California Regional Water Quality Control Board

San Francisco Bay Region

Proposed Basin Plan Amendment:

Chlorine Water Quality Objectives and Total Residual Chlorine Water Quality-Based Effluent Limitations for Wastewater Discharges

Draft Staff Report

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN FRANCISCO BAY REGION

1515 Clay Street, Suite 1400, Oakland, CA 94612

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

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List of Abbreviations and Acronyms

ACR – acute-to-chronic ratio
BPA – Basin Plan amendment
CEQA – California Environmental Quality Act
CFR – Code of Federal Regulations
CIWQA - California Integrated Water Quality System
CPO – chlorine produced oxidants
CWA – Clean Water Act
CTR – California Toxics Rule
FAV – final acute value
mgd – million gallons per day
mg/L – milligrams per liter
NPDES – National Pollutant Discharge Elimination System
SCADA - supervisory control and data acquisition system
SIP – State Implementation Policy
TRC – total residual chlorine
µg/L – micrograms per liter
U.S. EPA – United State Environmental Protection Agency
WEF – Water Environment Federation

1 Introduction

This staff report provides the technical background and basis for a proposed amendment to the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan). The proposed amendment, shown in Appendix A, would add chlorine water quality objectives for marine, estuarine, and freshwaters consistent with the U.S. Environmental Protection Agency's (U.S. EPA) ambient chlorine criteria (U.S. EPA 1984) and add provisions governing the implementation of these new objectives in National Pollutant Discharge Elimination System (NPDES) permits. These proposed implementation provisions include replacing the Basin Plan's current total residual chlorine (TRC) technology-based effluent limitations with water quality-based effluent limitations derived from the new chlorine objectives.

The Basin Plan requires that all NPDES permits for discharges containing sanitary waste include effluent limitations for bacteria to ensure protection of beneficial uses in receiving waters. Most municipal wastewater treatment plants apply a chlorine-based product to disinfect their effluent to comply with these bacterial effluent limitations. Chlorine not consumed in the disinfection process results in TRC. TRC is harmful to aquatic organisms at very low concentrations, and the Basin Plan currently contains a TRC effluent limitation of 0.0 milligrams/liter (mg/L) as a technology-based instantaneous maximum. Thus, treatment plants that use chlorine to disinfect must apply a dechlorinating chemical, typically liquid sodium bisulfite, to remove residual chlorine and comply with the TRC effluent limitation. Because wastewater is a complex chemical mixture and the technology-based effluent limitation is zero (i.e., no amount may be discharged), wastewater treatment plant operators routinely add sodium bisulfite in amounts well beyond those that would theoretically neutralize the TRC.

This over-application of sodium bisulfite results in extra operational cost and potential water quality concerns without providing environmental benefits, as described in this report. For this reason, NPDES wastewater dischargers requested economic relief from complying with the TRC technology-based effluent limitation. The San Francisco Bay Regional Water Quality Control Board (Water Board) staff finds their request compelling as wastewater treatment plants across the region plan for major upgrades to respond to sea level rise and increased nutrient concentrations in the Bay. This Basin Plan amendment would provide cost savings that could help fund wastewater treatment plant improvements needed to address other issues with substantial environmental consequences. Water Board staff concurs that the need for future wastewater infrastructure improvements is vast, and could include green infrastructure and/or advanced treatment for nutrients, reconstruction in response to sea level rise, additional holding capacity for increased wet weather flows, collection system upgrades, and more. The elements of this project provide a sensible regulatory solution that both protects beneficial uses and provides economic and environmental benefits by minimizing the need for the over-application of sodium bisulfate.

The proposed amendment also includes some minor non-regulatory updates to language in the Basin Plan needed to harmonize our Basin Plan with the revised water quality objectives included in the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California and to correct previous errors.

1.1 Regulatory Authority

A water quality standard defines the water quality goals of a water body by designating the use or uses to be made of the water, by setting numeric or narrative water quality objectives necessary to protect the uses, and by preventing degradation of water quality through antidegradation provisions (U.S. EPA 1994). Clean Water Act Section 303(c) requires states to adopt and modify, as appropriate, water quality standards for surface waters that protect the public health or welfare, enhance the quality of water, and serve the purposes of the Clean Water Act (33 U.S. Code Section 1313(c)). Water quality objectives must be based on sound scientific rationale and protect the designated beneficial uses of the receiving water (40 Code of Federal Regulations or CFR 131.11). California Water Code Section 13240 additionally authorizes water boards to adopt water quality objectives that reasonably protect beneficial uses and prevent nuisance based on factors listed in Section 13241.

1.2 Scientific Peer Review

This draft Report conforms to Section 57004 of the California Health and Safety Code which requires external scientific peer review of the scientific basis for any rule proposed by any board, office or department within California Environmental Protection Agency. Based on the interpretation of Health and Safety Code, Section 57004 and the State Water Resources Control Board's (State Water Board) Administrative Procedures Manual Section 8, III. D., we have determined that the proposed Basin Plan amendment does not contain new science that would require a peer review. The proposed amendment is an application of earlier, extensively peer-reviewed water quality criteria. Specifically, the water quality objectives are the same water quality criteria adopted by U.S. EPA in Ambient Water Quality Criteria for Chlorine – 1984 (U.S. EPA 1984). These criteria were adopted by U.S. EPA pursuant to Clean Water Act Section 304(a) and provide guidance for states and tribes to use in establishing water quality standards. The water quality-based effluent limitations are based on the same U.S. EPA criteria and are calculated in the manner set forth in "*Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bay, and Estuaries of California*" (State Implementation Policy or SIP). The State Implementation Policy had also gone through extensive scientific peer review before adoption by the State Water Resources Control Board and approval by U.S. EPA.

The proposed amendment does not depart from the scientific approach of the water quality criteria from which it is derived. Therefore, the proposed amendment has satisfied the peer review requirement of Health and Safety Code Section 57004, and no additional peer review is needed.

1.3 Report Organization

The report is organized into sections that present the information and analyses required by state and federal law. The sections are as follows:

- Section 2. Project Description – defines the project, its necessity, and objectives;

- Section 3. Project Background – provides technical details concerning the new chlorine objectives and other relevant background information for the project;
- Section 4. Implementation Plan – describes how the new chlorine objectives will be implemented as water quality-based effluent limitations in NPDES permits;
- Section 5. Regulatory Analyses – demonstrates the project's compliance with the California Water Code and California Environmental Quality Act (CEQA);
- Section 6. References – lists information sources cited and relied upon to prepare this report.

Specific proposed changes to the Basin Plan are shown in Appendix A. The CEQA environmental checklist is included as Appendix B.

2 Project Description

The need for and elements of the proposed Basin Plan amendment are described in this section.

2.1 Project Definition and Necessity

The project is a proposed Basin Plan amendment that includes regulatory changes to the Basin Plan with regards to chlorine, which are further discussed in Section 2.1.1 below. The amendment also proposes non-regulatory editorial changes to the Basin Plan language to correct previous errors as described in Section 2.1.2 below.

The Basin Plan, as first adopted in 1975, did not include chlorine water quality objectives to protect aquatic life beneficial uses. The Basin Plan does contain a technology-based TRC effluent limitation, 0.0 mg/L, as an instantaneous maximum, to ensure that no TRC is discharged into the receiving water. To comply with this effluent limitation, wastewater treatment system operators choose to overdose their chlorinated effluent with dechlorination chemicals, usually sodium bisulfite, to neutralize TRC before discharging to receiving waters. The thirteen largest municipal wastewater dischargers in the region report that sodium bisulfite overdosing costs them approximately $1.4 million per year, out of a total cost of $4.3 million for sodium bisulfite (Fono 2020b). As detailed in Section 3.5, sodium bisulfite overdosing can decrease dissolved oxygen concentration and depress pH in the effluent and receiving water. Reducing the level of excess sodium bisulfite will provide cost savings and modest environmental benefits.

Bay Area Clean Water Agencies (BACWA), representing all Bay Area municipal wastewater dischargers, requested replacement of the Basin Plan's TRC technology-based effluent limitation with water quality-based effluent limitations to allow for ease of compliance and operational cost saving, while still protecting receiving water beneficial uses. To calculate water quality-based effluent limitations, chlorine water quality objectives must be included in the Basin Plan.

2.1.1 Regulatory Changes with Regards to Chlorine/Total Residual Chlorine

The proposed changes pertaining to chlorine entail the following components:

a. Add new one (1)-hour average and four (4)-day average chlorine water quality objectives to protect aquatic life beneficial uses in marine, estuarine, and freshwaters;
b. Replace the TRC technology-based effluent limitation with 1-hour average water quality-based effluent limitations, derived from the newly added chlorine water quality objectives, to be implemented in NPDES permits for wastewater discharges;
c. Specify manner of implementation of the TRC water quality-based effluent limitations in NPDES permits, including minimum level requirements, treatment of measurements below minimum level, application of dilution credits, and other elements of compliance determination.

2.1.2 Non-regulatory Editorial Changes

We propose three minor non-regulatory editorial changes to the Basin Plan.

a. Remove the phrase in footnote "a" of Tables 3-3 and 3-4 stating that these objectives shall apply to all marine waters or freshwaters "except for the South Bay south of Dumbarton Bridge, where the California Toxics Rule (CTR) applies." This phrase is erroneous because the objectives apply to all segments of the bay.
b. Update the Basin Plan to reflect the new statewide mercury water quality objectives for aquatic life protection. On May 2, 2017, the State Water Resources Control Board adopted Resolution 2017-0027, which approved *Part 2 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California—Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions* (Mercury Provisions). Resolution 2017-0027 provides a consistent regulatory approach throughout the state by setting mercury limits to protect beneficial uses associated with the consumption of fish by people and wildlife. These provisions specifically supersede our Basin Plan's 4-day average mercury objective for freshwaters. Accordingly, we propose to delete the 4-day average objective for mercury in freshwater listed in Basin Plan Table 3-4 to avoid potential confusion and to conform the Basin Plan to the statewide objectives. In this project,we do not propose further mercury water quality objective updates to the Basin Plan, and the statewide Mercury Provisions remain as the applicable mercury water quality objectives.
c. Remove footnote "d" for Oil & Grease in Basin Plan Table 4-2 and replace it with footnote "g," so that Oil & Grease effluent limitations do not apply to treatment facilities with secondary and advanced secondary treatment. Footnote "d" specifies that "*These effluent limitations apply to all wastewater facilities,*" which is overly broad. 40 CFR Parts 133 and 125 specify that secondary or secondary equivalent treatment facilities must meet treatment standards for a number of parameters, including biochemical oxygen demand, suspended solids, pH, and percent removal for biochemical oxygen demand and suspended solids, but does not include those for Oil and Grease. Application of the Oil and Grease effluent limitations to secondary and advanced

sewage treatment facilities was not intended and does not afford better beneficial use protection. The new footnote g corrects this inappropriate application of the Oil & Grease effluent limitation.

The specific changes are shown in underline-strikeout in the Basin Plan amendment, Appendix A of this Staff Report.

