UNCONTESTED

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

STAFF SUMMARY REPORT (Tong Yin)
MEETING DATE: May 12, 2010

ITEMS: **5C and 6A**

SUBJECT: **Novato Sanitary District, Novato Wastewater Treatment Plant and collection system, Novato, Marin County - Reissuance of NPDES Permit and Issuance of Cease and Desist Order**

CHRONOLOGY: November 2004 – Permit reissued
May 2008 – Permit amended and a cease and desist order issued

DISCUSSION: This Revised Tentative Order (Appendix A) would reissue the NPDES permit for Novato Sanitary District's Novato Wastewater Treatment Plant and its collection system. The plant provides secondary wastewater treatment for a population of about 60,000 within the City of Novato and adjacent areas. The plant has an average dry weather flow design capacity of 6.55 million gallons per day (MGD). It discharges treated wastewater to San Pablo Bay from September through May.

The District is in the process upgrading the plant at a cost of $90 million to address long-term compliance problems with technology and some water quality-based effluent limits. The Board's 2004 permit and 2008 Cease and Desist Order required the upgrades. Completion is scheduled for December 2010 with full operation by June 2011. The upgraded plant will have an average dry weather flow design capacity of 7.05 MGD and will be able to treat up to 47 MGD of wet weather flow.

The District also maintains a reclamation program, which includes a wildlife marsh pond and 820 acres of irrigation pasture. The District recycles about half of its treated wastewater each year.

The Revised Tentative Order proposes some new water quality-based effluent limits that are required by federal and State Board regulations. Because the District cannot immediately comply with some of these new limits and permit compliance schedules are not applicable for this case, a cease and desist order consistent with the California Water Code is also proposed to address the pending compliance problem. For simplicity and clarity, the attached Revised Tentative Cease and Desist Order (Appendix B) would carry forward requirements from the 2008 Order that are still necessary, add requirements to address the new proposed limits, and rescind the 2008 Order instead of amending it with new requirements. Since the upgrades currently underway are likely to ensure compliance with the new effluent limits, the Revised Tentative Cease and Desist Order does not include onerous requirements at this time for further development of new technologies or treatment to assure compliance with the new limits.

The District and the Bay Area Clean Water Agencies (BACWA) submitted comments (Appendix C). Our responses (Appendix D) describe changes we made to resolve their concerns. All changes are reflected in the attached Revised Tentative Order and Revised Tentative Cease and Desist Order. The Revised Tentative Order reflects the results of a mixing zone study the District prepared to justify dilution credits for ammonia and fecal coliform. We expect these items to be uncontested.

RECOMMEN-DATION: Adopt the Revised Tentative Order and Revised Tentative Cease and Desist Order

CIWQS PLACE ID: 244705

APPENDICES:
A. Revised Tentative Order – Item 5C
B. Revised Tentative Cease and Desist Order – Item 6A
C. Comment Letters
D. Response to Comments

APPENDIX A

REVISED TENTATIVE ORDER

Linda S. Adams
Secretary for Environmental Protection

California Regional Water Quality Control Board

San Francisco Bay Region

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Arnold Schwarzenegger
Governor

REVISED TENTATIVE ORDER
NPDES NO. CA0037958

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

Table 1. Discharger Information

Discharger	Novato Sanitary District
Name of Facility	Novato Sanitary District Wastewater Treatment Plant, and its associated sewage collection system
Facility Address	500 Davidson St., Novato CA 94945, Marin County
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Quality Control Board have classified this discharge as a major discharge.	

Discharges from the Novato Wastewater Treatment Plant at the discharge point identified below are subject to waste discharge requirements as set forth in this Order.

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Secondary Treated Municipal Wastewater	38º 03' 36" N	122º 29' 24" W	San Pablo Bay

Table 3. Administrative Information

This Order was adopted by the Regional Water Quality Control Board on:	May 12, 2010
This Order shall become effective on:	July 1, 2010
This Order shall expire on:	June 30, 2015
The Discharger shall file a Report of Waste Discharge in accordance with title 23, California Code of Regulations, as application for issuance of new waste discharge requirements no later than:	180 days prior to the Order expiration date

I, Bruce H. Wolfe, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on May 12, 2010.

Bruce H. Wolfe, Executive Officer

Table of Contents

I. Facility Information 4
II. Findings 4
III. Discharge Prohibitions 11
IV. Effluent Limitations and Discharge Specifications 12
A. Effluent Limitations for Conventional and Non-Conventional Pollutants – Discharge Point 001 12
B. Effluent Limitations for Toxic Substances – Discharge Point 001 14
C. Whole Effluent Toxicity 14
D. Land Discharge Specifications 16
E. Reclamation Specifications 16
V. Receiving Water Limitations 16
A. Surface Water Limitations 16
B. Groundwater Limitations 17
VI. Provisions 18
A. Standard Provisions 18
B. MRP Requirements 18
C. Special Provisions 18
1. Reopener Provisions 18
2. Special Studies, Technical Reports and Additional Monitoring Requirements 19
3. Best Management Practices and Pollution Minimization Program 22
4. Construction, Operation, and Maintenance Specifications 25
5. Special Provisions for POTWs 26
6. Other Special Provisions 28
VII. Compliance Determination 30

Tables

Table 1. Discharger Information 1
Table 2. Discharge Location 1
Table 3. Administrative Information 1
Table 4. Facility Information 4
Table 5. Basin Plan Beneficial Uses 8
Table 6. Effluent Limitations – Discharge Point 001 (November through April) 12
Table 7. Effluent Limitations – Discharge Point 001 (May, September, and October) 13
Table 8. Effluent Limitations for Toxic Pollutants 14
Table 9. Tasks and Schedule for Ambient Total Ammonia Study 20
Table 10. Copper Action Plan 29
Table 11. Cyanide Action Plan 29

Attachments

Attachment A – Definitions A-1
Attachment B – Facility Map B-1
Attachment C – Process Flow Diagram C-1
Attachment D – Federal Standard Provisions D-1
Attachment E – Monitoring and Reporting Program (MRP) E-1
Attachment F – Fact Sheet F-1
Attachment G – Regional Standard Provisions and Monitoring and Reporting Program G-1
Attachment H – Pretreatment Requirements H-1

I. FACILITY INFORMATION

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

Table 4. Facility Information

Discharger	Novato Sanitary District
Name of Facility	Novato Sanitary District Wastewater Treatment Plant and its associated sewage collection system
Facility Address	500 Davidson St., Novato CA 94945, Marin County
Facility Contact, Title, and Phone	Beverly James, Manager - Engineer, (415)892-1694
Mailing Address	500 Davidson St., Novato CA 94945
Type of Facility	Publicly Owned Treatment Works (POTW)
Facility Design Flow	Existing Novato Plant: 6.55 million gallons per day (mgd) (average dry weather flow), 9 mgd (secondary treatment capacity) Upgraded Novato Plant: 7.05 mgd (average dry weather flow) after Tasks in Provision VI.C.4.c are completed, 47 mgd (secondary treatment wet weather capacity)
Service Area	City of Novato and adjacent areas
Service Population	60,000

II. FINDINGS

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

A. Background. The Novato Sanitary District (hereinafter, the Discharger) is currently discharging under Order No. R2-2004-0093, as amended by Order No. R2-2008-0026, National Pollutant Discharge Elimination System (NPDES) Permit No. CA0038806. The Discharger submitted a Report of Waste Discharge, dated June 30, 2009, and applied for an NPDES permit reissuance to discharge treated wastewater from its Novato Wastewater Treatment Plant to waters of the State and the United States. The Discharger is also subject to the requirements of Order No. R2-2007-0077 (NPDES Permit No. CA0038849), which establishes requirements regarding discharges of mercury to San Francisco Bay. Order No. R2-2007-0077 is unaffected by this Order.

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

B. Facility Description and Discharge Location

1. **Existing Facility Description.** The Discharger owns and operates the Novato Wastewater Treatment Plant (Novato Plant), its associated sewage collection system, and one effluent discharge outfall to San Pablo Bay, adjacent to the former Hamilton Air Force Base. The Novato Plant treats wastewater from a primarily residential area serving the City of Novato and adjacent areas with a current population of about 60,000.

The Discharger currently also operates the Ignacio Wastewater Treatment Plant (Ignacio Plant), located at 445 Bel Marin Keys Blvd., Novato, as a roughing plant; treated wastewater from the Ignacio Plant is conveyed to the Novato Plant for further treatment.

Treatment processes at the Novato Plant include influent pumping, influent screening, flow measurement and grit removal, primary clarification, activated sludge secondary treatment in the three existing circular aeration basins and two circular secondary clarifiers, ammonia removal through the existing bio-tower, chlorination (with sodium hypochlorite), and dechlorination (with sodium bisulfite) at the existing dechlorination facility about ½ mile east of the Ignacio Plant.

Treatment processes at the Ignacio Plant include primary clarification, biofiltration, subsequent clarification, and nitrification.

The Discharger's wastewater collection system collects and transports wastewater flows to the plants through a series of gravity sewers and interceptors, pump stations, and force mains, designed to handle peak wet weather flows. The Discharger's wastewater collection system includes approximately 200 miles of sewer lines and 38 wastewater pump stations.

2. **Discharge Description.** The Novato Plant has an average dry weather flow (ADWF) design capacity of 6.55 mgd and can treat up to 9 mgd with full secondary treatment. When influent flow exceeds the secondary treatment capacity of the Novato Plant, flows above 9 mgd and up to 16 mgd receive primary treatment, gravity filtration and disinfection, and flows exceeding 16 mgd receive gravity filtration and chlorine disinfection. These flows are blended with secondary treated wastewater prior to discharge. From January 2006 through April 2009, the average and daily maximum flow rates from the Novato Plant were 5.3 and 22.96 mgd.

   The Ignacio Plant has an ADWF design capacity of 2.02 mgd and a peak wet weather flow design capacity of 4.04 mgd. From January 2006 through March 2008, the average and daily maximum flow rates from the Ignacio Plant were 1.89 and 7.75 mgd.

   The Discharger completed additional engineering analyses, an Environmental Impact Report, and an antidegradation analysis for facility construction to increase the ADWF at the Novato Plant to 7.05 mgd. This Order authorizes this capacity increase after the Discharger completes construction and the tasks specified in Provision VI.C.4.c of this Order. The facility improvements will result in all treatment occurring at the Novato Plant. The upgraded Novato Plant (discussed below) will provide secondary treatment for 47 mgd wet weather flow. There will be no blending at the upgraded Novato Plant. When construction is complete, influent flows currently conveyed to the Ignacio Plant will be rerouted to the Novato Plant, and the Ignacio Plant will be decommissioned.

3. **Discharge Location**. From September 1 through May 31, treated effluent can be discharged from the Novato Plant to the intertidal zone of San Pablo Bay at Discharge Point 001 through a multiport diffuser located approximately 950 feet offshore. The diffuser is submerged at the +1 foot mean lower low water tidal elevation. At lower tidal elevations, the outfall is exposed, and the distance from the end of the diffuser to the San Pablo Bay water line can range from 1000 to 3500 feet. During these times of lower tidal elevation, the discharge does not receive an initial dilution of 10:1, and is therefore classified as a shallow water discharge.

From June 1 through August 31, discharge to San Pablo Bay is prohibited; effluent is discharged to storage ponds and used for sprinkler irrigation of 820 acres of Discharger-controlled pasturelands or to a Title 22 Recycled Water Treatment Facility before irrigation of a golf course.

4. **Treatment Facilities Upgrade Project.** The Discharger is currently undergoing a major multi-year Treatment Facilities Upgrade Project, at a cost of approximately $90 million, which it expects to complete by 2011. The Upgrade Project will result in all of the Discharger's wastewater treatment capabilities being consolidated at its Novato Plant. In the interim, the Discharger operates the existing Novato Plant as the main wastewater treatment plant, with its other treatment facility, the Ignacio Plant, being operated mainly as a roughing plant, pending the completion of the Upgrade Project and decommissioning of the Ignacio Plant.

   As of this time, the Discharger has completed construction of the Ignacio transfer pump station; Ignacio conveyance force main; waste activated sludge thickening process with two gravity belt thickeners; a new influent pump station; a new headworks facility with two mechanical filter screens and a manual bar rack for influent screening; parshall flumes for influent flow measurement; two grit basins each with a mechanical grit vortex system; a new primary clarifier; two aeration basins, including its blower systems; two secondary clarifiers; RAS/WAS pump station; UV disinfection facility; effluent pump station and auxiliary facilities.

   The remaining construction is scheduled to be completed as below:

June 30, 2010	Complete two other aeration basins.
December 31, 2010	Complete second primary clarifier, and second primary digester.
June 30, 2011	Place all treatment plant improvements into operation.

5. **Reclamation Activities.** The Discharger's reclamation system includes two storage ponds with a combined storage capacity of 180 million gallons, a wildlife marsh pond, an irrigation pump station, and 820 acres of irrigation pasture and a Title 22 Recycled Water Treatment Facility. Regional Water Board Order No. 92-065 establishes limitations and conditions regarding the reclamation uses of treated wastewater, which apply to the Discharger's reclamation system. Although the discharge prohibition includes three summer months, the Discharger typically reclaims wastewater for irrigation five or more months per year. An average of 48 percent of the Discharger's treated wastewater was used for recycled water applications over the last two years. This permit allows discharge from the storage ponds to San Pablo Bay during the discharge season, upon meeting the requirements specified in Provision VI.C.2.e.

6. **Biosolids Management.** Solids handling at the Novato Plant includes the new gravity belt waste activated sludge thickening, anaerobic digestion of primary sludge and thickened waste activated sludge in the existing primary digester, and removal of digested sludge to storage at the sludge lagoons at the Discharger's reclamation site. Sludge is treated at the Ignacio Plant through primary anaerobic digestion followed by thickening in storage ponds. Thickened sludge from both plants is land applied at a 14.4-acre dedicated land disposal site located near the reclamation area.

7. **Storm Water Discharge.** The Discharger is not required to be covered under the State Water Board's statewide NPDES permit for storm water discharges associated with industrial activities (NPDES General Permit No. CAS000001) because all storm water flows in contact with equipment or sewage at the plants and the pump stations serving the plants is collected and directed to the headworks of the plants for treatment.

Attachment B provides a map of the area around the both treatment plants. Attachment C provides flow schematics of the treatment plants.

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

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

E. California Environmental Quality Act (CEQA). Under CWC section 13389, this action to adopt an NPDES permit is exempt from Chapter 3 of CEQA.

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

G. Water Quality-Based Effluent Limitations (WQBELs). CWA section 301(b) and NPDES regulations at 40 CFR 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

NPDES regulations at 40 CFR 122.44(d)(1)(i) mandate that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established using (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion (WQC), such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in 40 CFR 122.44(d)(1)(vi).

H. Water Quality Control Plan. *The Water Quality Control Plan for the San Francisco Bay Basin* (the Basin Plan) is the Regional Water Board's master water quality control planning document. It designates beneficial uses and water quality objectives (WQOs) for waters of the State, including surface and groundwater. It also includes implementation programs to achieve WQOs. The Basin Plan was duly adopted by the Regional Water Board and approved by the State Water Resources Control Board (State Water Board), USEPA, and the Office of Administrative Law (OAL). Requirements of this Order implement the Basin Plan. The Basin Plan specifically identifies the receiving water for this discharge, San Pablo Bay.

The Basin Plan implements State Water Board Resolution No. 88-63, which establishes State policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Because of marine influence in San Pablo Bay, total dissolved solids levels in San Pablo Bay exceed 3,000 milligrams per liter (mg/L) and thereby meet an exception to State Water Board Resolution No. 88-63. The MUN designation is therefore not applicable to San Pablo Bay.

The Basin Plan beneficial uses for San Pablo Bay are listed in the table below.

Table 5. Basin Plan Beneficial Uses

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

The State Water Board's *Water Quality Control Plan for Enclosed Bays and Estuaries—Part 1, Sediment Quality* became effective on August 25, 2009. This plan integrates three lines of evidence (sediment toxicity, benthic community condition, and sediment chemistry) to determine if sediment-dependent biota and human health are protected from exposure to toxic pollutants in sediment. The plan focuses on benthic communities in enclosed bays and estuaries, and supersedes other narrative sediment quality objectives and related implementation provisions in other water quality control plans to the extent that they apply to sediment quality in bays and estuaries.

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

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

K. Compliance Schedules and Interim Requirements. The State Water Board adopted Resolution No. 2008-0025 on April 15, 2008, titled "Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits." Under limited circumstances, this policy allows the Regional Water Board to grant a compliance schedule based on a discharger's request and demonstration that it is infeasible to comply immediately with certain effluent limits. This policy became effective on August 27, 2008, superseding the Basin Plan's compliance schedule policy. This Order does not contain a compliance schedule or any interim effluent limit for any constituent.

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

M. Stringency of Requirements for Individual Pollutants. This Order contains both technology-based and water quality based effluent limitations for individual pollutants. The technology-based effluent limitations consist of restrictions on biochemical oxygen demand (BOD) and total suspended solids (TSS). Derivation of these technology-based limitations is discussed in the Fact Sheet (Attachment F). This Order's technology-based pollutant restrictions implement the minimum applicable federal technology-based requirements. This Order also contains BOD and TSS effluent limitations for the discharges during May, September, and October more stringent than the minimum technology-based requirements as necessary to meet water quality standards.

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

N. Antidegradation Policy. NPDES regulations at 40 CFR 131.12 require that state water quality standards include an antidegradation policy consistent with the federal policy. The State Water

Board established California's antidegradation policy in State Water Board Resolution No. 68-16, which incorporates the federal antidegradation policy where the federal policy applies under federal law and requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies.

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

P. Endangered Species Act. This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the State. The Discharger is responsible for meeting all requirements of applicable State and federal law pertaining to threatened and endangered species.

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

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

S. Provisions and Requirements Implementing State Law. None of the requirements in this Order are included to implement State law only.

T. Notification of Interested Parties. The Regional Water Board notified the Discharger and interested agencies and persons of its intent to prescribe WDRs for the discharge and provided them with an opportunity to submit their written comments and recommendations. The Fact Sheet (Attachment F) provides details of the notification.

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

IT IS HEREBY ORDERED, that this Order supersedes Order Nos. R2-2004-0093 and R2-2008-0026, except for enforcement purposes, and, in order to meet the provisions contained in CWC Division 7 (commencing with section 13000) and regulations adopted thereunder, and the provisions of the federal Clean Water Act (CWA) and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

III. DISCHARGE PROHIBITIONS

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

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

Blended wastewater is biologically treated wastewater blended with wastewater that has been diverted around biological treatment units or advanced treatment units. This Order conditionally approves blended discharges from the existing Novato Plant, but not the new upgraded plant scheduled to be completed by December 31, 2010. This new plant is designed to eliminate the need for blending. The approval for the existing plant is granted under the bypass conditions stated in 40 CFR 122.41(m)(4). Blended discharge from the existing Novato Plant is allowed only when (1) the Discharger's peak wet weather influent flow volumes exceed the capacity of the secondary treatment unit of 9 mgd, and (2) the discharge complies with the effluent and receiving water limitations contained in the Order. Furthermore, the Discharger shall operate its facility as designed and in accordance with the Operation and Maintenance Manual for the facility. This means it shall optimize storage and use of equalization units, and shall fully utilize the biological treatment units and advanced treatment units, if applicable. The Discharger shall report incidents of blended effluent discharges in routine monitoring reports, and shall conduct monitoring of this discharge as specified in the attached MRP (Attachment E).

C. The average dry weather effluent flow, measured at monitoring station A-002 as described in the attached MRP (Attachment E), shall not exceed 6.55 mgd. Actual average dry weather flow shall be determined for compliance with this prohibition over three consecutive dry weather months each year. Upon satisfaction of the requirements in section VI.C.4.c of this Order and Executive Officer approval, the maximum allowable average dry weather discharge rate shall increase to 7.05 mgd.

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

E. Discharge to San Pablo Bay is prohibited during the dry weather period from June 1 through August 31 unless the Discharger submits a request for discharge and that request is approved by the Executive Officer. In the event of high wastewater flows resulting from an early or late season storm, the Discharger, after considering the feasibility of reclamation and use of the storage ponds, shall notify the Regional Water Board case manager by phone or email of the need to discharge to San Pablo Bay immediately upon making the determination that such a discharge is necessary, and provide information justifying the request. If circumstances prevent the case manager's consideration and response to the request within the time frame necessary, the Discharger may at its discretion discharge some or all of the effluent to San Pablo Bay for the duration of the elevated flow event. The Discharger then shall submit a report within five business days from the date of the discharge. In the report, the Discharger shall fully explain the need to discharge to San Pablo Bay during the dry season and shall provide information regarding the total volume of flow discharged, and duration of discharge. In accordance with the attached MRP (Attachment E), discharge quality shall be reported in the monthly self-monitoring report for that period.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations for Conventional and Non-Conventional Pollutants – Discharge Point 001

1. Effluent Limitations during November 1 through April 30

During the period of November 1 through April 30, the Discharger shall comply with the following effluent limitations in Table 6 at Discharge Point 001, with compliance measured at Monitoring Location E-002 (and at W-004 for storage ponds discharge), as described in the attached MRP (Attachment E).

Table 6. Effluent Limitations – Discharge Point 001 (November through April)

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
BOD 5-day @ 20°C (BOD_5)	mg/L	30	45	---	---	---
Total Suspended Solids (TSS)	mg/L	30	45	---	---	---
BOD and TSS percent removal [1]	%	85 (minimum)	---	---	---	---
Oil and Grease	mg/L	10	---	20	---	---
pH[2]	s.u	---	---	---	6.5	8.5

Unit Abbreviations:

mg/L = milligrams per liter
s.u. = standard units

Footnotes to Table 6:

[1] 85 Percent Removal. The arithmetic mean of the biochemical oxygen demand (BOD_5, 20°C) and total suspended solids values (TSS), by concentration, for effluent samples collected in each calendar month shall not exceed 15 percent of the arithmetic mean of the respective values, by concentration, for influent samples collected at approximately the same times during the same period.

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

2. Effluent Limitations during May, September, and October

During the period of May, September, and October, the Discharger shall comply with the following effluent limitations in Table 7 at Discharge Point 001, with compliance measured at Monitoring Location E-002 (and at W-004 for storage ponds discharge), as described in the attached MRP (Attachment E). These effluent limitations also apply for emergency discharges during June 1 and August 31, consistent with Prohibition III.E.

Table 7. Effluent Limitations – Discharge Point 001 (May, September, and October)

Parameter	Units	Effluent Limitations				
		Average Monthly	**Average Weekly**	**Maximum Daily**	**Instantaneous Minimum**	**Instantaneous Maximum**
BOD_5	mg/L	15	30	---	---	---
TSS	mg/L	10	20	---	---	---
BOD and TSS percent removal[1]	%	85 (minimum)	---	---	---	---
Oil and Grease	mg/L	5	---	15	---	---
pH[2]	s.u	---	---	---	6.5	8.5

Unit Abbreviations:

mg/L = milligrams per liter
s.u. = standard units

Footnotes to Table 7:

[1] 85 Percent Removal. The arithmetic mean of the BOD_5 and TSS, by concentration, for effluent samples collected in each calendar month shall not exceed 15 percent of the arithmetic mean of the respective values, by concentration, for influent samples collected at approximately the same times during the same period.

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

3. **Enterococcus Bacteria:** The discharge at Discharge Point 001 shall meet the following limitation of bacteriological quality, with compliance measured at Monitoring Location E-002 (and at W-004 for storage ponds discharge):

   The 30-day geometric mean shall not exceed 35 enterococcus colonies per 100 milliliters (mL).

4. **Fecal Coliform Bacteria:** Discharges at Discharge Point 001 shall meet the following limitations of bacteriological quality, with compliance measured at Monitoring Location E-002 (and at W-004 for storage ponds discharge):

   (1) The median fecal coliform value shall not exceed 140 MPN/100mL, and

   (2) The 90^{th} percentile fecal coliform value shall not exceed 430 MPN/100mL.

   Compliance shall be determined based on a minimum of five consecutive samples equally spaced over a 30-day period.

5. **Total Chlorine Residual:** During times when chlorination is used for disinfection, discharges at Discharge Point 001 shall meet the following limitation for total chlorine residual, with compliance measured at Monitoring Location E-003 (and at W-004 when discharging from the storage ponds):

   Instantaneous maximum of 0.0 mg/L.

The Discharger may elect to use a continuous on-line monitoring system(s) for measuring flows, chlorine, and sulfur dioxide dosage (including a safety factor) and concentration to prove that chlorine residual exceedances are false positives. If convincing evidence is provided, Regional Water Board staff may conclude that false positive chlorine residual exceedances are not violations of the effluent limitation.

B. Effluent Limitations for Toxic Substances – Discharge Point 001

The Discharger shall comply with the following effluent limitations at Discharge Point 001with compliance determined at Monitoring Location E-002 (and at W-004 for storage ponds discharge), as described in the attached MRP (Attachment E).

Table 8. Effluent Limitations for Toxic Pollutants

Constituent	Units	Effluent Limitations[1]	
		Average Monthly	Maximum Daily
Copper	µg/L	6.9	13
Cyanide	µg/L	6.6	15
Carbon tetrachloride	µg/L	4.4	8.8
Dioxin-TEQ	µg/L	1.4×10^{-8}	2.8×10^{-8}
Dieldrin	µg/L	0.00014	0.00028
Total Ammonia	mg/L	6.0	21

Unit Abbreviations:

µg/L = micrograms per liter
mg/L = milligrams per liter

Footnotes to Table 8:

[1] a. Limitations apply to the average concentration of all samples collected during the averaging period (daily = 24-hour period; monthly = calendar month)

b. All limitations for metals are expressed as total recoverable metals.

C. Whole Effluent Toxicity

1. Whole Effluent Acute Toxicity

a. Representative samples of the effluent at Discharge Point 001, with compliance measured at E-003 (at E-002 once the new plant is complete and at W-004 for storage ponds discharge) as described in the MRP (Attachment E), shall meet the following limits for acute toxicity. Bioassays shall be conducted in compliance with Section V.A of the MRP (Attachment E.)

(1) An eleven (11) – sample median value of not less than 90 percent survival; and

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

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

(1) **11-sample median**. A bioassay test showing survival of less than 90 percent represents a violation of this effluent limit, if five or more of the past ten or less bioassay tests show less than 90 percent survival.

(2) **11-sample 90^{th} percentile**. A bioassay test showing survival of less than 70 percent represents a violation of this effluent limit, if one or more of the past ten or less bioassay tests show less than 70 percent survival.

c. Bioassays shall be performed using the most up-to-date USEPA protocol and the most sensitive species as specified in writing by the Executive Officer based on the most recent screening test results. Bioassays shall be conducted in compliance with “Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms,” currently 5th Edition (EPA-821-R-02-012), with exceptions granted to the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP) upon the Discharger’s request with justification.

2. Whole Effluent Chronic Toxicity

a. There shall be no chronic toxicity in the discharge as discharged. Chronic toxicity is a detrimental biological effect of growth rate, reproduction, fertilization success, larval development, or any other relevant measure of the health of an organism population or community.

Compliance with this limit shall be determined by analysis of indicator organisms and toxicity tests. Compliance shall be measured at E-002 as described in the MRP (Attachment E.)

b. The Discharger shall comply with the following tiered requirements based on results from representative samples of the effluent at Discharge Point 001, with compliance measured at E-002 as described in the MRP (Attachment E), meeting test acceptability criteria and Section V.B of the MRP (Attachment E.)

(1) Conduct routine monitoring.

(2) Conduct accelerated monitoring after exceeding a three-sample median of 1 chronic toxicity unit (TUc[1]) or a single-sample maximum of 2 TUc or greater.

(3) Return to routine monitoring if accelerated monitoring does not exceed the “trigger” in (2), above.

(4) If accelerated monitoring confirms consistent toxicity in excess of either “trigger” in (2), above, initiate toxicity identification evaluation/toxicity reduction evaluation (TIE/TRE) procedures in accordance with Provision VI.C.2.d.

[1] A TUc equals 100 divided by the no observable effect level (NOEL). The NOEL is determined from IC, EC, or NOEC values. These terms, their usage, and other chronic toxicity monitoring program requirements are defined in more detail in the MRP (Attachment E).

(5) Return to routine monitoring after appropriate elements of TRE workplan are implemented and either the toxicity drops below the “trigger” levels in (2), above, or based on the results of the TRE, the Executive Officer authorizes a return to routine monitoring.

c. The Discharger shall monitor chronic toxicity using the test species and protocols specified in MRP Section V.B (Attachment E). The Discharger shall also perform chronic toxicity screening phase monitoring as described in Appendix E-1 of the MRP (Attachment E). Chronic toxicity screening phase requirements, critical life stage toxicity tests, and definitions of terms used in the chronic toxicity monitoring are identified in the MRP Appendices E-1 and E-2 of the MRP. In addition, bioassays shall be conducted in compliance with the most recently promulgated test methods, “Short-Term Methods For Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms,” currently fourth edition (EPA-821-R-02-013); “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 Marine and Estuarine Organisms,” currently second Edition (EPA/600/4 91/003), with exceptions granted by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP) upon the Discharger’s request and justification.

D. Land Discharge Specifications

Not Applicable.

E. Reclamation Specifications

Water reclamation requirements for this Discharger are established by Regional Water Board Order No. 92-065.

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

Receiving water limitations are based on WQOs contained in the Basin Plan and are a required part of this Order. The discharges shall not cause the following in the receiving water:

1. The discharge of waste shall not cause the following conditions to exist in waters of the State at any place:

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

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

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

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

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

2. The discharge of waste shall not cause the following limits to be exceeded in waters of the State at any place within 1 foot of the water surface:

a. Dissolved Oxygen	5.0 mg/L, minimum Furthermore, the median dissolved oxygen concentration for any three consecutive months shall not be less than 80% of the dissolved oxygen content at saturation. When natural factors cause concentrations less than that specified above, the discharge shall not cause further reduction in ambient dissolved oxygen concentrations.
b. Dissolved Sulfide	Natural background levels
c. pH	The pH shall not be depressed below 6.5 or raised above 8.5. The discharge shall not cause changes greater than 0.5 pH units in normal ambient pH levels.
d. Nutrients	Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

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

B. Groundwater Limitations

Not Applicable.

VI. PROVISIONS

A. Standard Provisions

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

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

B. MRP Requirements

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

C. Special Provisions

1. Reopener Provisions

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

a. If present or future investigations demonstrate that the discharges governed by this Order have or will have a reasonable potential to cause or contribute to, or will cease to have, adverse impacts on water quality or beneficial uses of the receiving waters.

b. If new or revised WQOs or total maximum daily loads (TMDLs) come into effect for the San Francisco Bay Estuary and contiguous water bodies (whether statewide, regional, or site-specific). In such cases, effluent limitations in this Order will be modified as necessary to reflect updated WQOs and waste load allocations in TMDLs. Adoption of effluent limitations contained in this Order is not intended to restrict in any way future modifications based on legally adopted WQOs or TMDLs, or as otherwise permitted under federal regulations governing NPDES permit modifications.

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

d. If receiving water does not meet promulgated ammonia objectives.

e. If State Water Board precedential decisions, new policies, new laws, or new regulations on chronic toxicity or total chlorine residual become available.

f. If an administrative or judicial decision on a separate NPDES permit or WDRs addresses requirements similar to this discharge.

g. Or as otherwise authorized by law.

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

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. Effluent Characterization for Selected Constituents

The Discharger shall continue to monitor and evaluate the discharge from Discharge Point 001 (measured at E-002 or E-003) for the constituents listed in the Regional Standard Provisions (Attachment G) according to the sampling frequency specified in the attached MRP (Attachment E). Compliance with this requirement shall be achieved in accordance with the specifications stated in the Regional Standard Provisions.

The Discharger shall evaluate on an annual basis if concentrations of any constituents increase over past performance. The Discharger shall investigate the cause of any increase. The investigation may include, but need not be limited to, an increase in the effluent monitoring frequency, monitoring of internal process streams, and monitoring of influent sources. This requirement may be satisfied through identification of these constituents as "pollutants of concern" in the Discharger's Pollutant Minimization Program, described in Provision VI.C.3, below. The Discharger shall provide a summary of the annual evaluation of data and source investigation activities in the annual self-monitoring report.

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

b. Ambient Background Receiving Water Study

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

The Discharger shall submit, or cause to have submitted on its behalf, a final report that presents all such data to the Regional Water Board 180 days prior to expiration of this Order. This final report shall be submitted with the application for permit reissuance.

c. Receiving Water Ammonia Study

The Discharger shall collect receiving water monitoring data for water quality parameters (pH, salinity, temperature, and total ammonia, etc.) that shall be sufficient to characterize total and un-ionized ammonia in the receiving water, which includes, but not limited to, diurnal, seasonable variations.

Table 9. Tasks and Schedule for Ambient Total Ammonia Study

Tasks	Schedule
a. Submit a study plan to evaluate the effects of ammonia discharges on the receiving water. The study plan shall include the following elements: • sampling locations (effluent and receiving water, at an accessible near-field background location of San Pablo Bay beyond the influence of the discharge), • sampling and analysis protocols, • sampling parameters (including, at a minimum, pH, salinity, temperature, hardness, and total ammonia), • data interpretation models and other methods to be used (representing conservative, reasonable worst case conditions), and • implementation schedule.	Within 90 days of permit effective date
b. Begin implementation of the study plan developed for Task (a).	Upon Executive Officer's approval or within 45 days after submitting the study plan.
c. Submit annual progress report, including all sampling results of the previous year, and any updates of the original plan, if applicable.	Annually with the Self-Monitoring report due February 1.
d. Submit a final report that presents all the data and analysis results acceptable to the Executive Officer.	No later than 180 days prior to the Order expiration date. This final report shall be submitted with the Report of Waste Discharge for permit reissuance.

d. Chronic Toxicity Reduction Evaluation (TRE)

(1) The Discharger shall prepare a generic TRE work plan within 90 days of the effective date of this Order to be ready to respond to toxicity events. The Discharger shall review and update the work plan as necessary so that it remains current and applicable to the discharge and discharge facilities.

(2) Within 30 days of exceeding either 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.

(3) 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.

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

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

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

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

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

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

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

(5) The TRE may be ended at any stage if monitoring finds there is no longer consistent toxicity (complying with requirements of Section IV.C.2 of the Order).

(6) 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.

(7) 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.

(8) 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.

(9) 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.

e. Reclamation Pond Operation and Discharge from Storage Ponds

The Discharger has constructed and maintains reclamation storage ponds for storage of treated wastewater for reclamation. From June 1 through August 31 (and typically longer), the District diverts effluent into the storage ponds for sprinkler irrigation of 820 acres of Discharger-controlled pasturelands or to a Title 22 Recycled Water Treatment Facility for irrigation of a golf course, which are used for beef cattle grazing and irrigated hay production. Discharges of treated wastewater to the storage ponds may also happen during other times throughout the year.

The Discharger may discharge from these storage ponds any surplus water not used for reclamation at Discharge Point 001 if the discharge meets all of the requirements of this Order. Monitoring requirements for discharging water held in the storage ponds are specified in the Monitoring and Reporting Program (Attachment E).

The Discharger shall maintain its existing sediment control plan for the storage ponds. The present mechanical layout of the pumping intake lines shall provide adequate silt control measures. The suction point shall lie two (2) feet above the bottom of the ponds. There shall be no sediment drawn from the bottom of the ponds, e.g., by establishing a minimum draw down point of four (4) feet pond elevation.

3. Best Management Practices and Pollution Minimization Program

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

b. The Discharger shall submit an annual report, acceptable to the Executive Officer, no later than February 28 of each calendar year. Each annual report shall include at least the following information:

i. *A brief description of the treatment plant, treatment plant processes and service area.*

ii. *A discussion of the current pollutants of concern.* Periodically, the discharger shall analyze its own situation to determine which pollutants are currently a problem and which pollutants may be potential future problems. This discussion shall include the reasons why the pollutants were chosen.

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

iv. *Identification of tasks to reduce the sources of the pollutants of concern.* This discussion shall identify and prioritize tasks to address the

Discharger's pollutants of concern. The Discharger may implement tasks themselves or participate in group, regional, or national tasks that will address its pollutants of concern. The Discharger is strongly encouraged to participate in group, regional, or national tasks that will address its pollutants of concern whenever it is efficient and appropriate to do so. A time line shall be included for the implementation of each task.

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

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

vii. *Discussion of criteria used to measure Program's and tasks' effectiveness.* The Discharger shall establish criteria to evaluate the effectiveness of its Pollution Minimization Program. This shall also include a discussion of the specific criteria used to measure the effectiveness of each of the tasks in sections VI.C.3. b.iii, iv, v, and vi.

viii. *Documentation of efforts and progress.* This discussion shall detail all of the Discharger's activities in the Pollution Minimization Program during the reporting year.

ix. *Evaluation of Pollutant Minimization Program's and tasks' effectiveness.* This Discharger shall use the criteria established in section VI.C.3. b.vii. to evaluate the Program's and tasks' effectiveness.

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

c. Pollutant Minimization Program for Pollutants with Effluent Limitations

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

i. A sample result is reported as DNQ and the effluent limitation is less than the RL; or

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

d. Pollutant Minimization Program Submittals for Pollutants with Effluent Limitations

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

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

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

iii. Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutants in the effluent at or below the effluent limitation;

iv. Implementation of appropriate cost-effective control measures for the reportable priority pollutants, consistent with the control strategy; and

v. The annual report required by section VI.C.3.b above, shall specifically address the following items:

1. All Pollutant Minimization Program monitoring results for the previous year;
2. A list of potential sources of the reportable priority pollutants;
3. A summary of all actions undertaken pursuant to the control strategy; and
4. A description of actions to be taken in the following year.

4. Construction, Operation, and Maintenance Specifications

a. Reliability Status Report

As part of reviewing requests for exceptions to Basin Plan Discharge Prohibition 1, the Regional Water Board will evaluate the reliability of the Discharger's system in preventing inadequately treated wastewater from being discharged into the receiving waters. The Discharger shall submit a Reliability Status Report, or an update to the Report, annually to the Regional Water Board for review by February 1 each year. The Reliability Status Report shall be updated as necessary.

(1) The Discharger shall maintain a Reliability Status Report for the Discharger's wastewater facilities, which will allow the Regional Water Board to evaluate the reliability of the Discharger's system in preventing inadequately treated wastewater from being discharged into the receiving waters. Inadequately treated wastewater includes overflows from the collection system and wastewater that bypasses any portion of the treatment at the treatment facility. The Reliability Status Report shall be maintained in usable condition and be available for reference and use by all relevant personnel.

(2) The Discharger shall regularly review, revise, or update, as necessary, the Reliability Status Report to ensure that the document remains useful and relevant to current equipment and operational practices. Reviews shall be conducted annually, and revisions or updates shall be completed as necessary. For any significant changes in treatment facility equipment or operation practices, relevant revisions shall be completed as soon as practicable.

(3) The Discharger shall provide the Executive Officer, upon request, a summary describing the current status of its Reliability Status Report, including any recommended or planned actions and an estimated time schedule for these actions. The Discharger shall also include, in each annual self-monitoring report, a description or summary of review and evaluation procedures and changes to its Reliability Status Report.

b. Ignacio Plant Operation

Until the Ignacio Plant ceases receiving wastewater, the Discharger shall operate the Ignacio Plant as required by this Order, e.g., appropriate supervision and staffing, follow all applicable operation and maintenance manuals, contingency policy, standard operation procedures, etc., to ensure proper operation and safety.

The Discharger shall report the Ignacio Plant's operation status to the Regional Water Board within 90 days of permit adoption. The Discharger shall notify the Regional Water Board of the dates when the Ignacio Plant is completely decommissioned.

c. Design Flow Capacity Increase

Upon completion of facility upgrades, the Discharger shall submit the following documentation for Executive Officer approval prior to allowing an increase in the maximum allowable permitted dry weather flow rate from 6.55 mgd to 7.05 mgd.

(1) An Engineering Analysis that supports the capacity determination of 7.05 mgd;

(2) Certification that the treatment facilities and outfall have been constructed as designed and are available for use; and

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

5. Special Provisions for POTWs

a. Pretreatment Program

(1) The Discharger shall implement and enforce its approved pretreatment program in accordance with federal Pretreatment Regulations (40 CFR 403), pretreatment standards promulgated under CWA Sections 307(b), 307(c), and 307(d), pretreatment requirements specified under 40 CFR 122.44(j), and the requirements in Attachment H, "Pretreatment Requirements." The Discharger's responsibilities include, but are not limited to:

i. Enforcement of National Pretreatment Standards of 40 CFR 403.5 and 403.6;

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

iii. Submission of reports to USEPA, the State Water Board, and the Regional Water Board, as described in Attachment H "Pretreatment Requirements."

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

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

b. Biosolids Management Practices Requirements

(1) All sludge treatment, processing, storage or disposal activities under the Discharger's control shall be in compliance with current State and federal regulations.

(2) Sludge shall not be applied to the dedicated disposal site between October 30 and May 1 unless prior written authorization is obtained from the Executive Officer.

(3) Sewage sludge disposed of at the storage lagoons and dedicated disposal site shall be limited to sewage sludge generated by the Discharger and sludge from North Marin Water District's water treatment facility unless an exception is authorized by the Executive Officer.

(4) Disposal of sludge in the dedicated disposal site shall not adversely impact beneficial uses of the groundwater or Novato Creek.

(5) The Discharger shall notify the Regional Water Board in writing of any significant changes in its sludge disposal practices.

(6) The treatment, processing, storage, or disposal of sludge conducted by the Discharger shall not create a condition of pollution or nuisance as defined in CWC Section 13050(l) and (m).

(7) The treatment, processing, storage, or disposal of sludge by the Discharger shall not cause waste material to be discharged to, or deposited in, waters of the State. Ponded water or runoff from the disposal area shall not be discharged to adjacent land or ditches discharging to surface waters. Sludge storage facilities shall be operated and maintained in such a manner as to provide adequate protection from surface runoff, erosion, or other conditions, which would cause drainage from the waste materials to escape from the storage facility sites.

(8) Disposal of municipal wastewater solids by surface disposal and operation of a surface disposal site is regulated by USEPA under regulations at 40 CFR 503 (Standards for the Use and Disposal of Sewage Sludge.) Waste discharge requirements for sludge disposal are waived under the condition that the Discharger complies with all provisions of 40 CFR 503. As required by CWC Section 13269, the Regional Water Board finds this waiver is not against the public interest, as the activity is adequately regulated by federal regulations at 40 CFR 503.

(9) The Discharger is required to submit an annual report to USEPA regarding its sewage sludge disposal practices in accordance with the requirements of 40 CFR 503. The Discharger shall submit a copy of this report to the Regional Water Board by February 28 for the previous calendar year.

c. Sanitary Sewer Overflows and Sewer System Management Plan

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

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

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

The Discharger should note that Attachments D and G of this Order specify reporting requirements for unauthorized discharges from anywhere within the WWTP downstream of the WWTP boundaries.

6. Other Special Provisions

a. Copper Action Plan

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

Table 10. Copper Action Plan

Task	Compliance Date
(1) Review Potential Copper Sources The Discharger has submitted an inventory of potential copper sources to the treatment plant.	Already completed.
(2) Implement Copper Control Program The Discharger has submitted a plan for and begun implementation of a program to reduce copper discharges identified in Task 1. The Discharger shall continue to implement the tasks as specified in the submitted plan.	On-going.
(3) Implement Additional Measures If the Regional Water Board notifies the Discharger that the three-year rolling mean copper concentration of the receiving water exceeds 3.0 μg/L, the Discharger shall evaluate the effluent copper concentration trend. If the trend is increasing, within 90 days of the notification, the Discharger shall develop and begin implementation of additional measures to control copper discharges.	Begin implementation of additional measures within 90 days of notification.
(4) Studies to Reduce Copper Pollutant Impact Uncertainties. The Discharger shall submit a study plan and schedule to conduct, or cause to be conducted, technical studies to investigate possible copper sediment toxicity and technical studies to investigate sublethal effects on salmonids. Specifically, the Discharger shall include the manner in which the above will be accomplished and describe the studies to be performed with an implementation schedule. To satisfy this requirement, dischargers may collaborate and conduct these studies as a group.	With annual pollution prevention report due February 28, 2011
(5) Report Status of Copper Control Program The Discharger shall submit a report documenting copper control program implementation and addressing the effectiveness of the actions taken, including any additional copper controls required by Task 3, above, together with a schedule for actions to be taken in the next 12 months. Additionally, the Discharger shall report the findings and results of the studies completed, planned, or in progress under Task 4. Regarding the Task 4 studies, dischargers may collaborate and provide this information in a single report to satisfy this requirement for an entire group.	With annual pollution prevention report each year starting with February 28, 2011, report

b. Cyanide Action Plan

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

Table 11. Cyanide Action Plan

Task	Compliance Date
(1) Review Potential Cyanide Contributors The Discharger has submitted an inventory of potential sources of cyanide to the treatment plant (e.g., metal plating operations, hazardous waste recycling, etc.). Since no sources of cyanide were identified, Tasks 2 and 3 are not required, unless the Discharger receives a request to discharge detectable levels of cyanide to its treatment plant. If so, the Discharger shall notify the Executive Officer and implement Tasks 2 and 3.	Already completed.

Task	Compliance Date
(2) Implement Cyanide Control Program Action Plan The Discharger shall submit a plan for and begin implementation of a program to minimize cyanide discharges to its treatment plant consisting, at a minimum, of the following elements: a. Monitor each potential source identified to assess the need to include that contributing source in the control program. b. Inspect contributing sources included in the control program annually. Inspection elements may be based on USEPA guidance, such as Industrial User Inspection and Sampling Manual for POTWs (EPA 831-B-94-01). c. Develop and distribute educational materials to contributing sources and potential contributing sources regarding the need to prevent cyanide discharges. • Prepare an emergency monitoring and response plan to be implemented if a significant cyanide discharge occurs.	With annual pollution prevention report due after the notification.
(3) Implement Additional Cyanide Control Measures If the Regional Water Board notifies the Discharger that ambient monitoring shows cyanide concentrations of 1.0 µg/L or higher in the main body of San Francisco Bay, then the Discharger shall commence with actions to identify and abate cyanide sources responsible for the elevated ambient concentrations.	Begin implementation within 90-days of notification.
(4) Report Status of Cyanide Control Program The Discharger shall submit an annual report documenting implementation of the cyanide control program and addressing the effectiveness of actions taken, including any additional cyanide controls required by Tasks 2 and 3, above, together with a schedule for actions to be taken in the next 12 months.	With annual pollution prevention report due after the notification.

VII.COMPLIANCE DETERMINATION

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

ATTACHMENT A – DEFINITIONS

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

Arithmetic mean = $\mu = \Sigma x / n$ where: Σx is the sum of the measured ambient water concentrations, and n is the number of samples.

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

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

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

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

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

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

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

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

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

Dilution Credit

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

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

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

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

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

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

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

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

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

of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the arithmetic mean measurement of the pollutant over the day.

Median

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

Method Detection Limit (MDL)

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

Minimum Level (ML)

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

Mixing Zone

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

Not Detected (ND)

Sample results less than the laboratory's MDL.

Ocean Waters

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

Persistent Pollutants

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

Pollutant Minimization Program (PMP)

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

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

Reporting Level (RL)
RL is the ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order. The MLs included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the Regional Water Board either from Appendix 4 of the SIP in accordance with section 2.4.2 of the SIP or established in accordance with section 2.4.3 of the SIP. The ML is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the ML depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied to the ML in the computation of the RL.

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

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

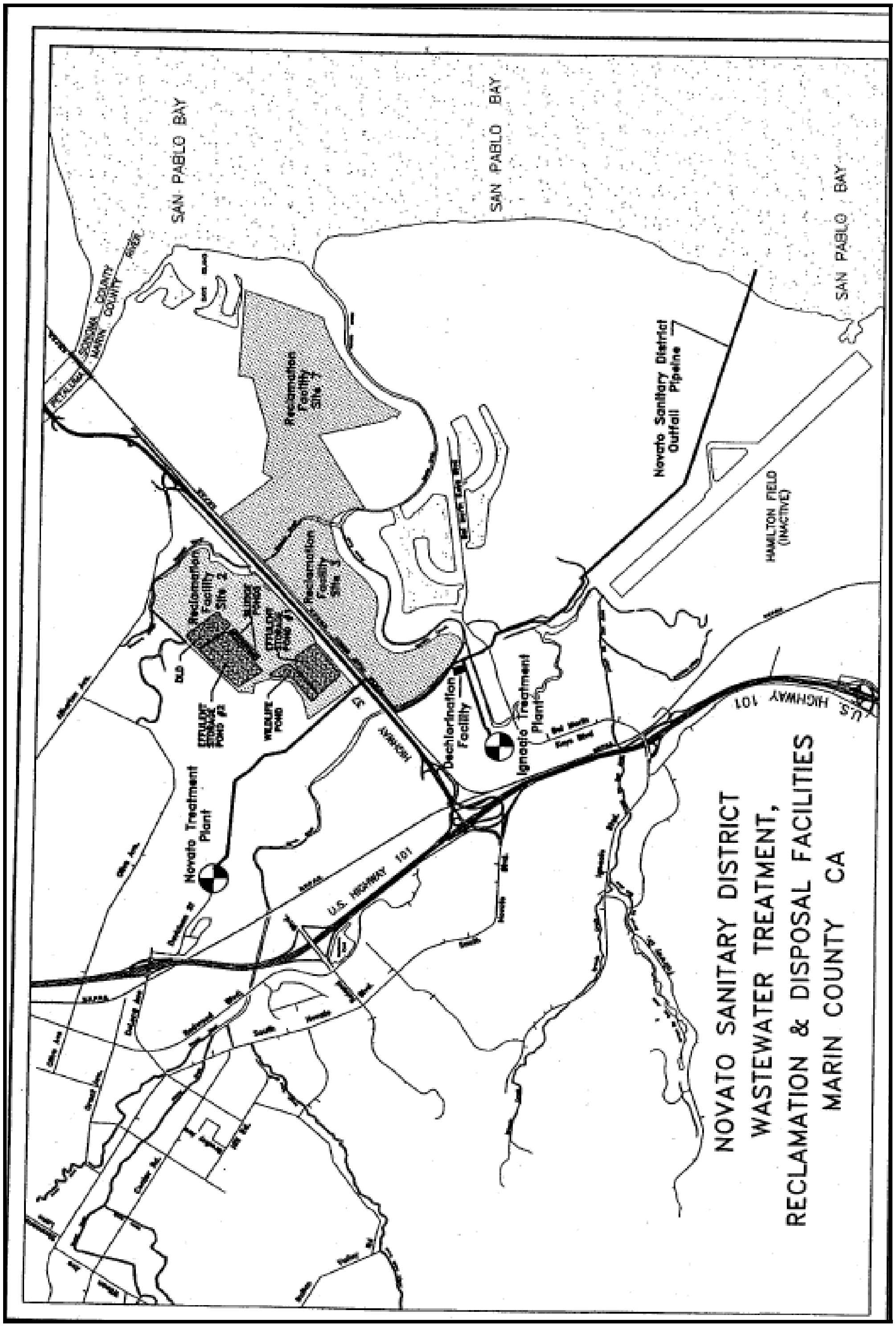
Standard Deviation (σ)
Standard Deviation is a measure of variability that is calculated as follows:

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

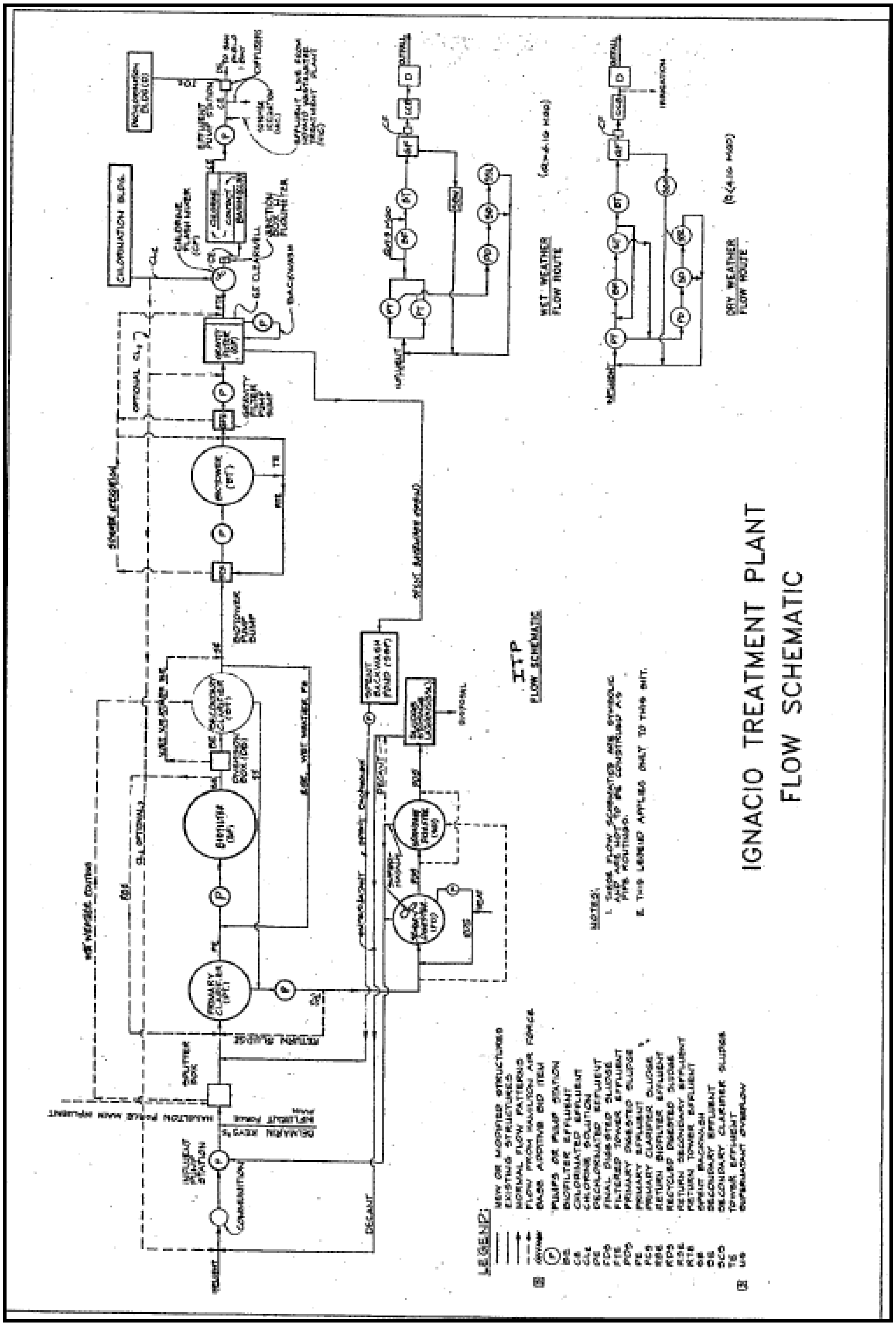
where:
x is the observed value;
μ is the arithmetic mean of the observed values; and
n is the number of samples.

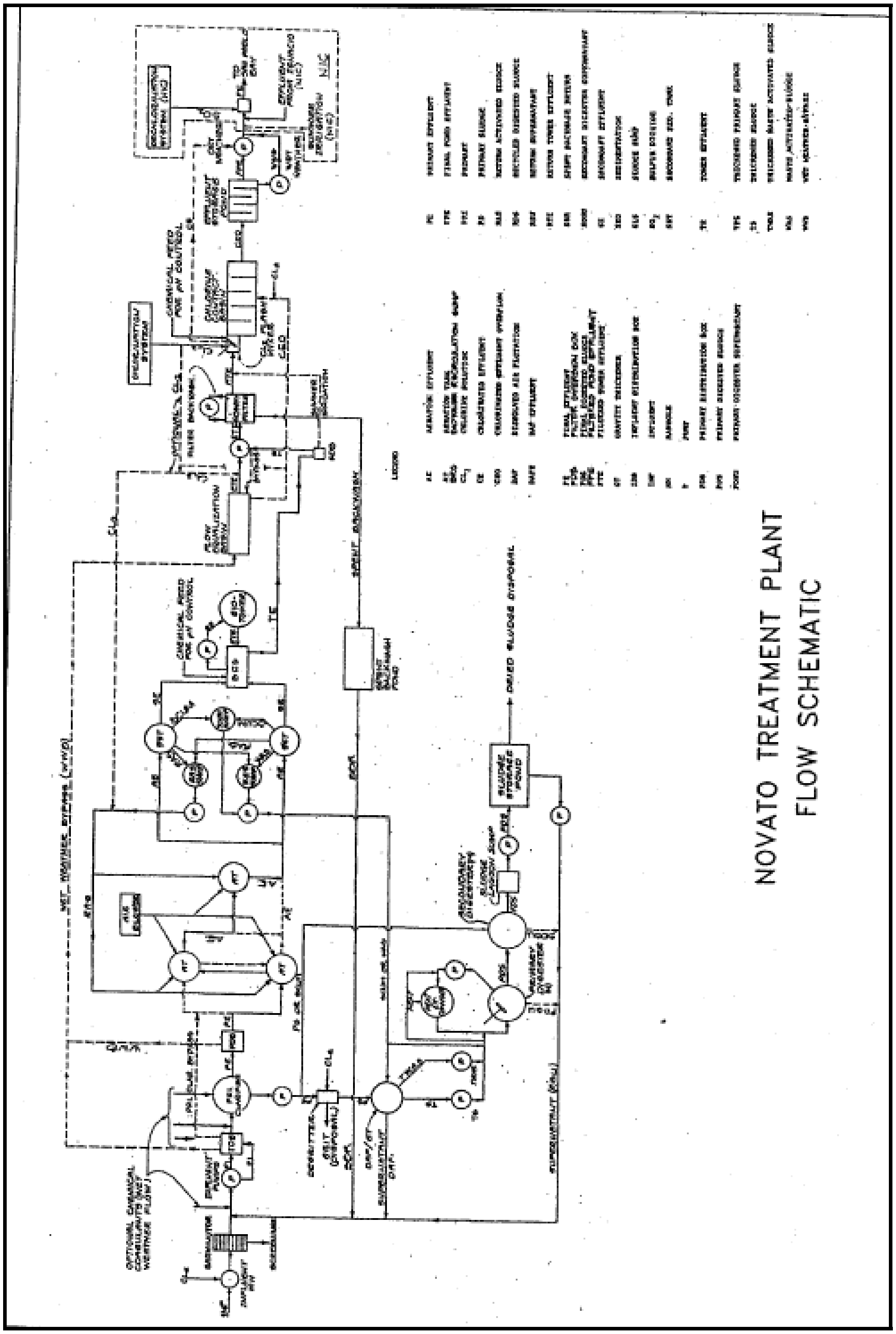
Toxicity Reduction Evaluation (TRE)
TRE is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first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

ATTACHMENT B – FACILITY MAP



ATTACHMENT C – PROCESS FLOW DIAGRAM




NOVATO TREATMENT PLANT
FLOW SCHEMATIC

ATTACHMENT D –STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

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

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

B. Need to Halt or Reduce Activity Not a Defense

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

C. Duty to Mitigate

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

D. Proper Operation and Maintenance

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

E. Property Rights

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

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

F. Inspection and Entry

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

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

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

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

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

G. Bypass

1. Definitions

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

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

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

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

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

   b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 CFR 122.41(m)(4)(i)(B)); and

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

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

5. Notice

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

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

H. Upset

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

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

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

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

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

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

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

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

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

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

B. Duty to Reapply

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

C. Transfers

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

III. STANDARD PROVISIONS – MONITORING

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

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

IV. STANDARD PROVISIONS – RECORDS

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

B. Records of monitoring information shall include:

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

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

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

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

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

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

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

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

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

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

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

B. Signatory and Certification Requirements

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

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

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

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

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 CFR 122.22(b)(2)); and

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

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

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

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

C. Monitoring Reports

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

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

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

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

D. Compliance Schedules

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

E. Twenty-Four Hour Reporting

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

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

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

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

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

F. Planned Changes

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

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

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

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 CFR 122.41(l)(1)(iii).)

