high, reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

ii. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

If a sample result, or the arithmetic mean or median of multiple sample results, is below the reporting limit, and there is evidence that the priority pollutant is present in the effluent above an effluent limitation and the Discharger conducts a Pollutant Minimization Program, the Discharger shall not be deemed out of compliance.

3) Dioxin-TEQ Reporting: The Discharger shall report for each dioxin and furan congener the analytical results of effluent monitoring, including the quantifiable limit (reporting level), the method detection limit, and the measured concentration. The Discharger shall report all measured values of individual congeners, including data qualifiers. When calculating dioxin-TEQ, the Discharger shall set congener concentrations below the minimum levels (ML) to zero. The Discharger shall calculate and report dioxin-TEQs using the following formula, where the MLs, toxicity equivalency factors (TEFs), and bioaccumulation equivalency factors (BEFs) are as provided in Table A:

$$\text{Dioxin-TEQ} = \Sigma (C_x \times TEF_x \times BEF_x)$$

where: C_x = measured or estimated concentration of congener *x*
TEF_x = toxicity equivalency factor for congener x
BEFx = bioaccumulation equivalency factor for congener *x*

Table A

Minimum Levels, Toxicity Equivalency Factors,
and Bioaccumulation Equivalency Factors

Dioxin or Furan Congener	Minimum Level (pg/L)	1998 Toxicity Equivalency Factor (TEF)	Bioaccumulation Equivalency Factor (BEF)
2,3,7,8-TCDD	10	1.0	1.0
1,2,3,7,8-PeCDD	50	1.0	0.9
1,2,3,4,7,8-HxCDD	50	0.1	0.3
1,2,3,6,7,8-HxCDD	50	0.1	0.1
1,2,3,7,8,9-HxCDD	50	0.1	0.1
1,2,3,4,6,7,8-HpCDD	50	0.01	0.05
OCDD	100	0.0001	0.01
2,3,7,8-TCDF	10	0.1	0.8
1,2,3,7,8-PeCDF	50	0.05	0.2

2,3,4,7,8-PeCDF	50	0.5	1.6
1,2,3,4,7,8-HxCDF	50	0.1	0.08
1,2,3,6,7,8-HxCDF	50	0.1	0.2
1,2,3,7,8,9-HxCDF	50	0.1	0.6
2,3,4,6,7,8-HxCDF	50	0.1	0.7
1,2,3,4,6,7,8-HpCDF	50	0.01	0.01
1,2,3,4,7,8,9-HpCDF	50	0.01	0.4
OCDF	100	0.0001	0.02

d. Data reporting for results not yet available

The Discharger shall make all reasonable efforts to obtain analytical data for required parameter sampling in a timely manner. Certain analyses require additional time to complete analytical processes and report results. For cases where required monitoring parameters require additional time to complete analytical processes and reports, and results are not available in time to be included in the SMR for the subject monitoring period, the Discharger shall describe such circumstances in the SMR and include the data for these parameters and relevant discussions of any observed exceedances in the next SMR due after the results are available.

e. Flow data

The Discharger shall provide flow data tabulation pursuant to Section IV.B.2.

f. Annual self monitoring report requirements

By the date specified in the MRP, the Discharger shall submit an annual report to the Regional Water Board covering the previous calendar year. The report shall contain the following:

1) Annual compliance summary table of treatment plant performance, including documentation of any blending events;

2) Comprehensive discussion of treatment plant performance and compliance with the permit (This discussion shall include any corrective actions taken or planned, such as changes to facility equipment or operation practices that may be needed to achieve compliance, and any other actions taken or planned that are intended to improve performance and reliability of the Discharger's wastewater collection, treatment, or disposal practices.);

3) Both tabular and graphical summaries of the monitoring data for the previous year if parameters are monitored at a frequency of monthly or greater;

4) List of approved analyses, including the following:

(i) List of analyses for which the Discharger is certified;

(ii) List of analyses performed for the Discharger by a separate certified laboratory (copies of reports signed by the laboratory director of that laboratory shall not be submitted but be retained onsite); and

(iii) List of "waived" analyses, as approved;

8) Plan view drawing or map showing the Discharger's facility, flow routing, and sampling and observation station locations;

9) Results of annual facility inspection to verify that all elements of the SWPP Plan are accurate and up to date (only required if the Discharger does not route all storm water to the headworks of its wastewater treatment plant); and

10) Results of facility report reviews (The Discharger shall regularly review, revise, and update, as necessary, the O&M Manual, the Contingency Plan, the Spill Prevention Plan, and Wastewater Facilities Status Report so that these documents remain useful and relevant to current practices. At a minimum, reviews shall be conducted annually. The Discharger shall include, in each Annual Report, a description or summary of review and evaluation procedures, recommended or planned actions, and an estimated time schedule for implementing these actions. The Discharger shall complete changes to these documents to ensure they are up-to-date.).

g. Report submittal

The Discharger shall submit SMRs to:

California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612
Attn: NPDES Wastewater Division

h. Reporting data in electronic format

The Discharger has the option to submit all monitoring results in an electronic reporting format approved by the Executive Officer. If the Discharger chooses to submit SMRs electronically, the following shall apply:

1) *Reporting Method*: The Discharger shall submit SMRs electronically via a process approved by the Executive Officer (see, for example, the letter dated December 17, 1999, "Official Implementation of Electronic Reporting System [ERS]" and the progress report letter dated December 17, 2000).

2) *Monthly or Quarterly Reporting Requirements*: For each reporting period (monthly or quarterly as specified in the MRP), the Discharger shall submit an electronic SMR to the Regional Water Board in accordance with the provisions of Section V.C.1.a-e, except for requirements under Section V.C.1.c(1) where ERS does not have fields for dischargers to input certain information (e.g., sample time). However, until USEPA approves the electronic signature or other signature technologies, Dischargers that use ERS shall submit a hard copy of the original transmittal letter, an ERS printout of the data sheet, and a violation report (a receipt of the electronic transmittal shall be retained by the Discharger). This electronic SMR submittal suffices for the signed tabulations specified under Section V.C.1.c(1).

3) *Annual Reporting Requirements*: Dischargers who have submitted data using the ERS for at least one calendar year are exempt from submitting the portion of the annual report required under Section V.C.1.f(1) and (3).

D. Compliance Schedules – Not supplemented

E. Twenty-Four Hour Reporting – This section supplements V.E of Standard Provision (Attachment D)

1. Spill of Oil or Other Hazardous Material Reports

a. Within 24 hours of becoming aware of a spill of oil or other hazardous material that is not contained onsite and completely cleaned up, the Discharger shall report by telephone to the Regional Water Board at (510) 622-2369.

b. The Discharger shall also report such spills to the State Office of Emergency Services [telephone (800) 852-7550] only when the spills are in accordance with applicable reporting quantities for hazardous materials.

c. The Discharger shall submit a written report to the Regional Water Board within five working days following telephone notification unless directed otherwise by Regional Water Board staff. A report submitted electronically is acceptable. The written report shall include the following:

1) Date and time of spill, and duration if known;

2) Location of spill (street address or description of location);

3) Nature of material spilled;

4) Quantity of material involved;

5) Receiving water body affected, if any;

6) Cause of spill;

7) Estimated size of affected area;

8) Observed impacts to receiving waters (e.g., oil sheen, fish kill, water discoloration);

9) Corrective actions taken to contain, minimize, or clean up the spill;

10) Future corrective actions planned to be taken to prevent recurrence, and schedule of implementation; and

11) Persons or agencies notified.

2. Unauthorized Discharges from Municipal Wastewater Treatment Plants[1]

The following requirements apply to municipal wastewater treatment plants that experience an unauthorized discharge at their treatment facilities and are consistent with and supercede

[1] California Code of Regulations, Title 23, Section 2250(b), defines an unauthorized discharge to be a discharge, not regulated by waste discharge requirements, of treated, partially treated, or untreated wastewater resulting from the intentional or unintentional diversion of wastewater from a collection, treatment or disposal system.

requirements imposed on the Discharger by the Executive Officer by letter of May 1, 2008, issued pursuant to California Water Code Section 13383.

a. Two (2)-Hour Notification

For any unauthorized discharges that result in a discharge to a drainage channel or a surface water, the Discharger shall, as soon as possible, but not later than two (2) hours after becoming aware of the discharge, notify the State Office of Emergency Services (telephone 800-852-7550), the local health officers or directors of environmental health with jurisdiction over the affected water bodies, and the Regional Water Board. The notification to the Regional Water Board shall be via the Regional Water Board's online reporting system at www.wbers.net, and shall include the following:

1) Incident description and cause;

2) Location of threatened or involved waterway(s) or storm drains;

3) Date and time the unauthorized discharge started;

4) Estimated quantity and duration of the unauthorized discharge (to the extent known), and the estimated amount recovered;

5) Level of treatment prior to discharge (e.g., raw wastewater, primary treated, undisinfected secondary treated, and so on); and

6) Identity of the person reporting the unauthorized discharge.

b. 24-hour Certification

Within 24 hours, the Discharger shall certify to the Regional Water Board, at www.wbers.net, that the State Office of Emergency Services and the local health officers or directors of environmental health with jurisdiction over the affected water bodies have been notified of the unauthorized discharge.

c. 5-Day Written Report

Within five business days, the Discharger shall submit a written report, via the Regional Water Board's online reporting system at www.wbers.net, that includes, in addition to the information required above, the following:

1) Methods used to delineate the geographical extent of the unauthorized discharge within receiving waters;

2) Efforts implemented to minimize public exposure to the unauthorized discharge;

3) Visual observations of the impacts (if any) noted in the receiving waters (e.g., fish kill, discoloration of water) and the extent of sampling if conducted;

4) Corrective measures taken to minimize the impact of the unauthorized discharge;

5) Measures to be taken to minimize the chances of a similar unauthorized discharge occurring in the future;

6) Summary of Spill Prevention Plan or O&M Manual modifications to be made, if necessary, to minimize the chances of future unauthorized discharges; and

7) Quantity and duration of the unauthorized discharge, and the amount recovered.

d. Communication Protocol

To clarify the multiple levels of notification, certification, and reporting, the current communication requirements for unauthorized discharges from municipal wastewater treatment plants are summarized in Table B that follows.

Table B

Summary of Communication Requirements for Unauthorized Discharges[1] from Municipal Wastewater Treatment Plants

Discharger is required to:	Agency Receiving Information	Time frame	Method for Contact
1. Notify	California Emergency Management Agency (Cal EMA)	As soon as possible, but not later than **2 hours** after becoming aware of the unauthorized discharge.	Telephone – (800) 852-7550 (obtain a control number from Cal EMA)
	Local health department	As soon as possible, but not later than **2 hours** after becoming aware of the unauthorized discharge.	Depends on local health department
	Regional Water Board	As soon as possible, but not later than **2 hours** after becoming aware of the unauthorized discharge.	Electronic[2] www.wbers.net
2. Certify	Regional Water Board	As soon as possible, but not later than **24 hours** after becoming aware of the unauthorized discharge.	Electronic[3] www.wbers.net

[1] California Code of Regulations, Title 23, Section 2250(b), defines an unauthorized discharge to be a discharge, not regulated by waste discharge requirements, of treated, partially treated, or untreated wastewater resulting from the intentional or unintentional diversion of wastewater from a collection, treatment or disposal system.

[2] In the event that the Discharger is unable to provide online notification within 2 hours of becoming aware of an unauthorized discharge, it shall phone the Regional Water Board's spill hotline at (510) 622-2369 and convey the same information contained in the notification form. In addition, within 3 business days of becoming aware of the unauthorized discharge, the Discharger shall enter the notification information into the Regional Water Board's online system in electronic format.

[3] In most instances, the 2-hour notification will also satisfy 24-hour certification requirements. This is because the notification form includes fields for documenting that OES and the local health department have been contacted. In other words, if the Discharger is able to complete all the fields in the notification form within 2 hours, certification requirements are also satisfied. In the event that the Discharger is unable to provide online certification within 24 hours of becoming aware of an unauthorized discharge, it shall phone the Regional Water Board's spill hotline at (510) 622-2369 and convey the same information contained in the certification form. In addition, within 3 business days of becoming aware of the unauthorized discharge, the Discharger shall enter the certification information into the Regional Water Board's online system in electronic format.

3. Report	Regional Water Board	Within **5 business days** of becoming aware of the unauthorized discharge.	Electronic[4] www.wbers.net

F. Planned Changes – Not supplemented

G. Anticipated Noncompliance – Not supplemented

H. Other Noncompliance – Not supplemented

I. Other Information – Not supplemented

VI. STANDARD PROVISIONS – ENFORCEMENT – Not Supplemented

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS – Not Supplemented

VIII. DEFINITIONS – This section is an addition to Standard Provisions (Attachment D)

More definitions can be found in Attachment A of this NPDES Permit.

1. Arithmetic Calculations

   a. Geometric mean is the antilog of the log mean or the back-transformed mean of the logarithmically transformed variables, which is equivalent to the multiplication of the antilogarithms. The geometric mean can be calculated with either of the following equations:

   $$\text{Geometric Mean} = Anti\log\left(\frac{1}{N}\sum_{i=1}^{N} Log(C_i)\right)$$

   or

   $$\text{Geometric Mean} = (C_1 * C_2 * \ldots * C_N)^{1/N}$$

   Where "N" is the number of data points for the period analyzed and "C" is the concentration for each of the "N" data points.

   b. Mass emission rate is obtained from the following calculation for any calendar day:

   $$\text{Mass emission rate (lb/day)} = \frac{8.345}{N}\sum_{i=1}^{N} Q_i C_i$$

   $$\text{Mass emission rate (kg/day)} = \frac{3.785}{N}\sum_{i=1}^{N} Q_i C_i$$

[4] If the Discharger cannot satisfy the 5-day reporting requirements via the Regional Water Board's online reporting system, it shall submit a written report (preferably electronically in pdf) to the appropriate Regional Water Board case manager. In cases where the Discharger cannot satisfy the 5-day reporting requirements via the online reporting system, it must still complete the Regional Water Board's online reporting requirements within 15 calendar days of becoming aware of the unauthorized discharge.

In which "N" is the number of samples analyzed in any calendar day and "Q_i" and "C_i" are the flow rate (MGD) and the constituent concentration (mg/L) associated with each of the "N" grab samples that may be taken in any calendar day. If a composite sample is taken, "C_i" is the concentration measured in the composite sample and "Q_i" is the average flow rate occurring during the period over which the samples are composited. The daily concentration of a constituent measured over any calendar day shall be determined from the flow-weighted average of the same constituent in the combined waste streams as follows:

C_d = Average daily concentration = $\frac{1}{Q_t}\sum_{i=1}^{N} Q_i C_i$

In which "N" is the number of component waste streams and "Q" and "C" are the flow rate (MGD) and the constituent concentration (mg/L) associated with each of the "N" waste streams. "Q_t" is the total flow rate of the combined waste streams.

c. Maximum allowable mass emission rate, whether for a 24-hour, weekly 7-day, monthly 30-day, or 6-month period, is a limitation expressed as a daily rate determined with the formulas in the paragraph above, using the effluent concentration limit specified in the permit for the period and the specified allowable flow.

d. POTW removal efficiency is the ratio of pollutants removed by the treatment facilities to pollutants entering the treatment facilities (expressed as a percentage). The Discharger shall determine removal efficiencies using monthly averages (by calendar month unless otherwise specified) of pollutant concentration of influent and effluent samples collected at about the same time and using the following equation (or its equivalent):

Removal Efficiency (%) = 100 × [1-(Effluent Concentration/Influent Concentration)]

2. Biosolids means the solids, semi-liquid suspensions of solids, residues, screenings, grit, scum, and precipitates separated from or created in wastewater by the unit processes of a treatment system. It also includes, but is not limited to, all supernatant, filtrate, centrate, decantate, and thickener overflow and underflow in the solids handling parts of the wastewater treatment system.

3. Blending is the practice of recombining wastewater that has been biologically treated with wastewater that has bypassed around biological treatment units.

4. Bottom sediment sample is (1) a separate grab sample taken at each sampling station for the determination of selected physical-chemical parameters, or (2) four grab samples collected from different locations in the immediate vicinity of a sampling station while the boat is anchored and analyzed separately for macroinvertebrates.

5. Composite sample is a sample composed of individual grab samples collected manually or by an automatic sampling device on the basis of time or flow as specified in the MRP. For flow-based composites, the proportion of each grab sample included in the composite sample shall be within plus or minus five percent (+/-5%) of the representative flow rate of the waste stream being measured at the time of grab sample collection. Alternatively, equal volume grab samples may be individually analyzed with the flow-weighted average calculated by averaging flow-weighted ratios of each grab sample analytical result. Grab samples comprising time-based composite samples shall be collected at intervals not greater than those specified in the MRP. The quantity of each grab sample comprising a time-based composite sample shall be a set of flow proportional volumes as specified in the MRP. If a particular time-based or flow-based composite sampling protocol is not specified in the MRP, the Discharger shall determine and

implement the most representative sampling protocol for the given parameter subject to Executive Officer approval.

6. Depth-integrated sample is defined as a water or waste sample collected by allowing a sampling device to fill during a vertical traverse in the waste or receiving water body being sampled. The Discharger shall collect depth-integrated samples in such a manner that the collected sample will be representative of the waste or water body at that sampling point.

7. Flow sample is an accurate measurement of the average daily flow volume using a properly calibrated and maintained flow measuring device.

8. Grab sample is an individual sample collected in a short period of time not exceeding 15 minutes. Grab samples represent only the condition that exists at the time the wastewater is collected.

9. Initial dilution is the process that results in the rapid and irreversible turbulent mixing of wastewater with receiving water around the point of discharge.

10. Overflow is the intentional or unintentional spilling or forcing out of untreated or partially treated wastes from a transport system (e.g., through manholes, at pump stations, and at collection points) upstream from the treatment plant headworks or from any part of a treatment plant facility.

11. Priority pollutants are those constituents referred to in 40 CFR Part 122 as promulgated in the Federal Register, Vol. 65, No. 97, Thursday, May 18, 2000, also known as the California Toxics Rule, the presence or discharge of which could reasonably be expected to interfere with maintaining designated uses.

12. Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage. It excludes infiltration and runoff from agricultural land.

13. Toxic pollutant means any pollutant listed as toxic under federal Clean Water Act section 307(a)(1) or under 40 CFR 401.15.

14. Untreated waste is raw wastewater.

15. Waste, waste discharge, discharge of waste, and discharge are used interchangeably in the permit. The requirements of the permit apply to the entire volume of water, and the material therein, that is disposed of to surface and ground waters of the State of California.

Table C

List of Monitoring Parameters and Analytical Methods

CTR No.	Pollutant/Parameter	Analytical Method[5]	Minimum Levels[6] (µg/l)											
			GC	GCMS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
1.	Antimony	204.2					10	5	50	0.5	5	0.5		1000
2.	Arsenic	206.3				20		2	10	2	2	1		1000
3.	Beryllium						20	0.5	2	0.5	1			1000
4.	Cadmium	200 or 213					10	0.5	10	0.25	0.5			1000
5a.	Chromium (III)	SM 3500												
5b.	Chromium (VI)	SM 3500				10	5							1000
	Chromium (total)[7]	SM 3500					50	2	10	0.5	1			1000
6.	Copper	200.9					25	5	10	0.5	2			1000
7.	Lead	200.9					20	5	5	0.5	2			10,000
8.	Mercury	1631 (note)[8]												
9.	Nickel	249.2					50	5	20	1	5			1000
10.	Selenium	200.8 or SM 3114B or C						5	10	2	5	1		1000
11.	Silver	272.2					10	1	10	0.25	2			1000
12.	Thallium	279.2					10	2	10	1	5			1000
13.	Zinc	200 or 289					20		20	1	10			
14.	Cyanide	SM 4500 CN^- C or I				5								
15.	Asbestos (only required for dischargers to MUN waters)[9]	0100.2 [10]												
16.	2,3,7,8-TCDD and 17 congeners (Dioxin)	1613												
17.	Acrolein	603	2.0	5										
18.	Acrylonitrile	603	2.0	2										
19.	Benzene	602	0.5	2										
33.	Ethylbenzene	602	0.5	2										
39.	Toluene	602	0.5	2										
20.	Bromoform	601	0.5	2										
21.	Carbon Tetrachloride	601	0.5	2										
22.	Chlorobenzene	601	0.5	2										
23.	Chlorodibromomethane	601	0.5	2										
24.	Chloroethane	601	0.5	2										

[5] The suggested method is the USEPA Method unless otherwise specified (SM = Standard Methods). The Discharger may use another USEPA-approved or recognized method if that method has a level of quantification below the applicable water quality objective. Where no method is suggested, the Discharger has the discretion to use any standard method.