2.2 Project Objectives

The objectives of the proposed Basin Plan amendment are consistent with the mission of the Water Board and with the requirements of the Clean Water Act and California Water Code (Porter-Cologne Water Quality Control Act). Specific objectives of the Basin Plan amendment project are as follows:

a. Add chlorine water quality objectives for marine, estuarine, and freshwaters to Basin Plan that are
- consistent with state and federal law, and criteria promulgated by U.S. EPA;
- based on the best available scientific information; and
- fully protective of aquatic life use in marine, estuarine, and freshwaters in the region.

b. Add implementation provisions for the new chlorine water quality objectives to the Basin Plan to describe how water quality-based effluent limitations will be implemented in NPDES wastewater permits; and

c. Add regulatory requirements (chlorine water quality objectives and implementation provisions) that meet water quality standards and result in reasonable cost relative to environmental benefits.

3. Project Background

This chapter describes the project's physical setting; summarizes information on chlorine chemistry, discharges and sources in the region; and describes the proposed chlorine water quality objectives and their scientific basis.

3.1 Chlorine Water Chemistry

This section is intended to provide the reader with basic information about the fate of chlorine in an aqueous environment. This information is a summary of peer-reviewed literature (Singleton 1989; USEPA 1984; USEPA 1999b).

When chlorine is added to water, it hydrolyzes to form hypochlorite ion (OCl^-) and hypochlorous acid (HOCl), which are generally found in equilibrium, depending on pH conditions. The reactions are shown in the chemical equations below. Hypochlorous acid is dominant at lower pH conditions, and hypochlorite ion at higher pH conditions. Under the normal wastewater pH range of 6.5 - 8.5, both hypochlorite ion and hypochlorous acid will be present.

Chlorine hydrolysis (1): $Cl_2 + H_2O \rightarrow HOCl + H^+ + Cl^-$

Chlorine hydrolysis (2): $HOCL \leftrightarrow H^+ + OCl^-$

Hypochlorous acid and hypochlorite ion are referred to as “free chlorine.” Hypochlorous acid is a strong oxidizing agent, and it has a sanitizing effect on organic and inorganic contaminants.

When water solutions contain ammonia (NH_3), chloramines are formed, mainly in the forms of monochloramine and dichloramine, depending on initial chlorine to ammonia ratio, pH, temperature, and reaction time. The reactions are shown in the following equations:

Monochloramine: $NH_3 + HOCl \rightarrow NH_2Cl + H_2O$

Dichloramine: $NH_2Cl + HOCl \rightarrow NHCl_2 + H_2O$

These chloramines are referred to as “combined chlorine.” They are weaker oxidizing agents than free chlorine and can also act as disinfectant.

Free and combined chlorine together are referred to as “total residual chlorine” or TRC, representing all forms of chlorine able to act as an oxidant. U.S. EPA uses the term “TRC” in its criteria for chlorine in freshwaters.

Chlorine reacts differently in saltwater than in freshwater because of high concentrations of bromide naturally present in seawater. Chlorine added to saltwater rapidly reacts with bromine to produce hypobromous acid (HOBr) and hypobromite ion (OBr^-), present in equilibrium. Under normal conditions, all free chlorine is reduced to chloride ion. Normal conditions would mean relatively low levels of chlorine discharged from anthropogenic sources (0.5 – 10 mg/L) as compared to the high levels of bromine in seawater (approximately 67 mg/L Br^- in seawater with a salinity of 35 parts per thousand). The following equations illustrate all chemical reactions that can happen when chlorine is added or when chlorinated effluent is discharged to saltwater:

$HOCl + Br^- \leftrightarrow HOBr + Cl^-$

$OCl^- + Br^- \leftrightarrow OBr^- + Cl^-$

$HOBr \leftrightarrow OBr^- + H^+$

When ammonia is present, bromamines are formed. The relative concentration of bromamines is dependent on the ammonia to bromide ratio and water pH. Monobromamine prefers alkaline pH; dibromamine dominates between pH 6 to 9; tribromamine is formed under more acid conditions.

Monobromamine: $HOBr + NH_3 \leftrightarrow NH_2Br + H_2O$

Dibromamine: $HOBr + NH_2Br \leftrightarrow NHBr_2 + H_2O$

Tribromamine: $HOBr + NHBr_2 \leftrightarrow NBr_3 + H_2O$

The sum of free and combined bromine, as well as any free and combined chlorine (if present) together are referred to as “chlorine produced oxidants” or CPO, to indicate that bromine is

involved in the reaction when chlorine is added to saltwater. All these chlorine-containing molecules are toxic to aquatic organisms. U.S. EPA uses the term “CPO” in its criteria for chlorine in saltwater.

Although U.S. EPA differentiates between TRC in freshwater and CPO in saltwater, the analytical methods for TRC measure the sum of free and combined chlorine and bromine, i.e., CPO, in a water sample. Therefore, for the purposes of effluent and ambient characterization, conducting reasonable potential analysis, establishing effluent limitations and compliance monitoring in the NPDES permitting program, this Staff Report uses the term “TRC” to refer to both TRC in freshwater and CPO in saltwater.

3.2 Physical Setting

The proposed chlorine objectives would apply to all surface water bodies within the San Francisco Bay region. The freshwater chlorine objectives will apply to all freshwater lakes, rivers, reservoirs, and creeks of the region. The marine/estuarine chlorine objectives would apply to the region’s water bodies where marine or estuarine conditions exist and for which the Ocean Plan does not apply.

3.3 Chlorine Sources

Unlike the chlorides that exist ubiquitously in almost all natural waters, free chlorine rarely occurs naturally (Singleton 1989). Accordingly, TRC in ambient waters is assumed to mostly come from anthropogenic sources, such as sewage wastewater discharges that have been disinfected with chlorine, once-through cooling water discharges with chlorine added for antifouling purposes, industrial wastewater discharge that uses potable water in the production process, or potable water treatment plant or distribution system discharges. Within the San Francisco Bay Region, the primary TRC source is discharge of chlorine-disinfected municipal sanitary wastewater.

The majority of municipal wastewater treatment facilities in the San Francisco Bay region use chlorine, commonly liquid hypochlorite, for effluent disinfection. Chlorine compounds are injected at the beginning of the contact chamber, with high turbulence for complete initial mixing to occur in less than one second. Adequate contact time and chlorine dosage are critical to ensure microorganisms are killed. Chlorine dosage will vary based on chlorine demand, wastewater characteristics, and discharge requirements. The dosage usually ranges from 5 – 20 mg/L (U.S. EPA 1999b).

After disinfection is complete, any remaining TRC must be neutralized via addition of a dechlorinating agent (typically sodium bisulfite) to protect aquatic life beneficial uses of the receiving waters. At most facilities, continuous on-line monitoring systems are used to control the dosage of these chemicals via associated supervisory control and data acquisition (SCADA) systems. Chlorine concentrations are monitored and recorded with the SCADA systems at multiple locations, both before and after dechlorination. With the current sodium bisulfite overdosing practices, discharges rarely contain any detected TRC.

3.4 Possible Effects of Past Total Residual Chlorine Violations

As mentioned in Section 3.3, TRC from wastewater discharges is the main source of TRC in ambient waters. Because TRC compliance is measured directly in effluent and discharges rarely contain TRC, the Water Board has not required monitoring for TRC in the receiving water. Furthermore, TRC is a nonconservative pollutant, meaning that it breaks down rapidly when discharged. When treated effluent is released into receiving waters, any free residual chlorine dissipates rapidly (half-life 1.3 to 5 hours), so there is no buildup of chlorine in the aqueous environment.

Occasionally, discharges do contain TRC as a result of equipment or plant process control failure, power outages, or operator errors. Based on historical TRC discharge records, TRC violations were few and have occurred sporadically, as described below.

In this region, most treatment facilities that discharge continuously are required to report hourly readings for compliance determination with the TRC effluent limitation. That equates to 8,760 hourly results per year per facility. Based on violation records retrieved from the State Water Resources Control Board's California Integrated Water Quality System (CIWQS), between January 2014 and December 2019 there were 32 TRC effluent limitation violations from sanitary wastewater Publicly Owned Treatment Works (POTWs), five from wet weather discharge facilities and water treatment plants, and 37 from industrial facilities. These violations resulted in discharges of chlorinated effluent with TRC concentrations from 0.1 mg/L to 7.7 mg/L that lasted from a few minutes to three hours. Most violations were less than one hour.

For those violations with reported flow rates, the volume discharged ranged from a few thousand gallons to 400,000 gallons. Most discharges are into deep water (see Section 4.3, list of POTWs and their receiving water types); therefore, the discharges receive a minimum 10:1 dilution, and under many occasions, much higher than 10:1. Treatment plant operators have the ability to correct chlorine exceedances quickly, which results in very few violations lasting long enough for field sampling to be conducted. Thus, we do not have data evaluating the impacts from past wastewater TRC violations; however, evidence of chlorine impacts, such as fish kills, have not been observed or reported in association with these TRC effluent limitation violations. Table 1 below summarizes the number of violations by year and facility type.

Table 1. Number of TRC Effluent Limitation Violations by Year and Facility Type (January 2014 – December 2019)

Year	Sum	2019	2018	2017	2016	2015	2014
POTWs	32	9	0	9	5	1	8
Wet weather or water treatment facilities	5	0	0	1	2	0	2
Industrial facilities (refinery, aggregate or sand washing)	37	0	12	1	2	19	3

Not all facilities experienced TRC violations; for example, 14 of a total 28 POTWs had no TRC effluent limitation violations during this five-year time period.

3.5 Potential Dechlorination Overdosing Impacts

Overdosing of sodium bisulfite may cause impacts to the aquatic environment. Sodium bisulfite is a reducing agent and reacts with free or combined chlorine quickly to remove TRC. This reaction produces hydrochloric acid (HCl), which decreases the pH of the effluent. Excess sodium bisulfite also reacts with dissolved oxygen and can potentially lead to reduced dissolved oxygen concentrations in the effluent and in the receiving water. For these reasons, U.S. EPA and the Water Environment Foundation suggest that overdosing should be avoided (U.S. EPA 2000, WEF 1996). Although decreased pH and dissolved oxygen can occur in receiving waters, we expect such impacts to be minimal, and there have been no reports of fish kills related to sodium bisulfite overdosing.

3.6 Proposed Chlorine Objectives for Marine, Estuarine, and Freshwaters

The Basin Plan currently has no numeric chlorine water quality objectives. The Water Board regulates TRC discharges through a technology-based effluent limitation. Because the technology exists to eliminate chlorine in discharges, the technology-based effluent limitation for chlorine is 0.0 mg/L. The proposed Basin Plan amendment would add chlorine water quality objectives to protect aquatic life beneficial uses in marine, estuarine, and freshwaters consistent with the criteria currently recommended by the U.S. EPA (U.S. EPA 1984). The new chlorine objectives would provide the basis for establishing water quality-based effluent limitations that would replace the existing technology-based effluent limitation.

The lethality of a chemical, in this case chlorine, is determined by calculating the $LC_{50,}$ or the concentration at which 50 percent mortality of test organisms occurs. The toxicity slope represents the percent of test species exposed to the chemical that die over time. Laboratory toxicity tests conducted to investigate chlorine toxicity to aquatic organisms have shown that, in general, the lethality due to TRC is rapid and the toxicity slope is steep. This means that a large proportion of the mortality occurs during the first twelve hours of exposure, so there is not a large difference between LC_{50} for 1-day exposures versus 4-day exposures, which represent the two time periods for which U.S. EPA developed criterion.