G. Anticipated Noncompliance

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

H. Other Noncompliance

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

I. Other Information

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

VI. STANDARD PROVISIONS – ENFORCEMENT

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

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Publicly-Owned Treatment Works (POTWs)

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

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

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

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

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

Table of Contents

I. General Monitoring Provisions E-2
II. Monitoring Locations E-2
III. Influent Monitoring Requirements E-2
IV. Effluent Monitoring Requirements E-3
V. Whole Effluent Toxicity Testing Requirements E-7
VI. Land Discharge Monitoring Requirements – Not Applicable E-9
VII. Reclamation Monitoring Requirements – Not Applicable E-9
VIII. Receiving Water Monitoring Requirements E-9
IX. Other Monitoring Requirements E-9
X. Reporting Requirements E-10
  A. General Monitoring and Reporting Requirements E-10
  B. Self Monitoring Reports (SMRs) E-10
  C. Discharge Monitoring Reports (DMRs) E-12
  D. Other Reports E-13

Tables

Table E-1. Monitoring Station Locations E-2
Table E-2. Influent Monitoring – A-002 ....E-2
Table E-3. Effluent Monitoring – E-002 ....E-3
Table E-4. Pond Effluent Monitoring –W-004 ....E-5
Table E-5. Pretreatment and Biosolids Monitoring Requirements E-9
Table E-6. Monitoring Periods and Reporting Schedule E-11

ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

40 CFR 122.48 requires that all NPDES permits specify monitoring and reporting requirements. California Water Code (CWC) sections 13267 and 13383 also authorize the Regional Water Board to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements that implement federal and California regulations.

I. GENERAL MONITORING PROVISIONS

A. The Discharger shall comply with this MRP. The Executive Officer may amend this MRP pursuant to 40 CFR 122.62, 122.63, and 124.5.

B. The Discharger shall conduct all monitoring in accordance with Attachment D, section III, as supplemented by Attachment G of this Order. Equivalent test methods must be more sensitive than those specified in 40 CFR 136, must be specified in the permit, and must be approved for use by the Executive Officer, following consultation with the State Water Quality Control Board (State Water Board) Quality Assurance Program.

II. MONITORING LOCATIONS

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

Table E-1. Monitoring Station Locations

Type of Sampling Location	Monitoring Location Name	Monitoring Location Description
Influent	A-002	At any point in the Novato Plant headworks after the influent bar screens at which all waste tributary to the system is present.
Effluent	E-002	At any point in the Novato Plant's outfall between the point of discharge and the point at which all waste tributary to that outfall is present.
Effluent	E-003	At a point in the outfall from the Novato Plant between the point of discharge and the point at which all waste tributary to that outfall is present.
Pond Discharge	W-004	At a point where all water from the pond to the outfall is present upstream of the connection to the common outfall.

III. INFLUENT MONITORING REQUIREMENTS

The Discharger shall monitor influent to the Novato Plant at A-002 as follows.

Table E-2. Influent Monitoring – A-002

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow[1]	mgd	Continuous	Continuous/D
	mg	1/day	1/day
BOD_5	mg/L	C-24	2/Week
	kg/day	Calculate	2/Week
TSS	mg/L	C-24	3/Week
	kg/day	Calculate	3/Week
Cyanide	μg/L	Grab	1/month

Legend for Table E-2

Unit Abbreviations:

mg = million gallons
mgd = million gallons per day
mg/L = milligrams per liter
kg/day = kilograms per day
µg/L = micrograms per liter

Sample Type:

C-24 = 24-hour composite

Sampling Frequency:

2/Week = Two times per week
3/Week = Three times per week
1/month = once per month

Footnote for Table E-2.

[1] Flow Monitoring. Flow shall be monitored continuously, and the following information shall be reported in self-monitoring reports for each month:

- Daily average flow (mgd)
- Total daily flow (mg)
- Monthly average flow (mgd)
- Total monthly flow volume (mg)
- Maximum and minimum daily average flow rates (mgd) and time of occurrence

Discharge to storage ponds. If treated wastewater is diverted to the storage ponds other than reclamation purpose (reporting for diversion to storage ponds for reclamation is specified in Order No. 92-065), the Discharger shall report the following:

- Date of diversion
- Duration of diversion (hours and minutes)
- Total flow volume (mg) diverted
- Reason for diversion

IV. EFFLUENT MONITORING REQUIREMENTS

A. Effluent Monitoring for Discharges at Discharge Point 001

The Discharger shall monitor treated wastewater from the Novato Plant to San Pablo Bay at E-002 (except acute toxicity, which until the new plant is complete shall be monitored at E-003, and total chlorine residual, which shall be monitored at E-003), as follows.

Table E-3. Effluent Monitoring – E-002

Parameter	Units	Sample Type	Minimum Sampling Frequency
pH [1]	s.u.	Grab	5/Week
BOD_5	mg/L	C-24	2/Week
	kg/day	Calculate	2/Week
TSS	mg/L	C-24	3/Week
	kg/day	Calculate	3/Week
BOD and TSS % Removal[2]	%	Calculate	1/Month
Oil and Grease[3]	mg/L	Multiple grabs	1/Month
	kg/day	Calculate	1/Month
Enterococcus Bacteria	MPN/100mL or CFU/100 mL	Grab	3/Week

Parameter	Units	Sample Type	Minimum Sampling Frequency
Fecal Coliform Bacteria	MPN/100 mL	Grab	3/Week
Temperature	°C	Grab	5/Week
Total Chlorine Residual[4]	mg/L	Cont/H	1/Hour
Acute Toxicity[5]	% Survival	Flow through	1/Month
Chronic Toxicity[6]	TUc	C-24	1/Quarter
Total Ammonia[7]	mg/L as N	C-24	1/Month
Unionized Ammonia	mg/L as N	Calculate	1/Month
Copper	µg/L	C-24	1/Month
Cyanide	µg/L	Grab	1/Month
Carbon tetrachloride	µg/L	Grab	2/Year
Dioxin-TEQ	µg/L	Grab	2/Year
Dieldrin	µg/L	Grab	2/Year
Remaining Priority Pollutants[8]	µg/L	[9]	2/Year
Standard Observations[9]	---	---	1/month

Legend to Table E-3:

Unit Abbreviations:

s.u.	= standard units
mg/L	= milligrams per liter
kg/day	= kilograms per day
%	= percent
TUc	= chronic toxicity units
MPN/100 mL	= most probable number per 100 milliliters
CFU/100 mL	= number of colony forming units per 100 milliliters
µg/L	= micrograms per liter

Sample Type:

C-24	= 24-hour composite
Cont/D	= measured continuously, and recorded and reported daily
Cont/H	= measured continuously, and recorded and reported hourly

Sampling Frequency:

1/Week	= Once per week
2/Week	= Two times per week
3/Week	= Three times per week
5/Week	= Five times per week
1/Month	= Once per month
1/Hour	= Once per hour
1/Quarter	= Once per quarter
2/Year	= Twice per year

Footnotes to Table E-3:

[1] pH. If pH is monitored continuously, the minimum and maximum pH values for each day shall be reported in monthly Self-Monitoring Reports (SMRs).

[2] BOD and TSS % Removal. The percent removal for BOD and TSS shall be reported for each calendar month in accordance with Effluent Limitations IV.A. 1 and 2. Samples for BOD and TSS shall be collected simultaneously with influent samples.

[3] Oil and Grease. Each oil and grease sample event shall consist of a composite sample comprised of three grab samples taken at equal intervals during the sampling date, with each grab sample being collected in a glass container. The grab samples shall be mixed in proportion to the instantaneous flow rates occurring at the time of each grab sample, within the accuracy of plus or minus 5%. Each glass container used for sample collection or mixing shall be thoroughly rinsed with solvent rinsings as soon as possible after use, and the solvent rinsings shall be added to the composite sample for extraction and analysis.

[4] Total Chlorine Residual. During times when chlorination is used for disinfection of the effluent, effluent chlorine concentrations shall be measured continuously at E-003. Chlorine residual concentrations shall be monitored and reported for sampling points both before and after dechlorination. The Discharger shall report the maximum residual chlorine concentration observed following dechlorination on a daily basis. Total chlorine dosage (kg/day) shall be recorded on a daily basis.

Alternatively, the Discharger may evaluate compliance with this requirement by recording discrete readings from the continuous monitoring every hour on the hour, or by collecting grab samples every hour, for a total of 24 readings or samples per day if the following conditions are met: (a) the Discharger shall retain continuous monitoring readings for at least three years; (b) the Discharger shall acknowledge in writing that the Regional Water Board reserves the right to use all other continuous monitoring data for discretionary enforcement; (c) the Discharger must provide in writing the brand name(s), model number(s), and serial number(s) of the equipment used to continuously monitor dechlorinated final effluent chlorine residual. If the identified equipment is replaced, the Discharger shall provide the Regional Water Board in writing, within 72 hours of the successful startup of the new equipment, the new equipment's brand name, model number, and serial number. The written notification identified in items (a) through (c) shall be in the form of a letter addressed to the Regional Water Board's Executive Officer with a certification statement as listed in the October 19, 2004, Regional Water Board letter re: *Chlorine Compliance Strategies for Dischargers Using Continuous Monitoring Devices*.

[5] Acute toxicity. Acute bioassay tests shall be performed in accordance with Section V.A of this MRP. Acute bioassay tests shall be performed at Monitoring Location E-003 instead of E-002 until the new plant is complete.

[6] Chronic toxicity. Critical life stage toxicity tests shall be performed and reported in accordance with the Chronic Toxicity Requirements of specified in Section V.B of this MRP.

[7] Total Ammonia. Monitoring for total ammonia shall occur concurrently with monitoring for temperature and pH, for determination of the unionized ammonia fraction.

[8] Remaining priority pollutants. The sample type and analytical method should be as described in the Regional Standard Provisions (Attachment G) or as amended and subsequently approved by the Executive Officer. For these pollutants, the sampling frequencies shall be the higher ones under this table or under the pretreatment program sampling required in Section X.A of this MRP. Pretreatment program monitoring can be used to satisfy relevant parts of these sampling requirements.

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

B. Effluent Monitoring for Pond Discharges

When the Discharger anticipates or plans to discharge surplus treated wastewater from the storage ponds to San Pablo Bay, the Discharger shall sample wastewater at W-004 as follows:

(1) If the discharge will occur at the beginning of the wet weather months (on or between November 1 – April 30), the Discharger shall sample once (unless otherwise indicated below) at the end of the dry weather months (by October 31) or once during the wet weather months before the first discharge occurs;

(2) If the discharge will occur during the dry weather months (May, September, or October), the Discharger shall sample once (unless otherwise indicated below) in May before the first discharge occurs in May; once (unless otherwise indicated below) in September or October before the first discharge occurs in September or October.

Table E-4. Pond Effluent Monitoring –W-004

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow[1]	mg	Continuous	1/day while discharge occurs
pH	s.u.	Grab	1/week while discharge occurs
BOD_5	mg/L	24-hr Composite[2]	1/discharge period
	kg/day	Calculate	1/discharge period
TSS	mg/L	24-hr Composite[2]	1/week while discharge occurs
	kg/day	Calculate	1/week

Parameter	Units	Sample Type	Minimum Sampling Frequency
Oil and Grease	mg/L	Multiple grabs[[3]	1/discharge period
	kg/day	Calculate	1/discharge period
Enterococcus Bacteria	MPN/100mL or CFU/100 mL	Grab	1/discharge period
Fecal Coliform Bacteria	MPN/100 mL	Grab	1/discharge period
Acute Toxicity	% survival	Static renewal from 24-hour composite[2]	1/discharge period
Temperature	°C	Grab	1/week while discharge occurs
Total Chlorine Residual	mg/L	Grab	1/week while discharge occurs if previous discharge to the ponds has been chlorinated
Total Ammonia	mg/L as N	24-hr Composite[2]	1/discharge period
Unionized Ammonia	mg/L as N	Calculate	1/discharge period
Copper	µg/L	24-hr Composite[2]	1/discharge period
Cyanide	µg/L	Grab	1/discharge period
Carbon tetrachloride	µg/L	Grab	1/discharge period
Dieldrin	µg/L	Grab	1/discharge period
Standard Observations	---	---	Each discharge event

Legend to Table E-4:

Unit Abbreviations:

mg	= million gallons
s.u.	= standard units
mg/L	= milligrams per liter
kg/day	= kilograms per day
MPN/100 mL	= most probable number per 100 milliliters
CFU/100 mL	= number of colony forming units per 100 milliliters
µg/L	= micrograms per liter

Sampling Frequency:

1/day = once per day
1/week = Once per week
1/discharge period = Once per discharge period; there could be three discharge periods for pond discharges, which are defined as wet months (November 1 – April 30); May 1- 31; September 1 – October 31.

Footnotes to Table E-4:

[1] If wastewater from storage ponds is discharged through Discharge Point 001, the Discharger shall report the following:

- Date of discharge
- Duration of discharge (hours and minutes) each day
- Daily total flow volume (mg) discharged
- Monthly total flow volume (mg) discharged

[2] 24-hour composite samples may be made up of discrete grab samples equally spaced over the course of a work shift, with each grab samples combined (volumetrically flow-weighted) prior to analysis.

[3] Oil and Grease. See Footnote [3] to Table E-3.

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

The Discharger shall monitor acute toxicity at E-003 (at E-002 once the new plant is complete) and chronic toxicity at E-002 as follows.

A. Whole Effluent Acute Toxicity

1. Compliance with the acute toxicity effluent limitations of this Order shall be evaluated by measuring survival of test organisms exposed to 96-hour continuous flow-through bioassays at E-003 (at E-002 once the new plant is complete) or static renewal for storage pond discharge bioassays at W-004.

2. Test organisms shall be fathead minnow (*Pimephales promelas*) unless the Executive Officer specifies otherwise in writing.

3. All bioassays shall be performed according to the most up-to-date protocols in 40 CFR 136, currently in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms,* 5th Edition.

4. If specific identifiable substances in the discharge can be demonstrated by the Discharger as being rapidly rendered harmless upon discharge to the receiving water, compliance with the acute toxicity limit may be determined after the test samples are adjusted to remove the influence of those substances. Written approval from the Executive Officer must be obtained to authorize such an adjustment.

5. The sample may be taken from final secondary effluent prior to disinfection. Monitoring of the bioassay water shall include, on a daily basis, the following parameters: pH, dissolved oxygen, ammonia (if toxicity is observed), temperature, hardness, and alkalinity. These results shall be reported. If a violation of acute toxicity requirements occurs, the bioassay test shall be repeated with new fish as soon as practical and shall be repeated until a test fish survival rate of 90 percent or greater is observed. If the control fish survival rate is less than 90 percent, the bioassay test shall be restarted with new fish and shall continue as soon as practical until an acceptable test is completed (i.e., control fish survival rate is 90 percent or greater).

B. Whole Effluent Chronic Toxicity

1. Chronic Toxicity Monitoring Requirements

a. **Sampling.** The Discharger shall collect 24-hour composite samples of the effluent at monitoring location E-002, for critical life stage toxicity testing as indicated below. For toxicity tests requiring renewals, 24-hour composite samples collected on consecutive days are required.

b. **Test Species.** The test species shall be the water flea (*Ceriodaphnia dubia.*) The Discharger shall conduct a screening chronic toxicity test as described in Appendix E-1 following any significant change in the nature of the effluent or prior to application for permit renewal. The most sensitive species shall be used thereafter for routine chronic toxicity monitoring. The Executive Officer may change to another test species if data suggest that another test species is more sensitive to the discharge.

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

(1) Routine Monitoring: Quarterly

(2) Accelerated Monitoring: Monthly

The Discharger shall accelerate monitoring to monthly after exceeding a three-sample median of 1 TUc or a single sample maximum of 2 TUc for discharges via Discharge Point 001, or as otherwise specified by the Executive Officer.

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

d. Methodology. Sample collection, handling, and preservation shall be in accordance with USEPA protocols. In addition, bioassays shall be conducted in compliance with the most recently promulgated test methods, as shown in Appendix E-1. These are *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms,* currently 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).

e. Dilution Series. The Discharger shall conduct tests with a control and five effluent concentrations (including 100% effluent) and using a dilution factor ≥ 0.5. Test sample pH in each dilution in the series may be controlled to the level of the effluent sample as received prior to being salted up.

2. Chronic Toxicity Reporting Requirements

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

(1) Sample dates

(2) Test initiation date

(3) Test species

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

(5) NOEC values in percent effluent

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

(7) TUc values (100/NOEC, 100/IC_{25}, or 100/EC_{25})

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

(9) NOEC and LOEC values for reference toxicant tests

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

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

b. Compliance Summary. The results of the chronic toxicity testing shall be provided in the self-monitoring report 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) (IC_{25} or EC_{25}), (7), and (8).

VI. LAND DISCHARGE MONITORING REQUIREMENTS – NOT APPLICABLE

VII. RECLAMATION MONITORING REQUIREMENTS – NOT APPLICABLE

VIII. RECEIVING WATER MONITORING REQUIREMENTS

Regional Monitoring Program (RMP)

The Discharger shall continue to participate in the RMP, which involves collection of data on pollutants and toxicity in water, sediment and biota of the San Francisco Bay. 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. OTHER MONITORING REQUIREMENTS

Pretreatment and Biosolids Monitoring Requirements

The Discharger shall comply with the pretreatment requirements specified in Table E-5 for influent (at Monitoring Location A-002), effluent (at Monitoring Location E-002), and biosolids monitoring.

Table E-5. Pretreatment and Biosolids Monitoring Requirements

Constituents	Sampling Frequency			Sample Type[4]	
	Influent A-002	Effluent E-002[3]	Biosolids	A-002 and E-002	Biosolids
VOC	2/Year	2/Year	2/Year	Multiple Grabs[4a]	Grabs
BNA	2/Year	2/Year	2/Year	Multiple Grabs [4a]	Grabs
Metals[1]	1/Month	1/Month	2/Year	24-hr Composite[4b]	Grabs
Hexavalent Chromium[2]	1/Month	1/Month	2/Year	Multiple Grabs [4a]	Grabs
Mercury	1/Month	1/Month	2/Year	24-hr Composite[4b,4c]	Grabs
Cyanide	1/Month	1/Month	2/Year	Multiple Grabs [4a]	Grabs

Legend for Table E-5:

VOC	= volatile organic compounds
BNA	= base/neutrals and acids extractable organic compounds
1/month	= once per month
2/year	= twice per year

Footnotes for Table E-5:

[1] The parameters are arsenic, cadmium, copper, lead, nickel, silver, zinc, and selenium.

[2] The Discharger may elect to run total chromium instead of hexavalent chromium. Sample collection for total chromium measurements may also use 24-hour composite sampling.

[3] Effluent monitoring conducted in accordance with Table E-4 can be used to satisfy these pretreatment monitoring requirements.

[4] Sample types:

a. Multiple grabs samples for VOC, BNA, hexavalent chromium, and cyanide, must be made up of a minimum of four (4) discrete grab samples, collected equally spaced over the course of a work shift, with each grab analyzed separately and the results mathematically flow-weighted or with grab samples combined (volumetrically flow-weighted) prior to analysis.

b. 24-hour composite samples may be made up discrete grab samples and may be combined (volumetrically flow-weighted) prior to analysis, or they may be mathematically flow-weighted. If an automatic compositor is used, 24-hour composite samples must be obtained through flow-proportioned composite sampling.

c. Automatic compositors are allowed for mercury if either 1) the compositing equipment (hoses and containers) comply with ultraclean specifications, or 2) appropriate equipment blank samples demonstrate that the compositing equipment has not contaminated the sample. This direction is consistent with the Regional Water Board's October 22, 1999, letter on this subject.

d. Biosolids collection shall comply with those requirements for sludge monitoring specified in Attachment H, Appendix H-3, of this of the Order for sludge monitoring. The biosolids analyzed shall be a composite sample of the biosolids for final disposal. The Discharger shall also comply with biosolids monitoring requirements required by 40 CFR 503.

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

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

B. Self Monitoring Reports (SMRs)

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 that there is a service interruption for electronic submittal.

2. The Discharger shall report in the SMR the results of all monitoring specified in this MRP under sections III through IX. The Discharger shall submit monthly SMRs, including the results of all required monitoring using USEPA-approved test methods or other test methods specified in this Order. Monthly SMRs shall be due 30 days after the end of 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. Annual SMRs shall be due February 1 of each year, covering the

previous calendar year. The report shall contain the items described in the Regional Standard Provisions (Attachment G).

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	Permit effective date	All
1/Hour	Permit effective date	Every hour on the hour
1/Day	Permit effective date	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.
1/Week 2/Week 3/Week 5/Week	Permit effective date	Sunday through Saturday
1/Month	Permit effective date	First day of calendar month through last day of calendar month
1/Quarter	Permit effective date	November 1 – January 31, February 1 – April 30, May 1 – July 31, August 1 – October 31
1/discharge period for storage pond discharges	Permit effective date	November 1 – April 30, May 1 – May 31, September 1 – October 31
2/Year	Permit effective date	Once during the wet season (typically November 1 – April 30) and once during the dry season (typically May 1 through October 31)

4. The Discharger shall report with each sample result the applicable reported Minimum Level (ML) 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 ML 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 (± 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.

e. Compliance with effluent limitations for priority pollutants shall be determined using sample reporting protocols defined above, in Attachment A. For purposes of reporting and administrative enforcement by the Regional and State Water Boards, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

5. The Discharger shall submit SMRs in accordance with the following requirements:

The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and 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.

The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall (1) clearly identify violations of the WDRs, (2) discuss corrective actions taken or planned, and (3) propose a time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.

SMRs must be submitted to the Regional Water Board, signed and certified as required by the Federal 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 Wastewater Division

C. Discharge Monitoring Reports (DMRs)

1. As described in Section X.B.1 above, at any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit SMRs that will satisfy federal requirements for submittal of DMRs. Until such notification is given, the Discharger shall submit DMRs in accordance with the requirements described below.

2. Once notified by the State or Regional Water Board, the Discharger shall submit hard copy DMRs. DMRs must be signed and certified as required by the Standard Provisions (Attachment D). The Discharger shall submit the original DMR and one copy of the DMR to one of the addresses listed below:

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

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

D. Other Reports

In the first monthly SMR following the respective due dates, 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.

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

I. Definition of Terms

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

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

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

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

II. Chronic Toxicity Screening Phase Requirements

A. The Discharger shall perform screening phase monitoring:

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

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

B. Design of the screening phase shall, at a minimum, consist of the following elements:

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

2. Two stages:

a. Stage 1 shall consist of a minimum of one battery of tests conducted concurrently. Selection of the type of test species and minimum number of tests shall be based on Appendix E-2 (attached).
b. Stage 2 shall consist of a minimum of two test batteries conducted at a monthly frequency using the three most sensitive species based on the Stage 1 test results and as approved by the Executive Officer.

3. Appropriate controls.

4. Concurrent reference toxicant tests.

5. Dilution series of 100%, 85%, 70%, 50%, 25%, and 0 %, where "%" is percent effluent as discharged, or as otherwise approved the Executive Officer.

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

APPENDIX E-2
SUMMARY OF TOXICITY TEST SPECIES REQUIREMENTS

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

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

Toxicity Test References:

1. American Society for Testing Materials (ASTM). 1990. Standard Guide for Conducting Static 96-Hour Toxicity Tests with Microalgae. Procedure E 1218-90. ASTM, Philadelphia, PA.

2. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to West Coast Marine and Estuarine Organisms. EPA/600/R-95/136. August 1995.

3. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Marine and Estuarine Organisms. EPA/600/4-90/003. July 1994.

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

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

<u>Toxicity Test Reference:</u>

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

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

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

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

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

(b) Estuarine refers to receiving water salinities that fall between those of marine and freshwater, as described above.

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

(a) The salinity of the effluent is above 1 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.

ATTACHMENT F - FACT

Table of Contents

I. Permit Information F-3
II. Facility Description F-4
A. Description of Wastewater and Biosolids Treatment F-4
B. Discharge Point and Receiving Waters F-6
C. Summary of Existing Requirements and Self-Monitoring Report Data F-7
D. Compliance Summary F-8
E. Planned Changes F-11
III. Applicable Plans, Policies, and Regulations F-11
A. Legal Authorities F-11
B. California Environmental Quality Act (CEQA) F-11
C. State and Federal Regulations, Policies, and Plans F-11
D. Impaired Water Bodies on CWA 303(d) List F-13
IV. Rationale For Effluent Limitations and Discharge Specifications F-14
A. Discharge Prohibitions F-14
B. Shallow Water Discharge and Basin Plan Discharge Prohibition 1 ....F-17
C. Technology-Based Effluent Limitations F-18
1. Scope and Authority for Technology-Based Effluent Limitations F-18
2. Applicable Effluent Limitations F-19
D. WQBELs F-20
1. Scope and Authority F-21
2. Applicable Beneficial Uses and WQOs F-21
3. Determining the Need for WQBELs F-24
4. WQBEL Calculations F-31
5. Whole Effluent Acute Toxicity F-42
6. Whole Effluent Chronic Toxicity F-42
7. Anti-backsliding and Antidegradation F-42
F. Land Discharge Specifications F-43
G. Reclamation Specifications F-43
V. Rationale for Receiving Water Limitations F-43
A. Surface Water F-43
B. Groundwater F-43
VI. Rationale for Monitoring and Reporting Requirements F-44
A. Influent Monitoring F-44
B. Effluent Monitoring F-44
C. Whole Effluent Toxicity Testing Requirements F-45
D. Receiving Water Monitoring F-45
E. Other Monitoring Requirements F-45
VII. Rationale for Provisions F-46
A. Standard Provisions (Provision VI.A) F-46
B. MRP Requirements F-46
C. Special Provisions F-46
1. Reopener Provisions F-46
2. Special Studies and Additional Monitoring Requirements F-46
3. Best Management Practices and Pollution Minimization Program F-47

4. Construction, Operation, and Maintenance Specifications F-47
5. Special Provisions for Municipal Facilities (POTWs Only) F-47
VIII. Public Participation F-49
A. Notification of Interested Parties F-49
B. Written Comments F-49
C. Public Hearing F-49
D. Waste Discharge Requirements Petitions F-50
E. Information and Copying F-50
F. Register of Interested Persons F-50
G. Additional Information F-50

List of Tables

Table F-1. Facility Information F-3
Table F-2. Outfall Locations F-6
Table F-3. Historic Effluent Limitations and Monitoring Data for Conventional and Non-Conventional Pollutants (Novato Plant Effluent, Formerly E-002) F-7
Table F-4. Historic Effluent Limitations and Monitoring Data for Toxic Pollutants F-8
Table F-5. Numeric Effluent Limitation Exceedances F-8
Table F-6. Compliance with Previous Order Provisions F-10
Table F-7. Basin Plan Beneficial Uses F-12
Table F-8. Secondary Treatment Requirements F-18
Table F-10. Site-Specific Translators F-23
Table F-11. Reasonable Potential Analysis Summary F-28
Table F-12. Effluent Limitation Calculations F-40

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 facility.

Table F-1. Facility Information

WDID	2 215022001
CIWQS Place ID	244705
Discharger	Novato Sanitary District
Name of Facility	Novato Wastewater Treatment Plant and its associated collection system
Facility Address	500 Davidson St., Novato CA 94945 Marin County
Facility Contact, Title, Phone	Beverly James, Manager-Engineer, (415) 892-1694
Authorized Person to Sign and Submit Reports	Same as above
Mailing Address	500 Davidson St., Novato CA 94945
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	Yes (Regional Water Board Order No. 92-065)
Mercury Discharge Requirements	Regional Water Board Order No. R2-2007-0077
Facility Permitted Flow	6.55 million gallons per day (mgd) (average daily dry weather flow); 7.05 mgd after tasks in Provision VI.C.4.c are completed
Facility Design Flow	Existing Novato Plant: 6.55 million gallons per day (mgd) (average dry weather flow design capacity), 9 mgd (secondary treatment capacity) Upgraded Novato Plant: 7.05 mgd (average dry weather flow design capacity) after tasks in Provision VI.C.4.c are completed, 47 mgd (secondary treatment wet weather capacity)
Watershed	San Pablo Bay
Receiving Water	San Pablo Bay
Receiving Water Type	Estuarine
Service Area	City of Novato
Service Area Population	60,000

A. The Novato Sanitary District (hereinafter, the Discharger) is the owner and operator of the Novato Wastewater Treatment Plant (Novato Plant) and its associated collection system, and the Ignacio Wastewater Treatment Plant (Ignacio Plant) and its associated collection system. The Ignacio Plant provides secondary treatment of wastewater, and the effluent from this facility flows to the Novato Plant, which provides secondary treatment of the combined influent wastewater, and discharges to San Pablo Bay. The plants treat wastewater from a primarily residential service area serving the City of Novato and adjacent areas with a current population of about 60,000.

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 discharge of treated wastewater from the Novato Plant to San Pablo Bay, a water of the State and the United States, was previously regulated by Order No. R2-2004-0093 (NPDES Permit No. CA0037851), which was adopted on September 15, 2004, became effective on December 1, 2004, and was amended by Order No. R2-2008-0026 on May 14, 2008. Order No. R2-2004-0093 expired on December 31, 2009 and has been administratively extended.

C. The Discharger filed a Report of Waste Discharge and submitted a complete application for renewal of its Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit dated June 30, 2009.

II. FACILITY DESCRIPTION

A. Description of Wastewater and Biosolids Treatment

1. **Facility Description.** Treatment processes at the Novato Plant include influent pumping, influent screening, flow measurement and grit removal, primary clarification, activated sludge secondary treatment in the three existing circular aeration basins and two circular secondary clarifiers, ammonia removal through the existing bio-tower, chlorination (with sodium hypochlorite), and dechlorination (with sodium bisulfite) at a dechlorination facility about ½ mile east of the Ignacio Plant.

   The Discharger operates the Ignacio Plant, located at 445 Bel Marin Keys Blvd., Novato, as a roughing plant, which means treated wastewater from the Ignacio Plant is conveyed to the Novato Plant for further treatment. Treatment processes at the Ignacio Plant include primary clarification, biofiltration, subsequent clarification, nitrification, gravity filtration, and chlorine disinfection.

   The Discharger's wastewater collection system collects and transports wastewater flows to the plants through a series of gravity sewers and interceptors, pump stations, and force mains, designed to handle peak wet weather flows. The Discharger's wastewater collection systems include approximately 200 miles of sewer lines and 35 wastewater pump stations.

2. **Discharge Description.** The Novato Plant has an average dry weather flow (ADWF) design capacity of 6.55 mgd and can treat up to 9 mgd flow with full secondary treatment. When influent flow exceeds the secondary treatment capacity of the Novato Plant, flows above 9 mgd and up to 16 mgd receive primary treatment, gravity filtration and disinfection, and flows exceeding 16 mgd receive gravity filtration and chlorine disinfection. These flows are blended

with secondary treated wastewater prior to discharge. From January 2006 through April 2009, the average and daily maximum flow rates from the Novato plant were 5.3 and 22.96 mgd.

The Ignacio Plant has an ADWF design capacity of 2.02 mgd and a peak wet weather design flow capacity of 4.04 mgd. From January 2006 through March 2008, the average and daily maximum flow rates from the Ignacio Plant were 1.89 and 7.75 mgd.

The Discharger completed additional engineering analyses, an Environmental Impact Report, and an antidegradation analysis for facility construction to increase full secondary treatment capacity at the Novato Plant to 7.05 mgd (ADWF). This Order authorizes this capacity increase after the Discharger completes all construction and the tasks specified in Provision VI.C.4.c of this Order. The facility improvements will result in all treatment occurring at the Novato Plant. The upgraded Novato Plant (discussed below) will provide secondary treatment for 47 mgd wet weather flow. There will be no blending at the new upgraded Novato Plant. When construction is complete, influent flows currently conveyed to the Ignacio Plant will be rerouted to the Novato plant, and the Ignacio Plant will be decommissioned.

3. **Discharge Location**. From September 1 to May 31, treated wastewater can be discharged from the Novato Plant to the intertidal zone of San Pablo Bay at Discharge Point 001 through a multiport diffuser located approximately 950 feet offshore. The diffuser is submerged at the +1 foot mean lower low water tidal elevation. At lower tidal elevations, the outfall is exposed, and the distance from the end of the diffuser to the San Pablo Bay water line can range from 1000 to 3500 feet. During these times of lower tidal elevation, the discharge does not receive an initial dilution of 10:1, and is therefore classified as a shallow water discharge. In accordance with Basin Plan Table 4-1, shallow water discharges are prohibited. Discharge to San Pablo Bay from June 1 through August 31 is prohibited. During this period, effluent is discharged to storage ponds for irrigating the Discharger-owned pasturelands. As described in section IV.B, this Order grants an exception to the discharge prohibition from September 1 through May 31.

4. **Treatment Facilities Upgrade Project.** The Discharger is currently undergoing a major multi-year Treatment Facilities Upgrade Project, at a cost of $90 million, which it expects to be complete by 2011. The Upgrade project will result in all of the Discharger's wastewater treatment capabilities being consolidated at its Novato Plant. In the interim, the Discharger operates the existing Novato Plant as the main wastewater treatment plant, with its other treatment facility, the Ignacio Plant, being operated mainly as a roughing plant, pending the completion of the Upgrade Project and decommissioning of the Ignacio Plant.

   In this interim operation mode, treated effluent from the Ignacio Plant is pumped up to the Novato Plant by the Ignacio Transfer Pump Station (ITPS) through the Ignacio Conveyance Force Main (ICFM). The construction of the ITPS and ICFM was completed about March 2008 as part of the Upgrade Project. The construction of the ITPS at the Ignacio Plant site included the construction of equalization capability for either treated effluent or raw influent and capability for a portion or all of the Ignacio Plant influent to be pumped directly to the Novato Plant.

   As of April 2010, the construction of the Novato Plant upgrade is about 85% complete. The following treatment processes or units are completed and in service:

- Waste activated sludge thickening process with two gravity belt thickeners;
- New influent pump station;
- New headworks facility with two mechanical filter screens and a manual bar rack for influent screening, Parshall flumes for influent flow measurement, and two grit basins each with a mechanical grit vortex system;
- New primary clarifier;
- Aeration basins 1 & 2, including its blower systems;
- Secondary clarifiers 1 & 2;
- RAS/WAS pump station;
- UV disinfection facility; and
- Effluent pump station and auxiliary facilities.

Other new treatment units will include another new primary clarifier, two aeration basins (3 & 4), second primary digester, and second primary clarifier.

5. **Reclamation Activities.** The Discharger's reclamation system includes two storage ponds with a combined storage capacity of 180 million gallons, a wildlife marsh pond, an irrigation pump station, and 820 acres of irrigated pasturelands. Regional Water Board Order No. 92-065 establishes limitations and conditions regarding the reclamation uses of treated wastewater in the reclamation system.

6. **Biosolids Management.** The solids handling at the Novato Plant includes the new gravity belt waste activated sludge thickening, anaerobic digestion of primary sludge and thickened waste activated sludge in the existing primary digester, and removal of digested sludge to storage at the sludge lagoons at the Discharger's reclamation site. Sludge is treated at the Ignacio Plant through primary anaerobic digestion followed by thickening in storage ponds. Thickened sludge from both plants is land applied at a 14.4-acre dedicated land disposal site located near the reclamation area.

7. **Storm Water Discharge.** The Discharger is not required to be covered under the State Water Board's statewide NPDES permit for storm water discharges associated with industrial activities (NPDES General Permit No. CAS000001) because all storm water flows in contact with equipment or sewage at the plants and the pump stations serving the plants is collected and directed to the headworks of the plants for treatment.

B. Discharge Point and Receiving Waters

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

Table F-2. Outfall Locations

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Secondary Treated Municipal Wastewater	38º 03' 36" N	122º 29' 24" W	San Pablo Bay

San Pablo Bay is located within the San Pablo watershed. The discharge to San Pablo Bay is a shallow water discharge because the discharge does not always receive 10:1 dilution.

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

Effluent limitations contained in the previous Order (Order No. R2-2004-0093, as amended by Order No. R2-2008-0026), and representative monitoring data from the term of the previous permit are presented in Tables F-3 and F-4, below.

Table F-3. Historic Effluent Limitations and Monitoring Data for Conventional and Non-Conventional Pollutants (Novato Plant Effluent, Formerly E-002)

Parameter	units	Effluent Limitations			Monitoring Data (From 01/06 to 04/09)[1]		
		Monthly Average	Weekly Average	Daily Maximum	Highest Monthly Average	Highest Weekly Average	Highest Daily Discharge
Wet Weather (November 1 – April 30)							
5-day Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	---	18	28	46
Total Suspended Solids (TSS)	mg/L	30	45	---	27.8	53	112.4
Oil and Grease	mg/L	10	---	20	2.8	2.8	4.5
Dry Weather (May 1 – October 31)							
BOD_5	mg/L	15	30	---	14.9	28.5 (May 08)	36
TSS	mg/L	10	20	---	9.25	10.3	12
Oil and Grease	mg/L	5	---	15	<1.7	<1.7	<1.7
All Year							
pH	s.u.	Within 6.5 – 8.5			Minimum: 7 Maximum: 8.1		
Enterococcus bacteria	MPN/100 mL	35[2]	---	276	17.8[2]	---	2419.6
Chlorine residual	mg/L	---	---	0.0	---	---	2.1
Total ammonia	mg/L	6.0 (combined effluent, E-003)	---	---	10.7	---	21.7
Acute toxicity	% Survival	11-sample median: ≥ 90% 11-sample 90th percentile: ≥ 70%			Minimum 11-sample median: 90% Minimum 11-sample 90th percentile: 95%		

Legend to Table F-3:

Unit Abbreviations:

mg/L = milligrams per liter
% = percent
s.u. = standard units
MPN/100 mL = Most Probable Number per 100 milliliters

Footnotes to Table F-3:

< = Non-Detect

[1] Data presented were collected from January 2006 through April 2009 at Monitoring Location E-002 or E-003, as described in the previous permit, because monitoring data collected at E-001, as described in the previous permit, were determined to be not representative of current effluent quality, as described in D, below.

[2] The Enterococcus limitation is expressed as a 30-day geometric mean.

Table F-4. Historic Effluent Limitations and Monitoring Data for Toxic Pollutants

Parameter	units	Effluent Limitations				Monitoring Data (From 01/04 to 04/09)	
		Monthly Average	Daily Maximum	Interim Daily Maximum	Interim Monthly Average	Highest Daily	Highest Monthly
Copper	µg/L	12	17	---	---	39	19.1
Lead	µg/L	3.5	8.8	---	---	2.7	1.16
Mercury	µg/L	---	---	---	0.087	0.066	0.043
Nickel	µg/L	21	32	---	---	9.2	6.57
Cyanide	µg/L	1.1	2.4	---	---	4.8	4.8
4,4'-DDE	µg/L	---	---	0.05	---	<0.001	<0.001
4,4'-DDD	µg/L	---	---	0.05	---	<0.001	<0.001
Dieldrin	µg/L	---	---	0.01	---	<0.002	<0.002
Heptachlor Epoxide	µg/L	---	---	0.01	---	<0.002	<0.002

Legend to Table F-4:

Unit Abbreviations:
µg/L = micrograms per liter

Footnotes to Table F-4:
< = Non-Detect
Monitoring data are for the combined effluent at Monitoring Location E-003.

D. Compliance Summary

1. **Compliance with Numeric Effluent Limits.** Table F-5 lists effluent limitation violations that occurred during the term of the previous permit.

Table F-5. Numeric Effluent Limitation Exceedances

Date of Violation	Exceeded Parameter	Location[1]	Units	Effluent Limitation	Reported Concentration
02/18/05	Chlorine Residual	E-003	mg/L	0.0	4.5
03/21/05	pH	E-001	s.u.	8.5	8.8
03/22/05	Enterococcus	E-002	MPN/100 mL	276	866.4
03/23/05	Enterococcus	E-002	MPN/100 mL	276	517.2
04/30/05	TSS	E-001	mg/L	30	33.5
04/30/05	TSS	E-001	% Removal	Minimum 85	81.9
04/30/05	Oil and Grease	E-001	mg/L	10	16
05/31/05	Ammonia	E-003	mg/L	6.0	7.1
12/18/05	Enterococcus	E-002	MPN/100 mL	276	2420
12/19/05	Enterococcus	E-001	MPN/100 mL	276	1733
12/28/05	Enterococcus	E-001	MPN/100 mL	276	2420
12/31/05	TSS	E-001	mg/L	45	53.6
12/31/05	Ammonia	E-003	mg/L	6.0	6.1
01/03/06	Enterococcus	E-002	MPN/100 mL	276	727
01/03/06	Dieldrin	E-003	µg/L	0.010	0.018
01/4/06	Enterococcus	E-001	MPN/100 mL	276	770
01/14/06	TSS	E-001	mg/L	45	50.9
01/24/06	Enterococcus	E-001	MPN/100 mL	276	517.2

Date of Violation	Exceeded Parameter	Location[1]	Units	Effluent Limitation	Reported Concentration
01/31/06	TSS	E-001	% Removal	Minimum 85	81.1
01/31/06	Ammonia	E-003	mg/L	6.0	8.10
02/27/06	Enterococcus	E-001	MPN/100 mL	276	2420
02/28/06	Ammonia	E-003	mg/L	6.0	9.45
03/04/06	TSS	E-001	mg/L	45	65.2
03/04/06	Enterococcus	E-001	MPN/100 mL	276	2420
03/24/06	BOD	E-001	mg/L	45	53
03/25/06	TSS	E-001	mg/L	45	62.3
03/31/06	TSS	E-001	mg/L	30	37.3
03/31/06	TSS	E-001	% Removal	Minimum 85	76.3
03/31/06	BOD	E-001	mg/L	30	37
03/31/06	BOD	E-001	% Removal	Minimum 85	75.4
03/31/06	Ammonia	E-003	mg/L	6.0	6.4
04/03/06	Enterococcus	E-001	MPN/100 mL	276	658.6
04/04/06	Enterococcus	E-001	MPN/100 mL	276	2420
04/08/06	TSS	E-001	mg/L	45	56.9
04/10/06	Enterococcus	E-001	MPN/100 mL	276	488.4
04/11/06	Enterococcus	E-002	MPN/100 mL	276	2420
04/27/06	Enterococcus	E-001	MPN/100 mL	276	2420
04/29/06	Enterococcus	E-001	mg/L	45	57.7
04/30/06	BOD	E-001	% Removal	Minimum 85	84.3
04/30/06	TSS	E-001	mg/L	30	38.6
04/30/06	TSS	E-001	% Removal	Minimum 85	75
05/31/06	Ammonia	E-003	mg/L	6.0	7.50
11/07/06	Enterococcus	E-001	MPN/100 mL	276	2420
11/11/06	BOD	E-001	mg/L	45	49
12/04/06	Enterococcus	E-001	MPN/100 mL	276	980.4
12/07/06	Enterococcus	E-001	MPN/100 mL	276	866.4
12/08/06	Enterococcus	E-001	MPN/100 mL	276	601.5
12/12/06	Enterococcus	E-001	MPN/100 mL	276	2420
12/12/06	Enterococcus	E-002	MPN/100 mL	276	1120
12/31/06	Enterococcus	E-001	MPN/100 mL	35	94.9
01/25/07	Chlorine Residual	E-003	mg/L	0.0	2.1
01/31/07	Ammonia	E-003	mg/L	6.0	8.24
02/09/07	Enterococcus	E-001	MPN/100 mL	276	365.4
02/10/07	Enterococcus	E-001	MPN/100 mL	276	2420
02/11/07	Enterococcus	E-001	MPN/100 mL	276	1046
02/12/07	Enterococcus	E-001	MPN/100 mL	276	648.8
02/15/07	Enterococcus	E-001	MPN/100 mL	276	416
02/16/07	Enterococcus	E-001	MPN/100 mL	276	960.6
02/27/09	Enterococcus	E-001	MPN/100 mL	276	686.7
02/28/07	Enterococcus	E-001	MPN/100 mL	35	141.2
02/28/07	Ammonia	E-003	mg/L	6.0	8.9
03/31/07	TSS	E-001	% Removal	Minimum 85	80.8
03/31/07	Ammonia	E-003	mg/L	6.0	9.89
04/30/07	Ammonia	E-003	mg/L	6.0	10.7
05/31/07	Ammonia	E-003	mg/L	6.0	6.6
01/05/08	Copper	E-003	µg/L	19	39
01/05/08	TSS	E-001	mg/L	45	121

Date of Violation	Exceeded Parameter	Location[1]	Units	Effluent Limitation	Reported Concentration
01/08/08	Enterococcus	E-001	MPN/100 mL	276	>2419.6
01/28/08	Enterococcus	E-002	MPN/100 mL	276	2419.6
01/29/08	Enterococcus	E-002	MPN/100 mL	276	>2419.6
01/31/08	TSS	E-001	% Removal	Minimum 85	73.2
01/31/08	TSS	E-001	mg/L	30	48
02/04/08	Enterococcus	E-001	MPN/100 mL	276	2419.6
02/19/08	Enterococcus	E-001	MPN/100 mL	276	1229.7
02/29/08	TSS	E-001	% Removal	Minimum 85	72.6
02/29/08	TSS	E-001	mg/L	30	36
02/29/08	Enterococcus	E-001	MPN/100 mL	35	58.1
12/31/08	Ammonia	E-003	mg/L	6.0	8.6
03/07/09	TSS	E-001	mg/L	45	53

Footnotes to Table F-5:

[1] Locations: E-001: Ignacio Plant effluent; E-002: Novato Plant effluent; E-003: combined effluent at discharge outfall to San Pablo Bay.

The Regional Water Board adopted Order No. R2-2005-0050 to address effluent limitations violations of Order No. R2-2004-0093 and assess Mandatory Minimum Penalties for violations through May 31, 2005, and adopted Order No. R2-2007-0081 to address violations and assess Mandatory Minimum Penalties for violations that occurred through May 31, 2007. The Discharger chose to complete a supplemental environmental project in response to Order No. R2-2007-0081. State Water Board Order No. SWB 2008-2-0015 addressed violations that occurred from January 5, 2008 through December 31, 2008.

Most of the enterococcus, TSS, and BOD violations occurred at the Ignacio Plant (E-001), which is now only serving as a roughing treatment facility, and will be decommissioned in 2011. In 2001, the Discharger prepared a Strategic Plan that concluded that the Discharger needed treatment plant upgrades and expanded capacity to accommodate limited future growth in the service area and to reliably comply with BOD and TSS effluent limitations at the Ignacio Plant. In March 2008, the Discharger changed the treatment process scheme to continue treating influent flows at the Ignacio Plant, and then convey the treated effluent to the Novato Plant for further treatment to circumvent continuing effluent limitation violations at the Ignacio Plant. The schedule for remaining facility upgrades is discussed in II. E., below. In May 2008, the Regional Water Board adopted Cease and Desist Order No. R2-2008-0029, which required the Discharger to upgrade the Novato Plant and established a time schedule for completion of upgrades to address foreseeable violations of copper and cyanide effluent limitations established by Order No. R2-2008-0026 (amending Order No. R2-2004-0093).

2. **Compliance with Previous Permit Provisions.** A list of special activities required by the previous Orders and the status of those requirements are shown in Table F-6, below.

Table F-6. Compliance with Previous Order Provisions

Provision Number	Requirement	Status of Completion
E.3	Cyanide Compliance Schedule and Cyanide SSO Study	1/30/2006, 10/26/2006, 2/1/2007, 12/4/2007, 12/29/2008
E.9	Bacteriological Study Final Study Report	6/21/2006
E.10	Reclamation Pond Operation	12/20/2006, 12/22/2009

Provision Number	Requirement	Status of Completion
E.11	Compliance Schedule for Conventional Effluent Limitations at Ignacio Plant	8/31/2006, 1/2/2008
E.15	Blending Monitoring Study	6/30/2006
R2-2008-0026	Copper Action Plan, Source Identification	8/26/2008
R2-2008-0026	Cyanide Action Plan, Source Identification	8/26/2008

E. Planned Changes

The Discharger is currently undergoing facility upgrades that augment its treatment capacity at the Novato Plant. The Discharger has completed an Environmental Impact Report and an antidegradation analysis for facility construction to increase full secondary capacity to 7.05 mgd. The Novato Plant improvements include construction of the following new facilities: headworks, influent pump station, two primary clarifiers, two aeration basins, two secondary clarifiers, UV disinfection unit, gravity belt thickener, second digester, odor control facilities, and electrical facilities. Once construction is complete, the Ignacio Plant will be decommissioned and all influent flows will be routed to the Novato Plant. The remaining schedule of improvements is as follows:

June 30, 2010 — Complete two aerations basins

December 31, 2010 — Complete second primary clarifiers and second digester.

June 30, 2011 — Place all treatment plant improvements into operation.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

This Order's requirements are based on the requirements and authorities described in this section.

A. Legal Authorities

This Order is issued pursuant to federal Clean Water Act (CWA) section 402 and implementing regulations adopted by the USEPA and chapter 5.5, division 7, of the California Water Code (CWC) or Water Code, commencing with section 13370. It shall serve as an NPDES permit for point source discharges from this facility to surface waters. This Order also serves as waste discharge requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the CWC (commencing with section 13260).

B. California Environmental Quality Act (CEQA)

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

C. State and Federal Regulations, Policies, and Plans

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

implementation to achieve WQOs. The Basin Plan was adopted by the Regional Water Board and approved by the State Water Board, the Office of Administrative Law (OAL), and USEPA as required. Requirements of this Order implement the Basin Plan.

The Basin Plan identifies beneficial uses for the receiving water for this discharge, San Pablo Bay. State Water Board Resolution No. 88-63 established 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 in San Pablo Bay, total dissolved solids levels exceed 3,000 mg/L and thereby meet an exception for San Pablo Bay. The MUN designation therefore does not apply to San Pablo Bay.

The Basin Plan beneficial uses of San Pablo Bay are listed in Table F-7, below.

Table F-7. Basin Plan Beneficial Uses

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

The State Water Board's *Water Quality Control Plan for Enclosed Bays and Estuaries—Part 1, Sediment Quality* became effective on August 25, 2009. This plan integrates three lines of evidence (sediment toxicity, benthic community condition, and sediment chemistry) to determine if sediment-dependent biota and human health are protected from exposure to toxic pollutants in sediment. The plan focuses on benthic communities in enclosed bays and estuaries, and supersedes other narrative sediment quality objectives and related implementation provisions in other water quality control plans to the extent that they apply to sediment quality in bays and estuaries.

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

3. **State Implementation Policy.** On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on April 28, 2000, with respect to the priority pollutant criteria promulgated through the NTR

and to the WQOs established in the Basin Plan. The SIP became effective on May 18, 2000, with respect to the priority pollutant criteria promulgated through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005 that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

4. **Compliance Schedules and Interim Requirements.** Section 2.1 of the SIP provides that, based on a discharger's request and demonstration that it is infeasible for an existing discharger to achieve immediate compliance with an effluent limitation derived from a CTR criterion, compliance schedules may be allowed in an NPDES permit. Unless an exception has been granted under SIP section 5.3, a compliance schedule may not exceed 5 years from the date that the permit is issued or reissued, nor may it extend beyond 10 years from the effective date of the SIP (or May 18, 2010).

   The State Water Board adopted Resolution No. 2008-0025 on April 15, 2008, titled "Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits," which includes compliance schedule policies for pollutants not addressed by the SIP. USEPA and Office of Administrative Law approved this policy, and it became effective on August 27, 2008. This Order does not include compliance schedules or interim effluent limits.

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

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

7. **Anti-Backsliding Requirements.** CWA Sections 402(o)(2) and 303(d)(4) and 40 CFR 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed.

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

In November 2006, the USEPA approved a revised list of impaired water bodies prepared by the State [the 303(d) list], prepared pursuant to CWA section 303(d), which requires identification of specific water bodies where it is expected that WQS will not be met after implementation of technology-based effluent limitations on point sources. Where it has not done so already, the Regional Water Board plans to adopt total maximum daily loads (TMDLs) for pollutants on the

303(d) list. TMDLs establish wasteload allocations for point sources and load allocations for non-point sources, and are established to achieve the WQS for the impaired waterbodies. The SIP requires that final effluent limitations for all 303(d)-listed pollutants be consistent with the TMDLs and associated wasteload allocations.

San Pablo Bay is 303(d) listed as impaired by chlordane, DDT, dieldrin, dioxin compounds, furan compounds, mercury, nickel, PCBs, dioxin-like PCBs, selenium, and exotic species. On February 12, 2008, USEPA approved a mercury TMDL for San Pablo Bay, which is implemented by Regional Water Board Order No. R2-2007-0077; therefore, mercury is not regulated under this Order.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the NPDES regulations: 40 CFR section 122.44(a) requires that permits include applicable technology-based limitations and standards; and section 122.44(d) requires that permits include water quality-based effluent limitations (WQBELs) to attain and maintain applicable numeric and narrative WQC to protect the beneficial uses of the receiving water. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established.

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 Report of Waste Discharge, and subsequently in this Order, are prohibited.

2. **Discharge Prohibition III.B (The bypass or overflow of untreated or partially treated wastewaters to waters of the U.S. is prohibited, except as provided for in Section I.G.2 of Attachment D):** Federal regulations prohibit bypasses, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless 40 CFR 122.41(m)(4)(i) conditions are met. This prohibition also approves bypass of peak wet weather flows above 9 mgd when recombined with secondary treatment flows and discharged in accordance with the conditions at 40 CFR 122.41(m)(4)(i)(A) – (C) (see Federal Standard Provisions, Attachment D, Section G) and is retained from the previous permit for the existing Novato Plant.

   Background
   During significant storm events, high influent flows can overwhelm certain parts of the wastewater treatment process and may cause damage or failure of the system. Operators of wastewater treatment plants must manage these high flows to both ensure the continued

operation of the treatment process and to prevent backups and overflows of raw wastewater in basements or on city streets. USEPA recognizes that peak wet weather flow diversions around secondary treatment units (blending) at treatment plants serving separate sanitary sewer conveyance systems may be necessary in some circumstances. In December 2005, USEPA invited public comment on a proposed Peak Wet Weather Policy that interprets 40 CFR 122.41(m) to apply to wet weather diversions recombined with flow from secondary treatment, and provides guidance regarding when the Regional Water Board may approve blending in an NPDES permit. The draft policy would require that dischargers meet all the requirements of NPDES permits and encourages municipalities to make investments in ongoing maintenance and capital improvements to improve their system's long-term performance. While USPEA has not formally adopted the draft policy, the proposal is a useful tool for Regional Water Board consideration.

40 CFR 122.41(m)(4)(i)(A) – (C) Criteria
If the criteria of 40 CFR 122.41(m)(4)(i)(A) – (C) are met, the Regional Water Board can approve wet weather diversions that are recombined with flow from secondary treatment. The 40 CFR 122.41(m)(4)(i) criteria are (A) bypass was unavoidable to prevent loss of life, personal injury, or severe property damage; (B) there were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime; and (C) the Discharger submitted notice to the Regional Water Board as required under Federal Standard Provision – Permit Compliance I.G.5 (Attachment D).

On February 23, 2010, the Discharger submitted a No Feasible Alternatives Analysis (NFAA) that addresses measures it has taken and plans to take to reduce and eliminate bypasses during wet weather events so that such bypasses can be approved under 40 CFR 122.41(m)(4).

