

acute toxicity requirements occurs or if the control fish survival rate is less than 90 percent, the bioassay test shall be restarted with new batches of fish. Bioassay tests shall continue back to back until compliance is demonstrated.

B. Whole Effluent Chronic Toxicity

1. Chronic Toxicity Monitoring Requirements

- a. *Sampling.* The Discharger shall collect 24-hour composite samples of the effluent at the compliance point specified in Table E-4 above for critical life stage toxicity testing. For toxicity tests requiring renewals, 24-hour composite samples collected on consecutive days are required.
- b. *Test Species.* The test species shall be *Mysidopsis bahia*. The Executive Officer may change to another test species if data suggest that another test species is more sensitive to the discharge.
- c. *Methodology.* Sample collection, handling and preservation shall be in accordance with USEPA protocols. In addition, bioassays shall be conducted in compliance with the most recently promulgated test methods, as shown in **Appendix E-1**. These are *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms*, currently third edition (EPA-821-R-02-014), and *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, currently fourth Edition (EPA-821-R-02-013), with exceptions granted the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP).
- d. *Dilution Series.* The Discharger shall conduct tests at 2%, 5%, 10%, 20%, and 40%. The "%" represents percent effluent as discharged. The Discharger may use a buffer only after obtaining written approval from the Executive Officer.

2. Chronic Toxicity Reporting Requirements

- a. *Routine Reporting.* Toxicity test results for the current reporting period shall include, at a minimum, for each test:
 - (1) Sample date(s)
 - (2) Test initiation date
 - (3) Test species
 - (4) End point values for each dilution (e.g., number of young, growth rate, percent survival)
 - (5) No Observed Effect Concentration (NOEC) value(s) in percent effluent
 - (6) Inhibition Concentration (IC) values at IC₁₅, IC₂₅, IC₄₀, and IC₅₀ (or Effective Concentration (EC) values at EC₁₅, EC₂₅ ... etc.) as percent effluent

- (7) Chronic Toxicity Units (TUc) values (100/NOEC, 100/IC₂₅, or 100/EC₂₅)
 - (8) Mean percent mortality (\pm s.d.) after 96 hours in 100% effluent (if applicable)
 - (9) NOEC and Lowest Observed Effect Concentration (LOEC) values for reference toxicant test(s)
 - (10) IC₅₀ or EC₅₀ value(s) for reference toxicant test(s)
 - (11) Available water quality measurements for each test (pH, dissolved oxygen [DO], temperature, conductivity, hardness, salinity, ammonia)
- b. *Compliance Summary.* The results of the chronic toxicity testing shall be provided in the Self-Monitoring Report (SMR) and shall include a summary table of chronic toxicity data from at least eleven of the most recent samples. The information in the table shall include items listed above under 2.a, specifically item numbers (1), (3), (5), (6) (IC₂₅ or EC₂₅), (7), and (8).
3. Chronic Toxicity Reduction Evaluation (TRE)
- a. *Prepare Generic TRE Work Plan.* To be ready to respond to toxicity events, the Discharger shall prepare a generic TRE work plan within 90 days of the effective date of this Order. The Discharger shall review and update the work plan as necessary to remain current and applicable to the discharge and discharge facilities.
 - b. *Submit Specific TRE Work Plan.* Within 30 days of exceeding the trigger for accelerated monitoring, the Discharger shall submit to the Regional Water Board a TRE work plan, which should be the generic work plan revised as appropriate for this toxicity event after consideration of available discharge data.
 - c. *Initiate TRE.* Within 30 days of the date of completion of the accelerated monitoring tests observed to exceed either trigger, the Discharger shall initiate a TRE in accordance with a TRE work plan that incorporates any and all comments from the Executive Officer.
 - d. The TRE shall be specific to the discharge and be prepared in accordance with current technical guidance and reference materials, including USEPA guidance materials. The TRE shall be conducted as a tiered evaluation process, such as summarized below:
 - i. Tier 1 consists of basic data collection (routine and accelerated monitoring).
 - ii. Tier 2 consists of evaluation of optimization of the treatment process, including operation practices and in-plant process chemicals.
 - iii. Tier 3 consists of a toxicity identification evaluation (TIE).
 - iv. Tier 4 consists of evaluation of options for additional effluent treatment processes.
 - v. Tier 5 consists of evaluation of options for modifications of in-plant treatment processes.

- vi. Tier 6 consists of implementation of selected toxicity control measures, and follow-up monitoring and confirmation of implementation success.
- e. The TRE may be ended at any stage if monitoring finds there is no longer consistent toxicity (complying with requirements of Section IV.A.4 of this Order).
- f. The objective of the TIE shall be to identify the substance or combination of substances causing the observed toxicity. All reasonable efforts using currently available TIE methodologies shall be employed.
- g. As toxic substances are identified or characterized, the Discharger shall continue the TRE by determining the source(s) and evaluating alternative strategies for reducing or eliminating the substances from the discharge. All reasonable steps shall be taken to reduce toxicity to levels consistent with chronic toxicity evaluation parameters.
- h. Many recommended TRE elements parallel required or recommended efforts of source control, pollution prevention and storm water control programs. TRE efforts should be coordinated with such efforts. To prevent duplication of efforts, evidence of complying with requirements or recommended efforts of such programs may be acceptable to comply with TRE requirements.
- i. The Regional Water Board recognizes that chronic toxicity may be episodic and identification of causes of and reduction of sources of chronic toxicity may not be successful in all cases. Consideration of enforcement action by the Regional Water Board will be based in part on the Discharger's actions and efforts to identify and control or reduce sources of consistent toxicity.

VI. LAND DISCHARGE MONITORING REQUIREMENTS

Not applicable.

VII. RECLAMATION MONITORING REQUIREMENTS

Not Applicable.

VIII. RECEIVING WATER MONITORING REQUIREMENTS

The Discharger shall continue to participate in the Regional Monitoring Program (RMP), which involves collection of data on pollutants and toxicity in water, sediment and biota of the Estuary. The Discharger's participation and support of the RMP is used in consideration of the level of receiving water monitoring required by this Order.