When developing the chlorine water quality criteria, U.S. EPA reviewed short-term, or acute, toxicity test data for 33 freshwater species in 28 genera and 24 saltwater species in 21 genera. The TRC acute values (LC_{50}) for freshwater species ranged from 28 micrograms per liter (µg/L) for *Daphnia magna* (a small planktonic arthropod) to 710 µg/L for the three-spine stickleback (fish). The CPO acute values for saltwater species ranged from 26 µg/L for the eastern oyster to 1,418 µg/L for a mixture of two shore crab species. Using these data and applying procedures detailed in U.S. EPA guidelines (U.S. EPA 1985), a freshwater final acute value (FAV) of 38.32 µg/L and saltwater FAV of 25.24 µg/L were derived. The criterion maximum concentration is then computed as one-half the FAV (U.S. EPA 1984). These are the 1-hour average concentrations listed in Table 2 below.

Chronic criteria are developed by applying a factor representing the ratio of acute to chronic toxicity. To develop this ratio, one must evaluate data for species for which both acute and chronic toxicity data exist. U.S. EPA reviewed chronic toxicity data for six freshwater species and one saltwater species, and the final acute-to-chronic ratio (ACR) was taken as the geometric mean of the three lowest ratios, resulting in a value of 3.345. The freshwater and saltwater FAVs were divided by this ACR to yield the Criterion Continuous Concentrations (U.S. EPA 1984). These are the 4-day average concentrations listed in Table 2 below. Both the 1-hour average and 4-day average concentrations are proposed for incorporation into the Basin Plan.

Table 2. Proposed Chlorine Water Quality Objectives for the Protection of Aquatic Life Beneficial Uses

Receiving Water Type*	4-Day Average (µg/L)	1-Hour Average (µg/L)
Marine or Estuarine (Chlorine-Produced Oxidants)	7.5	13
Freshwater (Total Residual Chlorine)	11	19

* Marine waters are those in which the salinity is equal to or greater than 10 parts per thousand 95 percent of the time; freshwaters are those in which the salinity is equal to or less than 1 part per thousand 95 percent of the time; estuarine waters are those with salinities in between the above two categories, as set forth in Chapter 4 of the Basin Plan.

U.S. EPA derived these 4-day average chronic and 1-hour average acute maximum concentration criteria such that aquatic organisms and their uses should not be affected unacceptably if these values are not exceeded more than once every three years on the average.

3.7 Non-regulatory Change to Basin Plan Tables 3-3 and 3-4 Footnote "a"

Footnote "a" for Basin Plan Table 3-3, "Marine Water Quality Objectives for Toxic Pollutants for Surface Waters," and Table 3-4, "Freshwater Water Quality Objectives for Toxic Pollutants for Surface Waters" states that these objectives shall apply to all marine waters or freshwaters "except for the South Bay south of Dumbarton Bridge, where the California Toxics Rule (CTR) applies." We propose to remove this phrase from both table footnotes because it is erroneous.

Contrary to the implication in Footnote a, the CTR is the basis for most of the objectives in Tables 3-3 and 3-4, and CTR water quality objectives apply to the entire San Francisco Bay. Some pollutants in Tables 3-3 and 3-4 have water quality objectives that are not based on the CTR, including chromium III, cyanide, mercury, selenium, tributyltin, and PAHs (marine water only). The objectives for these pollutants also apply to all the segments of the San Francisco Bay, unless otherwise indicated by footnotes for these individual pollutants.

By removing this phrase "except for the South Bay south of Dumbarton Bridge, where the California Toxics Rule (CTR) applies," the erroneous and confusing reference is corrected.

3.8 Non-regulatory Change to Mercury 4-Day Average Water Quality Objective

On May 2, 2017, the State Water Resources Control Board adopted Resolution 2017-0027, which approved "Part 2 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California – Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions." Resolution 2017-0027 (Statewide Mercury Provisions) provides a consistent regulatory approach throughout the state by setting mercury limits to protect the beneficial uses associated with the consumption of fish by both people and wildlife. The Statewide Mercury Provisions explicitly supersede the Water Board's freshwater quality objective for chronic effects, as stated in Section III.D.3:

> *"**3. Interaction of Mercury Water Quality Objectives with Basin Plans***
>
> *The MERCURY WATER QUALITY OBJECTIVES do not supersede any site-specific numeric mercury water quality objectives established in a Basin Plan, except (i) the freshwater mercury water quality objective for chronic effects to aquatic life (0.025 µg/L) established in the San Francisco Bay Basin Water Quality Control Plan (Table 3-4 and corresponding note)"*

In accordance with this directive in the Statewide Mercury Provisions, we propose editorial changes to remove the 4-day average freshwater water quality objectives from Basin Plan Table 3-4 and from footnote "k", which says "which established a mercury criterion of 0.012 ug/l. The Basin Plan set the objective at 0.025 based on considerations of the level of detection attainable at that time. The 4-day average value for mercury does not apply to Walker Creek and Soulajule Reservoir and their tributaries nor to waters of the Guadalupe River watershed; instead, the water quality objectives specified in Table 3-4A apply."

Mercury objectives and implementation provisions adopted in the Statewide Mercury Provisions apply to the region's inland surface waters, enclosed bays, and estuaries wherever applicable. For example, these mercury objectives would be applicable in waterbodies that support a beneficial use for which the Statewide Mercury Provisions establish mercury water quality objectives and which do not have site-specific mercury objectives or a mercury TMDL. Thus, we added a statement in Table 3-4, footnote "k" to inform the reader of the additional mercury water quality objectives in the Statewide Mercury Provisions.

3.9 Non-regulatory Change to Oil and Grease Effluent Limitations

Basin Plan Table 4-2 includes effluent limitations for conventional pollutants for all sewage treatment facilities, including Oil and Grease effluent limitations. The footnote for Oil and Grease specifies that "These effluent limitations apply to all treatment facilities."

This is an overly broad application of these effluent limitations. 40 CFR Parts 133 and 125 specify the treatment standards for the parameters, including biochemical oxygen demand, suspended solids, pH, and percent removal for biochemical oxygen demand and suspended solids that secondary or secondary equivalent treatment facilities must meet. These parameters

do not include Oil and Grease. Application of the Oil and Grease effluent limitations to secondary and advanced sewage treatment facilities was not intended and does not afford better beneficial use protection. To correct this overly broad application of the Oil and Grease limitations, we propose to delete footnote “d” and replace it with footnote “g” which states the effluent limitations apply to all treatment facilities except those with secondary and advanced secondary sewage treatment facilities.

4. Implementation Plan

The new chlorine objectives require a program of implementation consisting of water quality-based effluent limitations derived from the new objectives, effluent monitoring, and guidance for how the effluent limitations should be implemented in NPDES permits, e.g., how to determine compliance with effluent limitations. Most of these implementation elements result in changes to Basin Plan Table 4-2, an underline-strikeout version of which can be found in Appendix A to this report.

4.1 Total Residual Chlorine Water Quality-Based Effluent Limitations

With the addition of the proposed chlorine water quality objectives, it is possible to develop water quality-based effluent limitations based on the State Implementation Policy (SIP), using the following equations (Section 1.4 of the SIP):

$$ECA = C + D \times (C-B)$$

Where ECA = Effluent Concentration Allowance (effluent limitation), C = water quality objective, D = dilution factor, and B = ambient background concentration.

For TRC, normally the ambient background is zero (B = 0), and the equation is simplified to:

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

If no dilution is allowed, i.e., D = 0, then

$$ECA = C$$

We propose to establish the 1-hour water quality-based effluent limitations based on the 1-hour average chlorine objectives and not to impose 4-day average effluent limitations based on the 4-day objectives. This is because TRC dissipates quickly once entering the receiving water. For this reason, we find it unlikely that discharges that meet 1-hour effluent limitations will have TRC concentrations that persist in the receiving water long enough to cause the 4-day water quality objective to be exceeded.

Thus, the proposed 1-hour average TRC water quality-based effluent limitations, without considering a mixing zone, are:

- 0.019 mg/L for discharges into freshwaters;

- 0.013 mg/L for discharges into marine or estuarine waters.

These water quality-based effluent limitations would replace the existing Residual Chlorine effluent limitation of 0.0 mg/L in Basin Plan Table 4-2. A footnote to these water quality-based effluent limitations would specify implementation provisions related to these effluent limitations that would:

- provide for establishment of 4-day average TRC water quality-based effluent limitations in NPDES permits using the procedures in the SIP at the discretion of the Water Board, for example, if there is a reasonable potential that the receiving water could exceed the 4-day objective while discharges comply with the 1-hour effluent limitations;
- explain that water quality-based effluent limitations may be adjusted to account for a mixing zone in a manner consistent with procedures in the State Implementation Policy; and
- indicate how compliance will be determined with the specified averaging period and analytical method minimum levels.

4.2 TRC Effluent Monitoring, Data Assessment, and Minimum Level

Chapter 4 of the Basin Plan specifies how water quality objectives are implemented in our region. For the TRC water quality-based effluent limitations, we propose specifying the following elements pertaining to monitoring, data assessment, and the minimum level (ML).[1]

We propose that TRC compliance monitoring samples be collected not less than once every five minutes; less frequent monitoring may be allowed for smaller facilities or intermittent discharges, such as seasonal or wet weather discharges. For compliance determination, the TRC effluent limitations in Basin Plan Table 4-2 would be compared to the arithmetic mean of all TRC measurements collected during each hour. When computing the 1-hour arithmetic means, measured values below the ML would be treated as zero.

We note that treating TRC values below the ML as zero gives us cause to propose a reasonably stringent ML to limit the amount of TRC that can be discharged without triggering an exceedance. Federal Standard Provisions for all NPDES wastewater permits require that

[1] The ML is the concentration at which the entire analytical system gives 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.

samples be analyzed using sufficiently sensitive test methods[2]. This means that either the ML must be at or below the applicable effluent limitation or the method must have the lowest ML of the analytical methods approved by U.S. EPA in 40 CFR Part 136 or required under 40 CFR Chapter 1, Subchapter N. However, 40 CFR does not provide MLs for TRC analytical methods. To ensure dischargers use the most sensitive analytical methods, we propose a TRC ML of 0.05 mg/L based on U.S. EPA recommendations described below.

To derive a ML where promulgated MLs are not available, U.S. EPA's 1994 *Draft National Guidance for Permitting, Monitoring, and Enforcement of Water Quality-Based Effluent Limitations* recommends using a multiplication factor of 3.18 and the method detection limit (MDL). The lowest published MDL for chlorine residual analysis (Standard Methods 4500-Cl E and G) is 0.01 mg/L under ideal conditions. Therefore, an appropriate level of quantitation or ML under ideal conditions would be approximately 0.03 mg/L. U.S. EPA permitting division (U.S. EPA 1998) recommended that 0.05 mg/L is the appropriate ML for wastewater discharges and pointed out that some states, like Tennessee and South Carolina, had already started using 0.05 mg/L as the TRC ML. An Ohio EPA general permit for discharges from sewage treatment systems (Ohio 2020) includes 0.05 mg/L as the ML. Massachusetts Town of Rockland's 2006 NPDES permit (NPDES Permit No. MA0101923) has 0.02 mg/L as the ML.