The NFAA provides information about the existing treatment units at the Novato Plant. The existing aeration tanks, final clarifiers, and nitrification tower only have a secondary treatment capacity of 9 mgd, which limit the peak wet weather treatment capacity of the plant. On average, the Novato Plant experiences 2.6 wet weather diversions each year. The average duration is 55 hours and instantaneous plant flows can range as high as 24 MGD.

The NFAA also describes the $90 million plant upgrade project. The upgrades have or will result in many new treatment units, including two new primary clarifiers, four new aeration basins, and two new secondary clarifiers, which all have a peak wet weather treatment capacity of 47 mgd. Therefore, once the plant upgrade project is completed, there will be no peak wet weather bypass.

In addition to upgrading the treatment plant, the Discharger has spent $12 million on sewer system and pump station upgrades with $27 million more to be expended over the next 5 years. The Discharger spends approximately $2 million each year in repairing and maintaining the sanitary sewer collection system and associated pump stations. The Discharger also expects reductions in inflow and infiltration (I/I) over the next 10-15 years as the Discharger implements the various components of the State-mandated Sanitary Sewer Management Plan (SSMP) programs and continues to improve and upgrade the collection system.

The Discharger has satisfied 40 CFR 122.41(m)(4)(i)(A) – (C). Bypasses are necessary to prevent severe property damage when flows exceed the capacity of the secondary treatment process. The Discharger has analyzed alternatives to bypassing and has determined that no feasible alternatives to bypassing exist at this time. The Discharger has submitted notice to the Regional Water Board as required under Federal Standard Provision – Permit Compliance I.G.5.

3. **Discharge Prohibition III.C (Average dry weather flow not to exceed dry weather design capacity):** This prohibition is retained from the previous permit and is based on the design treatment capacity of the facility treatment system. Exceedance of the plant's average dry weather flow design capacity may result in lowering the reliability of achieving compliance with water quality requirements. Upon the completion of a submittal required by Special Provision VI.C.4.c, and Executive Officer approval of these submittals, the permitted dry weather flow capacity of 6.55 mgd will increase to 7.05 mgd.

4. **Discharge Prohibition III. D (No sanitary sewer overflows to waters of the United States):** Discharge Prohibition No. 15 from Basin Plan Table 4-1, and the CWA 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 meet water quality standards. [33 U.S.C. § 1311 (b)(1)(B and C)] Therefore, a sanitary sewer overflow that results in the discharge of raw sewage, or sewage not meeting effluent limitations required by the Order, to surface waters is prohibited under the CWA and the Basin Plan.

5. **Discharge Prohibition III.E (Discharge to San Pablo Bay during the dry weather period of June 1 through August 31 is prohibited):** This prohibition is retained from the previous permit and is based on the Basin Plan. The Basin Plan prohibits discharges not receiving a minimum 10:1 initial dilution (Chapter 4, Discharge Prohibition1). The Discharger does not always achieve an initial 10:1 dilution because the discharge is to the intertidal mudflats of San Pablo Bay, where at tidal elevations below the +1 foot mean lower low water tidal elevation, the outfall is not submerged. The discharge prohibition is maintained from June 1 through August 31, while an exception to discharge Prohibition 1 is granted for discharges during the wet weather period of November through April and the dry weather months of May, September and October, as described in IV.B, below.

   The Discharger may also discharge between June and August under emergency situations if authorized by the Executive Officer. When making an emergency discharge request, the Discharger will need to demonstrate that the facility is running out of its storage capacity for treated wastewater. This exception is continued from the previous permit and is intended to protect the treatment facility from being flooded or occurrence of uncontrolled spills. This permit also allows that if an emergency discharge is due to heavy storms, the Discharger may notify the Regional Water Board case manager when a discharge is unavoidable, and discharge treated wastewater at its discretion, before approval from the Executive Officer.

B. Shallow Water Discharge and Basin Plan Discharge Prohibition 1

The Basin Plan prohibits discharges not receiving a minimum 10:1 initial dilution or to dead end sloughs (Chapter 4, Discharge Prohibition 1). In accordance with the Basin Plan, this Order grants the Discharger an exception to the discharge prohibition for discharges to San Pablo Bay. The basis for allowing the exception is described below.

The Basin Plan states that exceptions to Prohibition 1 will be considered for discharges where:

- An inordinate burden would be placed on the discharger relative to the beneficial uses protected and an equivalent level of environmental protection can be achieved by alternate means, such as an alternative discharge site, a higher level of treatment, and/or improved treatment reliability.

- A discharge is approved as part of a reclamation project; or

- It can be determined that net environmental benefits will be derived as a result of the discharge.

The Basin Plan further states:

> Significant factors to be considered by the Regional Water Board in reviewing requests for exceptions will be the reliability of the discharger's system in preventing inadequately treated wastewater from being discharged to the receiving water and the environmental consequences of such discharges.

The Regional Water Board historically has granted an exception to Prohibition 1 from September 1 through May 31 for discharges to San Pablo Bay based on the Discharger's reclamation program and operation of a pond for wildlife habitat. This Order continues that exception and discharge prohibition based on the Discharger's reclamation program and significant capital improvements to enhance the Discharger's reliability in preventing inadequately treated wastewater from being discharged to the receiving water (see below).

1. The Discharger maintains and implements significant reclamation projects. An average of 48 percent of the Discharger's treated wastewater was used for recycled water applications over the last two years.

   a. The older reclamation project includes a 15-acre wildlife pond, 180-million-gallon storage ponds, and 820 acres of irrigated pasture. The wildlife pond provides valuable habitat for migrating birdlife as well as indigenous bird and animal species. The storage ponds provide habitat for migrating as well as indigenous birdlife.

   b. In addition to the above reclamation project, the Discharger also partners with the North Marin Water District (NMWD) to produce and distribute Title-22 recycled water. The Discharger and NMWD recently constructed and operate a 0.5 MGD Title 22 Recycled Water Facility that provides unrestricted reuse recycled water to the Stonetree Golf Course and one Novato Fire Protection District Fire Station. Additionally, the Discharger and the NMWD are cooperating on expanding the capacity of the facilities to serve more areas through a joint Recycled Water Master Plan. The Discharger and NMWD are active members of the North Bay Water Reuse Authority, through which the Discharger is exploring additional opportunities for water recycling in the North Bay.

c. To support the reclamation and water recycling activities, and consistent with NPDES permit requirements, the Discharger does not discharge to receiving waters between June 1 and August 31 of each year.

2. The Discharger has completed a significant portion of a major upgrade of its treatment facilities to provide enhanced reliability in preventing inadequately treated wastewater from being discharged to the receiving water. Upon completion of all construction by June 2011, treatment will be consolidated at the Novato Plant. This consolidation will allow for decommissioning of the Ignacio Plant, which is unable to attain secondary treatment standards for BOD_5 and TSS during dry weather. The consolidated facility will provide standard secondary treatment to wet weather flows up to 47 MGD, thereby precluding the need for wet weather blending.

The Regional Water Board finds that the reclamation and recycling programs, as well as the significant treatment upgrade undertaken by the Discharger, qualify the Discharger for an exception to Basin Plan Prohibition 1. This Order continues to grant the discharge prohibition exception from September 1 to May 31 of each year (and under emergency circumstances as described in Discharge Prohibition III.E), provided the Discharger continues its water reclamation/recycling efforts and completes its Upgrade Project as discussed earlier. This Order also requires a level of treatment, as discussed in IV.C below, greater than secondary treatment requirements for dry weather discharges in May, September, and October, thereby requiring a level of protection equivalent to adherence to the discharge prohibition. To address the Discharger’s treatment reliability, Provision VI.C.4.a of the Order requires the Discharger to conduct routine analyses of its collection and treatment system with attention toward preventing discharges of inadequately treated wastewater.

C. Technology-Based Effluent Limitations

1. Scope and Authority for Technology-Based Effluent Limitations

CWA section 301(b) and 40 CFR 122.44 require that permits include conditions meeting technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Secondary Treatment Standards at 40 CFR 133. These Secondary Treatment Regulations include the following minimum requirements. The 30-day average percent removal for BOD_5 and TSS, by concentration, is not to be less than 85 percent.

Table F-8. Secondary Treatment Requirements

Parameters	30-Day Average	7-Day Average
BOD_5	30 mg/L	45 mg/L
$CBOD_5$ [1]	25 mg/L	40 mg/L
TSS	30 mg/L	45 mg/L
pH	6.0 – 9.0	

Footnotes for Table F-8:
[1] At the option of the permitting authority, these effluent limitations for $CBOD_5$ may be substituted for limitations for BOD_5.

2. Applicable Effluent Limitations

This Order retains the effluent limitations for conventional and non-conventional pollutants from Order No. R2-2004-0093, as amended by Order No. R2-2008-0026. The basis for these limitations is detailed below.

a. **BOD_5 and TSS**. The effluent limitations for BOD_5 and TSS, including the 85 percent removal requirement, are unchanged from Order No. R2-2004-0093, as amended by Order No. R2-2008-0026. Concentration-based effluent limitations applicable during wet weather months (November – April) are based on secondary treatment requirements. Concentration-based effluent limitations applicable during dry weather discharge months (May, September, and October), and emergency discharges during June-August, are more stringent than required by the secondary treatment standards, but effluent data show they are technologically feasible and they are required to demonstrate a level of equivalent protection, on which, in part, an exception is based.

b. **Oil and Grease**. The effluent limitations established for oil and grease are unchanged from the previous permit and are required by Basin Plan Table 4-2 for all discharges to inland surface waters and enclosed bays and estuaries of the San Francisco Bay Region. The effluent limitations for oil and grease for dry weather discharges (May, September, and October), and emergency discharges during June-August are more stringent than required by Basin Plan Table 4-2, but effluent data show they are technologically feasible and they are required to demonstrate a level of equivalent protection, on which, in part, an exception is based.

c. **pH**. The pH limitation is retained from Order No. R2-2004-0093 and is required by Basin Plan Table 4-2 for shallow water discharges.

d. **Enterococcus Bacteria**. The 30-day geometric mean effluent limitation for enterococcus bacteria is unchanged from the previous Order; however, the single sample maximum limit of 276 colonies per 100 mL is not retained to be consistent with other recently adopted NPDES permits and USEPA criteria. Basin Plan Table 3-2 cites the 30-day geometric mean enterococcus bacteria limit based on the USEPA criteria established at 40 CFR 131.41 for coastal recreational waters, including coastal estuaries, in California. These water quality criteria became effective on December 16, 2004 [69 Fed. Register 67218 (November 16, 2006)].

   Although USEPA also established single sample maximum criteria for enterococci bacteria, this Order implements only the geometric mean criterion of 35 colonies per 100 mL as an effluent limitation. When these water quality 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 …" [69 Fed Reg. 67224 (November 16, 2004)].

The removal of the daily maximum bacteria limit is consistent with an exception to the Clean Water Act's backsliding provisions, expressed at CWA 402(o)(2)(B)(ii), for technical mistakes.

e. **Fecal Coliform Bacteria.** The Order establishes effluent limitations for fecal coliform bacteria based on Table 3-1 of the Basin Plan to protect shellfish harvesting, with a dilution credit of 10:1 (or D=9), based on the Discharger's mixing zone study, dated April 7, 2010. The study indicates that a mixing zone associated with a 10:1 dilution credit is about 39 acres, and is about 0.06% of the area of San Pablo Bay (see more detailed discussion under Section IV.D.4.c below). The receiving water of San Pablo Bay has a beneficial use of shellfish harvesting and effluent limitations for Enterococcus may not be fully protective of this beneficial use because the effluent limitation for Enterococcus is established to be protective of recreation beneficial uses. Therefore, this Order includes new fecal coliform effluent limits to protect shellfish harvesting.

In calculating the fecal coliform effluent limits, the following equation is used:

$$\text{Effluent limits} = C + D \times (C - B)$$

where C = Basin Plan objective
D = dilution credit, here D = 9
B = background concentration, since no background data is available at this time, B is set at 0

Therefore, the fecal coliform effluent limits = $10 \times C$

f. **Total Chlorine Residual.** The effluent limitation for chlorine residual is based on Basin Plan Table 4-2. It is unchanged from the previous Order. The Discharger may use a continuous online monitoring system to measure flow, chlorine, and sodium bisulfite concentration and dosage to prove that chlorine residual exceedances are false positives. If convincing evidence is provided, Regional Water Board staff may conclude that false positives of chlorine residual exceedances are not violations of this limitation. Self-monitoring data show the Discharger can comply with this limitation.

D. WQBELs

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

1. Scope and Authority

a. 40 CFR 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an excursion of a WQS, including numeric and narrative objectives within a standard. As specified in 40 CFR 122.44(d)(1)(i), permits are required to include WQBELs for all pollutants "which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard."

The process for determining "reasonable potential" and calculating WQBELs when necessary is intended to protect the designated beneficial uses of the receiving water as specified in the Basin Plan, and achieve applicable WQOs contained in other state plans and policies, and applicable WQC contained in the CTR and NTR.

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 to 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 WQOs

The WQOs applicable to the receiving water for this discharge are from the Basin Plan; the CTR, established by USEPA at 40 CFR 131.38; and the NTR, established by USEPA at 40 CFR 131.36. Some pollutants have WQOs established by more than one of these 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 marine and 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 to implement these objectives, based on available information.

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

c. **NTR.** The NTR establishes numeric aquatic life criteria for selenium and numeric human health criteria for 33 toxic organic pollutants for waters of San Francisco Bay upstream to and including Suisun Bay and the Sacramento River-San Joaquin River Delta. These NTR criteria apply to San Pablo 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 and, when necessary, establish WQBELs, the Regional Water Board has followed the requirements of applicable NPDES regulations, including 40 CFR 122 and 131; as well as 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 are to be considered in determining the applicable WQC. Freshwater criteria apply to discharges to waters with salinities equal to or less than one part per thousand (ppt) at least 95 percent of the time. Saltwater criteria apply to discharges to waters with salinities equal to or greater than 10 ppt at least 95 percent of the time in a normal water year. For discharges to water with salinities in between these two categories, or tidally influenced freshwaters that support estuarine beneficial uses, the criteria are the lower of the salt or freshwater criteria (the latter calculated based on ambient hardness) for each substance.

   The receiving water for this discharge is San Pablo Bay. Salinity data from the San Pablo Bay RMP monitoring station collected from March 1993 to August 2001 indicate that the salinity was less than 1 ppt in 2 percent of the samples and greater than 10 ppt in 63 percent of the samples. The waters of San Pablo Bay are therefore classified as estuarine, and the reasonable potential analysis (RPA) and effluent limitations in this Order are based on the more stringent of the fresh and saltwater objectives.

f. **Sediment Quality Objectives.** The Water Quality Control Plan for Enclosed Bays and Estuaries—Part 1, Sediment Quality contains two narrative WQOs: "Pollutants in sediments shall not be present in quantities that, alone or in combination, are toxic to benthic communities in bays and estuaries of California." and "Pollutants shall not be present in sediments at levels that will bioaccumulate in aquatic life to levels that are harmful to human health." The first of these WQOs is to be implemented by integrating three lines of evidence: sediment toxicity, benthic community condition, and sediment chemistry. The second is to be implemented on a case-by-case basis based on human health risk assessments. If the Regional Water Board determines that a discharge has reasonable potential to cause or contribute to an exceedance of these sediment quality objectives, it is to impose the objectives as receiving water limits.

g. **Receiving Water Hardness.** All available ambient hardness values were used to calculate freshwater WQOs that are hardness dependent. RMP data collected at the San Pablo Bay station (BD20) from February 1996 to August 2001 were used to determine the WQOs for this Order. To calculate WQOs for hardness dependent metals, the minimum value in the data set (138 mg/L) was used. All other results in the data set of 11 samples were censored for hardness values greater than 400 mg/L.

h. **Site-Specific Metals Translators.** NPDES regulations at 40 CFR 122.45(c) require that effluent limitations for metals be expressed as total recoverable metal. Since applicable WQC for metals are typically expressed as dissolved metal, translators must be used to convert metals concentrations from dissolved to total recoverable and vice versa. The CTR includes default translators; however, site-specific conditions, such as water temperature, pH, suspended solids, and organic carbon greatly affect the form of metal (dissolved, non-filterable, or otherwise) present in the water and therefore available to cause toxicity. In general, the dissolved form of the metal is more available and more toxic to aquatic life than non-filterable forms. Site-specific translators can be developed to account for site-specific conditions, thereby preventing exceedingly stringent or under protective WQOs.

In this Order, site-specific translators for copper and nickel are based on data for dissolved and total metals from the Regional Monitoring Program (RMP) San Pablo Bay and Pinole Point stations, and data collected during a San Pablo Bay Copper and Nickel Study at Stations SJR-1 and SRJ-2. The following table shows these translators. More details are presented in the Discharger's July 23, 2004, *Novato Sanitary District Copper and Nickel Translator Calculation.*

Table F-10. Site-Specific Translators

Pollutant	Site-Specific Translators	
	Acute	Chronic
Copper	0.73	0.39
Nickel	0.65	0.27

Default translators established by the USEPA at 40 CFR 131.38(b)(2), Table 2 were used to determine the need for and calculating WQBELs for all other metals.

3. Determining the Need for WQBELs

Assessing whether a pollutant has Reasonable Potential is the fundamental step in determining whether or not a WQBEL is required. Using the methods prescribed in SIP Section 1.3, effluent data were analyzed to determine if the discharge demonstrates Reasonable Potential. The Reasonable Potential Analysis (RPA) compares the effluent data with numeric and narrative WQOs in the Basin Plan, NTR, and CTR.

a. Reasonable Potential Methodology. The RPA identifies the observed maximum effluent concentration (MEC) for each pollutant based on effluent concentration data. There are three triggers in determining Reasonable Potential according to SIP Section 1.3.

(1) The first trigger (Trigger 1) is activated if the MEC is greater than or equal to the lowest applicable WQO (MEC $\geq$ WQO), which has been adjusted, if appropriate, for pH, hardness, and translator data. If the MEC is greater than or equal to the adjusted WQO, then that pollutant has Reasonable Potential, and a WQBEL is required.

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

(3) The third trigger (Trigger 3) is activated if a review of other information determines that a WQBEL is required to protect beneficial uses, even though both MEC and B are less than the WQO.

b. Effluent Data

The Regional Water Board's August 6, 2001, letter titled *Requirement for Monitoring of Pollutants in Effluent and Receiving Water to Implement New Statewide Regulations and Policy* (hereinafter referred to as the Regional Water Board's August 6, 2001, Letter) formally required the Discharger to initiate or continue monitoring for the priority pollutants using analytical methods that provide the best detection limits reasonably feasible. Regional Water Board staff analyzed these effluent data and the nature of the Novato Sanitary District discharge facility to determine if the discharge has Reasonable Potential. The RPA is based on the effluent monitoring data collected from January 2004 to April 2009 for most pollutants and from April 2008 to April 2009 for total ammonia.

c. Ambient Background Data

Ambient background values are typically used to determine reasonable potential and to calculate effluent limitations, when necessary. For the RPA, ambient background concentrations are the observed maximum detected water column concentrations. The SIP states that, for calculating WQBELs, ambient background concentrations are either the observed maximum ambient water column concentrations or, for criteria intended to protect human health from carcinogenic effects, the arithmetic mean of observed ambient water concentrations.

The RMP station located in San Pablo Bay is a far-field background station and has been monitored for most of the inorganic (CTR constituent numbers 1-15) and some of the organic (CTR constituent numbers 16-126) toxic pollutants, and these data were used as background data in performing the RPA for this discharge.

The RMP does not analyze all of the constituents listed in the CTR. These data gaps are addressed by the Board's August 6, 2001, Letter, which formally required dischargers to conduct ambient background monitoring and effluent monitoring for those constituents not currently monitored by the RMP and to provide this technical information to the Regional Water Board.

On May 15, 2003, a group of San Francisco Bay Region dischargers known as the Bay Area Clean Water Agencies (BACWA) submitted a collaborative receiving water study, entitled the *San Francisco Bay Ambient Water Monitoring Interim Report* (2003). This study includes monitoring results from sampling events in 2002 and 2003 for the remaining priority pollutants not monitored by the RMP. This study included the Yerba Buena monitoring station. BACWQ provided additional data in *Ambient Water Monitoring: Final CTR Sampling Update Report*, dated June 15, 2004.

The RPA was conducted and the WQBELs were calculated using RMP data through 2001 for the San Pablo Bay RMP station for organics and inorganics, and additional data from the BACWA receiving water study for the Yerba Buena Island RMP station.

d. Reasonable Potential Analysis for Ammonia

Ammonia is a toxic pollutant, but not a priority pollutant as defined by the CTR; therefore, the procedures outlined in the *Technical Support Document for Toxics Control* (TSD) (EPA/505/2-90-001, March 1991) were used to determine if ammonia in the discharge has a reasonable potential to cause water quality objectives to be exceeded in the receiving water.

(1) TSD RPA Procedure

The TSD allows using measured receiving water concentrations (RWC) or projected RWC from effluent data to perform an RPA. The following summarizes steps to determine reasonable potential for excursions above ambient criteria using effluent data:

Step 1. Determine the number of total observations (n) for a set of effluent data and determine the highest value from that data set (the maximum effluent concentration or MEC).

Step 2. Determine the coefficient of variation (CV) from the data set. For a data set where $n<10$, the CV is estimated to equal 0.6. For a data set where $n>10$, the CV is calculated as the standard deviation divided by the mean.

Step 3. Determine an appropriate ratio for projecting a selected upper bound concentration (e.g., the 99th or 95th percentile) assuming a lognormal distribution.

To do this, the percentile represented by the MEC in a data set of "*n*" samples, p_n, needs to be determined based on the desired confidence interval, e.g., 95% or 99%.

$$p_n = (1 - \text{confidence interval})^{1/n}$$

Then concentrations based on two percentile values, $C_{upper\ bound}$, and C_{Pn} need to be calculated using the following equation.

$$C_p = \exp(Z_p\sigma - 0.5\sigma^2)$$

where $\sigma^2 = \ln(CV^2+1)$, p is the percentile (upper bound or p_n), and Z_p is the standard normal distribution value for the percentile p.

The ratio, *R,* is then determined to be

$$R = \frac{C_{upper\,bound}}{C_{Pn}}$$

Step 4. Multiply the MEC by the ratio, R, determined by Step 3. Use this value with the appropriate dilution to project the receiving water concentration (RWC) (dilution ratio of 1:1; no dilution is considered in the ammonia RPA).

$$RWC = MEC \times R / \text{dilution ratio}$$

Step 5. Compare the projected RWC to the applicable WQC (CCC, CMC, human health criteria, etc). If a RWC is greater than or equal to a criterion, then there is reasonable potential.

(2) TSD-based RPA for Ammonia

i. *Ammonia WQOs.* The Basin Plan contains WQOs for un-ionized ammonia of 0.025 mg/L as an annual median and 0.16 mg/L as a maximum for San Pablo Bay.

ii. *Ammonia Data Translation*. Effluent and receiving water monitoring data are available for total ammonia, not un-ionized ammonia, because (1) sampling and laboratory methods are not available to analyze for un-ionized ammonia; and (2) the fraction of total ammonia that exists in the toxic un-ionized form depends on the pH, salinity, and temperature of the water. Total ammonia concentrations were translated into un-ionized ammonia concentrations (as nitrogen) to compare with the Basin Plan un-ionized ammonia objectives based on the following equations [Ambient Water Quality Criteria for Ammonia (saltwater) – 1989, USEPA Publication 440/5-88-004, USEPA, 1989]:

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

Where:

pK = 9.245 + 0.116*(I) + 0.0324*(298-T) + 0.0415*(P)/T
I = the molal ionic strength of saltwater = 19.9273*(S)/(1000-1.005109*S)
S = salinity (parts per thousand)
T = temperature in Kelvin
P = pressure (one atmosphere)

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

Where:

pK = 0.09018 + 2729.92/ T
T = temperature in Kelvin

For this calculation, no salinity data were available and staff assumed that the effluent is fresh; therefore, staff used the equation for waters of salinity <1 ppt.

iii. *Ammonia Dilution.* For purposes of this discharge, no dilution was assumed for ammonia, i.e., dilution ratio=1; therefore, the RWC is the same as the projected upper bound concentration, i.e., RWC=MEC×R (see Step 4 under TSD RPA Procedure above).

iv. Two Approaches

According to the TSD, the RPA can be performed based on the projected RWC using effluent data (the steps summarized above) or measured receiving water concentrations. Both values may be compared directly with WQOs.

(a) RPA Based on Effluent Data

Effluent monitoring data for total ammonia, pH, and temperature from April 1, 2008 through April 30, 2009 (prior to April 1, 2008, only total ammonia effluent data were available for the final discharge, no pH or temperature were measured at the final discharge location) were used for the RPA based on effluent data. Un-ionized ammonia concentrations were calculated using the pH and temperature data collected for the same samples. There were 89 data points (n=89). The MEC was 0.24 mg/L as un-ionized ammonia. The confidence interval was set at 95%. The percentile represented by the MEC is calculated to be:

$p_n = (1\text{-}0.95)^{1/90} = 0.9669$

For this analysis, $C_{upper\ bound}$ is set at the 99th percentile. C_{Pn} = 3.18, $C_{upper\ bound}$ = 4.72, and the ratio of $C_{upper\ bound}/C_{Pn}$ = 1.48. With no dilution (dilution ratio = 1), the projected receiving water concentration is

RWC = MEC × R / dilution ratio = 0.24 × 1.48 = 0.36 mg/L

This value is greater than the Basin Plan un-ionized ammonia acute objective of 0.16 mg/L, indicating reasonable potential to exceed this objective.

The median of the effluent data is appropriate for comparing with the chronic objective, which is expressed as an annual median. The 50th percentile un-ionized ammonia concentration was calculated from the effluent data and compared with the annual median objective. No projection is needed because the observed 50th percentile is generally very close to the population 50th percentile. The 50th percentile value is 0.032 mg/L, which is also greater than the annual median objective of 0.025 mg/L.

Therefore, there is reasonable potential based on projected receiving water concentration from the effluent data.

(b) RPA Based on Receiving Water Data

RPA can also be based on receiving water data if available. The Discharger, however, has not collected any near-field receiving water data so it is impossible to conduct an RPA based on receiving water data.

e. Reasonable Potential Analysis for Sediment Quality Objectives

Pollutants in some receiving water sediments may be present in quantities that, alone or in combination, are toxic to benthic communities. Efforts are underway to identify stressors causing such conditions. To date, there is no evidence to directly link compromised sediment conditions to the discharge subject to this Order. Therefore, the Regional Water Board does not find reasonable potential for the discharge to cause or contribute to exceedances of the sediment quality objectives. Nevertheless, the Discharger continues to participate in the RMP, which monitors San Francisco Bay sediment and seeks to identify stressors responsible for degraded sediment quality.

f. RPA Determination for Priority Pollutants

The MECs, most stringent applicable WQC, and background concentrations used in the RPA are presented in the following table, along with the RPA results (yes or no) for each pollutant analyzed. Reasonable Potential was not determined for all pollutants, because there are not applicable WQC for all pollutants, and monitoring data are not available for others. Based on a review of the effluent data collected during the previous permit term from January 2004 through April 2009, the pollutants that exhibit Reasonable Potential are copper, cyanide, dioxin-TEQ, carbon tetrachloride, dieldrin, and total ammonia by Trigger 1.

Table F-11. Reasonable Potential Analysis Summary

CTR #	Priority Pollutants	Governing WQO/WQC (µg/L)	MEC or Minimum DL [1][2] (µg/L)	Maximum Background or Minimum DL [1][2] (µg/L)	RPA Results [3]
1	Antimony	4300	**0.53**	1.8	No
2	Arsenic	36	**1**	4.6	No
3	Beryllium	No Criteria	<0.006	0.215	Ud

CTR #	Priority Pollutants	Governing WQO/WQC (µg/L)	MEC or Minimum DL [1][2] (µg/L)	Maximum Background or Minimum DL [1][2] (µg/L)	RPA Results [3]
4	Cadmium	1.5	**0.092**	0.230	No
5a	Chromium (III)	269	**1.78**	40.7	No
5b	Chromium (VI)	11	**0.9**	Not Available	No
6	**Copper**	13	**39**	14.3	**Yes**
7	**Lead**	4.8	**2.7**	0.37[4]	**No**
8	**Mercury (303d listed)**	0.025	**0.066**	0.088	**Yes[5]**
9	Nickel (303d listed)	30	**9.2**	30.35	No
10	Selenium (303d listed)	5.0	**0.95**	0.33	No
11	Silver	2.2	**0.6**	0.059	No
12	Thallium	6.3	**0.094**	0.21	No
13	Zinc	86	**40.5**	35	No
14	**Cyanide**	2.9	**7**	< 0.4	**Yes**
15	Asbestos	No Criteria	Not Available	Not Available	Ud
16	2,3,7,8-TCDD (303d listed)	1.4E-08	<0.0000007	8.00E-09	No
	Dioxin TEQ (303d listed)	1.4E-08	**5.0E-07**	**5.3E-08**	**Yes**
17	Acrolein	780	<0.56	< 0.5	No
18	Acrylonitrile	0.66	<0.33	0.03	No
19	Benzene	71	<0.06	< 0.05	No
20	Bromoform	360	**0.087**	< 0.5	No
21	**Carbon Tetrachloride**	4.4	**7.6**	0.06	**Yes**
22	Chlorobenzene	21000	<0.06	< 0.5	No
23	Chlorodibromomethane	34	**17.3**	< 0.05	No
24	Chloroethane	No Criteria	<0.07	< 0.5	Ud
25	2-Chloroethylvinyl ether	No Criteria	<0.1	< 0.5	Ud
26	Chloroform	No Criteria	**88**	< 0.5	Ud
27	Dichlorobromomethane	46	**7.5**	< 0.05	No
28	1,1-Dichloroethane	No Criteria	<0.05	< 0.05	Ud
29	1,2-Dichloroethane	99	<0.06	0.04	No
30	1,1-Dichloroethylene	3.2	<0.06	< 0.5	No
31	1,2-Dichloropropane	39	**0.088**	< 0.05	No
32	1,3-Dichloropropylene	1700	<0.05	Not Available	No
33	Ethylbenzene	29000	<0.06	< 0.5	No
34	Methyl Bromide	4000	<0.05	< 0.5	No
35	Methyl Chloride	No Criteria	<0.04	< 0.5	Ud
36	Methylene Chloride	1600	**0.38**	22	No
37	1,1,2,2-Tetrachloroethane	11	<0.06	< 0.05	No
38	Tetrachloroethylene	8.9	**0.24**	< 0.5	No
39	Toluene	200000	**3.88**	< 0.3	No
40	1,2-Trans-Dichloroethylene	140000	<0.05	< 0.5	No
41	1,1,1-Trichloroethane	No Criteria	<0.06	< 0.5	Ud
42	1,1,2-Trichloroethane	42	<0.07	< 0.05	No
43	Trichloroethylene	81	**0.24**	< 0.5	No
44	Vinyl Chloride	525	<0.05	< 0.5	No
45	2-Chlorophenol	400	<0.4	< 1.2	No
46	2,4-Dichlorophenol	790	<0.3	< 1.3	No
47	2,4-Dimethylphenol	2300	<0.3	< 1.3	No
48	2-Methyl- 4,6-Dinitrophenol	765	<0.3	< 1.2	No
49	2,4-Dinitrophenol	14000	<0.3	< 0.7	No
50	2-Nitrophenol	No Criteria	<0.3	< 1.3	Ud
51	4-Nitrophenol	No Criteria	<0.2	< 1.6	Ud
52	3-Methyl 4-Chlorophenol	No Criteria	<0.3	< 1.1	Ud
53	Pentachlorophenol	7.9	<0.3	< 1	No

CTR #	Priority Pollutants	Governing WQO/WQC (μg/L)	MEC or Minimum DL [1][2] (μg/L)	Maximum Background or Minimum DL [1][2] (μg/L)	RPA Results [3]
54	Phenol	4600000	<0.2	< 1.3	No
55	2,4,6-Trichlorophenol	6.5	**0.7**	< 1.3	No
56	Acenaphthene	2700	<0.028	0.007	No
57	Acenaphthylene	No Criteria	**0.02**	0.00069	Ud
58	Anthracene	110000	**0.04**	0.00230	No
59	Benzidine	0.00054	<0.3	< 0.0015	No
60	Benzo(a)Anthracene	0.049	<0.019	0.0064	No
61	Benzo(a)Pyrene	0.049	**0.02**	0.00940	No
62	Benzo(b)Fluoranthene	0.049	<0.02	0.01838	No
63	Benzo(ghi)Perylene	No Criteria	<0.06	0.0093	Ud
64	Benzo(k)Fluoranthene	0.049	<0.02	0.00510	No
65	Bis(2-Chloroethoxy)Methane	No Criteria	<0.3	< 0.3	Ud
66	Bis(2-Chloroethyl)Ether	1.4	<0.3	< 0.3	No
67	Bis(2-Chloroisopropyl)Ether	170000	<0.4	Not Available	No
68	Bis(2-Ethylhexyl)Phthalate	5.9	**5.4**	0.091	No
69	4-Bromophenyl Phenyl Ether	No Criteria	<0.4	< 0.23	Ud
70	Butylbenzyl Phthalate	5200	<0.4	0.0056	No
71	2-Chloronaphthalene	4300	<0.3	< 0.3	No
72	4-Chlorophenyl Phenyl Ether	No Criteria	<0.4	< 0.3	Ud
73	Chrysene	0.049	<0.02	0.0086	No
74	Dibenzo(a,h)Anthracene	0.049	<0.028	0.0026	No
75	1,2-Dichlorobenzene	17000	<0.05	< 0.8	No
76	1,3-Dichlorobenzene	2600	<0.07	< 0.8	No
77	1,4-Dichlorobenzene	2600	<0.06	< 0.8	No
78	3,3 Dichlorobenzidine	0.077	<0.3	< 0.001	No
79	Diethyl Phthalate	120000	**0.93**	< 0.24	No
80	Dimethyl Phthalate	2900000	<0.4	< 0.24	No
81	Di-n-Butyl Phthalate	12000	<0.4	0.016	No
82	2,4-Dinitrotoluene	9.1	<0.3	< 0.27	No
83	2,6-Dinitrotoluene	No Criteria	<0.3	< 0.29	Ud
84	Di-n-Octyl Phthalate	No Criteria	<0.4	< 0.38	Ud
85	1,2-Diphenylhydrazine	0.54	<0.3	0.0037	No
86	Fluoranthene	370	**0.04**	0.0218	No
87	Fluorene	14000	**0.02**	0.01	No
88	Hexachlorobenzene	0.00077	<0.4	0.00007	No
89	Hexachlorobutadiene	50	<0.2	< 0.3	No
90	Hexachlorocyclopentadiene	17000	<0.1	< 0.31	No
91	Hexachloroethane	8.9	<0.2	< 0.2	No
92	Indeno(1,2,3-cd)Pyrene	0.049	<0.02	0.0120	No
93	Isophorone	600	<0.3	< 0.3	No
94	Naphthalene	No Criteria	<0.019	0.0016	Ud
95	Nitrobenzene	1900	<0.3	< 0.25	No
96	N-Nitrosodimethylamine	8.1	<0.4	< 0.3	No
97	N-Nitrosodi-n-Propylamine	1.4	<0.4	< 0.001	No
98	N-Nitrosodiphenylamine	16	<0.4	< 0.001	No
99	Phenanthrene	No Criteria	**0.04**	0.0078	Ud
100	Pyrene	11000	<0.02	0.0296	No
101	1,2,4-Trichlorobenzene	No Criteria	<0.3	< 0.3	Ud
102	Aldrin	0.00014	<0.002	1.4E-07	No
103	Alpha-BHC	0.013	<0.002	0.00080	No
104	Beta-BHC	0.046	<0.001	0.000635	No
105	Gamma-BHC	0.063	<0.001	0.00079	No
106	Delta-BHC	No Criteria	<0.001	0.00015	Ud

CTR #	Priority Pollutants	Governing WQO/WQC (µg/L)	MEC or Minimum DL [1][2] (µg/L)	Maximum Background or Minimum DL [1][2] (µg/L)	RPA Results [3]
107	Chlordane (303d listed)	0.00059	<0.003	0.00034	No
108	4,4'-DDT (303d listed)	0.00059	<0.001	0.000075	No
109	4,4'-DDE (linked to DDT)	0.00059	<0.001	0.000693	No
110	4,4'-DDD	0.00084	<0.001	0.000313	No
111	Dieldrin (303d listed)	0.00014	**0.018**	0.000237	**Yes**
112	Alpha-Endosulfan	0.0087	<0.002	0.000035	No
113	beta-Endolsulfan	0.0087	<0.001	0.000059	No
114	Endosulfan Sulfate	240	<0.001	0.000143	No
115	Endrin	0.0023	<0.002	0.000073	No
116	Endrin Aldehyde	0.81	<0.002	Not Available	No
117	Heptachlor	0.00021	<0.003	0.00003	No
118	Heptachlor Epoxide	0.00011	<0.002	0.000121	No
119-125	PCBs sum (303d listed)	0.00017	<0.03	0.00334	No
126	Toxaphene	0.0002	<0.15	Not Available	No
	Tributylin	0.0074	<0.0016	0.002	No
	Total PAHs	15	**0.18**	0.144	No

[1] The Maximum Effluent Concentration (MEC) and maximum background concentration are the actual detected concentrations unless preceded by a "<" sign, in which case the value shown is the minimum detection level (DL).
[2] The MEC or maximum background concentration is "Not Available" when there are no monitoring data for the constituent.
[3] RPA Results = Yes, if MEC > WQO/WQC, B > WQO/WQC and MEC is detected, or Trigger 3;
= No, if MEC and B are < WQO/WQC or all effluent data are undetected;
= Undetermined (Ud), if no criteria have been promulgated or there are insufficient data.
[4] This is the maximum lead ambient dissolved concentration. This concentration is lower than the most stringent dissolved criterion of 2.5 µg/L (for freshwater aquatic life protection). Total recoverable lead effluent concentrations were used in the RPA, and the MEC is below the most stringent total recoverable lead criterion (4.8 µg/L).
[5] Mercury is addressed in the Regional Water Board Order No. R2-2007-0077.

f. Constituents with limited data. In some cases, Reasonable Potential cannot be determined because effluent data are limited, or ambient background concentrations are unavailable. The Discharger will continue to monitor for these constituents in the effluent using analytical methods that provide the best feasible detection limits. When additional data become available, further RPA will be conducted to determine whether numeric effluent limitations are necessary.

g. Pollutants with No Reasonable Potential. WQBELs are not included in this Order for constituents that do not demonstrate Reasonable Potential; however, monitoring for those pollutants is still required. If concentrations of these constituents are found to have increased significantly, the Discharger will be required to investigate the sources of the increases. Remedial measures are required if the increases pose a threat to receiving water quality.

4. WQBEL Calculations

a. **Pollutants with Reasonable Potential.** WQBELs were developed for the toxic and priority pollutants determined to have reasonable potential to cause or contribute to exceedances of the WQOs. The WQBELs were calculated based on appropriate WQOs and the appropriate procedures specified in SIP Section 1.4. The WQOs used for each pollutant with reasonable potential are discussed below.

b. **Shallow/Deep Water Discharge.** The discharge from the Novato Plant does not achieve 10:1 dilution at all times because the diffuser is located in the intertidal mudflats of San Pablo Bay and is therefore viewed as a shallow water discharge.

c. **Dilution Credit.** The Order allows dilution credits for certain pollutants. The SIP allows dilution credits for completely-mixed discharges, and under certain circumstances for incompletely-mixed discharges. The discharge diffuser is located in the intertidal zone of San Pablo Bay and is submerged at the +1 foot Mean Lower Low Water (MLLW) tidal elevation and above. At lower tidal elevations, the outfall is exposed and the distance from the end of the diffuser to San Pablo Bay water line can range from 1000 to 3500 feet. Therefore, this discharge is incompletely-mixed. Because it does not receive an initial dilution of 10:1, the discharge is classified as a shallow water discharge and no dilution credit is provided for most of toxic pollutants, with the exception of cyanide, total ammonia, and fecal coliform.

(1) **Diluton Credit for Cyanide.** Because cyanide is a non-persistent pollutant that quickly disperses and degrades, the Basin Plan sets forth a dilution credit of 3.25:1 (D=2.25) for calculating WQBELs for cyanide.

(2) **Dilution Credit for Total Ammonia and Fecal Coliform.**

i. **Justification for Mixing Zones.** SIP section 1.4.2.2 allows mixing zones for incompletely-mixed discharges, but the mixing zones must be as small as practicable. The Discharger provided a comprehensive mixing zone study, dated April 7, 2010, to justify a mixing zone for ammonia and fecal coliform, in accordance to the SIP requirements. The analysis demonstrates that, by allowing mixing zones for ammonia (the study proposed a dilution credit of 6:1) and fecal coliform (proposed dilution credit of 10:1), the mixing zones meet SIP requirements. Specifically, the mixing zones do not:

- *Compromise the integrity of the water body.* Under conservative mixing conditions, a dilution ratio of 6:1 is achieved within approximately 250 meters east of the outfall and 325 meters from the outfall in the direction of the plume (roughly south-east of the outfall). A dilution ratio of 10:1, under the same conditions, is achieved approximately 300 meter east of the outfall and 400 meters from the outfall in the direction of the plume. San Pablo Bay has an approximate surface area of 68,000 acres. The mixing zone covers 0.06% of San Pablo Bay or less.

- *Cause acute toxicity conditions to aquatic life passing through the mixing zone.* Aquatic life is not expected to be exposed to acutely toxic conditions because the Discharger's acute bioassay results from January 2005 through April 2009 show no toxicity to juvenile fathead minnows. In addition, tidal conditions create a dynamic hydraulic environment that flushes the vicinity of the outfall on a continuous basis.

- *Restrict the passage of aquatic life.* The mixing zone covers 0.06% of San Pablo Bay or less. Due to its relative size and location, the mixing zone is not expected to inhibit the passage of aquatic life. There is significant waterbody volume in and around the outfall to allow passage. Since the outfall is exposed approximately 4 hours each day, passage of aquatic organisms through the highest concentrations of effluent in the mixing zone is limited by the lack of water at the outfall.

- *Adversely impact biologically sensitive or critical habitats, including, but not limited to, habitats of species listed under federal or State endangered species laws.* National Oceanic Atmospheric Association (NOAA)'s Environmental Sensitivity Index Atlas (Plate 7 for San Francisco Bay) lists the area surrounding the outfall as consisting of sheltered tidal mudflat, which is not identified as providing critical habitat or being used by any state or federal listed protected or sensitive species. Because the discharge is to mudflats (when the outfall is not submerged), and because there are no biologically sensitive or critical habitats in the mudflats, the mixing zone does not have an adverse impact on biologically sensitive or critical habitats.

- *Produce undesirable or nuisance aquatic life.* California Water Code 13050(m) defines "nuisance" to mean anything which meets all of the following requirements:

  (1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.

  (2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.

  (3) Occurs during, or as a result of, the treatment or disposal of wastes.

  No nuisance will be created because the effluent discharged through the outfall receives secondary treatment, has been properly disinfected, and with the new plant improvements, will be comply with NPDES permit limits that specifically prohibit the discharge from creating a nuisance in or impacting the beneficial uses of San Pablo Bay.

- *Result in floating debris, oil, or scum.* The Discharger's treatment works are equipped with properly designed, installed, and maintained scum/debris collection devices (scum baffles) to effectively collect and properly dispose of oils, grease, debris, and scum so that the effluent is free of these materials. The receiving water limitations in the Discharger's NPDES Permit prohibit discharges that cause these conditions in the receiving water. The Discharger routinely visually monitors conditions in the effluent to ensure that debris, oil, and scum are not present. Standard Observation data from 2007 - 2009 indicate that these materials have not been observed.

- *Produce objectionable color, odor, taste, or turbidity.* Effluent discharged receives secondary treatment and is properly disinfected. Secondary treatment removes color, turbidity, and odor through the biological degradation of organic compounds that may contribute to these undesirable characteristics. The receiving water limitations in the Discharger's NPDES Permit prohibit these conditions in the receiving water. The Discharger visually monitors effluent conditions to ensure that objectionable color, odor, or turbidity is not present. Standard Observation data from 2007 - 2009 confirm the absence of these characteristics.

- *Cause objectionable bottom deposits.* Receiving water limitation C.1.b. prohibits bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses. Effluent discharged through the outfall receives secondary treatment and is properly disinfected. Secondary treatment biologically degrades and removes suspended particles, measured as total suspended solids or TSS, from the wastewater that may otherwise contribute to receiving water bottom deposits. Ammonia and bacteria, for which the mixing zone is requested, degrade rapidly in the saline environment of San Pablo Bay and are not particle bound pollutants that would harm sediment quality or benthic or aquatic life.

- *Cause nuisance.* No nuisances will be created because the effluent discharged through the outfall receives secondary treatment, is been properly disinfected, and will comply with NPDES permit limits that specifically prohibit the discharge from creating a nuisance in or impacting the beneficial uses of San Pablo Bay. Secondary treatment and ammonia removal at the Discharger's treatment plant are designed to remove BOD and ammonia. The removal of these constituents will prevent nuisance aquatic life. In addition, the Discharger's Receiving Water Limitations C.1.b. and C.2.e. specifically prohibit the discharge from causing a nuisance with respect to bottom deposits and nutrients, respectively.

- *Dominate the receiving water body or overlap a mixing zone from different outfall.* The mixing zone represents no more than 0.06% of the entire receiving waterbody; therefore, it does not dominate the receiving waterbody. The closest wastewater treatment plant outfall is that of the Las Gallinas Valley Sanitary District, which discharges to a tributary of San Pablo Bay and is located approximately 3 miles south of the outfall and almost as far from the edge of the 10:1 mixing zone.

- *Be located at or near any drinking water intake.* Beneficial uses listed for San Pablo Bay do not include municipal supply. There are no drinking water intakes anywhere near the mixing zone.

ii. **Minimum Mixing Zone Granted.** The SIP requires that mixing zones be as small as practicable. The upgraded plant is designed to achieve compliance with an average monthly effluent limit of 6.0 mg/L; therefore, a mixing zone no larger than necessary to comply with such a limit is considered as small as practicable.

A dilution credit of 4.6:1 or D = 3.6 yields an average monthly effluent limit of 6.0 mg/L. Therefore, a dilution credit of 4.6:1 is used to calculate the total ammonia WQBELs.

For fecal coliform, a dilution credit of 10:1 is used in the effluent limit calculation. No effluent monitoring data for fecal coliform exist, so there is no basis to determine a smaller mixing zone than the largest mixing zone evaluated in the Discharger's study. For this Order, that mixing zone is considered as small as practicable.

d. Development of WQBELs for Specific Pollutants

(1) Copper

a. **Copper WQC.** The chronic and acute marine WQC for copper from the Basin Plan are 6.0 and 9.4 micrograms per liter (µg/L), respectively, expressed as dissolved metal. These WQC were converted to total recoverable metal using the site-specific translators of 0.39 (chronic) and 0.73 (acute), as described in IV.D.2.g, above. The resulting acute water quality criterion of 13 µg/L and chronic water quality criterion of 15 µg/L were used to perform the RPA.

b. **RPA Results.** This Order establishes effluent limitations for copper because the MEC (39 µg/L) exceeds the governing WQC (13 µg/L) for copper, demonstrating Reasonable Potential by Trigger 1.

c. **Copper WQBELs**. WQBELs for copper calculated according to SIP procedures with an effluent data coefficient of variation (CV) of 0.52, are an AMEL of 6.9 µg/L and an MDEL of 13 µg/L. The previous permit included an AMEL of 9.4 µg/L and an MDEL of 14 µg/L. The newly calculated WQBELs are therefore more stringent.

d. **Immediate Compliance Infeasible.** Statistical analysis of effluent data for copper, collected over the period of January 2004 to April 2009 (ranging from 3.8 – 39 µg/L), shows that the 95th percentile (20 µg/L) is greater than the AMEL (6.9 µg/L), the 99th percentile (37 µg/L) is greater than the MDEL (13 µg/L), and the mean (9.8 µg/L) is greater than the long term average of the projected lognormal distribution of the effluent data set after accounting for effluent variability (4.6 µg/L). Based on this analysis, the Discharger cannot immediately comply with these copper WQBELs. [1]

[1] The statistical feasibility analysis consisted of the following steps:

- Use statistical software (MiniTab) to fit a statistical distribution of the effluent data.
- Calculate the mean, 95th, and 99th percentiles of the effluent data for each constituent considered (using the fitted distribution for percentiles calculation).
- Compare the mean, 95th, and 99th percentile values with the long-term average (LTA), AMEL, and MDEL calculated using the SIP procedure, respectively.
- If any of the LTA, AMEL, and MDEL exceeds the mean, 95th percentile, or 99th percentile, it may be infeasible for the Discharger to immediately comply with WQBELs.

e. **Need for Cease and Desist Order.** Pursuant to State Water Board Order WQ-2007-0004, a compliance schedule is not authorized for copper. Because the Discharger cannot immediately comply with the WQBELs for copper, the Discharger will likely discharge in violation of this Order. Therefore, a Cease and Desist Order will be considered immediately following this Order. A Cease and Desist Order would ensure that the Discharger achieves compliance. It would establish a time schedule for the Discharger to complete its plant upgrade project to address its imminent and threatened violations. Cease and Desist Order No. R2-2008-0029 was adopted concurrently with Order No. R2-2008-0026, the amendment to Order No. R2-2004-0093, and included an interim maximum daily effluent limit of 19 µg/L for copper. The Regional Water Board will consider an updated cease and desist order following the adoption of this Order.

f. **Antibacksliding.** Antibacksliding requirements are satisfied because the newly calculated limits for copper are more stringent than those in the previous permit.

(2) Cyanide

a. **Cyanide WQC.** The most stringent applicable WQC for cyanide are an acute criterion of 9.4 µg/L and a chronic criterion of 2.9 µg/L and are from the Basin Plan for protection of marine aquatic life in San Francisco Bay (cyanide site-specific objectives).

b. **RPA Results.** This Order establishes effluent limitations for cyanide because the MEC (7.0 µg/l) exceeds the governing WQC (2.9 µg/L), demonstrating Reasonable Potential by Trigger 1.

c. **Cyanide WQBELs.** WQBELs for cyanide, calculated according to SIP procedures with an effluent CV of 0.77 and a dilution credit of 2.25 (dilution ratio = 3.25:1), are an AMEL of 6.6 µg/L and an MDEL of 15 µg/L.

d. **Immediate Compliance Feasible.** Statistical analysis of effluent data for cyanide collected over the period of January 2004 to April 2009 (ranging from 0.08 – 7.0 µg/L) shows that the 95th percentile (4.9 µg/L) is less than the AMEL (6.6 µg/L), the 99th percentile (6.1 µg/L) is less than the MDEL (15 µg/L), and the mean (2.2 µg/L) is less than the long term average of the projected lognormal distribution of the effluent data set after accounting for effluent variability (3.8 µg/L). Therefore, immediate compliance with these cyanide WQBELs is feasible.

e. **Antibacksliding**. The previous permit, as amended, contained effluent limitations for cyanide of 6.8 µg/L as an AMEL and 15 µg/L as an MDEL. The new cyanide WQBELs are more stringent than the previous permit limits; therefore, antibacksliding requirements are satisfied.

- Where the 95th and 99th percentile values cannot be estimated due to too few data or too many data being non-detect, the determination was based on staff judgment after examination of the raw data, such as direct comparison of the MEC with the AMEL. If MEC>AMEL, it may be infeasible for the Discharger to immediately comply with WQBELs.

(3) Dioxin – TEQ

a. **Dioxin-TEQ WQC.** The Basin Plan narrative WQO for bioaccumulative substances states, "[M]any pollutants can accumulate on particulates, in sediments, or bioaccumulate in fish and other aquatic organisms. Controllable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life. Effects on aquatic organisms, wildlife, and human health will be considered."

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

The CTR establishes a numeric WQO for 2,3,7,8-tetrachlorinated dibenzo-p-dioxin (2,3,7,8-TCDD) of 1.4×10^{-8} µg/L for the protection of human health, when aquatic organisms are consumed. When the CTR was promulgated, USEPA stated its support of the regulation of other dioxin and dioxin-like compounds through the use of toxicity equivalencies (TEQs) in NPDES permits. For California waters, USEPA stated specifically, "if the discharge of dioxin or dioxin-like compounds has reasonable potential to cause or contribute to a violation of a narrative criterion, numeric WQBELs for dioxin or dioxin-like compounds should be included in NPDES permits and should be expressed using a TEQ scheme." [65 Fed. Reg. 31682, 31695 (2000)]

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

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

Order's TEQ scheme. The CTR has established a specific water quality standard for PCBs, and dioxin-like PCBs are included in the analysis of total PCBs.

b. **RPA Results.** This Order establishes effluent limitations for dioxin-TEQ because the MEC (5.0×10^{-7} µg/L using both TEFs and BEFs for calculation) exceeds the applicable water quality criterion (1.4×10^{-8} µg/L), demonstrating Reasonable Potential by Trigger 1.

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

d. **Immediate Compliance Feasible.** The Discharger's monitoring data from January 2004 to December 2008 include 12 samples for the dioxin and furan congeners. All measurements were below their respective minimum levels. Therefore, dioxin-TEQ values calculated only using reliable data above minimum levels are zero and are obviously below the WQBELs. Therefore, the Discharger is expected to be able to comply with these dioxin-TEQ WQBELs.

e. **Antibacksliding.** Antibacksliding requirements are satisfied because the previous permit did not include final effluent limitations for dioxin-TEQ.

(4) Carbon Tetrachloride

a. **Carbon Tetrachloride WQC.** The most stringent applicable WQC for carbon tetrachloride is the CTR criterion for protection of human health of 4.4 µg/L.

b. **RPA Results.** This Order finds reasonable potential and thus establishes effluent limitations for carbon tetrachloride because the MEC (7.6 µg/L) exceeds the most stringent applicable criterion (4.4 µg/L), demonstrating reasonable potential by Trigger 1.

c. **Carbon Tetrachloride WQBELs.** WQBELs for carbon tetrachloride, calculated according to SIP procedures with a default CV of 0.60 and no dilution credit, are an AMEL of 4.4 µg/L and an MDEL of 8.8 µg/L.

d. **Immediate Compliance Infeasible.** With insufficient data to determine the distribution of the data set or to calculate a mean and standard deviation, feasibility to comply with these effluent limitations is determined by comparing the MEC (7.6 µg/L) to the AMEL (4.4 µg/L). Based on this comparison, immediate compliance with these WQBELs is infeasible.

e. **Need for Cease and Desist Order.** Pursuant to State Water Board Order WQ-2007-0004, a compliance schedule is not authorized for carbon tetrachloride. Because the Discharger cannot immediately comply with the WQBELs for carbon tetrachloride, the Discharger will likely discharge in violation of this Order. Therefore, a Cease and Desist Order will be considered immediately following this Order. A Cease and Desist Order would ensure that the Discharger achieves compliance. It would establish a time schedule for the Discharger to complete its plant upgrade project to address its imminent and threatened violations.

f. **Antibacksliding.** Antibacksliding requirements are satisfied because there were no carbon tetrachloride effluent limits in the previous permit.

(5) Dieldrin

a. **Dieldrin WQC.** The most stringent applicable WQC for dieldrin is the CTR criterion for protection of human health of 0.00014 μg/L.

b. **RPA Results.** This Order finds reasonable potential and thus establishes effluent limitations for dieldrin because the MEC (0.018 μg/L) exceeds the most stringent applicable criterion (0.00014 μg/L), demonstrating reasonable potential by Trigger 1.

c. **Dieldrin WQBELs.** WQBELs for dieldrin, calculated according to SIP procedures with a default CV of 0.60 and no dilution credit, are an AMEL of 0.00014 μg/L and an MDEL of 0.00028 μg/L.

d. **Immediate Compliance Infeasible.** With insufficient data to determine the distribution of the data set or to calculate a mean and standard deviation, feasibility to comply with these effluent limitations is determined by comparing the MEC (0.018 μg/L) to the AMEL (0.00014 μg/L). Based on this comparison, immediate compliance with these WQBELs is infeasible.

e. **Need for Cease and Desist Order.** Pursuant to State Water Board Order WQ-2007-0004, a compliance schedule is not authorized for dieldrin. Because the Discharger cannot immediately comply with the WQBELs for dieldrin, the Discharger will likely discharge in violation of this Order. Therefore, a Cease and Desist Order will be considered immediately following this Order. A Cease and Desist Order would ensure that the Discharger achieves compliance. It would establish a time schedule for the Discharger to complete its plant upgrade project to address its imminent and threatened violations.

f. **Antibacksliding.** Antibacksliding requirements are satisfied because these dieldrin WQBELs are more stringent than the previous interim effluent of 0.01 μg/L.