IX. LEGEND FOR MRP TABLES

Types of Samples

- C-24 = composite sample, 24 hours (includes continuous sampling, such as for flows)
- C-X = composite sample, X hours
- G = grab sample

Frequency of Sampling

Cont.	=	Continuous
Cont/D	=	Continuous monitoring & daily reporting
H	=	Once each hour (at about hourly intervals)
2H	=	once every 2 hours
W	=	Once each week
2/W	=	Twice each week
4/W	=	Four times each week
M	=	Once each month
Q	=	Once each calendar quarter (at about three month intervals)
1/Y	=	Once each calendar year
2/Y	=	Twice each calendar year (at about 6 months intervals, once during dry season, once during wet season)

Parameter and Unit Abbreviations

BNA	=	Base, Neutral, Acid-extractable compounds
CBOD	=	Carbonaceous Biochemical Oxygen Demand
TUc	=	Chronic Toxicity Units
°C	=	Degrees Celsius
DO	=	Dissolved Oxygen
kg/d	=	Kilograms per day
kg/mo	=	Kilograms per month
µg/L	=	Micrograms per liter
mg/L	=	Milligrams per liter
MG	=	Million Gallons
MGD	=	Million Gallons per Day
MPN/100 mL	=	Most Probable Number per 100 milliliters
Metals	=	Multiple metals; See SMP Section VI.G.
% survival	=	Percent survival
s.u.	=	Standard units
TSS	=	Total Suspended Solids
VOC	=	Volatile Organic Compounds

X. OTHER MONITORING REQUIREMENTS**A. Pretreatment Requirements**

The Discharger shall comply with the pretreatment requirements specified in Table E-5 for influent (A-001), effluent (E-001), and biosolids.

Table E-5. Pretreatment Monitoring Requirements ⁽¹⁾

Constituents/EPA Method	Influent (A-001)	Effluent (E-001)	Biosolids
VOCs / 624 ⁽²⁾	2/Y	2/Y	
BNA / 625 ⁽³⁾	2/Y	2/Y	
Metals ⁽⁴⁾	M	M	
Organophosphorus Pesticides	2/Y	2/Y	
Carbamate and Urea Pesticides	2/Y	2/Y	

Biosolids ⁽⁵⁾			2/Y
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- (1) Influent and effluent monitoring conducted in accordance with Tables E-3 and E-4 can be used to satisfy these pretreatment monitoring requirements.
- (2) Volatile organic compounds.
- (3) Base neutral, acid extractable compounds.
- (4) Same USEPA method used to determine compliance with the respective NPDES permit. Analyses for metals shall include arsenic, cadmium, chromium, copper, lead, nickel, silver, zinc, selenium and cyanide.
- (5) USEPA approved methods.

B. Biosolids Monitoring

The Discharger shall adhere to sludge monitoring requirements required by 40 CFR 503.

XI. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.

B. Modifications to Part A of Self-Monitoring Program (Attachment G)

1. If any discrepancies exist between SMP Part A, August 1993 (Attachment G) and this MRP, this MRP prevails.
2. Sections C.3 and C.5 are satisfied by participation in the Regional Monitoring Program.
3. Amend Section E as Follows:

Records to be Maintained

Written reports, electronic records, strip charts, equipment calibration and maintenance records, and other records pertinent to demonstrating compliance with waste discharge requirements, including monitoring and reporting requirements, shall be maintained by the Discharger in a manner and at a location (e.g., wastewater treatment plant or Discharger offices) such that the records are accessible to Regional Water Board staff. These records shall be retained by the Discharger for a minimum of 3 years. This minimum period of retention shall be extended during the course of any unresolved litigation regarding the subject discharge, or when requested by the Regional Water Board or Regional Administrator of the U.S. EPA, Region IX.

Records to be maintained shall include the following:

1. Parameter Sampling and Analyses, and Observations

For each sample, analysis, or observation conducted, records shall include the following:

a. Parameter.

b. Identity of sampling and observation stations, consistent with the station descriptions given in the MPR (Attachment E).

- c. Date and time of sampling and/or observations.*
- d. Method of sampling (e.g., grab, composite, or other method).*
- e. Date and time analyses are started and completed, and name of personnel or contract laboratory performing the analyses.*
- f. Reference or description of procedure(s) and analytical method(s) used.*
- g. Analytical method detection limits and related quantification parameters.*
- h. Results of the analyses and/or observations.*

2. Flow Monitoring Data

For all required flow monitoring (e.g., influent and effluent flows), records shall include the following:

- a. Total flow or volume, for each day.*
- b. Maximum, minimum, and average daily flows for each calendar month.*

3. Wastewater Treatment Process Solids

a. For each treatment unit process that involves solids removal from the wastewater stream, records shall include the following:

- 1) Total volume and/or mass quantification of solids removed from each unit (e.g., grit, skimmings, undigested biosolids) for each calendar month.*
- 2) Final disposition of such solids (e.g., landfill, other subsequent treatment unit).*

b. For final dewatered biosolids from the treatment plant as a whole, records shall include the following:

- 1) Total volume and/or mass quantification of dewatered biosolids for each calendar month.*
- 2) Solids content of the dewatered biosolids.*
- 3) Final disposition of dewatered biosolids (point of disposal location and disposal method).*

4. Disinfection Process

For the disinfection process, records shall be maintained documenting process operation and performance, including the following:

For bacteriological analyses:

- 1) *Date and time of each sample collected.*
- 2) *Wastewater flow rate at the time of sample collection.*
- 3) *Results of sample analyses (e.g., bacterial count).*
- 4) *Required statistical parameters for cumulative bacterial values (e.g., moving median or geometric mean for the number of samples or sampling period identified in waste discharge requirements).*

5. Treatment Process Bypasses

A chronological log of all treatment process bypasses, including wet weather blending, shall include the following:

- a. *Identification of the treatment process bypassed.*
- b. *Date(s) and times of bypass beginning and end.*
- c. *Total bypass duration.*
- d. *Estimated total volume.*
- e. *Description of, or reference to other report(s) describing, the bypass event, the cause, corrective actions taken, and any additional monitoring conducted.*

6. Modify Section F.4 as follows:

Self-Monitoring Reports

For each calendar month, a self-monitoring report (SMR) shall be submitted to the Regional Water Board in accordance with the requirements listed in Self-Monitoring Program, Part A. The purpose of the report is to document treatment performance, effluent quality and compliance with waste discharge requirements prescribed by this Order, as demonstrated by the monitoring program data and the Discharger's operation practices.