[6] Minimum levels are from the *State Implementation Policy*. They are the concentration of the lowest calibration standard for that technique based on a survey of contract laboratories. Laboratory techniques are defined as follows: GC = Gas Chromatography; GCMS = Gas Chromatography/Mass Spectrometry; LC = High Pressure Liquid Chromatography; Color = Colorimetric; FAA = Flame Atomic Absorption; GFAA = Graphite Furnace Atomic Absorption; ICP = Inductively Coupled Plasma; ICPMS = Inductively Coupled Plasma/Mass Spectrometry; SPGFAA = Stabilized Platform Graphite Furnace Atomic Absorption (i.e., USEPA 200.9); Hydride = Gaseous Hydride Atomic Absorption; CVAA = Cold Vapor Atomic Absorption; DCP = Direct Current Plasma.

[7] Analysis for total chromium may be substituted for analysis of chromium (III) and chromium (VI) if the concentration measured is below the lowest hexavalent chromium criterion (11 ug/l).

[8] The Discharger shall use ultra-clean sampling (USEPA Method 1669) and ultra-clean analytical methods (USEPA Method 1631) for mercury monitoring. The minimum level for mercury is 2 ng/l (or 0.002 ug/l).

[9] MUN = Municipal and Domestic Supply. This designation, if applicable, is in the Findings of the permit.

[10] *Determination of Asbestos Structures over 10 [micrometers] in Length in Drinking Water Using MCE Filters*, USEPA 600/R-94-134, June 1994.

CTR No.	Pollutant/Parameter	Analytical Method[5]	Minimum Levels[6] (µg/l)											
			GC	GCMS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
25.	2-Chloroethylvinyl Ether	601	1	1										
26.	Chloroform	601	0.5	2										
75.	1,2-Dichlorobenzene	601	0.5	2										
76.	1,3-Dichlorobenzene	601	0.5	2										
77.	1,4-Dichlorobenzene	601	0.5	2										
27.	Dichlorobromomethane	601	0.5	2										
28.	1,1-Dichloroethane	601	0.5	1										
29.	1,2-Dichloroethane	601	0.5	2										
30.	1,1-Dichloroethylene or 1,1-Dichloroethene	601	0.5	2										
31.	1,2-Dichloropropane	601	0.5	1										
32.	1,3-Dichloropropylene or 1,3-Dichloropropene	601	0.5	2										
34.	Methyl Bromide or Bromomethane	601	1.0	2										
35.	Methyl Chloride or Chloromethane	601	0.5	2										
36.	Methylene Chloride or Dichlorormethane	601	0.5	2										
37.	1,1,2,2-Tetrachloroethane	601	0.5	1										
38.	Tetrachloroethylene	601	0.5	2										
40.	1,2-Trans-Dichloroethylene	601	0.5	1										
41.	1,1,1-Trichloroethane	601	0.5	2										
42.	1,1,2-Trichloroethane	601	0.5	2										
43.	Trichloroethene	601	0.5	2										
44.	Vinyl Chloride	601	0.5	2										
45.	2-Chlorophenol	604	2	5										
46.	2,4-Dichlorophenol	604	1	5										
47.	2,4-Dimethylphenol	604	1	2										
48.	2-Methyl-4,6-Dinitrophenol or Dinitro-2-methylphenol	604	10	5										
49.	2,4-Dinitrophenol	604	5	5										
50.	2-Nitrophenol	604		10										
51.	4-Nitrophenol	604	5	10										
52.	3-Methyl-4-Chlorophenol	604	5	1										
53.	Pentachlorophenol	604	1	5										
54.	Phenol	604	1	1		50								
55.	2,4,6-Trichlorophenol	604	10	10										
56.	Acenaphthene	610 HPLC	1	1	0.5									
57.	Acenaphthylene	610 HPLC		10	0.2									
58.	Anthracene	610 HPLC		10	2									
60.	Benzo(a)Anthracene or 1,2 Benzanthracene	610 HPLC	10	5										
61.	Benzo(a)Pyrene	610 HPLC		10	2									
62.	Benzo(b)Fluoranthene or 3,4 Benzofluoranthene	610 HPLC		10	10									
63.	Benzo(ghi)Perylene	610 HPLC		5	0.1									
64.	Benzo(k)Fluoranthene	610 HPLC		10	2									
74.	Dibenzo(a,h)Anthracene	610 HPLC		10	0.1									
86.	Fluoranthene	610 HPLC	10	1	0.05									
87.	Fluorene	610 HPLC		10	0.1									
92.	Indeno(1,2,3-cd) Pyrene	610 HPLC		10	0.05									
100.	Pyrene	610 HPLC		10	0.05									
68.	Bis(2-Ethylhexyl)Phthalate	606 or 625	10	5										

CTR No.	Pollutant/Parameter	Analytical Method[5]	Minimum Levels[6] (µg/l)											
			GC	GCMS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
70.	Butylbenzyl Phthalate	606 or 625	10	10										
79.	Diethyl Phthalate	606 or 625	10	2										
80.	Dimethyl Phthalate	606 or 625	10	2										
81.	Di-n-Butyl Phthalate	606 or 625		10										
84.	Di-n-Octyl Phthalate	606 or 625		10										
59.	Benzidine	625		5										
65.	Bis(2-Chloroethoxy)Methane	625		5										
66.	Bis(2-Chloroethyl)Ether	625	10	1										
67.	Bis(2-Chloroisopropyl)Ether	625	10	2										
69.	4-Bromophenyl Phenyl Ether	625	10	5										
71.	2-Chloronaphthalene	625		10										
72.	4-Chlorophenyl Phenyl Ether	625		5										
73.	Chrysene	625		10	5									
78.	3,3'-Dichlorobenzidine	625		5										
82.	2,4-Dinitrotoluene	625	10	5										
83.	2,6-Dinitrotoluene	625		5										
85.	1,2-Diphenylhydrazine (note)[11]	625		1										
88.	Hexachlorobenzene	625	5	1										
89.	Hexachlorobutadiene	625	5	1										
90.	Hexachlorocyclopentadiene	625	5	5										
91.	Hexachloroethane	625	5	1										
93.	Isophorone	625	10	1										
94.	Naphthalene	625	10	1	0.2									
95.	Nitrobenzene	625	10	1										
96.	N-Nitrosodimethylamine	625	10	5										
97.	N-Nitrosodi-n-Propylamine	625	10	5										
98.	N-Nitrosodiphenylamine	625	10	1										
99.	Phenanthrene	625		5	0.05									
101.	1,2,4-Trichlorobenzene	625	1	5										
102.	Aldrin	608	0.005											
103.	α-BHC	608	0.01											
104.	β-BHC	608	0.005											
105.	γ-BHC (Lindane)	608	0.02											
106.	δ-BHC	608	0.005											
107.	Chlordane	608	0.1											
108.	4,4'-DDT	608	0.01											
109.	4,4'-DDE	608	0.05											
110.	4,4'-DDD	608	0.05											
111.	Dieldrin	608	0.01											
112.	Endosulfan (alpha)	608	0.02											
113.	Endosulfan (beta)	608	0.01											
114.	Endosulfan Sulfate	608	0.05											
115.	Endrin	608	0.01											
116.	Endrin Aldehyde	608	0.01											
117.	Heptachlor	608	0.01											
118.	Heptachlor Epoxide	608	0.01											
119-	PCBs: Aroclors 1016, 1221,	608	0.5											

[11] Measurement for 1,2-Diphenylhydrazine may use azobenzene as a screen: if azobenzene is measured at >1 ug/l, then the Discharger shall analyze for 1,2-Diphenylhydrazine.

CTR No.	Pollutant/Parameter	Analytical Method[5]	Minimum Levels[6] (µg/l)											
			GC	GCMS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
125	1232, 1242, 1248, 1254, 1260													
126.	Toxaphene	608	0.5											

ATTACHMENT H – PRETREATMENT REQUIREMENTS

CALIFORNIA REGIONAL WATER QUALITY CONTROL
BOARD
SAN FRANCISCO BAY REGION

ATTACHMENT H
PRETREATMENT PROGRAM PROVISIONS

For

NPDES POTW WASTEWATER DISCHARGE PERMITS

March 2011

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Attachment H: Pretreatment Program Provisions

1. The Discharger shall be responsible and liable for the performance of all Control Authority pretreatment requirements contained in 40 CFR 403, including any regulatory revisions to Part 403. Where a Part 403 revision is promulgated after the effective date of the Discharger's permit and places mandatory actions upon the Discharger as Control Authority but does not specify a timetable for completion of the actions, the Discharger shall complete the required actions within six months from the issuance date of this permit or six months from the effective date of the Part 403 revisions, whichever comes later.

   (If the Discharger cannot complete the required actions within the above six-month period due to the need to process local adoption of sewer use ordinance modifications or other substantial pretreatment program modifications, the Discharger shall notify the Executive Officer in writing at least 60 days prior to the six-month deadline. The written notification shall include a summary of completed required actions, an explanation for why the six month deadline cannot be met, and a proposed timeframe to complete the rest of the required actions as soon as practical but not later than within twelve months of the issuance date of this permit or twelve months of the effective date of the Part 403 revisions, whichever comes later. The Executive Officer will notify the Discharger in writing within 30 days of receiving the request if the extension is not approved.)

   The United States Environmental Protection Agency (USEPA), the State and/or other appropriate parties may initiate enforcement action against a nondomestic user for noncompliance with applicable standards and requirements as provided in the Clean Water Act (Act).

2. The Discharger shall enforce the requirements promulgated under Sections 307(b), 307(c), 307(d) and 402(b) of the Act with timely, appropriate and effective enforcement actions. The Discharger shall cause nondomestic users subject to Federal Categorical Standards to achieve compliance no later than the date specified in those requirements or, in the case of a new nondomestic user, upon commencement of the discharge.

3. The Discharger shall perform the pretreatment functions as required in 40 CFR 403 and amendments or modifications thereto including, but not limited to:

   A) Implement the necessary legal authorities to fully implement the pretreatment regulations as provided in 40 CFR 403.8(f)(1);

   B) Implement the programmatic functions as provided in 40 CFR 403.8(f)(2);

   C) Publish an annual list of nondomestic users in significant noncompliance as provided per 40 CFR 403.8(f)(2)(viii);

   D) Provide for the requisite funding and personnel to implement the pretreatment program as provided in 40 CFR 403.8(f)(3); and

   E) Enforce the national pretreatment standards for prohibited discharges and categorical standards as provided in 40 CFR 403.5 and 403.6, respectively.

4. The Discharger shall submit annually a report to USEPA Region 9, the State Water Board and the Regional Water Board describing its pretreatment program activities over the previous calendar year. In the event that the Discharger is not in compliance with any conditions or requirements of the Pretreatment Program, the Discharger shall also include the reasons for noncompliance and a plan and schedule for achieving compliance. The report shall contain, but is not limited to, the information specified in Appendix H-1 entitled, "Requirements for Pretreatment Annual Reports." The annual report is due each year on February 28.

5. The Discharger shall submit a pretreatment semiannual report to USEPA Region 9, the State Water Board and the Regional Water Board describing the status of its significant industrial users (SIUs). The report shall contain, but is not limited to, information specified in Appendix H-2 entitled, "Requirements for Pretreatment Semiannual Reports." The semiannual report is due July 31 for the period January through June. The information for the period July through December of each year shall be included in the Annual Report identified in Appendix H-1. The Executive Officer may exempt the Discharger from the semiannual reporting requirements on a case by case basis subject to State Water Board and USEPA's comment and approval.

6. The Discharger shall conduct the monitoring of its treatment plant's influent, effluent, and sludge (biosolids) as described in Appendix H-4 entitled, "Requirements for Influent, Effluent and Sludge (Biosolids) Monitoring." (The term "biosolids," as used in this Attachment, shall have the same meaning as wastewater treatment plant "sludge" and will be used from this point forward.) The Discharger shall evaluate the results of the sampling and analysis during the preparation of the semiannual and annual reports to identify any trends. Signing the certification statement used to transmit the reports shall be deemed to certify the Discharger has completed this data evaluation. A tabulation of the data shall be included in the pretreatment annual report as specified in Appendix H-4. The Executive Officer may require more or less frequent monitoring on a case by case basis.

APPENDIX H-1

REQUIREMENTS FOR PRETREATMENT ANNUAL REPORTS

The Pretreatment Annual Report is due each year on February 28 and shall contain activities conducted during the previous calendar year. The purpose of the Annual Report is to:

- Describe the status of the Discharger's pretreatment program; and
- Report on the effectiveness of the program, as determined by comparing the results of the preceding year's program implementation.

The report shall contain, at a minimum, the following information:

1) **Cover Sheet**

The cover sheet shall include:

A) The name(s) and National Pollutant Discharge Elimination Discharge System (NPDES) permit number(s) of the Discharger(s) that is part of the Pretreatment Program;

B) The name, address and telephone number of a pretreatment contact person;

C) The period covered in the report;

D) A statement of truthfulness; and

E) The dated signature of a principal executive officer, ranking elected official, or other duly authorized employee who is responsible for overall operation of the Publicly Owned Treatment Works (POTW) (40 CFR 403.12(m)).

2) **Introduction**

This section shall include:

A) Any pertinent background information related to the Discharger and/or the nondomestic user base of the area;

B) List of applicable interagency agreements used to implement the Discharger's pretreatment program (e.g., Memoranda of Understanding (MOU) with satellite sanitary sewer collection systems); and

C) A status summary of the tasks required by a Pretreatment Compliance Inspection (PCI), Pretreatment Compliance Audit (PCA), Cleanup and Abatement Order (CAO), or other pretreatment-related enforcement actions required by the Regional Water Board or the USEPA. A more detailed discussion can be referenced and included in the section entitled, "Program Changes," if needed.

3) **Definitions**

This section shall include a list of key terms and their definitions that the Discharger uses to describe or characterize elements of its pretreatment program, or the Discharger may provide a reference to its website if the applicable definitions are available on-line.

4) **Discussion of Upset, Interference and Pass Through**

This section shall include a discussion of Upset, Interference or Pass Through incidents, if any, at the Discharger's treatment plant(s) that the Discharger knows of or suspects were caused by nondomestic user discharges. Each incident shall be described, at a minimum, consisting of the following information:

A) A description of what occurred;

B) A description of what was done to identify the source;

C) The name and address of the nondomestic user responsible;

D) The reason(s) why the incident occurred;

E) A description of the corrective actions taken; and

F) An examination of the local and federal discharge limits and requirements for the purposes of determining whether any additional limits or changes to existing requirements may be necessary to prevent other Upset, Interference or Pass Through incidents.

5) **Influent, Effluent and Biosolids Monitoring Results**

The Discharger shall evaluate the influent, effluent and biosolids monitoring results as specified in Appendix H-4 in preparation of this report. The Discharger shall retain the analytical laboratory reports with the Quality Assurance and Quality Control (QA/QC) data validation and make these reports available upon request.

This section shall include:

A) Description of the sampling procedures and an analysis of the results (see Appendix H-4 for specific requirements);
B) Tabular summary of the compounds detected (compounds measured above the detection limit for the analytical method used) for the monitoring data generated during the reporting year as specified in Appendix H-4;
C) Discussion of the investigation findings into any contributing sources of the compounds that exceed NPDES limits; and
D) Graphical representation of the influent and effluent metal monitoring data for the past five years with a discussion of any trends.

6) **Inspection, Sampling and Enforcement Programs**

This section shall include at a minimum the following information:

A) Inspections: Summary of the inspection program (e.g., criteria for determining the frequency of inspections and inspection procedures);

B) Sampling Events: Summary of the sampling program (e.g., criteria for determining the frequency of sampling and chain of custody procedures); and

C) Enforcement: Summary of Enforcement Response Plan (ERP) implementation including dates for adoption, last revision and submission to the Regional Water Board.

7) **Updated List of Regulated SIUs**

This section shall contain a list of all of the federal categories that apply to SIUs regulated by the Discharger. The specific categories shall be listed including the applicable 40 CFR subpart and section, and pretreatment standards (both maximum and average limits). Local limits developed by the Discharger shall be presented in a table including the applicability of the local limits to SIUs. If local limits do not apply uniformly to SIUs, specify the applicability in the tables listing the categorical industrial users (CIUs) and non-categorical SIUs. Tables developed in Sections 7A and 7B can be used to present or reference this information.

A) CIUs - Include a table that alphabetically lists the CIUs regulated by the Discharger as of the end of the reporting period. This list shall include:

   i. Name;

   ii. Address;

   iii. Applicable federal category(ies);

   iv. Reference to the location where the applicable Federal Categorical Standards are presented in the report;

   v. Identify all deletions and additions keyed to the list submitted in the previous annual report. All deletions shall be briefly explained (e.g., closure, name change, ownership change, reclassification, declassification); and

   vi. Information, calculations and data used to determine the limits for those CIUs for which a combined waste stream formula is applied.

B) Non-categorical SIUs - Include a table that alphabetically lists the SIUs not subject to any federal categorical standards that were regulated by the Discharger as of the end of the reporting period. This list shall include:

   i. Name;

ii. Address;

iii. A brief description of the type of business;
iv. Identify all deletions and additions keyed to the list submitted in the previous annual report. All deletions shall be briefly explained (e.g., closure, name change, ownership change, reclassification, declassification); and

v. Indicate the applicable discharge limits (e.g., different from local limits) to which the SIUs are subject and reference to the location where the applicable limits (e.g., local discharge limits) are presented in the report.

8) **SIU (categorical and non-categorical) Compliance Activities**

The information required in this section may be combined in the table developed in Section 7 above.

A) **Inspection and Sampling Summary:** This section shall contain a summary of all the SIU inspections and sampling activities conducted by the Discharger and sampling activities conducted by the SIU over the reporting year to gather information and data regarding SIU compliance. The summary shall include:

i. The number of inspections and sampling events conducted for each SIU by the Discharger;

ii. The number of sampling events conducted by the SIU. Identify SIUs that are operating under an approved Total Toxic Organic Management Plan;

iii. The quarters in which the above activities were conducted; and

iv. The compliance status of each SIU, delineated by quarter, and characterized using all applicable descriptions as given below:

a. Consistent compliance;

b. Inconsistent compliance;

c. Significant noncompliance;

d. On a compliance schedule to achieve compliance (include the date final compliance is required);

e. Not in compliance and not on a compliance schedule; and

f. Compliance status unknown, and why not.

B) **Enforcement Summary:** This section shall contain a summary of SIU compliance and enforcement activities during the reporting year. The summary may be included in the summary table developed in section 8A and shall include the names and addresses of all SIUs affected by

the actions identified below. For each notice specified in enforcement action "i" through "iv," indicate whether it was for an infraction of a federal or local standard/limit or requirement.

i. Warning letters or notices of violations regarding SIUs' apparent noncompliance with or violation of any federal pretreatment categorical standards and/or requirements, or local limits and/or requirements;

ii. Administrative Orders regarding the SIUs' apparent noncompliance with or violation of any federal pretreatment categorical standards and/or requirements, or local limits and/or requirements;

iii. Civil actions regarding the SIUs' apparent noncompliance with or violation of any federal pretreatment categorical standards and/or requirements, or local limits and/or requirements;

iv. Criminal actions regarding the SIUs' apparent noncompliance with or violation of any federal pretreatment categorical standards and/or requirements, or local limits and/or requirements;

v. Assessment of monetary penalties. Identify the amount of penalty in each case and reason for assessing the penalty;

vi. Order to restrict/suspend discharge to the Discharger; and

vii. Order to disconnect the discharge from entering the Discharger.

C) **July-December Semiannual Data:** For SIU violations/noncompliance during the semiannual reporting period from July 1 through December 31, provide the following information:

i. Name and facility address of the SIU;

ii. Indicate if the SIU is subject to Federal Categorical Standards; if so, specify the category including the subpart that applies;

iii. For SIUs subject to Federal Categorical Standards, indicate if the violation is of a categorical or local standard;

iv. Indicate the compliance status of the SIU for the two quarters of the reporting period; and

v. For violations/noncompliance identified in the reporting period, provide:

a. The date(s) of violation(s);

b. The parameters and corresponding concentrations exceeding the limits and the discharge limits for these parameters; and

c. A brief summary of the noncompliant event(s) and the steps that are being taken to achieve compliance.