(6) Ammonia

a. **Ammonia WQOs**. The Basin Plan contains WQOs for un-ionized ammonia of 0.025 mg/L as an annual median and 0.16 mg/L as a daily maximum for San Pablo Bay.

b. **RPA Results.** This Order finds reasonable potential for total ammonia based on the ammonia RPA detailed in Section IV.D.3 above.

c. **Ammonia WQBELs.** The WQBELs for total ammonia, based on translated total ammonia objectives, 1.3 mg/L as an annual median and 4.7 mg/L as a daily maximum, an effluent CV of 0.91, and a dilution credit of 4.6:1 (or D = 3.6) are an AMEL of 6.0 mg/L and an MDEL of 21 mg/L.

d. **Immediate Compliance Infeasible.** Statistical analysis of total ammonia effluent data collected over the period of April 2008 to April 2009 (ranging from 0.25–21.7 mg/L) shows that the 95th percentile of the natural log transformed effluent data (12 mg/L) is greater than the AMEL (6.0 mg/L), the 99th percentile (23 mg/L) is greater than the MDEL (21 mg/L). Therefore, immediate compliance with these WQBELs is infeasible.

e. **Need for Cease and Desist Order.** Pursuant to State Water Board Order WQ-2007-0004, a compliance schedule is not authorized for ammonia. Because the Discharger cannot immediately comply with the WQBELs for amomnia, the Discharger will likely discharge in violation of this Order. Therefore, a Cease and Desist Order will be considered immediately following this Order. A Cease and Desist Order would ensure that the Discharger achieves compliance. It would establish a time schedule for the Discharger to complete its plant upgrade project to address its imminent and threatened violations.

f. **Antibacksliding.** Antibacksliding requirements are satisfied because the new WQBELs are more stringent than the previous permit effluent limit of 6 mg/L, expressed as an AMEL (this limit is not a water quality-based effluent limit).

e. Effluent Limit Calculations

The following table shows the WQBEL calculations for copper, cyanide, dioxin-TEQ, carbon tetrachloride, dieldrin, and total ammonia.

Table F-12. Effluent Limitation Calculations

Priority Pollutants	**Copper**	**Cyanide**	**Dioxin-TEQ**	**Carbon Tetrachloride**	**Dieldrin**	**Total Ammonia (acute)**	**Total Ammonia (chronic)**
Units	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**mg/L N**	**mg/L N**
Basis and Criteria type	BP SSOs	BP SSOs	BP Narrative	CTR HH	CTR HH	Basin Plan Aquatic Life	Basin Plan Aquatic Life
Criteria -Acute	-----	-----	-----	-----	-----	-----	-----
Criteria -Chronic	-----	-----	-----	-----	-----	-----	-----
Acute	9.4	9.4	-----	-----	-----	-----	-----
Chronic	6	2.9	-----	-----	-----	-----	-----
Lowest WQO	6.0	2.9	1.4E-08	4.4	0.0	4.70	1.30
Site Specific Translator - MDEL	0.73	-----	-----	-----	-----	-----	-----
Site Specific Translator - AMEL	0.39	-----	-----	-----	-----	-----	-----
Dilution Factor (D) (if applicable)	0	2.25	0	0	0	3.6	3.6
No. of samples per month	4	4	4	4	4	4	30
Aquatic life criteria analysis required? (Y/N)	Y	Y	N	N	N	Y	Y
HH criteria analysis required? (Y/N)	N	Y	Y	Y	Y	N	N

Priority Pollutants	Copper	Cyanide	Dioxin-TEQ	Carbon Tetrachloride	Dieldrin	Total Ammonia (acute)	Total Ammonia (chronic)
Applicable Acute WQO	13	9.4	-----	-----	-----	4.70	-----
Applicable Chronic WQO	15	2.9	-----	-----	-----	-----	1.30
HH criteria	-----	220000	1.4E-08	4.4	0.00014	-----	-----
Background (Maximum Conc for Aquatic Life calc)	14.3	0.4	-----	-----	-----	0.16	0.07
Background (Average Conc for Human Health calc)	-----	0.4	5.3E-08	0.06	-----	-----	-----
Is the pollutant on the 303d list (Y/N)?	N	N	Y	N	Y	N	N
ECA acute	13	30	-----	-----	-----	4.7	-----
ECA chronic	15	9	-----	-----	-----	-----	1.3
ECA HH	-----	714999	1.4E-08	4.4	0.00014	-----	-----
No. of data points <10 or at least 80% of data reported non detect? (Y/N)	N	N	Y	Y	Y	N	N
Avg of effluent data points	9.8	2.2	-----	-----	-----	4.1	4.1
Std Dev of effluent data points	5.1	1.7	-----	-----	-----	3.7	3.7
CV calculated	0.52	0.77	N/A	N/A	N/A	0.91	0.91
CV (Selected) - Final	0.52	0.77	0.6	0.6	0.6	0.91	0.91
ECA acute mult99	0.36	0.26	-----	-----	-----	0.22	-----
ECA chronic mult99	0.57	0.45	-----	-----	-----	-----	0.90
LTA acute	4.6	7.6	-----	-----	-----	4.66	-----
LTA chronic	9	3.8	-----	-----	-----	-----	5.1
minimum of LTAs	4.6	3.8	-----	-----	-----	4.66	4.66
AMEL mult95	1.5	1.7	1.6	1.6	1.6	1.86	1.30
MDEL mult99	2.8	3.9	3.1	3.1	3.1	4.52	4.52
AMEL (aq life)	7	6.6	-----	-----	-----	8.67	6.03
MDEL(aq life)	13	14.9	-----	-----	-----	21.0	21.0
MDEL/AMEL Multiplier	1.88	2.26	2.01	2.01	2.01	2.43	3.49
AMEL (human hlth)	-----	714999	1.4E-08	4.4	0.00014	-----	-----
MDEL (human hlth)	-----	1612782	2.8E-08	8.8	0.00028	-----	-----
minimum of AMEL for Aq. life vs HH	7	6.61	1.4E-08	4.4	0.00014	8.7	6.0
minimum of MDEL for Aq. Life vs HH	13	14.92	2.8E-08	8.8	0.00028	21	21
Current limit in permit (30-day average)	9.4	6.8	-----	-----	-----	6.0	6.0
Current limit in permit (daily)	14	15	-----	-----	-----	-----	-----
Final limit - AMEL	6.9	6.6	1.4E-08	4.4	0.00014	-----	6.0
Final limit - MDEL	13	15	2.8E-08	8.8	0.00028	-----	21
Max Effl Conc (MEC)	39	7.0	5.0E-07	7.6	0.0	21.7	21.7

5. Whole Effluent Acute Toxicity

This Order includes effluent limitations for whole effluent acute toxicity that are based on Basin Plan Table 4-3 and are unchanged from the previous permit. All bioassays are to be performed according to the USEPA approved method in 40 CFR 136, currently *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, 5th Edition. The approved test species is the fathead minnow. The approved test species currently specified in the Monitoring and Reporting Program (Attachment E) is the fathead minnow.

The Discharger's acute toxicity monitoring data show that bioassay results from January 2005 through April 2009 were a minimum of 90% survival as an 11-sample median, and a minimum 95% survival as a 11-sample 90th percentile. There have been no acute toxicity effluent limitations violations.

6. Whole Effluent Chronic Toxicity

a. Toxicity Objective. Basin Plan section 3.3.18 states, "There shall be no chronic toxicity in ambient waters. Chronic toxicity is a detrimental biological effect on growth rate, reproduction, fertilization success, larval development, population abundance, community composition, or any other relevant measure of the health of an organism, population, or community."

b. Reasonable Potential Analysis. The Discharger's chronic toxicity monitoring data (including screening study) from November 2005 – May 2009 showed one exceedance of the single sample maximum trigger with a result of 8.1 TUc and four exceedances of the three-sample median with either 2 TUc and 2.1 TUc. Based on the data summarized above, there is reasonable potential for chronic toxicity in the effluent to cause or contribute to chronic toxicity in the receiving waters. The SIP, therefore, requires chronic toxicity limits.

c. Permit Requirements. The Order establishes a narrative effluent limitation for chronic toxicity based on the narrative Basin Plan objective. In addition, this Order retains the previous permit requirements to implement the chronic toxicity narrative objective, including numeric triggers for accelerated monitoring. These triggers are based on Basin Plan Table 4-5.

d. Screening Phase Study. The Discharger is required to conduct a chronic toxicity screening phase study, as described in Appendix E-1 of the MRP (Attachment E), prior to the next permit issuance.

7. Anti-backsliding and Antidegradation

Effluent limitations in this Order that are less stringent than those in the previous permit or are not retained from the previous permit comply with antibacksliding and antidegradation requirements for the reasons explained below.

- The single sample maximum effluent limitation for enterococcus is not retained. As stated under Section C.2.d above, the removal of this limit complies with anti-backsliding requirements and is not expected to cause degradation of water quality because imposing it in the past was a mistake and the 30-day geometric mean will hold the Discharger to its current performance.

- The previous permit contained final effluent limitations for lead, nickel and interim effluent limitations for 4,4'-DDE, 4,4'-DDD, and heptachlor epoxide; however, the RPA shows that the discharge no longer demonstrates reasonable potential for these pollutants to cause or contribute to exceedances of applicable WQC. Therefore this Order does not retain these limitations. Elimination of the interim and final limitations for these pollutants is consistent with State Water Board Order No. WQ 2001-16 and degradation is not expected because the Discharger will maintain and improve its current level of treatment during the permit term.

- The previous permit included an interim effluent limitation for mercury that is not retained by this Order because discharges of mercury to San Francisco Bay are now regulated by Regional Water Board Order No. R2-2007-0077, which became effective March 1, 2008. Order No. R2-2007-0077 is a watershed permit that implements the San Francisco Bay Mercury TMDL, which contains wasteload allocations for industrial and municipal wastewater mercury discharges. Order No. R2-2007-0077 complied with anti-backsliding and antidegradation requirements.

E. Land Discharge Specifications

Not Applicable.

F. Reclamation Specifications

Water reclamation requirements for this Discharger are established by Regional Water Board Order No. 92-065.

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

A. Surface Water

Receiving water limitations V.A.1 and V.A.2 are based on the narrative and numeric objectives contained in Basin Plan Chapter 3.

Receiving water limitation V.A.3 is retained from the previous permit and requires compliance with federal and State water quality standards.

B. Groundwater

Not Applicable.

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

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

The principal purposes of a monitoring program are to:

- Document compliance with waste discharge requirements and prohibitions established by the Regional Water Board,

- Facilitate self-policing by the Discharger in the prevention and abatement of pollution arising from waste discharge,

- Develop or assist in the development of limitations, discharge prohibitions, national standards of performance, pretreatment and toxicity standards, and other standards, and

- Prepare water and wastewater quality inventories.

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

The following provides the rationale for the monitoring and reporting requirements contained in the MRP for this facility.

A. Influent Monitoring

Influent monitoring requirements for BOD_5 and TSS are unchanged from the previous permit, as amended, to allow determination of compliance with this Order's 85% removal requirement. Cyanide influent monitoring is required by the Basin Plan with implementation of the cyanide site-specific objectives. The upgraded Novato Plant has flow measurement devices at the influent monitoring location (no flow measurement devices at the effluent monitoring location); therefore, the previous effluent flow monitoring requirement is now moved to the influent monitoring station.

B. Effluent Monitoring

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

- The MRP establishes routine monitoring for toxic pollutants with effluent limitations (copper, cyanide, carbon tetrachloride, dieldrin, total ammonia, and dioxin-TEQ.) Monitoring for all other priority toxic pollutants must be conducted in accordance with Regional Standard Provisions (Attachment G).

- Routine monitoring is not retained for lead, nickel, 4,4'-DDE, 4,4'-DDD, and heptachlor epoxide because these pollutants no longer demonstrate reasonable potential.

- Routine monitoring for mercury is not retained because this pollutant is now regulated under a separate Order (Order No. R2-2007-0077.)

- Routine effluent monitoring is to be arranged during discharge of treated wastewater to San Pablo Bay at E-002 or E-003; these monitoring requirements are necessary to determine compliance with the requirements in the Order.

- Monitoring for discharges of treated wastewater from the storage ponds is established in the Order. The monitoring results will be used to determine compliance with effluent limits specified in this Order.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Monthly 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity. Acute bioassay is also required once before a discharge from the storage ponds to the bay occurs in a specific discharger period as defined in this Order. The MRP requires the use of fathead minnow as the bioassay test species.

2. **Chronic Toxicity.** This Order requires the Discharger to conduct quarterly chronic toxicity testing. The Discharger conducted an effluent toxicity screening study during the previous permit term that indicated that the water flea, *Ceriodaphnia dubia*, is the most sensitive species for chronic toxicity testing. The Discharger shall re-screen in accordance with Appendix E-1 of the MRP (Attachment E) after any significant change in the nature of the effluent or prior to 180 days prior to the expiration of this Order.

D. Receiving Water Monitoring

Regional Monitoring Program (RMP). On April 15, 1992, the Regional Water Board adopted Resolution No. 92-043 directing the Executive Officer to implement the RMP for San Francisco Bay. Subsequent to a public hearing and various meetings, Regional Water Board staff requested major permit holders in this Region, under authority of CWC section 13267, to report on the water quality of the estuary. These permit holders responded to this request by participating in a collaborative effort through the San Francisco Estuary Institute. This effort has come to be known as the San Francisco Bay RMP for Trace Substances. This Order specifies that the Discharger shall continue to participate in the RMP, which involves collection of data on pollutants and toxicity in water, sediment, and biota of the estuary.

E. Other Monitoring Requirements

Pretreatment and Biosolids Monitoring. This Order specifies the sampling type for pretreatment monitoring. Specifically, this Order requires multiple grabs (instead of 24-hour composites for BNA, VOCs, cyanide, and hexavalent chromium. Multiple grab sampling will provide samples more representative of daily plant operations, because discharges from industrial users usually are intermittent, and concentrations in the plant's influent and effluent vary (may be significant in influent) throughout the day. Composites made up of discrete grabs for these parameters are necessary because of the potential loss of the constituents during automatic compositing. Hexavalent chromium is chemically unstable. It, cyanide, and BNAs are also somewhat volatile. For these same reasons, discrete analyses are also necessary since constituents are subject to loss during compositing at the laboratory.

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions (Provision VI.A)

Standard Provisions, which, in accordance with 40 CFR 122.41 and 122.42 apply to all NPDES discharges and must be included in every NPDES permit, are provided in Attachment D of this Order. The Discharger must comply with all standard provisions and with those additional conditions that apply under 40 CFR 122.42

40 CFR 122.41(a)(1) and (b) through (n) establish conditions that apply to all state-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. They are incorporated expressly in this Order as Attachment D. Section 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with section 123.25 this Order omits federal conditions that address enforcement authority specified in sections 122.41(j)(5) and (k)(2) because the enforcement authority under CWC is more stringent. In lieu of these conditions, this Order incorporates by reference CWC section 13387(e). This Order also modifies the Federal Standard Provisions to impose more stringent requirements as set forth in the Regional Standard Provisions (Attachment G).

B. MRP Requirements

The Discharger is required to monitor the permitted discharges to evaluate compliance with permit conditions. The MRP includes (Attachment E) includes monitoring requirements and the Regional Standard Provisions (Attachment G) of this Order. This provision requires compliance with these documents and is based on 40 CFR 122.63.

C. Special Provisions

1. Reopener Provisions

These provisions are based on 40 CFR 123 and allow future modification of this Order and its effluent limitations as necessary to respond to updated information.

2. Special Studies and Additional Monitoring Requirements

a. **Effluent Characterization Study.** This Order does not include effluent limitations for priority pollutants that do not demonstrate Reasonable Potential, but this provision requires the Discharger to continue monitoring for these pollutants as described in the Regional Standard Provisions (Attachment G) and as specified in the MRP (Attachment E). If concentrations of these constituents increase significantly, the Discharger must investigate the source of the increases and establish remedial measures if the increases result in reasonable potential to cause or contribute to an excursion above the applicable WQC. This provision is based on the SIP and is retained from the previous permit.

b. **Ambient Background Receiving Water Study.** This provision is based on the Basin Plan, the SIP, and the Regional Standard Provisions (Attachment G). As indicated in this Order, this requirement may be met by participating in the collaborative BACWA study. This provision is retained from the previous permit.

c. **Receiving Water Ammonia Study.** This provision requires the Discharger to conduct receiving water monitoring to characterize ammonia ambient condition. This study will help determine whether the receiving water is meeting ammonia water quality objectives and establish whether ammonia has any impacts on the receiving water.

d. **Chronic Toxicity Reduction Evaluation (TRE)**. These general TIE/TRE requirements establish guidelines for TIE/TRE evaluations and are unchanged from the previous permit.

e. **Reclamation Pond Operation.** This provision is updated from the previous permit and specifies when wastewater stored in the reclamation ponds may be discharged to San Pablo Bay, and storage pond sediment control requirements, which are incorporated from the Discharger's *Storage Pond Sediment Control and Monitoring Plan*, dated September 30, 1999.

3. Best Management Practices and Pollution Minimization Program

This provision for a Pollutant Minimization Program is based on Basin Plan Chapter 4 (Section 4.13.2) and SIP Chapter 2 (section 2.4.5).

4. Construction, Operation, and Maintenance Specifications

a. **Reliability Report.** This provision is established by this Order and is required to support the Discharger's request for an exception to Basin Plan discharge Prohibition 1.

b. **Ignacio Plant Operation.** This provision is based on California Code of Regulations, the Basin Plan and 40 CFR 122.

c. **Plant Capacity Increase.** This provision is based on 40 CFR 122.41(l) (reporting requirements).

5. Special Provisions for Municipal Facilities (POTWs Only)

a. **Pretreatment Program.** This provision is based on 40 CFR 403 (General Pretreatment Regulations for Existing and New Sources of Pollution) and is retained from the previous permit.

b. **Biosolids Management Practices Requirements.** This provision is based on the Basin Plan (Chapter 4, section 4.17) and 40 CFR Parts 257 and 503, and is retained from the previous permit.

c. **Sanitary Sewer and Sewer System Management Plan.** This provision is to explain the Order's requirements as they relate to the Discharger's collection system, and to promote consistency with the State Water Board-adopted General Collection System WDRs (General Order, Order No. 2006-0003-DWQ).

The General Order requires public agencies that own or operate sanitary sewer systems with greater than one mile of pipes or sewer lines to enroll for coverage under the General Order. The General Order requires agencies to develop sanitary sewer management plans and report all sanitary sewer overflows, among other requirements and prohibitions. Furthermore, the General Order contains requirements for operation and maintenance of collection systems and for reporting and mitigating sanitary sewer overflows. Inasmuch that the Discharger's collection system is part of the system that is subject to this Order, certain standard provisions are applicable as specified in Provisions, Section VI.C.5. For instance, the 24-hour reporting requirements in this Order are not included in the General Order. The Discharger must comply with both the General Order and this Order. The Discharger and public agencies that are discharging wastewater into the facility were required to obtain enrollment for regulation under the General Order by December 1, 2006.

The State Water Board amended the General Order on February 20, 2008 in Order No. WQ 2008-0002-EXEC, to strengthen the notification and reporting requirements for sanitary sewer overflows. The Regional Water Board issued a 13267 letter on May 1, 2008, requiring dischargers to comply with the new notification requirements for sanitary sewer overflows, and to comply with similar notification and reporting requirements for spills from wastewater treatment facilities.

6. Other Special Provisions

a. **Copper Action Plan.** This provision is based on Basin Plan sections 7.2.2.2 and 7.2.2.5. It is necessary to ensure that use of copper site-specific objectives is consistent with antidegradation policies. This Order is continued from Order R2-2008-0026 and requires the Discharger to implement monitoring and surveillance, pretreatment, source control, and pollution prevention for copper in accordance with the Basin Plan. The Basin Plan contains site-specific water quality objectives for copper in all San Francisco Bay segments, which are a 4-day average concentration of 6.0 µg/L and a 1-hour average concentration of 9.4 µg/L for San Pablo Bay. The Basin Plan includes an implementation plan that requires a Copper Action Plan to ensure no degradation of water quality. The Discharger has already completed some tasks as required by the previous Order.

b. **Cyanide Action Plan.** This provision is based on Basin Plan Chapter 4 (see Regional Water Board Resolution R2-2006-0086, Cyanide Site-Specific Objectives). It is necessary to ensure that use of cyanide site-specific objectives is consistent with antidegradation policies. This Order is continued from Order R2-2008-0026 and requires the Discharger to implement monitoring and surveillance, pretreatment, source control, and pollution prevention for cyanide in accordance with the Basin Plan. The Basin Plan contains site-specific water quality objectives for cyanide in all San Francisco Bay segments, which are a 4-day average concentration of 2.9 µg/L and a 1-hour average concentration of 9.4 µg/L. The Basin Plan includes an implementation plan that requires a Cyanide Action Plan to ensure no degradation of water quality. Additionally, because a dilution credit has been granted in establishing effluent limitations for cyanide, source control efforts are necessary for the continued exception to the Basin Plan prohibition regarding shallow water dischargers. The Discharger has already completed some tasks as required by the previous Order.

VIII. PUBLIC PARTICIPATION

The Regional Water Board is considering the issuance of WDRs that will serve as an NPDES permit for the Novato Sanitary District. As a step in the WDRs adoption process, Regional Water Board staff has developed tentative WDRs. The Regional Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe WDRs for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided through the Marin Independent-Journal on March 9, 2010.

B. Written Comments

Staff determinations are tentative. Interested persons are invited to submit written comments concerning these tentative WDRs. Comments must be submitted either in person or by mail to the Executive Office at the Regional Water Board at the address provided on the cover page of this Order, to the Attention of Tong Yin.

To receive full consideration and a written response, written comments must be received at the Regional Water Board offices by 5:00 p.m. on April 7, 2010.

C. Public Hearing

The Regional Water Board will hold a public hearing on the tentative WDRs during its regular meeting at the following date, and time, and at the following location:

Date: May 12, 2010
Time: 9:00 am
Location: Elihu Harris State Office Building
1515 Clay Street, 1st Floor Auditorium
Oakland, CA 94612

Contact: Tong Yin, (510) 622-2418, email TYin@waterboards.ca.gov

Interested persons are invited to attend. At the public hearing, the Regional Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

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

D. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Resources Control Board to review the decision of the Regional Water Board regarding the final WDRs. The petition must be submitted within 30 days of the Regional Water Board's action to the following address:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

E. Information and Copying

The Report of Waste Discharge, related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:45 a.m. and 5:00 p.m., Monday through Thursday for the first three weeks of a month, and Monday through Friday for the rest of the month. Copying of documents may be arranged by calling 510-622-2300.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Regional Water Board, reference this facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Tong Yin at 510-622-2418 or e-mail at TYin@waterboards.ca.gov.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ATTACHMENT G
REGIONAL STANDARD PROVISIONS, AND MONITORING
AND REPORTING REQUIREMENTS
(SUPPLEMENT TO ATTACHMENT D)

For

NPDES WASTEWATER DISCHARGE PERMITS

March 2010

Table of Contents

I. STANDARD PROVISIONS - PERMIT COMPLIANCE G-1
- A. Duty to Comply G-1
- B. Need to Halt or Reduce Activity Not a Defense G-1
- C. Duty to Mitigate G-1
  1. Contingency Plan G-1
  2. Spill Prevention Plan G-2
- D. Proper Operation & Maintenance G-2
  1. Operation and Maintenance (O&M) Manual G-2
  2. Wastewater Facilities Status Report G-2
  3. Proper Supervision and Operation of Publicly Owned Treatment Works (POTWs) G-3
- E. Property Rights G-3
- F. Inspection and Entry G-3
- G. Bypass G-3
- H. Upset G-3
- I. Other G-3
- J. Storm Water G-3
  1. Storm Water Pollution Prevention Plan (SWPP Plan) G-3
  2. Source Identification G-4
  3. Storm Water Management Controls G-5
  4. Annual Verification of SWPP Plan G-6
- K. Biosolids Management G-6

II. STANDARD PROVISIONS – PERMIT ACTION G-7

III. STANDARD PROVISIONS – MONITORING G-7
- A. Sampling and Analyses G-7
  1. Use of Certified Laboratories G-7
  2. Use of Appropriate Minimum Levels G-7
  3. Frequency of Monitoring G-7
- B. Biosolids Monitoring G-10
  1. Biosolids Monitoring Frequency G-10
  2. Biosolids Pollutants to Monitor G-11
- C. Standard Observations G-11
  1. Receiving Water Observations G-11
  2. Wastewater Effluent Observations G-11
  3. Beach and Shoreline Observations G-12
  4. Land Retention or Disposal Area Observations G-12
  5. Periphery of Waste Treatment and/or Disposal Facilities Observations G-12

IV. STANDARD PROVISIONS – RECORDS G-12
- A. Records to be Maintained G-12
- B. Records of monitoring information shall include G-13
  1. Analytical Information G-13
  2. Flow Monitoring Data G-13
  3. Wastewater Treatment Process Solids G-13
  4. Disinfection Process G-13

5. Treatment Process Bypasses G-14
6. Treatment Facility Overflows G-14

V. STANDARD PROVISIONS – REPORTING G-14
A. Duty to Provide Information G-14
B. Signatory and Certification Requirements G-14
C. Monitoring Reports G-15
1. Self Monitoring Reports G-15
D. Compliance Schedules G-19
E. Twenty-Four Hour Reporting G-19
1. Spill of Oil or Other Hazardous Material Reports G-19
2. Unauthorized Discharges from Municipal Wastewater Treatment Plants G-20
F. Planned Changes G-23
G. Anticipated Noncompliance G-23
H. Other Noncompliance G-23
I. Other Information G-23

VI. STANDARD PROVISIONS – ENFORCEMENT G-23

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS G-23

VIII. DEFINITIONS – This section is an addition to Standard Provisions (Attachment D) G-23

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

REGIONAL STANDARD PROVISIONS, AND MONITORING AND REPORTING REQUIREMENTS (SUPPLEMENT TO ATTACHMENT D)

FOR

NPDES WASTEWATER DISCHARGE PERMITS

APPLICABILITY

This document applies to dischargers covered by a National Pollutant Discharge Elimination System (NPDES) permit. This document does not apply to Municipal Separate Storm Sewer System (MS4) NPDES permits.

The purpose of this document is to supplement the requirements of Attachment D, Standard Provisions. The requirements in this supplemental document are designed to ensure permit compliance through preventative planning, monitoring, recordkeeping, and reporting. In addition, this document requires proper characterization of issues as they arise, and timely and full responses to problems encountered. To provide clarity on which sections of Attachment D this document supplements, this document is arranged in the same format as Attachment D.

I. STANDARD PROVISIONS - PERMIT COMPLIANCE

A. Duty to Comply – Not Supplemented

B. Need to Halt or Reduce Activity Not a Defense – Not Supplemented

C. Duty to Mitigate – This supplements I.C. of Standard Provisions (Attachment D)

1. **Contingency Plan** - The Discharger shall maintain a Contingency Plan as originally required by Regional Water Board Resolution 74-10 and as prudent in accordance with current municipal facility emergency planning. The Contingency Plan shall describe procedures to ensure that existing facilities remain in, or are rapidly returned to, operation in the event of a process failure or emergency incident, such as employee strike, strike by suppliers of chemicals or maintenance services, power outage, vandalism, earthquake, or fire. The Discharger may combine the Contingency Plan and Spill Prevention Plan into one document. Discharge in violation of the permit where the Discharger has failed to develop and implement a Contingency Plan as described below will be the basis for considering the discharge a willful and negligent violation of the permit pursuant to California Water Code Section 13387. The Contingency Plan shall, at a minimum, contain the provisions of a. through g. below.

    a. Provision of personnel for continued operation and maintenance of sewerage facilities during employee strikes or strikes against contractors providing services.

b. Maintenance of adequate chemicals or other supplies and spare parts necessary for continued operations of sewerage facilities.

c. Provisions of emergency standby power.

d. Protection against vandalism.

e. Expeditious action to repair failures of, or damage to, equipment and sewer lines.

f. Report of spills and discharges of untreated or inadequately treated wastes, including measures taken to clean up the effects of such discharges.

g. Programs for maintenance, replacement, and surveillance of physical condition of equipment, facilities, and sewer lines.

2. **Spill Prevention Plan -** The Discharger shall maintain a Spill Prevention Plan to prevent accidental discharges and minimize the effects of such events. The Spill Prevention Plan shall:

a. Identify the possible sources of accidental discharge, untreated or partially treated waste bypass, and polluted drainage;

b. Evaluate the effectiveness of present facilities and procedures, and state when they became operational; and

c. Predict the effectiveness of the proposed facilities and procedures, and provide an implementation schedule containing interim and final dates when they will be constructed, implemented, or operational.

This Regional Water Board, after review of the Contingency and Spill Prevention Plans or their updated revisions, may establish conditions it deems necessary to control accidental discharges and to minimize the effects of such events. Such conditions may be incorporated as part of the permit upon notice to the Discharger.

D. Proper Operation & Maintenance – This supplements I.D of Standard Provisions (Attachment D)

1. **Operation and Maintenance (O&M) Manual -** The Discharger shall maintain an O&M Manual to provide the plant and regulatory personnel with a source of information describing all equipment, recommended operational strategies, process control monitoring, and maintenance activities. To remain a useful and relevant document, the O&M Manual shall be kept updated to reflect significant changes in treatment facility equipment and operational practices. The O&M Manual shall be maintained in usable condition and be available for reference and use by all relevant personnel and Regional Water Board staff.

2. **Wastewater Facilities Status Report -** The Discharger shall regularly review, revise, or update, as necessary, its Wastewater Facilities Status Report. This report shall document how the Discharger operates and maintains its wastewater collection, treatment, and disposal facilities to ensure that all facilities are adequately staffed, supervised, financed, operated,

maintained, repaired, and upgraded as necessary to provide adequate and reliable transport, treatment, and disposal of all wastewater from both existing and planned future wastewater sources under the Discharger's service responsibilities.

3. **Proper Supervision and Operation of Publicly Owned Treatment Works (POTWs) -** POTWs shall be supervised and operated by persons possessing certificates of appropriate grade pursuant to Division 4, Chapter 14, Title 23 of the California Code of Regulations.

E. Property Rights – Not Supplemented

F. Inspection and Entry – Not Supplemented

G. Bypass – Not Supplemented

H. Upset – Not Supplemented

I. Other – This section is an addition to Standard Provisions (Attachment D)

1. Neither the treatment nor the discharge of pollutants shall create pollution, contamination, or nuisance as defined by California Water Code Section 13050.

2. Collection, treatment, storage, and disposal systems shall be operated in a manner that precludes public contact with wastewater, except in cases where excluding the public is infeasible, such as private property. If public contact with wastewater could reasonably occur on public property, warning signs shall be posted.

3. If the Discharger submits a timely and complete Report of Waste Discharge for permit reissuance, this permit continues in force and effect until a new permit is issued or the Regional Water Board rescinds the permit.

J. Storm Water – This section is an addition to Standard Provisions (Attachment D)

These provisions apply to facilities that do not direct all storm water flows from the facility to the wastewater treatment plant headworks.

1. Storm Water Pollution Prevention Plan (SWPP Plan)

The SWPP Plan shall be designed in accordance with good engineering practices and shall address the following objectives:

a. To identify pollutant sources that may affect the quality of storm water discharges; and

b. To identify, assign, and implement control measures and management practices to reduce pollutants in storm water discharges.

The SWPP Plan may be combined with the existing Spill Prevention Plan as required in accordance with Section C.2. The SWPP Plan shall be retained on-site and made available upon request of a representative of the Regional Water Board.

2. Source Identification

The SWPP Plan shall provide a description of potential sources that may be expected to add significant quantities of pollutants to storm water discharges, or may result in non-storm water discharges from the facility. The SWPP Plan shall include, at a minimum, the following items:

a. A topographical map (or other acceptable map if a topographical map is unavailable), extending one-quarter mile beyond the property boundaries of the facility, showing the wastewater treatment facility process areas, surface water bodies (including springs and wells), and discharge point(s) where the facility's storm water discharges to a municipal storm drain system or other points of discharge to waters of the State. The requirements of this paragraph may be included in the site map required under the following paragraph if appropriate.

b. A site map showing the following:

   1) Storm water conveyance, drainage, and discharge structures;

   2) An outline of the storm water drainage areas for each storm water discharge point;

   3) Paved areas and buildings;

   4) Areas of actual or potential pollutant contact with storm water or release to storm water, including but not limited to outdoor storage and process areas; material loading, unloading, and access areas; and waste treatment, storage, and disposal areas;

   5) Location of existing storm water structural control measures (i.e., berms, coverings, etc.);

   6) Surface water locations, including springs and wetlands; and

   7) Vehicle service areas.

c. A narrative description of the following:

   1) Wastewater treatment process activity areas;

   2) Materials, equipment, and vehicle management practices employed to minimize contact of significant materials of concern with storm water discharges;

   3) Material storage, loading, unloading, and access areas;

   4) Existing structural and non-structural control measures (if any) to reduce pollutants in storm water discharges; and

   5) Methods of on-site storage and disposal of significant materials.

d. A list of pollutants that have a reasonable potential to be present in storm water discharges in significant quantities.

3. Storm Water Management Controls

The SWPP Plan shall describe the storm water management controls appropriate for the facility and a time schedule for fully implementing such controls. The appropriateness and priorities of controls in the SWPP Plan shall reflect identified potential sources of pollutants. The description of storm water management controls to be implemented shall include, as appropriate:

a. Storm water pollution prevention personnel

Identify specific individuals (and job titles) that are responsible for developing, implementing, and reviewing the SWPP Plan.

b. Good housekeeping

Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm drain conveyance system.

c. Spill prevention and response

Identify areas where significant materials can spill into or otherwise enter storm water conveyance systems and their accompanying drainage points. Specific material handling procedures, storage requirements, and cleanup equipment and procedures shall be identified, as appropriate. The necessary equipment to implement a cleanup shall be available, and personnel shall be trained in proper response, containment, and cleanup of spills. Internal reporting procedures for spills of significant materials shall be established.

d. Source control

Source controls include, for example, elimination or reduction of the use of toxic pollutants, covering of pollutant source areas, sweeping of paved areas, containment of potential pollutants, labeling of all storm drain inlets with “No Dumping” signs, isolation or separation of industrial and non-industrial pollutant sources so that runoff from these areas does not mix, etc.

e. Storm water management practices

Storm water management practices are practices other than those that control the sources of pollutants. Such practices include treatment or conveyance structures, such as drop inlets, channels, retention and detention basins, treatment vaults, infiltration galleries, filters, oil/water separators, etc. Based on assessment of the potential of various sources to contribute pollutants to storm water discharges in significant quantities, additional storm water management practices to remove pollutants from storm water discharges shall be implemented and design criteria shall be described.

f. Sediment and erosion control

Measures to minimize erosion around the storm water drainage and discharge points, such as riprap, revegetation, slope stabilization, etc., shall be described.

g. Employee training

Employee training programs shall inform all personnel responsible for implementing the SWPP Plan. Training shall address spill response, good housekeeping, and material management practices. New employee and refresher training schedules shall be identified.

h. Inspections

All inspections shall be done by trained personnel. Material handling areas shall be inspected for evidence of, or the potential for, pollutants entering storm water discharges. A tracking or follow up procedure shall be used to ensure appropriate response has been taken in response to an inspection. Inspections and maintenance activities shall be documented and recorded. Inspection records shall be retained for five years.

i. Records

A tracking and follow-up procedure shall be described to ensure that adequate response and corrective actions have been taken in response to inspections.

4. Annual Verification of SWPP Plan

An annual facility inspection shall be conducted to verify that all elements of the SWPP Plan are accurate and up-to-date. The results of this review shall be reported in the Annual Report to the Regional Water Board described in Section V.C.f.

K. Biosolids Management – This section is an addition to Standard Provisions (Attachment D)

Biosolids must meet the following requirements prior to land application. The Discharger must either demonstrate compliance or, if it sends the biosolids to another party for further treatment or distribution, must give the recipient the information necessary to ensure compliance.

1. Exceptional quality biosolids meet the pollutant concentration limits in Table III of 40 CFR Part 503.13, Class A pathogen limits, and one of the vector attraction reduction requirements in 503.33(b)(1)-(b)(8). Such biosolids do not have to be tracked further for compliance with general requirements (503.12) and management practices (503.14).

2. Biosolids used for agricultural land, forest, or reclamation shall meet the pollutant limits in Table I (ceiling concentrations) and Table II or Table III (cumulative loadings or pollutant concentration limits) of 503.13. They shall also meet the general requirements (503.12) and management practices (503.14) (if not exceptional quality biosolids) for Class A or Class B pathogen levels with associated access restrictions (503.32) and one of the 10 vector attraction reduction requirements in 503.33(b)(1)-(b)(10).

3. Biosolids used for lawn or home gardens must meet exceptional quality biosolids limits.

4. Biosolids sold or given away in a bag or other container must meet the pollutant limits in either Table III or Table IV (pollutant concentration limits or annual pollutant loading rate limits) of 503.13. If Table IV is used, a label or information sheet must be attached to the biosolids packing that explains Table IV (see 503.14). The biosolids must also meet the Class A pathogen limits and one of the vector attraction reduction requirements in 503.33(b)(1)-(b)(8).

II. STANDARD PROVISIONS – PERMIT ACTION – Not Supplemented

III. STANDARD PROVISIONS – MONITORING

A. Sampling and Analyses – This section is a supplement to III.A and III.B of Standard Provisions (Attachment D)

1. Use of Certified Laboratories

Water and waste analyses shall be performed by a laboratory certified for these analyses in accordance with California Water Code Section 13176.

2. Use of Appropriate Minimum Levels

Table C lists the suggested analytical methods for the 126 priority pollutants and other toxic pollutants that should be used, unless a particular method or minimum level (ML) is required in the MRP.

For priority pollutant monitoring, when there is more than one ML value for a given substance, the Discharger may select any one of the analytical methods cited in Table C for compliance determination, or any other method described in 40 CFR part 136 or approved by USEPA (such as the 1600 series) if authorized by the Regional Water Board. However, the ML must be below the effluent limitation and water quality objective. If no ML value is below the effluent limitation and water quality objective, then the method must achieve an ML no greater than the lowest ML value indicated in Table C. All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements.

3. Frequency of Monitoring

The minimum schedule of sampling analysis is specified in the MRP portion of the permit.

a. Timing of Sample Collection

1) The Discharger shall collect samples of influent on varying days selected at random and shall not include any plant recirculation or other sidestream wastes, unless otherwise stipulated by the MRP.

2) The Discharger shall collect samples of effluent on days coincident with influent sampling unless otherwise stipulated by the MRP or the Executive Officer. The Executive Officer may approve an alternative sampling plan if it is demonstrated to be representative of plant discharge flow and in compliance with all other permit requirements.

3) The Discharger shall collect grab samples of effluent during periods of day-time maximum peak effluent flows (or peak flows through secondary treatment units for facilities that recycle effluent flows).

4) Effluent sampling for conventional pollutants shall occur on at least one day of any multiple-day bioassay test the MRP requires. During the course of the test, on at least one day, the Discharger shall collect and retain samples of the discharge. In the event a bioassay test does not comply with permit limits, the Discharger shall analyze these retained samples for pollutants that could be toxic to aquatic life and for which it has effluent limits.

   i. The Discharger shall perform bioassay tests on final effluent samples; when chlorine is used for disinfection, bioassay tests shall be performed on effluent after chlorination-dechlorination; and

   ii. The Discharger shall analyze for total ammonia nitrogen and calculate the amount of un-ionized ammonia whenever test results fail to meet the percent survival specified in the permit.

b. Conditions Triggering Accelerated Monitoring

1) If the results from two consecutive samples of a constituent monitored in a 30-day period exceed the monthly average limit for any parameter (or if the required sampling frequency is once per month and the monthly sample exceeds the monthly average limit), the Discharger shall, within 24 hours after the results are received, increase its sampling frequency to daily until the results from the additional sampling show that the parameter is in compliance with the monthly average limit.

2) If any maximum daily limit is exceeded, the Discharger shall increase its sampling frequency to daily within 24 hours after the results are received that indicate the exceedance of the maximum daily limit until two samples collected on consecutive days show compliance with the maximum daily limit.

3) If final or intermediate results of an acute bioassay test indicate a violation or threatened violation (e.g., the percentage of surviving test organisms of any single acute bioassay test is less than 70 percent), the Discharger shall initiate a new test as soon as practical, and the Discharger shall investigate the cause of the mortalities and report its findings in the next self monitoring report (SMR).

4) The Discharger shall calibrate chlorine residual analyzers against grab samples as frequently as necessary to maintain accurate control and reliable operation. If an effluent violation is detected, the Discharger shall collect grab samples at least every 30 minutes until compliance with the limit is achieved, unless the Discharger monitors chlorine residual continuously. In such cases, the Discharger shall continue to conduct continuous monitoring as required by its permit.

5) When a bypass occurs (except one subject to provision III.A.3.b.6 below), the Discharger shall monitor flows and collect samples on a daily basis for all constituents at affected discharge points that have effluent limits for the duration of

the bypass (including acute toxicity using static renewals), except chronic toxicity, unless otherwise stipulated by the MRP.

6) Unless otherwise stipulated by the MRP, when a bypass approved pursuant to Attachment D, Standard Provisions, Sections I.G.2 or I.G.4, occurs, the Discharger shall monitor flows and, using appropriate procedures as specified in the MRP, collect and retain samples for affected discharge points on a daily basis for the duration of the bypass. The Discharger shall analyze for total suspended solids (TSS) using 24-hour composites (or more frequent increments) and for bacteria indicators with effluent limits using grab samples. If TSS exceeds 45 mg/L in any composite sample, the Discharger shall also analyze the retained samples for that discharge for all other constituents that have effluent limits, except oil and grease, mercury, dioxin-TEQ, and acute and chronic toxicity. Additionally, at least once each year, the Discharger shall analyze the retained samples for one approved bypass discharge event for all other constituents that have effluent limits, except oil and grease, mercury, dioxin-TEQ, and acute and chronic toxicity. This monitoring shall be in addition to the minimum monitoring specified in the MRP.

c. Storm Water Monitoring

The requirements of this section only apply to facilities that are not covered by an NPDES permit for storm water discharges and where not all site storm drainage from process areas (i.e., areas of the treatment facility where chemicals or wastewater could come in contact with storm water) is directed to the headworks. For storm water not directed to the headworks during the wet season (October 1 to April 30), the Discharger shall:

1) Conduct visual observations of the storm water discharge locations during daylight hours at least once per month during a storm event that produces significant storm water discharge to observe the presence of floating and suspended materials, oil and grease, discoloration, turbidity, and odor, etc.

2) Measure (or estimate) the total volume of storm water discharge, collect grab samples of storm water discharge from at least two storm events that produce significant storm water discharge, and analyze the samples for oil and grease, pH, TSS, and specific conductance.

   The grab samples shall be taken during the first 30 minutes of the discharge. If collection of the grab samples during the first 30 minutes is impracticable, grab samples may be taken during the first hour of the discharge, and the Discharger shall explain in the Annual Report why the grab sample(s) could not be taken in the first 30 minutes.

3) Testing for the presence of non-storm water discharges shall be conducted no less than twice during the dry season (May 1 to September 30) at all storm water discharge locations. Tests may include visual observations of flows, stains, sludges, odors, and other abnormal conditions; dye tests; TV line surveys; or analysis and validation of accurate piping schematics. Records shall be maintained describing the method used, date of testing, locations observed, and test results.

4) Samples shall be collected from all locations where storm water is discharged. Samples shall represent the quality and quantity of storm water discharged from the facility. If a facility discharges storm water at multiple locations, the Discharger may sample a reduced number of locations if it establishes and documents through the monitoring program that storm water discharges from different locations are substantially identical.

5) Records of all storm water monitoring information and copies of all reports required by the permit shall be retained for a period of at least three years from the date of sample, observation, or report.

d. Receiving Water Monitoring

The requirements of this section only apply when the MRP requires receiving water sampling.

1) Receiving water samples shall be collected on days coincident with effluent sampling for conventional pollutants.

2) Receiving water samples shall be collected at each station on each sampling day during the period within one hour following low slack water. Where sampling during lower slack water is impractical, sampling shall be performed during higher slack water. Samples shall be collected within the discharge plume and down current of the discharge point so as to be representative, unless otherwise stipulated in the MRP.

3) Samples shall be collected within one foot of the surface of the receiving water, unless otherwise stipulated in the MRP.

B. Biosolids Monitoring – This section supplements III.B of Standard Provisions (Attachment D)

When biosolids are sent to a landfill, sent to a surface disposal site, or applied to land as a soil amendment, they must be monitored as follows:

1. Biosolids Monitoring Frequency

Biosolids disposal must be monitored at the following frequency:

Metric tons biosolids/365 days	**Frequency**
0-290	Once per year
290-1500	Quarterly
1500-15,000	Six times per year
Over 15,000	Once per month

(Metric tons are on a dry weight basis)

2. Biosolids Pollutants to Monitor

Biosolids shall be monitored for the following constituents:

Land Application: arsenic, cadmium, copper, mercury, molybdenum, nickel, lead, selenium, and zinc

Municipal Landfill: Paint filter test (pursuant to 40 CFR 258)

Biosolids-only Landfill or Surface Disposal Site (if no liner and leachate system): arsenic, chromium, and nickel

C. Standard Observations – This section is an addition to III of Standard Provisions (Attachment D)

1. Receiving Water Observations

The requirements of this section only apply when the MRP requires standard observations of the receiving water. Standard observations shall include the following:

a. *Floating and suspended materials* (e.g., oil, grease, algae, and other macroscopic particulate matter): presence or absence, source, and size of affected area.

b. *Discoloration and turbidity*: description of color, source, and size of affected area.

c. *Odor*: presence or absence, characterization, source, distance of travel, and wind direction.

d. *Beneficial water use*: presence of water-associated waterfowl or wildlife, fisherpeople, and other recreational activities in the vicinity of each sampling station.

e. *Hydrographic condition*: time and height of corrected high and low tides (corrected to nearest National Oceanic and Atmospheric Administration location for the sampling date and time of sample collection).

f. *Weather conditions*:

1) Air temperature; and

2) Total precipitation during the five days prior to observation.

2. Wastewater Effluent Observations

The requirements of this section only apply when the MRP requires wastewater effluent standard observations. Standard observations shall include the following:

a. *Floating and suspended material of wastewater origin* (e.g., oil, grease, algae, and other macroscopic particulate matter): presence or absence.

b. *Odor*: presence or absence, characterization, source, distance of travel, and wind direction.

3. Beach and Shoreline Observations

The requirements of this section only apply when the MRP requires beach and shoreline standard observations. Standard observations shall include the following:

a. *Material of wastewater origin*: presence or absence, description of material, estimated size of affected area, and source.

b. *Beneficial use*: estimate number of people participating in recreational water contact, non-water contact, or fishing activities.

4. Land Retention or Disposal Area Observations

The requirements of this section only apply to facilities with on-site surface impoundments or disposal areas that are in use. This section applies to both liquid and solid wastes, whether confined or unconfined. The Discharger shall conduct the following for each impoundment:

a. Determine the amount of freeboard at the lowest point of dikes confining liquid wastes.

b. Report evidence of leaching liquid from area of confinement and estimated size of affected area. Show affected area on a sketch and volume of flow (e.g., gallons per minute [gpm]).

c. Regarding odor, describe presence or absence, characterization, source, distance of travel, and wind direction.

d. Estimate number of waterfowl and other water-associated birds in the disposal area and vicinity.

5. Periphery of Waste Treatment and/or Disposal Facilities Observations

The requirements of this section only apply when the MRP specifies periphery standard observations. Standard observations shall include the following:

a. *Odor*: presence or absence, characterization, source, and distance of travel.

b. *Weather conditions*: wind direction and estimated velocity.

IV. STANDARD PROVISIONS – RECORDS

A. Records to be Maintained – This supplements IV.A of Standard Provisions (Attachment D)

The Discharger shall maintain records in a manner and at a location (e.g., wastewater treatment plant or Discharger offices) such that the records are accessible to Regional Water Board staff. The minimum period of retention specified in Section IV, Records, of the Federal Standard Provisions shall be extended during the course of any unresolved litigation regarding the subject discharge, or when requested by the Regional Water Board or Regional Administrator of USEPA, Region IX.

A copy of the permit shall be maintained at the discharge facility and be available at all times to operating personnel.

B. Records of monitoring information shall include – This supplements IV.B of Standard Provision (Attachment D)

1. Analytical Information

Records shall include analytical method detection limits, minimum levels, reporting levels, and related quantification parameters.

2. Flow Monitoring Data

For all required flow monitoring (e.g., influent and effluent flows), the additional records shall include the following, unless otherwise stipulated by the MRP:

a. Total volume for each day; and

b. Maximum, minimum, and average daily flows for each calendar month.

3. Wastewater Treatment Process Solids

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

1) Total volume or mass of solids removed from each collection unit (e.g., grit, skimmings, undigested biosolids, or combination) for each calendar month or other time period as appropriate, but not to exceed annually; and

2) Final disposition of such solids (e.g., landfill, other subsequent treatment unit).

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

1) Total volume or mass of dewatered biosolids for each calendar month;

2) Solids content of the dewatered biosolids; and

3) Final disposition of dewatered biosolids (disposal location and disposal method).

4. Disinfection Process

For the disinfection process, these additional records shall be maintained documenting process operation and performance:

a. For bacteriological analyses:

1) Wastewater flow rate at the time of sample collection; and

2) Required statistical parameters for cumulative bacterial values (e.g., moving median or geometric mean for the number of samples or sampling period identified in this Order).

b. For the chlorination process, when chlorine is used for disinfection, at least daily average values for the following:

1) Chlorine residual of treated wastewater as it enters the contact basin (mg/L);

2) Chlorine dosage (kg/day); and

3) Dechlorination chemical dosage (kg/day).

5. Treatment Process Bypasses

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

a. Identification of the treatment process bypassed;

b. Dates and times of bypass beginning and end;

c. Total bypass duration;

d. Estimated total bypass volume; and

e. Description of, or reference to other reports describing, the bypass event, the cause, the corrective actions taken (except for wet weather blending that is in compliance with permit conditions), and any additional monitoring conducted.

6. Treatment Facility Overflows

This section applies to records for overflows at the treatment facility. This includes the headworks and all units and appurtenances downstream. The Discharger shall retain a chronological log of overflows at the treatment facility and records supporting the information provided in section V.E.2.

C. Claims of Confidentiality – Not Supplemented

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information – Not Supplemented

B. Signatory and Certification Requirements – Not Supplemented

C. Monitoring Reports – This section supplements V.C of Standard Provisions (Attachment D)

1. Self Monitoring Reports

For each reporting period established in the MRP, the Discharger shall submit an SMR to the Regional Water Board in accordance with the requirements listed in this document and at the frequency the MRP specifies. The purpose of the SMR is to document treatment performance, effluent quality, and compliance with the waste discharge requirements of this Order.

a. Transmittal letter

Each SMR shall be submitted with a transmittal letter. This letter shall include the following:

1) Identification of all violations of effluent limits or other waste discharge requirements found during the reporting period;

2) Details regarding violations: parameters, magnitude, test results, frequency, and dates;

3) Causes of violations;

4) Discussion of corrective actions taken or planned to resolve violations and prevent recurrences, and dates or time schedule of action implementation (if previous reports have been submitted that address corrective actions, reference to the earlier reports is satisfactory);

5) Data invalidation (Data should not be submitted in an SMR if it does not meet quality assurance/quality control standards. However, if the Discharger wishes to invalidate any measurement after it was submitted in an SMR, a letter shall identify the measurement suspected to be invalid and state the Discharger's intent to submit, within 60 days, a formal request to invalidate the measurement. This request shall include the original measurement in question, the reason for invalidating the measurement, all relevant documentation that supports invalidation [e.g., laboratory sheet, log entry, test results, etc.], and discussion of the corrective actions taken or planned [with a time schedule for completion] to prevent recurrence of the sampling or measurement problem.);

6) If the Discharger blends, the letter shall describe the duration of blending events and certify whether blended effluent was in compliance with the conditions for blending; and

7) Signature (The transmittal letter shall be signed according to Section V.B of this Order, Attachment D – Standard Provisions.).

b. Compliance evaluation summary

Each report shall include a compliance evaluation summary. This summary shall include each parameter for which the permit specifies effluent limits, the number of samples taken during the monitoring period, and the number of samples that exceed applicable effluent limits.

c. Results of analyses and observations

1) Tabulations of all required analyses and observations, including parameter, date, time, sample station, type of sample, test result, method detection limit, method minimum level, and method reporting level, if applicable, signed by the laboratory director or other responsible official.

2) When determining compliance with an average monthly effluent limitation and more than one sample result is available in a month, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of detected but not quantified (DNQ) or nondetect (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

   i. The data set shall be ranked from low to high, reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

   ii. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

   If a sample result, or the arithmetic mean or median of multiple sample results, is below the reporting limit, and there is evidence that the priority pollutant is present in the effluent above an effluent limitation and the Discharger conducts a Pollutant Minimization Program, the Discharger shall not be deemed out of compliance.

3) Dioxin-TEQ Reporting: The Discharger shall report for each dioxin and furan congener the analytical results of effluent monitoring, including the quantifiable limit (reporting level), the method detection limit, and the measured concentration. The Discharger shall report all measured values of individual congeners, including data qualifiers. When calculating dioxin-TEQ, the Discharger shall set congener concentrations below the minimum levels (ML) to zero. The Discharger shall calculate and report dioxin-TEQs using the following formula, where the MLs, toxicity equivalency factors (TEFs), and bioaccumulation equivalency factors (BEFs) are as provided in Table A:

$$\text{Dioxin-TEQ} = \Sigma\,(C_x \times TEF_x \times BEF_x)$$

where: C_x = measured or estimated concentration of congener *x*
TEF_x = toxicity equivalency factor for congener x
BEFx = bioaccumulation equivalency factor for congener *x*

Table A

Minimum Levels, Toxicity Equivalency Factors,
and Bioaccumulation Equivalency Factors

Dioxin or Furan Congener	Minimum Level (pg/L)	1998 Toxicity Equivalency Factor (TEF)	Bioaccumulation Equivalency Factor (BEF)
2,3,7,8-TCDD	10	1.0	1.0
1,2,3,7,8-PeCDD	50	1.0	0.9
1,2,3,4,7,8-HxCDD	50	0.1	0.3
1,2,3,6,7,8-HxCDD	50	0.1	0.1
1,2,3,7,8,9-HxCDD	50	0.1	0.1
1,2,3,4,6,7,8-HpCDD	50	0.01	0.05
OCDD	100	0.0001	0.01
2,3,7,8-TCDF	10	0.1	0.8
1,2,3,7,8-PeCDF	50	0.05	0.2
2,3,4,7,8-PeCDF	50	0.5	1.6
1,2,3,4,7,8-HxCDF	50	0.1	0.08
1,2,3,6,7,8-HxCDF	50	0.1	0.2
1,2,3,7,8,9-HxCDF	50	0.1	0.6
2,3,4,6,7,8-HxCDF	50	0.1	0.7
1,2,3,4,6,7,8-HpCDF	50	0.01	0.01
1,2,3,4,7,8,9-HpCDF	50	0.01	0.4
OCDF	100	0.0001	0.02

d. Data reporting for results not yet available

The Discharger shall make all reasonable efforts to obtain analytical data for required parameter sampling in a timely manner. Certain analyses require additional time to complete analytical processes and report results. For cases where required monitoring parameters require additional time to complete analytical processes and reports, and results are not available in time to be included in the SMR for the subject monitoring period, the Discharger shall describe such circumstances in the SMR and include the data for these parameters and relevant discussions of any observed exceedances in the next SMR due after the results are available.

e. Flow data

The Discharger shall provide flow data tabulation pursuant to Section IV.B.2.

f. Annual self monitoring report requirements

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

1) Annual compliance summary table of treatment plant performance, including documentation of any blending events;

2) Comprehensive discussion of treatment plant performance and compliance with the permit (This discussion shall include any corrective actions taken or planned, such as changes to facility equipment or operation practices that may be needed to achieve compliance, and any other actions taken or planned that are intended to improve performance and reliability of the Discharger's wastewater collection, treatment, or disposal practices.);

3) Both tabular and graphical summaries of the monitoring data for the previous year if parameters are monitored at a frequency of monthly or greater;

4) List of approved analyses, including the following:

   (i) List of analyses for which the Discharger is certified;

   (ii) List of analyses performed for the Discharger by a separate certified laboratory (copies of reports signed by the laboratory director of that laboratory shall not be submitted but be retained onsite); and

   (iii) List of "waived" analyses, as approved;

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

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

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

g. Report submittal

The Discharger shall submit SMRs to:

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

h. Reporting data in electronic format

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

1) *Reporting Method*: The Discharger shall submit SMRs electronically via a process approved by the Executive Officer (see, for example, the letter dated December 17, 1999, "Official Implementation of Electronic Reporting System [ERS]" and the progress report letter dated December 17, 2000).

2) *Monthly or Quarterly Reporting Requirements*: For each reporting period (monthly or quarterly as specified in the MRP), the Discharger shall submit an electronic SMR to the Regional Water Board in accordance with the provisions of Section V.C.1.a-e, except for requirements under Section V.C.1.c(1) where ERS does not have fields for dischargers to input certain information (e.g., sample time). However, until USEPA approves the electronic signature or other signature technologies, Dischargers that use ERS shall submit a hard copy of the original transmittal letter, an ERS printout of the data sheet, and a violation report (a receipt of the electronic transmittal shall be retained by the Discharger). This electronic SMR submittal suffices for the signed tabulations specified under Section V.C.1.c(1).

3) *Annual Reporting Requirements*: Dischargers who have submitted data using the ERS for at least one calendar year are exempt from submitting the portion of the annual report required under Section V.C.1.f(1) and (3).

D. Compliance Schedules – Not supplemented

E. Twenty-Four Hour Reporting – This section supplements V.E of Standard Provision (Attachment D)

1. Spill of Oil or Other Hazardous Material Reports

a. Within 24 hours of becoming aware of a spill of oil or other hazardous material that is not contained onsite and completely cleaned up, the Discharger shall report by telephone to the Regional Water Board at (510) 622-2369.

b. The Discharger shall also report such spills to the State Office of Emergency Services [telephone (800) 852-7550] only when the spills are in accordance with applicable reporting quantities for hazardous materials.

c. The Discharger shall submit a written report to the Regional Water Board within five working days following telephone notification unless directed otherwise by Regional Water Board staff. A report submitted electronically is acceptable. The written report shall include the following:

1) Date and time of spill, and duration if known;

2) Location of spill (street address or description of location);

3) Nature of material spilled;

4) Quantity of material involved;

5) Receiving water body affected, if any;

6) Cause of spill;

7) Estimated size of affected area;

8) Observed impacts to receiving waters (e.g., oil sheen, fish kill, water discoloration);

9) Corrective actions taken to contain, minimize, or clean up the spill;

10) Future corrective actions planned to be taken to prevent recurrence, and schedule of implementation; and

11) Persons or agencies notified.