[And add at the end of Section F.4 the following:]

- g. *If the Discharger wishes to invalidate any measurement, the letter of transmittal will include identification of the measurement suspected to be invalid and notification of intent to submit, within 60 days, a formal request to invalidate the measurement, the original measurement in question, the reason for invalidating the measurement, all relevant documentation that supports the invalidation (e.g., laboratory sheet, log entry, test results, etc.), and discussion of the corrective actions taken or planned (with a time schedule for completion), to prevent recurrence of the sampling or measurement problem.*

h. Reporting Data in Electronic Format

The Discharger has the option to submit all monitoring results in an electronic reporting format approved by the Executive Officer. If the Discharger chooses to submit SMRs electronically, the following shall apply:

- 1) Reporting Method: The Discharger shall submit SMRs electronically via the process approved by the Executive Officer in a letter dated December 17, 1999, Official Implementation of Electronic Reporting System (ERS) and in the Progress Report letter dated December 17, 2000, or in a subsequently approved format that the Permit has been modified to include.*
- 2) Monthly or Quarterly Reporting Requirements: For each reporting period (monthly or quarterly as specified in SMP Part B), an electronic SMR shall be submitted to the Regional Water Board in accordance with Section F.4.a-g. above. However, until U.S. EPA approves the electronic signature or other signature technologies, Dischargers that are using the ERS must submit a hard copy of the original transmittal letter, an ERS printout of the data sheet, a violation report, and a receipt of the electronic transmittal.*
- 3) Annual Reporting Requirements: Dischargers who have submitted data using the ERS for at least one calendar year are exempt from submitting an annual report electronically, but a hard copy of the annual report per Sections F.5.b, F.5.c, and F.5.d below shall be submitted.*

7. Add at the end of Section F.5, Annual Reporting, the following:

d. A plan view drawing or map showing the Discharger's facility, flow routing and sampling and observation station locations.

C. Self Monitoring Reports

1. At any time during the term of this Order, the State or Regional Water Board may notify the Discharger to electronically submit SMRs using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (<http://www.waterboards.ca.gov/ciwqs/index.html>). Until such notification is given, the Discharger shall submit hard copy SMRs. The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal.
2. The Discharger shall submit monthly and annual SMRs including the results of all required monitoring using USEPA-approved test methods or other test methods specified in this Order for each calendar month. If the Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR. Monthly SMRs shall be due on the 30th day following the end of each calendar month, covering samples collected during that calendar month; Annual Reports shall be due on February 1 following each calendar year.

3. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-6. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On...	Monitoring Period
Continuous	Day after permit effective date	All
Hourly	Day after permit effective date	Hourly
Daily	Day after permit effective date	Midnight through 11:59 PM or any 24-hour period that reasonably represents a calendar day for purposes of sampling.
Weekly	Sunday following permit effective date or on permit effective date if on a Sunday	Sunday through Saturday
Monthly	First day of calendar month following permit effective date or on permit effective date if that date is first day of the month	1 st day of calendar month through last day of calendar month
Quarterly	Closest of January 1, April 1, July 1, or October 1 following (or on) permit effective date	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31
Semiannually	Closest of January 1 or July 1 following (or on) permit effective date	January 1 through June 30 July 1 through December 31
Annually	January 1 following (or on) permit effective date	January 1 through December 31
Per Discharge Event	Anytime during the discharge event or as soon as possible after aware of the event	At a time when sampling can characterize the discharge event

4. Reporting Protocols. The Discharger shall report with each sample result the applicable Reporting Level (RL) and the current Method Detection Limit (MDL), as determined by the procedure in 40 CFR 136.

The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

- a. Sample results greater than or equal to the RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
- b. Sample results less than the RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (\pm a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

- c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.
 - d. Dischargers are to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from *extrapolation* beyond the lowest point of the calibration curve.
5. The Discharger shall submit SMRs in accordance with the following requirements:
- a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the Millbrae WPCP is operating in compliance with interim and/or final effluent limitations. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.
 - b. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDRs; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.
 - c. SMRs must be submitted to the Regional Water Board, signed and certified as required by the Standard Provisions (Attachment D), to the address listed below:

Executive Officer
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612
ATTN: NPDES Permit

D. Discharge Monitoring Reports

1. As described in Section X.B.1 above, at any time during the term of this Order, the State or Regional Water Board may notify the Discharger to electronically submit SMRs that will satisfy federal requirements for submittal of Discharge Monitoring Reports (DMRs). Until such notification is given, the Discharger shall submit DMRs in accordance with the requirements described below.
2. DMRs must be signed and certified as required by the standard provisions (Attachment D). The Discharge shall submit the original DMR and one copy of the DMR to one of the addresses listed below:

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

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

E. Other Reports

The Discharger shall report the results of any special studies, monitoring, and reporting required by Section VI.C.2 (Special Studies, Technical Reports, and Additional Monitoring Requirements) of this Order with the first monthly SMR following the respective due date. The Discharger shall include a report of progress towards meeting compliance schedules established by section VI.C.2 of this Order in the annual SMR.

**APPENDIX E-1
CHRONIC TOXICITY
DEFINITION OF TERMS AND SCREENING PHASE REQUIREMENTS**

I. Definition of Terms

- A. No observed effect level (NOEL) for compliance determination is equal to IC₂₅ or EC₂₅. If the IC₂₅ or EC₂₅ cannot be statistically determined, the NOEL shall be equal to the NOEC derived using hypothesis testing.
- B. Effective concentration (EC) is a point estimate of the toxicant concentration that would cause an adverse effect on a quantal, "all or nothing," response (such as death, immobilization, or serious incapacitation) in a given percent of the test organisms. If the effect is death or immobility, the term lethal concentration (LC) may be used. EC values may be calculated using point estimation techniques such as probit, logit, and Spearman-Kärber. EC₂₅ is the concentration of toxicant (in percent effluent) that causes a response in 25 percent of the test organisms.
- C. Inhibition concentration (IC) is a point estimate of the toxicant concentration that would cause a given percent reduction in a nonlethal, nonquantal biological measurement, such as growth. For example, an IC₂₅ is the estimated concentration of toxicant that would cause a 25 percent reduction in average young per female or growth. IC values may be calculated using a linear interpolation method such as USEPA's Bootstrap Procedure.
- D. No observed effect concentration (NOEC) is the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specific time of observation. It is determined using hypothesis testing.