9) **Baseline Monitoring Report Update**

This section shall provide a list of CIUs added to the pretreatment program since the last annual report. This list of new CIUs shall summarize the status of the respective Baseline Monitoring Reports (BMR). The BMR must contain the information specified in 40 CFR 403.12(b). For each new CIU, the summary shall indicate when the BMR was due; when the CIU was notified by the Discharger of this requirement; when the CIU submitted the report; and/or when the report is due.

10) **Pretreatment Program Changes**

This section shall contain a description of any significant changes in the Pretreatment Program during the past year including, but not limited to:

A) Legal authority;

B) Local limits;

C) Monitoring/ inspection program and frequency;

D) Enforcement protocol;

E) Program's administrative structure;

F) Staffing level;

G) Resource requirements;

H) Funding mechanism;

I) If the manager of the Discharger's pretreatment program changed, a revised organizational chart shall be included; and

J) If any element(s) of the program is in the process of being modified, this intention shall also be indicated.

11) **Pretreatment Program Budget**

This section shall present the budget spent on the Pretreatment Program. The budget, either by the calendar or fiscal year, shall show the total expenses required to implement the pretreatment program. A brief discussion of the source(s) of funding shall be provided. In addition, the Discharger shall make available upon request specific details on its pretreatment program expense amounts such as for personnel, equipment, and chemical analyses.

12) **Public Participation Summary**

This section shall include a copy of the public notice as required in 40 CFR 403.8(f)(2)(viii). If a notice was not published, the reason shall be stated.

13) **Biosolids Storage and Disposal Practice**

This section shall describe how treated biosolids are stored and ultimately disposed. If a biosolids storage area is used, it shall be described in detail including its location, containment features and biosolids handling procedures.

14) **Other Pollutant Reduction Activities**

This section shall include a brief description of any programs the Discharger implements to reduce pollutants from nondomestic users that are not classified as SIUs. If the Discharger submits any of this program information in an Annual Pollution Prevention Report, reference to this other report shall satisfy this reporting requirement.

15) **Other Subjects**

Other information related to the Pretreatment Program that does not fit into any of the above categories should be included in this section.

16) **Permit Compliance System (PCS) Data Entry Form**

The annual report shall include the PCS Data Entry Form. This form shall summarize the enforcement actions taken against SIUs in the past year. This form shall include the following information:

A) Discharger's name,

B) NPDES Permit number,

C) Period covered by the report,

D) Number of SIUs in significant noncompliance (SNC) that are on a pretreatment compliance schedule,

E) Number of notices of violation and administrative orders issued against SIUs,

F) Number of civil and criminal judicial actions against SIUs,

G) Number of SIUs that have been published as a result of being in SNC, and

H) Number of SIUs from which penalties have been collected.

APPENDIX H-2

REQUIREMENTS FOR JANUARY-JUNE PRETREATMENT SEMIANNUAL REPORT

The pretreatment semiannual report is due on July 31 for pretreatment program activities conducted from January through June unless an exception has been granted by the Regional Water Board's Executive Officer (e.g., pretreatment programs without any SIUs may qualify for an exception to the pretreatment semiannual report). Pretreatment activities conducted from July through December of each year shall be included in the Pretreatment Annual Report as specified in Appendix H-1. The pretreatment semiannual report shall contain, at a minimum the following information:

1) **Influent, Effluent and Biosolids Monitoring**

The influent, effluent and biosolids monitoring results shall be evaluated in preparation of this report. The Discharger shall retain analytical laboratory reports with the QA/QC data validation and make these reports available upon request. The Discharger shall also make available upon request a description of its influent, effluent and biosolids sampling procedures. Violations of any parameter that exceed NPDES limits shall be identified and reported. The contributing source(s) of the parameters that exceed NPDES limits shall be investigated and discussed.

2) **Significant Industrial User Compliance Status**

This section shall contain a list of all SIUs that were not in consistent compliance with all pretreatment standards/limits or requirements for the reporting period. For the reported SIUs, the compliance status for the previous semiannual reporting period shall be included. Once the SIU has determined to be out of compliance, the SIU shall be included in subsequent reports until consistent compliance has been achieved. A brief description detailing the actions that the SIU undertook to come back into compliance shall be provided.

For each SIU on the list, the following information shall be provided:

A) Name and facility address of the SIU;

B) Indicate if the SIU is subject to Federal Categorical Standards; if so, specify the category including the subpart that applies;

C) For SIUs subject to Federal Categorical Standards, indicate if the violation is of a categorical or local standard;

D) Indicate the compliance status of the SIU for the two quarters of the reporting period; and

E) For violations/noncompliance identified in the reporting period, provide:

   i. The date(s) of violation(s);

ii. The parameters and corresponding concentrations exceeding the limits and the discharge limits for these parameters; and

iii. A brief summary of the noncompliant event(s) and the steps that are being taken to achieve compliance.

3) **Discharger's Compliance with Pretreatment Program Requirements**

This section shall contain a discussion of the Discharger's compliance status with the Pretreatment Program Requirements as indicated in the latest Pretreatment Compliance Audit (PCA) Report or Pretreatment Compliance Inspection (PCI) Report. It shall contain a summary of the following information:

A) Date of latest PCA or PCI report;

B) Date of the Discharger's response;

C) List of unresolved issues; and

D) Plan(s) and schedule for resolving the remaining issues.

APPENDIX H-3

SIGNATURE REQUIREMENTS FOR PRETREATMENT ANNUAL AND SEMIANNUAL REPORTS

The pretreatment annual and semiannual reports shall be signed by a principal executive officer, ranking elected official, or other duly authorized employee who is responsible for the overall operation of the Discharger [POTW - 40 CFR 403.12(m)]. Signed copies of the reports shall be submitted to the USEPA, the State Water Board, and the Regional Water Board at the following addresses unless the Discharger is instructed by any of these agencies to submit electronic copies of the required reports:

Pretreatment Program Reports
Clean Water Act Compliance Office (WTR-7)
Water Division
Pacific Southwest Region
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105-3901

Submit electronic copies only to State and Regional Water Boards:
Pretreatment Program Manager
Regulatory Unit
State Water Resources Control Board
Division of Water Quality-15th Floor
1001 I Street
Sacramento, CA 95814
DMR@waterboards.ca.gov
NPDES_Wastewater@waterboards.ca.gov

Pretreatment Coordinator
NPDES Wastewater Division
SF Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612
(Submit the report as a single Portable Document Format (PDF) file to the Pretreatment Coordinator's folder in the Regional Water Board's File Transfer Protocol (FTP) site. The instructions for using the FTP site can be found at the following internet address:
http://www.waterboards.ca.gov/sanfranciscobay/publications_forms/documents/FTP_Discharger_Guide-12-2010.pdf.)

APPENDIX H-4

REQUIREMENTS FOR INFLUENT, EFFLUENT AND BIOSOLIDS MONITORING

The Discharger shall conduct sampling of its treatment plant's influent, effluent and biosolids at the frequency shown in **the pretreatment requirements table** of the Monitoring and Reporting Program (MRP, Attachment E). When sampling periods coincide, one set of test results, reported separately, may be used for those parameters that are required to be monitored by both the influent and effluent monitoring requirements of the MRP and the Pretreatment Program. The Pretreatment Program monitoring reports as required in Appendices H-1 and H-2 shall be transmitted to the Pretreatment Program Coordinator.

1. Reduction of Monitoring Frequency

The minimum frequency of Pretreatment Program influent, effluent, and biosolids monitoring shall be dependant on the number of SIUs identified in the Discharger's Pretreatment Program as indicated in Table H-1.

Table H-1: Minimum Frequency of Pretreatment Program Monitoring	
Number of SIUs	Minimum Frequency
< 5	Once every five years
> 5 and < 50	Once every year
> 50	Twice per year

If the Discharger's required monitoring frequency is greater than the minimum specified in Table H-1, the Discharger may request a reduced monitoring frequency for that constituent(s) as part of its application for permit reissuance if it meets the following criteria:

The monitoring data for the constituent(s) consistently show non-detect (ND) levels for the effluent monitoring and very low (i.e., near ND) levels for influent and biosolids monitoring for a minimum of eight previous years' worth of data.

The Discharger's request shall include tabular summaries of the data and a description of the trends in the industrial, commercial, and residential customers in the Discharger's service area that demonstrate control over the sources of the constituent(s). The Regional Water Board may grant a reduced monitoring frequency in the reissued permit after considering the information provided by the Discharger and any other relevant information.

2. Influent and Effluent Monitoring

The Discharger shall monitor for the parameters using the required sampling and test methods listed in **the pretreatment table** of the MRP. Any test method substitutions must have received prior written Executive Officer approval. Influent and effluent sampling locations shall be the same as those sites specified in the MRP.

The influent and effluent samples should be taken at staggered times to account for treatment plant detention time. Appropriately staggered sampling is considered consistent with the requirement for collection of effluent samples coincident with influent samples in Section III.A.3.a(2) of Attachment D. All samples must be representative of daily operations. Sampling and analysis shall be performed in accordance with the techniques prescribed in 40 CFR 136 and amendments thereto. For effluent monitoring, the reporting limits for the individual parameters shall be at or below the minimum levels (MLs) as stated in the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (2000) [also known as the State Implementation Policy (SIP)]; any revisions to the MLs shall be adhered to. If a parameter does not have a stated ML, then the Discharger shall conduct the analysis using the lowest commercially available and reasonably achievable detection levels.

The following report elements should be used to submit the influent and effluent monitoring results. A similarly structured format may be used but will be subject to Regional Water Board approval. The monitoring reports shall be submitted with the Pretreatment Annual Report identified in Appendix H-1.

A) Sampling Procedures, Sample Dechlorination, Sample Compositing, and Data Validation (applicable quality assurance/quality control) shall be performed in accordance with the techniques prescribed in 40 CFR 136 and amendments thereto. The Discharger shall make available upon request its sampling procedures including methods of dechlorination, compositing, and data validation.

B) A tabulation of the test results for the detected parameters shall be provided.

C) Discussion of Results – The report shall include a complete discussion of the test results for the detected parameters. If any pollutants are detected in sufficient concentration to upset, interfere or pass through plant operations, the type of pollutant(s) and potential source(s) shall be noted, along with a plan of action to control, eliminate, and/or monitor the pollutant(s). Any apparent generation and/or destruction of pollutants attributable to chlorination/dechlorination sampling and analysis practices shall be noted.

3. Biosolids Monitoring

Biosolids should be sampled in a manner that will be representative of the biosolids generated from the influent and effluent monitoring events except as noted in (C) below. The same parameters required for influent and effluent analysis shall be included in the biosolids analysis. The biosolids analyzed shall be a composite sample of the biosolids for final disposal consisting of:

A) Biosolids lagoons – 20 grab samples collected at representative equidistant intervals (grid pattern) and composited as a single grab, or

B) Dried stockpile – 20 grab samples collected at various representative locations and depths and composited as a single grab, or

C) Dewatered biosolids - daily composite of 4 representative grab samples each day for 5 days taken at equal intervals during the daily operating shift taken from a) the dewatering units or b) each truckload, and shall be combined into a single 5- day composite.

The USEPA manual, POTW Sludge Sampling and Analysis Guidance Document, August 1989, containing detailed sampling protocols specific to biosolids is recommended as a guidance for sampling procedures. The USEPA manual Analytical Methods of the National Sewage Sludge Survey, September 1990, containing detailed analytical protocols specific to biosolids, is recommended as a guidance for analytical methods.

In determining if the biosolids are a hazardous waste, the Discharger shall adhere to Article 2, "Criteria for Identifying the Characteristics of Hazardous Waste," and Article 3, "Characteristics of Hazardous Waste," of Title 22, California Code of Regulations, sections 66261.10 to 66261.24 and all amendments thereto.

The following report elements should be used to submit the biosolids monitoring results. A similarly structured form may be used but will be subject to Regional Water Board approval. The results shall be submitted with the Pretreatment Annual Report identified in Appendix H-1.

- Sampling Procedures and Data Validation (applicable quality assurance/quality control) shall be performed in accordance with the techniques prescribed in 40 CFR 136 and amendments thereto. The Discharger shall make available upon request its biosolids sampling procedures and data validation methods.

- Test Results – Tabulate the test results for the detected parameters and include the percent solids.

- Discussion of Results – Include a complete discussion of test results for the detected parameters. If the detected pollutant(s) is reasonably deemed to have an adverse effect on biosolids disposal, a plan of action to control, eliminate, and/or monitor the pollutant(s) and the known or potential source(s) shall be included. Any apparent generation and/or destruction of pollutants attributable to chlorination/dechlorination sampling and analysis practices shall be noted.

The Discharger shall also provide a summary table presenting any influent, effluent or biosolids monitoring data for non-priority pollutants that the Discharger believes may be causing or contributing to interference, pass through or adversely impacting biosolids quality.

EXHIBIT D

Public Water Agencies' Comments on the Tentative NPDES Permit Renewal for the Vallejo Sanitation and Flood Control District Wastewater Treatment Plant
November 23, 2011

The San Luis & Delta-Mendota Water Authority, the Metropolitan Water District of Southern California, Westlands Water District, Santa Clara Valley Water District, Tulare Lake Basin Water Storage District, Alameda County Flood Control and Water Conservation District, Zone 7, Coachella Valley Water District, and Alameda County Water District (collectively, "Public Water Agencies") appreciate the opportunity to comment on the tentative renewal of the National Pollutant Discharge Elimination System permit ("Tentative Permit") for the Vallejo Sanitation and Flood Control District's ("VSFCD") Wastewater Treatment Plant ("Treatment Plant").[1]

The VSFCD Treatment Plant provides secondary treatment of wastewater from domestic and commercial sources within the City of Vallejo, the former Mare Island Naval Facility, and an adjacent unincorporated area. The VSFCD discharges wastewater from two points: Discharge Point No. 001, which discharges wastewater into the Carquinez Strait, and Discharge Point No. 002, which discharges wastewater into the Mare Island Strait. The areas of discharge are important for aquatic resources.

The Carquinez and Mare Island Straits connect the Napa River to Suisun Bay and hence San Pablo Bay, a northern extension of San Francisco Bay. The greater San Francisco Bay/Sacramento-San Joaquin River Delta estuary system is referred to as the Bay-Delta estuary, the largest estuary on the United States' Pacific coast. The Bay-Delta estuary and specifically the Napa River provide important habitat to species protected under the federal and State Endangered Species Acts, including Delta smelt and longfin smelt.[2] It is well documented that water quality and aquatic resources within the Bay-Delta estuary are under stress. The populations of both pelagic and anadromous fish have suffered serious decline in recent years.

During wet weather conditions, only flows up to approximately 35 million gallons per day ("MGD") receive secondary treatment. The maximum wet weather capacity of the Treatment Plant, however, is 60 MGD. When wet weather flows exceed 30 MGD, treated effluent is discharged through Discharge Point No. 001 to Carquinez Strait and Discharge Point No. 002 to Mare Island Strait. The discharges to Carquinez Strait may consist of a disinfected blend of primary and secondary treated effluents, while discharges to Mare Island Strait consist of only secondary-treated and dechlorinated effluent. Included in the daily discharge are more than 1,500 pounds of "nutrients," in the form of ammonium (or "ammonia as nitrogen") that VSFCD does not remove or otherwise treat.[3]

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[1] On or about November 23, 2011, the Public Water Agencies filed with the Regional Board a disc that contains copies of material referenced in this comment letter. The Public Water Agencies hereby incorporate into this letter by this reference the material on that disc.

[2] *See* Figures 1 to 4, attached. *See also* Federal Register 58:12854 (Delta smelt listing), Federal Register 59:65256 (Delta Smelt critical habitat designation); Federal Register 76:50447 (Winter-run listing); Federal Register 58:33212 (Winter-run critical habitat designation); Federal Register 76:50447 (Spring-run listing); Federal Register 70:52488 (Spring-run critical habitat designation); Federal Register 76:50447 (Steelhead listing); Federal Register 70:52488 (Steelhead critical habitat designation); Cal. Admin. Code tit. 14, § 670.5 (listing Longfin smelt as threatened).

[3] Pounds of nutrients was calculated based on the permitted Average Dry Weather Capacity of 15.5 MGD and average effluent ammonium-N concentration of 12 mg L-1.

The Public Water Agencies have a significant interest in how the Regional Board regulates the VSFCD. The members of the Public Water Agencies receive water through the California State Water Project ("SWP") and the federal Central Valley Project ("CVP"). The SWP and CVP collect and store water in large reservoirs in northern California for use throughout the State. After water is released from reservoirs, the water flows to the Delta. From there, water is pumped and conveyed for use by more than 2 million acres of prime farmland and some 25 million Californians living in two-thirds of the state's households. To date, regulators have largely responded to the stress to water quality and aquatic resources by regulating the SWP and CVP and restricting the water available to the members of the Public Water Agencies. These restrictions have had a direct and severe adverse impact on the ability of the members of the Water Agencies to serve the people who depend on SWP and CVP water.

Unfortunately, while the focus on water users has resulted in great hardship, it has not led to real improvements in either water quality or aquatic resources. To the Public Water Agencies, this has not been a surprise. Federal and state agencies have long recognized that nutrient loadings seriously impact water quality and aquatic life.[4] Although it has long been thought that the Bay-Delta Estuary was not vulnerable to nutrient impacts, that is no longer the case.

The VSFCD's discharge of more than 275 tons per year of nutrients (specifically ammonium) is significant. It discharges into areas inhabited by endangered and threatened species, including the Delta smelt and longfin smelt. In fact, as demonstrated in Figures 1 to 4, attached hereto, the VSFCD discharges into an area where a substantial portion of the Delta smelt and longfin smelt populations are found or travel through. The California Department of Fish and Game prepared Figures 1 to 4. Using the data from monitoring studies of postlarval-juvenile Delta and longfin smelt, the Figures depict the distribution and relative abundance of those species throughout the historical spring range, which includes portions of San Pablo Bay and Napa River. Overwhelming scientific literature, grounded in sound science, demonstrates the impact to the Delta smelt and longfin smelt caused by nutrient discharges from the VSFCD Treatment Plant, in concert with discharges from other publicly owned treatment works (including Sacramento Regional County Sanitation District ("SRCSD") and Central Contra Costa Sanitary District).

Indeed, writings by Regional Board staff have publically acknowledged the scientific evidence that establishes the nexus between nutrient discharges and impacts on aquatic life. On June 4, 2010, the Regional Board submitted a letter to the Central Valley Regional Water Quality Control Board citing published studies that document the impacts of ammonium in Suisun Bay and urging the Central Valley Regional Board to take all necessary actions to ensure beneficial uses in Suisun Bay are fully protected.[5] Since Carquinez and Mare Island Straits connect the Napa River to Suisun Bay and San Pablo Bay, nutrient discharges in the Carquinez and Mare Island Straits are also relevant to water quality in Suisun Bay and San Pablo Bay.

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[4] According to U.S. EPA: "Nutrient pollution, especially from nitrogen and phosphorus, has consistently ranked as one of the top causes of degradation in some U.S. waters for more than a decade. Excess nitrogen and phosphorus lead to significant water quality problems including harmful algal blooms, hypoxia and declines in wildlife and wildlife habitat. Excesses have also been linked to higher amounts of chemicals that make people sick." http://water.epa.gov/scitech/swguidance/standards/criterialnutrients/.

[5] San Francisco Bay Regional Water Quality Control Board letter from Bruce H. Wolfe, Executive Officer, to Kathy Harder, Central Valley Regional Water Quality Control Board re Comments on "Issue Paper - Aquatic Life and Wildlife Preservation Related Issues - Proposed NPDES Permit Renewal for Sacramento Regional County Sanitation District Sacramento Regional Wastewater Treatment Plant" June 4, 2010.

For all of these reasons, nutrient discharges are impairing water quality and designated beneficial uses of receiving waters. They are devastating the food web.

In spite of these harms, the Tentative Permit would allow the VSFCD to not only continue to discharge, but to increase its discharge by 48 percent from a current average dry weather flow of 10.5 million gallons per day, Tentative Permit at p. F-4, to a future average dry weather flow of 15.5 million gallons per day. Tentative Permit at 8. It would also effectively provide the VSFCD a new point source for discharge, by allowing the VSFCD to shift discharges during normal operations from the Carquinez Strait (Discharge Point No. 001) to Mare Island Strait (Discharge Point No. 002).[6] It is inconsistent with the law and good public policy to proceed in this manner. The Public Water Agencies urge the Regional Board to undertake a different course of action.