2. Unauthorized Discharges from Municipal Wastewater Treatment Plants[1]

The following requirements apply to municipal wastewater treatment plants that experience an unauthorized discharge at their treatment facilities and are consistent with and supercede requirements imposed on the Discharger by the Executive Officer by letter of May 1, 2008, issued pursuant to California Water Code Section 13383.

a. Two (2)-Hour Notification

For any unauthorized discharges that result in a discharge to a drainage channel or a surface water, the Discharger shall, as soon as possible, but not later than two (2) hours after becoming aware of the discharge, notify the State Office of Emergency Services (telephone 800-852-7550), the local health officers or directors of environmental health with jurisdiction over the affected water bodies, and the Regional Water Board. The notification to the Regional Water Board shall be via the Regional Water Board's online reporting system at www.wbers.net, and shall include the following:

1) Incident description and cause;

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

3) Date and time the unauthorized discharge started;

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

[1] California Code of Regulations, Title 23, Section 2250(b), defines an unauthorized discharge to be a discharge, not regulated by waste discharge requirements, of treated, partially treated, or untreated wastewater resulting from the intentional or unintentional diversion of wastewater from a collection, treatment or disposal system.

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

6) Identity of the person reporting the unauthorized discharge.

b. 24-hour Certification

Within 24 hours, the Discharger shall certify to the Regional Water Board, at www.wbers.net, that the State Office of Emergency Services and the local health officers or directors of environmental health with jurisdiction over the affected water bodies have been notified of the unauthorized discharge.

c. 5-Day Written Report

Within five business days, the Discharger shall submit a written report, via the Regional Water Board's online reporting system at www.wbers.net, that includes, in addition to the information required above, the following:

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

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

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

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

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

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

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

d. Communication Protocol

To clarify the multiple levels of notification, certification, and reporting, the current communication requirements for unauthorized discharges from municipal wastewater treatment plants are summarized in Table B that follows.

Table B

Summary of Communication Requirements for Unauthorized Discharges[1] from Municipal Wastewater Treatment Plants

Discharger is required to:	Agency Receiving Information	Time frame	Method for Contact
1. Notify	California Emergency Management Agency (Cal EMA)	As soon as possible, but not later than **2 hours** after becoming aware of the unauthorized discharge.	Telephone – (800) 852-7550 (obtain a control number from Cal EMA)
	Local health department	As soon as possible, but not later than **2 hours** after becoming aware of the unauthorized discharge.	Depends on local health department
	Regional Water Board	As soon as possible, but not later than **2 hours** after becoming aware of the unauthorized discharge.	Electronic[2] www.wbers.net
2. Certify	Regional Water Board	As soon as possible, but not later than **24 hours** after becoming aware of the unauthorized discharge.	Electronic[3] www.wbers.net
3. Report	Regional Water Board	Within **5 business days** of becoming aware of the unauthorized discharge.	Electronic[4] www.wbers.net

1 California Code of Regulations, Title 23, Section 2250(b), defines an unauthorized discharge to be a discharge, not regulated by waste discharge requirements, of treated, partially treated, or untreated wastewater resulting from the intentional or unintentional diversion of wastewater from a collection, treatment or disposal system.

2 In the event that the Discharger is unable to provide online notification within 2 hours of becoming aware of an unauthorized discharge, it shall phone the Regional Water Board's spill hotline at (510) 622-2369 and convey the same information contained in the notification form. In addition, within 3 business days of becoming aware of the unauthorized discharge, the Discharger shall enter the notification information into the Regional Water Board's online system in electronic format.

3 In most instances, the 2-hour notification will also satisfy 24-hour certification requirements. This is because the notification form includes fields for documenting that OES and the local health department have been contacted. In other words, if the Discharger is able to complete all the fields in the notification form within 2 hours, certification requirements are also satisfied. In the event that the Discharger is unable to provide online certification within 24 hours of becoming aware of an unauthorized discharge, it shall phone the Regional Water Board's spill hotline at (510) 622-2369 and convey the same information contained in the certification form. In addition, within 3 business days of becoming aware of the unauthorized discharge, the Discharger shall enter the certification information into the Regional Water Board's online system in electronic format.

4 If the Discharger cannot satisfy the 5-day reporting requirements via the Regional Water Board's online reporting system, it shall submit a written report (preferably electronically in pdf) to the appropriate Regional Water Board case manager. In cases where the Discharger cannot satisfy the 5-day reporting requirements via the online reporting system, it must still complete the Regional Water Board's online reporting requirements within 15 calendar days of becoming aware of the unauthorized discharge.

F. Planned Changes – Not supplemented

G. Anticipated Noncompliance – Not supplemented

H. Other Noncompliance – Not supplemented

I. Other Information – Not supplemented

VI. STANDARD PROVISIONS – ENFORCEMENT – Not Supplemented

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS – Not Supplemented

VIII. DEFINITIONS – This section is an addition to Standard Provisions (Attachment D)

More definitions can be found in Attachment A of this NPDES Permit.

1. Arithmetic Calculations

   a. Geometric mean is the antilog of the log mean or the back-transformed mean of the logarithmically transformed variables, which is equivalent to the multiplication of the antilogarithms. The geometric mean can be calculated with either of the following equations:

   $$\text{Geometric Mean} = Anti\log\left(\frac{1}{N}\sum_{i=1}^{N} Log(C_i)\right)$$

   or

   $$\text{Geometric Mean} = (C_1 * C_2 * \ldots * C_N)^{1/N}$$

   Where "N" is the number of data points for the period analyzed and "C" is the concentration for each of the "N" data points.

   b. Mass emission rate is obtained from the following calculation for any calendar day:

   $$\text{Mass emission rate (lb/day)} = \frac{8.345}{N}\sum_{i=1}^{N} Q_i C_i$$

   $$\text{Mass emission rate (kg/day)} = \frac{3.785}{N}\sum_{i=1}^{N} Q_i C_i$$

   In which "N" is the number of samples analyzed in any calendar day and "Q_i" and "C_i" are the flow rate (MGD) and the constituent concentration (mg/L) associated with each of the "N" grab samples that may be taken in any calendar day. If a composite sample is taken, "C_i" is the concentration measured in the composite sample and "Q_i" is the average flow rate occurring during the period over which the samples are composited. The daily concentration of a constituent measured over any calendar day shall be determined from the flow-weighted average of the same constituent in the combined waste streams as follows:

C_d = Average daily concentration = $\frac{1}{Q_t}\sum_{i=1}^{N} Q_i C_i$

In which "N" is the number of component waste streams and "Q" and "C" are the flow rate (MGD) and the constituent concentration (mg/L) associated with each of the "N" waste streams. "Q_t" is the total flow rate of the combined waste streams.

c. Maximum allowable mass emission rate, whether for a 24-hour, weekly 7-day, monthly 30-day, or 6-month period, is a limitation expressed as a daily rate determined with the formulas in the paragraph above, using the effluent concentration limit specified in the permit for the period and the specified allowable flow.

d. POTW removal efficiency is the ratio of pollutants removed by the treatment facilities to pollutants entering the treatment facilities (expressed as a percentage). The Discharger shall determine removal efficiencies using monthly averages (by calendar month unless otherwise specified) of pollutant concentration of influent and effluent samples collected at about the same time and using the following equation (or its equivalent):

Removal Efficiency (%) = 100 × [1-(Effluent Concentration/Influent Concentration)]

2. Biosolids means the solids, semi-liquid suspensions of solids, residues, screenings, grit, scum, and precipitates separated from or created in wastewater by the unit processes of a treatment system. It also includes, but is not limited to, all supernatant, filtrate, centrate, decantate, and thickener overflow and underflow in the solids handling parts of the wastewater treatment system.

3. Blending is the practice of recombining wastewater that has been biologically treated with wastewater that has bypassed around biological treatment units.

4. Bottom sediment sample is (1) a separate grab sample taken at each sampling station for the determination of selected physical-chemical parameters, or (2) four grab samples collected from different locations in the immediate vicinity of a sampling station while the boat is anchored and analyzed separately for macroinvertebrates.

5. Composite sample is a sample composed of individual grab samples collected manually or by an automatic sampling device on the basis of time or flow as specified in the MRP. For flow-based composites, the proportion of each grab sample included in the composite sample shall be within plus or minus five percent (+/-5%) of the representative flow rate of the waste stream being measured at the time of grab sample collection. Alternatively, equal volume grab samples may be individually analyzed with the flow-weighted average calculated by averaging flow-weighted ratios of each grab sample analytical result. Grab samples comprising time-based composite samples shall be collected at intervals not greater than those specified in the MRP. The quantity of each grab sample comprising a time-based composite sample shall be a set of flow proportional volumes as specified in the MRP. If a particular time-based or flow-based composite sampling protocol is not specified in the MRP, the Discharger shall determine and implement the most representative sampling protocol for the given parameter subject to Executive Officer approval.

6. Depth-integrated sample is defined as a water or waste sample collected by allowing a sampling device to fill during a vertical traverse in the waste or receiving water body being sampled. The

Discharger shall collect depth-integrated samples in such a manner that the collected sample will be representative of the waste or water body at that sampling point.

7. Flow sample is an accurate measurement of the average daily flow volume using a properly calibrated and maintained flow measuring device.

8. Grab sample is an individual sample collected in a short period of time not exceeding 15 minutes. Grab samples represent only the condition that exists at the time the wastewater is collected.

9. Initial dilution is the process that results in the rapid and irreversible turbulent mixing of wastewater with receiving water around the point of discharge.

10. Overflow is the intentional or unintentional spilling or forcing out of untreated or partially treated wastes from a transport system (e.g., through manholes, at pump stations, and at collection points) upstream from the treatment plant headworks or from any part of a treatment plant facility.

11. Priority pollutants are those constituents referred to in 40 CFR Part 122 as promulgated in the Federal Register, Vol. 65, No. 97, Thursday, May 18, 2000, also known as the California Toxics Rule, the presence or discharge of which could reasonably be expected to interfere with maintaining designated uses.

12. Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage. It excludes infiltration and runoff from agricultural land.

13. Toxic pollutant means any pollutant listed as toxic under federal Clean Water Act section 307(a)(1) or under 40 CFR 401.15.

14. Untreated waste is raw wastewater.

15. Waste, waste discharge, discharge of waste, and discharge are used interchangeably in the permit. The requirements of the permit apply to the entire volume of water, and the material therein, that is disposed of to surface and ground waters of the State of California.

Table C

List of Monitoring Parameters and Analytical Methods

CTR No.	Pollutant/Parameter	Analytical Method[1]	Minimum Levels[2] (µg/l)											
			GC	**GCMS**	**LC**	**Color**	**FAA**	**GFAA**	**ICP**	**ICP MS**	**SPGFAA**	**HYD RIDE**	**CVAA**	**DCP**
1.	Antimony	204.2					10	5	50	0.5	5	0.5		1000
2.	Arsenic	206.3				20		2	10	2	2	1		1000
3.	Beryllium						20	0.5	2	0.5	1			1000
4.	Cadmium	200 or 213				10	0.5	10	0.25	0.5				1000
5a.	Chromium (III)	SM 3500												
5b.	Chromium (VI)	SM 3500				10	5							1000
6.	Copper	200.9					25	5	10	0.5	2			1000
7.	Lead	200.9					20	5	5	0.5	2			10,000
8.	Mercury	1631 (note)[3]												
9.	Nickel	249.2					50	5	20	1	5			1000
10.	Selenium	200.8 or SM 3114B or C						5	10	2	5	1		1000
11.	Silver	272.2					10	1	10	0.25	2			1000
12.	Thallium	279.2					10	2	10	1	5			1000
13.	Zinc	200 or 289					20		20	1	10			
14.	Cyanide	SM 4500 CN^- C or I				5								
15.	Asbestos (only required for dischargers to MUN waters)[4]	0100.2 [5]												
16.	2,3,7,8-TCDD and 17 congeners (Dioxin)	1613												
17.	Acrolein	603	2.0	5										
18.	Acrylonitrile	603	2.0	2										
19.	Benzene	602	0.5	2										
33.	Ethylbenzene	602	0.5	2										
39.	Toluene	602	0.5	2										

1 The suggested method is the USEPA Method unless otherwise specified (SM = Standard Methods). The Discharger may use another USEPA-approved or recognized method if that method has a level of quantification below the applicable water quality objective. Where no method is suggested, the Discharger has the discretion to use any standard method.

2 Minimum levels are from the *State Implementation Policy*. They are the concentration of the lowest calibration standard for that technique based on a survey of contract laboratories. Laboratory techniques are defined as follows: GC = Gas Chromatography; GCMS = Gas Chromatography/Mass Spectrometry; LC = High Pressure Liquid Chromatography; Color = Colorimetric; FAA = Flame Atomic Absorption; GFAA = Graphite Furnace Atomic Absorption; ICP = Inductively Coupled Plasma; ICPMS = Inductively Coupled Plasma/Mass Spectrometry; SPGFAA = Stabilized Platform Graphite Furnace Atomic Absorption (i.e., USEPA 200.9); Hydride = Gaseous Hydride Atomic Absorption; CVAA = Cold Vapor Atomic Absorption; DCP = Direct Current Plasma.

3 The Discharger shall use ultra-clean sampling (USEPA Method 1669) and ultra-clean analytical methods (USEPA Method 1631) for mercury monitoring. The minimum level for mercury is 2 ng/l (or 0.002 ug/l).

4 MUN = Municipal and Domestic Supply. This designation, if applicable, is in the Findings of the permit.

5 *Determination of Asbestos Structures over 10 [micrometers] in Length in Drinking Water Using MCE Filters*, USEPA 600/R-94-134, June 1994.

CTR No.	Pollutant/Parameter	Analytical Method[1]	Minimum Levels[2] (µg/l)											
			GC	GCMS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
20.	Bromoform	601	0.5	2										
21.	Carbon Tetrachloride	601	0.5	2										
22.	Chlorobenzene	601	0.5	2										
23.	Chlorodibromomethane	601	0.5	2										
24.	Chloroethane	601	0.5	2										
25.	2-Chloroethylvinyl Ether	601	1	1										
26.	Chloroform	601	0.5	2										
75.	1,2-Dichlorobenzene	601	0.5	2										
76.	1,3-Dichlorobenzene	601	0.5	2										
77.	1,4-Dichlorobenzene	601	0.5	2										
27.	Dichlorobromomethane	601	0.5	2										
28.	1,1-Dichloroethane	601	0.5	1										
29.	1,2-Dichloroethane	601	0.5	2										
30.	1,1-Dichloroethylene or 1,1-Dichloroethene	601	0.5	2										
31.	1,2-Dichloropropane	601	0.5	1										
32.	1,3-Dichloropropylene or 1,3-Dichloropropene	601	0.5	2										
34.	Methyl Bromide or Bromomethane	601	1.0	2										
35.	Methyl Chloride or Chloromethane	601	0.5	2										
36.	Methylene Chloride or Dichlorormethane	601	0.5	2										
37.	1,1,2,2-Tetrachloroethane	601	0.5	1										
38.	Tetrachloroethylene	601	0.5	2										
40.	1,2-Trans-Dichloroethylene	601	0.5	1										
41.	1,1,1-Trichloroethane	601	0.5	2										
42.	1,1,2-Trichloroethane	601	0.5	2										
43.	Trichloroethene	601	0.5	2										
44.	Vinyl Chloride	601	0.5	2										
45.	2-Chlorophenol	604	2	5										
46.	2,4-Dichlorophenol	604	1	5										
47.	2,4-Dimethylphenol	604	1	2										
48.	2-Methyl-4,6-Dinitrophenol or Dinitro-2-methylphenol	604	10	5										
49.	2,4-Dinitrophenol	604	5	5										
50.	2-Nitrophenol	604		10										
51.	4-Nitrophenol	604	5	10										
52.	3-Methyl-4-Chlorophenol	604	5	1										
53.	Pentachlorophenol	604	1	5										
54.	Phenol	604	1	1		50								
55.	2,4,6-Trichlorophenol	604	10	10										
56.	Acenaphthene	610 HPLC	1	1	0.5									
57.	Acenaphthylene	610 HPLC		10	0.2									
58.	Anthracene	610 HPLC		10	2									
60.	Benzo(a)Anthracene or 1,2 Benzanthracene	610 HPLC	10	5										
61.	Benzo(a)Pyrene	610 HPLC		10	2									
62.	Benzo(b)Fluoranthene or 3,4 Benzofluoranthene	610 HPLC		10	10									
63.	Benzo(ghi)Perylene	610 HPLC		5	0.1									

CTR No.	Pollutant/Parameter	Analytical Method[1]	Minimum Levels[2] (µg/l)											
			GC	GCMS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
64.	Benzo(k)Fluoranthene	610 HPLC		10	2									
74.	Dibenzo(a,h)Anthracene	610 HPLC		10	0.1									
86.	Fluoranthene	610 HPLC	10	1	0.05									
87.	Fluorene	610 HPLC		10	0.1									
92.	Indeno(1,2,3-cd) Pyrene	610 HPLC		10	0.05									
100.	Pyrene	610 HPLC		10	0.05									
68.	Bis(2-Ethylhexyl)Phthalate	606 or 625	10	5										
70.	Butylbenzyl Phthalate	606 or 625	10	10										
79.	Diethyl Phthalate	606 or 625	10	2										
80.	Dimethyl Phthalate	606 or 625	10	2										
81.	Di-n-Butyl Phthalate	606 or 625		10										
84.	Di-n-Octyl Phthalate	606 or 625		10										
59.	Benzidine	625		5										
65.	Bis(2-Chloroethoxy)Methane	625		5										
66.	Bis(2-Chloroethyl)Ether	625	10	1										
67.	Bis(2-Chloroisopropyl)Ether	625	10	2										
69.	4-Bromophenyl Phenyl Ether	625	10	5										
71.	2-Chloronaphthalene	625		10										
72.	4-Chlorophenyl Phenyl Ether	625		5										
73.	Chrysene	625		10	5									
78.	3,3'-Dichlorobenzidine	625		5										
82.	2,4-Dinitrotoluene	625	10	5										
83.	2,6-Dinitrotoluene	625		5										
85.	1,2-Diphenylhydrazine (note)[6]	625		1										
88.	Hexachlorobenzene	625	5	1										
89.	Hexachlorobutadiene	625	5	1										
90.	Hexachlorocyclopentadiene	625	5	5										
91.	Hexachloroethane	625	5	1										
93.	Isophorone	625	10	1										
94.	Naphthalene	625	10	1	0.2									
95.	Nitrobenzene	625	10	1										
96.	N-Nitrosodimethylamine	625	10	5										
97.	N-Nitrosodi-n-Propylamine	625	10	5										
98.	N-Nitrosodiphenylamine	625	10	1										
99.	Phenanthrene	625		5	0.05									
101.	1,2,4-Trichlorobenzene	625	1	5										
102.	Aldrin	608	0.005											
103.	α-BHC	608	0.01											
104.	β-BHC	608	0.005											
105.	γ-BHC (Lindane)	608	0.02											
106.	δ-BHC	608	0.005											
107.	Chlordane	608	0.1											
108.	4,4'-DDT	608	0.01											
109.	4,4'-DDE	608	0.05											
110.	4,4'-DDD	608	0.05											

[6] Measurement for 1,2-Diphenylhydrazine may use azobenzene as a screen: if azobenzene is measured at >1 ug/l, then the Discharger shall analyze for 1,2-Diphenylhydrazine.

CTR No.	Pollutant/Parameter	Analytical Method[1]	Minimum Levels[2] (µg/l)											
			GC	GCMS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
111.	Dieldrin	608	0.01											
112.	Endosulfan (alpha)	608	0.02											
113.	Endosulfan (beta)	608	0.01											
114.	Endosulfan Sulfate	608	0.05											
115.	Endrin	608	0.01											
116.	Endrin Aldehyde	608	0.01											
117.	Heptachlor	608	0.01											
118.	Heptachlor Epoxide	608	0.01											
119-125	PCBs: Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260	608	0.5											
126.	Toxaphene	608	0.5											

ATTACHMENT H – PRETREATMENT REQUIREMENTS

Pretreatment Program Provisions

1. The Discharger shall implement all pretreatment requirements contained in 40 CFR 403, as amended. The Discharger shall be subject to enforcement actions, penalties, and fines as provided in the Clean Water Act (33 USC 1351 et seq.), as amended. The Discharger shall implement and enforce its Approved Pretreatment Program or modified Pretreatment Program as directed by the Regional Water Board's Executive Officer or USEPA. USEPA and/or the State may initiate enforcement action against an industrial user for noncompliance with applicable standards and requirements as provided in the Clean Water Act.

2. The Discharger shall enforce the requirements promulgated under Sections 307(b), 307(c), 307(d) and 402(b) of the Clean Water Act. The Discharger shall cause industrial users subject to Federal Categorical Standards to achieve compliance no later than the date specified in those requirements or, in the case of a new industrial user, upon commencement of the discharge.

3. The Discharger shall perform the pretreatment functions as required in 40 CFR 403 and amendments or modifications thereto including, but not limited to:

   i) Implement the necessary legal authorities to fully implement the pretreatment regulations as provided in 40 CFR 403.8(f)(1);

   ii) Implement the programmatic functions as provided in 40 CFR 403.8(f)(2);

   iii) Publish an annual list of industrial users in significant noncompliance as provided per 40 CFR 403.8(f)(2)(vii);

   iv) Provide for the requisite funding and personnel to implement the pretreatment program as provided in 40 CFR 403.8(f)(3); and

   v) Enforce the national pretreatment standards for prohibited discharges and categorical standards as provided in 40 CFR 403.5 and 403.6, respectively.

4. The Discharger shall submit annually a report to USEPA Region 9, the State Water Board and the Regional Water Board describing its pretreatment program activities over the previous twelve months. In the event that the Discharger is not in compliance with any conditions or requirements of the Pretreatment Program, the Discharger shall also include the reasons for noncompliance and a plan and schedule for achieving compliance. The report shall contain, but is not limited to, the information specified in Appendix A entitled, "Requirements for Pretreatment Annual Reports," which is made a part of this Order. The annual report is due on the last day of February each year.

5. The Discharger shall submit semiannual pretreatment reports to USEPA Region 9, the State Water Board and the Regional Water Board describing the status of its significant industrial users (SIUs). The report shall contain, but is not limited to, the information specified in Appendix B entitled, "Requirements for Semiannual Pretreatment Reports," which is made part of this Order. The semiannual reports are due July 31st (for the period January through June) and January 31st (for the period July through December) of each year. The Executive Officer may exempt a Discharger from

the semiannual reporting requirements on a case by case basis subject to State Water Board and USEPA's comment and approval.

6. The Discharger may combine the annual pretreatment report with the semiannual pretreatment report (for the July through December reporting period). The combined report shall contain all of the information requested in Appendices A and B and will be due on January 31st of each year.

7. The Discharger shall conduct the monitoring of its treatment Plant's influent, effluent, and sludge as described in Appendix C entitled, "Requirements for Influent, Effluent and Sludge Monitoring," which is made part of this Order. The results of the sampling and analysis, along with a discussion of any trends, shall be submitted in the semiannual reports. A tabulation of the data shall be included in the annual pretreatment report. The Executive Officer may require more or less frequent monitoring on a case by case basis.

APPENDIX H-A

REQUIREMENTS FOR PRETREATMENT ANNUAL REPORTS

The Pretreatment Annual Report is due each year on the last day of February. [If the annual report is combined with the semiannual report (for the July through December period) the submittal deadline is January 31st of each year.] The purpose of the Annual Report is 1) to describe the status of the Publicly Owned Treatment Works (POTW) pretreatment program and 2) to report on the effectiveness of the program, as determined by comparing the results of the preceding year's program implementation. The report shall contain at a minimum, but is not limited to, the following information:

1) **Cover Sheet**

The cover sheet must contain the name(s) and National Pollutant Discharge Elimination Discharge System (NPDES) permit number(s) of those POTWs that are part of the Pretreatment Program. Additionally, the cover sheet must include: the name, address and telephone number of a pretreatment contact person; the period covered in the report; a statement of truthfulness; and the dated signature of a principal executive officer, ranking elected official, or other duly authorized employee who is responsible for overall operation of the POTW (40 CFR 403.12(j)).

2) **Introduction**

The Introduction shall include any pertinent background information related to the Discharger, the POTW and/or the industrial user base of the area. Also, this section shall include an update on the status of any Pretreatment Compliance Inspection (PCI) tasks, Pretreatment Performance Evaluation tasks, Pretreatment Compliance Audit (PCA) tasks, Cleanup and Abatement Order (CAO) tasks, or other pretreatment-related enforcement actions required by the Regional Water Board or USEPA. A more specific discussion shall be included in the section entitled, "Program Changes."

3) **Definitions**

This section shall contain a list of key terms and their definitions that the Discharger uses to describe or characterize elements of its pretreatment program.

4) **Discussion of Upset, Interference and Pass Through**

This section shall include a discussion of Upset, Interference or Pass Through incidents, if any, at the POTW(s) that the Discharger knows of or suspects were caused by industrial discharges. Each incident shall be described, at a minimum, consisting of the following information:

a) a description of what occurred;

b) a description of what was done to identify the source;

c) the name and address of the IU responsible

d) the reason(s) why the incident occurred;

e) a description of the corrective actions taken; and

f) an examination of the local and federal discharge limits and requirements for the purposes of determining whether any additional limits or changes to existing requirements may be necessary to prevent other Upset, Interference or Pass Through incidents.

5) **Influent, Effluent and Sludge Monitoring Results**

This section shall provide a summary of the analytical results from the "Influent, Effluent and Sludge Monitoring" as specified in Appendix C. The results should be reported in a summary matrix that lists monthly influent and effluent metal results for the reporting year.

A graphical representation of the influent and effluent metal monitoring data for the past five years shall also be provided with a discussion of any trends.

6) **Inspection and Sampling Program**

This section shall contain at a minimum, but is not limited to, the following information:

a) Inspections: the number of inspections performed for each type of IU; the criteria for determining the frequency of inspections; the inspection format procedures;

b) Sampling Events: the number of sampling events performed for each type of IU; the criteria for determining the frequency of sampling; the chain of custody procedures.

7) **Enforcement Procedures**

This section shall provide information as to when the approved Enforcement Response Plan (ERP) had been formally adopted or last revised. In addition, the date the finalized ERP was submitted to the Regional Water Board shall also be given.

8) **Federal Categories**

This section shall contain a list of all of the federal categories that apply to the Discharger. The specific category shall be listed including the subpart and 40 CFR section that applies. The maximum and average limits for the each category shall be provided. This list shall indicate the number of Categorical Industrial Users (CIUs) per category and the CIUs that are being regulated pursuant to the category. The information and data used to determine the limits for those CIUs for which a combined waste stream formula is applied shall also be provided.

9) **Local Standards**

This section shall include a table presenting the local limits.

10) **Updated List of Regulated SIUs**

This section shall contain a complete and updated list of the Discharger's Significant Industrial Users (SIUs), including their names, addresses, and a brief description of the individual SIU's type of business. The list shall include all deletions and additions keyed to the list as submitted in the previous annual report. All deletions shall be briefly explained.

11) **Compliance Activities**

a) **Inspection and Sampling Summary:** This section shall contain a summary of all the inspections and sampling activities conducted by the Discharger over the past year to gather information and data regarding the SIUs. The summary shall include:

(1) the number of inspections and sampling events conducted for each SIU;

(2) the quarters in which these activities were conducted; and

(3) the compliance status of each SIU, delineated by quarter, and characterized using all applicable descriptions as given below:

(a) in consistent compliance;

(b) in inconsistent compliance;

(c) in significant noncompliance;

(d) on a compliance schedule to achieve compliance, (include the date final compliance is required);

(e) not in compliance and not on a compliance schedule;

(f) compliance status unknown, and why not.

b) **Enforcement Summary:** This section shall contain a summary of the compliance and enforcement activities during the past year. The summary shall include the names of all the SIUs affected by the following actions:

(1) Warning letters or notices of violations regarding SIUs' apparent noncompliance with or violation of any federal pretreatment categorical standards and/or requirements, or local limits and/or requirements. For each notice, indicate whether it was for an infraction of a federal or local standard/limit or requirement.

(2) Administrative Orders regarding the SIUs' apparent noncompliance with or violation of any federal pretreatment categorical standards and/or requirements, or local limits and/or requirements. For each notice, indicate whether it was for an infraction of a federal or local standard/limit or requirement.

(3) Civil actions regarding the SIUs' apparent noncompliance with or violation of any federal pretreatment categorical standards and/or requirements, or local limits and/or requirements. For each notice, indicate whether it was for an infraction of a federal or local standard/limit or requirement.

(4) Criminal actions regarding the SIUs' apparent noncompliance with or violation of any federal pretreatment categorical standards and/or requirements, or local limits and/or requirements. For each notice, indicate whether it was for an infraction of a federal or local standard/limit or requirement.

(5) Assessment of monetary penalties. Identify the amount of penalty in each case and reason for assessing the penalty.

(6) Order to restrict/suspend discharge to the POTW.

(7) Order to disconnect the discharge from entering the POTW.

12) **Baseline Monitoring Report Update**

This section shall provide a list of CIUs that have been added to the pretreatment program since the last annual report. This list of new CIUs shall summarize the status of the respective Baseline Monitoring Reports (BMR). The BMR must contain all of the information specified in 40 CFR 403.12(b). For each of the new CIUs, the summary shall indicate when the BMR was due; when the CIU was notified by the POTW of this requirement; when the CIU submitted the report; and/or when the report is due.

13) **Pretreatment Program Changes**

This section shall contain a description of any significant changes in the Pretreatment Program during the past year including, but not limited to: legal authority, local limits, monitoring/ inspection program and frequency, enforcement protocol, program's administrative structure, staffing level, resource requirements and funding mechanism. If the manager of the pretreatment program changes, a revised organizational chart shall be included. If any element(s) of the program is in the process of being modified, this intention shall also be indicated.

14) **Pretreatment Program Budget**

This section shall present the budget spent on the Pretreatment Program. The budget, either by the calendar or fiscal year, shall show the amounts spent on personnel, equipment, chemical analyses and any other appropriate categories. A brief discussion of the source(s) of funding shall be provided.

15) **Public Participation Summary**

This section shall include a copy of the public notice as required in 40 CFR 403.8(f)(2)(vii). If a notice was not published, the reason shall be stated.

16) **Sludge Storage and Disposal Practice**

This section shall have a description of how the treated sludge is stored and ultimately disposed. The sludge storage area, if one is used, shall be described in detail. Its location, a description of the containment features and the sludge handling procedures shall be included.

17) **PCS Data Entry Form**

The annual report shall include the PCS Data Entry Form. This form shall summarize the enforcement actions taken against SIUs in the past year. This form shall include the following information: the POTW name, NPDES Permit number, period covered by the report, the number of SIUs in significant noncompliance (SNC) that are on a pretreatment compliance schedule, the number of notices of violation and administrative orders issued against SIUs, the number of civil and criminal judicial actions against SIUs, the number of SIUs that have been published as a result of being in SNC, and the number of SIUs from which penalties have been collected.

18) **Other Subjects**

Other information related to the Pretreatment Program that does not fit into one of the above categories should be included in this section.

Signed copies of the reports shall be submitted to the Regional Administrator at USEPA, the State Water Board and the Regional Water Board at the following addresses:

Regional Administrator
United States Environmental Protection Agency
Region 9, Mail Code: WTR-7
Clean Water Act Compliance Office
Water Division
75 Hawthorne Street
San Francisco, CA 94105

Pretreatment Program Manager
Regulatory Unit
State Water Resources Control Board
Division of Water Quality
1001 I Street
Sacramento, CA 95814

Pretreatment Coordinator
NPDES Permits Division
SF Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

APPENDIX H-B

REQUIREMENTS FOR SEMIANNUAL PRETREATMENT REPORTS

The semiannual pretreatment reports are due on July 31st (for pretreatment program activities conducted from January through June) and January 31st (for pretreatment activities conducted from July through December) of each year, unless an exception has been granted by the Regional Water Board's Executive Officer. The semiannual reports shall contain, at a minimum, but is not limited to, the following information:

1) **Influent, Effluent and Sludge Monitoring**

The influent, effluent and sludge monitoring results shall be included in the report. The analytical laboratory report shall also be included, with the QA/QC data validation provided upon request. A description of the sampling procedures and a discussion of the results shall be given. (Please see Appendix C for specific detailed requirements.) The contributing source(s) of the parameters that exceed NPDES limits shall be investigated and discussed. In addition, a brief discussion of the contributing source(s) of all organic compounds identified shall be provided.

The Discharger has the option to submit all monitoring results via an electronic reporting format approved by the Executive Officer. The procedures for submitting the data will be similar to the electronic submittal of the NPDES self-monitoring reports as outlined in the December 17, 1999 Regional Water Board letter, Official Implementation of Electronic Reporting System (ERS). The Discharger shall contact the Regional Water Board's ERS Project Manager for specific details in submitting the monitoring data.

If the monitoring results are submitted electronically, the analytical laboratory reports (along with the QA/QC data validation) should be kept at the discharger's facility.

2) **Industrial User Compliance Status**

This section shall contain a list of all Significant Industrial Users (SIUs) that were not in consistent compliance with all pretreatment standards/limits or requirements for the reporting period. The compliance status for the previous reporting period shall also be included. Once the SIU has determined to be out of compliance, the SIU shall be included in the report until consistent compliance has been achieved. A brief description detailing the actions that the SIU undertook to come back into compliance shall be provided.

For each SIU on the list, the following information shall be provided:

a. Indicate if the SIU is subject to Federal categorical standards; if so, specify the category including the subpart that applies.

b. For SIUs subject to Federal Categorical Standards, indicate if the violation is of a categorical or local standard.

c. Indicate the compliance status of the SIU for the two quarters of the reporting period.

d. For violations/noncompliance occurring in the reporting period, provide (1) the date(s) of violation(s); (2) the parameters and corresponding concentrations exceeding the limits and the discharge limits for these parameters and (3) a brief summary of the noncompliant event(s) and the steps that are being taken to achieve compliance.

3) **POTW's Compliance with Pretreatment Program Requirements**

This section shall contain a discussion of the Discharger's compliance status with the Pretreatment Program Requirements as indicated in the latest Pretreatment Compliance Audit (PCA) Report, Pretreatment Compliance Inspection (PCI) Report or Pretreatment Performance Evaluation (PPE) Report. It shall contain a summary of the following information:

a. Date of latest PCA, PCI or PPE and report.

b. Date of the Discharger's response.

c. List of unresolved issues.

d. Plan and schedule for resolving the remaining issues.

The reports shall be signed by a principal executive officer, ranking elected official, or other duly authorized employee who is responsible for the overall operation of the Publicly Owned Treatment Works (POTW) (40 CFR 403.12(j)). Signed copies of the reports shall be submitted to the Regional Administrator at USEPA, the State Water Resources Control Board and the Regional Water Board at the following addresses:

Regional Administrator
United States Environmental Protection Agency
Region 9, Mail Code: WTR-7
Clean Water Act Compliance Office
Water Division
75 Hawthorne Street
San Francisco, CA 94105

Pretreatment Program Manager
Regulatory Unit
State Water Resources Control Board
Division of Water Quality
1001 I Street
Sacramento, CA 95814

Pretreatment Coordinator
NPDES Permits Division
SF Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

APPENDIX H-C

REQUIREMENTS FOR INFLUENT, EFFLUENT AND SLUDGE MONITORING

The Discharger shall conduct sampling of its treatment Plant's influent, effluent and sludge at the frequency as shown in Table E-5 of the Monitoring and Reporting Program (MRP).

The monitoring and reporting requirements of the POTW's Pretreatment Program are in addition to those specified in Tables E-2 and E-3 the MRP. Any subsequent modifications of the requirements specified in Tables E-2 and E-3 shall be adhered to and shall not affect the requirements described in this Appendix unless written notice from the Regional Water Board is received. When sampling periods coincide, one set of test results, reported separately, may be used for those parameters that are required to be monitored by both Tables E-2 and E-3 and the Pretreatment Program. The Pretreatment Program monitoring reports shall be sent to the Pretreatment Program Coordinator.

1. Influent and Effluent Monitoring

The Discharger shall monitor for the parameters using the required test methods listed in Table E-5 of the MRP. Any test method substitutions must have received prior written Regional Water Board approval. Influent and effluent sampling locations shall be the same as those sites specified in the MRP.

The influent and effluent sampled should be taken during the same 24-hour period. All samples must be representative of daily operations. Grab samples shall be used for volatile organic compounds, cyanide and phenol. In addition, any samples for oil and grease, polychlorinated biphenyls, dioxins/furans, and polynuclear aromatic hydrocarbons shall be grab samples. For all other pollutants, 24-hour composite samples must be obtained through flow-proportioned composite sampling. Sampling and analysis shall be performed in accordance with the techniques prescribed in 40 CFR 136 and amendments thereto. For effluent monitoring, the reporting limits for the individual parameters shall be at or below the minimum levels (MLs) as stated in the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (2000) [also known as the State Implementation Policy (SIP)]; any revisions to the MLs shall be adhered to. If a parameter does not have a stated minimum level, then the Discharger shall conduct the analysis using the lowest commercially available and reasonably achievable detection levels.

The following standardized report format should be used for submittal of the influent and effluent monitoring report. A similar structured format may be used but will be subject to Regional Water Board approval. The monitoring reports shall be submitted with the Semiannual Reports.

A. Sampling Procedures – This section shall include a brief discussion of the sample locations, collection times, how the sample was collected (i.e., direct collection using vials or bottles, or other types of collection using devices such as automatic samplers, buckets, or beakers), types of containers used, storage procedures and holding times. Include description of prechlorination and chlorination/dechlorination practices during the sampling periods.

B. Method of Sampling Dechlorination – A brief description of the sample dechlorination method prior to analysis shall be provided.

C. Sample Compositing – The manner in which samples are composited shall be described. If the compositing procedure is different from the test method specifications, a reason for the variation shall be provided.

D. Data Validation – All quality assurance/quality control (QA/QC) methods to be used shall be discussed and summarized. These methods include, but are not limited to, spike samples, split samples, blanks and standards. Ways in which the QA/QC data will be used to qualify the analytical test results shall be identified. A certification statement shall be submitted with this discussion stating that the laboratory QA/QC validation data has been reviewed and has met the laboratory acceptance criteria. The QA/QC validation data shall be submitted to the Regional Water Board upon request.

E. A tabulation of the test results shall be provided.

F. Discussion of Results – The report shall include a complete discussion of the test results. If any pollutants are detected in sufficient concentration to upset, interfere or pass through Plant operations, the type of pollutant(s) and potential source(s) shall be noted, along with a plan of action to control, eliminate, and/or monitor the pollutant(s). Any apparent generation and/or destruction of pollutants attributable to chlorination/dechlorination sampling and analysis practices shall be noted.

2. **Sludge Monitoring**

Sludge should be sampled in the same 24-hour period during which the influent and effluent are sampled except as noted in (C) below. The same parameters required for influent and effluent analysis shall be included in the sludge analysis. The sludge analyzed shall be a composite sample of the sludge for final disposal consisting of:

A. Sludge lagoons – 20 grab samples collected at representative equidistant intervals (grid pattern) and composited as a single grab, or

B. Dried stockpile – 20 grab samples collected at various representative locations and depths and composited as a single grab, or

C. Dewatered sludge- daily composite of 4 representative grab samples each day for 5 days taken at equal intervals during the daily operating shift taken from a) the dewatering units or b) from each truckload, and shall be combined into a single 5-day composite.

The USEPA manual, POTW Sludge Sampling and Analysis Guidance Document, August 1989, containing detailed sampling protocols specific to sludge is recommended as a guidance for sampling procedures. The USEPA manual Analytical Methods of the National Sewage Sludge Survey, September 1990, containing detailed analytical protocols specific to sludge, is recommended as a guidance for analytical methods.

In determining if the sludge is a hazardous waste, the Dischargers shall adhere to Article 2, “Criteria for Identifying the Characteristics of Hazardous Waste,” and Article 3, “Characteristics of

Hazardous Waste," of Title 22, California Code of Regulations, Sections 66261.10 to 66261.24 and all amendments thereto.

Sludge monitoring reports shall be submitted with the appropriate Semiannual Report. The following standardized report format should be used for submittal of the report. A similarly structured form may be used but will be subject to Regional Water Board approval.

A. Sampling procedures – Include sample locations, collection procedures, types of containers used, storage/refrigeration methods, compositing techniques and holding times. Enclose a map of sample locations if sludge lagoons or stockpiled sludge is sampled.

B. Data Validation – All quality assurance/quality control (QA/QC) methods to be used shall be discussed and summarized. These methods include, but are not limited to, spike samples, split samples, blanks and standards. Ways in which the QA/QC data will be used to qualify the analytical test results shall be identified. A certification statement shall be submitted with this discussion stating that the laboratory QA/QC validation data has been reviewed and has met the laboratory acceptance criteria. The QA/QC validation data shall be submitted to the Regional Water Board upon request.

C. Test Results – Tabulate the test results and include the percent solids.

D. Discussion of Results – The report shall include a complete discussion of test results. If the detected pollutant(s) is reasonably deemed to have an adverse effect on sludge disposal, a plan of action to control, eliminate, and/or monitor the pollutant(s) and the known or potential source(s) shall be included. Any apparent generation and/or destruction of pollutants attributable to chlorination/ dechlorination sampling and analysis practices shall be noted.

The Discharger shall also provide any influent, effluent or sludge monitoring data for nonpriority pollutants that the permittee believes may be causing or contributing to Interference, Pass Through or adversely impacting sludge quality.

APPENDIX B

TENTATIVE CEASE AND DESIST ORDER

California Regional Water Quality Control Board
San Francisco Bay Region

1515 Clay Street, Suite 1400, Oakland, California 94612
(510) 622-2300 • Fax (510) 622-2460
http://www.waterboards.ca.gov/sanfranciscobay

Linda S. Adams
Secretary for Environmental Protection

Arnold Schwarzenegger
Governor

REVISED CEASE AND DESIST ORDER NO. R2-2010-XXXX

REQUIRING THE NOVATO SANITARY DISTRICT TO CEASE AND DESIST DISCHARGING PARTIALLY-TREATED WASTEWATER TO WATERS OF THE STATE

WHEREAS the California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter "Regional Water Board"), finds that:

1. The Novato Sanitary District (hereinafter "Discharger") owns and operates the Novato Wastewater Treatment Plant (hereinafter "Novato Plant"), its associated sewage collection system, and one effluent discharge outfall to San Pablo Bay. The Novato Plant treats wastewater from a primarily residential service area serving the City of Novato and adjacent areas with a current population of about 60,000.

2. The Novato Plant has an average dry weather flow (ADWF) design capacity of 6.55 million gallons per day (mgd). The annual ADWF has been 3.91 mgd, based on flow data from January 2006 – April 2009.

3. The Discharger also owns and operates the Ignacio Wastewater Treatment Plant (hereinafter "Ignacio Plant") as a roughing plant; effluent from the Ignacio Plant flows to the Novato Plant for further treatment.

4. The Discharger is currently implementing significant capital improvements that include construction of major new wastewater treatment facilities. These facilities are being installed to address aging infrastructure, to accommodate limited future service area growth, to consolidate operations at the Novato Plant, and to comply with all effluent limitations. As of this time, the Discharger has completed construction of the Ignacio transfer pump station and Ignacio conveyance force main to convey wastewater flows to the Novato Plant. The Novato Plant is undergoing a major overhaul with the installation of new headworks, a new influent pump station, two new primary clarifiers, two new aeration basins, two new secondary clarifiers, an ultraviolet disinfection facility, a new effluent pump station, a new gravity belt thickener, a second digester, new odor control facilities, and new electrical facilities. The Discharger intends to decommission the Ignacio Plant once these new facilities at the Novato Plant are complete.

5. NPDES Permit No. CA0037958 (Regional Water Board Order No. R2-2010-XXXX) regulates the discharge of Novato Plant effluent and contains the water quality-based effluent limitations (WQBELs) listed in Table 1, below, among others.

Table 1: Water Quality-Based Effluent Limits in Order No. R2-2010-XXXX

Parameter	Units	WQBELs	
		Average Monthly Effluent Limit (AMEL)	Maximum Daily Effluent Limit (MDEL)
Copper	μg/L	6.9	13
Carbon Tetrachloride	μg/L	4.4	8.8
Dieldrin	μg/L	0.00014	0.00028
Total Ammonia	mg/L	6.0	21

6. The Discharger cannot currently comply with the copper, carbon tetrachloride, dieldrin, and total ammonia WQBELs listed in Table 1, as explained below:

   a. For copper, statistical analysis of effluent data collected over the period of January 2004 to April 2009 (ranging from 3.8 – 39 μg/L) shows that the 95th percentile (20 μg/L) is greater than the AMEL (6.9 μg/L); the 99th percentile (37 μg/L) is greater than the MDEL (13 μg/L); and the mean (9.8 μg/L) is greater than the long term average of the projected lognormal distribution of the effluent data set after accounting for effluent variability (4.6 μg/L). Based on this analysis, the Regional Water Board concludes that immediate compliance with the copper WQBELs is infeasible. [1]

   b. For carbon tetrachloride, all effluent data were non-detect except one detected value. It is impossible to fit a probability distribution to the data to estimate percentiles; therefore, feasibility to comply with the WQBELs was evaluated by comparing the maximum effluent concentration (MEC) (7.6 μg/L) to the AMEL (4.4 μg/L). Because the MEC exceeds the AMEL, the Regional Water Board concludes that immediate compliance with the carbon tetrachloride WQBELs is infeasible.

   c. For dieldrin, all effluent data were non-detect except one detected value. It is impossible to fit a probability distribution to the data to estimate percentiles; therefore, feasibility to comply with the WQBELs was evaluated by comparing the MEC (0.018 μg/L) to the AMEL (0.00014 μg/L). Because the MEC exceeds the AMEL, the Regional Water Board concludes that immediate compliance with the dieldrin WQBELs is infeasible.

[1] The statistical feasibility analysis consisted of the following steps:

- Use statistical software (MiniTab) to fit a statistical distribution of the effluent data.
- Calculate the mean, 95th, and 99th percentiles of the effluent data for each constituent considered (using the fitted distribution).
- Compare the mean, 95th, and 99th percentiles with the long-term average (LTA), average monthly effluent limit (AMEL), and maximum daily effluent limit (MDEL) calculated using the procedure in the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (2005).
- If any of the LTA, AMEL, and MDEL exceeds the mean, 95th percentile, or 99th percentile, respectively, it may be infeasible for the Discharger to immediately comply with the WQBELs.
- Where the 95th and 99th percentiles cannot be estimated due to too few data or too many data being non-detect, the determination is based on staff judgment after examining the raw data, such as direct comparison of the maximum effluent concentration (MEC) with the AMEL. If the MEC is greater than the AMEL, it may be infeasible for the Discharger to immediately comply with WQBELs.

d. For total ammonia, statistical analysis of effluent data collected over the period of April 2008 to April 2009 (ranging from 0.25 – 21.7 mg/L) shows that the 95th percentile (12 mg/L) is greater than the AMEL (6.0 mg/L); the 99th percentile (23 mg/L) is greater than the MDEL (21 mg/L). Based on this analysis, the Regional Water Board concludes that immediate compliance with the total ammonia WQBELs is infeasible.

7. Water Code § 13301 authorizes the Regional Water Board to issue a cease and desist order when it finds that a waste discharge is taking place, or threatening to take place, in violation of Regional Water Board requirements. Because the Discharger will violate or threatens to violate required effluent limits, a cease and desist order is necessary to ensure that the Discharger achieves compliance with the copper, carbon tetrachloride, dieldrin, and total ammonia WQBELs.

8. Regional Water Board Cease and Desist Order No. R2-2008-0029 already contains a time schedule and specific actions to comply with copper and cyanide limits in the previous permit (Regional Water Board Order No. R2-2004-0093, as amended by Order No. R2-2008-0026).

9. Analysis undertaken to support the existing permit (Order No. R2-2010-XXXX) demonstrates that the Discharger can comply with the cyanide WQBELs in the existing permit; therefore, Cease and Desist Order No. R2-2008-0029 is no longer necessary to ensure cyanide compliance. (Statistical analysis of cyanide effluent data collected over the period of January 2004 to April 2009 [ranging from 0.08 – 7.0 µg/L] shows that the 95th percentile [4.9 µg/L] is less than the AMEL [6.6 µg/L]; the 99th percentile [6.1 µg/L] is less than the MDEL [15 µg/L]; and the mean [2.2 µg/L] is less than the long term average of the projected lognormal distribution of the effluent data set after accounting for effluent variability [3.8 µg/L]. Based on this analysis, the Regional Water Board concludes that immediate compliance with the cyanide WQBELs is feasible.)

10. This Order establishes an updated time schedule for the Discharger to complete necessary facility upgrades to address its imminent and threatened violations for copper; the same schedule applies to carbon tetrachloride, dieldrin, and total ammonia. These facility upgrades are expected to result in the Discharger's ability to comply with the copper, carbon tetrachloride, dieldrin, and total ammonia WQBELs.

11. The time schedule is intended to be as short as possible; however, it accounts for uncertainty in determining exactly when facility upgrades can be completed. It is based on reasonably expected times needed to implement each required action. The Regional Water Board may wish to revisit these assumptions as more information becomes available.

12. As part of the time schedule to achieve compliance, this Order requires the Discharger to comply with interim effluent limits. These interim limits are intended to ensure that the Discharger maintains at least its existing performance while completing all actions required during the time schedule. The interim limitations for these pollutants are presented in Table 2, below. The copper interim effluent limit is the same as in Cease and Desist Order No. R2-2008-0029. The total ammonia interim effluent limit is the same as the limit in the previous permit (Order No. R2-2004-0093). The carbon tetrachloride and dieldrin interim effluent limits are the same as

the MECs. The interim effluent limit for total ammonia is based on the effluent data collected during April 2008 through April 2009. There were only seven monthly average concentrations; the 99th percentile of the log transformed data is 11 mg/L and is set as the monthly average interim effluent limit.

Table 2. Interim Effluent Limitations

Parameter	Units	Maximum Daily Interim Effluent Limitations	Monthly Average Interim Effluent limitations
Copper	µg/L	19	--
Carbon Tetrachloride	µg/L	--	7.6
Dieldrin	µg/L	--	0.018
Total Ammonia	mg/L	--	11

13. This Order is an enforcement action and, as such, is exempt from the provisions of the California Environmental Quality Act (Public Resources Code § 21000 et seq.) in accordance with 14 CCR §15321.

14. The Regional Water Board notified the Discharger and interested persons of its intent to consider adoption of this Cease and Desist Order, and provided an opportunity to submit written comments and appear at a public hearing. The Regional Water Board, in a public hearing, heard and considered all comments.

IT IS HEREBY ORDERED, that Cease and Desist Order No. R2-2008-0029 is rescinded upon the effective date of this Order, except for enforcement purposes, and that in accordance with Water Code §13300, the Discharger shall comply with the following provisions:

1. Prescribed Actions. The Discharger shall comply with the required actions in Table 3 in accordance with the time schedules provided therein to comply with applicable WQBELs. Deliverables listed in Table 3 shall be acceptable to the Executive Officer, who will review them for adequacy and compliance with the Table 3 requirements.

Table 3. Time Schedule and Prescribed Actions

Action	Deadline
a. Comply with the interim effluent limits for copper, carbon tetrachloride, and dieldrin listed in Table 2 at monitoring location EFF-001 (see Order No. R2-2010-XXXX).	Upon effective date of this Order
b. Document and certify complete construction of Novato Plant influent pump station, second primary and secondary clarifier, UV disinfection, gravity belt thickener, and second digester.	December 31, 2010
c. Document and certify completion of all facility upgrades, place upgrades into operation, and comply with copper, carbon tetrachloride, dieldrin, and total ammonia WQBELs of Regional Water Board Order No. R2-2010-XXXX (NPDES Permit No. CA0037958)	June 30, 2011

2. Reporting Delays. If the Discharger is delayed, interrupted, or prevented from meeting one or more deadlines of the time schedules in Tables 3 and 4 due to circumstances beyond its

reasonable control, the Discharger shall promptly notify the Executive Officer, provide the reasons and justification for the delay, and propose a time schedule for resolving the delay.

3. Consequences of Non-Compliance. If the Discharger fails to comply with the provisions of this Order, the Executive Officer is authorized to take further enforcement action or to request the Attorney General to take appropriate actions against the Discharger in accordance with Water Code §§ 13331, 13350, 13385, and 13386. Such actions may include injunctive and civil remedies, if appropriate, or the issuance of an Administrative Civil Liability Complaint for Regional Water Board consideration.

4. Effective Date. This Order shall become effective on July, 1, 2010.

I, Bruce H. Wolfe, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on May 12, 2010.

BRUCE H. WOLFE
Executive Officer

APPENDIX C

COMMENT LETTERS

April 7, 2010

Ms. Tong Yin, Water Resources Control Engineer
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Via E-mail**:** *tyin@waterboards.ca.gov, bwolfe@waterboards.ca.gov, ltang@waterboards,ca.gov, wjohnson@waterboards.ca.gov, BevJ@novatosan.com*

SUBJECT: Comments on the Tentative Order Reissuing Novato Sanitary District NPDES Permit (CA0037958)

Dear Ms. Yin:

The Bay Area Clean Water Agencies (BACWA) appreciates the opportunity to comment on the Tentative Order reissuing the Novato Sanitary District (District) NPDES Permit (No. CA0037958). BACWA is a joint powers agency whose members own and operate publicly-owned treatment works (POTWs) and sanitary sewer systems that collectively provide sanitary services to over 6.5 million people in the nine county San Francisco Bay Area. BACWA members are public agencies, governed by elected officials and managed by professionals charged with protecting the environment and public health.

The tentative order's total coliform and ammonia limits raise concerns for BACWA member agencies that we request be addressed prior to adoption by the San Francisco Bay Regional Water Quality Control Board (Water Board).

First, the permit's limits for fecal coliform are inappropriate considering the basis of the water quality objectives and the lack of shellfishing in the vicinity of the outfall. The tentative order contains final effluent limits for fecal coliform that are not in the District's current permit and which are very stringent. These limits – a median of 14 MPN/ 100 mL and a 90th percentile of 42 MPN/100 mL – are identical to the Basin Plan's objectives to protect shellfishing. The Basin Plan objectives are based on, and the same as, the National Shellfish Sanitation Program (NSSP) guideline standards.[1] These standards are intended to apply to state-designated areas where commercial shellfish harvesting actually occurs, and for which the state performs regular sanitary surveys and has developed a management plan. These public health-based standards were not intended or suitable to be used as effluent limits.

[1] The NSSP is a federal and state cooperative program, established by the U.S. Public Health Service to control disease associated with the consumption of raw shellfish and to "promote and improve the sanitation of shellfish…moving in interstate commerce." National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish, Section IX: History of the National Shellfish Sanitation Program, 2007 ("NSSP Guidance").

It is our understanding that the District has also completed a study showing that no shellfishing occurs in the vicinity of the outfall. As compliance with the very low fecal limits will require a significant increase in chlorination, which has its own environmental and human health implications, BACWA requests that these studies be taken under consideration in determining what bacteriological effluent limits are appropriate and necessary.

We further note that the proposed fecal limits are inconsistent with the Water Board's draft Basin Plan Amendment adopting water quality objectives for enterococcus and does not recognize related efforts by the State Water Resources Control Board (State Water Board) to address this issue. The State Water Board is currently engaged in a project to develop standards and an implementation approach for protecting shellfishing that increases consistency and flexibility. One of the reasons for this project is that, as mentioned above, current water quality objectives for protection of shellfishing are based on public consumption health standards for commercial growers and may be unduly stringent when applied to ambient waters. Considering the current reassessment of the shellfish harvesting beneficial use designations and the lack of commercial or recreational shellfishing in the District's receiving waters, BACWA does not believe that the limits for fecal coliform are appropriate at this time.

Second, the tentative order's average monthly effluent limit for ammonia is more than four times lower than that in the District's current permit. In 2001, the District began planning for $90 million in capital improvements to its plant and system, to be completed by 2011. This upgrade - the plans for which have been approved by the State Water Board - does not include changes that will allow the District to achieve the new ammonia limits. It is our understanding that the District has completed and will shortly be submitting the results of mathematical modeling and an analysis of mixing zone size and other conditions in support of *State Implementation Policy* requirements that will demonstrate that the previous permit's ammonia effluent limit is protective of water quality. BACWA requests that the tentative order retain the previous permit's ammonia effluent limits until the study is evaluated by the Water Board.

Thank you for your attention to these comments.

Sincerely,

Amy Chastain

Amy Chastain
Executive Director
Bay Area Clean Water Agencies

cc: BACWA Executive Board
James Ervin, BACWA Permits Committee Chair
Bruce Wolfe, Regional Water Board
Lila Tang, Regional Water Board
Bill Johnson, Regional Water Board
Beverly James, Novato Sanitary District

NOVATO SANITARY DISTRICT

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April 7, 2010

VIA EMAIL: To: tyin@waterboards.ca.gov
Cc: bwolfe@waterboards.ca.gov; ltang@waterboards.ca.gov; wjohnson@waterboards.ca.gov

Ms. Tong Yin
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Subject: Novato Sanitary District Comments on Tentative Order for NPDES Permit CA0037958

Dear Ms. Yin:

The Novato Sanitary District appreciates the opportunity to comment on the tentative order for the District's NPDES Permit. The District would also like to commend your staff for their diligence and care in preparing these documents.