II. Chronic Toxicity Screening Phase Requirements

- A. The Discharger shall perform screening phase monitoring:
 1. Subsequent to any significant change in the nature of the effluent discharged through changes in sources or treatment, except those changes resulting from reductions in pollutant concentrations attributable to source control efforts, or
 2. Prior to permit reissuance. Screening phase monitoring data shall be included in the NPDES permit application for reissuance. The information shall be as recent as possible, but may be based on screening phase monitoring conducted within 5 years before the permit expiration date.
- B. Design of the screening phase shall, at a minimum, consist of the following elements:
 1. Use of test species specified in **Appendix E-2**, attached, and use of the protocols referenced in those tables.
 2. Two stages:

- a. Stage 1 shall consist of a minimum of one battery of tests conducted concurrently. Selection of the type of test species and minimum number of tests shall be based on **Appendix E-2** (attached).
 - b. Stage 2 shall consist of a minimum of two test batteries conducted at a monthly frequency using the three most sensitive species based on the Stage 1 test results.
3. Appropriate controls.
 4. Concurrent reference toxicant tests.
 5. Dilution series of 2%, 5%, 10%, 20%, and 40%, where “%” is percent effluent as discharged.
- C. The Discharger shall submit a screening phase proposal acceptable to the Executive Officer. The proposal shall address each of the elements listed above. If within 30 days, the Executive Officer does not comment, the Discharge shall commence with screening phase monitoring.

**APPENDIX E-2
SUMMARY OF TOXICITY TEST SPECIES REQUIREMENTS**

Critical Life Stage Toxicity Tests for Estuarine Waters

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

Toxicity Test References:

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

Critical Life Stage Toxicity Tests for Fresh Waters

Species	(Scientific Name)	Effect	Test Duration	Reference
Fathead minnow	<i>(Pimephales promelas)</i>	Survival; growth rate	7 days	4
Water flea	<i>(Ceriodaphnia dubia)</i>	Survival; number of young	7 days	4
Alga	<i>(Selenastrum capricornutum)</i>	Cell division rate	4 days	4

Toxicity Test Reference:

4. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, third edition. EPA/600/4-91/002. July 1994.

Toxicity Test Requirements for Stage One Screening Phase

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

[1] The freshwater species may be substituted with marine species if:

- (a) The salinity of the effluent is above 1 part per thousand (ppt) greater than 95 percent of the time, or
- (b) The ionic strength (TDS or conductivity) of the effluent at the test concentration used to determine compliance is documented to be toxic to the test species.

[2] (a) Marine/Estuarine refers to receiving water salinities greater than 1 ppt at least 95 percent of the time during a normal water year.

- (b) Fresh refers to receiving water with salinities less than 1 ppt at least 95 percent of the time during a normal water year.

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ATTACHMENT F – FACT SHEET

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

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for dischargers in California. Only those sections or subsections of this Order that are specifically identified as “not applicable” have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as “not applicable” are fully applicable to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the Millbrae Water Pollution Control Plant (WPCP).

Table F-1. Facility Information

WDID	2 417019001
Dischargers	City of Millbrae and the North Bayside System Unit (NBSU)
Name of Facility	City of Millbrae Water Pollution Control Plant
Facility Address	400 East Millbrae Avenue
	Millbrae, CA 94030
	San Mateo County
Facility Contact, Title, Phone	Joseph Magner, Superintendent, (650) 259-2388
Authorized Person to Sign and Submit Reports	Joseph Magner, Superintendent, (650) 259-2388
Mailing Address	621 Magnolia Avenue Millbrae, CA 94030
Billing Address	Same as Mailing Address
Type of Facility	Publicly Owned Treatment Works (POTW)
Major or Minor Facility	Major
Threat to Water Quality	2
Complexity	A
Pretreatment Program	Yes
Reclamation Requirements	1
Facility Permitted Flow	3.0 million gallons per day (MGD) average dry weather flow
Facility Design Flow	3.0 MGD (average daily, dry weather design flow)
	9.0 MGD (peak daily, wet weather design flow)
Watershed	San Francisco Bay
Receiving Water	Lower San Francisco Bay
Receiving Water Type	Marine

- A. The City of Millbrae is the owner and operator of the City of Millbrae Water Pollution Control Plant (WPCP), which discharges to Lower San Francisco Bay through the North Bayside System Unit (NBSU) force main.

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

- B.** The Millbrae WPCP discharges treated wastewater through the NBSU force main into the deep-water channel of Lower San Francisco Bay, a water of the United States, and is currently regulated by Order No. 01-143 (NPDES Permit No. CA0037532), which was adopted on November 28, 2001.

The terms and conditions of Order No. 01-143 have been automatically continued past the Order’s original expiration date of November 28, 2006, and remain in effect until new Waste Discharge Requirements (WDRs) and a new NPDES permit are adopted pursuant to this Order.

- C.** The Discharger filed a Report of Waste Discharge and submitted an application for renewal of its WDRs and NPDES permit on March 24, 2006. The application was deemed complete on April 3, 2006.

II. FACILITY DESCRIPTION

A. Description of Wastewater Treatment

The Discharger owns and operates the Millbrae WPCP, which provides primary and secondary treatment of domestic and commercial wastewater collected from the City of Millbrae (population 20,500). The Millbrae WPCP has an average daily dry weather design treatment capacity of 3.0 MGD and can treat up to 9.0 MGD during wet weather.

Wastewater treatment processes at the Millbrae WPCP include grinding, primary sedimentation in rectangular clarifiers, biological activated sludge treatment, secondary clarification, disinfection with sodium hypochlorite, and final effluent skimming. Electricity is generated using the digester methane gas to fuel a co-generator. Standby generators supply power to Millbrae WPCP systems during power outages. Recycled water is produced for restricted use applications. A treatment process schematic diagram is included as Attachment C.