1. The Regional Board should revise the Tentative Permit to expeditiously provide for nitrification of the discharge to remove ammonium. Further interim limits should be set that restrict the discharge while treatment is designed and built. In addition, the Regional Board and VSFCD should conduct studies addressing the impact of nutrient discharges on the Napa River and Carquinez Strait and should evaluate whether denitrification should also be required.

2. In the alternative, if the Regional Board is convinced that further study is needed before requiring nutrient removal, the Public Water Agencies urge the Regional Board to expedite (consistent with good scientific practice) the completion of necessary studies, but defer issuing this Permit until that work is completed and published, so the Regional Board may consider those data and analyses. Further studies should include more comprehensive monitoring of ammonium and other nutrient constituents at the two discharge locations.

3. Lastly, if the Regional Board determines it must proceed with a permit now, the Public Water Agencies urge the Regional Board to include a detailed framework in the final permit that includes (a) a schedule for promptly conducting necessary studies, with a plan for funding, (b) a clear procedure for reconsideration of the ammonium issue, with full public participation in the process, and (c) interim limits consistent with the actual maximum concentrations of ammonium in VSFCD discharges.

I. The Tentative Permit Does Not Address the Significant Uncontrolled Discharge of Ammonia-Nitrogen From the VSFCD Wastewater Treatment Plant

The Public Water Agencies' concern with the Regional Board's Tentative Permit is grounded in one irrefutable fact well known to the Regional Board: On average the VSFCD Treatment Plant discharges more than 1,500 pounds of untreated ammonium in its wastewater every day.

[6] The Regional Board, if it were to permit the discharge into Mare Island Strait (Discharge Point No. 002), would violate legal principles establish in *Friends of Pinto Creek v. United States Environmental Protection Agency,* 504 F.3d 1007 (9th Cir. 2007) (holding the NPDES regulations prohibit permitting of a new source to an impaired waterbody absent a TMDL with a very specific waste load allocation).

VSFCD discharges directly into the Carquinez and Mare Island Straits. Those Straits connect the Napa River to Suisun Bay and thence to San Pablo Bay, a northern extension of San Francisco Bay. The greater San Francisco Bay/Sacramento-San Joaquin River Delta estuary system is referred to as the Bay-Delta estuary, the largest estuary on the United States' Pacific coast. Species protected under the federal and state Endangered Species Acts inhabit those areas. *See* footnote 3; Tentative Permit, at 5. Given the expansive view of federal and state agencies of the need to protect listed species, one would expect the Tentative Permit to directly address the ammonium in VSFCD's discharge in its Tentative Permit.

Yet, the Regional Board's Tentative Permit would not limit the ammonium in the VSFCD's discharge. In contrast, many other municipal wastewater treatment plants in central California that discharge into waters that feed into the Bay-Delta estuary and its tributaries have stepped up and made the investments (or been required to make the investments) needed to install treatment technology that would remove ammonium. These plants are listed in Table 1 hereto.[7] Thus, if required to bring its treatment up to date, VSFCD would not be singled out to invest in new or unproven technology.

II. VSFCD's Significant Uncontrolled Discharge of Ammonium May Adversely Affect Beneficial Uses of Waters of this State and the United States

In the Tentative Permit, the Regional Board staff has not discussed the substantial available evidence linking nutrient discharges to significant impacts on aquatic life. The full body of research and scientific literature already available demonstrates that full ammonium removal should be applied to VSFCD. At a minimum, the Public Water Agencies request that the Regional Board carefully consider that evidence before deciding whether to allow the continued discharge of untreated "nutrients" into the Carquinez and Mare Island Straits.

In fact, the overwhelming data and scientific literature demonstrate that nutrients discharged directly to the Bay-Delta estuary, including areas of great importance to threatened and endangered species, such as Carquinez and Mare Island Straits, are likely causing toxic effects on aquatic species and contributing to the altering of the aquatic food web – the foundation of the entire Bay-Delta estuary. These impacts to the beneficial uses of waters of this State and the United States require a far more vigorous evaluation and response by the Regional Board than that proposed in the Tentative Permit.

That untreated nutrients cause serious impacts on aquatic life is not a novel proposition, as detailed here and in the enclosed Technical Memorandum collecting and summarizing the recent nutrient research. See Water Agencies' Technical Memorandum (November 22, 2011), Attachment 1 hereto. Indeed, among other work, the Memorandum highlights the most recent work done by Dr. Patricia Glibert, et al.[8] Dr. Glibert's latest paper analyzes comparable

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[7] *See also* West Yost Associates, Wastewater Control Measures Study (March 2011), available at http://www.swrcb.ca.gov/rwgcbSlwaterissues/drinkingwaterpolicy/dwpwastewtrcntrlmeasstdy.pdf. This report, prepared for the Central Valley Regional Board, lists 26 treatment plants that are currently achieving nutrient removal and nine additional plants that are required by current NPDES permits to achieve this standard of treatment.

[8] Dr. Glibert is an aquatic ecologist and nutrient bio-geochemist with over 30 years of experience working on issues related to nutrient loading, nutrient ratios, eutrophication, changes in trophic dynamics, harmful algae, and management implications of nutrients loading all over the world. She has a Ph.D. from Harvard University and was awarded an honorary doctorate degree from Linnaeus University, Sweden earlier this year. She has studied and published widely on nutrients and food web dynamics in systems covering phytoplankton nutrient uptake and

ecosystems and demonstrates that the fact that nutrient loadings materially impact the food web is well established by stoichiometric analysis of data from systems across the United States and around the world. This and other existing literature provide ample support for the Regional Board to take action now to restrict the discharge of untreated nutrients.

Indeed, in addition to the literature and research outlined in the Technical Memorandum, the Public Water Agencies and/or their members have previously provided comments in other proceedings which further detail how ammonium is harming aquatic species in the Bay-Delta estuary and altering the aquatic food web including the following:

1. Water Agencies' Response to Discharger's Petition For Review, In the Matter of the Sacramento Regional County Sanitation District's Petition for Review SWRCB/OCC File Nos. A-2144(a) and A-2144(b) (Consolidated) (May 4 and 6, 2011);

2. San Luis & Delta-Mendota Water Authority and State Water Contractors Comments on U.S. Environmental Protection Agency ("U.S. EPA") Advanced Notice of Proposed Rulemaking Regarding Water Quality Challenges in the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, Docket No. EPAR09-0W-210-0976, 76 Federal Register 9709, February 22, 2011 (April 21, 2011);

3. Westlands Water District's Comments on EPA Advanced Notice of Proposed Rulemaking Regarding the Water Quality Challenges in the San Francisco Bay/Sacramento-San Joaquin Delta Estuary 76 Federal Register 9709 (February 22, 2011) Docket Number: EPA-R09-0W-201O-0976 (April 25, 2011);[9]

4. Proposed NPDES Permit Renewal and TSO, Sacramento Regional County Sanitation District, Water Agencies' Testimony before Central Valley Regional Water Quality Control Board Meeting (December 9, 2010) (Water Agencies' Testimony);

5. Comments of the Water Agencies on the Tentative Waste Discharge Requirements Renewal for the Sacramento Regional County Sanitation District Sacramento Regional Wastewater Treatment Plant (Oct. 8. 2010);

6. Comments of Westlands Water District (Westlands) and the San Luis & Delta-Mendota Water Authority (Authority) on Tentative Waste Discharge Requirements Renewal (NPDES Permit No. CA0077682) for Sacramento

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photosynthesis, nutrient excretion by zooplankton, harmful algal physiology, nutrient preferential use by phytoplankton taxa, eutrophication, and global nutrient modeling. Her field investigations span the globe - including the Chesapeake Bay, Long Island Sound, Florida Bay, Australia, Brazil, the Baltic Sea, East China Sea, Kuwait Bay, Gulf of Oman, and Hong Kong coastal waters, as well as many other sites, including San Francisco Bay Delta. She serves as the co-chair of the U.S. National HAB Committee, chair of the committee on eutrophication for the international GEOHAB Programme, and co-chair of the international SCORILOICZ Working Group on HABs and Eutrophication. She has consulted with the governments of Kuwait and Oman on issues related to nutrient pollution, served as an independent advisor to the Chinese Academy of Sciences on their studies of eutrophication, served on numerous panels and advisory boards related to nutrient management for the federal government and the states of Florida and Maryland.

[9] http://www.regulations.gov/#!documentDetail:D=EPA-R09-0W -2010-0976-0037.

Regional County Sanitation District, Sacramento Regional Wastewater Treatment Plant (Oct. 8, 2010);

7. San Luis & Delta-Mendota Water Authority and State Water Contractors Comments on Draft Report Titled "Nutrient Concentrations and Biological Effects in the Sacramento-San Joaquin Delta" (June 14, 2010);[10]

8. Water Agencies' Comments on Aquatic Life and Wildlife Preservation Issues Concerning the Sacramento Regional Wastewater Treatment Plant NPDES Permit Renewal (June 1, 2010).[11]

The Public Water Agencies hereby incorporate by reference into this letter the arguments, analysis, data and scientific literature cited and described in those comments. *See* footnote 2 above.

Among other things, the research outlines four basic scientific propositions:

1. Excessive ammonium has been shown to be toxic to copepods

Recent studies indicate that ammonium at concentrations present in the Bay-Delta estuary is acutely toxic to copepods central to the food web that supports aquatic life, including the threatened Delta smelt. See Technical Memorandum at 7. Specifically, Dr. Swee Teh (and colleagues) at the University of California at Davis[12] have completed a variety of studies on the effects of ammonium on the native copepods *Eurytemora affinis* and *Pseudodiaptomus forbesi.*[13] Dr. Teh found ten percent mortality occurred in invertebrate species exposed to ammonia

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[10] San Luis & Delta Mendota Water Authority and State Water Contractors letter to Dr. Chris Foe, Central Valley Regional Water Quality Control Board re Comments on Draft Report Titled "Nutrient Concentrations and Biological Effects in the Sacramento-San Joaquin Delta." June 14,2010.

[11] Water Agencies letter to Ms. Kathleen Harder, Central Valley Regional Water Quality Control Board re Comments on Aquatic Life and Wildlife Preservation Issues Concerning the Sacramento Regional Wastewater Treatment Plant NPDES Permit Renewal. June 1, 2010.

[12] Dr. Teh is a Ph.D in Comparative Pathology and a Research Toxicologist and Pathologist in the Department of Anatomy, Physiology, and Cell Biology at the University of California - Davis. He serves as the Interim Director of the Aquatic Toxicology Laboratory at the UC-Davis School of Veterinary Medicine, and is a UC-Davis Faculty Member for the Graduate Group in Ecology, the Center for Aquatic Biology and Aquaculture, the Center for Health and the Environment, and the John Muir Institute of Environment. Dr. Teh conducted his work under the auspices of the Central Valley Regional Water Quality Control Board.

[13] The relevant research and related writings include Dr. Teh's presentation at the Ammonia Summit sponsored by Central Valley Regional Water Board http://www.waterboards.ca.gov/centralvalley!water issues/delta water quality/ambient ammonia concentrationslindex.shtml (August 18-19,2009) ("Teh Presentation") {also provided with these comments as an attachment to the Declaration of Dr. Swee Teh (May 4, 2011) ("Teh Decl."); Werner, et al., Pelagic Organism Decline (POD): Acute and Chronic Invertebrate and Fish Toxicity Testing in the Sacramento San Joaquin Delta 2008-2011, Final Report Submitted to the California Department of Water Resources (July 24, 2010), (http://www.science.calwater.ca.gov/pdf/workshopsiPOD/ Werner'l1020et%20al 2010 POD2008-2010 Final%20Report.pdf) (also at Teh Decl. Exhibit 3); Full Life-Cycle Bioassay Approach to Assess Chronic Exposure of P. forbesi to Ammonia/Ammonium to the Delta Pelagic Organism Decline Contaminants Work Team (July 6, 2010) Teh Decl. Exhibit 4; Letter from S. Teh to C. Foe (November 10, 2010) Teh Decl. Exhibit 5; S. Teh, et al., Final Report, Full Life-Cycle Bioassay Approach to Assess Chronic Exposure of *Pseudodiaptomusforbesi* to Ammonia/Ammonium - Submitted to C. Foe and M. Gowdy (March 4, 2011) Teh Decl. Exhibit 6.

concentrations present in the Sacramento River using a 96-hour toxicity test.[14] Dr. Teh has likewise conducted life cycle tests to assess the impacts of different concentrations of ammonium on the ability of the copepod to reproduce and thrive. Dr. Teh found that total ammonia impacted adult *P. forbesi* reproduction at concentrations greater than or equal to 0.79 mg L^{-1}, while nauplii and juveniles are affected at concentrations as low as 0.36 mg L^{-1}.[15] This level of ammonium is exceeded all the time in VSFCD effluent samples. *See* Figure 5. Dr. Teh repeated the life cycle testing and confirmed his results, which he provided to the Central Valley Regional Board.[16] The toxic effect of total ammonia is a major stressor on aquatic life that has a pervasive impact across the Bay-Delta estuary.

2. The excess ammonium is inhibiting nitrogen uptake by diatoms and reducing diatom primary production in the Bay-Delta

In addition to toxic effects, the ammonium loadings are disrupting the food supply by inhibiting nitrogen uptake by diatoms in the Bay-Delta estuary. The phytoplankton that form the base of the food web are essential to a healthy aquatic ecosystem. Primary consumers, including copepods (such as *P. forbesi*) rely on that primary production by phytoplankton as their main source of food, which, in turn, serves as a food source for other aquatic life. In recent research, Dr. Richard Dugdale and others have found that excessive ammonium from wastewater treatment plant discharges is inhibiting nitrogen uptake by diatoms and contributing to reduced diatom production in the Bay-Delta estuary.[17] *See* Technical Memorandum at 1; Taberski, Dugdale, et al., SWAMP Monitoring Plan 2011-2012, *San Francisco Bay Region Work Plan; Monitoring Spring Phytoplankton Bloom Progression in Suisun Bay* at 1 (Dec. 2010) ("Work Plan"). at 1-3.[18]

Indeed, as the Work Plan acknowledges, Dr. Dugdale has found that at an ammonium concentration of 4 µmol L^{-1},[19] nitrate uptake is fully inhibited. Work Plan at 2-3. This level of ammonium is exceeded nearly all the time in Carquinez Strait, at the VSFCD receiving water monitoring location in the lower Napa River, and in VSFCD effluent samples, as demonstrated in Figures 5, 6 and 7 presenting ammonium monitoring data for the three locations. The

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[14] Werner, et al., *supra;* Teh Presentation, *supra.* Dr. Teh was unfairly criticized that his initial testing did not apply a representative average pH. This criticism was not valid, as Dr. Teh's first test was within the range found in the River 20 percent of the time. Nonetheless, Dr. Teh repeated his analysis and again observed that comparable toxic effects occurred at a pH of 7.8. Teh, S. et al., August 31, 2011 Final Report to C. Foe, *supra.*

[15] Teh, S. Full Life-Cycle Bioassay Approach, *supra* (Teh Decl. Exhibit 4).

[16] Teh, S. et al., Final Report to C. Foe, *supra* (August 31, 2011 Report).

[17] *See e.g.,* Parker, A.E., A.M. Marchi, J. Drexel-Davidson, R.C. Dugdale, and F.P. Wilkerson. " Effect of ammonium and wastewater effluent on riverine phytoplankton in the Sacramento River, CA. Final Report to the State Water Resources Control Board; Wilkerson, F.P., R.C. Dugdale, V.E. Hogue and A. Marchi, 2006. Phytoplankton blooms and nitrogen productivity in San Francisco Bay, Estuaries and Coasts 29(3): 401-416; Dugdale, R.C., F.P. Wilkerson, V.E. Hogue and A. Marchi. 2007. The Role of ammonium and nitrate in spring bloom development in San Francisco Bay. *Estuarine. Coast and Shelf Science* 73: 17-29 ; Sommer, T., C. Armor, R. Baxter, R. Bruer, L. Brown, M. Chotkowski, S. Culberson, F. Feyrer, M. Gingras, B. Herbold, W. Kimmerer, A. Mueller-Solger, M. Nobriga and K. Souza. 2007. The Collapse of Pelagic Fishes in the Upper San Francisco Estuary, *Fisheries* 32(6):270-277; Glibert, P. 2010a. "Long-term changes in nutrient loading and stoichiometry and their relationships with changes in the food web and dominant pelagic fish species in the San Francisco Estuary, California," *Reviews in Fisheries Science.* 18(2):211 - 232.

[18] http://www.swrcb.ca.gov/water_issues/programs/swamp/docs/workplans/1112rb2wp.pdf.

[19] An ammonium concentration of 4 µmol L^{-1} is equivalent to 0.056 mg L^{-1}.

monitoring locations are indicated on the map in Figure 8. *See* Figures 5-8, attached hereto. While the additional research by Ms. Taberski and Dr. Dugdale outlined in the Work Plan will provide additional useful information to supplement the body of knowledge of how ammonium inhibits primary productivity, existing data amply document the effects of nutrient discharges like those from VSFCD sufficient to require nutrient removal. At a minimum, as noted, the Regional Board should consider carefully these recent studies, before deciding whether to allow VSFCD to continue to discharge more than 1,500 pounds of nutrients into Carquinez Strait every day.

3. Nutrient discharges into the Bay-Delta estuary are contributing to a shift in algal communities by changing the nutrient ratios to favor harmful, invasive species

Further, the research of Dr. Glibert and others demonstrates that ammonium discharges have adversely impacted aquatic life in the Bay-Delta estuary by increasing the ratio of nitrogen to phosphorus in the receiving water which triggers impacts to the food web on which aquatic life depends. Increasing ammonium discharges, particularly when phosphorus discharges have been declining, degrades water quality by changing the ratio between dissolved inorganic nitrogen and phosphorus, as well as the total nitrogen to total phosphorus ratio. These ratios are known to have profound influences on food webs.[20] Dr. Glibert's research strongly suggests that changes in Delta smelt and several other fish species' abundance are ultimately related to changes in ammonium load from wastewater discharges. Dr. Glibert concluded that "[r]emediation of pelagic fish populations should be centered on reduction of nitrogen loads and reestablishment of balanced nutrient ratios delivered from point source discharges."[21] *See* Technical Memorandum at 3-4.

4. Where implemented in impacted ecosystems, nutrient removal has improved the natural ecosystem and aquatic life

Requiring nitrification and denitrification of wastewater treatment plant effluent would help restore the health of the ecosystem and aquatic life in the Bay-Delta estuary. Again, the literature is clear that requiring nutrient removal on wastewater treatment plants has proven to be effective at reversing the harmful effects of previously undertreated discharges and restoring native ecosystems. As just one example that is discussed in Dr. Glibert's work, nutrient removal at the Blue Plains treatment plant in Washington D.C. has reduced the invasive species and begun to restore the native vegetation in the Potomac River, which flows into the Atlantic coast's largest estuary, Chesapeake Bay. Once nutrient removal was implemented at Blue Plains in the 1990s, within several years, the abundance of the invasive *Hydrilla* began to decline and the abundance of native grasses increased. There are many other examples in other systems. *See* Technical Memorandum at 4-5.

To reiterate: The Public Water Agencies submit that the existing literature amply documents the effects of nutrient discharges like those from VSFCD sufficient to require treatment. At a minimum, before issuing any permit to VSFCD, the Regional Board should consider carefully

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[20] Sterner, R. W. and J.J. Elser. 2002. Ecological stoichiometry: The biology of elements from molecules to the biosphere. Princeton University Press, Princeton, N.J. Sterner and Elser (2002), state that, "Stoichiometry can either constrain trophic cascades by diminishing the chances of success of key species, or be a critical aspect of spectacular trophic cascades with large shifts in primary producer species and major shifts in ecosystem nutrient cycling."

[21] Glibert, P. 2010a.

these studies, as the Central Valley Regional Board did in deciding to impose full nutrient removal on the SRCSD Treatment Plant.

III. The Regional Board's Consideration of Ammonium in the Tentative Permit is Incomplete and Contrary to Law

The Regional Board considers ammonium (referred to as total ammonia as N) essentially in two ways. First, the Regional Board evaluates whether the ammonium in VSFCD's discharge has the reasonable potential to exceed a water quality objective and if so, whether a water quality based effluent limit is required. Second, after setting the limits, the Regional Board determined that state and federal Antidegradation Policy and anti-backsliding requirements are met, because no previous permit included any limits. Neither analysis appears to be correct.