Attached you will find the District's detailed comments on the tentative order. We would like to highlight a couple of the comments in particular:

1. The District requests that the existing ammonia effluent limit be retained as the final effluent limit of record, based on mixing zone analyses and a revised reasonable potential analysis.

2. The District requests removal of the proposed new fecal coliform limits, since these limits are designed to protect shellfish harvesting, which does not occur in the vicinity of, or even nearby to, the District's outfall.

The District is nearing completion of a $90 million improvement project to upgrade the wastewater treatment plant to improve effluent quality and provide for a very small amount of growth in the service area. The project is exemplary because it includes sufficient capacity to completely remove blending, and the new facilities will include ultraviolet disinfection, to replace the chlorine disinfection. Chlorine is a toxic chemical. Eliminating chlorine use would result in a safer workplace, safer distribution and a lowered production of chlorinated byproducts, which are recognized as carcinogenic. By the time the construction is complete in 2011, the new wastewater treatment facilities will have taken 10 years to plan, design, and construct. These facilities are not designed for the proposed ammonia and bacteria effluent limits, nor does the District believe the new limits are necessary to protect water quality and public health.

The District appreciates the consideration of these comments by the Regional Water Board. Please do not hesitate to contact me if you have any questions or would like to discuss anything. Thank you very much.

Respectfully submitted,

Beverly B James

Beverly B. James, P.E.
Manager-Engineer

cc: Bruce Wolfe, Regional Water Board
Lila Tang, Regional Water Board
Bill Johnson, Regional Water Board
Monica Oakley, Oakley Water Strategies

Novato Sanitary District

Comments Regarding Tentative NPDES Permit and Tentative Cease and Desist Order

April 7, 2010

The Novato Sanitary District (District) appreciates the opportunity to submit the following comments on the Tentative Order (TO) and the Cease and Desist Order reissuing the National Pollutant Discharge Elimination System (NPDES) Permit CA0037958. Comments on the permit and CDO are shown roughly in the order that the topics appear in the permit.

COMMENTS ON NPDES PERMIT

1. The peak wet weather flow for the treatment plant is characterized incorrectly in the permit.

(Page 4)

The Novato Treatment Plant currently has a peak hydraulic wet weather design flow higher than 9 mgd, so the permit should be more specific about what the 9 mgd represents. It would be helpful to also make the new plant language consistent. Language should be revised in Table 4 (and Table F-1) as follows:

Table 4. Facility Information

Discharger	Novato Sanitary District
Name of Facility	Novato Sanitary District Wastewater Treatment Plant and its associated sewage collection system
Facility Address	500 Davidson St., Novato CA 94945, Marin County
Facility Contact, Title, and Phone	Beverly James, Manager - Engineer, (415)892-1694
Mailing Address	500 Davidson St., Novato CA 94945
Type of Facility	Publicly Owned Treatment Works (POTW)
Facility Design Flow	Existing Novato Plant: 6.55 million gallons per day (mgd) (average dry weather flow), 9 mgd (secondary treatment capacity ~~peak wet weather flow~~) Upgraded Novato Plant: 7.05 mgd (average dry weather flow) after Tasks in Provision VI.C.4(c) are completed, 47 mgd (secondary treatment capacity ~~peak wet weather flow~~)
Service Area	City of Novato and adjacent areas
Service Population	60,000

2. The District requests the description of the treatment processes at the Ignacio Plant in Finding B be revised to reflect current operations.

(Page 5 and page F-4)

Gravity filtration and chlorine disinfection no longer take place at the Ignacio Plant. Treated wastewater from the Ignacio Plant is conveyed to the Novato Plant for further treatment. The

District requests the following language in Finding B of the permit and in Section II.A.1. of the Fact Sheet be revised as follows:

Page 5:
Treatment processes at the Ignacio Plant include primary clarification, biofiltration, subsequent clarification~~,~~ and nitrification~~, gravity filtration, and chlorine disinfection~~.

Page F-4:
The Discharger operates the Ignacio Plant, located at 445 Bel Marin Keys Blvd., Novato, as a roughing plant, which means treated wastewater from the Ignacio Plant is conveyed to the Novato Plant for further treatment. Treatment processes at the Ignacio Plant include primary clarification, biofiltration, subsequent clarification, and nitrification~~, gravity filtration, and chlorine disinfection~~.

Comments 3 and 4 pertain to information on the District's recycled water program contained in the Tentative Order. The language revisions for these comments are provided in one location following Comment 4.

3. The District requests that the uses of District produced recycled water be revised to reflect current applications.

(Page 5 and F-17)
The District requests that the permit language include an accurate description of the current recycled water program. (See requested language after Comment 4.)

4. The District requests that the percent of effluent used in reclamation and water recycling activities be indicated in the permit.

(Page 6 and F-17)
The District recycles a significant portion of its effluent and would like this information indicated in the permit language.

Language revisions for Comments 3 and 4 are as follows:

Page 5:
In accordance with Basin Plan Table 4-1, shallow water discharges are prohibited. This Order therefore prohibits discharges at Discharge Point 001 to San Pablo Bay from June 1 through August 31. During this period, effluent is discharged to storage ponds until used for sprinkler irrigation of 820 acres of Discharger-controlled pasturelands and irrigation of a golf course. ~~used for beef cattle, grazing, and irrigated hay production.~~ As described in the Fact Sheet (Attachment F) section IV.B, this Order grants an exception to the discharge prohibition from September 1 through May 31.

Page 6:
5. **Reclamation Activities.** The Discharger's reclamation system includes two storage ponds with a combined storage capacity of 180 million gallons, a wildlife marsh pond, an irrigation pump station, and 820 acres of irrigation pasture. Regional Water Board Order No. 92-065 establishes limitations and conditions regarding the reclamation uses of treated wastewater, which apply to the Discharger's reclamation system. Although the discharge prohibition includes three summer months, the Discharger typically reclaims wastewater for irrigation five or more months per year. An average of 48 percent of the Discharger's treated wastewater was used for recycled water applications over the last two years. This permit allows discharge from the storage ponds to San Pablo Bay during the discharge season, upon meeting the requirements specified in Provision VI.C.2(d).

Page F-17:
1. The Discharger maintains and implements significant reclamation projects. An average of 48 percent of the Discharger's treated wastewater was used for recycled water applications over the last two years.

a. The older reclamation project includes a 15-acre wildlife pond, 180-million-gallon storage ponds, and 820 acres of irrigated pasture. The wildlife pond provides valuable habitat for migrating birdlife as well as indigenous bird and animal species. The storage ponds provide habitat for migrating as well as indigenous birdlife. ~~The pasture lands are used for beef cattle grazing and irrigated hay crop production.~~

b. In addition to the above reclamation project, the Discharger also partners with the North Marin Water District (NMWD) to produce and distribute Title-22 recycled water. The Discharger and NMWD recently constructed and operate 0.5 MGD Title 22 Recycled Water Facility that provides unrestricted reuse recycled water to the Stonetree Golf Course and one Novato Fire Protection District Fire Station. Additionally, the Discharger and the NMWD are cooperating on expanding the capacity of the facilities to serve more areas through a joint Recycled Water Master Plan. The Discharger and NMWD are active members of the North Bay Water Reuse Authority, through which the Discharger is exploring additional opportunities for water recycling in the North Bay.

5. The District requests the Treatment Facilities Upgrade Project description include information about the cost of the project.

(Page 6)
The Treatment Facilities Upgrade Project is being constructed at a cost of approximately $90 million, paid mostly by local ratepayers. The District would like this information indicated in the permit language. The District requests the following revision to Finding II.B.4:

4. Treatment Facilities Upgrade Project.
The remaining construction is scheduled to be completed as below:

June 30, 2010	Complete Novato Plant aeration basins and one secondary clarifier.

December 31, 2010 Complete Novato Plant influent pump station, second primary and secondary clarifiers, UV disinfection, gravity belt thickener, and second digester.

The Treatment Facilities Upgrade Project is being constructed at a cost of approximately $90 million.

6. The District requests Finding E pertaining to the California Environmental Quality Act (CEQA) be revised for accuracy.

(Page 7)

The California Water Code section 13389 exempts NPDES permits from Chapter 3 of CEQA, but not Chapters 1 or 2.6. These chapters require some environmental assessment, though not a full Environmental Impact Report (*County of Los Angeles v. California State Water Resources Control Board* (2006) 143 Cal.App.4th 985).

The District requests the following language revision to Finding E:

E. California Environmental Quality Act (CEQA). Under CWC section 13389, this action to adopt an NPDES permit is exempt from ~~the~~ Chapter 3 ~~provisions~~ of CEQA.

7. The District requests that the phrase pertaining to Best Professional Judgment be removed from Finding F, as it is not applicable.

(Page 7)

Best Professional Judgment pursuant to 40 CFR 125.3 does not apply to technology-based effluent limits for publicly-owned treatment plants. The District requests the following revision to Finding F:

F. Technology-Based Effluent Limitations. CWA Section 301(b) and NPDES regulations at Title 40 of the Code of Federal Regulations (40 CFR) section 122.44 require that permits include conditions meeting applicable technology-based requirements at minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Secondary Treatment Standards at 40 CFR 133 ~~and/or Best Professional Judgment (BPJ) pursuant to 40 CFR 125.3~~. Further discussion of the development of technology-based effluent limitation development is included in the Fact Sheet (Attachment F).

8. The District requests Finding O pertaining to the Endangered Species Act be removed from the Tentative Order, as it does not apply.

(Page 9)

The Endangered Species Act is not applicable to this NPDES permit. The treatment plant was approved and constructed under the California Environmental Quality Act (CEQA), which took the Endangered Species Act into account, and CEQA (under which the Endangered Species Act would be considered for this permit) does not apply to this permit. The District requests that Finding O be removed.

9. The District requests that Finding R pertaining to requirements under state law be removed.

There are many provisions in the permit which are promulgated under state law only, including requirements for technology-based and water-quality based effluent limits as well as special studies, pollution prevention, and other activities. In particular, there are several instances where the permit requirements are more stringent than required by the federal Clean Water Act. As a result, Novato Sanitary District requests removal of this finding.

10. The District requests that language in Discharge Prohibition III.B be consistent with other parts of the permit.

(Page 10-11)

The District requests the following language revision to Discharge Prohibition III.B regarding the approval for the upgraded plan, to be consistent with other portions of the permit (including Prohibition III.C.):

> **B.** The bypass of untreated or partially treated wastewater to waters of the United States is prohibited, except as provided for in the conditions stated in Subsections I.G.2 and I.G.4 of Attachment D of this Order.
>
> Blended wastewater is biologically treated wastewater blended with wastewater that has been diverted around biological treatment units or advanced treatment units. Such discharges are approved under the bypass conditions stated in 40 CFR 122.41(m)(4) for the existing Novato Plant (not the upgraded plant when improvements are complete~~d~~, the requirements in section VI.C.4(c) of this Order are satisfied and approval from the Executive Officer is received), when (1) the Discharger's peak wet weather influent flow volumes exceed the capacity of the secondary treatment unit of 9 mgd, and (2) the discharge complies with the effluent and receiving water limitations contained in the Order. Furthermore, the Discharger shall operate its facility as designed and in accordance with the Operation and Maintenance Manual for the facility. This means it shall optimize storage and use of equalization units, and shall fully utilize the biological treatment units and advanced treatment units, if applicable. The Discharger shall report incidents of blended effluent discharges in routine monitoring reports, and shall conduct monitoring of this discharge as specified in the attached MRP (Attachment E).

11. The District requests the language in Discharge Prohibition III.C be revised with correct flow monitoring location.

(Page 11)

Consistent with the Treatment Facilities Upgrade Project, flow will continue to be monitored at A-002, the Novato Plant influent monitoring location. See also Comment 26. The language should be revised as follows:

> **C.** The average dry weather effluent flow, measured at monitoring station ~~EFF-001~~ A-002 as described in the attached MRP (Attachment E), shall not exceed 6.55 mgd. Actual average dry weather flow shall be determined for compliance with this prohibition over three consecutive dry weather months each year. Upon satisfaction of the requirements in

section VI.C.4(c) of this Order and Executive Officer approval, the maximum allowable average dry weather discharge rate shall increase to 7.05 mgd.

12. The District requests additional time to report estimated dilution to comply with Prohibition E, in the event of an emergency discharge.

(Page 11)

The Tentative Order contains a new requirement to estimate dilution in the receiving water in the event of an emergency discharge. Although an emergency discharge is unlikely, if one should occur, additional time is needed to develop this estimate because the dilution conditions are complicated in the vicinity of the outfall. The District requests 60 days for this portion of the report, and that the language be revised as follows:

E. Discharge to San Pablo Bay is prohibited during the dry weather period from June 1 through August 31 unless the Discharger submits a request for discharge and that request is approved by the Executive Officer. In the event of high wastewater flows resulting from an early or late season storm, the Discharger, after considering the feasibility of reclamation and use of the storage ponds, shall notify the Regional Water Board case manager by phone or email of the need to discharge to San Pablo Bay immediately upon making the determination that such a discharge is necessary, and provide information justifying the request. If circumstances prevent the case manager's consideration and response to the request within the time frame necessary, the Discharger may at its discretion discharge some or all of the effluent to San Pablo Bay for the duration of the elevated flow event. The Discharger then shall submit a report within five business days from the date of the discharge. In the report, the Discharger shall fully explain the need to discharge to San Pablo Bay during the dry season and shall provide information regarding the total volume of flow discharged, duration of discharge, and estimate of dilution (effluent flow in receiving water flow) that occurred during this period. At the Discharger's discretion, the estimate of dilution may be submitted up to 60 days from the date of the discharge. In accordance with the attached MRP (Attachment E), discharge quality shall be reported in the monthly self-monitoring report for that period.

13. The District requests that the units for reporting *enterococcus* bacteria be changed from colonies per 100 mL to CFU/100ml or MPN/100 mL.

(Page 13)

The units of MPN/100mL or CFU/100 mL for *enterococcus* bacteria is needed for conducting an analysis using either the membrane filtration method or the IDEXX Enterolert Method, both approved methods (40 CFR Part 136). In addition, consistency is needed in the permit with respect to this parameter. The effluent limitation is expressed as colonies/100 mL in the permit, however in Table E-4 the units are expressed as MPN/100 mL.

14. The District requests that the fecal coliform bacteria effluent limitation be removed from the Tentative Order.

(Page 13)

The District's existing NPDES permit contains *enterococcus* effluent limits only. The *enterococcus* limits were established with a required provision that the District perform a confirmation study to demonstrate that the *enterococcus* limits were protective of the designated uses of the receiving water and that the receiving water adjacent to the outfall is in fact a "Lightly used area." The District completed the confirmation study and submitted the "Novato Sanitary District Bacteriological Confirmation Study Final Report," to the Regional Water Board on June 21, 2006. The study included collection of bi-weekly observations of any full or limited water contact, and any other recreational activities. Throughout the duration of the study not a single recreational activity was observed, in the vicinity of the District's outfall (including shellfish harvesting). Enterococcus limits were included in the existing permit based on this study.

The current Tentative Order issued for the NPDES permit renewal contains a 30-day geometric mean enterococcus bacteria effluent limit and new fecal coliform limits including a median 14 MPN/100mL and a 90th percentile fecal coliform limit of 43 MPN/100mL. The fecal coliform effluent limits are based on the water quality objectives (WQOs) for shellfish harvesting contained in Table 3-1 of the San Francisco Bay Basin Water Quality Control Plan (Basin Plan). Table 3-1 sites the source of these WQOs from the National Shellfish Sanitation Program (NSSP). However, the guidelines contained in the "National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish," 2007, are intended to protect areas where recreational or commercial shellfishing occurs. The District's outfall is located 950 feet offshore in the mudflats of San Pablo Bay, which are subject to daily tidal fluctuations. The vicinity of the outfall is extremely difficult to access, if it all possible, and as confirmed in the Bacteriological Confirmation study, not an area where shellfish harvesting occurs. In addition, the National Shellfish Sanitation Program (NSSP) guidelines specific recommendation is that "A growing area [for shellfish harvesting] shall be classified as prohibited if… [t]he growing area is adjacent to a sewage treatment plant outfall"[1]. Further, according to information from the California Department of Fish and Game (CDFG), no commercial shellfish harvesting occurs within San Francisco Bay-Delta[2].

The State Water Resources Control Board (SWRCB) is currently conducting a project to re-assess the areas designated for the shellfish harvesting beneficial use. The SWRCB acknowledged in the March 30, 2010 stakeholder flier that the breadth of the shellfish harvesting definition reduces flexibility to apply the most appropriate water quality standards. The State Water Board in an announcement of this project indicated that bacterial indicators for shellfishing are based on public consumption health standards for commercial growers, and that these standards are very strict and allow for very little flexibility. Given the current reassessment of the shellfish harvesting beneficial use designations and the lack

[1] National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish, 2007 ("NSSP Guidance").

[2] CDFG 2009

of commercial or recreational activities observed in the District's receiving waters, inclusion of effluent limits based on shellfish harvesting is inappropriate at this time, if at all.

Retaining only the *enterococcus* effluent limit, the indicator bacteria better correlated to the risk of illnesses associated with exposure to waste containing fecal bacteria, would maintain effective water quality protection while reducing chlorine usage. A reduction in chlorine use would result in a safer workplace, safer distribution and a lowered production of chlorinated byproducts, which are recognized as carcinogenic.

We are also concerned that the District would be receiving an effluent limit for a constituent for which we have never conducted any effluent monitoring. Normally monitoring is conducted ***before*** an effluent limit is issued. The proposed fecal coliform effluent limits are very low, and compliance attainability is completely uncertain and expected to be unachievable.

Even after reviewing the compelling evidence to substantiate removal of fecal coliform limits, the Regional Water Board still desires to protect nonexistent shellfish harvesting, the District would like the Board to consider total coliform limits (instead of both *enterococcus* plus fecal coliform limits), or dilution for fecal coliform limits, as alternatives to the proposed fecal coliform limits.

In summary, the District requests the *enterococcus* effluent limit be retained while the fecal coliform bacteria effluent limit be removed from the Tentative Order.

15. The District requests that the total chlorine residual limitation apply only when chlorination is used for disinfection of the effluent.

(Page 13)

The District will be implementing an UV disinfection system as part of the Treatment Facilities Upgrade project. When the UV system is operational, and chlorination is not used for disinfection, a total chlorine residual limitation is not necessary.

The District requests that the total chlorine residual limitation apply only when chlorination is used for disinfection, and that language be revised as follows:

> **5. Total Chlorine Residual:** During times when chlorination is used for disinfection, Discharges at Discharge Point 001 shall meet the following limitation for total chlorine residual, with compliance measured at Monitoring Location ~~EFF-001~~E-002:
>
> Instantaneous maximum of 0.0 mg/L
>
> The Discharger may elect to use a continuous on-line monitoring system(s) for measuring flows, chlorine, and sulfur dioxide dosage (including a safety factor) and concentration to prove that chlorine residual exceedances are false positives. If convincing evidence is provided, Regional Water Board staff may conclude that false positive chlorine residual exceedances are not violations of the effluent limitation.

16. The District requests that reasonable potential for lead be removed.

(Page 13, F-32 and other references)

The proposed Tentative Order includes a Reasonable Potential Analysis (RPA) conducted using ambient total recoverable lead concentration data collected by the Regional Monitoring Program (RMP) at the San Pablo Bay RMP station (BD20), as well as total recoverable lead concentrations from the District's effluent monitoring data from January 2004 through April 2009. Reasonable potential was triggered only by the receiving water data. The District's lead concentrations are well below the lowest applicable water quality objective expressed in the total recoverable form.

However, the original water quality criteria in the California Toxics Rule, upon which the water quality objectives for the receiving water are based, are expressed as *dissolved* lead concentrations. A review of the actual receiving water dissolved lead concentrations shows that the receiving water dissolved lead concentrations are well below the lowest applicable dissolved concentrations. In particular, the ambient maximum dissolved lead concentration at 0.37 μg/L, which is much lower than the lowest applicable dissolved criterion of 4.8 μg/L. Using this more scientifically accurate approach, reasonable potential should not be triggered. The District believes that this approach is also consistent with Section 1.2 of the SIP which describes the method for determining reasonable potential.

The District requests the water quality-based effluent limits for lead be removed since reasonable potential is not demonstrated.

17. The District requests that the existing ammonia effluent limit be retained since reasonable potential is not triggered as shown by a comprehensive mixing zone analysis.

(Page 14, F-36 and other references)

In 2001, the District began the planning and design process for construction of significant capital improvements to its wastewater treatment system. In 2011, a $90 million program is scheduled for completion, ten years after the need was identified. This timeline is typical, if even fast track, for significant upgrades at a publicly-owned wastewater treatment plant. The new facilities were designed to meet an average monthly ammonia effluent limit of 6.0 mg/L. This limit has been in the District's permit for many years and was expected to continue for the planning horizon of the capital improvements. In addition, this limit is already very low in comparison to other secondary wastewater treatment plants in the Bay Area.

However, the proposed Novato Sanitary District Tentative Order on page 14 contains a proposed 1.3 mg/L monthly average effluent limit and 4.7 mg/L maximum daily effluent limit for ammonia. The Novato Sanitary District received notice of these effluent limits on February 22, 2010, only 14 ***days*** before the Tentative Order was released. We are very concerned that there has not been due process in the promulgation of these limits.

The District has submitted a separate mixing zone analysis which contains a request for the Regional Water Board to grant a 6:1 dilution credit for ammonia, based on comprehensive mathematical modeling and an analysis of mixing zone size and other conditions in support of *State Implementation Policy* (SIP) requirements. It is expected that with this approach, and taking antibacksliding into account, the District would retain its 6.0 mg/L average monthly effluent limit (only) for ammonia as a technology-based limit, since there is no reasonable potential to cause or contribute to the exceedance of water quality objectives.

18. The District requests the criteria for accelerated chronic toxicity monitoring be consistent with the District's existing NPDES permit.

(Page 15 and E-7)

The District's existing NPDES permit requires accelerated chronic toxicity monitoring when both a three-sample median of 1 chronic toxicity unit and a single-sample maximum of 2 TUc or greater are exceeded. The District requests that the same criteria for accelerated chronic toxicity monitoring continue with the renewal of the NPDES permit.

The following language revisions are required:

Revision to Page 15:

b. The Discharger shall comply with the following tiered requirements based on results from representative samples of the effluent at Discharge Point 001, with compliance measured at EFF-001 as described in the MRP (Attachment E), meeting test acceptability criteria and Section V.B of the MRP (Attachment E.)

(1) Conduct routine monitoring.

(2) Conduct accelerated monitoring after exceeding a three-sample median of 1 chronic toxicity unit (TUc[1]) ~~or~~ and a single-sample maximum of 2 TUc or greater.

Revision to Page E-7:

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

(1) Routine Monitoring: Quarterly

(2) Accelerated Monitoring: Monthly

The Discharger shall accelerate monitoring to monthly after exceeding a three-sample median of 1 TUc ~~or~~ and a single sample maximum of 2 TUc for discharges via Discharge Point 001, or as otherwise specified by the Executive Officer.

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

19. The District requests that the appropriate chronic toxicity test method, applicable to the District's test species, be included in Section IV.C.2 of the Tentative Order.

(Page 15)

The District's current test species is *ceriodaphnia dubia*, a freshwater organism. The promulgated test methods for conducting whole effluent chronic toxicity monitoring included in Section IV.C.2 of the Tentative Order pertain to marine and estuarine organisms only. The "Short-Term Methods For Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms," currently fourth edition (EPA-821-R-02-013) should be added to the list of approved test methods. Including the test methods for each of the marine, estuarine and freshwater organisms also allows flexibility if the District's test species is changed during the term of the permit.

The District requests the following language revision to Section IV.C.2:

> c. The Discharger shall monitor chronic toxicity using the test species and protocols specified in MRP Section V.B (Attachment E). The Discharger shall also perform chronic toxicity screening phase monitoring as described in Appendix E-1 of the MRP (Attachment E). Chronic toxicity screening phase requirements, critical life stage toxicity tests, and definitions of terms used in the chronic toxicity monitoring are identified in the MRP Appendices E-1 and E-2 of the MRP. In addition, bioassays shall be conducted in compliance with the most recently promulgated test methods, "Short-Term Methods For Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms," currently fourth edition (EPA-821-R-02-013), 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 Marine and Estuarine Organisms," currently second Edition (EPA/600/491/003), with exceptions granted by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP) upon the Discharger's request and justification.

20. The District requests the removal of the duplicative and vague requirements in Provision VI.C.2(d) pertaining to reclamation pond operations.

(Page 20-21)

The Tentative Order changes the Reclamation Pond Operation Requirements from those in the District's existing permit. In particular, surplus water in the storage ponds that is discharged to San Pablo Bay during the discharge season (November 1 through April 30) is now subject to the requirements of both the District's *Reclamation Pond Wet Season Discharge Sediment and Control Monitoring* Plan and the Tentative Order. The requirements for discharging water held in the reclamation ponds though the combined outfall during the dry weather discharge months remained unchanged from the existing permit.

The Tentative Order adds a new paragraph to the Reclamation Pond Operation provision which appears both duplicative and impractical. The added language pertains to both wet and dry weather discharge months and only if treated wastewater "of any water quality concern" is diverted to the storage ponds. If this criteria is met, when discharging from the ponds to San Pablo Bay, sampling is required on the days that "the largest amount of water is released." Given the nature of discharges from the storage ponds to the combined outfall, it is impractical to predict when the largest amount of water will be released from the ponds. Since discharges from the storage ponds to San Pablo Bay during both the wet and dry weather months must already meet the requirements of the Tentative Order, the added paragraph is unnecessary and has potential to cause confusion in interpretation.

The District accepts the added requirement that discharges from the storage ponds through the combined outfall during November 1 through April 30 must meet the requirements of the

Tentative Order, and the existing language is sufficient for this purpose. The District requests the following language be revised for the Reclamation Pond Operation provision:

d. Reclamation Pond Operation
The Discharger has constructed and maintains reclamation storage ponds for storage of treated wastewater for reclamation. The Discharger may discharge treated wastewater from these storage ponds any surplus water not used for reclamation at Discharge Point 001 from November 1 through April 30 if the discharge meets all of the requirements of this Order and the Discharger's *Reclamation Pond Wet Season Discharge Sediment and Control Monitoring Plan* (Attachment I). Further, if discharge is anticipated during the period November 1 through April 30, the Discharger shall conduct effluent sampling of the storage ponds once at the end of the dry season prior to discharge.

Water held in the reclamation ponds before being discharged through the combined outfall during the dry weather discharge months (May, September, and October) may be discharged if it meets all the requirements in this Order. Pre-discharge monitoring of water held in the reclamation ponds is required during the dry weather discharge period (May 1 – 31 and September 1 – October 31, annually).

~~If the Discharger previously diverts treated wastewater that are of any water quality concern other than chlorine residual, e.g., effluent with abnormal appearance (color, turbidity, etc.), bypassed effluent, during plant upset, to these ponds, when discharging from the reclamation ponds to San Pablo Bay, the Discharger shall arrange all routine effluent sampling on the days that that the largest amount of water is released from the ponds. Attachment E, Monitoring and Reporting Program specifies the monitoring requirements for this scenario.~~

21. The District requests that the Biosolids Management Practices Requirements, specified in the Special Provisions of the Tentative Order, be consistent with the 40 CFR Part 503 regulations.

(Page 25)

Section VI.C.5.b.(3) of the Tentative Order requires that only biosolids that have been digested be placed in the dedicated disposal site. This requirement limits the 40 CFR Part 503 regulations (503 regulations) relating to dedicated disposal sites. The 503 regulations allow for disposal of raw sludge in a dedicated disposal site provided that the vector attraction reduction requirement described in 503.33(b)(11) is met (daily cover of active disposal site with soil or other material). The District requests the full operational flexibility allowed under the 503 regulations, as is allowed in the existing permit. The District requests the following revision to Section VI.C.5.b.(3) of the Tentative Order:

b. Biosolids Management Practices Requirements
(1) All sludge treatment, processing, storage or disposal activities under the Discharger's control shall be in compliance with current State and federal regulations.
(2) Sludge shall not be applied to the dedicated disposal site between October 30 and May 1 unless prior written authorization is obtained from the Executive Officer.
(3) Sewage sludge disposed of at the storage lagoons and dedicated disposal site shall be limited to ~~digested~~ sewage sludge generated by the Discharger and sludge from North

Marin Water District's water treatment facility unless an exception is authorized by the Executive Officer.

22. The District requests the Copper Action Plan be revised to reflect the tasks already completed by the District.

(Page 27)

With the issuance of the Order R2-2008-0026, amending the District's existing NPDES permit, the District was subject to a Copper Action Plan. Tasks 1 and 2 of the Copper Action Plan in the permit amendment are the same as those in the Tentative Order. The District already submitted an inventory of copper sources and a plan to reduce copper discharges to the Regional Water Board. Therefore, the District requests the following revisions to Table 9 of the Tentative Order:

Table 9. Copper Action Plan

Task	Compliance Date
(1). Review Potential Copper Sources The Discharger shall submit an inventory of potential copper sources to the treatment plant.	~~Within 90 days of Order adoption~~. <u>Already Complete</u>
(2). Implement Copper Control Program The Discharger shall submit a plan for and begin implementation of a program to reduce copper discharges identified in Task 1 consisting, at a minimum, of the following elements: a. Provide education and outreach to the public (e.g., focus on proper pool and spa maintenance and plumbers.' roles in reducing corrosion). b. If corrosion is determined to be a significant copper source, work cooperatively with local water purveyors to reduce and control water corrosivity, as appropriate, and ensure that local plumbing contractors implement best management practices to reduce corrosion in pipes. c. Educate plumbers, designers, and maintenance contractors for pools and spas to encourage best management practices that minimize copper discharges.	~~February 28, 2011, with 2010 annual pollution prevention report.~~ <u>Already Complete</u>
(3). Implement Additional Measures If the Regional Water Board notifies the Discharger that the three year rolling mean copper concentration of the receiving water exceeds 3.0 µg/L, the Discharger shall evaluate the effluent copper concentration trend. If the trend is increasing, within 90 days of the notification, the Discharger shall develop and begin implementation of additional measures to control copper discharges, and shall report annually on the progress and effectiveness of measures taken together with a schedule for measures to be taken in the next 12 months..	With annual pollution prevention (P2) report with the report due after the notification.
(4). Studies to Reduce Copper Pollutant Impact Uncertainties. The Discharger shall conduct or cause to be conducted studies to investigate possible copper sediment toxicity and studies to investigate sublethal effects on salmonids. Specifically, the Discharger shall include the manner in which the above will be	With Annual P2 Report due February 28, 2011

Task	Compliance Date
accomplished and describe the studies to be performed with an implementation schedule. To satisfy this requirement, dischargers may collaborate and conduct these studies as a group.	
(5). Report Status of Copper Control Program Submit a report to the Regional Water Board documenting implementation of the copper control program.	Annually with annual P2 reports due February 28.

23. The District requests the Cyanide Action Plans be revised to reflect the tasks already completed by the District.

(Page 28)

With the issuance of the Order R2-2008-0026, amending the District's existing NPDES permit, the District was subject to a Cyanide Action Plan. Tasks 1 and 2 of the Cyanide Action Plan in the permit amendment are the same as those in the Tentative Order. The District already submitted an inventory of potential cyanide sources to the treatment plant. Since no sources were identified, Task 2 is required only if the District receives a request in the future to discharge detectable levels of cyanide to the treatment plant. The District requests the following revisions to Table 10 of the Tentative Order:

Table 10. Cyanide Action Plan

Task	Compliance Date
(1). Review Potential Cyanide Contributors The Discharger shall submit an inventory of potential sources of cyanide to the treatment plant (e.g., metal plating operations, hazardous waste recycling, etc.). If no sources of cyanide are identified, Tasks 2 and 3 are not required, unless the Discharger receives a request to discharge detectable levels of cyanide to its treatment plant. If so, the Discharger shall notify the Executive Officer and implement Tasks 2 and 3.	~~Within 90 days of Order adoption~~ Already Complete
(2). Implement Cyanide Control Program The Discharger shall submit a plan for and begin implementation of a program to minimize cyanide discharges to the sanitary sewer system consisting, at a minimum, of the following elements: a. Inspect each potential contributor to assess the need to include that contributing source in the control program. b. Inspect contributing sources included in the control program annually. Inspection elements may be based on USEPA guidance, such as Industrial User Inspection and Sampling Manual for POTWs (EPA 831-B-94-01). c. Develop and distribute educational materials to contributing sources and potential contributing sources regarding the need to prevent cyanide discharges. d. Prepare an emergency monitoring and response plan to be implemented if a significant cyanide discharge occurs.	~~February 28, 2011, with 2010 annual P2 report.~~ Required if the Discharger receives a request to discharge detectable levels of cyanide to its treatment plant.

Task	Compliance Date
(3). Studies to Reduce Cyanide Pollutant Impact Uncertainties If the Regional Water Board notifies the Discharger that ambient monitoring shows cyanide concentrations of 1.0 µg/L or higher in the main body of San Francisco Bay, then within 90 days of the notification, the Discharger shall commence with actions to identify and abate cyanide sources responsible for the elevated ambient concentrations and report annually the progress and effectiveness of actions taken together with a schedule for actions to be taken within the next 12 months.	With annual pollution prevention (P2) report with the report due after the notification.
(4) Report Status of Cyanide Control Program Submit a report to the Regional Water Board documenting implementation of the cyanide control program.	Annually, with annual P2 reports due February 28.

Comments 24 through 32 pertain to the monitoring locations and requirements contained in the Monitoring and Reporting Program of the Tentative Order (and related requirements). The language revisions for these comments are provided in one location following Comment 32.

24. The District requests the Monitoring Station Location Names remain as they were designated in both Order R2-2004-0093 and Order R2-2008-0026.

(Table E-1)

The District sees no reason to change the names of the already designated Monitoring Station Locations. To avoid inconsistencies in data collection and data storage systems, the District requests the monitoring location names remain as they are in the existing NPDES permit.

25. The District requests the location in which treated effluent is monitored be consistent with the 2008 Permit Amendment (Order No. R2-2008-0026) and the Treatment Facilities Upgrade Project.

(Table E-1 and E-3)

The Tentative Order currently requires all effluent monitoring to occur at EFF-001 (E-003). Before the conveyance of all treated wastewater from the Ignacio Plant to the Novato Plant, E-003 was considered the point at which all waste tributary to the outfall was present. In order to ascertain E-003 values, the Ignacio and Novato Plant monitoring values were flow-weighted. Now that E-002, as defined in the revised Table E-2, below, is a point at which all waste tributary to the outfall is present, effluent monitoring will commence at this location.

Acute toxicity will continue to be monitored at E-003 since fish bioassays must be dechlorinated prior to testing. When the Treatment Facilities Upgrade Project is complete and the appropriate facilities are operational, acute toxicity monitoring will commence at E-002.

26. The District requests that flow be monitored at the influent monitoring station, consistent with the Treatment Facilities Upgrade Project.

(Table E-2 and E-3)

Consistent with the Treatment Facilities Upgrade Project, flow will continue to be monitored at A-002, the Novato Plant influent monitoring location. The Tentative Order currently has flow monitored at EFF-001 (E-003). Flow was not monitored at E-003 under the existing NPDES permit and there is not capability for monitoring at that location.

27. The District requests that total chlorine residual monitoring be required only when chlorination is used for disinfection of the effluent.

(Table E-3)

The District will be implementing a UV disinfection system as part of the Treatment Facilities Upgrade project. When the UV system is operational, and chlorination is no used for disinfection, monitoring for chlorine residual would no longer be necessary. Revising the footnote of Table E-3 pertaining to chlorine residual monitoring in a manner that required monitoring only chlorination is used for disinfection allows the District operational flexibility in getting the UV system established.

28. The District requests that the requirement to calculate mass for total chlorine residual be removed.

(Table E-3)

Calculating mass (kg/day) for total chlorine residual is not in the existing permit, Order No. R2-2004-0093, and is not necessary for any practical purposes. The total chlorine residual mass calculation should be removed from Table E-3.

29. The District requests the frequency of carbon tetrachloride monitoring be revised from monthly to twice per year.

(Table E-3)

The District requests the frequency of carbon tetrachloride monitoring be changed from monthly to twice per year, since only one outlier triggered reasonable potential, the District expects that this value had quality control issues, and this approach is consistent with other organic priority pollutants.

30. The District requests that the pretreatment program monitoring be allowed to satisfy relevant parts of the Remaining Priority Pollutants effluent monitoring.

(Table E-3)

The effluent pretreatment monitoring conducted in accordance with Table E-5 of the Tentative Order should be allowed to satisfy effluent monitoring requirements in Table E-4. This allowance is consistent with other recently adopted NPDES permits. The footnote pertaining to monitoring of the Remaining Priority Pollutants has been revised with the applicable language.

31. The District requests that monitoring frequency of Standard Observations be monthly, consistent with the District's existing NPDES permit.

(Table E-3)

Effluent Standard Observations monitoring has been conducted for many years at monthly intervals and the data show a consistent absence of any floating or suspended material and any odor of wastewater origin. It is an inefficient use of public resources to increase the frequency of conducting standard observations with this kind of quality record.

32. The District requests that the Near-Field Receiving Water Monitoring Requirements contained in Table E-4 be integrated into a Special Provision study in the Tentative Order.

(Page E-8)

The intent of the newly established receiving water monitoring station (RSW-001) and monitoring requirements contained in Table E-4 are to characterize the near-field ambient ammonia conditions. A more effective approach, consistent with other recently adopted shallow water discharger NPDES permits, is to include a provision requiring the District to conduct a Special Study which evaluates the diurnal receiving water ammonia conditions.

The District requests the removal of RSW-001 and Section VIII.B from the Monitoring and Reporting Program with the addition of a Special Study in the Special Provisions of the Tentative Order.

Language revisions for Comments 24 through 32 are shown below:

Table E-1. Monitoring Station Locations

Type of Sampling Location	Monitoring Location Name	Monitoring Location Description
Influent	A~~INF~~-00~~1~~2	At any point after the influent bar screens in the Novato Plant headworks at which all waste tributary to the system is present. ~~and preceding any phase of treatment~~. ~~Formerly A-002.~~
Effluent	E-002	At any point in the Novato Plant's outfall between the point of discharge and the point at which all waste tributary to that outfall is present.
Effluent	E~~FF~~-00~~1~~3	At a point in the dechlorination facilities ~~in the outfall from the Novato Plant between the point of discharge and the point~~ at which all waste tributary to that outfall is present. ~~Formerly E-003.~~
~~Receiving Water~~	~~RSW-001~~	~~At an accessible near-field background location of San Pablo Bay beyond the influence of the discharge..~~

Table E-2. Influent Monitoring – ~~EFF-001~~ A-002

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow[1]	mgd/mg	Cont/D	Continuous

BOD5	mg/L	C-24	2/Week
	kg/day	Calculate	2/Week
TSS	mg/L	C-24	3/Week
	kg/day	Calculate	3/Week
Cyanide	µg/L	Grab	1/month

Footnote to Table E-2:

[1] Flow Monitoring. Flow shall be monitored continuously, and the following information shall be reported in self-monitoring reports for each month:

- Daily average flow (mgd)
- Total daily flow (mg)
- Monthly average flow (mgd)
- Total monthly flow volume (mg)
- Maximum and minimum daily average flow rates (mgd) and time of occurrence

Discharge to storage ponds. If treated wastewater is diverted to the storage ponds other than reclamation purpose (reporting for diversion to storage ponds for reclamation is specified in Order No. 92-065), the Discharger shall report the following:

- Date of diversion
- Duration of diversion (hours and minutes)
- Total flow volume (mg) diverted
- Reason for diversion

Discharge from storage ponds. If wastewater from storage ponds is discharged through Discharge Point 001, the Discharger shall report the following:

- Date of discharge
- Duration of discharge (hours and minutes)
- Total flow volume (mg) discharged

Table E-3. Effluent Monitoring – ~~EFF-001~~ E-002

Parameter	Units	Sample Type	Minimum Sampling Frequency
~~Flow~~ [~~1~~]	~~mgd/mg~~	~~Cont/D~~	~~Continuous~~
pH [~~2~~1]	s.u.	Grab	5/Week
BOD5	mg/L	C-24	2/Week
	kg/day	Calculate	2/Week
TSS	mg/L	C-24	3/Week
	kg/day	Calculate	3/Week
BOD and TSS % Removal [~~3~~2]	%	Calculate	1/Month
Oil and Grease [~~4~~3]	mg/L	C-24	1/Month
	kg/day	Grab	1/Month
Enterococcus Bacteria	MPN/100mL or CFU/100mL	Grab	3/Week
~~Fecal Coliform Bacteria~~	~~MPN/100 mL~~	~~Grab~~	~~3/Week~~
Temperature	°C	Grab	5/Week
Total Chlorine Residual [~~6~~5]	mg/L	Cont/H	1/Hour
	~~kg/day~~	~~Calculate~~	~~1/Hour~~
Acute Toxicity [6, 7]	% Survival	Flow through	1/Month
Chronic Toxicity [8]	TUc	C-24	1/Quarter
Total Ammonia [~~5~~4]	mg/L as N	C-24	1/Month
Unionized Ammonia	mg/L as N	Calculate	1/Month
Copper	µg/L	C-24	1/Month
~~Lead~~	~~µg/L~~	~~C-24~~	~~1/Month~~
Cyanide	µg/L	Grab	1/Month

Carbon tetrachloride	µg/L	Grab	~~1/Month~~ 2/Year
Dioxin-TEQ	µg/L	Grab	2/Year
Dieldrin	µg/L	Grab	2/Year
Remaining Priority Pollutants	µg/L	[9]	2/Year
Standard Observations [10]	---	---	1/~~Week~~ Month

Footnotes to Table E-3:

~~[1] Flow Monitoring. Flow shall be monitored continuously, and the following information shall be reported in self-monitoring reports for each month:~~

- ~~Daily average flow (mgd)~~
- ~~Total daily flow (mg)~~
- ~~Monthly average flow (mgd)~~
- ~~Total monthly flow volume (mg)~~
- ~~Maximum and minimum daily average flow rates (mgd) and time of occurrence~~

~~Discharge to storage ponds. If treated wastewater is diverted to the storage ponds other than reclamation purpose (reporting for diversion to storage ponds for reclamation is specified in Order No. 92-065), the Discharger shall report the following:~~

- ~~Date of diversion~~
- ~~Duration of diversion (hours and minutes)~~
- ~~Total flow volume (mg) diverted~~
- ~~Reason for diversion~~

~~Discharge from storage ponds. If wastewater from storage ponds is discharged through Discharge Point 001, the Discharger shall report the following:~~

- ~~Date of discharge~~
- Duration of discharge (hours and minutes)
- Total flow volume (mg) discharged

[~~2~~1] pH. If pH is monitored continuously, the minimum and maximum pH values for each day shall be reported in monthly Self- Monitoring Reports (SMRs).

[~~3~~2] BOD and TSS % Removal. The percent removal for BOD and TSS shall be reported for each calendar month in accordance with Effluent Limitations IV.A. 1 and 2. Samples for BOD and TSS shall be collected simultaneously with influent samples.

[~~4~~3] Oil and Grease. Each oil and grease sample event shall consist of a composite sample comprised of three grab samples taken at equal intervals during the sampling date, with each grab sample being collected in a glass container. The grab samples shall be mixed in proportion to the instantaneous flow rates occurring at the time of each grab sample, within the accuracy of plus or minus 5%. Each glass container used for sample collection or mixing shall be thoroughly rinsed with solvent rinsings as soon as possible after use, and the solvent rinsings shall be added to the composite sample for extraction and analysis.

[~~5~~4] Total Ammonia. Monitoring for total ammonia shall occur concurrently with monitoring for temperature and pH, for determination of the unionized ammonia fraction.

[~~6~~5] Total Chlorine Residual. During times when chlorination is used for disinfection of the effluent, e~~E~~ffluent chlorine concentrations shall be measured continuously. Chlorine residual concentrations shall be monitored and reported for sampling points both before and after dechlorination. The Discharger shall report the maximum residual chlorine concentration observed following dechlorination on a daily basis. Total chlorine dosage (kg/day) shall be recorded on a daily basis. Alternatively, the Discharger may evaluate compliance with this requirement by recording discrete readings from the continuous monitoring every hour on the hour, or by collecting grab samples every hour, for a total of 24 readings or samples per day if the following conditions are met: (a) the Discharger shall retain continuous monitoring readings for at least three years; (b) the Discharger shall acknowledge in writing that the Regional Water Board reserves the right to use all other continuous monitoring data for discretionary enforcement; (c) the Discharger must provide in writing the brand name(s), model number(s), and serial number(s) of the equipment used to continuously monitor dechlorinated final effluent chlorine residual. If the identified equipment is replaced, the Discharger shall provide the Regional Water Board in writing, within 72 hours of the successful startup of the new equipment, the new equipment's brand name, model number, and serial number. The written notification identified in items (a) through (c) shall be in the form of a letter addressed to the Regional Water Board's Executive Officer with a certification statement as listed in the October 19,2004, Regional Water Board letter re: *Chlorine Compliance Strategies for Dischargers Using Continuous Monitoring Devices*.

[~~7~~6] Acute toxicity. Acute bioassay tests shall be performed in accordance with Section V.A of this MRP.

[7] Acute Toxicity. Acute bioassay tests shall be performed at Monitoring Location E-003 until the appropriate technical facilities are operational at the new Novato Plant at which time the acute bioassay tests will commence at Monitoring Location E-002.

[8] Chronic toxicity. Critical life stage toxicity tests shall be performed and reported in accordance with the Chronic Toxicity Requirements of specified in Section V.B of this MRP.

[9] Remaining priority pollutants. The sample type and analytical method should be as described in the Regional Standard Provisions (Attachment G) or as amended and subsequently approved by the Executive Officer. For these pollutants, the sampling frequencies shall be the higher ones under this table or under the pretreatment program sampling required in Section X.A of this MRP. Pretreatment program monitoring can be used to satisfy relevant parts of these sampling requirements.

[10] Standard observations. Standard Observations are specified in the Regional Standard Provisions (Attachment G).

[~~11~~] ~~Effluent monitoring while water is released from storage ponds. The Discharger shall arrange routine monitoring during the days when largest amount of wastewater is released from storage ponds, if the storage ponds have previously received wastewater that has water quality concerns, e.g., discharge is diverted to the storage ponds because of treatment units shutdown, plant upset, abnormal appearance of wastewater, etc.~~

Revision to Page E-8:

~~B. Receiving Water Monitoring Location RSW-001~~

~~The Discharger shall monitor the near-field background receiving water at Monitoring Location RSW-001 as follows to determine ambient ammonia concentrations.~~

~~Table E-4. Near-Field Receiving Water Monitoring Requirements~~

~~Parameter~~	~~Units~~	~~Sample Type~~	~~Minimum Sampling Frequency~~
~~Total Ammonia~~	~~mg/L~~	~~Grab~~	~~1/month~~
~~Un-ionized ammonia~~	~~mg/L~~	~~Calculated~~	~~1/month~~
~~pH~~	~~s.u.~~	~~Grab~~	~~1/month~~
~~Temperature~~	~~°C~~	~~Grab~~	~~1/month~~
~~Salinity~~	~~ppt~~	~~Grab~~	~~1/month~~

~~Legend to Table E-4:~~
~~Unit Abbreviations:~~
~~mg/L = milligrams per liter~~
~~s.u. = standard units~~
~~°C = degrees Celsius~~
~~ppt = parts per thousand~~
~~Sampling Frequency:~~
~~1/Month = One time per month~~

Revision to Page 19:

C. Special Provisions

2. Special Studies, Technical Reports and Additional Monitoring Requirements

c. Receiving Water Ammonia Characterization Study

The Discharger shall collect receiving water monitoring data for water quality parameters (pH, salinity, temperature, un-ionized ammonia, and total ammonia) that shall be sufficient to characterize the diurnal variability of these parameters throughout the day.

The Discharger shall submit a study plan to the Executive Officer within 90 days from the permit adoption date, that includes the following elements: a sampling location (an accessible near-field background location of San Pablo Bay beyond the influence of the discharge), sampling and analysis protocols, sampling parameters and a proposed implementation schedule.

The Discharger shall begin implementation of the plan within 90 days following approval by the Executive Officer. If a written approval is not received by the Executive Officer within 60 days of submittal of the study plan, then the study plan shall be deemed approved. A final report that presents all the data shall be submitted to the Regional Water Board no later than 180 days prior to the Order expiration date. This final report shall be submitted with the application for permit reissuance.

~~c~~ d. Chronic Toxicity Reduction Evaluation (TRE)

33. With the removal of reasonable potential for ammonia and preservation of existing effluent limits, the ammonia language in the CDO should be removed from the Cease and Desist Order.

(Pages 3, 5 and 6 of CDO)

With the mixing zone analysis that shows there is no reasonable potential for ammonia and the recommendation that existing limits be retained, the Districts requests language in the CDO be removed for ammonia, including the interim limits and prescribed actions. The Receiving Water Characterization Study as described in Comment 32 above is sufficient to characterize ammonia in the receiving water.

34. The District requests the requirement to collect multiple grab samples for pretreatment monitoring be removed, as there is no apparent regulatory basis for requiring these sampling procedures.

(Page E-9)

For select parameters, the pretreatment program, currently in the Tentative Order, requires multiple grab samples consisting of four discrete grab samples, collected at equally spaced intervals over the course of a 24-hour period. The Tentative Order Fact Sheet, Page F-42, in explaining the rationale for monitoring and reporting requirements states:

> *This Order specifies the sampling type for pretreatment monitoring. Specifically, this Order requires multiple grabs (instead of 24-hour composites for BNA and most metals, or grabs for VOCs, cyanide, and hexavalent chromium) to make the requirement consistent both with the federal pretreatment requirements in 40 CFR 403.12, which require 24-hour composites, and with proper sample handling for these parameters (summarized in the Regional Standard Provisions [Attachment G]).*

40 CFR 403.12 is incorrectly referenced as defining sampling requirements for publicly-owned treatment works (POTW's). This section, reproduced in part, below, describes sampling requirements for categorical industrial users and annual reporting requirements for POTW's. It does not specify grab sampling or composite sampling for POTW's.

§ 403.12 Reporting requirements for POTW's and industrial users.

(a) Definition. The term Control Authority as it is used in this section refers to: (1) The POTW if the POTW's Submission for its pretreatment program (§ 403.3(t)(1)) has been approved in accordance with the requirements of § 403.11; or (2) the Approval Authority if the Submission has not been approved.

(b) Reporting requirements for industrial users upon effective date of categorical pretreatment standard—baseline report.

(5) Measurement of pollutants.

(i) The user shall identify the Pretreatment Standards applicable to each regulated process;

(ii) In addition, the User shall submit the results of sampling and analysis identifying the nature and concentration (or mass, where required by the Standard or Control Authority) of regulated pollutants in the Discharge from each regulated process. Both daily maximum and average concentration (or mass, where required) shall be reported. The sample shall be representative of daily operations;

(iii) A minimum of four (4) grab samples must be used for pH, cyanide, total phenols, oil and grease, sulfide, and volatile organics. For all other pollutants, 24-hour composite samples must be obtained through flow-proportional composite sampling techniques where feasible. The Control Authority may waive flow-proportional composite sampling for any Industrial User that demonstrates that flow-proportional sampling is infeasible. In such cases, samples may be obtained through time proportional composite sampling techniques or through a minimum of four (4) grab samples where the User demonstrates that this will provide a representative sample of the effluent being discharged.

40 CFR 136 and 40 CFR 403 Appendix E prescribe the pretreatment sampling and analysis techniques. In these sections, there is no regulatory basis for the requirement to collect four discrete grab samples for VOC, BNA, hexavalent chromium, and cyanide.

The Fact Sheet further references Attachment G, Regional Standard Provisions, and Monitoring and Reporting Requirements, as a source of the required sampling regime. Attachment G contains the definition of a composite sample and requires that, "Grab samples comprising time-based composite samples shall be collected at intervals not greater than those specified in the MRP." Attachment G, however, only provides definition, not a regulatory basis for the requirement of multiple grab samples.

The District requests the following revisions to Table E-5 of the Monitoring and Reporting Program:

Table E-5. Pretreatment and Biosolids Monitoring Requirements

Constituents	**Sampling Frequency**			**Sample Type [4]**	
	Influent ~~INF-001~~ A-002	**Effluent E~~FF~~-00~~1~~2[3]**	**Biosolids**	**~~INF-001~~ A-002 and E~~FF~~-00~~1~~2**	**Biosolids[4c]**
VOC	2/Year	2/Year	---	~~Multiple~~ Grab~~s~~[4a]	Grab~~s~~

BNA	2/Year	2/Year	---	~~Multiple~~ Grab~~s~~ ~~[4a]~~	Grab~~s~~
Metals[1]	1/Month	1/Month	2/Year	24-hr Composite[4~~b~~a]	Grab~~s~~
Hexavalent Chromium[2]	1/Month	1/Month	2/Year	~~Multiple~~ Grab~~s~~ ~~[4a]~~	Grab~~s~~
Mercury	1/Month	1/Month	2/Year	24-hr Composite[4a, 4b~~,~~ ~~4c~~]	Grab~~s~~
Cyanide	1/Month	1/Month	2/Year	~~Multiple~~ Grab~~s~~ ~~[4a]~~	Grab~~s~~

Legend for Table E-5:

VOC = volatile organic compounds
BNA = base/neutrals and acids extractable organic compounds
1/month = once per month
2/year = twice per year

Footnotes for Table E-5:

[1] The parameters are arsenic, cadmium, copper, lead, nickel, silver, zinc, and selenium.
[2] The Discharger may elect to run total chromium instead of hexavalent chromium. Sample collection for total chromium measurements may also use 24-hour composite sampling.
[3] Effluent monitoring conducted in accordance with Table E-4 can be used to satisfy these pretreatment monitoring requirements.
[4] Sample types:

~~a. Multiple grabs samples for VOC, BNA, hexavalent chromium, and cyanide, must be made up of a minimum of four (4) discrete grab samples, collected at equally spaced intervals over the course of a 24-hour period, with each grab analyzed separately and the results mathematically flow-weighted or with grab samples combined (volumetrically flow-weighted) prior to analysis.~~

~~b~~ a. 24-hour composite samples may be made up discrete grab samples and may be combined (volumetrically flow-weighted) prior to analysis, or they may be mathematically flow-weighted. If an automatic compositor is used, 24-hour composite samples must be obtained through flow-proportioned composite sampling.

~~c~~ b. Automatic compositors are allowed for mercury if either 1) the compositing equipment (hoses and containers) comply with ultraclean specifications, or 2) appropriate equipment blank samples demonstrate that the compositing equipment has not contaminated the sample. This direction is consistent with the Regional Water Board's October 22, 1999, letter on this subject.

~~d~~ c. Biosolids collection shall comply with those requirements for sludge monitoring specified in Attachment H, Appendix H-3, of this of the Order for sludge monitoring. The biosolids analyzed shall be a composite sample of the biosolids for final disposal. The Discharger shall also comply with biosolids monitoring requirements required by 40 CFR 503.

35. The District requests the removal of the Blending Event Monitoring Requirements from the Monitoring and Reporting Program since they are duplicative with Attachment G.

(Page E-9)

The District understands that Attachment G was adopted as part of the blanket permit amendment in March to standardize requirements among dischargers. The addition of this requirement IX.B. of the Monitoring and Reporting Program is counter to this purpose for Attachment G. Also, by having a separate and slightly different duplicative requirement, it creates confusion by having different requirements in different parts of the permit for the same activity. Therefore, the District requests removal of paragraph IX. B. from the MRP.

36. The District requests the Fact Sheet be revised to correctly reflect the Technical Support Document Reasonable Potential Analysis procedure.

(Page F-25)

The text describing Step 3 of the TSD RPA Procedure includes a definition that is not consistent with the TSD. Sigma squared is defined on page 52 the TSD. The TO indicates that the TSD's definition for sigma squared was incorrectly used as the definition of sigma.

The District requests the following revision:

Then concentrations based on two percentile values, $C_{upper\ bound}$, and C_{Pn} need to be calculated using the following equation.

$$C_p = \exp(Z_p \sigma - 0.5\sigma^2)$$

where $\sigma^2 = \ln(CV^2+1)$, p is the percentile (upper bound or p_n), and Z_p is the standard normal distribution value for the percentile p.

37. The District requests that the ammonia RPA be revised to eliminate an erroneous effluent data value and to reflect the corrected sigma and sigma squared values.

(Page F-26)

The Regional Water Board's RPA calculations (included in a spreadsheet provided separately from the TO upon request), indicate that 90 effluent data points were used to perform RPA calculations. As described on page F-26 of the TO, the concentration of unionized ammonia was calculated using effluent data for total ammonia along with pH and temperature effluent data from samples collected on corresponding dates. However, one of the unionized ammonia values used in the RPA calculations, dated 1/10/2009, was included even though pH and temperature data were not available for that date. This unionized ammonia value was calculated as if the temperature and the pH values were both equal to zero, resulting in an outlier that slightly skewed the statistical calculations. This value should be removed from the data set, and the subsequent calculations should be revised accordingly.

In addition, the corrected sigma and sigma squared values (see previous comment), should also be reflected in the RPA calculations, and the text beginning on page F-26 should be revised accordingly.

38. The District requests that the Regional Water Board include a 6:1 dilution ratio (dilution credit=5) in the ammonia RPA calculations, as discussed in the District's Mixing Zone Analysis.