We understand that some permits nationwide have higher MLs for TRC, for example, 0.1 mg/L (Fono 2020a); however, many of them are for facilities using handheld chlorine devices for compliance monitoring. In this region, some NPDES dischargers, especially shallow water dischargers, have stated that their laboratories cannot achieve a ML of 0.05 mg/L using TRC Methods 4500-Cl C, F, or G. Factors that affect a method's ML include instrument sensitivity, instrumental precision, variability in extraction processes, and analyst's performance (Chang 2011).

[2] Monitoring must be conducted according to sufficiently sensitive test methods approved under 40 C.F.R. part 136 for the analysis of pollutants or pollutant parameters or required under 40 C.F.R. chapter 1, subchapter N. For the purposes of this paragraph, a method is sufficiently sensitive when:

> "(1) The method minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter, and either (a) the method ML is at or below the level of the applicable water quality criterion for the measured pollutant or pollutant parameter, or (b) the method ML is above the applicable water quality criterion but the amount of the pollutant or pollutant parameter in a facility's discharge is high enough that the method detects and quantifies the level of the pollutant or pollutant parameter in the discharge; or
>
> (2) The method has the lowest ML of the analytical methods approved under 40 C.F.R. part 136 or required under 40 C.F.R. chapter 1, subchapter N, for the measured pollutant or pollutant parameter."

Dischargers that cannot achieve the ML of 0.05 mg/L will likely evaluate whether the cost savings from reducing sodium bisulfite overdosing justifies the cost of improving its laboratory performance in TRC analysis. We expect that many shallow water dischargers will continue sodium bisulfite overdosing to meet the TRC water quality-based effluent limitations. Proposing a higher ML to accommodate dischargers with technical limitations is not appropriate because raising the ML would effectively allow these facilities to discharge chlorine at concentrations that are well above the water quality-based effluent limitations. For discharges to shallow waters there is little assimilative capacity and these discharges could negatively impact beneficial uses.

For comparison, for the current technology-based effluent limitation of 0.0 mg/L, chlorine concentrations of up to 0.049 mg/L are rounded to 0.0 mg/L when determining compliance with these limitations; thus, the proposed ML of 0.05 mg/L is not significantly different from the existing compliance concentration.

4.3 Wastewater Treatment Facilities Foreseeably Affected

As stated in the above section, adoption of the water quality-based effluent limitations will likely not prompt all dischargers to reduce dechlorination agent usage.

To illustrate how the universe of the POTWs in this region will likely reduce sodium bisulfate overdosing as a result of this Basin Plan amendment, we categorize these facilities by how they disinfect (chlorination or ultraviolet light) and whether they discharge to shallow or deep waters. Figure 1 shows the results of this analysis. Treatment capacity is determined by the plant's average daily dry weather influent flow. The combined designed flows for POTWs are also displayed in Figure 1.

There are 44 POTWs in the San Francisco Bay region, of which seven use ultraviolet light (UV) for disinfection (purple box in Figure 1). Because UV disinfection does not use chlorine, these seven POTWs will not be affected by this Basin Plan amendment.

The remaining 37 POTWs disinfect their effluent with chlorine and dechlorinate prior to discharging via 28 outfalls, as shown in the green box in Figure 1, with some POTWs sharing a common outfall. When several POTWs share an outfall, dechlorination occurs and compliance with the TRC effluent limitations is determined at the outfall for the combined effluent. The combined outfalls in this region are as follows:

- Six POTWs discharge via the East Bay Dischargers Authority outfall;
- Four POTWs discharge via the North Bayside System Unit outfall; and
- Two POTWs discharge via the West County Agency outfall.

Of these 37 POTWs, 28 are deep water dischargers (discharging via 19 outfalls) that discharge into estuarine or marine waters. These 19 deep water outfalls have a combined design flow of approximately 470 million gallons per day (mgd), which is about 67 percent of the total combined design flow of all the POTWs that chlorinate (700 mgd). All 28 are expected to reduce their sodium bisulfite dosage (blue box in Figure 1).

Nine of the 37 POTWs are shallow water dischargers (as noted in orange boxes). Of these nine, six discharge into estuarine waters, and three discharge into the upper reach of Napa River, which is freshwater. These shallow water dischargers are unlikely to reduce sodium bisulfite use because they would unlikely to be able to meet the ML under current lab performance, as described above.

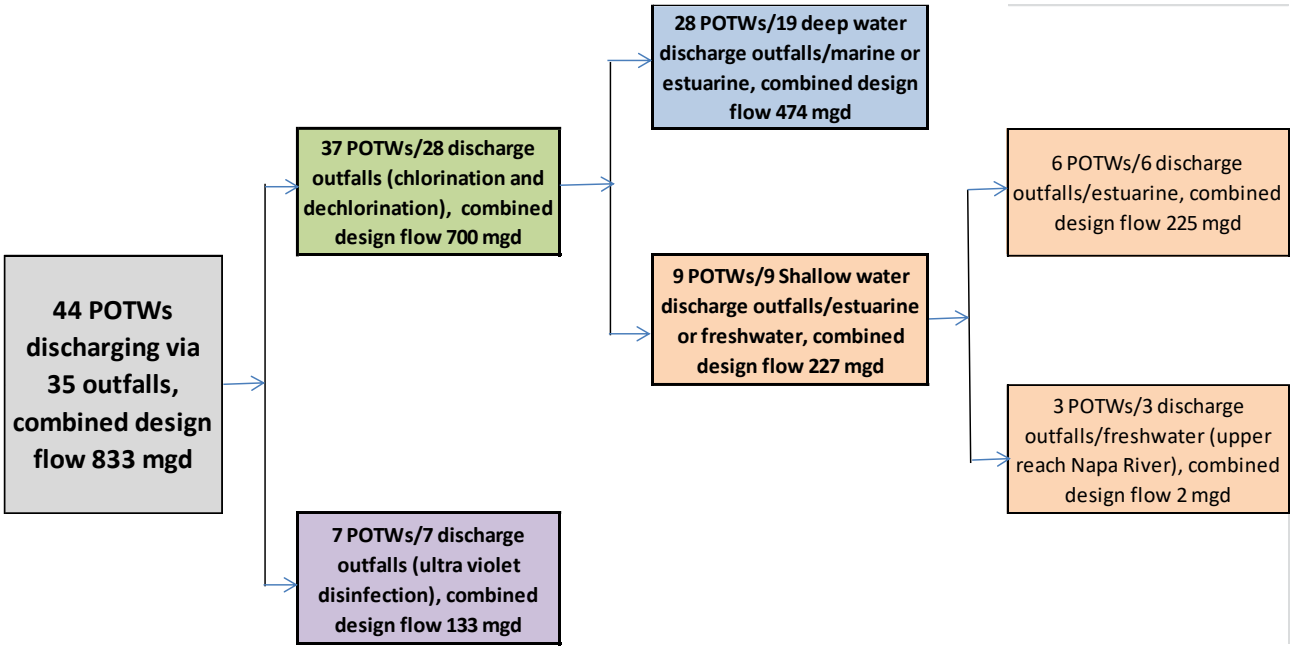

Figure 1. San Francisco Bay Region POTWs by Disinfection Method and Discharge Receiving Water Type

In addition to the POTWs summarized above, industrial facilities with permits containing TRC effluent limitations include C&H Sugar Company and Phillips 66 San Francisco Refinery. Both are deep water dischargers and are expected to reduce sodium bisulfite use as a result of this Basin Plan amendment. Shallow water industrial dischargers are not expected to change their dechlorination practices, if they dechlorinate their effluent, because they discharge into shallow water and will not be able to meet the proposed ML, as stated above.

5. Regulatory Analyses

This section provides the regulatory analyses required when adding water quality objectives and an associated implementation plan to the Basin Plan. California Water Code Section 13241 requires consideration of specific factors when establishing a water quality objective. CEQA requires an environmental impact analysis when adopting a Basin Plan amendment under the Water Board's certified regulatory program (California Public Resources Code Section 15251 [g]). This Staff Report, including the CEQA Checklist and analyses, constitute a substitute environmental document. This section also includes a discussion of economic considerations in accordance with Public Resources Code Section 21159 (a)(3)(c), which requires an analysis of

economic factors related to costs of implementation of the rules or regulations. An anti-backsliding analysis, which addresses the state's antidegradation requirements, is included in this section as well.

5.1 California Water Code Section 13241

California Water Code Section 13241 identifies six factors that must be considered when establishing a water quality objective.

- Past, present and probable beneficial uses of water;
- Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto;
- Water quality conditions that could reasonably be achieved through the coordinated control of all factors that affect water quality in the area;
- Economic considerations;
- The need for developing housing within the region; and
- The need to develop and use recycled water.

5.1.1 Existing and Potential Beneficial Uses

The Basin Plan defines beneficial uses and water quality objectives for waters in the San Francisco Bay region. The beneficial uses cited in Chapter 2 of the Basin Plan for San Francisco Bay water bodies are (in alphabetical order by abbreviation):

- Agricultural supply (AGR)
- Areas of special biological significance (ASBS)
- Cold freshwater habitat (COLD)
- Commercial, and sport fishing (COMM)
- Estuarine Habitat (EST)
- Freshwater replenishment (FRSH)
- Groundwater recharge (GWR)
- Industrial service supply (IND)
- Marine habitat (MAR)
- Fish migration (MIGR)
- Municipal and domestic supply (MUN)
- Navigation (NAV)
- Industrial process supply (PRO)
- Preservation of Rare and Endangered Species (RARE)
- Water contact recreation (REC-1)
- Noncontact water recreation (REC-2)

- Shellfish harvesting (SHELL)
- Fish spawning (SPWN)
- Warm freshwater habitat (WARM)
- Wildlife habitat (WILD)

These beneficial uses adequately represent past, present and probable future uses. The proposed chlorine objectives were developed in accordance with U.S. EPA's *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* (U.S. EPA 1985) to protect aquatic life. The aquatic life protection-related beneficial uses of the surface waters of the region are: COLD, COMM, EST, MAR, MIGR, RARE, SHELL, SPWN, WARM, and WILD. These objectives are expected to be fully protective of the relevant aquatic life-related beneficial uses in marine, estuarine, and freshwaters.

5.1.2 Environmental Characteristics of the Hydrographic Unit

The San Francisco Bay system is the largest coastal embayment on the Pacific Coast of the United States. The watershed encompasses about 155,000 square kilometers. Its waters have a surface area of about 2800 square kilometers and are divided into two major hydrographic units, which are connected by the Central Bay to the Pacific Ocean. The northern reach is relatively well flushed because more than half of California's freshwater flows into the Bay through the Sacramento and San Joaquin Rivers from the Central Valley watershed. In contrast, the southern reach receives limited flushing from the smaller streams draining these smaller local watersheds. There are multiple freshwater streams, creeks, and rivers that flow into the Bay, some of which may receive treated wastewater effluent.

The chlorine objectives will apply to all surface waters of the San Francisco Bay region that are not subject to the Ocean Plan. Based on U.S. EPA water quality criteria, we propose separate water quality objectives for freshwater and marine or estuarine environments to reflect the distinct environmental characteristics of the two categories of surface waters to chlorine is discharged in the region.