A. The Regional Board's application of a dilution factor is flawed and should be reconsidered

The Public Water Agencies are concerned that the Regional Board staff has erred in its application of a dilution factor to set effluent limits for ammonium. As the Tentative Permit acknowledges, the applicable Basin Plan has Water Quality Objectives for un-ionized ammonia of 0.025 mg/L (annual median) and 0.16 mg/L (maximum). Tentative Permit, Attachment F at F-25. As the un-ionized component of total ammonia is only a small fraction of the total discharge, these are then converted to total ammonia objectives of 4.9 mg/L (acute) and 1.7 mg/L (chronic). Tentative Permit, Attachment F at F-26. Given that the measured effluent concentration for ammonium consistently exceeds these levels, there unquestionably is a reasonable potential to exceed these objectives. *See* Figure 5. However, the Tentative Permit proceeds to allow a substantial dilution for total ammonia to set the effluent limits by apparently relying on the "Mixing Zone Study." If so, that would be inappropriate for several reasons:

First, the staff acknowledges the inability to set a Mixing Zone.

> Because of the complex hydrology of San Francisco Bay, a mixing zone has not been established. There are uncertainties in accurately determining an appropriate mixing zone. The models used to predict dilution have not considered the three dimensional nature of San Francisco Bay currents resulting from the interaction of tidal flushes and seasonal fresh water outflows. Being heavier and colder than fresh water, ocean salt water enters San Francisco Bay on a twice-daily tidal cycle, generally beneath the warmer fresh water that flows seaward. When these waters mix and interact, complex circulation patterns occur due to the varying densities of the fresh and ocean waters. The complex patterns occur throughout San Francisco Bay, but are most prevalent in the San Pablo, Carquinez Straight, and Suisun Bay areas. The locations of this mixing and interaction change, depending on the strength of each tide. Additionally, sediment loads from the Central Valley change on a long-term basis, affecting the depth of different parts of San Francisco Bay, resulting in alteration of flow patterns, mixing, and dilution at the outfall.

Tentative Permit, Attachment F, at F-23 to F-24. In fact, the Mixing Zone Study specifically emphasizes that the complexities are greatest in the vicinity of the VSFCD discharge to the Carquinez Straight. Given that, it would be wholly illogical for the Regional Board to then go

ahead and apply a full dilution factor for ammonia to the VSFCD discharge and establish limits substantially greater than the maximum concentration observed.

Nonetheless, second, the staff proposes that dilution be applied to ammonia. However, in doing so, the staff relies on a provision of the Basin Plan that may apply to *ammonia* but that is not applicable to the more than 275 tons of *ammonium* that are present in the discharge from the VSFCD each year. Specifically, the staff asserts as follows:

> For *ammonia*, a conservative estimated actual initial dilution was used to calculate the effluent limitations. This is justified because *ammonia*, a non-persistent pollutant, quickly disperses and degrades to a non-toxic state, and cumulative toxicity effects are unlikely. In the Mixing Zone Study Report (Vallejo Sanitation and Flood Control District, 2011), the Discharger developed dilution estimates for the Facility's discharges from Discharge Point Nos. 001 and 002....[T]his Order establishes the more conservative dilution of 26:1 to achieve compliance with water quality objectives.

Tentative Order, Attachment F at F-24 (emphases added). However, the Basin Plan discussion that the staff has relied on in the Tentative Order is referring to the small *"un-ionized"* fraction of ammonia, *not* the *ammonium* that is the nutrient of concern in the VSFCD discharge. *See* Basin Plan, § 3.3.20 at 3-7. As the literature demonstrates – including the work by Dr. Glibert and by Dr. Dugdale and others – it is the *ammonium* that is causing real, demonstrable impacts on primary productivity in the Bay-Delta environment. Unlike un-ionized ammonia, ammonium does not quickly disperse and degrade to a non-toxic state. As such, and consistent with the clear direction in the Basin Plan that the "complex patterns" near the discharge point are not appropriate to establish a mixing zone, no dilution should be applied to ammonium.

Third, the Basin Plan cautions against application of dilution in light of various concerns, including the difficulty in measuring the discharge in a tidal zone, Basin Plan, § 4.6.1.1 at 4-18, precisely where the VSFCD discharge is located. It further states that it would "consider inclusion of an effluent limitation greater than that calculated from water quality objectives when the increase in concentration is caused by implementation of significant water reclamation or water reuse programs at the facility; the increase in the effluent limitations does not result in an increase in the mass loading; and the water quality objectives will not be exceeded outside the zone of initial dilution." Basin Plan, § 4.6.1.1 at 4-18. But no such findings or analyses have been completed here.

Further, fourth, the Basin Plan also cautions against relying on modeling when evaluating a discharge in an estuarine environment because models are limited to the initial dilution analysis. This includes U.S. EPA models like that relied on by the discharger here. *See* Mixing Zone Study Report, Vallejo Sanitation and Flood Control District, Prepared For: RMC Water and Environment Oakley Water Strategies, Prepared By: LimnoTech Ann Arbor, Michigan (March 22, 2011) (uses U.S. EPA "Visual Plumes" model). Specifically, according to the Basin Plan, "the direction of waste transport varies over the course of the tidal cycle, so it is difficult to determine the fraction of new water versus recirculated water mixing with the discharge. U.S. EPA has developed several models of initial dilution for discharge plumes, *but none takes into account transport due to tidal currents.*" Basin Plan, § 4.6.1.1 at 4-18. Indeed, here, while the Mixing Zone Study Report claims to use an equation (the "Brooks algorithm") to assess far-field

dilution, no specific data or calculations are presented in the Report showing those results; only the "initial dilution" is described, precisely the concern raised in the Basin Plan.

Finally, fifth, regardless, the analysis of ammonia and dilution is entirely divorced from the overwhelming body of literature and data outlined in and provided with these comments. In fact, as outlined, the data demonstrate that the concentration of ammonium (or total ammonia as N) is consistently exceeding the inhibitory threshold for primary productivity and contributing to the exceedance of toxicity levels for copepods. That suggests the proposed dilution is not the "conservative approach to calculating effluent limitations" required by the Basin Plan. Basin Plan, § 4.6.1.1 at 4-18. Instead, those data must be considered carefully and fully by the Regional Board before deciding that the tons of "nutrients" that the VSFCD and other point sources discharge into the Bay-Delta and habitat used by endangered and threatened species will simply be "diluted" away.

B. The Regional Board's analysis of Anti-degradation Policy compliance with regard to ammonia is contrary to established principles of law

California's Antidegradation Policy is summarized by a 1990 Administrative Procedures Update ("APU") from the State Board, which was meant to "provide guidance for the Regional Boards for implementing State Board Resolution No. 68-16...and the Federal Antidegradation Policy, as set forth in 40 C.F.R. § 131.12." APU 90-04, (July 1, 1990) at p. 1. As such, the APU is designed to help the Regional Boards implement both federal policy, 40 C.F.R. § 131.12, and the State Board's Antidegradation Policy, Resolution No. 68-16.

For high quality waters, Resolution 68-16 mandates that the water quality must be maintained unless the discharger can prove that lowering the water quality: (1) will provide "maximum benefit" to the state; (2) will not impair present or anticipated beneficial uses of the receiving water; and (3) will not violate water quality objectives. Additionally, discharges that increase the volume or concentration of waste in high quality waters must comply with discharge limits based on the "best practicable treatment or control" ("BPTC") which ensures that no pollution or nuisance will occur and that the highest water quality will be maintained.

If approved, the Tentative Permit would violate federal and state Antidegradation Policy by allowing degradation of receiving waters due to ammonium discharge. The Treatment Plant's actual current discharge is 10.5 MGD.[22] The Tentative Permit would allow that discharge to physically increase by nearly 48 percent to 15.5 MGD.[23] Although the Treatment Plant's existing discharge already has violated its permit due to ammonia toxicity,[24] the Tentative Permit has not proposed ammonium removal. By allowing at least a 48 percent increase in the discharge of ammonia, the Tentative Permit would allow increasing degradation of receiving waters. Those receiving waters are habitat occupied by threatened Delta smelt, other pelagic organisms and the plankton community comprising the foundation of the food web sustaining all these species. *See* Figures 1 to 4. If VSFCD's requested Permit were granted, VSFCD would not just further degrade listed species habitat and harm Delta smelt and other pelagic species. In so doing, it would also further jeopardize the largest single source of fresh water supply in all California.

[22] Average dry weather flow. *See* Tentative Permit at p. F-4.

[23] See Tentative Permit at 8.

[24] *See* Tentative Permit at F-7 (describing acute toxicity violations resulting in Notice of Violation).

Before the Regional Board can issue, reissue, amend, or revise such a discharge permit, however federal and state Antidegradation Policy requires the Regional Board to determine that permit conditions result in BPTC and to determine whether any water quality degradation that will result is permissible when balanced against the benefit to the public from issuing the permit. Here, the Tentative Permit makes no findings with respect to BPTC and the balancing of water quality degradation against any public benefit from allowing degradation.[25] The Tentative Permit discloses no analysis showing how the degradation of receiving water quality from the continuation of the existing 10.5 MGD discharge level, and how the additional degradation from allowing a 48 percent increase in that discharge to 15.5 MGD complies with the Antidegradation Policy. Nowhere does the Tentative Permit show a complete and legally adequate analysis of compliance with the Antidegradation Policy for this discharge.

To the extent that VSFCD might contend that some aspect of the required analysis is addressed in some unspecified, prior discharge permit or California Environmental Quality Act ("CEQA") documentation approved by the VSFCD, it is important to understand that substantially changed circumstances and significant new information prevent reliance on any prior permit or CEQA review to support the Tentative Permit. The pelagic organism decline and scientific evidence that ammonium discharges harm the Bay-Delta estuary and its food web would prevent reliance on any prior permit or CEQA document to help support the analysis and determination of compliance with the Antidegradation Policy that is required before VSFCD's new discharge permit may be approved.

The Regional Board must work with VSFCD to complete a legally adequate analysis and then circulate a revised Tentative Permit which demonstrates compliance with the Antidegradation policy, including ammonium effluent limits that achieve BPTC. Failure to do so will result in approval of an unlawful permit that degrades receiving water quality, violates water quality objectives, impairs designated beneficial uses – all in violation of state and federal water quality protection law.

IV. The Regional Board Should Take Affirmative Steps to Control the Ammonium in the VSFCD Discharge

A. The Regional Board should require VSFCD to install nitrification treatment

In view of the scientific evidence, the Regional Board should require VSFCD to reduce to acceptable levels the nutrients in its discharge. The Regional Board should set final effluent limits that are achievable with full nitrification treatment, as well as a reasonable schedule for designing and building the treatment system. Further, daily and monthly interim effluent limits for ammonium (ammonia as N) should be set that reflect the real daily and monthly maximum effluent concentrations that have been observed in the discharge, with a modest margin for compliance. The Regional Board and VSFCD should also conduct studies addressing the impacts of nutrient discharges on the Napa River and Carquinez Strait and evaluate whether denitrification should also be required.

[25] *See* Tentative Permit at F-31.

There are well established technologies available to VSFCD to remove nutrients, as evidenced by the many other municipalities in California and across the country that have implemented ammonium removal through the "nitrification" of the wastewater. *See* discussion, *supra*.

Unquestionably, this is a feasible technology that has previously been determined to satisfy BPTC under California law.[26]

B. The Regional Board should defer issuing the Tentative Permit until studies on the effects of nutrients in VSFCD's discharge are completed

In the alternative, if the Regional Board is convinced that further study is needed before requiring nutrient removal, the Public Water Agencies urge the Regional Board to expedite (consistent with good scientific practice) the completion of necessary studies. This would include completing the Work Plan and its examination of water quality issues in Suisun Bay and expanding that work to encompass the Carquinez and Mare Island Straits. However, the Regional Board should defer issuing this Permit until that work is completed and published, so the Regional Board may consider those data and analyses. Further studies should include more comprehensive monitoring of ammonium and other nutrient constituents at the two discharge locations.

Given the focus of recent studies and the recognized concerns about how the ammonium discharge can impair the primary productivity in the Bay-Delta estuary, proceeding to finalize the permit without either nitrification or considering fully the latest analyses is unreasonable. Specifically, among other objectives, the Regional Board Work Plan is designed to further assess whether "high ammonium concentrations in Suisun Bay correlate with low primary production." Work Plan, Attachment at 2. As the Work Plan acknowledges, the data gathered to date has found that "an additional ammonium signal was detected in the western part of Suisun that may play a role in controlling phytoplankton blooms in Suisun Bay." Work Plan at 4. Thus, these additional data may inform necessary steps to protect Carquinez and Mare Island Straits and Suisun Bay.

C. Alternatively, if the Regional Board is intent on finalizing a permit now, the final permit should at a minimum be revised to address ammonium more effectively

If the Regional Board determines it must proceed with a permit now and is not prepared to require full nitrification, then the Public Water Agencies urge the Regional Board to include a detailed framework in the final permit to address ammonium. The framework should include three components:

First: The Regional Board should make specific findings in the permit regarding its concern that the ammonium in VSFCD's discharge may be contributing to nutrient impairment in the Napa River and to impacts below Suisun Bay in Carquinez and Mare Island Straits, and that therefore it is in the process of implementing studies to evaluate those concerns. The permit should then

[26] A number of municipal sanitations districts have also been required to install "denitrification" treatment which follows nitrification to further treat the wastewater by removing the nitrates from the discharge. In the case of Sacramento Regional, the Water Agencies believe the evidence strongly supported the Central Valley Board's decision to require that additional treatment given the available data concerning that discharge. Here, as the Regional Board develops additional data regarding VSFCD's discharge, it should consider whether denitrification should also be included.

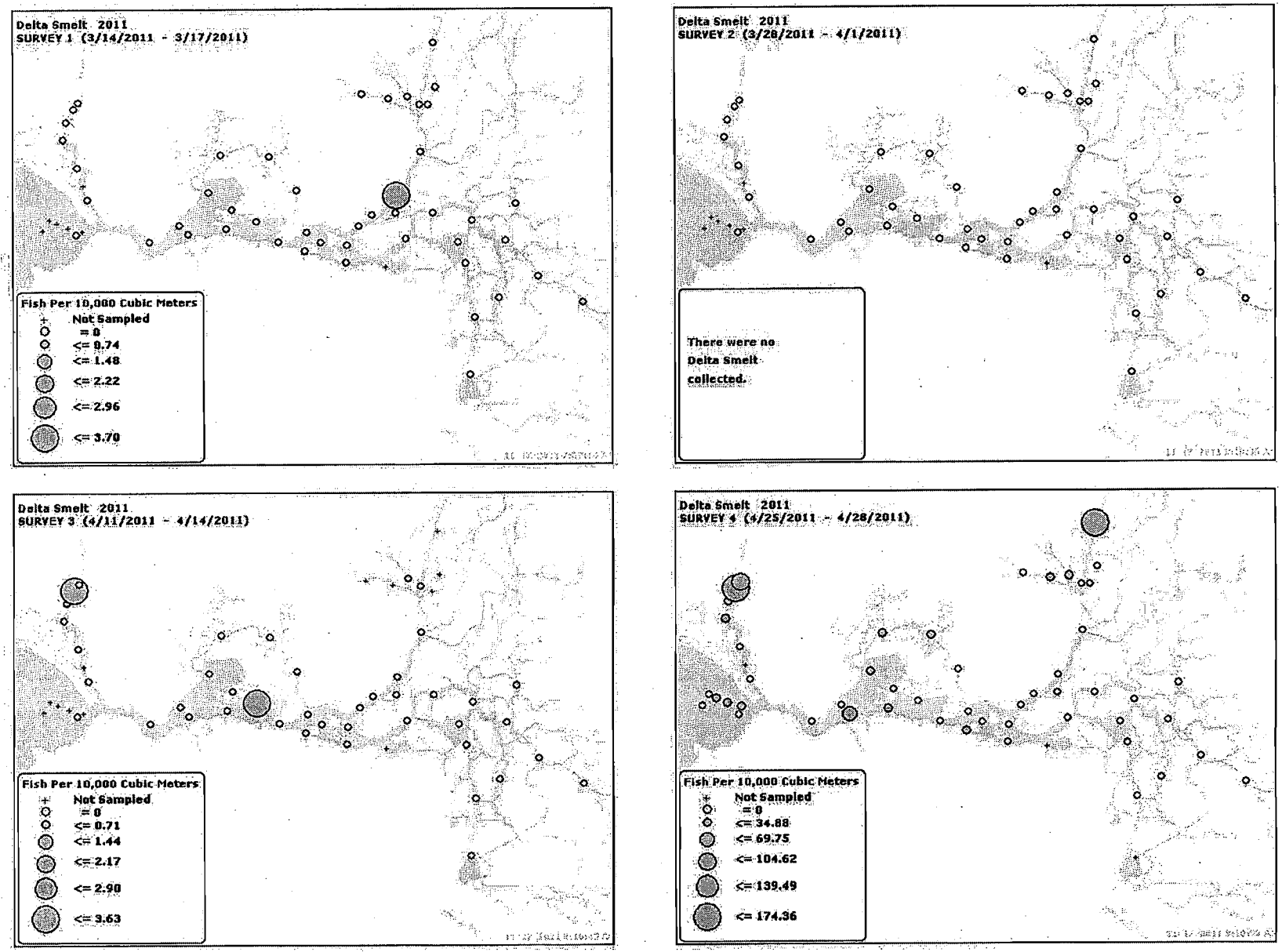
include a schedule for surface water ambient monitoring program sampling and associated studies, including sampling in Carquinez and Mare Island Straits and Suisun Bay.

Second: The Regional Board should set a clear procedure for reconsideration of the ammonium issue, with full public participation in the process, after the studies are completed and the data are published. The Regional Board should include deadlines to ensure the ammonium limits are reconsidered no later than 12 months after the Regional Board issues a final permit.

Third: As outlined for the recommended interim limits, the Regional Board should set effluent limits consistent with the actual daily and monthly average maximum concentrations of ammonium in the VSFCD discharge, with a modest margin for compliance. With the maximum observed concentration of ammonium according to the Regional Board in the range of 32 mg/L, there is no rational basis in the record to set limits of 43 mg/L (monthly) and 85 mg/L (daily maximum). Tentative Permit, Attachment F, F-21; Tentative Permit, at 9.

FIGURE 1

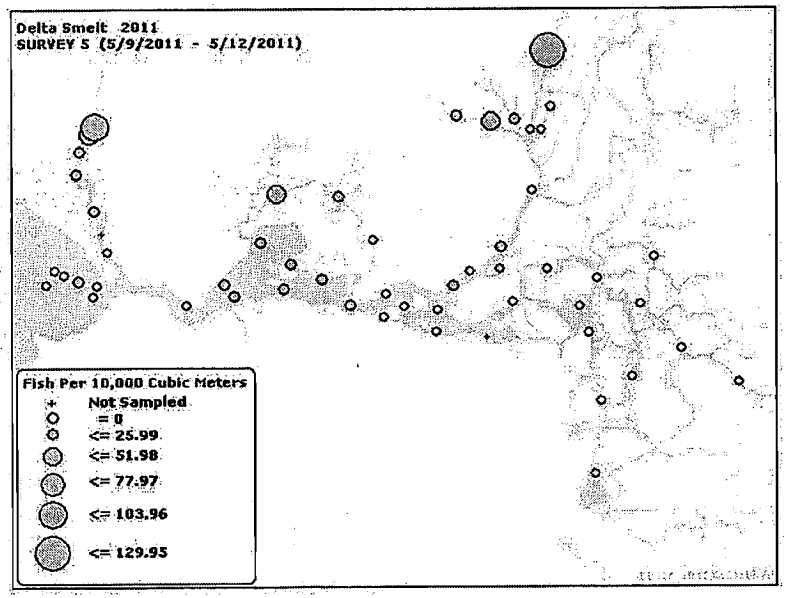
Figure 1. Delta Smelt 2011 20 mm Surveys 1-4.