Chlorinated secondary effluent is discharged through Outfall E-001 to the North Bayside System Unit (NBSU) force main. The effluent is dechlorinated at the City of South San Francisco Water Quality Control Plant prior to discharge into Lower San Francisco Bay through the NBSU outfall (Outfall E-002). Outfall E-002 is a submerged diffuser located northeast of Point San Bruno about 5,300 feet offshore at a depth of 20 feet below mean lower low water (37 degrees, 39 minutes, 55 seconds N latitude and 122 degrees, 21 minutes, 41 seconds W longitude). The NBSU is a joint powers authority and includes the Cities of Burlingame, Millbrae, South San Francisco, and San Bruno, and San Francisco International Airport (both industrial and domestic waste treatment plants).

The Millbrae WPCP previously blended primary effluent with secondary effluent prior to disinfection when necessary as part of its wet weather operating strategy. It reported one blending event during the term of the previous permit, in February 2004. However, the Millbrae WPCP no longer blends; therefore, this Order does not include a provision for blending.

All storm water captured within the wastewater treatment plant is directed to the headworks of the treatment plant. Therefore, discharges of storm water originating on the grounds of the Millbrae WPCP are regulated by this order and coverage under Statewide Industrial Storm Water Permit (NPDES General Permit No. CAS000001) is not required.

B. Discharge Points and Receiving Waters

The receiving water and the location of the NBSU discharge point are shown in Table F-2 below and Attachment B.

Table F-2. Outfall Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
E-002	POTW Effluent	37°, 39', 55" N	122°, 21', 41" W	Lower San Francisco Bay, via Discharge through the North Bayside System Unit

Lower San Francisco Bay is located in the South Bay Basin watershed management area, between the Dumbarton Bridge and the San Francisco-Oakland Bay Bridge.

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

Effluent limitations contained in the previous Order (Order No. 01-143) for discharges to Lower San Francisco Bay and representative monitoring data from the term of Order No. 01-143 are as follows:

Table F-3. Effluent Limitations (Order No. 01-143) and Monitoring Data for Conventional and Non-Conventional Pollutants

Parameter	(units)	Effluent Limitations			Monitoring Data (From 01/02 to 02/07)		
		Monthly Average	Weekly Average	Daily Maximum	Highest Monthly Average	Highest Weekly Average	Highest Daily Discharge
Oil and Grease	mg/L	10	---	20	5.5	NA	5.5
pH	standard units	6.0 – 9.0			7.4	NA	8.0
Total Suspended Solids (TSS)	mg/L	30	45	60	20	33	66
Acute Toxicity	% survival	(1)	(1)	(1)	NA	NA	NA
Carbonaceous Biological Oxygen Demand (CBOD)	mg/L	25	40	50	20	38	59
Fecal Coliform	MPN/100 mL	(2)	(2)	(2)	137	NA	16,000
Chlorine, Total Residual (TRC)	mg/L	---	---	0.0 ⁽³⁾	(4)	(4)	(4)
Settleable Matter	mL/L-hr.	0.1	---	0.2	0.5	NA	0.5

mg/L = milligrams per liter

mL/L-hr = milliliters per liter per hour

Most Probable Number per 100 milliliters = MPN/100 mL

ND = Non-Detect

NA = Not Applicable

% survival = percent survival

- (1) An 11-sample median value of not less than 90 percent survival and an 11-sample 90th percentile value of not less than 70 percent survival.
- (2) The geometric mean for each calendar month shall not exceed 200 MPN/100 mL and no more than 10 percent of the samples in each calendar month shall exceed 400 MPN/100 mL.
- (3) For TRC, 0.0 mg/L was established as an instantaneous maximum effluent limitation.
- (4) Compliance is measured at the NBSU outfall for all NBSU dischargers. Individual data for the Millbrae WPCP is not available. TRC was not detected at the NBSU outfall over the time period covered in this table.

Table F-4. Effluent Limitations (Order No. 01-143) and Monitoring Data for Toxic Pollutants

Parameter	Units	Final Limits		Interim Limits		Monitoring Data (From 02/04 to 01/07)
		Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Highest Daily Concentration
Copper	µg/L	-----	-----	-----	17	13
Lead	µg/L	89	31	-----	-----	0.58
Mercury	µg/L	-----	-----	-----	0.087	0.028
Nickel	µg/L	63	33	-----	-----	6.5
Zinc	µg/L	887	440	-----	-----	27
Cyanide	µg/L	-----	-----	-----	10	17
TCDD Equivalents	µg/L	-----	-----	-----	1.4×10^{-7}	8.3×10^{-8}
Tetrachloroethylene	µg/L	-----	-----	-----	25	1.2
Bis(2-Ethylhexyl)Phthalate	µg/L	-----	-----	-----	170	3.1
4,4-DDE	µg/L	0.00118	0.00059	-----	-----	(0.002) ⁽¹⁾
Dieldrin	µg/L	0.000264	0.00014	-----	-----	(0.0019) ⁽¹⁾

Units: µg/L = micrograms per liter

⁽¹⁾ Analyte not detected in effluent. Number in parenthesis is the method detection limit (MDL) as reported by the analytical laboratory.**D. Compliance Summary**

1. **Compliance with Numeric Effluent Limits.** Exceedances of numeric effluent limits were observed during the permit term for total suspended solids, total settleable solids, fecal coliform, and CBOD. The exceedances are outlined below:

Table F-5. Numeric Effluent Exceedances

Date of Violation	Exceeded Parameter	Units	Effluent Limitation	Reported Concentration
October 31, 2002	Cyanide – Effluent Monthly Average	µg/L	10	18
December 19, 2002	TSS – Effluent Daily Maximum	Mg/L	60	66
October 31, 2003	Fecal Coliform – Monthly Percentage of Samples Greater Than 400 MPN/100 mL	%	10	25
November 30, 2003	Fecal Coliform – Monthly Percentage of Samples Greater Than 400 MPN/100 mL	%	10	18
December 29, 2003	Total Settleable Solids - Effluent Daily Maximum	mL/L-hr	0.2	0.5
December 31, 2003	Total Settleable Solids - Effluent Monthly Average	mL/L-hr	0.1	0.5
December 31, 2003	Fecal Coliform – Monthly Percentage of Samples Greater Than 400 MPN/100 mL	%	10	20
September 30, 2004	Fecal Coliform – Monthly Percentage of Samples	%	10	12.5