Though the quality of individual surface waters in the region varies, the chlorine objectives are not expected to exacerbate existing water quality problems or otherwise degrade water bodies. We expect this Basin Plan amendment would have very little or no quantifiable negative impact on water quality because TRC in effluent will continue to be limited. Moreover, any decrease in the use of sodium bisulfite by permittees who implement the new water quality-based effluent limitations at their facilities would have a slightly positive or neutral effect on water quality.

5.1.3 Water Quality Conditions That Could Reasonably be Achieved

It is well understood (Jolley et al. 1982, Singleton 1989) that TRC rapidly decays and breaks down to chloride ion in seawater, which is already present at high concentrations in the marine and estuarine portions of San Francisco Bay, where most wastewater treatment plant discharges occur. It is exceedingly unlikely that implementation of the proposed project would have a discernible impact on receiving water chloride concentrations.

The Water Board has not required receiving water monitoring for sodium bisulfite because the sulfite is oxidized to sulfate; thus, sodium bisulfite dissociates to sodium and sulfate. Both ions are already present at naturally high concentrations in the marine and estuarine environments. Following adoption of this Basin Plan amendment, deep water dischargers will likely reduce the use of excess sodium bisulfite, which could otherwise result in a pH depression and oxygen demand exerted by excess sodium bisulfite. These changes will be small and difficult to discern given the relatively high background dissolved oxygen concentrations present at most discharge locations around the Bay.

5.1.4 Economic considerations

The economic analysis requires, at a minimum, a review of available information to determine:

- Whether the proposed water quality objectives are currently being attained; and if not,
- What methods are available to achieve compliance with the water quality objective and the costs of those methods of compliance.

In addition to the California Water Code Section 13241 economic analysis requirements, CEQA requires that whenever a state or regional board adopts rules that require the installation of pollution control equipment or establish a performance standard or treatment requirement, the board must conduct an environmental analysis of the reasonably foreseeable methods of compliance [Pub. Res. Code Section 21159, 14 CCR 15064]. Both the CEQA analysis of reasonably foreseeable methods of compliance and the California Water Code Section 13241 economic analyses of the proposed amendment are provided in this section.

Economic Considerations of National Pollutant Discharge Elimination System Permit Effluent Limitations

There are no substantial, foreseeable adverse economic impacts that would result from the implementation of the proposed TRC water quality-based effluent limitations in NPDES permits. Conversely, it is expected that changing from the current technology-based effluent limitation to the proposed water quality-based effluent limitations will allow for a reduction in the amount of excess sodium bisulfite added for dechlorination and associated cost savings. There will be secondary cost savings associated with the reduced energy required to produce and transport lower amounts of sodium bisulfite to treatment facilities and to pump the chemicals from storage tanks to dechlorination locations within the treatment facilities. Existing monitoring and control equipment will not need to be modified or replaced to implement the resultant reductions in chemical dosages.

BACWA provided the results of a survey of the 12 largest dischargers (POTWs with a design flow at or above 10 mgd) regarding their chlorine and sodium bisulfite dosage, cost, and how much of sodium bisulfite cost is for overdosing (Fono 2020a). Central Marin Sanitation Agency provided an approximate cost estimate for sodium bisulfite use after the survey (Fono 2020b). Of the 13 largest POTWs in the San Francisco Bay region, ten are deep water dischargers and are likely to reduce sodium bisulfite overdosing if this Basin Plan amendment is adopted. Results are shown in Table 3 below. The total cost of sodium bisulfite used by the largest

dischargers is estimated to be in excess of $4.25 million, and the excess sodium bisulfite cost exceeds $1.4 million.

Table 3. Bay Area 13 Largest POTWs Sodium Bisulfite Usage and Cost for Fiscal Year 2018 – 2019

Discharger	Design Flow (mgd)	Deep or Shallow Water Discharge	Total Sodium Bisulfite Dosage (mg/L)	Excess Sodium Bisulfite Dosage (mg/L)	Total Sodium Bisulfite Cost ($)	Excess Sodium Bisulfite Cost ($)	Possible to reduce Sodium Bisulfite Use
Central Marin Sanitation Agency	10	Deep	NA	NA	$200,000	$100,000	Yes
Delta Diablo	19.5	Deep	13 - 39	3 - 13	$216,479	$13,800	Yes
East Bay Dischargers Authority	107.8	Deep	Variable	Variable	$182,621	$137,000	Yes
East Bay Municipal Utility District	120	Deep	6.5 – 20.5	1.6 – 9.8	$781,000	$347,000	Yes
Napa Sanitation District	15.4	Shallow	6 - 7	2 - 3	$117,000	$53,000	No
San Francisco, Southeast Plant	85.4	Deep	2 - 4	1 - 2	$615,000	$185,000	Yes
Cities of San Jose/Santa Clara	167	Shallow	As needed	Average 0.54	$713,000	$107,000	No
City of San Mateo	15.7	Deep	11 - 14	2 – 4	$400,000	$132,000	Yes
Silicon Valley Clean Water	29	Deep	3.3 - 6.1	1.2 - 4.4	$203,174	$44,700	Yes
South San Francisco and San Bruno (North Bay System Unit dechlorination)	13	Deep	12 - 14	2 - 4	$335,400	$80,000	Yes
City of Sunnyvale	29.5	Shallow	5 - 12	2 - 3	$128,000	$51,000	No
Vallejo Flood and Wastewater District	15.5	Deep	2 - 6	1 - 1.5	$104,000	$20,000	Yes
West County Agency (dechlor at Richmond)	28.5	Deep	6 - 10	3 - 5	$268,000	$133,500	Yes

As stated previously, we expect that shallow water dischargers will continue their existing operations rather than reduce sodium bisulfite usage. For the ten largest deep water dischargers, the survey results shown in Table 3 indicate that eliminating sodium bisulfite

overdosing by the ten deep water dischargers would save up to $1.2 million, out of a total sodium bisulfite cost of $4.3 million per year, a 28 percent savings.

Economic Considerations of Monitoring

No new monitoring requirements are proposed as part of this project. Existing continuous monitoring and control facilities at wastewater treatment plants should be able to operate without significant modifications at the lower sodium bisulfite dosages that would be possible following implementation of this project. Existing effluent TRC monitoring data from continuous analyzers will be used to calculate 1-hour average concentrations. If smaller or intermittent dischargers wish to reduce sodium bisulfite overdosing and are not equipped with continuous analyzers for TRC compliance monitoring, Water Board permit writers have the discretion to allow less frequent monitoring.

Continuous on-line TRC effluent monitoring data is typically collected and stored by SCADA systems. TRC continuous monitoring data stored in the SCADA system at 5-minutes intervals would be compiled and used to calculate the arithmetic averages over 60-minute periods. Those 24 discrete 60-minute average values will be reported and compared to the 1-hour average water quality-based effluent limitation for compliance determination purposes.

5.1.5 Need for Housing

The proposed chlorine water quality objectives and water quality-based effluent limitations would not restrict the development of housing in the San Francisco Bay region because they do not result in discharge requirements that affect housing or any economic costs related to housing development. Nor does the proposed amendment constrain the ability of wastewater treatment facilities to respond to population growth.

5.1.6 Need to Develop and Use Recycled Water

Adopting the proposed chlorine objectives and water quality-based effluent limitations will have no foreseeable impact on the quality and no impact on the quantity of wastewater available for recycling or reclamation in the region. Recycled water is required to be disinfected to comply with Title 22 drinking water criteria, so not with these effluent limitations. This Basin Plan amendment does not apply to discharges of disinfected recycled water to land or to groundwater, so it will not directly affect the use or production of recycled water.

5.2 California Environmental Quality Act Analysis

CEQA requires agencies to review the potential for their actions to result in adverse environmental impacts. The water quality planning process is a certified regulatory program approved by the Secretary of Resources as exempt from CEQA's requirements for preparation of an environmental impact report or negative declaration. As part of the regulatory program, the State Water Board's regulations at 23 Cal. Code of Regs. Section 3720 et seq. require any standard, rule, regulation or plan proposed for board approval to be accompanied by a completed Environmental Checklist and a written report containing: (1) a brief description of the proposed activity; (2) reasonable alternatives to the proposed activity; and (3) mitigation

measures to minimize any significant environmental impacts of the proposed activity. Upon completion of the written report, the Water Board is required to provide a Notice of Filing of the report to the public. This Staff Report, including the analysis in this section and the Environmental Checklist in Appendix B, meets the requirements of CEQA for adopting Basin Plan amendments and serves as a substitute environmental document.

Consistent with Public Resources Code Section 21159, the substitute document does not engage in speculation, but rather considers only the possible environmental impacts of reasonably foreseeable methods of compliance, reasonably foreseeable feasible mitigation measures, and reasonably foreseeable alternative means of compliance, which would avoid or reduce the identified impacts.

5.2.1 Project Description

The project is a proposed Basin Plan amendment to add chlorine water quality objectives for protection of aquatic life beneficial uses in marine, estuarine, and freshwaters; these objectives provide the basis for calculating water quality-based effluent limitations, which are also included in this project.

Sections 2 through 4 of this report contain additional information about the project. The project objectives are detailed in section 2.2, and Appendix A contains the proposed amendment language. Appendix B contains the Environmental Checklist for the proposed project.

5.2.2 Consideration of Alternatives for the Proposed Amendment

Four project alternatives are considered: (1) no action (no Basin Plan amendment); (2) the proposed Basin Plan amendment; (3) using TRC effluent limitations based on the 4-day average TRC water quality objective; and (4) including an implementation element that does not allow the application of dilution when computing effluent limitations for NPDES permits.

No Action

Under this alternative, the Water Board would not amend the Basin Plan to adopt the proposed chlorine objectives, and no new implementation activities would be initiated. This alternative would not meet all the project objectives set forth in Section 2.2. Specifically, the *'No Action'* alternative would not meet the project objective that the Basin Plan include water quality criteria adopted by U.S. EPA, and the *'No Action'* alternative would mean not adding water quality-based effluent limitations for TRC. This alternative also would not allow for the desired reduction in costs and excess chemical (e.g., sodium bisulfite) discharges to the Bay or the reduction in greenhouse gas emissions related to reduced transportation of the chemicals.

Proposed Basin Plan Amendment

The proposed project is the adoption of the Basin Plan amendment presented in Appendix A. The technical background for the Basin Plan amendment is provided in Sections 2 through 4 of this report and is summarized above. Because this alternative is the only one considered that

meets all project objectives and would not result in adverse environmental impacts (see Appendix B for a complete CEQA checklist results), it is the preferred alternative.

TRC Water Quality-Based Effluent Limitations Based on 4-day Average Water Quality Objectives

Under this alternative, TRC effluent limitations would be calculated based on the 4-day average water quality objectives, as allowed for in the SIP, instead of the proposed 1-hour average water quality objectives. The SIP procedures use both the 4-day average to derive chronic limitations (normally Average Monthly Effluent Limitations) and the 1-hour average water quality objectives to derive acute limitations (normally Maximum Daily Effluent Limitations) for inclusion in NPDES permits.