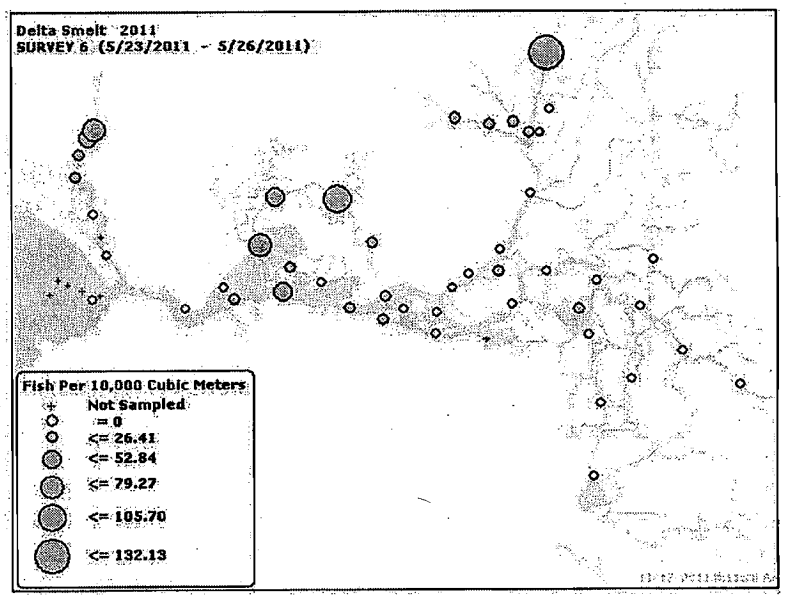


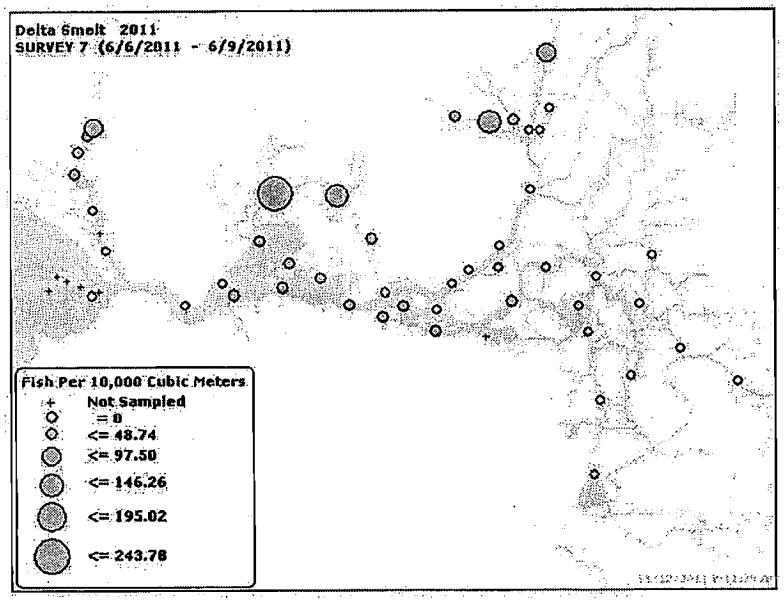
Survey maps and underlying data from Cal. Dept. of Fish & Game, available at http://www.dfg.ca.gov/delta/projects.asp?ProjectID=20mm.

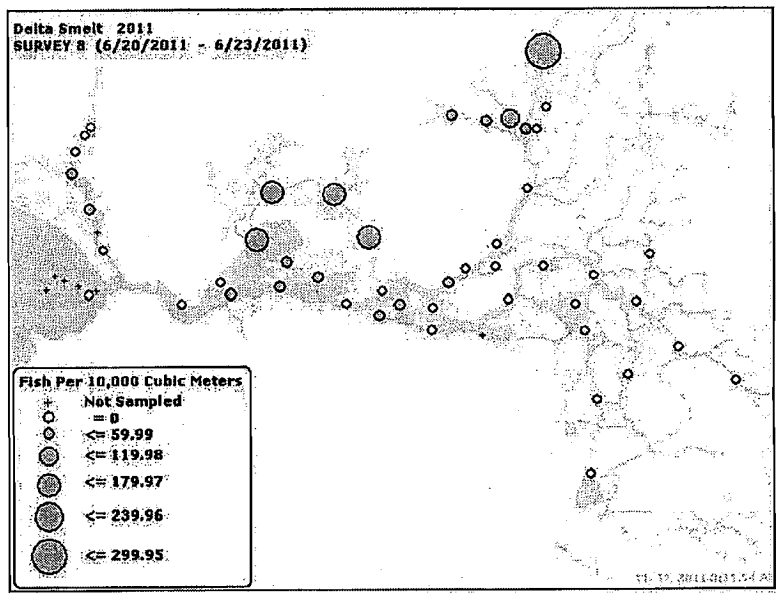
FIGURE 2

Figure 2. Delta Smelt 2011 20 mm Surveys 5-8.





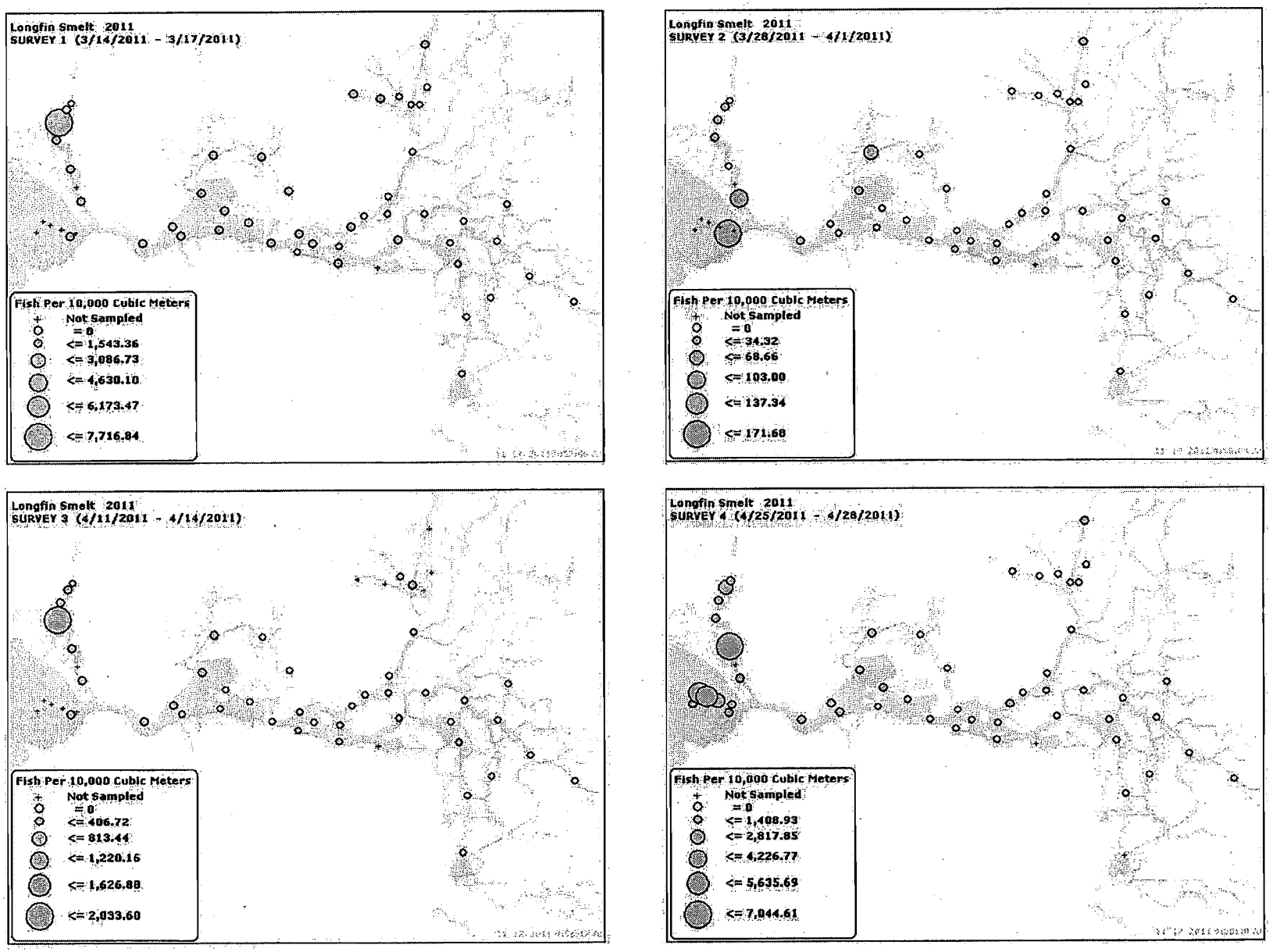




Survey maps and underlying data from Cal. Dept. of Fish & Game, available at http://www.dfg.ca.gov/delta/projects.asp?ProjectID=20mm.

FIGURE 3

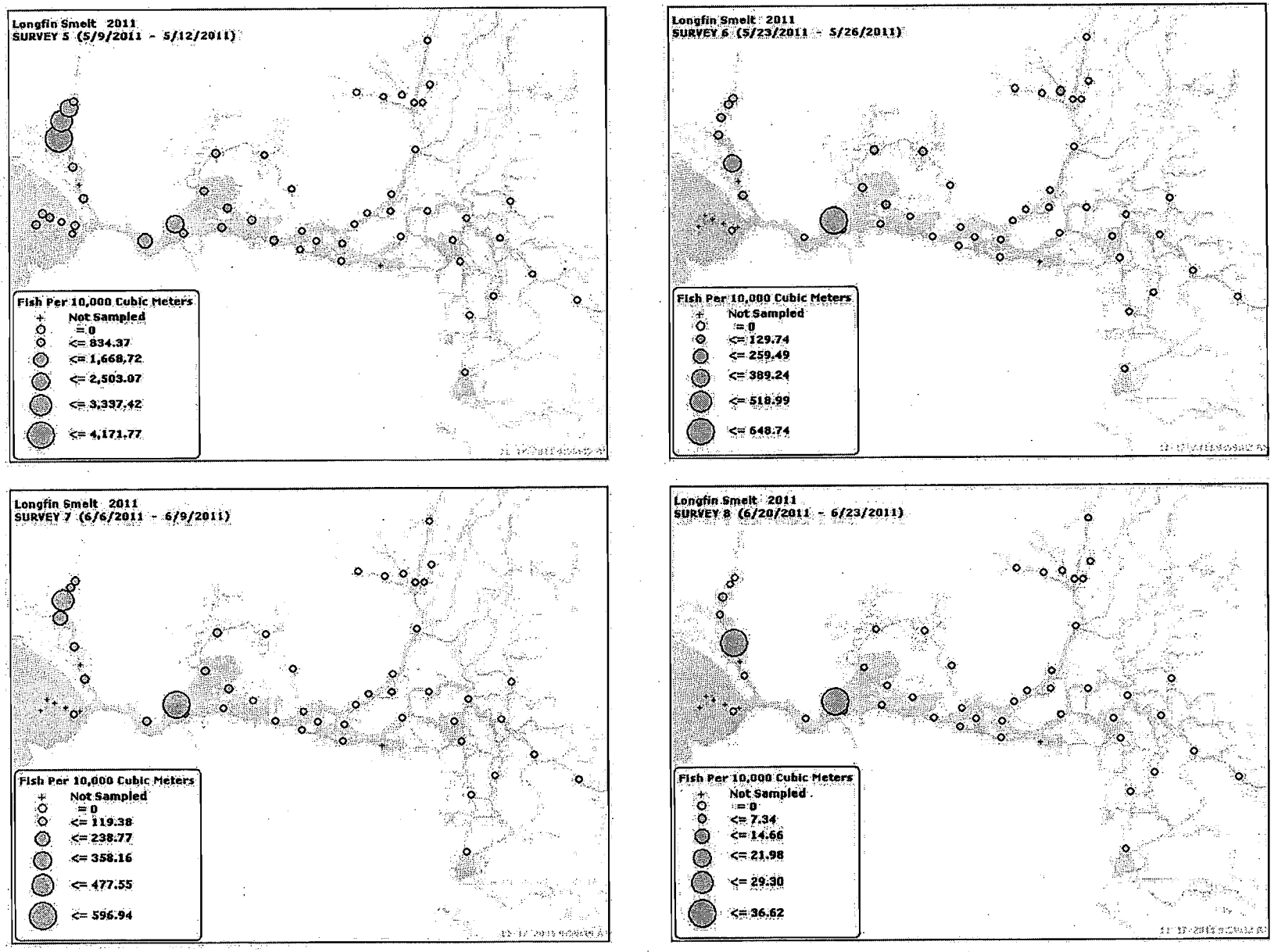
Figure 3. Longfin Smelt 2011 20 mm Surveys 1-4.



Survey maps and underlying data from Cal. Dept. of Fish & Game, available at http://www.dfg.ca.gov/delta/projects.asp?ProjectID=20mm.

FIGURE 4

Figure 4. Longfin Smelt 2011 20 mm Surveys 5-8.



Survey maps and underlying data from Cal. Dept. of Fish & Game, available at http://www.dfg.ca.gov/delta/projects.asp?ProjectID=20mm.

ultimate production at upper trophic levels vary with algal species composition: diatom-dominated marine upwelling systems sustain 50 times more fish biomass per unit of phytoplankton biomass than cyanobacteria-dominated lakes [citations removed]." Slaughter and Kimmerer (2010) provide further support. They observed lower reproductive rates and lower growth rates of the copepod, *Acartia* sp. in the low salinity zone compared to taxa in other areas of the estuary and conclude that "[t]he combination of low primary production, and the long and inefficient food web have likely contributed to the declines of pelagic fish."

There is also a growing body of literature documenting improvements in ecosystem functions in systems where nutrient loading is reduced. Reducing nutrient loading in the Chesapeake Bay, Tampa Bay, and coastal areas of Denmark has proven to be effective at reversing the harmful effects of previously undertreated discharges and restoring the native systems. For example, within several years of increasing nutrient removal at the Blue Plains treatment plant in Washington DC, N:P ratios in the Potomac River declined, the abundance of the invasive *Hydrilla verticillata* and *Corbicula fluminea* began to decline (Figure 1 immediately below), and the abundance of native grasses increased. Ruhl and Rybicki 2010.

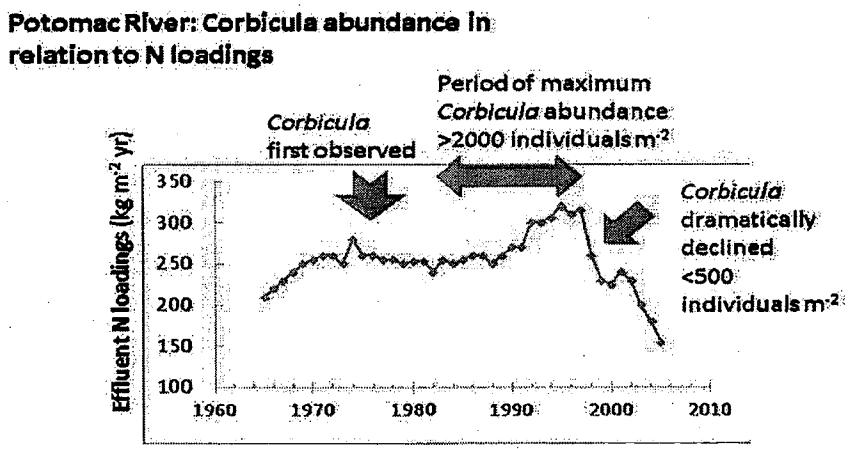


Figure 1. Comparative relationships for the Potomac River showing the change in effluent N loading and the relative abundance of the invasive clam, *Corbicula fluminea* clams. Data derived from Dresler and Cory (1980), Jaworski *et al.* (2007), and Cummins *et al.* (2010).

Tampa Bay provides another important example. Eutrophication problems in the Bay were severe in the 1970s, with N loads approximating 24 tons per day, about half of which was due to point source effluent. Greening and Janicki 2006. Several years after nitrogen and phosphorus reductions were achieved, native seagrass began to increase. Lower nutrient discharges also had positive effects on the coastal waters around the island of Funen, Denmark. Rask *et al.* 1999. Since the mid 1980s, there has been a roughly 50% reduction in the loading of N and P in the region due to point source reductions. Again, native grasses returned and low oxygen problems were reversed.

Moreover, there is recent evidence that diatom blooms can be restored in the Bay-Delta if ammonium loading were reduced. In Suisun Bay a diatom bloom reached chlorophyll concentrations of 30 $\mu g\ L^{-1}$ during spring 2000 when ammonium concentrations declined to 1.9 $\mu mol\ L^{-1}$. Wilkerson *et al.* 2006. Similarly, chlorophyll concentrations in Suisun Bay reached 35 $\mu g\ L^{-1}$ during spring 2010 when ammonium concentrations declined to 0.5 $\mu mol\ L^{-1}$ Dugdale *et al.*, 2011. These blooms are comparable to spring chlorophyll levels from 1969-1977, Ball and Arthur, 1979, when ammonium concentrations were 1.8 $\mu mol\ L^{-1}$ during summer and 4.0

TABLE 1

Table 1. Treatment Requirements for Select Wastewater Treatment Plants That Discharge Directly or Indirectly to the Bay-Delta Estuary.

Discharger	Permitted Average Dry Weather Flow (mgd)	Treatment Requirements
		Nitrification or Nitrification + Denitrification
Sacramento Regional WWTP	181	Yes
Stockton	55	Yes
Central Contra Costa Sanitary District	53.8	No
Fairfield	17.5	Yes
Manteca	17.5	Yes
Delta Diablo	16.5	No
Tracy	16	Yes
Vallejo	*15.5*	*No*
Vacaville Easterly WWTP	15	Yes
Woodland	10.4	Yes
Lodi	8.5	Yes
Davis	7.5	Yes
Mountain House	5.4	Yes
Benicia	4.5	No
Galt	4.5	Yes

ATTACHMENT 1

Attachment 1

Technical Memorandum

Summary of Nutrient Impacts

There is a large body of literature documenting the significant impacts of increased loading and changing forms, concentrations, and ratios of nitrogen and phosphorus both within the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta) and globally to the food web form and function. The form of nutrients matters. Wilkerson, *et al.* (2006) and Dugdale, *et al.* (2007) show that "bloom levels of chlorophyll are evident only when nitrate uptake occurs and that nitrate uptake only takes place at lower ambient ammonium concentrations." They conclude that ammonium concentrations greater than 4 $\mu mol\ L^{-1}$ inhibit nitrate uptake by diatoms and thus suppress bloom formation. This level of ammonium is exceeded a majority of the time in the Sacramento River and Suisun Bay.

In enclosure experiments with samples from Central Bay, Suisun Bay and the Sacramento River at Rio Vista, Wilkerson *et al.* (in preparation) observed "a gradient of decreasing phytoplankton physiological rates in the upstream direction as far as Rio Vista." Algal biomass accumulation was delayed in enclosures from Suisun Bay and was not observed within 96 hours in enclosures from Rio Vista. Also supporting this finding, Parker, *et al.* (in review) observed a 55% decline in primary production in the Sacramento River below the Sacramento Regional Wastewater Treatment Plant compared to production above the Treatment Plant's outfall. Parker, *et al.* (in review) conclude that "[t]he quantitative reduction in primary productivity and nitrogen uptake at various points in the river was predictable and strongly related with NH_4 concentrations."

These observations of ammonium suppression are not new or unique to the Bay-Delta. There is a large body of scientific research describing ammonium suppression of algae productivity, which was first observed as far back as the 1930s. Ludwig, 1938; Harvey, 1953. Some of the early field demonstrations of this phenomenon were by MacIsaac and Dugdale (1969, 1972), followed by research in the Chesapeake Bay by McCarthy, *et al.* (1975). Lomas and Glibert (1999a) describe the threshold for inhibition of nitrate uptake at ammonium levels of approximately 1 $\mu mol\ L^{-1}$. Ammonium suppression of nitrate uptake when both nutrients are in ample supply should not be confused with the preferential use of ammonium by phytoplankton when nitrogen is limiting. Under the latter conditions, phytoplankton will use ammonium preferentially because it requires less energy than nitrate. Under the former conditions, the cells must cope with an excess; and in doing so, their metabolism is altered away from an ability to assimilate nitrate. Total primary productivity is suppressed as a result. This is particularly problematic for the Bay-Delta as it is already a comparatively low producing estuary. Jassby *et al.*, 2002. Laboratory experiments suggest that Delta-wide chl-a levels are now low enough to limit zooplankton abundance. Müller -Solger *et al.*, 2002.

Nutrient form also affects phytoplankton species composition. Cyanobacteria have been shown to preferentially use chemically reduced forms of nitrogen over nitrate in many studies. Chemically reduced nitrogen not only includes ammonium, but also urea and dissolved organic nitrogen. This evidence comes from:

- Measurements of enzyme activities in the cells – enzymes that process these forms of nitrogen. Cyanobacteria have been shown to have some of the highest measured rates of urease, for example, relative to all phytoplankton species tested, and among

cyanobacteria, *Microcystis* rates are the highest. Solomon et al., 2010.