Date of Violation	Exceeded Parameter	Units	Effluent Limitation	Reported Concentration
	Greater Than 400 MPN/100 mL			
January 23, 2005	CBOD – Daily Maximum	mg/L	50	59
July 31, 2006	Cyanide - Effluent Monthly Average	µg/L	10	11.2
August 7, 2006	Acute Toxicity – Less Than 70% Survival If One or More of Past 10 or Less also Less Than 70%	%	70	45
September 30, 2006	Fecal Coliform – Monthly Percentage of Samples Greater Than 400 MPN/100 mL	-----	10	16.67

The Regional Water Board is evaluating appropriate enforcement for the exceedances listed above. Three of the above violations (cyanide effluent daily maximum, October 2002; Total Settleable Solids effluent daily maximum and effluent monthly average, December 2003) are considered “serious” and one additional violation (Fecal Coliform – Monthly Percentage of Samples Greater Than 400 MPN/100 mL in December 2003) is considered “chronic” under California Water Code (CWC) section 13385.

E. Planned Changes

The Millbrae WPCP is in the planning stages of a series of capital projects that will include improvements to the collection system, addition of treatment plant flow equalization, process facilities renovation, a new aeration system, and a new operations center. The projects do not include an increase in the treatment capacity. The improvement projects are estimated to be completed by May, 2010.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

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

A. Legal Authorities

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

B. California Environmental Quality Act (CEQA)

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

C. State and Federal Regulations, Policies, and Plans

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

and approved by the State Water Resources Control Board, USEPA, and the Office of Administrative Law, as required. Requirements of this Order implement the Basin Plan.

The Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which establishes state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply (MUN). Because of the marine influence on receiving waters of San Francisco Bay, total dissolved solids levels in San Francisco Bay commonly (and often significantly) exceed 3,000 mg/L and thereby meet an exception to State Water Board Resolution No. 88-63. Therefore, the designation MUN is not applicable to Lower San Francisco Bay. Beneficial uses applicable to Lower San Francisco Bay are as follows:

Table F-6. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
E-002	Lower San Francisco Bay	Industrial Service Supply (IND) Navigation (NAV) Water Contact Recreation (REC1) Non-Contact Water Recreation (REC2) Ocean, Commercial and Sport Fishing (COMM) Wildlife Habitat (WILD) Preservation of Rare and Endangered Species (RARE) Fish Migration (MIGR) Shellfish Harvesting (SHELL) Estuarine Habitat (EST)

2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on December 22, 1992, and amended it on May 4, 1995, and November 9, 1999. About 40 criteria in the NTR applied in California. On May 18, 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on February 13, 2001. These rules contain water quality criteria for priority toxic pollutants, which are applicable to Lower San Francisco Bay.
3. **State Implementation Policy.** On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on April 28, 2000, with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plan. The SIP became effective on May 18, 2000, with respect to the priority pollutant criteria promulgated by the USEPA through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005 that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.
4. **Alaska Rule.** On March 30, 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards (WQS) become effective for CWA

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

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

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

In the cases of copper and cyanide:

- Both the final effluent limits for copper that will take effect with this Order and the alternate effluent limits for copper based on site-specific objectives (SSOs) that will take effect if the SSOs become effective during the term of this Order are higher than the current interim limits.
- The final effluent limits for cyanide are higher than the previous interim effluent limit in Order No. 01-143.

The standards-setting processes for the copper and cyanide SSOs addressed antidegradation, concluding that water quality would not be degraded (*Copper Site-Specific Objectives in San Francisco Bay: Proposed Basin Plan Amendment and Draft Staff Report*, June 6, 2007; *Staff Report on Proposed Site-Specific Water Quality Objectives for Cyanide for San Francisco Bay*, December 4, 2006). These conclusions were based on assumed implementation of copper and cyanide action plans. Such plans are included in the provisions of this Order (Sections VI.C.7 and 8).

As antidegradation has been addressed, there will be no lowering of water quality beyond the current level authorized in the previous permit, which is the baseline by which to measure whether degradation will occur, and further analysis in this permit is unnecessary. Findings authorizing degradation are thus unnecessary.

6. **Anti-Backsliding Requirements.** CWA Sections 402(o)(2) and 303(d)(4) and NPDES regulations at 40 CFR 122.44(l) prohibit backsliding in NPDES permits. These anti-

backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed. See Fact Sheet Section VI.D.1, Anti-Backsliding/Antidegradation.

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

In November 2006, the USEPA approved a revised list of impaired water bodies prepared by the State [hereinafter referred to as the 303(d) list], prepared pursuant to provisions of CWA section 303(d), which requires identification of specific water bodies where it is expected that water quality standards will not be met after implementation of technology-based effluent limitations on point sources. Lower San Francisco Bay is listed as an impaired waterbody for chlordane, DDT, dieldrin, dioxin compounds, exotic species, furan compounds, mercury, PCBs, and dioxin-like PCBs. The SIP requires final effluent limitations for all 303(d)-listed pollutants to be consistent with total maximum daily loads and associated waste load allocations.

1. Total Maximum Daily Loads

The Regional Water Board plans to adopt Total Maximum Daily Loads (TMDLs) for pollutants on the 303(d) list in Lower San Francisco Bay within the next ten years. Future review of the 303(d)-list for Lower San Francisco Bay may provide schedules or result in revision of the schedules for adoption of TMDLs.

2. Waste Load Allocations

The TMDLs will establish waste load allocations (WLAs) for point sources and load allocations (LAs) for non-point sources, and will result in achieving the water quality standards for the waterbodies. Final water quality-based effluent limitations (WQBELs) for 303(d)-listed pollutants in this discharge will be based on WLAs contained in the respective TMDLs.