The SIP calculation procedures were developed for conservative pollutants in contrast to TRC, which is a non-conservative pollutant, meaning it undergoes chemical change and cannot be effectively monitored as TRC in receiving waters. TRC can exert toxicity in the receiving water in much shorter periods than one day or one month but will not be measurable in receiving water over longer periods. Therefore, a monthly limitation would not effectively protect aquatic beneficial uses. Limitations calculated based directly on the 4-day average water quality objective and implemented by the average of measurements collected over a 4-day period, instead of a 1-hour period, would similarly be inappropriate for protecting aquatic life beneficial uses. Compliance with the 4-day average would not necessarily protect aquatic life because monitoring would not detect spikes of acutely toxic levels of TRC. Therefore, this alternative would not meet the project objective that new regulatory requirements should be as stringent as necessary but not more stringent than necessary to attain and maintain water quality standards.

No Initial Dilution Allowed for Calculation of TRC Water Quality-Based Effluent Limitations

Under this alternative, the implementation plan would not allow consideration of dilution in the calculation of TRC water quality-based effluent limitations. This alternative is not consistent with the SIP because the TRC effluent limitations are water quality-based effluent limitations and are eligible for application of dilution.

For deep water discharges in particular, the receiving water provides assimilative capacity. The SIP contains procedures for calculating the concentrations of pollutants that can be assimilated without causing an adverse impact to water quality. If this Basin Plan amendment established effluent limitations without a dilution credit, such effluent limitations would be unnecessarily stringent to protect beneficial uses. Dischargers would be unlikely to reduce their usage of dechlorination chemical. This alternative, therefore, does not meet all project objectives.

Preferred Alternative

The proposed Basin Plan amendment meets all the project objectives and will not result in any significant adverse environmental impacts. None of the other considered alternatives, including

'No Action,*'* meets all the project objectives. Therefore, the proposed Basin Plan amendment is the preferred alternative.

5.3 Antidegradation Analysis

California's "Statement of Policy with Respect to Maintaining High Quality of Waters in California," adopted on October 28, 1968, in Resolution 68-16 serves as the state's Antidegradation Policy, which is consistent with the federal antidegradation policy contained in Code of Federal Regulations, title 40, section 131.12. Where a receiving water is of higher quality than applicable water quality standards, the higher water quality must be maintained unless certain conditions are met. Specifically, any decrease in water quality must be consistent with the maximum benefit to the people of the state, must not unreasonably affect any current or anticipated beneficial uses, and must not result in lower water quality than that prescribed in the policies. Activities that produce an increased volume or concentration of waste and that discharge to existing high quality waters will be required to meet waste discharge requirements that will "result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained."

Adoption and implementation of the water quality objectives for chlorine is expected to be consistent with Resolution No. 68-16, although antidegradation is considered during permit issuance and reissuance on a discharge-by-discharge basis. While revising effluent limitations to reflect the new objectives will allow POTWs to discharge increased volumes and/or concentrations of chlorine, such increase is expected to be consistent with the maximum benefit of the people of the state because it will reduce discharges of dechlorination chemicals, which themselves have harmful effects on water quality; will reduce costs and emissions associated with deliveries of dechlorination chemicals; and will permit POTWs to redirect their limited resources to climate resilience, which is essential to protecting critical infrastructure and human health across the region. Moreover, this Basin Plan Amendment reflects recognition that overdosing with dechlorination chemicals may no longer be the best practicable treatment or control of chlorine because of its adverse impacts to water quality. Compliance with the new objectives will not unreasonably affect current or anticipated beneficial uses because the objectives were developed by U.S. EPA and are protective of water quality and aquatic life. Finally, any increase in chlorine in wastewater discharges will not result in lower water quality than prescribed in the Basin Plan because the discharges will comply with the new water quality objectives.

In addition to satisfying the requirements of the antidegradation policy, the Regional Board, when modifying or reissuing permits with existing water quality-based effluent limitations for chlorine, must ensure that new effluent limitations comply with Clean Water Act anti-backsliding requirements, which prohibit reissued permits from containing less stringent effluent limitations than previous permits unless specific conditions are met. (33 U.S.C. §1342(o); 40 C.F.R.§122.44(l)).

5.4 Anti-backsliding Analysis for Future Permits

Because the existing technology-based effluent limitations are equal to 0 (0.0 mg/L), the proposed TRC water quality-based effluent limitations are technically less stringent than the existing technology-based effluent limitation included in NPDES permits. When individual permits are reissued or amended, this effluent limitation must comply with the Clean Water Act's (CWA's) anti-backsliding provisions.

The term anti-backsliding refers to statutory and regulatory provisions that prohibit the renewal, reissuance, or modification of an existing NPDES permit that contains effluent limitations, permit conditions, or standards less stringent than those established in the previous permit. Here, regulatory and, potentially, statutory backsliding could be used to justify inclusion of the new water quality-based chlorine effluent limitations in reissued permits.

Code of Federal Regulations, title 40, section 122.44, subdivision (l) requires that "when a permit is renewed or reissued, interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under § 122.62.) Code of Federal Regulations, title 40, section 122.62 allows modification under certain circumstances, including when there "are material and substantial alterations or additions to the permitted facility or activity… which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit," and when the permitting authority has received new information that "was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and would have justified the application of different permit conditions at the time of issuance." Here, the deeper understanding of the environmental impacts resulting from the use of excess dechlorination chemicals likely amounts to new information that would justify permit modification under section 122.62. The decrease in use of dechlorination chemicals potentially could also amount to a material and substantial alteration to the permitted activity. However, the permit writer must determine whether backsliding from prior permit limitations is justified on a permit-by-permit basis. Backsliding may also be justified under CWA section 402(o), which prohibits backsliding from an effluent limitation that is based on state standards, such as water quality standards or treatment standards, unless the change is consistent with CWA Section 303(d)(4). (33 U.S.C. §§ 1311(b)(1)(C); 1342, subd. (o)(1); see also U.S. EPA, NPDES Permit Writers' Manual, Ch. 7, § 7.2.1.3; U.S. EPA, Interim Guidance on Implementation of Section 402(o) Anti-backsliding Rules For Water Quality-Based Permits.) Section 303(d)(4) may be applied independently of section 402(o). Here, the previous chlorine effluent limitations were based on state treatment standards reflecting the level of treatment achievable by overdosing with dechlorination chemicals. Thus, in order for backsliding to be permissible, it must be consistent with CWA Section 303(d)(4).

The analysis for revising effluent limitations for a particular constituent under CWA section 303(d)(4) depends on whether the discharge enters receiving waters that meet the water quality

standard (attainment waters) or to receiving waters that do not meet the water quality standard for that constituent (non-attainment waters). (33 U.S.C. § 1313, subd. (d)(4)(B).) Here, no surface waters of the San Francisco Bay region appear on the 303(d) list as impaired for chlorine and, as described in sections 3.2 and 3.3, *supra*, existing ambient chlorine levels are considered to be protective of aquatic life beneficial uses. Therefore, we expect that permits will use the analysis in 303(d)(4)(B) for attainment waters. This analysis provides that a limitation based on a permitting standard may only be relaxed where the action is consistent with a state's antidegradation policy.

Accordingly, chlorine effluent limitations in individual permits may only be relaxed where they are consistent with California's Antidegradation Policy. As described in Section 5.3, *supra*, antidegradation is already considered during permit issuance and reissuance and the Regional Board expects the inclusion of water quality-based effluent limitations for chlorine to be consistent with the Antidegradation Policy. Accordingly, the conclusion that the new effluent limitations are consistent with the Antidegradation Policy will also ensure that effluent limitations are consistent with statutory anti-backsliding provisions.

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Appendix A – Annotated Basin Plan Amendment

PROPOSED BASIN PLAN AMENDMENT

Revisions indicated in single underline/~~strikeout~~ represent new or revised language. Numeric footnotes provide background for proposed changes.

Table 3-3: Marine[a] Water Quality Objectives for Toxic Pollutants for Surface Waters (all values in µg/L)

Compound	4-day Average	1-hr Average	24-hr Average
Arsenic[b, c, d]	36	69	
Cadmium[b, c, d]	9.3	42	
Chromium VI[b, c, d, e]	50	1100	
Copper[c, d, f, l]			
Cyanide[g]			
Lead[b, c, d]	8.1	210	
Mercury[h]	0.025	2.1	
Nickel[b, c, d, l]	8.2	74	
Selenium[i]			
Silver[b, c, d]		1.9	
Tributyltin[j]			
Zinc[b, c, d]	81	90	
PAHs[k]			15

NOTES:

a. Marine waters are those in which the salinity is equal to or greater than 10 parts per thousand 95% of the time, as set forth in Chapter 4 of the Basin Plan. Unless a site-specific objective has been adopted, these objectives shall apply to all marine waters ~~except for the South Bay south of Dumbarton Bridge (where the California Toxics Rule (CTR) applies)~~ or as specified in note h (below). For waters in which the salinity is between 1 and 10 parts per thousand, the applicable objectives are the more stringent of the freshwater (Table 3-4) or marine objectives.

b. Source: 40 CFR Part 131.38 (California Toxics Rule or CTR), May 18, 2000.

c. These objectives for metals are expressed in terms of the dissolved fraction of the metal in the water column.

d. According to the CTR, these objectives are expressed as a function of the water-effect ratio (WER), which is a measure of the toxicity of a pollutant in site water divided by the same

measure of the toxicity of the same pollutant in laboratory dilution water. The 1-hr. and 4-day objectives = table value X WER. The table values assume a WER equal to one.

e. This objective may be met as total chromium.

f. Water quality objectives for copper were promulgated by the CTR and may be updated by U.S. EPA without amending the Basin Plan. Note: at the time of writing, the values are 3.1 ug/l (4-day average) and 4.8 ug/l (1-hr. average). The most recent version of the CTR should be consulted before applying these values.

g. Cyanide criteria were promulgated in the National Toxics Rule (NTR) (Note: at the time of writing, the values are 1.0 µg/l (4-day average) and 1.0 µg/l (1-hr. average)) and apply, except that site-specific marine water quality objectives for cyanide have been adopted for San Francisco Bay as set forth in Table 3-3C.

h. Source: U.S. EPA Ambient Water Quality Criteria for Mercury (1984). The 4-day average value for mercury does not apply to San Francisco Bay; instead, the water quality objectives specified in Table 3-3B apply. The 1-hour average value continues to apply to San Francisco Bay.

i. Selenium criteria were promulgated for all San Francisco Bay/Delta waters in the National Toxics Rule (NTR). The NTR criteria specifically apply to San Francisco Bay upstream to and including Suisun Bay and Sacramento-San Joaquin Delta. Note: at the time of writing, the values are 5.0 ug/l (4-day average) and 20 ug/l (1-hr. average).

j. Tributyltin is a compound used as an antifouling ingredient in marine paints and toxic to aquatic life in low concentrations. U.S. EPA has published draft criteria for protection of aquatic life (Federal Register: December 27, 2002, Vol. 67, No. 249, Page 79090-79091). These criteria are cited for advisory purposes. The draft criteria may be revised.

k. The 24-hour average aquatic life protection objective for total PAHs is retained from the 1995 Basin Plan. Source: U.S. EPA 1980.

l. Table 3-3A contains site-specific water quality objectives for copper and nickel applicable to specific San Francisco Bay segments.