- Directly determined rates of nitrogen uptake using isotope tracer techniques. These rates show that cyanobacteria use reduced nitrogen forms and, in many cases, avoid the chemically oxidized forms. Glibert *et al.*, 2004.

- Direct growth studies. These studies based on growth measurements in the laboratory demonstrate that growth rates of *Microcystis* can be significantly higher on urea than on nitrate. Berman and Chava, 1999. Meyer, *et al.* (2009) state: "Compared to NO_3- and N_2 (via fixation) as N sources, NH_4+ produces the highest growth and primary production rates for *Microcystis aeruginosa* and other cyanobacteria (*Aphanizomenon flos-aquae* and *Anabaena flos-aquae*) in laboratory studies [citations removed]." Meyer *et al.*, 2009.

Moreover, retrospective analysis of the data in the Bay-Delta system further demonstrates that at very high ammonium concentrations (*i.e.*, > 200 $\mu g\ L^{-1}$), phytoplankton functional groups such as flagellates, cryptophytes and diatoms are outcompeted by cyanobacteria. Glibert, P., Univ. of Maryland, personal communication. Thus, even though *Microcystis* may have a broad capability for using different forms of nitrogen to support their physiological demands for nitrogen, they have a greater capacity to take up and metabolize reduced forms of nitrogen compared to other functional groups and may have higher growth rates under reduced nitrogen compared to nitrate and thus may outcompete other phytoplankton groups at very high ammonium levels. Lehman et al. (2010) concedes: "Recent increases in ammonium concentration in the western delta may give a competitive advantage to *Microcystis* which rapidly assimilates ammonium over nitrate."

The physiological literature strongly supports the concept that different algal communities use different forms of nitrogen. Diatoms generally have a preference for nitrate; dinoflagellates and cyanobacteria generally prefer more chemically reduced forms of nitrogen (ammonium, urea, organic nitrogen). Berg, *et al.*, 2001; Glibert, et al., 2004, 2006; Brown, 2009. It has long been recognized that diatoms may have a nutritional requirement for, and under some circumstances even a preference for, nitrate (Lomas and Glibert, 1999a; 1999b). Moreover, diatoms often show no evidence of nitrate uptake saturation under very high nitrate conditions, Collos et al. 1992, 1997, in contrast to the generally accepted saturating uptake kinetic relationships that are used to describe the relationship between nutrients and uptake rate. Thus, cyanobacteria may grow particularly well on ammonium while their competitors, such as diatoms, do not.

The shift in algal community composition in the Bay-Delta has been far more extensive than just the recent increase in annual blooms of *Microcystis*. The Delta's algal species composition has shifted from diatoms to smaller and lower quality food species such as flagellates, cryptophytes and cyanobacteria. Lehman, 2000; Lehman *et al.*, 2005; Lehman et al., 2010; Jassby *et al.*, 2002; Sommer *et al.*, 2007; Glibert, 2010; Glibert et al., 2011; Winder and Jassby, 2010) and to invasive macrophytes such as *Egeria densa* (Sommer, *et al.*, 2007; Nobriga et al., 2005; Glibert et al., 2011. Jassby (2008) states:

> *A decrease in percentage of diatom biovolume occurred during 1975–1989, caused by both a decrease in diatoms and an increase in green algae, cyanobacteria, and flagellate species biovolume (Kimmerer 2005; Lehman 1996), i.e., probably in the direction of declining nutritional value per unit biomass. In principle, the total nutritional value of a community could decrease even as its biomass increases. Moreover, changes in size, shape, and motility of species*

comprising the phytoplankton community could also affect their availability as food particles for crustacean zooplankton and other consumers.

In addition, the ratios of nitrogen to phosphorus are known to have profound influences on food webs. Sterner and Elser (2002) state: "[s]toichiometry can either constrain trophic cascades by diminishing the chances of success of key species, or be a critical aspect of spectacular trophic cascades with large shifts in primary producer species and major shifts in ecosystem nutrient cycling."

The N:P ratio has long been shown to influence phytoplankton community composition and the presence - or absence - of native species and vegetation, as extensive studies have repeatedly demonstrated in systems around the world including: Hong Kong, Tunisia, Germany, Florida, Spain, Korea, Japan, and Washington D.C. (Chesapeake Bay), to name just a few. The Potomac River (Chesapeake Bay) was invaded by submerged aquatic vegetation, *Hydrilla,* and clams, *Corbicula*, when the N:P ratio of effluent from the large Blue Plains sewage treatment facility increased after phosphorus was reduced in the 1980s. Ruhl and Rybicki 2010. In Spain's Ebro River estuary, *Hydrilla* and *Corbicula* invaded shortly after phosphorus was removed from effluent (Ibanez *et al.* 2008). In Tolo Harbor, Hong Kong, nutrient loading, particularly phosphorus loading, increased due to population increases in the late 1980's. The result was that a distinct shift from diatoms to dinoflagellates was observed in the harbor, coincident with a decrease in the N:P ratio. Hodgkiss and Ho 1997; Hodgkiss 2001. Once the phosphorus was removed from the sewage effluent that was being discharged into the harbor and stoichiometric proportions were re-established, there was a resurgence of diatoms and a decrease in dinoflagellates (Lam and Ho 1989). In Tunisian aquaculture lagoons, dinoflagellates have been shown to develop seasonally when N:P ratios decrease. Romdhane, et al. 1998. Comparable results have been observed in systems in Germany, Radach *et al.*, 1990, and along the coast of Florida. Glibert *et al.*, 2004; Heil *et al.*, 2007.

N:P ratios have also been shown to influence zooplankton community composition. Norwegian studies monitored lakes for many years and found that different zooplankton tend to dominate under different N:P ratios, due to the different phosphorus content of different species found in the lake. Hessen 1997. Hessen (1997), for example, showed that a shift from calanoid copepods to *Daphnia* tracked N:P; calanoid copepods retain proportionately more N, while *Daphnia* are proportionately more P rich. Studies from experimental whole lake ecosystems found that zooplankton size, composition and growth rates changed as the N:P ratio varied (*e.g.*, Schindler 1974, Sterner and Elser 2002).

There has been a measureable change in the N:P ratio in the Bay-Delta, an increase in total N loading, a decrease in total P loading, and a change in the dominant form of nitrogen from nitrate to ammonium. Glibert, 2010. In a retrospective analysis of 30 years of data from the Bay Delta, Glibert 2010; Glibert et al., 2011, found that the variation in these nutrient concentrations and ratios is highly correlated to variations in the base of the food web, primarily the composition of phytoplankton, to variations in the composition of zooplankton, to variations in the abundance of invasive clams, and to variations in the abundance of several fish species.

Winder and Jassby (2010) provide additional documentation of the shift that has occurred in the phytoplankton and zooplankton community.

The shift in the phytoplankton community has ripple effects through the food web. Cloern and Dufford (2005) state, "[t]he efficiency of energy transfer from phytoplankton to consumers and

$\mu mol\ L^{-1}$ during winter. Cloern and Cheng, 1981. If clam abundance declines, as has occurred in San Pablo Bay and South San Francisco Bay, Cloern *et al.*, 2007, chlorophyll levels may also be restored during summer in Suisun Bay if ammonium loading were reduced.

Additionally, as Glibert (2010) reported, "[s]upporting the idea that correct balance of nutrients is important for restoration of delta smelt and other pelagic fish, there is a small but apparently successful subpopulation of delta smelt in a restored habitat, Liberty Island. Liberty Island is outside the immediate influence of Sacramento River nutrients. It has abundant diatoms among a mixed phytoplankton assemblage, as well as lower NH_4 levels and higher ratios of NO_3:NH_4 than the main Sacramento River [citations removed]."

The recent increase in *Microcystis* bloom frequency and size can also be explained by changes in Delta nutrients. Based on stable isotope analyses of particulate organic matter and nitrate, Kendall (2010) observed that ammonium, not nitrate, is the dominant source of nitrogen utilized by *Microcystis* at the Antioch and Mildred Island sites in the summer 2007 and 2008.

Nutrients affect more than *Microcystis* growth; nutrients may also affect its production of toxins. In Daechung Reservoir, Korea, researchers found that toxicity was related not only to an increase in N in the water, but to the cellular N content as well. Oh, *et al.* 2000. A very recent report by van de Waal (2010) demonstrated in chemostat experiments that under high CO_2 and high N conditions, microcystin production was enhanced in *Microcystis*. Similar relationships were reported for a field survey of the Hirosawa-no-ike fish pond in Kyoto, Japan, where the strongest correlations with microcystin were high concentrations of NO_3 and NH_4 and the seasonal peaks in *Microcystis* blooms were associated with extremely high N:P ratios. Ha *et al.* 2009. Thus, not only is *Microcystis* abundance enhanced under high N:P, but its toxicity is as well. Oh, *et al.* 2000.

Glibert *et al.* (2011) provides further support for the hypothesis that nutrient form and ratio is driving food web composition in the Delta. Using several different statistical approaches, Glibert *et al.* (2011) evaluated the relationships between approximately thirty different aquatic species and various nutrient ratios and found significant correlations for a majority of them. After comparing trends in the Bay-Delta estuary to those in Lake Washington, Potomac River, Hudson River and several European lakes and estuaries, they state,

> *Moreover, the physiology of the resident organisms and biogeochemical pathways lends support to the premise that similar trophic structure, including the appearance of* Microcystis, *in many of these systems has resulted from similar nutrient dynamics, biogeochemistry and food web interactions that resulted, in turn, from changes in stoichiometry and the relative abilities of different types of organisms to either sequester nutrients and/or to tolerate nutrients that are in excess (e.g., NH_4^+).*

They suggest that, "[r]eductions in N (especially NH_4^+) will allow organisms, from diatoms to fish, that cannot withstand high NH_4^+ (and/or that are outcompeted by NH_4^+ -tolerant organisms, such as various harmful dinoflagellates and cyanobacteria), to compete."

Glibert *et al.* (2011) found, "[f]or all organisms, with the exception of *Acartia*, for which strong correlations were observed with X2 (Table 9), *i.e.*, *Eurytemora*, *Pseudodiaptomus*, *Daphnia*, *Bosmina*, *Corbula*, *Crangon*, longfin smelt, splittail, striped bass, starry founder, crappie, sunfish and largemouth bass, equal or more significant correlations were observed with nutrients or

nutrient ratios." This analysis determined pairwise relationships between biological parameters and nutrients and/or nutrient ratios using both the original data and data that were adjusted for autocorrelation. Glibert *et al.* (2011) also found that total phosphorus "explained at least as much of the variability in delta smelt as did the [Feyrer *et al.*, 2010] habitat index (Table 4), and dinoflagellate abundance explained even more (Table 6)." Unlike the X2 relationships whose mechanisms of effect are largely unknown, the nutrient relationships have a strong mechanistic explanation in ecological stoichiometry and stable state principles.

Ammonia Toxicity

Studies have been conducted by scientists at UC Davis investigating the effects of ammonia to the calanoid copepod *Pseudodiaptomus forbesi* using a full-life cycle bioassay approach. *P. forbesi* is an important food organism for the young of many fish species in the Bay-Delta including delta smelt and longfin smelt, two State listed species. Evidence of the toxic effects of ammonia on *P. forbesi* comes from life cycle tests conducted by Teh *et al.* (2011). Teh *et al.* (2011) found that total ammonia nitrogen at 0.36 ± 0.01 mg L^{-1} significantly affects the recruitment of new adult copepods and total ammonia nitrogen at 0.38 ± 0.01 mg L^{-1} significantly affects the number of newborn nauplii surviving to 3 days old.

Clam Invasion

There is no denying that the overbite clam has had a significant impact on the ecosystem since it took hold in the mid-1980s. Kimmerer (2002) and Kimmerer *et al.* (2009) found that many of the relationships between spring X2 and abundance changed in the mid-1980s, presumably due to the invasion by the overbite clam, *Corbula amurensis.* Phytoplankton biomass also declined significantly due to grazing pressure from the invasive clams. There is some scientific debate regarding the ability, or lack thereof, to manage clam populations by increasing freshwater outflows. However, this strategy fails to account for the potential consequences of an increased distribution in the freshwater clam, *Corbicula fluminea,* if freshwater flow is used to try to push the distribution of the brackish water clams further west of the Delta.

In addition, Glibert *et al.* (2011) found that "the change after 1987 also corresponds with the change in nutrient loading. X2 is strongly correlated with PO_4^{3-}, TP and NH_4^+." Glibert (2010) suggested that changes in nutrients created the environment in which these clams could dominate. Glibert (2010) found a strong correlation between the CUSUM trends in clam abundance and ammonium concentration and in the ratio of inorganic nitrogen to inorganic phosphorus (DIN:DIP).

Glibert *et al.* (2011) provides further support for nutrient effects on clam abundance as well as on the abundance of other invasive organisms such as non-native centrarchids and non-native invasive weeds. Using several statistical approaches, Glibert *et al.* (2011) found "a strong long-term correlation between water-column DIN:TP ratios (and DIN:PO_4^{3-} ratios) and abundance of the clam, *Corbula*...there is also a strong long-term positive relationship between pH and *Corbula* abundance." They explain,

> *Changes in external nutrient loads can drive changes in internal ecosystem biogeochemistry and, in turn, trophodynamics. This analysis suggests that increasing dominance over time of macrophytes, clams, and* Microcystis *along with more omnivorous fish that are fueled by a benthic food web, are not a result of stochastic events (random invasions) but, rather, are related to a cascade of changes in biogeochemistry resulting from changes in nutrient loading over time*

> *as a major driver. This analysis supports the premise that reductions in P loading from external sources drive aquatic systems toward increased importance of sediment dynamics, and toward the sediments as a major source of P. The food webs that are supported are different from those supported when the water column is the major source of P; they are benthic-dominated. Macrophytes such as* Egeria *and phytoplankton such as* Microcystis *are physiologically well adapted to these altered nutrient and pH regimes. The communities of bivalves and fish change accordingly.* (Glibert *et al.*, 2011, pp. 389-399)

As discussed previously, and in more detail in Glibert *et al.* (2011), numerous examples exist where nutrient reductions in other ecosystems has led to the restoration of native sea grasses and to declines in invasive bivalve populations.

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FIGURE 5

Figure 5. This figure presents historical ammonium concentration data collected from 2006 to 2010 by the Vallejo Sanitation and Flood Control District (VSFCD). These data are for VSFCD effluent monitoring Station E-001. The Inhibition Threshold of 0.056 mg L^{-1} ammonium-N (equivalent to 4µmol L^{-1}) is the concentration that has been found to inhibit nitrogen uptake by diatoms and contribute to reduced diatom production in the Bay-Delta estuary. The Copepod Toxicity Threshold of 0.36 mg L^{-1} ammonium-N is the concentration that has been found to reduce the recruitment of new adult copepods and the number of newborn nauplii surviving to 3 days old. The Basin Plan Acute and Chronic Water Quality Objectives are 4.9 mg L^{-1} ammonium-N and 1.7 mg L^{-1} ammonium-N, respectively, as specified in the Tentative Permit, Attachment F at F-26.

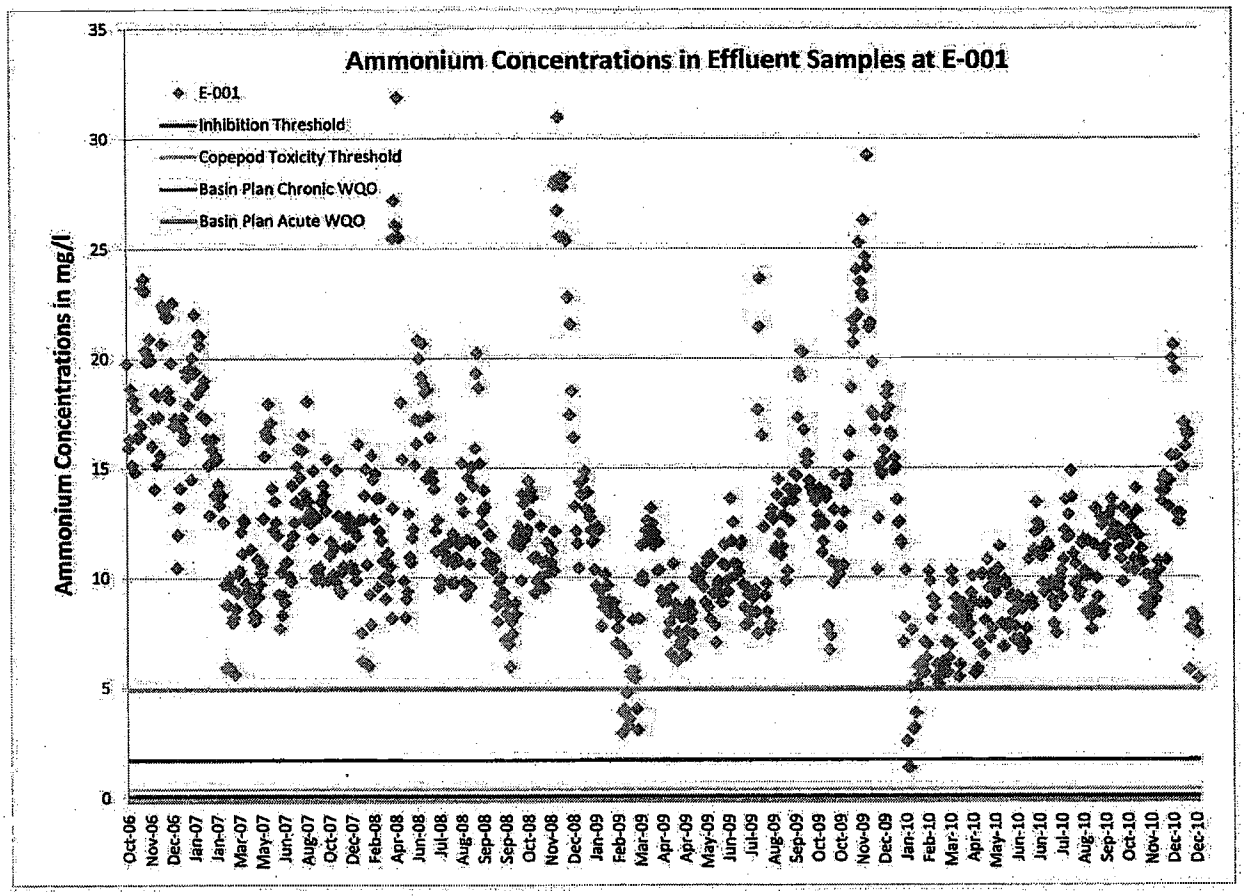


FIGURE 6

Figure 6. This figure presents historical ammonium concentration data collected from 1993 to 2010 by the U.S. Geological Survey (USGS). These data are for USGS monitoring stations 9, 10 and 11 located in Carquinez Strait. See Figure 7 for monitoring locations. The ammonium concentration of 0.056 mg L^{-1} (equivalent to 4µmol L^{-1}) is indicated on the graph. This ammonium level has been found to inhibit nitrogen uptake by diatoms and contribute to reduced diatom production in the Bay-Delta estuary. (Data source: http://sfbay.wr.usgs.gov/access/wqdata/index.html)