(Page F-26)

The District has submitted a separate mixing zone analysis which contains a request for the Regional Water Board to grant a 6:1 dilution ratio for ammonia, based on comprehensive mathematical modeling and an analysis of mixing zone size and other conditions in support of SIP requirements.

The District requests that the recommended dilution ratio be included in RPA calculations, as described on page 53 of the TSD. Reasonable potential is not triggered when this dilution factor is included in RPA calculations. The District therefore requests that the finding of reasonable potential be removed from the TO, and that the text on page F-26 be edited to reflect the revised RPA calculations.

Comments 39 through 44 pertain to typographical errors contained in the Tentative Order.

39. *Revisions to Page 5:*

The Discharger's wastewater collection system collects and transports wastewater flows to the Plants through a series of gravity sewers and interceptors, pump stations, and force mains, designed to handle peak wet weather flows. The Discharger's wastewater collection system~~s~~ includes approximately 200 miles of sewer lines and ~~35~~38 wastewater pump stations.

40. *Revision to Page 5*:

The Discharger completed additional engineering analyses, an Environmental Impact Report, and an antidegradation analysis for facility construction to increase the ADWF at the Novato Plant to 7.05 mgd. This Order authorizes this capacity increase after the Discharger completes ~~all~~ construction and the tasks specified in Provision VI.C.4(c) of this Order. The facility improvements will result in all treatment occurring at the Novato Plant. The upgraded Novato Plant (discussed below) will provide secondary treatment for 47 mgd peak wet weather flow. There will be no blending at the upgraded Novato Plant. When construction is complete, influent flows currently conveyed to the Ignacio Plant will be rerouted to the Novato plant, and the Ignacio Plant will be decommissioned.

41. *Revision to Page 9:*

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

42. *Revision to Page 24:*

Until Ignacio Plant ceases receiving wastewater, the Discharger shall operat~~ion~~e the Ignacio Plant as required by relevant regulations; follow all applicable operation and maintenance manuals, contingency policy, standard operation procedures, etc. to ensure proper operation and safety.

43. *Revision to Page 27:*

Table 9. Copper Action Plan

(3). Implement Additional Measures If the Regional Water Board notifies the Discharger that the three year rolling mean copper concentration of the receiving water exceeds 3.0 μg/L, the Discharger shall evaluate the effluent copper concentration trend. If the trend is increasing, within 90 days of the notification, the Discharger shall develop and begin implementation of additional measures to control copper discharges, and shall report annually on the progress and effectiveness of measures taken together with a schedule for measures to be taken in the next 12 months.~~.~~	With annual pollution prevention (P2) report with the report due after the notification.

44. *Revision to Page F-4:*

1. **Facility Description.** Treatment processes at the Novato Plant include influent pumping, influent screening, flow measurement and grit removal, primary clarification, activated sludge secondary treatment in the three existing circular aeration basins and two circular secondary clarifiers, ammonia removal through the existing bio-tower, chlorination (with sodium hypochlorite), and dechlorination (with sodium bisulfite) at a dechlorination facility about ½ mile east of the Ignacio Plant.

Novato Sanitary District
2010 NPDES Permit Renewal

Proposed Ammonia and Bacteria Effluent Limits Mixing Zone Analysis

April 7, 2010

Introduction

The Novato Sanitary District (District) owns and operates two wastewater treatment facilities, the Novato and Ignacio plants, collectively the WWTPs, which discharge to the intertidal mud flats of San Pablo Bay adjacent to the former Hamilton Air Force Base. The District's service area includes the City of Novato and adjacent areas, with a current population of about 60,000. The District presently discharges an average dry weather flow (ADWF) of 5.4 million gallons per day (MGD), from the WWTPs into San Pablo Bay.

In 2001, the District prepared a strategic plan which concluded that treatment plant upgrades and expanded capacity were needed to accommodate limited future growth within the service area and to reliably comply with existing effluent limitations. In addition, the District wanted to be proactive and addressed various existing (at the time) regulatory issues with increased sophistication in treatment processes. The District has since completed engineering analyses and environmental reviews and is nearing completion of construction, expected for June 2011. The cost to rate payers for this project is approximately $90 million.

The District has completed construction of a new pump station and now conveys treated effluent flows from the Ignacio plant to the Novato plant, so all effluent flow is now discharged from the Novato plant. Until the Novato plant improvements are fully operational, the Ignacio plant will continue to be used for pre-treatment of a portion of the service area wastewater flows.

On March 10, 2010, the San Francisco Bay Regional Water Quality Control Board (Regional Water Board) released a tentative order (TO) of the new NPDES permit for the Novato Sanitary District for public comment. This proposed permit contains final effluent limits for ammonia and fecal coliform that the District will not be able to comply with, as shown in **Table 1**.

Table 1. Existing and Proposed Effluent Limits for Ammonia and Bacteria

	Ammonia (mg/L)		Fecal Coliform Bacteria (MPN/100 mL)	
MEC:	**22 mg/L**		**Unknown (sampling never conducted or required)**	
	AMEL	MDEL	Median	90^{th} Percentile
Existing Effluent Limits	6.0	None	None	None
Proposed Effluent Limits	1.3	4.7	14	43

Notes:
MEC = Maximum Effluent Concentration
AMEL = Average Monthly Effluent Limit
MDEL = Maximum Daily Effluent Limit

In order to address compliance attainability concerns, this document includes an analysis of the mixing zone conditions near the District's wastewater treatment plant outfall and proposes dilution credit for discharge of ammonia and if necessary fecal coliform bacteria to San Pablo Bay during periods of discharge.

Location of Treatment Plant Outfall

The District's treatment plant outfall contains a multi-port diffuser and is located about 950 feet offshore at latitude 38°03'36"N and longitude 122°29'24"W, in the intertidal zone adjacent to the former Hamilton Air Force Base. An aerial view of the vicinity of the outfall is shown in **Figure 1** below.

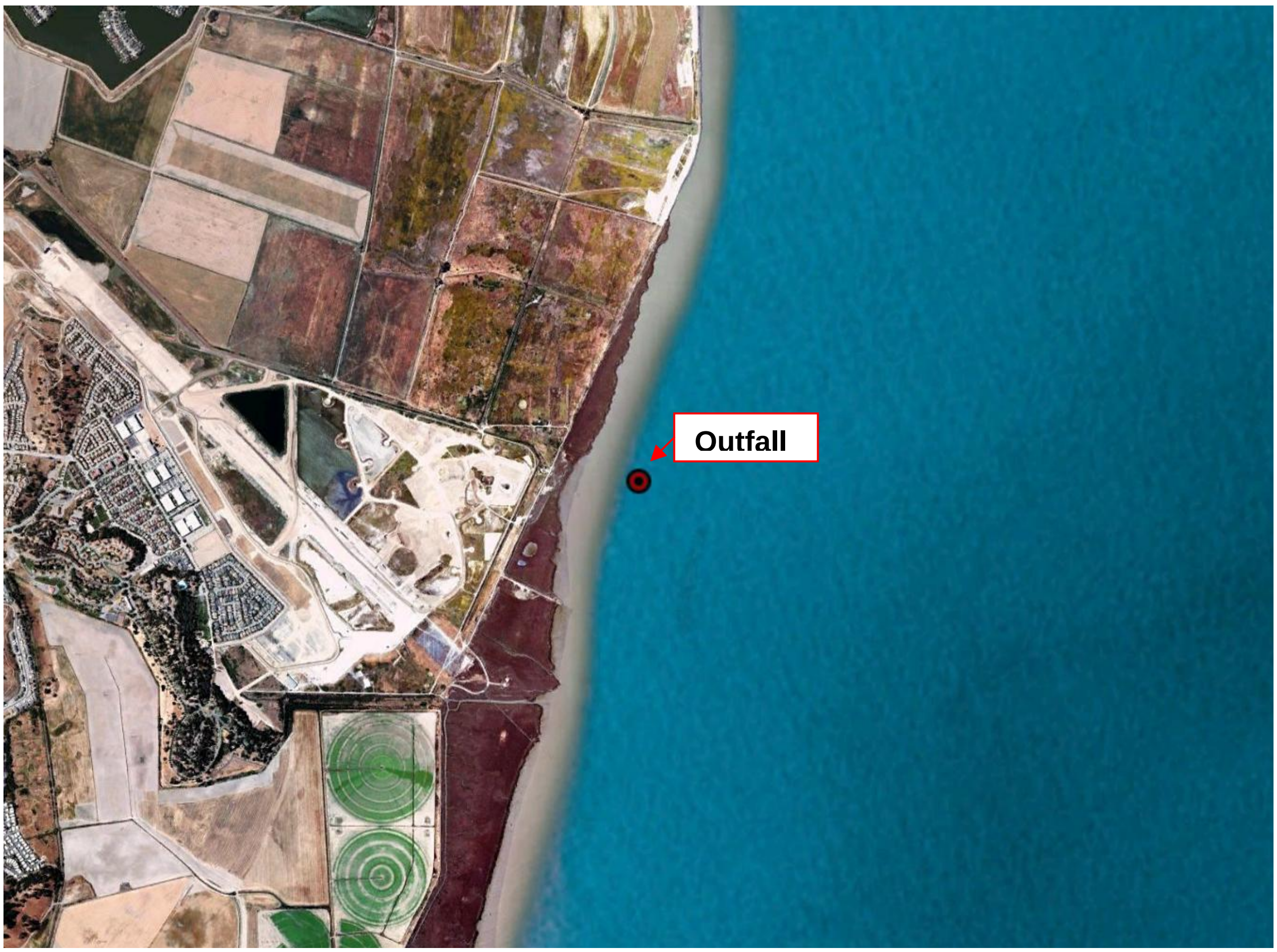


Figure 1. Location of Novato Sanitary District Outfall

Water Quality Objectives

Ammonia

The Water Quality Control Plan for the San Francisco Basin (the Basin Plan, revised 2005), contains chronic and acute WQOs for unionized ammonia for the San Francisco Bay. The chronic objective is 0.025 mg/L and the acute objective is 0.16 mg/L.

Bacteria

Fecal coliform WQO thresholds used as the basis of proposed effluent limits in the tentative order include 14 MPN/100 mL for the median and 43 MPN/100 mL for the 90th percentile.

Basic Data

Ammonia

The Novato Treatment Plant effluent data for ammonia, pH, and temperature were used in this analysis. The duration of data is April, 2008 through April, 2009. The effluent data are included in **Attachment 1**.

Receiving water data from Regional Monitoring Program (RMP) Station BD20 were used to convert unionized ammonia WQOs to total ammonia WQOs, and as background data to calculate effluent limits based on SIP procedures. These data were collected from 1993 through 2001 and are included with the WQO conversions in **Attachment 2**.

Bacteria

No fecal coliform data have been collected, or required to be collected, for treatment plant effluent.

Compliance Analysis

Ammonia

A compliance attainability analysis was conducted to determine the smallest practicable mixing zone necessary for compliance purposes. Compliance was determined to be feasible if all three of the following conditions were met:

- The mean effluent concentration is less than the long term average (LTA),
- The 95th percentile of the effluent data set is less than the average monthly effluent limit (AMEL), and
- The 99th percentile is less than the maximum daily effluent limit (MDEL).

The smallest mixing zone and corresponding minimum dilution factor that resulted in attainable water quality based effluent limits (WQBELs) was then selected.

A lognormal probability plot indicating the 95th and 99th percentiles of the effluent data is included below as **Figure 2**.

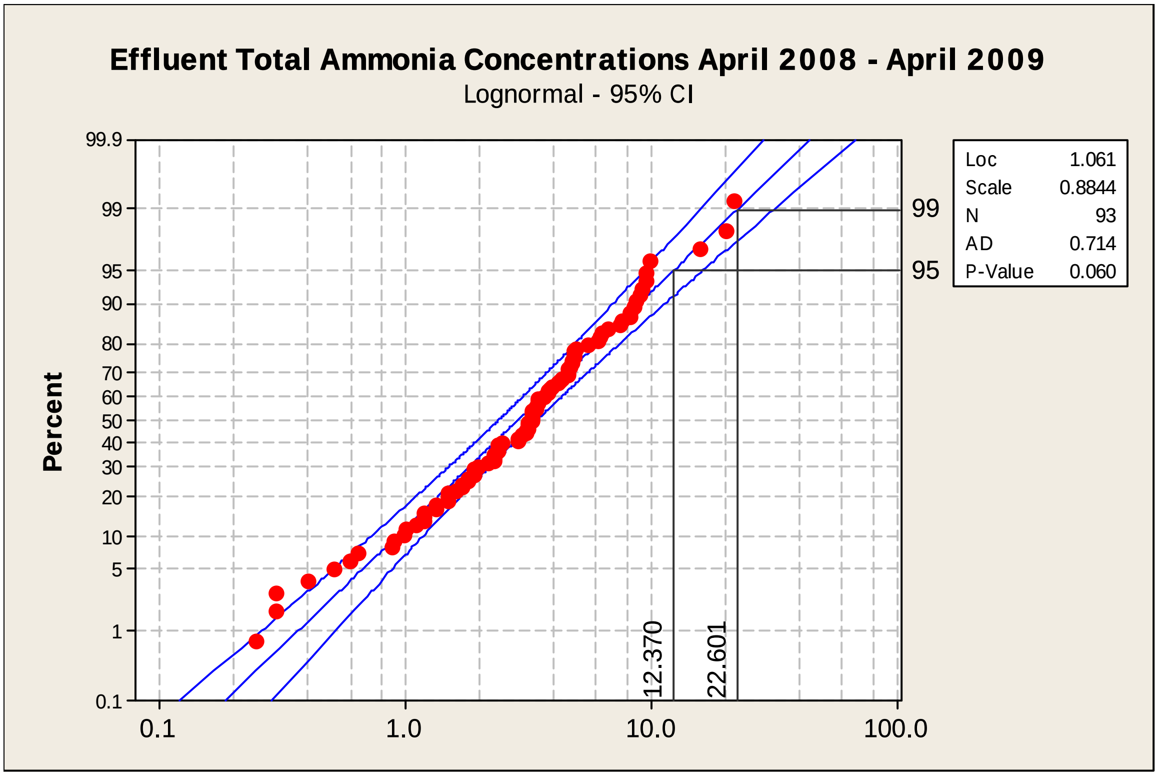


Figure 2. Probability Plot of Effluent Data Indicating 95th and 99th Percentiles

The results of this ammonia attainability analysis indicate that the District would currently need a dilution credit of 9 or greater in order to fully comply with ammonia WQBELs, as shown in **Table 2**, below. A dilution credit of 9 (equivalent to a ratio of 10:1) would yield an AMEL of 13 mg/L and an MDEL of 46 mg/L. WQBEL calculations are included in **Attachment 3**.

Table 2. Attainability Analysis of Ammonia Dilution

Effluent Statistics (Jan., 2006 – Dec., 2008) (mg/L)		**Compliance Attainability with Increasing Dilution Credits**					
MEC	22	**Dilution Credit**	**0**	**4**	**5**	**8**	**9**
Mean	4.1	LTA (mg/L)	1.0	5.1	6.1	9.1	10
95th Percentile	12	AMEL (mg/L)	1.3	6.6	7.9	12	13
99th Percentile	23	MDEL (mg/L)	4.7	23	27	41	46
		Mean < LTA (Y/N)	No	Yes	Yes	Yes	Yes
		95th < AMEL (Y/N)	No	No	No	No	Yes
		99th < MDEL (Y/N)	No	No	Yes	Yes	Yes
		Compliance (Y/N)	**No**	**No**	**No**	**No**	**Yes**

The current capital improvements being implemented at a cost of $90 million are designed to comply with the existing final average monthly effluent limit for ammonia in the current permit, which is 6.0 mg/L. New facilities include a new headworks, new influent pump station, two new primary clarifiers, two new aeration basins, two new secondary clarifiers, an ultraviolet disinfection facility, a new effluent pump station, a new gravity belt thickener, a second digester, new odor control facilities, and new electrical facilities. These facilities are being installed to address aging infrastructure, to accommodate limited future service area growth, to consolidate operations at the Novato plant (decommissioning the District's second plant, the Ignacio plant), and to comply with all effluent limitations.

These treatment facilities have been designed to control ammonia based on the 6.0 mg/L monthly average limit included in the existing and previous permits. An *Anti-Degradation Analysis for Proposed Wastewater Treatment Plant Discharge Modification* (December, 2004) (Antidegradation Analysis) was completed to address potential impacts of the proposed discharge modification to water quality. The Antidegradation Analysis concludes that "the proposed discharge is consistent with the purpose and intent of the federal and state antidegradation policies." Further, the Regional Water Board indicated that this Antidegradation Analysis is consistent with federal and State requirements in the District's NPDES permit amendment adopted in May, 2008. The facility upgrades will be completed by June 30, 2011.

The existing permit does not include an MDEL for ammonia, nor were facility upgrades designed based on any anticipated MDEL. However, the TO includes a proposed MDEL for ammonia. The attainability analysis presented above indicates that the 99th percentile of the effluent data is less than the MDEL when a dilution credit of 5 or greater is used in WQBEL calculations. This dilution credit is therefore representative of the smallest mixing zone needed for compliance purposes and will result in the acute WQO being met in the receiving water at the edge of the associated mixing zone (where the discharge obtains a 6:1 dilution ratio). A dilution credit of 5 would result in an MDEL of 27 mg/L.

Bacteria

It is not possible to determine whether compliance is attainable for the proposed fecal coliform limits because no measurements of fecal coliform bacteria have been made. However, it is generally recognized that the proposed limits are extremely low and that compliance is very uncertain. If it is necessary for the NPDES permit to contain fecal coliform effluent limits at this time, then a 10:1 dilution ratio is recommended for the current permit renewal. The District would then provide information and request a re-evaluation with the next permit renewal, after experience with the new plant is achieved.

Previous Dilution Studies

Several dilution studies have already been completed for the District's discharge to San Pablo Bay. These studies include a dye-release study during March and April of 1978, a dilution modeling analysis conducted in 1997 (*Dilution Analysis and Water Quality Impacts of the Novato Sanitary District Discharge to San Pablo Bay*, 1997), and a second water quality modeling analysis conducted in 2004 (*Final Report; Water Quality Modeling for Novato Sanitary District Anti-degradation and EIR Water Quality Analysis*, 2004*).* The most recent 2004 modeling report is included as **Attachment 4**.

Information used in the 1997 and 2004 modeling reports were intended to provide conservative results (i.e., they aimed to overestimate the water quality impacts of the District's treated wastewater discharge to the Bay). For example, the District does not discharge during the dry season, only the wet season. However, a principle modeling assumption was to base the analysis on dry weather conditions and historical low Delta flows, which had the effect of minimizing dilution of continuous point source discharges within the San Francisco Bay and maximizing the impacts of such discharges (in terms of concentration) to the Bay. In addition, this analysis was based on all pollutants of concern behaving conservatively after discharge (i.e. no decay or loss was presumed as treated effluent is mixed out into the receiving water). This assumption led to an overestimation of the incremental impact of the District's discharge for some pollutants, an overestimate that increased with distance and time from the discharge location.

The 2004 modeling report contains figures depicting mixing zones that correspond to various dilution ratios of receiving water to wastewater effluent. In particular, Figure 6-20 of the 2004 modeling report contains hourly average wastewater dilution contours at slack tide for the District's discharge to San Pablo Bay, as shown in **Figure 3** below.

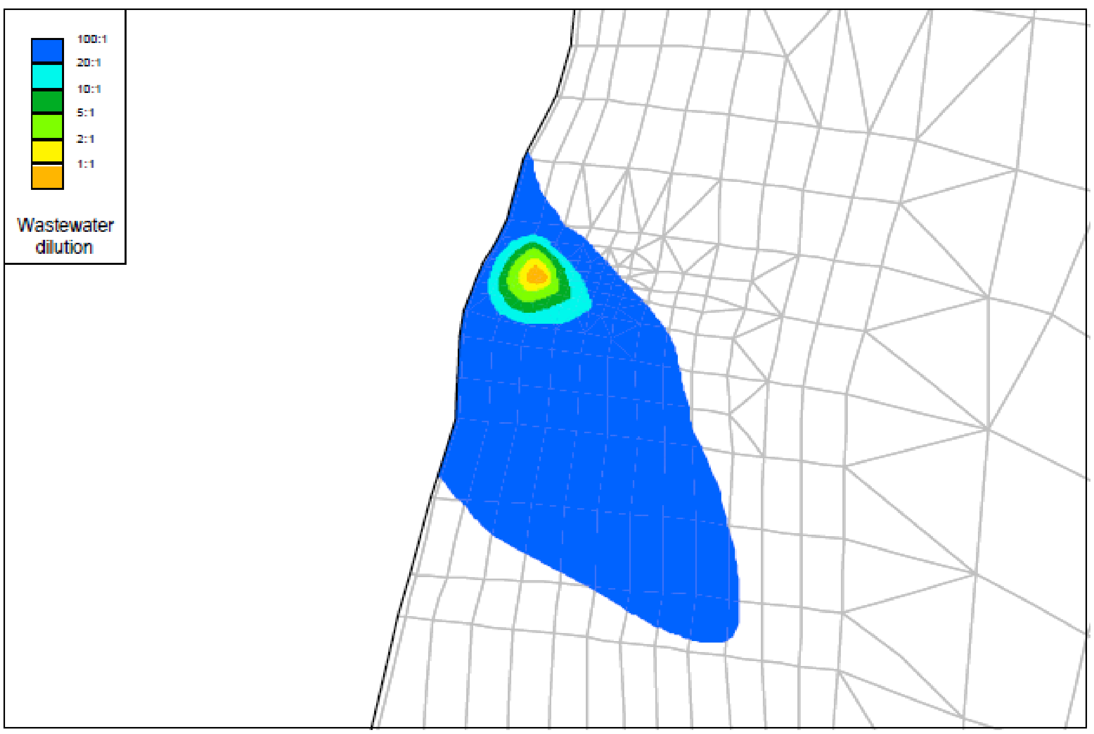


Figure 6-20 Hourly average wastewater dilution contours at slack tide during the 1977 simulation.

Figure 3. 2004 Modeling Report Mixing Zone Contours

Determination of Mixing Zone Size

The previous dilution studies were used in this analysis to develop a particular mixing zone that would be as small as practicable for compliance with the proposed effluent limits. Although the 2004 modeling report also includes several other figures illustrating dilution contours such as for daily averages and other less conservative delta inflow conditions (Figures 6-21, 6-41, and 6-42), the hourly average contours presented in Figure 6-20 are the most conservative. The hourly average contours were overlaid on a Google Earth Pro map of the receiving water in order to illustrate and calculate the approximate sizes of the mixing zones relative to the size of the receiving water body (San Pablo Bay). This image is shown in **Figure 4**, below, with the explanation of the computations following the figure.

Figure 4. Location and Size of Mixing Zones for Novato Sanitary District Outfall

The contour map in the 2004 modeling report delineated wastewater dilution ratios of 5:1 and 10:1. For ammonia, a radial interpolation (treating the mixing zone area roughly as a circle) of the contours results in an estimated area for the 6:1 dilution of approximately 20 acres, which extends to just outside the light green contour shown on **Figure 4**. In the event a bacteria mixing zone is needed for fecal coliform, the area of the mixing zone with a 10:1 dilution ratio (extending to the edge of the dark green contour) is approximately 32 acres.

Plots of *maximum* hourly average percent effluent versus distance along specified transects from Figures 6-8, 6-12, and 6-16 of the 2004 modeling report were used to identify approximate locations in the receiving water where the effluent achieves 6:1 and 10:1 dilution ratios (corresponding to 14.3% and 9.1% effluent, respectively) for these conditions. The specified transects are shown in Figure 4-10 of the 2004 modeling report. The areas estimated using the transects were approximately 24 acres for the 6:1 dilution ratio and 39 acres for the 10:1 dilution ratio. The maximum hourly average dilution occurs at lower low tide, and therefore this condition can be considered a critical condition representing the maximum extent of the mixing zones.

The surface area of San Pablo Bay is estimated to be 67,559 acres[1]. Therefore, the maximum 6:1 mixing zone would cover approximately 0.04% of the surface area of the receiving water, and the maximum 10:1 mixing zone would cover approximately 0.06% percent. To get a feel for the extent of the mixing zone in relation to San Pablo Bay, the area was plotted in **Figure 5** below.

Figure 5. Location of Novato Sanitary District Mixing Zone in Relation to San Pablo Bay

[1] http://sfbay.wr.usgs.gov/sediment/sfbay/geostat.html, accessed 3/30/2010.

Reasonable Potential Analysis Including Dilution Credit

The TO includes WQBELs for ammonia because results of a reasonable potential analysis (RPA) indicated that the effluent had reasonable potential cause an exceedance of WQOs. The RPA was conducted according to the Technical Support Document for Toxics Control (TSD) (EPA/505/2-90-001, March 1991). Step 4 of the RPA process, as described in TSD Box 3-2, indicates that a projected receiving water concentration (RWC) should be determined by multiplying the MEC both by an appropriate multiplying factor, as well as by the percent to which the effluent is diluted at the edge of the mixing zone. A finding of reasonable potential is then determined if the RWC is greater than the applicable WQO.

The RPA described in the TO indicates that maximum and median RWCs were determined assuming that there was no dilution. If the dilution achieved at the edge of the 6:1 mixing zone (14.3% effluent) is included in the RPA, the calculated RWCs are less than the applicable WQOs. Therefore, no reasonable potential exists, eliminating the need for WQBELs. In this case, it is expected that the existing technology-based effluent limit (an average monthly limit of 6.0 mg/L) would therefore be retained in the renewed permit. Retaining the existing technology-based ammonia limit would also be consistent with the State Water Resources Control Board's (State Water Board's) prior approval of the District's current treatment plant upgrades.

RPA calculations including this dilution factor are included in **Attachment 5**.

Mixing Zone SIP Conditions

An analysis of the mixing zone for the conditions indicated in the SIP, Section 1.4.2.2 (starting on page 17), is shown in **Table 3** on the following page.

Table 3. SIP Analysis of Mixing Zone Conditions for the District's Outfall

Basic Mixing Zone Data:		
Dilution at Edge of Mixing Zone:	**6:1** (ammonia)	**10:1** (fecal coliform, if needed)
Approximate Mixing Zone Area:	24 acres	39 acres
Approximate Receiving Water Area:	67,559 acres	
Mixing Zone Percent of Receiving Water:	0.04%	0.06%
Future ADWF, pending completion of upgrades:	6.55 MGD	
SIP Mixing Zone Conditions ***Section 1.4.2.2.A:***	**Detailed Response Description**	
(1) Does the mixing zone compromise the integrity of the entire water?	The mixing zones are located near the western shoreline of San Pablo Bay. A comparison of Figures 6-8 and 6-12, plots of maximum hourly average percent dilution along specified transects, with Figure 4-10, which depicts these transects, indicates that under conservative mixing conditions (lowest freshwater inputs to the Bay) and at lower low tide, a dilution ratio of **6:1** is achieved within approximately 250 meters east of the outfall and 325 meters from the outfall in the direction of the plume (roughly south-east of the outfall). A dilution ratio of **10:1**, under the same conditions, is achieved approximately 300 meter east of the outfall and 400 meters from the outfall in the direction of the plume. San Pablo Bay has an approximate surface area of 67,559 acres. The mixing zones cover an extremely small portion of the Bay (0.04% and 0.06%, respectively).	
(2) Does the mixing zone cause acutely toxic conditions to aquatic life passing through the mixing zone?	Aquatic life that could pass through the mixing zone includes a variety of organisms, many of which are listed in **Attachment 6**. The aquatic life are not expected to be exposed to acutely toxic conditions because the District's effluent acute toxicity monitoring data show that bioassay results from January 2005 through April 2009 conducted on juvenile fathead minnow were in full compliance. In particular, results show a minimum of 90% survival in 100% effluent as an 11-sample median, and a minimum 95% survival in 100% effluent as an 11-sample 90th percentile. The discharge to San Pablo Bay occurs at most 9 months of the year, so exposure occurs intermittently. In addition, tidal conditions create a dynamic hydraulic environment which contributes to flushing of Bay water over and around the vicinity of the outfall on a continuous basis.	
(3) Does the mixing zone restrict the passage of aquatic life?	The mixing zone covers approximately 0.04% to 0.06% of the surface area of San Pablo Bay, located near the Western shoreline. Due to the relative size and location, the mixing zone is not expected to inhibit the passage of aquatic life. There is significant waterbody volume in and around the outfall that could be utilized by aquatic life for passage. In addition, the effluent rapidly achieves a minimum of a **10:1** dilution ratio even directly above the submerged outfall. As only a **6:1** dilution ratio is needed to consistently comply with acute ammonia limits derived from Basin Plan WQOs, the initial dilution is sufficient to ensure that the effluent will not cause acutely toxic conditions to aquatic life when the outfall is submerged. The outfall is exposed approximately 17% of the time, or about 4 hours each day. During the exposure times, passage of aquatic organisms through the highest concentrations of effluent in the mixing zone is limited by the lack of water near the outfall. In addition, the shoreline near the outfall creates a barrier to fish passage, and the discharge to San Pablo Bay occurs at most 9 months of the year, so exposure occurs intermittently.	

(4) Does the mixing zone adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws;	NOAA's Environmental Sensitivity Index Atlas (Plate 7 for San Francisco Bay)[2] lists the area surrounding the outfall as consisting of sheltered tidal mudflat which is not identified as providing critical habitat or being used by any state or federal listed protected or sensitive species. Alternatively, a Bay area biologist[3] indicated that anadromous fish species such as Chinook salmon, steelhead, and green sturgeon utilize the entire estuarine system, including San Pablo Bay, as a migration corridor and foraging habitat. All estuarine, bay, and coastal marine habitats in California are protected as critical habitat for the southern population of the green sturgeon. Longfin smelt are listed as a State Threatened Species and juvenile longfin smelt are collected throughout the Bay during the late spring, summer and fall. Additionally, the Harbor Seal (*Phoca vitulina richardi)* occurs in sloughs, open bay, and haul-outs on tidal marshes, islands, or beaches within San Francisco Bay and San Pablo Bay. The tidal marsh located immediately inland of the intertidal mudflat is identified as home to the state and federally listed salt-marsh harvest mouse (State and federal endangered list) and used by two protected bird species, the California Black Rail and the Clapper Rail (both listed as State and California Threatened). Because the discharge is to mudflats (when the outfall is not submerged), and because there are no biologically sensitive or critical habitats in the mudflats, the mixing zone does not have an adverse impact for this condition.
(5) Does the mixing zone produce undesirable or nuisance aquatic life?	California Water Code 13050(m) defines "nuisance" to mean anything which meets <u>all</u> of the following requirements: (1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property. (2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal. (3) Occurs during, or as a result of, the treatment or disposal of wastes. No nuisances will be created because the effluent discharged through the outfall has received secondary treatment, has been properly disinfected, and, especially with the new plant improvements, will be compliant with NPDES permit limits that specifically prohibit the discharge from creating a nuisance in or impacting the beneficial uses of San Pablo Bay. Secondary treatment and ammonia removal at the District's treatment plant are designed to remove BOD and ammonia, respectively. The removal of these constituents will prevent nuisance aquatic life. In addition, the District's Receiving Water Limitations C.1.b. and C.2.e. specifically prohibit the discharge from causing a nuisance with respect to bottom deposits and nutrients, respectively. Primary production in San Francisco Bay has increased over 75% between the periods of 1993-1996 and 2001-2004[4]. Before the late 1990s, phytoplankton blooms in spring (February-May) punctuated the otherwise consistently low phytoplankton biomass. Since then, there have been larger spring blooms between San Pablo Bay and the San Mateo

[2] NOAA 2007b. Environmental Sensitivity Index for San Francisco Bay. Plate 7. Version 3, issued March 6, 2007.
[3] Jay Johnson of Applied Marine Sciences, personal communication, March 2010.
[4] Cloern, J.E., Jassby, A.D., Schraga, T.S., and Dallas, K.L., 2006. What is causing the phytoplankton increase in San Francisco Bay? In: San Francisco Estuary Institute (SFEI), The Pulse of the Estuary: Monitoring and Managing Water Quality in the San Francisco Estuary. SFEI Contribution 517. San Francisco Estuary Institute, Oakland, CA.

	Bridge, new autumn/winter blooms (July-December), and a higher minimum annual chlorophyll concentration. In 2004 a dinoflagelate red tide was reported to occur in South Bay for just under a week[5]. However, these reports do not identify the District's proposed mixing zone location as an area of increased production, therefore the District's discharge does not affect local or far field productivity. The District has been discharging in the same location for 38 years and no nuisance biota have been observed during this period. Since the plant improvements will only improve the water quality of the effluent, the discharge is not expected to change the habitat in any way that could promote nuisance biota, including within the mixing zone. The District conducts regular monitoring of its effluent for ammonia and as part of Standard Observations (such as checking for odor or floating or suspended materials). The District expects that this monitoring will continue with renewal of the NPDES permit.
(6) Does the mixing zone result in floating debris, oil, or scum?	The District's treatment works are equipped with properly designed, installed, and maintained scum/debris collection devices (scum baffles) to effectively collect and properly dispose of oils, grease, debris, and scum so that the effluent is free of these materials. The receiving water limitations in the District's NPDES Permit prohibit the following: *a. Floating, suspended, or deposited macroscopic particulate matter or foam;* *b. Bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses;* *c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;* *d. Visible floating, suspended, or deposited oil or other products of petroleum origin.* The District routinely visually monitors conditions in the effluent to ensure that debris, oil, and scum are not present. Standard Observation data from 2007 - 2009 indicate that these materials have not been observed.
(7) Does the mixing zone produce objectionable color, odor, taste, or turbidity?	Effluent discharged receives secondary treatment and is properly disinfected. Secondary treatment removes color, turbidity, and odor through the biological degradation of organic compounds that may contribute to these undesirable characteristics. The receiving water limitations in the District's NPDES Permit prohibit the following: *a. Floating, suspended, or deposited macroscopic particulate matter or foam;* *b. Bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses;* *c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;* *d. Visible floating, suspended, or deposited oil or other products of petroleum origin.* The District visually monitors effluent conditions to ensure that objectionable color, odor, or turbidity is not present. Standard Observation data from 2007 - 2009 confirm the absence of these characteristics.
(8) Does the mixing zone cause objectionable bottom deposits?	Receiving water limitation C.1.b. prohibits bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses.

[5] Cloern et al 2006

	Effluent discharged through the outfall receives secondary treatment and is properly disinfected. Secondary treatment biologically degrades and removes suspended particles, measured as Total Suspended Solids or TSS, from the wastewater that may otherwise contribute to receiving water bottom deposits. Ammonia and bacteria, for which the mixing zone is requested, degrade rapidly in the saline environment of San Pablo Bay and are not particle bound pollutants that would harm sediment quality or benthic or aquatic life.
(9) Does the mixing zone cause nuisance?	California Water Code 13050(m) defines "nuisance" to mean anything which meets <u>all</u> of the following requirements: (1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property. (2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal. (3) Occurs during, or as a result of, the treatment or disposal of wastes. No nuisances will be created because the effluent discharged through the outfall has received secondary treatment, has been properly disinfected, and, especially with the new plant improvements, will be compliant with NPDES permit limits that specifically prohibit the discharge from creating a nuisance in or impacting the beneficial uses of San Pablo Bay. Secondary treatment and ammonia removal at the District's treatment plant are designed to remove BOD and ammonia, respectively. The removal of these constituents will prevent nuisance aquatic life. In addition, the District's Receiving Water Limitations C.1.b. and C.2.e. specifically prohibit the discharge from causing a nuisance with respect to bottom deposits and nutrients, respectively. Effluent bacteriological limits are protective of human health in the water column as defined by the San Francisco Bay Basin Plan. In addition, because access to the mixing zone is restricted (due to the impassibility of open mudflats and marshland, and limited development of the surrounding land), the bacteriological limits are protective of the human food chain. Shellfish harvesting does not occur in the mixing zone[6]. Therefore, water in the mixing zone will not impact human health, property or enjoyment of life, communities and/or neighborhoods. The District visually monitors conditions in the effluent to ensure that no nuisances are present. Standard Observation data from 2007-2009 indicate that no nuisances have been observed.
(10) Does the mixing zone dominate the receiving water or overlap a mixing zone from different outfalls?	The mixing zones constitute 0.04% and 0.06% of the entire receiving waterbody; therefore neither dominates the receiving waterbody. The closest wastewater treatment plant outfall is the Las Gallinas Valley Sanitary District, which discharges to a tributary of San Pablo Bay and is located approximately 3 miles south of the outfall and almost as far from the edge of the **10:1** mixing zone.
(11) Is the mixing zone at or near any drinking water intake?	Beneficial uses listed for San Pablo Bay do not include Municipal Water Supply. Because the receiving water is saltwater, it does not support the Municipal Water Supply beneficial use pursuant to the State Water Board policy, "Sources of Drinking Water" (Resolution No. 88-63). There are no drinking water intakes near the mixing zone.

[6] CDFG 2009. Final California Commercial Landings for 2008. http://www.dfg.ca.gov/marine/fishing.asp#Commericial.

Section 1.4.2.2.B:	
The RWQCB shall deny or significantly limit a mixing zone and dilution credit as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements. Such situations may exist based upon the quality of the discharge, hydraulics of the water body, or the overall discharge environment (including water column chemistry, organism health, and potential for bioaccumulation).	Beneficial uses will be protected because all NPDES permit limits will be met at the edge of the mixing zone. Neither the SIP nor other regulations require a smaller mixing zone than the one recommended in this analysis. According to information from the California Department of Fish and Game (CDFG), no commercial shellfish harvesting occurs within San Francisco Bay-Delta[7]. The invasive Asian clam Corbula amurensis has been reported to dominate the subtidal and intertidal mudflats of San Pablo Bay and has been noted to replace many of the native clam species. The resurgence of the native oyster, Ostrea conchaphila, in San Francisco Bay since the beginning of this century is restricted to the southern portions of San Pablo Bay[8]. In addition, the National (federal) Shellfish Sanitation Program (NSSP) guidelines, developed by the Food and Drug Administration (FDA) are intended to protect areas where recreational or commercial shellfishing occurs, and its specific recommendation is that "A growing area shall be classified as prohibited if… [t]he growing area is adjacent to a sewage treatment plant outfall"[9]. Additional information from a Bay area biologist indicated that two edible clam species generally occur in the intertidal zone of San Francisco Bay, including San Pablo Bay, and support recreational fisheries, which include the softshell clam (*Mya arenaria*) and the Japanese littleneck clam (*Tapes japonica*). Other clams found in San Francisco Bay, include the gaper clam, native littleneck clam, bentnose clam, Baltic clam, basket cockle, and Washington clam. However, most of these species are either too small or occur in numbers too low to represent potentially harvestable resources[10]. Neither ammonia nor fecal coliform is carcinogenic, mutagenic, teratogenic, persistent, or bioaccumulative. These constituents, in addition to degrading quickly in the receiving water, will be flushed away from the outfall by the strong tidal currents. Receiving water data collected at RMP Station BD20 indicate that levels of ammonia in District effluent do not compromise the integrity of the receiving water body. These data are all well below the annual median ammonia WQO, as illustrated in **Figure 6** below (data are included in **Attachment 7**). In addition, the mixing zones are based on worst-case conditions and do not consider degradation of ammonia and fecal coliform. Since ammonia and fecal coliform do not persist in the receiving water, there is no enduring effect of mass loading. In addition to degradation of ammonia and fecal coliform, the tide is expected to flush these constituents away from the outfall as they are also diluted.
If a RWQCB allows a mixing zone and dilution credit, the permit shall specify the method by which the mixing zone was derived, the dilution credit granted, and the point(s) in the receiving	The size of the mixing zone was developed based on the results of the 2004 Modeling Report. Figures from this report illustrate the location and average sizes (both for the hourly average at slack tide and the daily average) of the mixing zones under worst-case scenario conditions. The more conservative of these plots, the hourly average dilution contours, was overlaid onto a Google Earth Pro map. This software was then used to estimate the surface area

[7] CDFG 2009
[8] NOAA 2007a
[9] National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish, 2007 ("NSSP Guidance").
[10] James E. O'Toole of Environmental Science Associates, personal communication, March 26, 2010.

water where the applicable criteria/objectives must be met. The application for the permit shall include, to the extent feasible, the information needed by the RWQCB to make a determination on allowing a mixing zone, including the calculations for deriving the appropriate receiving water and effluent flows, and/or the results of a mixing zone study.	covered by **6:1** and **10:1** mixing zones. Additionally, the maximum extent of the mixing zones was identified from plots included in the 2004 Modeling Report of the maximum hourly average percent effluent at various locations along specified transects, as well as the percent effluent versus time at a distance of 250 meters from the outfall in the cardinal directions. These locations were identified and illustrated by overlaying reference transects from the 2004 Modeling Report over a Google Earth Map of the receiving water and using this software to locate and label the distances along these transects where a **6:1** dilution and a **10:1** dilution is achieved at lower low tide. The information included in the plots depicting percent effluent versus time at 250 meters from the outfall was used to ground-truth the locations identified and labeled along the reference transects, in order to make sure the distances depicted were as accurate as possible considering the potential error involved in the reconciliation of multiple sources of data (e.g., 2004 Modeling Report figures and plots, TO permit description of outfall location, and Google Earth Pro maps). The approximate size of the receiving water body, San Pablo Bay, was obtained from a USGS website: http://sfbay.wr.usgs.gov/sediment/sfbay/geostat.html. The ammonia MDEL, and therefore the acute WQO, will be met in the receiving water at the edge of the **6:1** mixing zone. The ammonia AMEL calculated according to WQBEL SIP procedures would be met at the edge of the **10:1** mixing zone. The bacteria limits and WQO will be met at the edge of the **10:1** mixing zone.

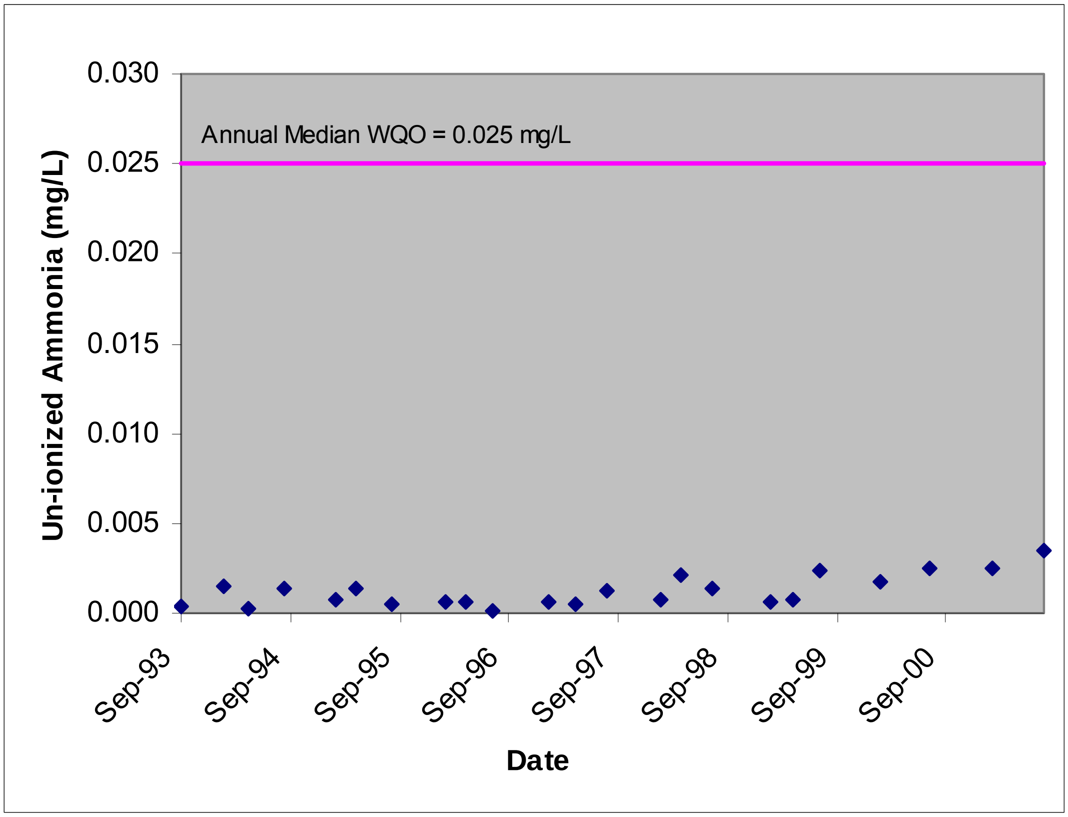


Figure 6. Unionized Ammonia Concentrations at San Pablo Bay RMP Station BD20 Compared to the Basin Plan Annual Median WQO (1993 – 2001)

Conclusions and Recommendations

The conclusions from this analysis are as follows:

- The size of the mixing zone in which a 6:1 dilution ratio is achieved represents approximately 0.04% of the size of the receiving water body.
- The TSD indicates that dilution at the edge of the mixing zone should be incorporated into the RPA.
- A RPA conducted considering the 6:1 mixing zone indicates that the effluent does not have reasonable potential to cause an exceedance of WQOs. Therefore, there is no need to include WQBELs for ammonia in the renewed permit.
- The current permit contains an average monthly limit of 6.0 mg/L.
- The State Water Board previously approved the District's plans for the major treatment plant upgrades that are nearly complete. These upgrades were designed for compliance with the existing technology-based ammonia limit.
- Bacteria limits are expected to be met with a dilution ratio of 10:1. This dilution credit is expected to result in limits of 140 MPN/100 mL for the median and 430 MPN/100 mL for the 90th percentile.

Based on these conclusions, it is recommended that the existing ammonia average monthly limit be retained. It is also recommended that a dilution ratio of 10:1 be used for calculation of bacteria limits. The recommended dilution credit and effluent limits are shown in **Table 4**, below.

Table 4. Recommended Dilution Credit and Effluent Limits for Ammonia and Bacteria

Pollutant	Units	Dilution Ratio	Effluent Limit(s)	
Ammonia	mg/L	6:1	6.0 – average monthly	
Fecal Coliform (if needed)	MPN/100 mL	10:1	140 – median	430 – 90th percentile

ATTACHMENT 1
Effluent Ammonia, pH, and Temperature Data
April, 2008 – April, 2009

Date	Ammonia mg/L	pH s.u.	Temperature (ºC)
04/01/08	3.2	7.7	18
04/02/08	4.6	7.7	18.2
04/07/08	0.25	7.8	17.4
04/08/08	1.5	7.7	17
04/09/08	3.2	7.6	17.7
04/14/08	0.65	7.8	17.8
04/15/08	2.4	7.7	17.1
04/16/08	0.88	7.6	18.2
04/21/08	1.9	7.7	17.4
04/22/08	1.1	7.7	18
04/23/08	1.8	7.6	18
04/28/08	1.7	7.6	20
04/29/08	1.8	7.7	18.7
04/30/08	5.6	7.8	18.2
05/05/08	3.5	7.7	19.5
05/06/08	4	7.6	19.7
05/07/08	2.9	7.8	18.6
05/12/08	1.9	7.8	19.1
05/13/08	4.8	7.6	20.1
05/14/08	8.8	7.7	21.4
05/19/08	6.4	7.8	20.4
05/20/08	6.1	7.7	20.1
05/21/08	7.7	7.8	19.1
12/08/08	16	7.4	17.2
12/09/08	2.35	7.4	17.3
12/10/08	7.5	7.5	17.1
12/12/08	20.3	7.3	17.8
12/15/08	3.9	7.7	16.5
12/16/08	9.5	7.8	16
12/17/08	21.7	7.6	15.5
12/23/08	6.7	7.7	16.8
12/26/08	3.4	7.8	15.8
12/27/08	4.9		
12/28/08	4.8		
12/29/08	1.9	7.7	16.5
12/30/08	8.56	7.5	16.1
12/31/08	9.3	7.6	16
01/05/09	3.1	7.7	16.2
01/08/09	3.3	7.6	14.9
01/10/09	1.2		
01/12/09	1	7.4	16.1
01/13/09	3	7.3	17.3

Date	Ammonia	pH	Temperature
	mg/L	s.u.	(ºC)
01/14/09	3.3	7.4	16.4
01/20/09	4.7	7.5	16.7
01/21/09	3.5	7.4	16.4
01/23/09	6.2	7.2	17.4
01/27/09	1.2	7.5	15.7
01/28/09	2.4	7.5	15.2
01/29/09	2.4	7.4	16
02/02/09	2.3		
02/03/09	2.3	7.5	18.3
02/04/09	4.3	7.4	16.1
02/09/09	2.5	7.6	16.6
02/10/09	4.2	7.6	17.4
02/11/09	4.4	7.6	15.4
02/16/09	2.9	7	14.1
02/17/09	3.1	7.2	15.6
02/18/09	4.9	7.7	15.5
02/23/09	3.3	7.4	16.5
02/24/09	3.3	7.3	16.1
02/25/09	9.5	7.5	16.7
02/26/09	2	7.3	16.4
03/02/09	4.6	7.3	16.7
03/03/09	3.2	7.4	15.4
03/04/09	8.2	7.4	14.6
03/05/09	8.2	7.4	14.9
03/06/09	0.6	7.5	15.9
03/07/09	2.2	7.4	15.7
03/08/09	0.9	7.6	15.4
03/09/09	1.01	7.6	15.9
03/10/09	10	7.6	18.3
03/11/09	3.8	7.4	16.1
03/16/09	2.3	7.3	17.3
03/17/09	3.5	7.3	17.7
03/18/09	1.5	7.3	16.9
03/23/09	1.34	7.6	16.4
03/26/09	0.3	7.5	18
03/27/09	0.4	7.6	18.9
03/30/09	0.3	7.8	16.4
03/31/09	3.8	7.5	17.3
04/01/09	1.5	7.7	16.8
04/06/09	0.51	7.5	18.9
04/07/09	1.35	7.7	18.3
04/08/09	1.2	7.6	18.4
04/13/09	1.7	7.8	17.6
04/14/09	5	7.5	15.4
04/15/09	3.4	7.7	15.8
04/20/09	1.6	7.6	20.2

Date	Ammonia mg/L	pH s.u.	Temperature (ºC)
04/21/09	4.9	7.6	22.5
04/22/09	3.7	7.7	21.2
04/27/09	3.32	7.6	18.2
04/28/09	9.13	7.8	17.9
04/29/09	4.62	7.7	18

ATTACHMENT 2
Water Quality Objectives

Basin Plan Unionized Ammonia Water Quality Objectives (WQOs) Conversion to Total Ammonia Objectives					
Ambient Data from RMP Monitoring Station BD20					
Date	**Salinity (ppt)**	**Temp (°C)**	**Temp (K)**	**pH**	**% Unionized**
09/15/93	BD20	24.0	293.7	7.8	2.22
02/07/94	BD20	20.0	284.7	7.8	1.17
04/26/94	BD20	21.9	287.1	8.0	2.33
08/22/94	BD20	25.4	292.2	8.0	3.03
02/13/95	BD20	11.7	285.0	7.7	1.00
04/19/95	BD20	7.0	285.9	7.8	1.47
08/21/95	BD20	20.2	293.5	8.0	3.20
02/12/96	BD20	3.9	286.2	7.5	0.72
04/22/96	BD20	9.0	289.2	8.0	2.43
07/24/96	BD20	17.3	294.2	7.8	2.62
01/27/97	BD20	0.4	283.5	7.6	0.69
08/04/97	BD20	22.2	293.1	7.7	1.75
02/02/98	BD20	4.2	284.3	7.6	0.70
04/14/98	BD20	3.7	287.1	8.3	4.58
07/27/98	BD20	14.5	294.2	8.0	3.42
02/08/99	BD20	6.9	283.4	7.6	0.71
04/19/99	BD20	12.2	288.8	7.9	1.94
07/19/99	BD20	20.7	291.9	7.9	2.49
02/07/00	BD20	10.5	284.9	7.8	1.12
07/17/00	BD20	22.4	292.2	7.9	2.70
02/12/01	BD20	19.0	282.5	8.0	1.69
08/06/01	BD20	25.2	293.6	8.0	3.21
Median					**1.9**
90th Percentile					**3.4**
Annual Median WQO for Unionized Ammonia					**0.025**
Maximum WQO for Unionized Ammonia					**0.16**
Chronic WQO for Total Ammonia					**1.3**
Acute WQO for Total Ammonia					**4.7**

ATTACHMENT 3
WQBEL Calculations

PRIORITY POLLUTANTS	Total Ammonia (acute)	Total Ammonia (chronic)	Total Ammonia (acute)	Total Ammonia (chronic)	Total Ammonia (acute)	Total Ammonia (chronic)	Total Ammonia (acute)	Total Ammonia (chronic)	Total Ammonia (acute)	Total Ammonia (chronic)
Units	**mg/L N**	**mg/L N**	**mg/L N**	**mg/L N**	**mg/L N**	**mg/L N**	**mg/L N**	**mg/L N**	**mg/L N**	**mg/L N**
Basis and Criteria type	Basin Plan Aquatic Life									
Lowest WQO	4.70	1.30	4.70	1.30	4.70	1.30	4.70	1.30	4.70	1.30
Dilution Factor (D) (if applicable)	**0**	**0**	**4**	**4**	**5**	**5**	**8**	**8**	**9**	**9**
No. of samples per month	4	30	4	30	4	30	4	30	4	30
Aquatic life criteria analysis required? (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Applicable Acute WQO	4.70		4.70		4.70		4.70		4.70	
Applicable Chronic WQO		1.30		1.30		1.30		1.30		1.30
Background (maximum, median)	0.16	0.07	0.16	0.07	0.16	0.07	0.16	0.07	0.16	0.07
ECA acute	4.7		22.9		27.4		41.0		45.6	
ECA chronic		1.3		6.2		7.5		11.1		12.4
No. of data points <10 or at least 80% of data reported non detect? (Y/N)	N	N	N	N	N	N	N	N	N	N
Avg of effluent data points	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Std Dev of effluent data points	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
CV calculated	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
CV (Selected) - Final	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
ECA acute mult99	0.22		0.22		0.22		0.22		0.22	
ECA chronic mult99		0.90		0.90		0.90		0.90		0.90
LTA acute	1.04		5.06		6.06		9.08		10.08	
LTA chronic		1.2		5.6		6.7		10.0		11.1
minimum of LTAs	1.04	1.04	5.06	5.06	6.06	6.06	9.08	9.08	10.08	10.08
AMEL mult95	1.86	1.30	1.86	1.30	1.86	1.30	1.86	1.30	1.86	1.30
MDEL mult99	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52
Final AMEL	**1.3**	**1.3**	**6.6**	**6.6**	**7.9**	**7.9**	**12**	**12**	**13**	**13**
Final MDEL	**4.7**	**4.7**	**23**	**23**	**27**	**27**	**41**	**41**	**46**	**46**

ATTACHMENT 4
Final Report; Water Quality Modeling for Novato Sanitary District Anti-degradation and EIR Water Quality Analysis

RMA

RESOURCE MANAGEMENT ASSOCIATES, INC.