Table 3-4: Freshwater[a] Water Quality Objectives for Toxic Pollutants for Surface Waters (all values in µg/L)

Compound	4-day Average	1-hr Average
Arsenic[b, c, d]	150	340
Cadmium[b, d]	e	e
Chromium III[f]		
Chromium VI[b, c, d, g]	11	16
Copper[b, c, d]	9.0[h]	13[h]
Cyanide[i]		
Lead[b, c, d]	2.5[j]	65[j]
Mercury[k]	~~0.025~~	2.4
Nickel[b, c, d]	52[l]	470[l]
Selenium[m]		
Silver[b, c, d]		3.4[n]
Tributyltin[o]		
Zinc[b, c, d]	120[p]	120[p]

Notes:

a. Freshwaters are those in which the salinity is equal to or less than 1 part per thousand 95% of the time, as set forth in Chapter 4 of the Basin Plan. Unless a site-specific objective has been adopted, these objectives shall apply to all freshwaters ~~except for the South Bay south of Dumbarton Bridge, where the California Toxics Rule (CTR) applies~~. For waters in which the salinity is between 1 and 10 parts per thousand, the applicable objectives are the more stringent of the marine (Table 3-3) and freshwater objectives.

b. Source: 40 CFR Part 131.38 (California Toxics Rule or CTR), May 18, 2000.

c. These objectives for metals are expressed in terms of the dissolved fraction of the metal in the water column.

d. These objectives are expressed as a function of the water-effect ratio (WER), which is a measure of the toxicity of a pollutant in site water divided by the same measure of the toxicity of the same pollutant in laboratory dilution water. The 1-hr. and 4-day objectives = table value × WER. The table values assume a WER equal to one.

e. The objectives for cadmium and other noted metals are expressed by formulas where H = ln (hardness) as $CaCO_3$ in mg/l: The four-day average objective for cadmium is $e^{(0.7852\ H\ -\ 3.490)}$. This is 1.1 µg/l at a hardness of 100 mg/l as $CaCO_3$. The one-hour average objective for cadmium is $e^{(1.128\ H\ -\ 3.828)}$. This is 3.9 µg/l at a hardness of 100 mg/l as $CaCO_3$.

f. Chromium III criteria were promulgated in the National Toxics Rule (NTR). The NTR criteria specifically apply to San Francisco Bay upstream to and including Suisun Bay and Sacramento-San Joaquin Delta. Note: at the time of writing, the values are 180 ug/l (4-day average) and 550 ug/l (1-hr. average). The objectives for chromium III are based on

hardness. The values in this footnote assume a hardness of 100 mg/l $CaCO_3$. At other hardnesses, the objectives must be calculated using the following formulas where H = ln (hardness): The 4-day average objective for chromium III is $e^{(0.8190H+1.561)}$. The 1-hour average for chromium III is $e^{(0.8190\ H+3.688)}$.

g. This objective may be met as total chromium.

h. The objectives for copper are based on hardness. The table values assume a hardness of 100 mg/l $CaCO_3$. At other hardnesses, the objectives must be calculated using the following formulas where H = ln (hardness): The 4-day average objective for copper is $e^{(0.8545H-1.702)}$. The 1-hour average for copper is $e^{(0.9422H-1.700)}$.

i. Cyanide criteria were promulgated in the National Toxics Rule (NTR). The NTR criteria specifically apply to San Francisco Bay upstream to and including Suisun Bay and Sacramento-San Joaquin Delta. Note: at the time of writing, the values are 5.2 ug/l (4-day average) and 22 ug/l (1-hr. average).

j. The objectives for lead are based on hardness. The table values assume a hardness of 100 mg/l $CaCO_3$. At other hardnesses, the objectives must be calculated using the following formulas where H = ln (hardness): The 4-day average objective is $e^{(1.273H\ -4.705)}$. The 1-hour average for lead is $e^{(1.273H-1.460)}$.

k. Source: U.S. EPA Quality Criteria for Water 1986 (EPA 440/5-86-001)~~., which established a mercury criterion of 0.012 ug/l. The Basin Plan set the objective at 0.025 based on considerations of the level of detection attainable at that time. The 4-day average value for mercury does not apply to Walker Creek and Soulajule Reservoir and their tributaries nor to waters of the Guadalupe River watershed; instead, the water quality objectives specified in Table 3- 4A apply. The 1-hour average value continues to apply to waters specified in Table 3-4A.~~ Part 2 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California—Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions (Statewide Mercury Provisions) contains additional mercury objectives that may apply to some waters.

l. The objectives for nickel are based on hardness. The table values assume a hardness of 100 mg/l $CaCO_3$. At other hardnesses, the objectives must be calculated using the following formulas where H = ln (hardness): The 4-day average objective is $e^{(0.8460H + 0.0584)}$. The 1-hour average objective is $e^{(0.8460H + 2.255)}$.

m. Selenium criteria were promulgated for all San Francisco Bay/Delta waters in the National Toxics Rule (NTR). The NTR criteria specifically apply to San Francisco Bay upstream to and including Suisun Bay and Sacramento-San Joaquin Delta. Note: at the time of writing, the values are 5.0 ug/l (4-day average) and 20 ug/l (1-hr. average).

n. The objective for silver is based on hardness. The table value assumes a hardness of 100 mg/l $CaCO_3$. At other hardnesses, the objective must be calculated using the following formula where H = ln (hardness): The 1-hour average objective for silver is $e^{(1.72H\ -6.52)}$. U.S. EPA has not developed a 4-day criterion.

o. Tributyltin is a compound used as an antifouling ingredient in marine paints and toxic to aquatic life in low concentrations. U.S. EPA has published draft criteria for protection of aquatic life (Federal Register: December 27, 2002, Vol. 67, No. 249, Page 79090-79091). These criteria are cited for advisory purposes. The draft criteria may be revised.

p. The objectives for zinc are based on hardness. The table values assume a hardness of 100 mg/l $CaCO_3$. At other hardnesses, the objectives must be calculated using the following

formulas where H = ln (hardness): The 4-day average objective for zinc is $e^{(0.8473\ H+0.884)}$. The 1-hour average for zinc is $e^{(0.8473\ H+\ 0.884)}$.

3.3.23 CHLORINE

The discharge of wastes shall not cause receiving waters to contain concentrations of chlorine-produced oxidants or total residual chlorine in excess of the following objectives for the protection of marine, estuarine, and freshwater aquatic life beneficial uses:

Table 3-8: Chlorine Water Quality Objectives for the Protection of Aquatic Life Beneficial Uses in Marine, Estuarine, and Freshwaters (all values in ug/l)

Receiving Water Type[a]	4-day Average	1-hour Average
Marine or Estuarine (Chlorine-Produced Oxidants[b])	7.5	13
Freshwater (Total Residual Chlorine[c])	11	19

Notes:

a. Marine waters are those in which the salinity is equal to or greater than 10 parts per thousand 95 percent of the time; freshwaters are those in which the salinity is equal to or less than 1 part per thousand 95 percent of the time; estuarine waters are those with salinities in between the above two categories, as set forth in Chapter 4 of the Basin Plan.

b. Chlorine-produced oxidants are the sum of free and combined chlorine and bromine, as measured by the methods for "total residual chlorine."

c. Total residual chlorine is the sum of free and combined chlorine.

Source: 1984 national ambient water quality criteria for chlorine (EPA 440/5-84-030).

Table 4-2 Effluent Limitations for Conventional Pollutants (all units in mg/L, except as otherwise noted)

Parameters~~:~~	**3-Day Average**	**7-Day Average**	**Daily Maximum**	**1-Hour Average**	**Instan-taneous Limit**
Biochemical Oxygen Demand (BOD_5) [a,b]	30	45			
Suspended Solids (SS) [a]	30	45			
85% removal of BOD and SS [a,c]					
pH [d] (in pH units)					
- Shallow Water Discharge					6.5-8.5
- Deep Water Discharge					6.0-9.0
Total Residual Chlorine ~~[d,f (free chlorine plus chloramines)]~~					~~0.0~~
- Marine/Estuarine Discharge				0.013	
- Freshwater Discharge				0.019	
Settleable Matter [e] (in ml/l-hr)	0.1		0.2		
Oil & Grease ~~[d]~~[g]	10		20		

Notes:

a. These effluent limitations apply to all sewage treatment facilities that discharge to inland surface waters and enclosed bays and estuaries. The Water Board may also apply some of these limitations selectively to certain other non-sewage discharges, but they will not be used to preempt Effluent Guideline Limitations established pursuant to Sections 301, 302, 304, or 306 of the federal Water Pollution Control Act, as amended. (Such Effluent Guideline Limitations are included in NPDES permits for particular industries.)

b. The federal regulation allows the parameter BOD to be substituted with Carbonaceous BOD at levels that shall not exceed 25 mg/l as a 30-day average, nor 40 mg/l as a 7-day average.

c. The arithmetic mean of the biochemical oxygen demand (5-day 20ºC) and suspended solids values, by weight, for effluent samples collected in any month shall not exceed 15 percent of the arithmetic mean of the respective values, by weight, for simultaneous influent samples.

d. These effluent limitations apply to all treatment facilities.

e. Discharges from sedimentation and similar cases should generally not contain more than 1.0 ml/l-hr of settleable matter. Design and maintenance of erosion and sediment control structures shall comply with accepted engineering practices as identified in the Association of Bay Area Government's (ABAG's) *Manual of Standards for Erosion and Sediment Control Measures*.

f. These effluent limitations apply to all treatment facilities with potential to discharge chlorine.

These effluent limitations may be adjusted to account for a mixing zone in a manner consistent with procedures in the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California. Total residual chlorine should be monitored with a

frequency of not less than one sample every five minutes. Less frequent sampling may be appropriate for smaller or intermittent discharge facilities. To determine compliance with the 1-hour average effluent limitation, all readings recorded within each hour shall be considered. All readings below the minimum level shall be treated as zero for compliance determination. The discharger shall calculate the arithmetic mean for each hour with all the readings within the hour and compare it with the 1-hour average effluent limitation.

The Water Board will establish water quality-based effluent limitations based on the 4-day average chlorine water quality objective if it is deemed necessary to ensure receiving waters meet the 4-day average water quality objective.

In most cases, the minimum level (which 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) shall be no greater than 0.05 mg/L and shall be reported along with the arithmetic mean of the total residual chlorine results. Higher minimum levels may be used where justified, for example, if a discharger must rely on field instruments.

g. These effluent limitations apply to all treatment facilities except those that provide secondary or advanced secondary treatment.

Appendix B – Environmental Checklist

1. Project Title: Basin Plan amendment to add chlorine water quality objectives to protect aquatic life beneficial uses in marine, estuarine, and freshwaters in the San Francisco Bay region and to replace Basin Plan total residual chlorine (TRC) technology-based effluent limitation with water quality-based effluent limitations

2. Lead Agency Name and Address: San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, California 94612

3. Contact Person and Phone: Tong Yin, (510) 622-2418
Tong.Yin@waterboards.ca.gov

4. Project Locations: The new chlorine objectives will apply in marine, estuarine, and freshwaters in the San Francisco Bay region where Ocean Plan does not apply.