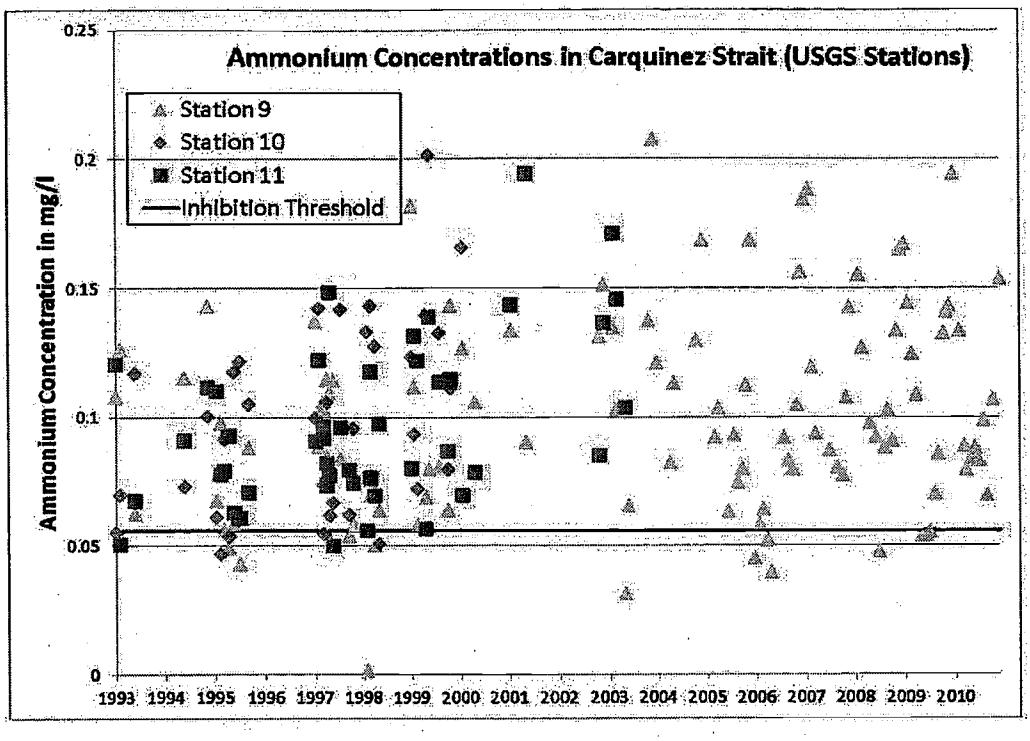


FIGURE 7

Figure 7. This figure presents historical ammonium concentration data collected from 1993 to 2001 by the Regional Monitoring Program (RMP). These data are for RMP Napa River Station BD50, a receiving water station for the Vallejo Sanitation and Flood Control District (VSFCD). See Figure 7 for monitoring location. The ammonium concentration of 0.056 mg L^{-1} (equivalent to 4µmol L^{-1}) is indicated on the graph. This ammonium concentration has been found to inhibit nitrogen uptake by diatoms and contribute to reduced diatom production in the Bay-Delta estuary. (Data Source: http://www.sfei.org/rmp)

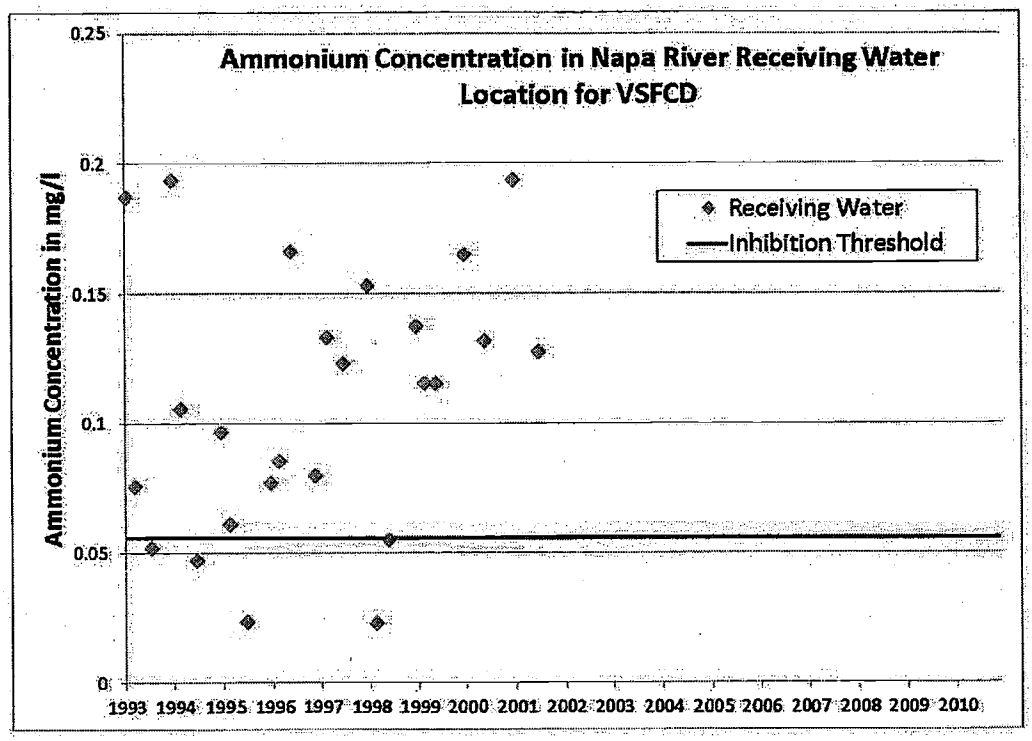
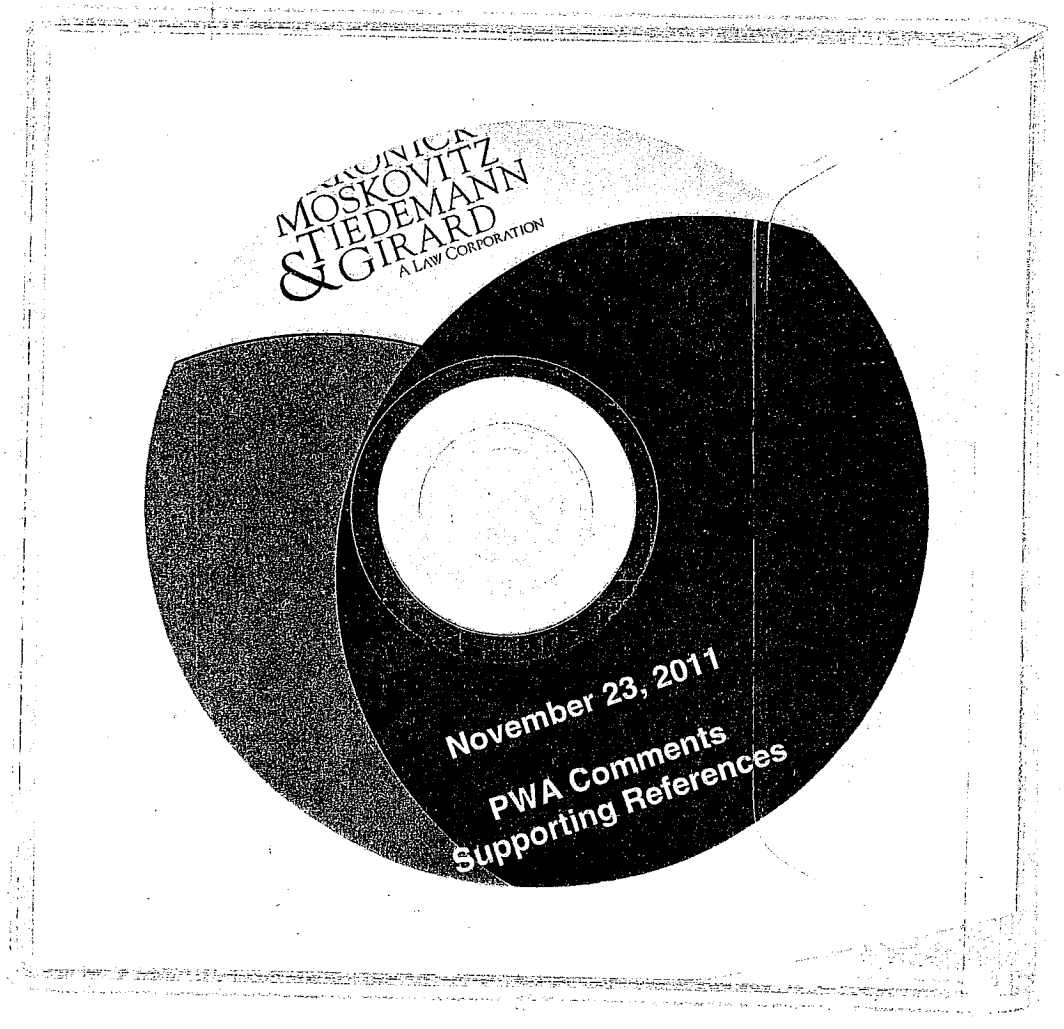


FIGURE 8

Figure 8. This figure shows the locations for the water quality monitoring stations that are referred to in Figures 6 and 7. The yellow dots labeled 9, 10 and 11 are USGS monitoring stations in Carquinez Strait, and the red dot is the RMP monitoring station BD50.


MOSKOVITZ
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&GIRARD
A LAW CORPORATION
November 23, 2011
PWA Comments
Supporting References

EXHIBIT E

Proposed Reissuance of NPDES Permit to Vallejo Sanitation and Flood Control District

Presentation of Public Water Agencies

Alameda County Flood Control and Water Conservation District, Zone 7

Coachella Valley Water District

Metropolitan Water District of Southern California

San Luis & Delta-Mendota Water Authority

Santa Clara Valley Water District

Tulare Lake Basin Water Storage District

Westlands Water District

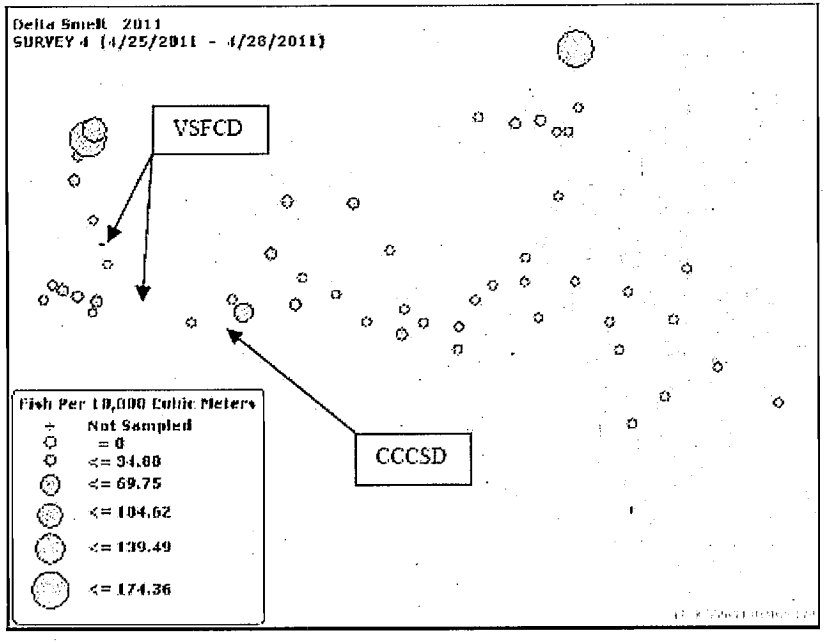
San Francisco Regional Water Quality Control Board Meeting
February 8, 2012

Who are the Public Water Agencies?

- Public water districts
- Provide water to millions of citizens
- Provide water to farmers producing crops on hundreds of thousands of acres
- Water supplies have been significantly impacted by regulations intended to protect aquatic species, including Delta and longfin smelt

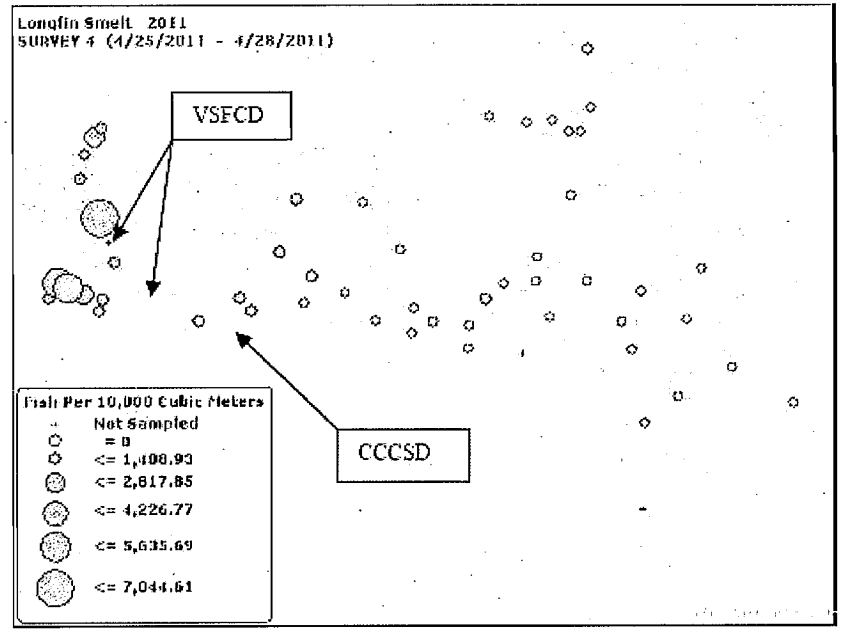
Why the Public Water Agencies and Others are concerned with Vallejo's Discharges?

From Attachment 1. Figure 1. Delta Smelt 2011 20 mm Surveys 1-4.



Survey maps and underlying data from Cal. Dept. of Fish & Game, available at http://www.dfg.ca.gov/delta/projects.asp?ProjectID=20mm.

From Attachment 1, Figure 3. Longfin Smelt 2011 20 mm Surveys 1-4.



Survey maps and underlying data from Cal. Dept. of Fish & Game, available at http://www.dfg.ca.gov/delta/projects.asp?ProjectID=20mm.

How should the Regional Board condition Vallejo's Discharges?

Because the best available science shows:

- Vallejo discharges ammonium into habitat occupied by Delta smelt and longfin smelt, and
- Excess ammonium is harmful to the Bay-Delta ecosystem,

So, the Regional Board should require Vallejo to nitrify its discharge.

However, if the Regional Board does not require nitrification, the Regional Board should require Vallejo to:

- Conduct additional study on the effect of its discharges, and
- Commence interim steps to prepare for nitrification.

The Bay-Delta Has Excess Nutrients

- "[T]he **current nutrient loading (especially total ammonia) may be one of the most important of these stressors**" on the Delta Ecosystem. Dr. Cliff Dahm, Delta Lead Scientist.

- "I think there is consensus among the scientific community that the San Francisco Bay-Delta **system is overly enriched in nitrogen and phosphorus**." Dr. James Cloern, USGS.

- "**Primary nutrients are typically in excess** of requirements and are exported from the estuary." Wilkerson *et al* 2006.

The Excess Nutrients are Harmful to the Bay-Delta Ecosystem

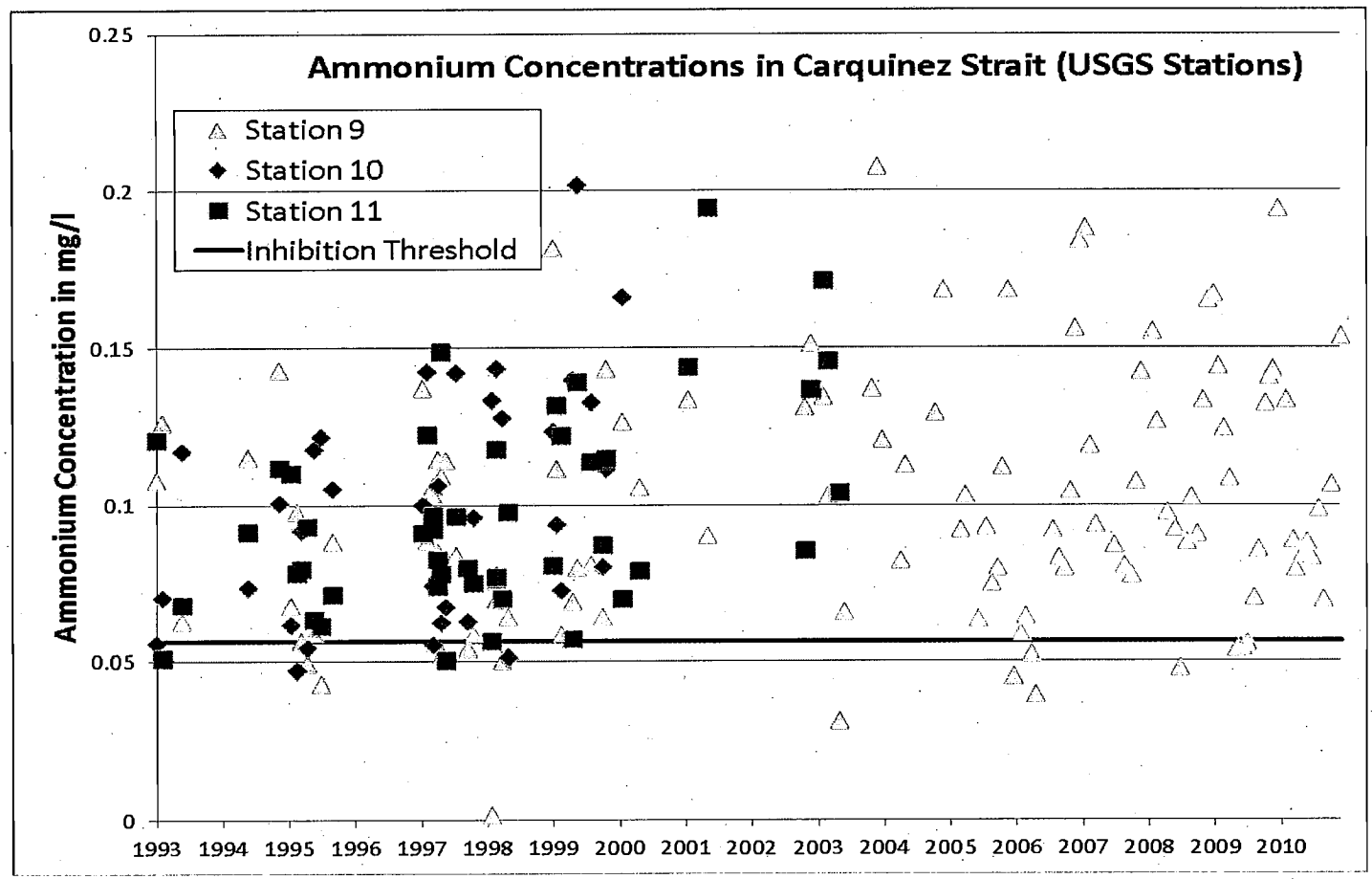
- The science is not uncertain – it is quite clear.

- Ammonium loadings are:

  - Inhibiting the uptake of nitrogen;
  - Skewing the balanced geochemistry needed to support the food web;
  - Toxic;
  - Reducing primary productivity in Suisun Bay;
  - Harming aquatic life, including threatened and endangered species such as Delta and Longfin Smelt.

- Most recent science confirms these conclusions.

Monitoring shows ammonium above inhibition threshold in the receiving waters



Vallejo is an "outlier"

Delta and Suisun Bay Discharger	Permitted Average Dry Weather Flow (mgd)	Treatment Requirements: Nitrification or Nitrification + Denitrification
Sacramento Regional WWTP	181	Yes
Stockton	55	Yes
Central Contra Costa Sanitary District	53.8	No
Fairfield	17.5	Yes
Manteca	17.5	Yes
Delta Diablo (expires Apr. 2014)	16.5	No
Tracy	16	Yes
Vallejo	*15.5*	*No*
Vacaville Easterly WWTP	15	Yes
Woodland	10.4	Yes
Lodi	8.5	Yes
Davis	7.5	Yes
Mountain House	5.4	Yes
Benicia (expires May 2013)	4.5	No
Galt	4.5	Yes

The Regional Board's Staff Recognize Nutrients Impact Beneficial Uses

As stated in proceedings before the Central Valley Regional Water Quality Control Board that resulted in the current NPDES for Sacramento Regional County Sanitation District:

- **Dyan Whyte, Assistant Executive Officer, December 9, 2010:**

  "We wrote a letter in June this past year saying that we believe that there may be impacts to Suisun Bay associated with Sac Regional's discharge. Well, I'm here today to say that since that time in June, we've taken a deeper dive into the science. I've got my technical staff here. We've gone out and participated in studies and conducted our own studies. And based on that, we do feel like we have strong reason to believe now that there are impacts that we are seeing within our region, mainly in Suisun Bay."

- **Bruce Wolfe, Executive Officer, June 4, 2010:**

  "One of the primary hypotheses for the pelagic organism decline (POD) is a decline in food availability for POD species. Declines in diatom blooms in Suisun Bay have been well documented by the Interagency Ecological Program (IEP) and others. Studies on the relationship between nutrients and primary productivity in the estuary indicate that ammonia levels in Suisun Bay reduce both nitrate uptake and primary production rates (Wilkerson et al 2006, Dugdale et al 2007)."

Conclusions

Beginning today, Vallejo should be making all reasonable efforts toward nitrification

- Best available science shows excess ammonium is harmful to the Bay-Delta ecosystem;

- Science is sufficient for the Regional Board to require Vallejo to nitrify its discharge;

- However, if the Regional Board does not require nitrification, the Regional Board should require Vallejo to:
  - Conduct studies that apply the established scientific principles to Vallejo's discharges, and
  - Investigate and prepare for treatment upgrades.