3. Implementation Strategy

The Regional Water Board's strategy to collect water quality data and to develop TMDLs is summarized below:

- a. Data Collection.** The Regional Water Board has given dischargers to San Francisco Bay the option to collectively assist in developing and implementing analytical techniques capable of detecting 303(d)-listed pollutants to at least their respective levels of concern or WQOs/Water Quality Criteria (WQC). This collective effort may include development of sample concentration techniques for approval by the USEPA. The Regional Water Board will require dischargers to characterize the pollutant loads from their facilities into the water-quality limited waterbodies. The results will be used in the development of TMDLs, and may be used to update or revise the 303(d) list or change the WQOs/WQC for the impaired waterbodies including Lower San Francisco Bay.
- b. Funding Mechanism.** The Regional Water Board has received, and anticipates continuing to receive, resources from Federal and State agencies for TMDL development. To ensure timely development of TMDLs, the Regional Water Board intends to

supplement these resources by allocating development costs among dischargers through the Regional Monitoring Program (RMP) or other appropriate funding mechanisms.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the NPDES regulations: 40 CFR 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 CFR 122.44(d) requires that permits include WQBELs to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water. Where Reasonable Potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs may be established (1) using USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) using an indicator parameter for the pollutant of concern; or (3) using a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in 40 CFR 122.44(d)(1)(vi).

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

A. Discharge Prohibitions

1. **Discharge Prohibition III.A (No discharge other than that described in this Order):** This prohibition is the same as in the previous permit and is based on CWC section 13260, which requires filing a Report of Waste Discharge (ROWD) before discharges can occur. Discharges not described in the ROWD, and subsequently in this Order, are prohibited.
2. **Discharge Prohibition III.B (Average dry weather flow not to exceed dry weather design capacity):** This prohibition is based on the design treatment capacity of the Millbrae WPCP. Exceedance of the Millbrae WPCP's average dry weather flow design capacity of 3.0 MGD may result in lowering the reliability of achieving compliance with water quality requirements.
3. **Discharge Prohibition III.C (No discharge receiving less than 10:1 dilution):** This prohibition is the same as in the previous permit and is based on Discharge Prohibition No. 1 from Table 4-1 of the Basin Plan, which prohibits discharges that do not receive a minimum 10:1 initial dilution. Further, this Order allows a 10:1 dilution credit in the calculation of some water quality based effluent limitations, and these limits would not be protective of water quality if the discharge did not actually achieve a 10:1 minimum initial dilution.
4. **Discharge Prohibition III.D (No bypass or overflow of untreated or partially treated wastewaters):** This prohibition is based on the NPDES regulations expressed at 40 CFR 122.41(m)(4)(i)(A)-(C). This prohibition is changed from Order 01-143 in that blending, which was permitted by Order 01-143 during wet weather subject to the requirements of 40 CFR 122.41(m)(4)(i)(A)-(C), is also prohibited.

5. **Discharge Prohibition III.E (No sanitary sewer overflows to waters of the United States).** Sanitary sewer overflows that result in the discharge of raw or partially treated sewage not meeting secondary treatment requirements to surface waters of the United States are prohibited under the Clean Water Act and the Basin Plan. Discharge Prohibition No. 15 from Table 4-1 of the Basin Plan and the Clean Water Act prohibit the discharge of wastewater to surface waters except as authorized under an NPDES permit. POTWs must achieve secondary treatment, at a minimum, and any more stringent limitations necessary to achieve water quality standards (33U.S.C. §1311(b)(1)(B) and (C)).

B. Technology-Based Effluent Limitations

1. Scope and Authority

CWA section 301(b)(1)(B) requires USEPA to develop secondary treatment standards (the level of effluent quality attainable through application of secondary or equivalent treatment) for POTWs. USEPA promulgated such technology-based effluent guidelines for POTWs at 40 CFR 133. These Secondary Treatment Regulations include the following minimum requirements for POTWs, which are applicable to discharges from the Millbrae WPCP.

Table F-7. Secondary Treatment Requirements

	30-Day Average	7-Day Average
BOD ⁽¹⁾	30 mg/L	45 mg/L
CBOD ⁽¹⁾⁽²⁾	25 mg/L	40 mg/L
TSS ⁽¹⁾	30 mg/L	45 mg/L
pH	6.0 – 9.0	

⁽¹⁾ The 30 day average percent removal shall not be less than 85 percent.

⁽²⁾ At the option of the permitting authority, these effluent limitations for CBOD may be substituted for limitations for BOD.

2. Applicable Technology-Based Effluent Limitations

This Order retains the following technology-based effluent limitations, applicable to Discharge Point E-001, from Order No. 01-143.

Table F-8. Summary of Technology-Based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
CBOD ₅	mg/L	25	40		---	---
TSS	mg/L	30	45		---	---
Oil and Grease	mg/L	10	---	20	---	---
pH	s.u.	---	---	---	6.0	9.0
Total Residual Chlorine	mg/L	---	---	---	---	0.0 ⁽¹⁾

⁽¹⁾ Chlorine residual compliance may be demonstrated by monitoring at the NBSU common outfall (E-002).

The limitations established for Oil and Grease are levels attainable by secondary treatment and are required by the Basin Plan (Table 4-2) for all discharges to inland surface waters and enclosed bays and estuaries of the San Francisco Bay Region.

The pH limitation is retained from Order No. 01-143 and is required by USEPA's Secondary Treatment Regulation at 40 CFR 133 and by the Basin Plan (Table 4-2) for deep water discharges.

The technology-based effluent limitations for settleable matter are not retained from Order No. 01-143, as the Regional Water Board has determined that compliance with the Secondary Treatment Regulation at 40 CFR 133 and with the Basin Plan (Table 4-2) requirements for all discharges to inland surface waters and enclosed bays and estuaries of the San Francisco Bay Region will ensure removal of settleable solids to acceptably low levels below 0.1 mL/L-hr (30 day average) and 0.2 mL/L-hr (daily maximum).

Effluent limitations for CBOD and TSS, including the 85% removal requirement, are retained from Order No. 01-143. 40 CFR 122.45(d)(2) specifies that discharge limitations for POTWs shall be stated as average weekly limitations and average monthly limitations, unless impracticable.