5. Project Sponsor's Name & Address: San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, California 94612

6. General Plan Designation: Not Applicable

7. Zoning: Not Applicable

8. Description of Project:

The project is a proposed Basin Plan amendment (BPA) to adopt chlorine water quality objectives for the protection of aquatic life beneficial uses in marine, estuarine, and freshwaters within the San Francisco Bay region. The BPA will also replace the TRC technology-based effluent limitations in the Basin Plan with water quality-based effluent limitations, to be implemented in the region's National Pollutant Discharge Elimination System (NPDES) permits, along with implementation provisions for the water quality-based effluent limitations. The BPA will also make three minor editorial changes to the Basin Plan: to correct Footnote "a" to Tables 3-3 and 3-4, by removing the text stating that these objectives do not apply to the South Bay south of Dumbarton Bridge, which is erroneous; to remove the 4-day average freshwater mercury objective consistent with the Statewide Mercury Provisions; and to replace the Oil and Grease effluent limitation footnote annotation in Table 4-2, stating that "these effluent limits apply to all treatment facilities," which is overly broad, with a footnote saying the Oil and Grease effluent limitations shall be applied to all treatment facilities except those with secondary and advanced secondary treatment.

9. Surrounding Land Uses and Setting:

The land uses and setting are those of the entire San Francisco Bay region, except the coastal region that drain to the ocean, where Ocean Plan applies.

10. Other public agencies whose approval is required:

The State Water Board, the California Office of Administrative Law, and the U.S. EPA must approve the Basin Plan amendment following adoption by the Water Board.

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

California Native American tribes in the project area, namely, the Federated Indians of Graton Rancheria and Mishewal Wappo Tribe of Alexander Valley, Ohlone/Costanoan-Esselen Nation, United Auburn Indian Community of the Auburn Rancheria, and Wilton Rancheria, were informed of this project on May 5, 2020. The tribes did not request consultation pursuant to Public Resources Code section 21080.3.1.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The project would not have any significant adverse impacts on the environment; hence, there are no physical, biological, social and/or economic factors that might be affected by the proposed project. See the checklist on the following pages for more details.

☐ Aesthetics	☐ Agriculture and Forestry	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Energy
☐ Geology/Soils	☐ Greenhouse Gas Emissions	☐ Hazards and Hazardous Materials
☐ Hydrology/Water Quality	☐ Land Use/Planning	☐ Mineral Resources
☐ Noise	☐ Population/Housing	☐ Public Services
☐ Recreation	☐ Transportation	☐ Tribal Cultural Resources
☐ Utilities/Service Systems	☐ Wildfire	☐ Mandatory Findings on Significance

DETERMINATION: On the basis of this initial evaluation:

☒ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

Signature Date

ENVIRONMENTA CHECKLIST

I. AESTHETICS. Except as provided in Public Resources Code Section 21099, would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☐	☒
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

We do not anticipate that the project would impact aesthetics, because this project would not result in additional construction or change of land use.

II. AGRICULTURAL AND FOREST RESOURCES. In determining whether impacts to agricultural resources are significant environmental impacts, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

We do not anticipate that the project would impact agricultural or forest resources, because the sole change in resource use would be an expected decrease in usage of sodium bisulfate.

III. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☐	☒
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☐	☒

We do not anticipate that the project would have negative impacts to air quality. Conversely, the project may result in modest reductions of greenhouse gas emissions related to a decrease in the production and transport of sodium bisulfate.

IV. BIOLOGICAL RESOURCES. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the DFG or USFWS?	☐	☐	☐	☒
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the DFG or USFWS?	☐	☐	☐	☒
c) Have a substantial adverse effect on state or federally-protected wetlands (including, but not limited to, marsh, vernal pool, coastal, *etc.*) through direct removal, filling, hydrological interruption or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

We do not anticipate that the project would impact biological resources significantly. The proposed water quality objectives were developed to be protective of aquatic life. The project would have no impacts to land. In deep waters of the Bay, the project could alter the quality of wastewater discharges by decreasing the mass of sodium bisulfate released; this could have modest positive impacts to aquatic life; any potential increase in the concentration of chlorine is not expected to harm fish or other aquatic life due to the low concentrations and high mixing in deep water.

V. CULTURAL RESOURCES. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to in §15064.5?	☐	☐	☐	☒

b) Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?	☐	☐	☐	☒
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

We do not anticipate that the project would impact cultural resources. The project is not expected to trigger construction activities or cause increased noise, transportation, or disturbance in the vicinity of the wastewater treatment facilities.

VI. ENERGY. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☐	☒
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

We do not anticipate that the project would impact energy significantly. In fact, the reduced use of dechlorination chemicals would save energy, by reducing the energy needed for transportation, storage, and application of the chemicals.

VII. GEOLOGY and SOILS. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☐	☒
i) Rupture of a known earthquake fault, as delineated in the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines & Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒

b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☒
d) Be located on expansive soils, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternate wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒

We do not anticipate that the project would impact geology and soils. The project would not result in any physical changes of the wastewater treatment facilities and surrounding areas. Therefore, the geology and soils would not be impacted.

VIII. GREENHOUSE GAS EMISSIONS. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☐	☒
b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

We do not anticipate that the project would impact greenhouse gas emissions. Emissions would be slightly reduced to the extent that the project results in lower usage of sodium bisulfite and the associated production, transport, storage and use of those chemicals.

IX. HAZARDS and HAZARDOUS MATERIALS. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or to the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or a public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☐	☒

We do not anticipate that the project would impact hazards and hazardous materials. The project will not increase the application of chlorine as a disinfectant above the status quo. The potential hazard to the public or the environment could be reduced to the extent that the project results in lower usage sodium bisulfite and the associated production, transport, storage and use of this chemical.

X. HYDROLOGY AND WATER QUALITY. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☐	☒
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	☒

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	☐	☐	☐	☒
(i) result in substantial erosion or siltation on- or off-site;	☐	☐	☐	☒
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☐	☒
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☐	☒
(iv) impede or redirect flood flows?	☐	☐	☐	☒
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

We do not expect the project to impact hydrology or water quality. To the extent that implementation of the water quality objectives increases concentrations of chlorine in certain dischargers' effluent, such increases are not expected to adversely impact aquatic life. In fact, implementation of this project may result in slightly improved water quality in the waters of the Region by reducing excess sodium bisulfite discharge and thus potentially reducing oxygen demand and pH depression in the receiving waters.

XI. LAND USE AND PLANNING. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

There is no foreseeable potential for the project to physically divide an established community or conflict with a land use plan or policy. The project would not result in construction of new treatment or chemical storage facilities.

XII. MINERAL RESOURCES. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

The project will not result in any foreseeable impacts on mineral resources. No mineral resources are needed to implement the project.

XIII. NOISE. Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒
b) Generation of, excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing in or working in the project area to excessive noise levels?	☐	☐	☐	☒

We do not anticipate that the project would impact noise. The project would not result in noise associated with construction, transportation of materials for construction, or plant operation. The project could potentially result in minor noise reduction from reduced truck trips to transport chemicals to the wastewater treatment facilities.

XIV. POPULATION AND HOUSING. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

a) Induce substantial unplanned population growth in an area either directly (*e.g.*, by proposing new homes and businesses) or indirectly (*e.g.*, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

We do not anticipate that the project would impact population or housing. The project would not increase wastewater treatment capacity which could allow for additional population and housing construction.

XV. PUBLIC SERVICES.	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	☐	☐	☐	☒
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

We do not anticipate that the project would impact parks or other recreational facilities. The project would not result in additional wastewater treatment capacity, construction of new treatment facilities, or expansion of existing facilities such that a need for new schools or other services could occur as a result of the project.

XVI. RECREATION. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒

b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☒

We do not anticipate that the project would impact recreation facilities. The project would not result in additional wastewater treatment capacity, construction of new treatment facilities, or expansion of existing facilities such that a need for new parks or other services could occur as a result of the project.

XVII. TRANSPORTATION. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☐	☒
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☐	☒
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d) Result in inadequate emergency access?	☐	☐	☐	☒

We do not anticipate that the project will impact transportation or traffic. The project would not result in increased transportation/traffic to wastewater treatment facilities because their operations would largely stay the same. However, the projected decrease of dechlorination chemical use at deep water discharge facilities could result in modest reduction of traffic to the treatment facilities.

XVIII. TRIBAL CULTURAL RESOURCES.	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				

i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☐	☒
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	☒

We do not expect this project would have any impacts on tribal cultural resources. The project would not result in physical changes of the tribal land because no wastewater treatment facilities affected by this Basin Plan amendment are located on Tribal lands, nor are fishery resources affected by this proposed amendment. Formal notification of this project was sent to five tribal contacts in letters dated May 5, 2020. None of the tribal contacts responded with a request to consult on this project.

XIX. UTILITIES AND SERVICE SYSTEMS. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental impacts?	☐	☐	☐	☒
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☐	☒
c) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☒
g) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

We do not anticipate that the project would impact utilities or service systems. Implementation of these water quality objectives would primarily occur through Water Board issuance of waste discharge requirements. No new wastewater treatment facilities are required.

XX. WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

We do not anticipate that the project would impact wildfire. There will be no new construction or wastewater treatment facilities or the road for transportation to the facilities. Therefore, would not result in alteration of the landscape or the surrounding areas that may start a wildfire.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE.	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☒	☐

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)	☐	☐	☐	☒
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

Potential to Degrade and Cumulative impacts: The project is not expected to cause significant degradation or cumulative impacts to the environment, as it would not result in increased wastewater treatment or wastewater discharges. Discharges complying with the new water quality-based effluent limitations would be protective of the receiving waters' beneficial uses. There would not be construction of additional treatment facilities or housing as a result of this project. On the contrary, implementation of this project will likely result in slightly improved water quality in the waters of the Region, as there would be fewer chemicals (sodium bisulfite) entering the receiving waters.

Authority: Public Resources Code Sections 21083, 21084, 21084.1, and 21087.

Reference: Public Resources Code Sections 21080(c), 21080.1, 21080.3, 21082.1, 21083, 21083.1 through 21083.3, 21083.6 through 21083.9, 21084.1, 21093, 21094, 21151; Sundstrom v. County of Mendocino, 202 Cal. App. 3d 296 (1988); Leonoff v. Monterey Board of Supervisors, 222 Cal. App. 3d 1337 (1990).

Explanations of Impact Assessment

The foregoing analysis of potential environmental impacts is based on current wastewater treatment plant disinfection and dechlorination practices and likely future practices following project implementation.

Potential impacts stemming from the project are discussed above and we find there to be no impacts. Most of the impacts resulting from reduced chemical use and discharge are expected to be positive.

Based on this review, we conclude that there are no adverse impacts.

PRELIMINARY STAFF DETERMINATION

☒ The proposed project COULD NOT have a significant effect on the environment, and, therefore, no alternatives or mitigation measures are proposed.

☐ The proposed project MAY have a significant or potentially significant effect on the environment, and therefore alternatives and mitigation measures have been evaluated.

Note: Authority cited: Sections 21083 and 21087, Public Resources Code. Reference: Sections 21080(c), 21080.1, 21080.3, 21082.1, 21083, 21083.3, 21093, 21094, 21151, Public Resources Code; *Sundstrom v. County of Mendocino*, 202 Cal.App.3d 296 (1988); *Leonoff v. Monterey Board of Supervisors*, 222 Cal.App.3d 1337 (1990).