3. Bacteria

- a. **Fecal Coliform:** Effluent limitations for fecal coliform bacteria are retained from Order No. 01-143. These limitations reflect applicable water quality objectives for water contact recreation, established by Table 3-1 of the Basin Plan and applied as end-of-pipe effluent limitations.
- b. **Enterococci:** This Order establishes a technology-based effluent limitation for enterococci bacteria. This limitation is based on the enterococci concentration currently economically and technologically achievable by six other POTWs in the San Francisco Bay Region. This limitation is also consistent with the requirements of the Basin Plan at Table 4-2, footnote d, and with the BEACH Act of 2004 [40CFR 133.41(e)(1)]. This effluent limitation will ensure that there are no "unacceptable adverse impacts on the beneficial uses" of lower San Francisco Bay.

Enterococci are more closely associated with gastrointestinal disease contracted by water contact than are fecal coliform bacteria. USEPA established bacteriological criteria for water contact recreation in coastal waters, including coastal estuaries such as San Francisco Bay, pursuant to the BEACH Act on November 16, 2004 (Federal Register, Volume 69, No. 220). This Order's effluent limitation on enterococci, a geometric mean of 35 MPN/100 mL, is equivalent to the BEACH Act's saltwater bacteriological criterion for water contact recreation.

Bacteria concentrations in sewage treatment plant effluent are primarily a function of disinfectant application, so the Discharger can meet this limitation with its existing technology. Because this technology-based limitation does not account for dilution in the receiving waters, it is likely to be conservative in terms of protecting beneficial uses, and therefore consistent with Basin Plan Table 4-2, footnote d.

Although USEPA also established single sample maximum criteria for enterococci bacteria, this Order implements only the geometric mean criterion of 35 MPN/100 mL. When these criteria were promulgated, USEPA expected that the single sample maximum values would be used for making beach notification and beach closure decisions. "Other

than in the beach notification and closure decision context, the geometric mean is the more relevant value for assuring that appropriate actions are taken to protect and improve water quality because it is a more reliable measure, being less subject to random variation..." [Federal Register, Volume 69, No 220].

C. Water Quality-Based Effluent Limitations

1. Scope and Authority

- a. NPDES regulations at 40 CFR 122.44(d)(1)(i) require permits to include WQBELs for pollutants (including toxicity) that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an excursion above any state water quality standard (Reasonable Potential). The process for determining Reasonable Potential and, when necessary, calculating WQBELs is intended to (1) protect the designated beneficial uses of the receiving water specified in the Basin Plan, and (2) achieve applicable WQOs and WQC that are contained in the California Toxics Rule (CTR), National Toxics Rule (NTR), Basin Plan, and other State plans and policies.
- b. NPDES regulations and the SIP provide the basis to establish Maximum Daily Effluent Limitations (MDELs).
 - (1) **NPDES Regulations.** NPDES regulations at 40 CFR 122.45(d) state: "For continuous discharges all permit effluent limitations, standards, and prohibitions, including those necessary to achieve water quality standards, shall *unless impracticable* be stated as maximum daily and average monthly discharge limitations for all discharges other than publicly owned treatment works."
 - (2) **SIP.** The SIP (page 8, Section 1.4) requires WQBELs be expressed as MDELs and average monthly effluent limitations (AMELs).
- c. MDELs are used in this Order to protect against acute water quality effects. The MDELs are necessary for preventing fish kills or mortality to aquatic organisms.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

The WQC and WQOs applicable to the receiving waters for this discharge are from the Basin Plan; the CTR, established by USEPA at 40 CFR 131.38; and the NTR, established by USEPA at 40 CFR 131.36. Some pollutants have WQC/WQOs established by more than one of these three sources.

- a. **Basin Plan.** The Basin Plan specifies numeric WQOs for 10 priority toxic pollutants, as well as narrative WQOs for toxicity and bioaccumulation in order to protect beneficial uses. The pollutants for which the Basin Plan specifies numeric objectives are arsenic, cadmium, chromium (VI), copper in freshwater, lead, mercury, nickel, silver, zinc, and cyanide. The narrative toxicity objective states in part that "[a]ll waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms." The bioaccumulation objective states in part that "[c]ontrollable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life. Effects on

aquatic organisms, wildlife, and human health will be considered.” Effluent limitations and provisions contained in this Order are designed based on available information to implement these objectives.

- b. **CTR.** The CTR specifies numeric aquatic life criteria for 23 priority toxic pollutants and numeric human health criteria for 57 priority toxic pollutants. These criteria apply to all inland surface waters and enclosed bays and estuaries of San Francisco Bay Region, although Tables 3-3 and 3-4 of the Basin Plan include numeric objectives that supersede criteria of the CTR for certain of these priority toxic pollutants.
- c. **NTR.** The NTR establishes numeric aquatic life criteria for selenium, numeric aquatic life and human health criteria for cyanide, and numeric human health criteria for 34 toxic organic pollutants for waters of San Francisco Bay upstream to and including Suisun Bay and the Sacramento River Delta. These criteria of the NTR are applicable to Lower San Francisco Bay, the receiving water for this Discharger.
- d. **Technical Support Document for Water Quality-Based Toxics Controls.** Where numeric objectives have not been established or updated in the Basin Plan, NPDES regulations at 40 CFR 122.44 (d) require that WQBELs be established based on USEPA criteria, supplemented where necessary by other relevant information, to attain and maintain narrative WQOs to fully protect designated beneficial uses.

To determine the need for WQBELs and establish them when necessary, the Regional Water Board has followed the requirements of applicable NPDES regulations, including 40 CFR 122 and 131; guidance and requirements established by the Basin Plan; USEPA’s *Technical Support Document for Water Quality-Based Toxics Control* (the TSD, EPA/505/2-90-001, 1991); and the SIP.

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

The receiving water for this discharger, Lower San Francisco Bay, is a salt water environment based on salinity data generated through the San Francisco Estuary Institute’s RMP at the Alameda (BB70), Oyster Point (BB30), and San Bruno Shoal (BB15) sampling stations between 1993 and 2001. In that period, the average salinity at the three sampling stations was 24 ppt; the minimum observed salinity levels at the San Bruno Shoal, Alameda, and Oyster Point sampling stations were 12, 11, and 0.5 ppt, respectively. As salinity was greater than 10 ppt in at least 95 percent of receiving water samples, the saltwater criteria from the Basin Plan, NTR, and CTR apply to this discharge.