FAIRFIELD, CALIFORNIA

FINAL REPORT

Water Quality Modeling for Novato Sanitary District Anti-degradation and EIR Water Quality Analysis

Prepared for

Novato Sanitary District
under subcontract to
Larry Walker Associates

March 2004

TABLE OF CONTENTS

1 INTRODUCTION 1

1.1 BACKGROUND 1
1.2 OBJECTIVES 2
1.3 NUMERICAL MODELS 3
1.4 MODEL REPRESENTATION 4

2 HYDRODYNAMIC MODEL CALIBRATION 8

3 WATER QUALITY MODEL CALIBRATION 16

3.1 SALINITY 16
3.2 DYE STUDY 18

4 DISSOLVED COPPER 25

4.1 DISSOLVED COPPER MODEL CALIBRATION 25
4.2 DISSOLVED COPPER ANALYSIS 28
4.2.1 October – November 1977 28
4.2.2 October – November 1980 30

5 DISSOLVED NICKEL 49

5.1 DISSOLVED NICKEL MODEL CALIBRATION 49
5.2 DISSOLVED NICKEL ANALYSIS 52
5.2.1 October – November 1977 52
5.2.2 October – November 1980 53

6 TRACER SIMULATION 70

6.1 OCTOBER – NOVEMBER 1977 70
6.2 OCTOBER – NOVEMBER 1980 71

7 SUMMARY 95

7.1 HYDRODYNAMIC MODEL CALIBRATION 95
7.2 WATER QUALITY MODEL CALIBRATION 95

7.3 DISSOLVED COPPER....96
7.4 DISSOLVED NICKEL....96
7.5 TRACER....97

8 REFERENCES....98

LIST OF FIGURES

Figure 1-1 Finite element mesh of San Francisco Bay and Delta. 6

Figure 1-2 Finite element mesh in the vicinity of the NSD outfall. 7

Figure 2-1 Locations of velocity, stage, and salinity recording stations used for the October – November 1980 calibration. 10

Figure 2-2 Computed and observed stage at station 5009 in San Pablo Bay during the October – November 1980 calibration period. 11

Figure 2-3 Computed and observed stage at station 5009 in San Pablo Bay for October 18 through October 23, 1980. 11

Figure 2-4 Computed and observed stage at station 5143 in San Pablo Bay. 12

Figure 2-5 Computed and observed stage at station 5143 in San Pablo Bay for October 28 through November 2, 1980. 12

Figure 2-6 Computed and observed current speed and direction at station C18 in San Pablo Bay. 13

Figure 2-7 Computed and observed current speed and direction at station C22 in San Pablo Bay. 14

Figure 2-8 Computed and observed current speed and direction at station C24 in San Pablo Bay. 15

Figure 3-1 Computed and observed salinity at station C18 in San Pablo Bay. 20

Figure 3-2 Computed and observed salinity at station C22 in San Pablo Bay. 20

Figure 3-3 Computed and observed dye concentration contours on March 23, 1978......................21

Figure 3-4 Computed and observed dye concentration contours on March 24, 1978......................22

Figure 3-5 Computed and observed dye concentration contours on March 27, 1978......................23

Figure 3-6 Computed and observed dye concentration contours on March 30, 1978......................24

Figure 4-1 Locations of RMP monitoring stations. 32

Figure 4-2 Profile from Golden Gate Bridge to Honker Bay of maximum, average and minimum dissolved copper concentrations computed for August 1994, plotted with observed copper concentration data collected between August 17 and August 23, 1994.....33

Figure 4-3 Dissolved copper concentrations at outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1977 simulation). 34

Figure 4-4 Dissolved copper concentrations 250 meters north of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1977 simulation)..34

Figure 4-5 Dissolved copper concentrations 250 meters east of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1977 simulation)..35

Figure 4-6 Dissolved copper concentrations 250 meters south of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1977 simulation)..35

Figure 4-7 Dissolved copper concentrations 2500 meters north of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1977 simulation)..36

Figure 4-8 Dissolved copper concentrations 2500 meters east of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1977 simulation)..36

Figure 4-9 Dissolved copper concentrations 2500 meters south of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1977 simulation)..37

Figure 4-10 Profile plot transect locations. 38

Figure 4-11 Maximum hourly average dissolved copper concentrations along east-west transect (1977 simulation). 39

Figure 4-12 Maximum daily average dissolved copper concentrations along east-west transect (1977 simulation). 39

Figure 4-13 Maximum hourly average dissolved copper concentrations for transect along length of plume (1977 simulation). 40

Figure 4-14 Maximum daily average dissolved copper concentrations for transect along length of plume (1977 simulation). 40

Figure 4-15 Maximum hourly average dissolved copper concentrations along shoreline transect (1977 simulation). 41

Figure 4-16 Maximum daily average dissolved copper concentrations along shoreline transect (1977 simulation). 41

Figure 4-17 Dissolved copper concentrations at outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1980 simulation). 42

Figure 4-18 Dissolved copper concentrations 250 meters north of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1980 simulation). 42

Figure 4-19 Dissolved copper concentrations 250 meters east of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1980 simulation). 43

Figure 4-20 Dissolved copper concentrations 250 meters south of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1980 simulation). 43

Figure 4-21 Dissolved copper concentrations 2500 meters north of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1980 simulation). 44

Figure 4-22 Dissolved copper concentrations 2500 meters east of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1980 simulation). 44

Figure 4-23 Dissolved copper concentrations 2500 meters south of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1980 simulation). 45

Figure 4-24 Maximum hourly average dissolved copper concentrations along east-west transect (1980 simulation). 46

Figure 4-25 Maximum daily average dissolved copper concentrations along east-west transect (1980 simulation). 46

Figure 4-26 Maximum hourly average dissolved copper concentrations for transect along length of plume (1980 simulation). 47

Figure 4-27 Maximum daily average dissolved copper concentrations for transect along length of plume (1980 simulation). 47

Figure 4-28 Maximum hourly average dissolved copper concentrations along shoreline transect (1980 simulation). 48

Figure 4-29 Maximum daily average dissolved copper concentrations along shoreline transect (1980 simulation). 48

Figure 5-1 Profile from Golden Gate Bridge to Honker Bay of maximum, average and minimum dissolved nickel concentrations computed for August 1994, plotted with observed copper concentration data collected between August 17 and August 23, 1994. 55

Figure 5-2 Dissolved Nickel concentrations at outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1977 simulation). 56

Figure 5-3 Dissolved Nickel concentrations 250 meters north of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1977 simulation). 56

Figure 5-4 Dissolved Nickel concentrations 250 meters east of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1977 simulation). 57

Figure 5-5 Dissolved Nickel concentrations 250 meters south of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1977 simulation). 57

Figure 5-6 Dissolved Nickel concentrations 2500 meters north of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1977 simulation). 58

Figure 5-7 Dissolved Nickel concentrations 2500 meters east of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1977 simulation). 58

Figure 5-8 Dissolved Nickel concentrations 2500 meters south of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1977 simulation). 59

Figure 5-9 Maximum hourly average dissolved nickel concentrations along east-west transect (1977 simulation). 60

Figure 5-10 Maximum daily average dissolved nickel concentrations along east-west transect (1977 simulation). 60

Figure 5-11 Maximum hourly average dissolved nickel concentrations for transect along length of plume (1977 simulation). 61

Figure 5-12 Maximum daily average dissolved nickel concentrations for transect along length of plume (1977 simulation). 61

Figure 5-13 Maximum hourly average dissolved nickel concentrations along shoreline transect (1977 simulations). 62

Figure 5-14 Maximum daily average dissolved nickel concentrations along shoreline transect (1977 simulation). 62

Figure 5-15 Dissolved Nickel concentrations at outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1980 simulation). 63

Figure 5-16 Dissolved Nickel concentrations 250 meters north of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1980 simulation). 63

Figure 5-17 Dissolved Nickel concentrations 250 meters east of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1980 simulation). 64

Figure 5-18 Dissolved Nickel concentrations 250 meters south of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1980 simulation). 64

Figure 5-19 Dissolved Nickel concentrations 2500 meters north of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1980 simulation). 65

Figure 5-20 Dissolved Nickel concentrations 2500 meters east of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1980 simulation). 65

Figure 5-21 Dissolved Nickel concentrations 2500 meters south of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1980 simulation). 66

Figure 5-22 Maximum hourly average dissolved nickel concentrations along east-west transect (1980 simulation). 67

Figure 5-23 Maximum daily average dissolved nickel concentrations along east-west transect (1980 simulation). 67

Figure 5-24 Maximum hourly average dissolved nickel concentrations for transect along length of plume (1980 simulation). 68

Figure 5-25 Maximum daily average dissolved nickel concentrations for transect along length of plume (1980 simulation). 68

Figure 5-26 Maximum hourly average dissolved nickel concentrations along shoreline transect (1980 simulation). 69

Figure 5-27 Maximum daily average dissolved nickel concentrations along shoreline transect (1980 simulation)....69

Figure 6-1 Wastewater concentrations at outfall for existing, current permit and future flow conditions, October 1977....73

Figure 6-2 Wastewater concentrations 250 meters north of outfall for existing, current permit and future flow conditions, October 1977....73

Figure 6-3 Wastewater concentrations 250 meters east of outfall for existing, current permit and future flow conditions, October 1977....74

Figure 6-4 Wastewater concentrations 250 meters south of outfall for existing, current permit and future flow conditions, October 1977....74

Figure 6-5 Wastewater concentrations 2500 meters north of outfall for existing, current permit and future flow conditions, October 1977....75

Figure 6-6 Wastewater concentrations 2500 meters east of outfall for existing, current permit and future flow conditions, October 1977....75

Figure 6-7 Wastewater concentrations 2500 meters south of outfall for existing, current permit and future flow conditions, October 1977....76

Figure 6-8 Maximum hourly average percent effluent along east-west transect for existing and future conditions (1977 simulation). 77

Figure 6-9 Maximum hourly average percent effluent along east-west transect for current permit and future conditions (1977 simulation)....77

Figure 6-10 Maximum daily average percent effluent along east-west transect for existing and future conditions (1977 simulation). 78

Figure 6-11 Maximum daily average percent effluent along east-west transect for current permit and future conditions (1977 simulation)....78

Figure 6-12 Maximum hourly average percent effluent for transect along length of plume for existing and future conditions (1977 simulation)....79

Figure 6-13 Maximum hourly average percent effluent for transect along length of plume for current permit and future conditions (1977 simulation)......79

Figure 6-14 Maximum daily average percent effluent for transect along length of plume for existing and future conditions (1977 simulation)......80

Figure 6-15 Maximum daily average percent effluent for transect along length of plume for current permit and future conditions (1977 simulation)......80

Figure 6-16 Maximum hourly average percent effluent along shoreline transect for existing and future conditions (1977 simulation). 81

Figure 6-17 Maximum hourly average percent effluent along shoreline transect for current permit and future conditions (1977 simulation)......81

Figure 6-18 Maximum daily average percent effluent along shoreline transect for existing and future conditions (1977 simulation). 82

Figure 6-19 Maximum daily average percent effluent along shoreline transect for current permit and future conditions (1977 simulation)......82

Figure 6-20 Hourly average wastewater dilution contours at slack tide during the 1977 simulation. 83

Figure 6-21 Daily average wastewater dilution contours during the 1977 simulation. 83

Figure 6-22 Wastewater concentrations at outfall for existing, current permit and future flow conditions, October 1980......84

Figure 6-23 Wastewater concentrations 250 meters north of outfall for existing, current permit and future flow conditions, October 1980......84

Figure 6-24 Wastewater concentrations 250 meters east of outfall for existing, current permit and future flow conditions, October 1980......85

Figure 6-25 Wastewater concentrations 250 meters south of outfall for existing, current permit and future flow conditions, October 1980......85

Figure 6-26 Wastewater concentrations 2500 meters north of outfall for existing, current permit and future flow conditions, October 1980. 86

Figure 6-27 Wastewater concentrations 2500 meters east of outfall for existing, current permit and future flow conditions, October 1980. 86

Figure 6-28 Wastewater concentrations 2500 meters south of outfall for existing, current permit and future flow conditions, October 1980. 87

Figure 6-29 Maximum hourly average percent effluent along east-west transect for existing and future conditions (1980 simulation). 88

Figure 6-30 Maximum hourly average percent effluent along east-west transect for current permit and future conditions (1980 simulation). 88

Figure 6-31 Maximum daily average percent effluent along east-west transect for existing and future conditions (1980 simulation). 89

Figure 6-32 Maximum daily average percent effluent along east-west transect for current permit and future conditions (1980 simulation). 89

Figure 6-33 Maximum hourly average percent effluent for transect along length of plume for existing and future conditions (1980 simulation). 90

Figure 6-34 Maximum hourly average percent effluent for transect along length of plume for current permit and future conditions (1980 simulation). 90

Figure 6-35 Maximum daily average percent effluent for transect along length of plume for existing and future conditions (1980 simulation). 91

Figure 6-36 Maximum daily average percent effluent for transect along length of plume for current permit and future conditions (1980 simulation). 91

Figure 6-37 Maximum hourly average percent effluent along shoreline transect for existing and future conditions (1980 simulation). 92

Figure 6-38 Maximum hourly average percent effluent along shoreline transect for current permit and future conditions (1980 simulation). 92

Figure 6-39 Maximum daily average percent effluent along shoreline transect for existing and future conditions (1980 simulation). 93

Figure 6-40 Maximum daily average percent effluent along shoreline transect for current permit and future conditions (1980 simulation). 93

Figure 6-41 Hourly average wastewater dilution contours at slack tide during the 1980 simulation. 94

Figure 6-42 Daily average wastewater dilution contours during the 1980 simulation. 94

LIST OF TABLES

Table 4-2 Summary of NSD discharge rates and concentrations. 28

Table 4-3 Summary of dissolved copper simulation results. 31

Table 5-1 Dry weather flows and dissolved nickel concentrations. 51

Table 5-2 Summary of NSD discharge rates and concentrations. 52

Table 5-3 Summary of dissolved nickel simulation results. 54

Table 6-1 Summary of tracer simulation results. 72

Prepared by
Resource Management Associates, Inc.

1 INTRODUCTION

The Novato Sanitary District (NSD) is in the process of evaluating incremental water quality impacts of the proposed increase in the District's NPDES permitted discharge to the Bay for key water quality parameters of interest. The spatial and temporal magnitude of these impacts will provide essential information for the anti-degradation and EIR analysis. These increments will be measured from a baseline of the existing discharge (for the EIR analysis) and from a baseline of the existing permitted discharge (for the anti-degradation analysis (ADA)). The existing RMA model of San Francisco Bay and Delta has been refined in the area of the NSD discharge and used for this analysis.

1.1 BACKGROUND

Resource Management Associates, Inc. (RMA) has developed a series of finite element models for one-, two- and three-dimensional simulation of flow, salinity, water quality and sediment transport in streams and estuaries. Each of these models is accompanied by utility programs that aid in the preparation of model inputs and the interpretation of simulation results. The model interpretation software includes graphical user interfaces (GUI), which allow on-screen time dependent display of concentration contours, velocity vectors and particle tracking in two or three dimensions.

Through numerous San Francisco Bay and Delta modeling projects, RMA has developed several finite element representations of the San Francisco Bay and Delta system that emphasize various areas in the Bay and Delta. Due to the variable grid nature of the finite element method, fine detail can be added in the project vicinity without increasing detail elsewhere. The most recently updated model representation served as a foundation on which the network was constructed to meet the specific needs of the Novato Sanitary District analysis.

The RMA staff has successfully applied these models in previous studies to evaluate the incremental water quality responses of treated wastewater discharges to San Francisco Bay and Delta. These modeling efforts have included analysis of wastewater dilution, dissolved copper, dissolved nickel, and incremental coliform impacts.

A previous study for NSD evaluated the dilution of the treated wastewater plume and the impacts of the discharge on dissolved copper concentrations in the Bay.

The RMA model of the San Francisco Bay is continually updated, refined and recalibrated. Because of the many changes that have been made to the model since the original study was performed in 1997, it was necessary to recalibrate the model for the current analysis to assure accuracy was maintained in the study area.

The combination of model software capabilities, existing Bay and Delta networks and extensive modeling experience provides an unparalleled capability for analyzing detailed variations in the hydrodynamic and water quality responses within the portion of San Francisco Bay and Delta influenced by the NSD treated wastewater discharge.

1.2 OBJECTIVES

The goal of this study was to adapt the existing RMA model of San Francisco Bay and Delta to quantify water quality impacts resulting from proposed increase in the District's NPDES permitted discharge to the Bay. The following objectives were accomplished.

- Refined the finite element mesh of San Francisco Bay and Delta in the vicinity of the NSD discharge.
- Updated the calibration of the hydrodynamic and water quality models.
    - Calibrated the hydrodynamic model to October – November 1980 dry weather conditions using NOAA stage and USGS velocity measurements.

- Calibrated the water quality model using October – November 1980 USGS dry weather salinity data.
- Checked calibration of the water quality model in the vicinity of the NSD discharge using dye study data from March 1978.

- Evaluated incremental impacts of increased discharge rates on wastewater dilution, dissolved copper concentrations, and dissolved nickel concentrations in the vicinity of the outfall.

1.3 NUMERICAL MODELS

RMA developed and maintains a numerical model of the San Francisco Bay and Sacramento-San Joaquin Delta system utilizing the RMA finite element models for surface waters.

To simulate the hydrodynamic and water quality responses in shallow estuaries, RMA has developed two computer programs, RMA-2 (King, 1986) and RMA-11 (King, 1995). RMA-2 is a generalized free surface hydrodynamic model that is used to compute a continuous temporal and spatial description of fluid velocities and depth throughout an estuary system. RMA-11 is a generalized two-dimensional water quality model that computes a temporal and spatial description of conservative and non-conservative water quality parameters. RMA-11 is designed to simulate both inter-tidal and tidally averaged water quality conditions. In the tidally averaged mode, direct steady-state concentrations can be computed. RMA-11 uses the results from RMA-2 for its description of the flow field.

RMA-2 solves a set of differential equations that represent hydrodynamic response of shallow water waves throughout the estuary. They are essentially a hydrodynamic quantification of Newton's second law (i.e., force = mass x acceleration) and include the effects of momentum transfer, wind, bottom friction, the Coriolis force, and turbulent diffusion. The complex effects of turbulent diffusion are approximated by turbulent diffusion analogy (i.e. eddy diffusion).

RMA-11 solves a set of differential equations representing the conveyance of dissolved or suspended material by advection and turbulent mixing. These equations are derived from a statement of conservation of mass. Eddy diffusion is also used to approximate the complex process of time dependent transport by turbulent mixing. In the tidally averaged mode, inter-tidal mixing is represented by diffusion based on the inter-tidal velocity magnitude and direction over an entire tidal cycle.

1.4 MODEL REPRESENTATION

The RMA model of the San Francisco Bay-Delta, shown in Figure 1-1, extends from the Golden Gate to the confluence of the American and Sacramento Rivers, and to Vernalis on the San Joaquin River. San Francisco Bay and Suisun Bay regions are represented using a two-dimensional depth-averaged approximation, and Delta channels and tributary streams represented using a one-dimensional cross-sectionally averaged approximation.

The size and shape of elements not associated with outfalls are dictated by changes in bottom elevation and other hydraulic considerations. Wetting and drying of the tidal mudflats has been represented in sufficient detail to provide a good definition of change in the tidal prism with change in tidal stage. Bottom elevations and the extent of mudflats were based on NOAA navigation charts, NOAA hydrographic survey data, and aerial photo surveys processed by USGS and Stanford University.

Most recently, the existing mesh has been improved to facilitate the Suisun Marsh levee breach study. The 1-D Delta and Suisun Marsh channels have been refined using current USGS digital orthoquad maps and bathymetry data collected through 1990, and the most recent bathymetry data. The 2-D finite element mesh was refined in the Suisun Bay and extended into the confluence area to Rio Vista, Three Mile Slough and Bradford Island. Frank's Tract is represented in 2-D as well.

For the current study, the mesh was refined around the NSD outfall and along the adjacent shoreline to the west and south in San Pablo Bay. These refinements allow more accurate computation of concentration gradients near the discharge and better representation of the discharge plume as it moves south along the shoreline. The finite element mesh in the vicinity of the District's outfall is depicted in Figure 1-2.

Hydrodynamic model operation requires specification of the tidal stage at the Golden Gate and inflow and withdrawal rates at other external boundaries. Inflows include Sacramento River, San Joaquin Rivers and other rim flows, channel depletions, and exports (SWP, CVP, Contra Costa Canal, and North Bay Aqueduct).

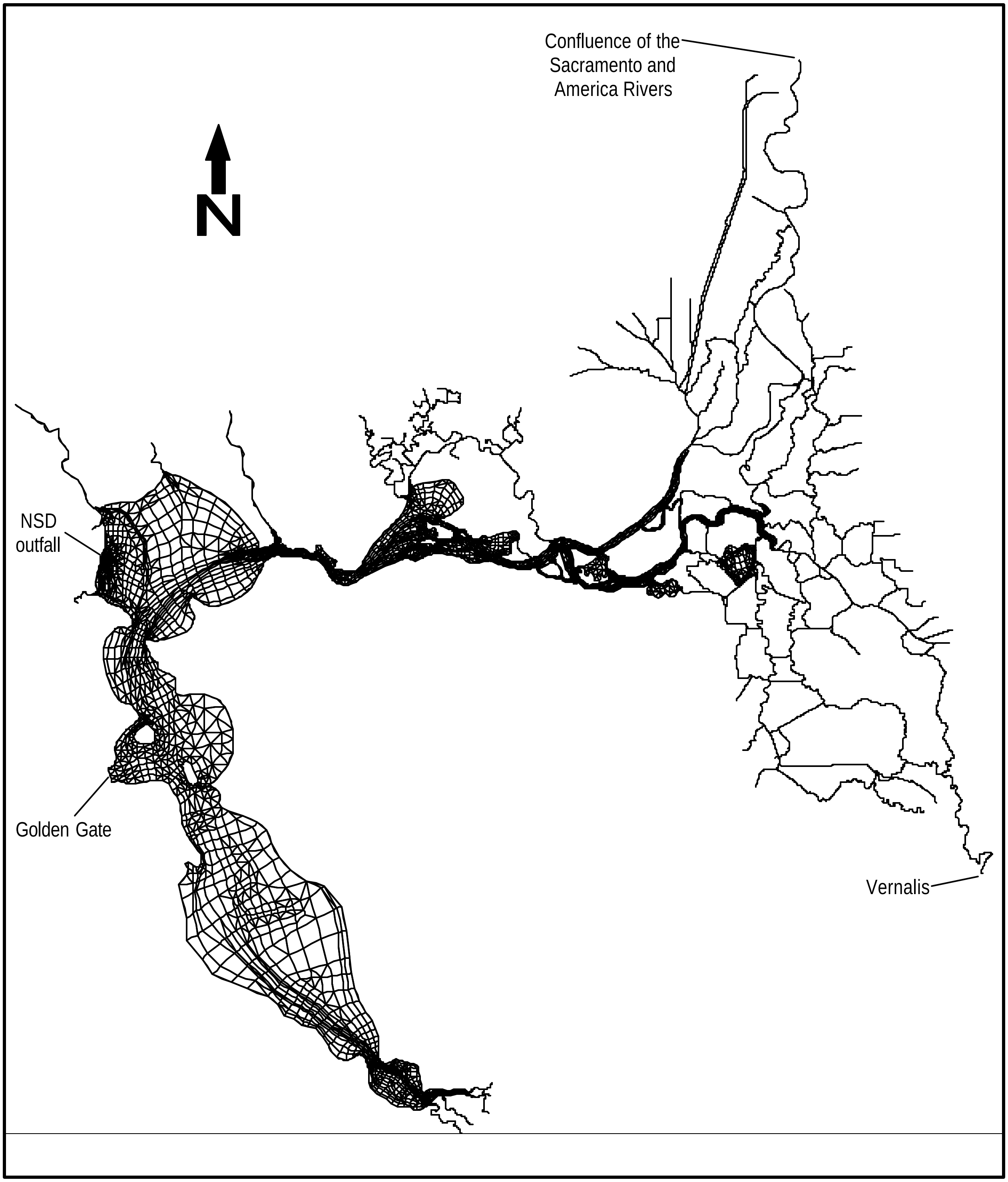


Figure 1-1 Finite element mesh of San Francisco Bay and Delta.

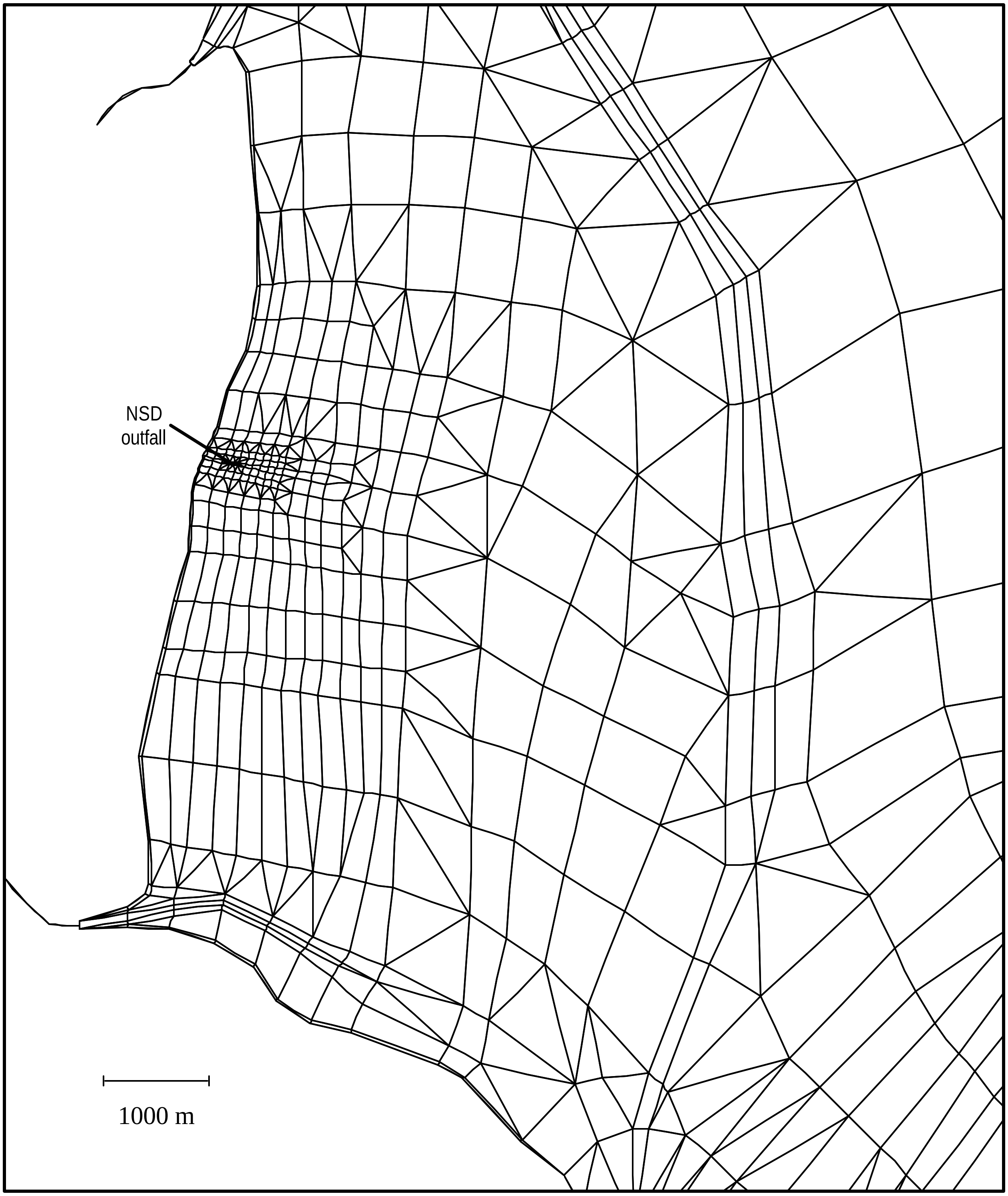


Figure 1-2 Finite element mesh in the vicinity of the Novato Sanitary District outfall.

2 HYDRODYNAMIC MODEL CALIBRATION

The hydrodynamic model was calibrated for the period of October 10 through November 14, 1980. Calibration was performed by varying the bottom roughness and eddy viscosity coefficients until adequate agreement is obtained between the computed and observed stage, velocity and flow at selected locations throughout the Bay and Delta, with particular emphasis on San Pablo Bay and nearby areas.

During the current and previous calibrations, model parameters were fine-tuned to ensure that flows, current velocity and tidal stage were well represented throughout the San Francisco Bay and Delta system. These calibration efforts utilized stage and current velocity measurements recorded in Suisun Bay, San Pablo Bay, Central Bay, South Bay, Lower Bay and the Delta, as well as flow measurements at the Sacramento – San Joaquin River confluence.

The San Francisco Bay velocity and stage monitoring program occurred during 1979 and 1980. Current velocity meters and stage recorders were deployed at several locations. The length of deployment ranged from two weeks to several months. Up to three velocity meters at different depths were used at several locations to provide a measure for the bottom friction and density stratification effects on the velocity profile.

For the present study, flow, velocity and stage data in San Pablo Bay region were used to ensure that the finite element model representation developed to meet the specific needs of the Novato Sanitary District project retained an accurate representation of the hydrodynamic characteristics of the Bay as demonstrated in previous calibration efforts. Data recording stations used in the calibration are shown in Figure 2-1.

The October 10 through November 14, 1980 calibration period was selected because of availability of extensive stage, velocity and salinity data. Dayflow data were used to set daily flow boundaries for Sacramento River, San Joaquin River, Mokelumne and Cosumnes Rivers, Yolo Bypass, miscellaneous eastside flows, and CVP, SWP, Contra Costa Canal, and North Bay Aqueduct exports. Precipitation and channel depletions were also included. Water surface elevations were applied at the Golden Gate based on NOAA stage data at San Francisco.

During the October 10 – November 14, 1980 calibration period, the average net delta outflow (NDO) was 6559 cfs, and the low NDO was 3556 cfs. Figures 2-2 through 2-5 show the computed and observed water surface elevations at stations 5009 and 5143. Figures 2-2 and 2-4 show the results for the entire period, while Figures 2-3 and 2-5 show only five-day time periods for closer inspection of the results. These results show that the magnitude and phasing of the tide are generally well represented for the dry weather calibration period. Computed values are generally within 0.2 m or less of observed at each of the two locations.

Computed and observed velocity magnitude and direction time series at stations C18, C22 and C24 for five days of the calibration simulation are shown in Figures 2-6 through 2-8. The velocity calibration plots show the computed and measured current speed and the associated velocity direction. The computed current velocities represent the average over the entire water column, while the observed data represent conditions at the meter depth(s). The current direction plots show the computed and measured direction in degrees referenced to true north in a clockwise direction.

At each station, computed depth-averaged velocities generally fall within the range of observed data. The velocity directions are also in good agreement with observed data. The time of slack water and the directions during the ebb and flood cycles are well represented. The spikes seen at slack water are a result of how the meter and/or model switches direction as the tide reverses (slack water). For example, if the flow direction changes clockwise from 360° to 180°, a spike occurs, but if the flow direction changes anti-clockwise a spike does not occur. Whether the model and meter switch directions in the same manner has little if any significance.

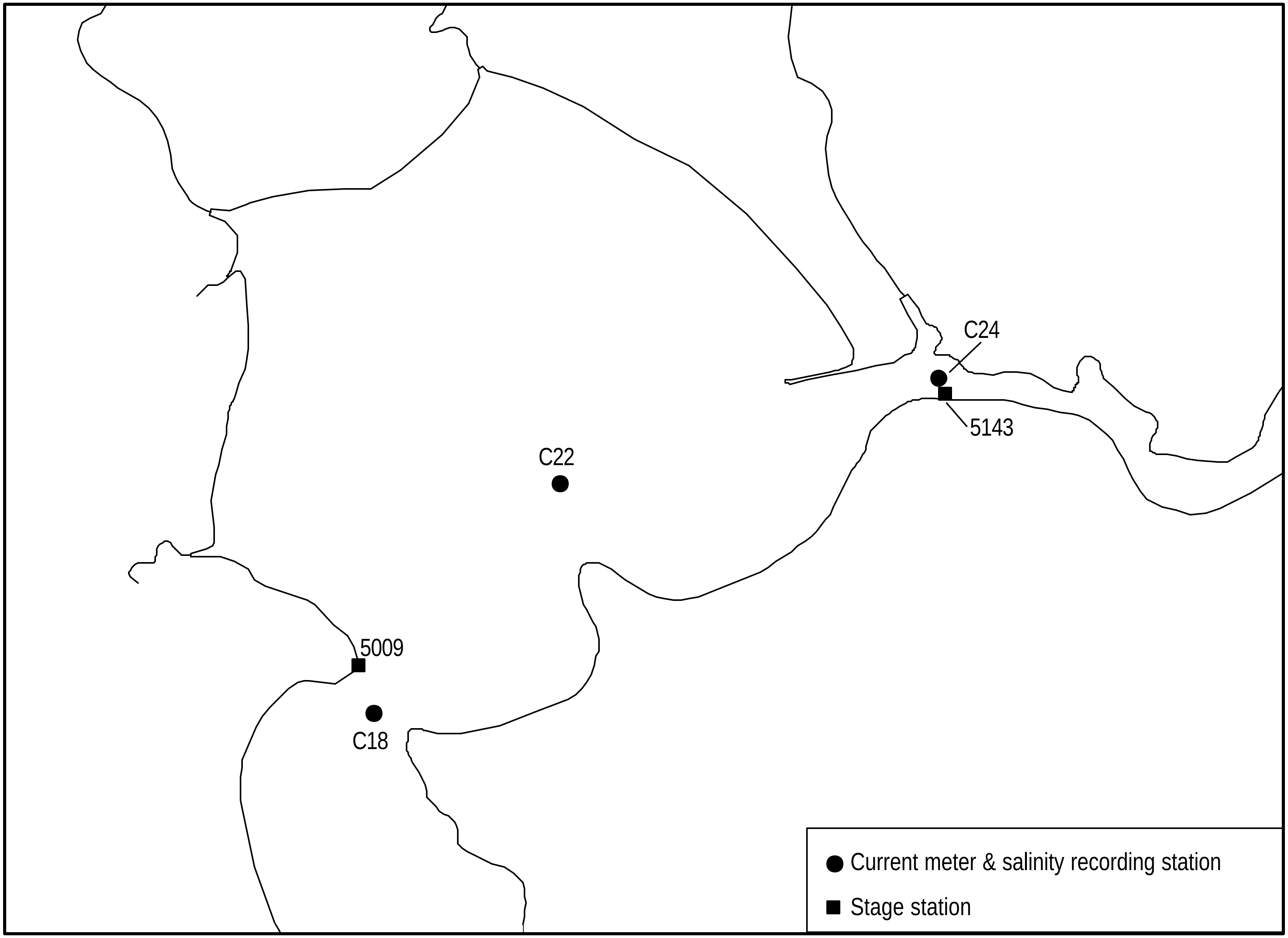


Figure 2-1 Locations of velocity, stage and salinity recording stations.

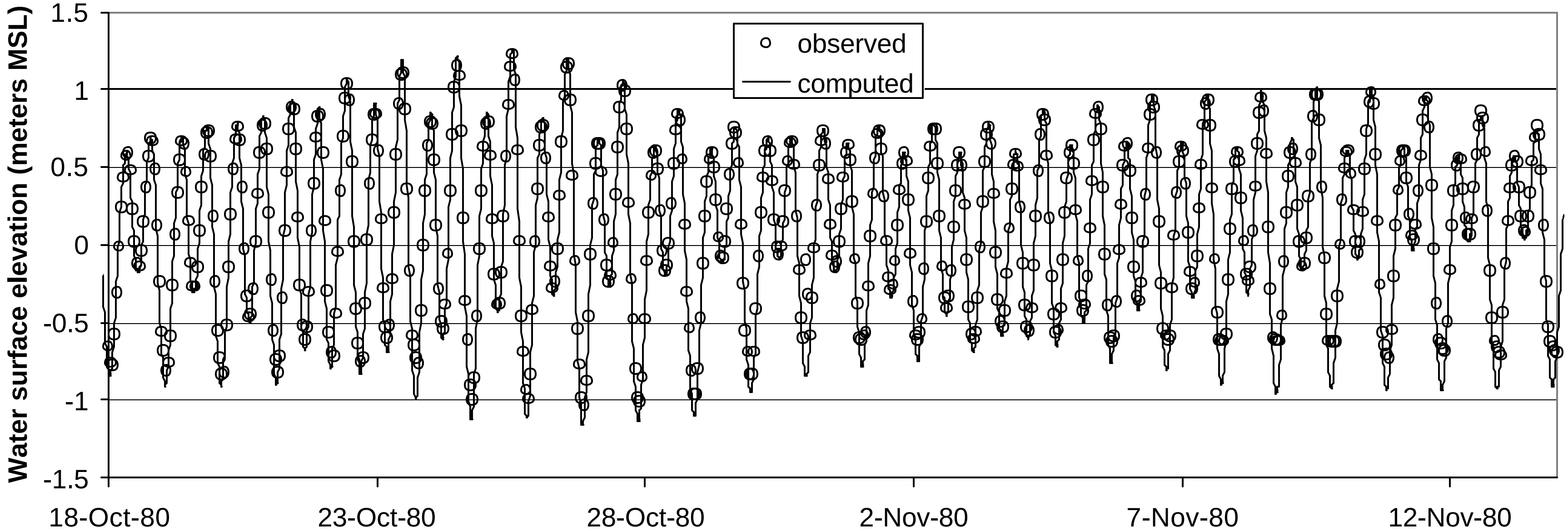


Figure 2-2 Computed and observed stage at station 5009 in San Pablo Bay.

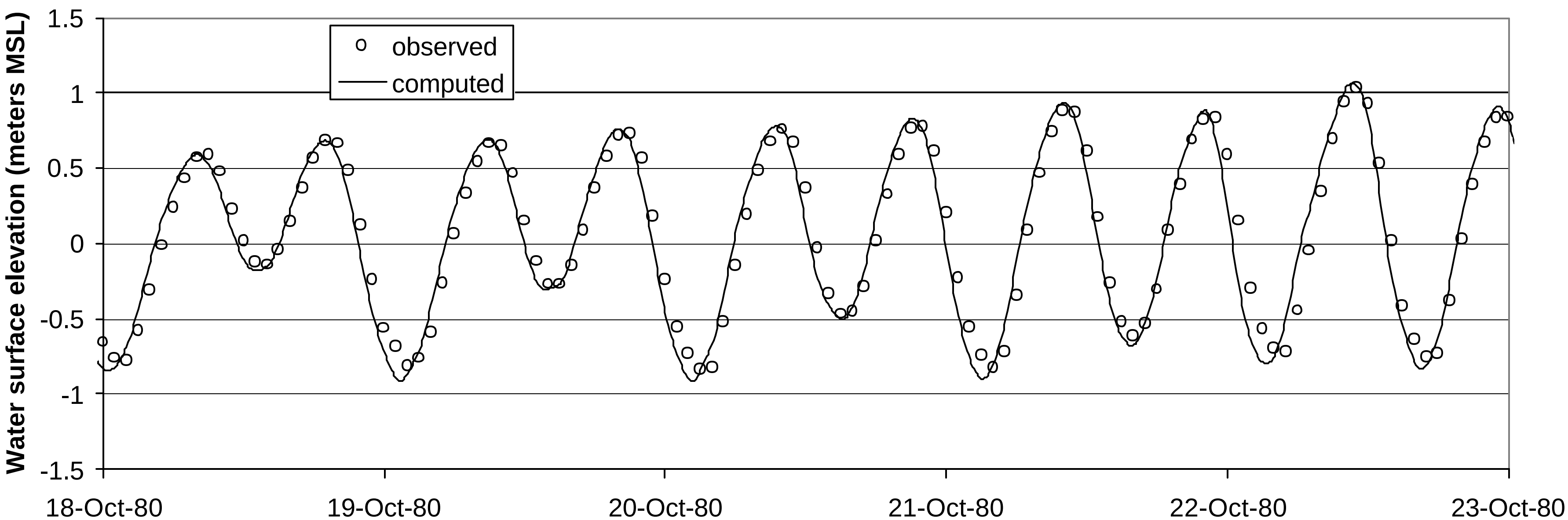


Figure 2-3 Computed and observed stage at station 5009 in San Pablo Bay for October 18 through October 23, 1980.

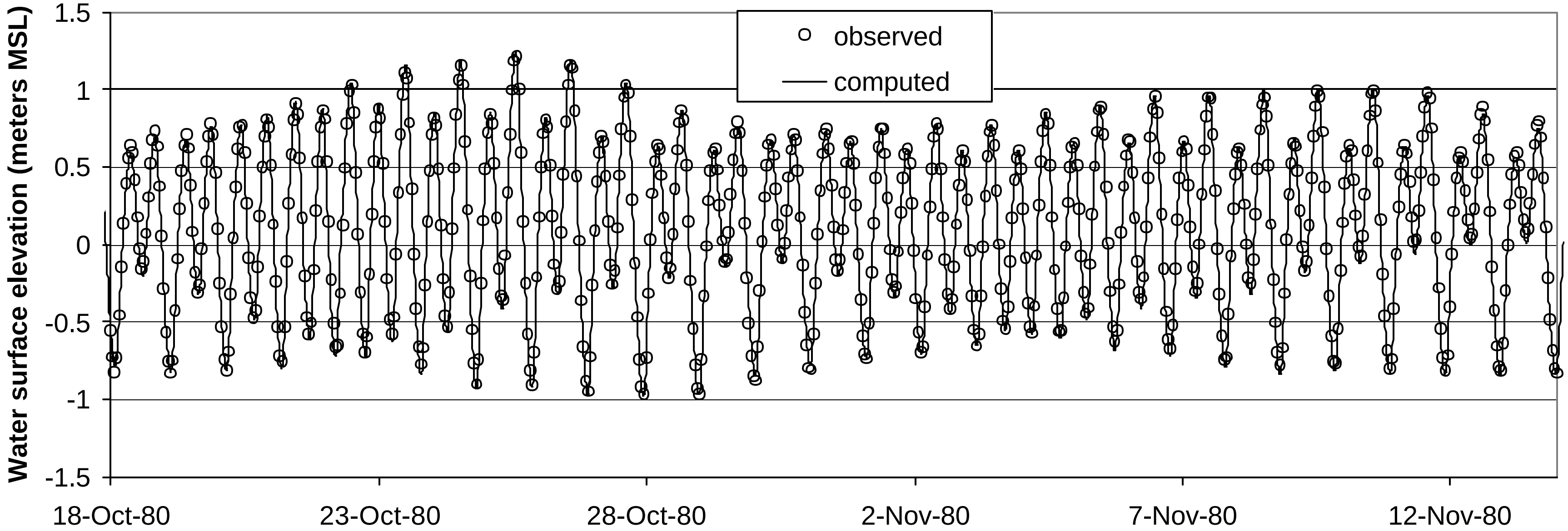


Figure 2-4 Computed and observed stage at station 5143 in San Pablo Bay.

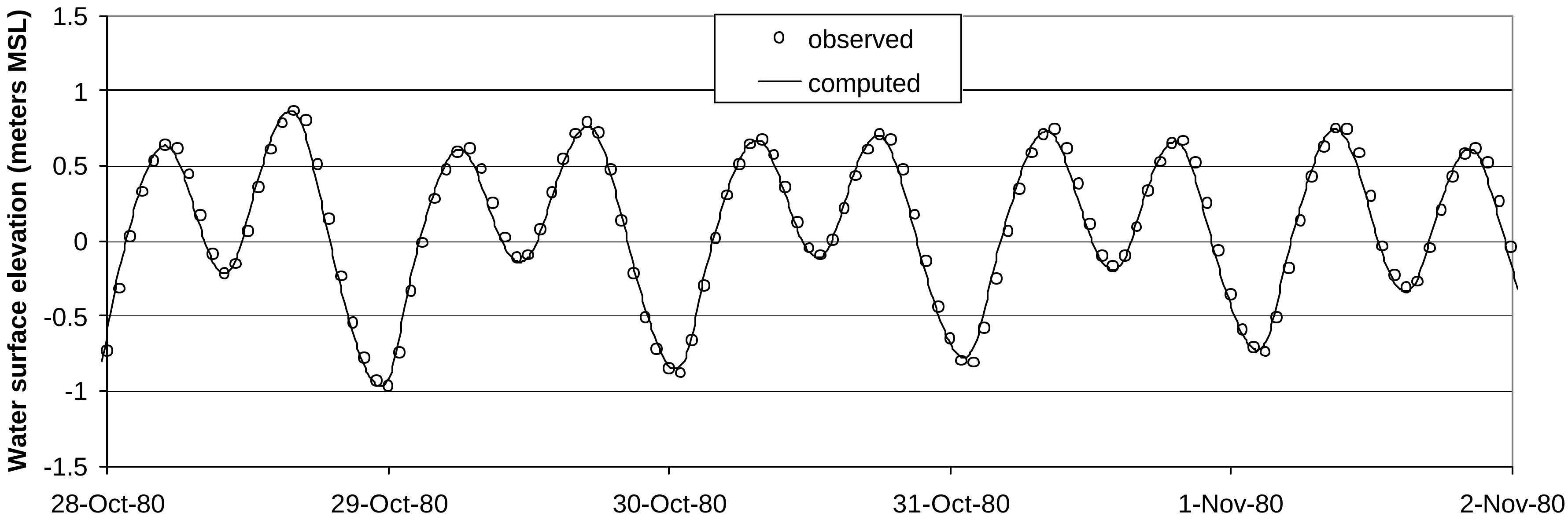
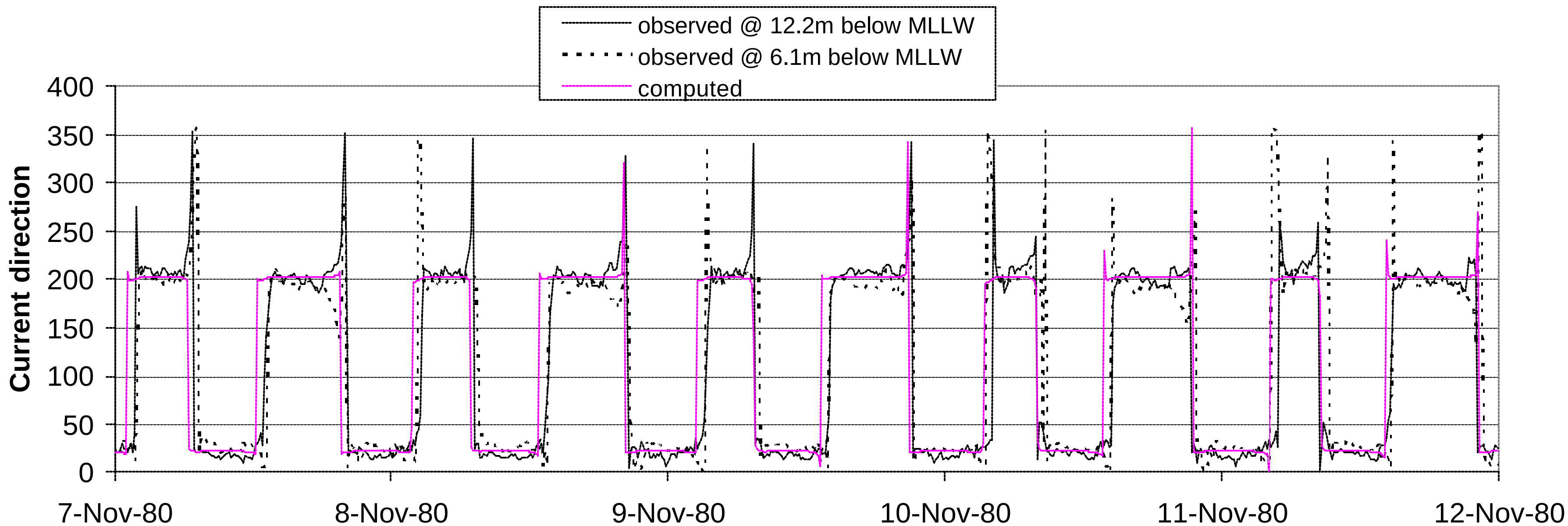


Figure 2-5 Computed and observed stage at station 5143 in San Pablo Bay for October 28 through November 2, 1980.



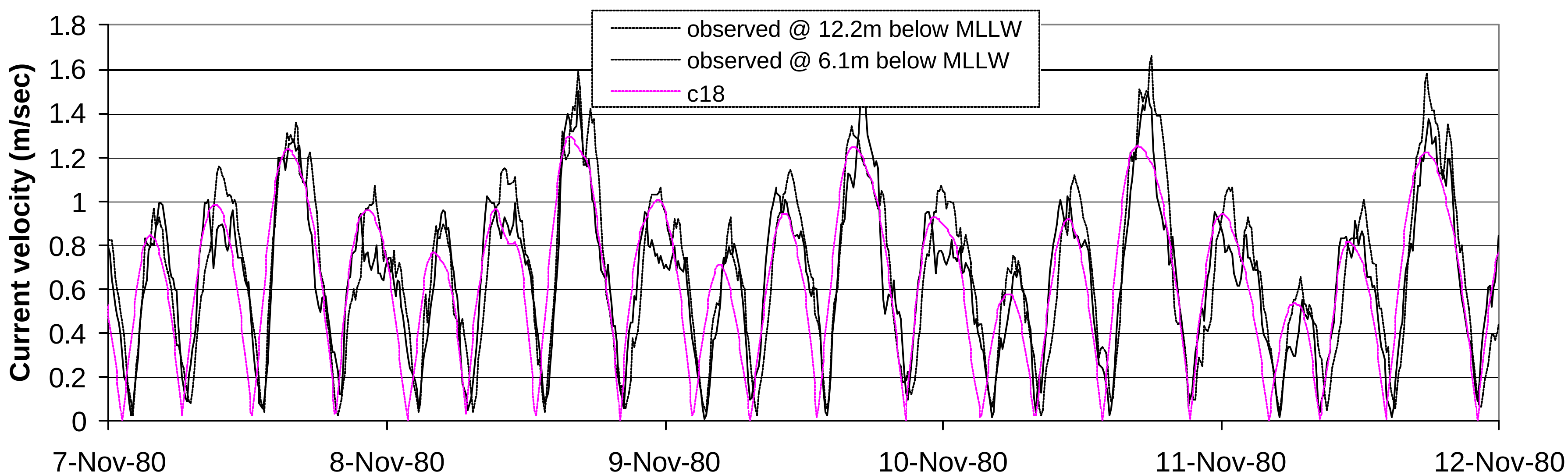


Figure 2-6 Computed and observed current speed and direction at station C18 in San Pablo Bay.

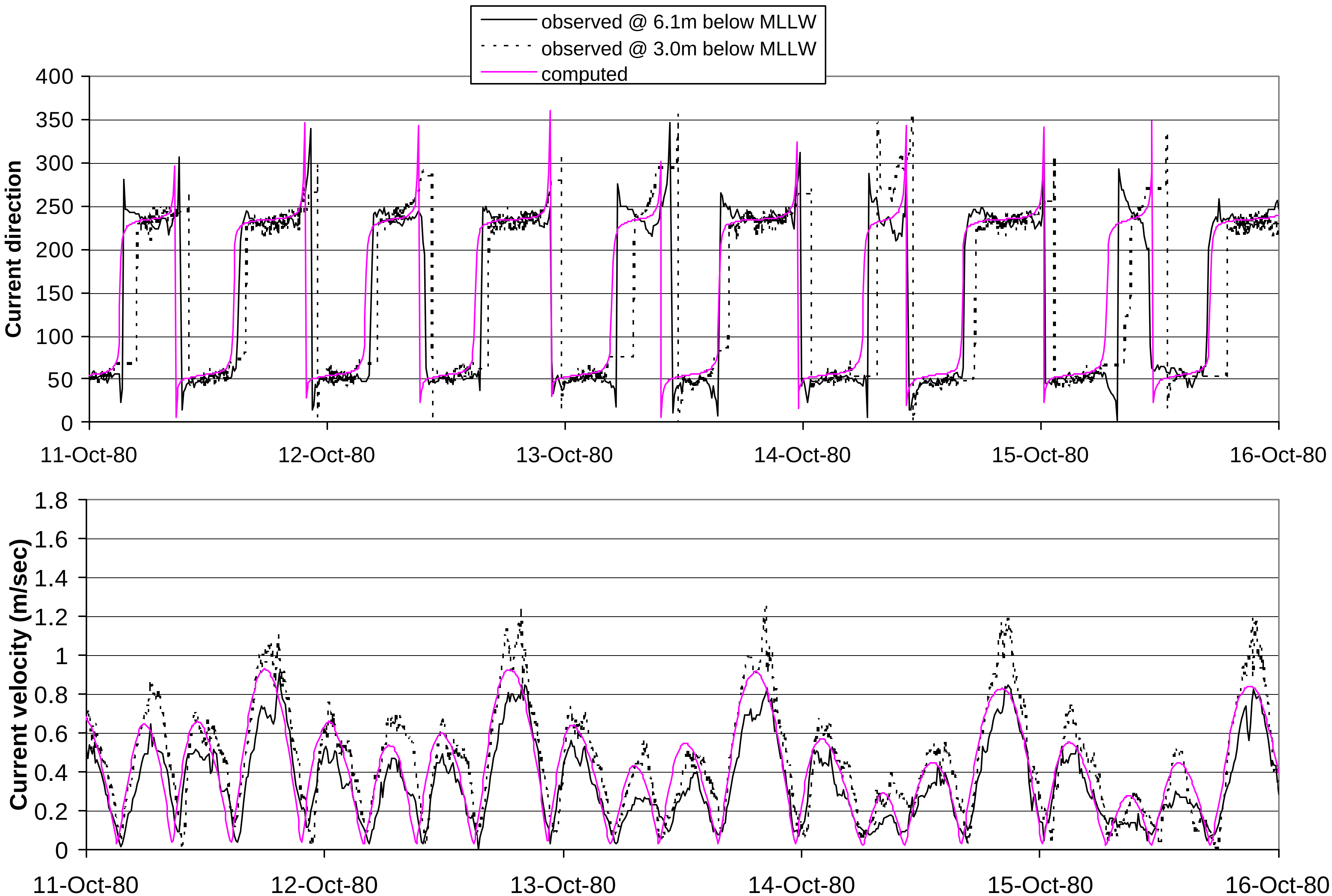


Figure 2-7 Computed and observed current speed and direction at station C22 in San Pablo Bay.

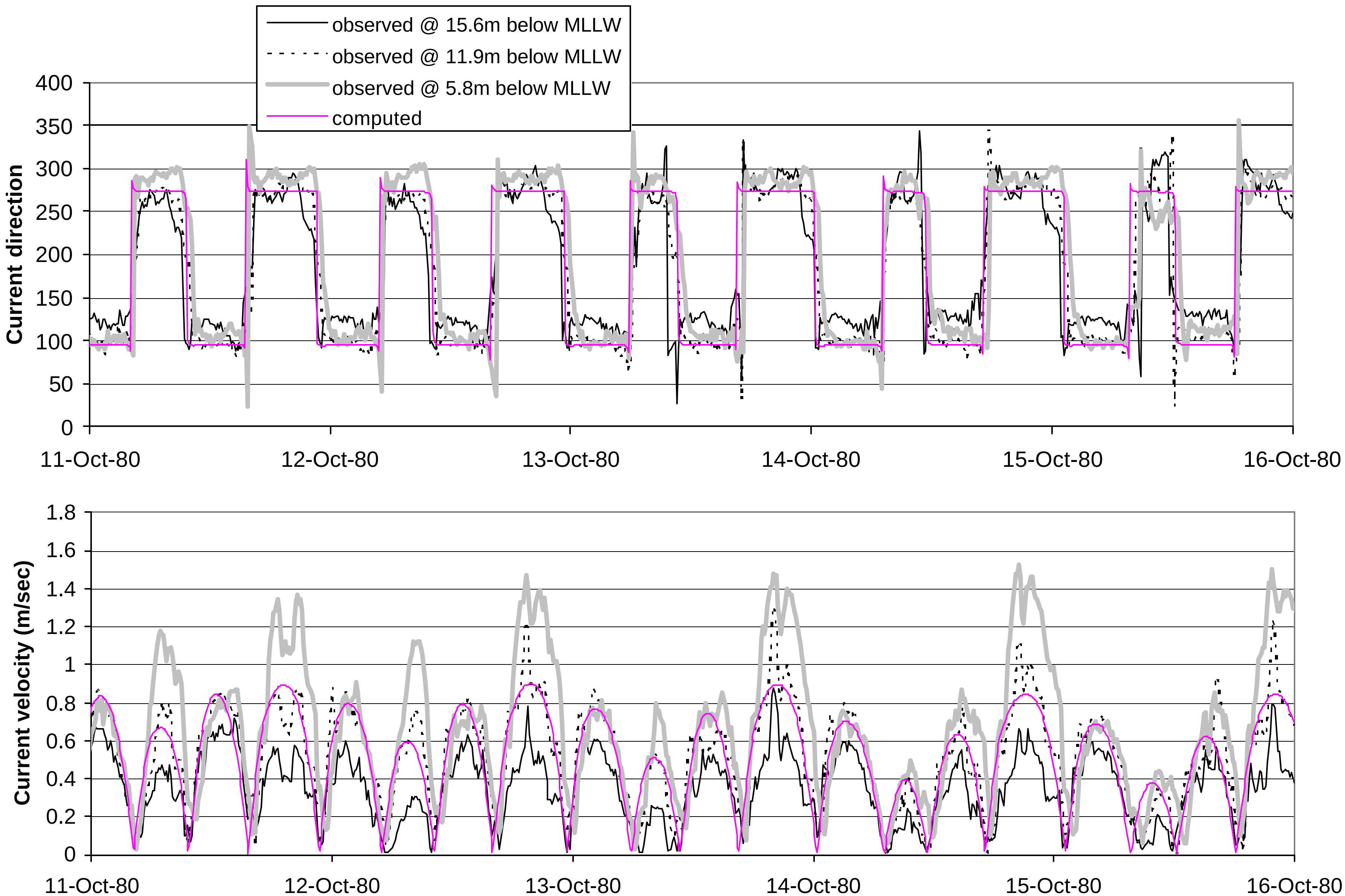


Figure 2-8 Computed and observed current speed and direction at station C24 in San Pablo Bay.

3 WATER QUALITY MODEL CALIBRATION

The water quality model was calibrated for the October – November 1980 hydrodynamic calibration period using USGS salinity observations in Carquinez Straight, Suisun Bay and the confluence area. The locations of the salinity gauges are shown in Figure 2-1. Additional calibration of the water quality model was performed using the February and March 1978 dye study during which dye was released through the NSD outfall.

The primary estuarine mass transport mechanisms are advection and turbulent mixing or diffusion. In the inter-tidal water quality simulation mode, advection is the dominant transport mechanism. RMA-11 uses computed inter-tidal current velocities to compute the distribution of dissolved or suspended materials at intervals of less than one hour. Turbulent diffusion occurs in the presence of velocity and concentration gradients. Diffusion coefficients are estimated by scaling constant and nodal velocities during each time step. The orientation of diffusion is in the direction of the velocities. This component of transport is small relative to the instantaneous advective transport but does contribute significantly to long-term transport of material.

In the tidally averaged mode, net advection averaged over the tidal cycle is usually small. In this mode, diffusive transport becomes more significant and is often the dominant transport mechanism. Diffusive transport is estimated as a constant times the mean of the absolute inter-tidal velocities at each node point. The magnitude of the scaling constant is typically twice that of the scaling factor used in the inter-tidal version of the model. The orientation of diffusion is in the direction of the mean of the absolute value of the inter-tidal velocities. For this study, the tidally averaged mode of the water quality model was used only to provide reasonable initial conditions for the inter-tidal salinity simulation.

3.1 SALINITY

The objective of the salinity model calibration was to reproduce the depth average of observed salinity values in San Francisco Bay to assure that the model adequately represents the transport of dissolved materials.

The fundamental transport that results in the distribution of salinity also controls the transport of other dissolved and particulate material that are passively transported with water movement. Therefore, accuracy of the salinity calibration is a good indication of accuracy of the model results for other parameters subject to loading variation and non-conservative kinetics, even if the transport for those parameters is not explicitly calibrated.

Salinity calibration was a two-step process. First the tidally averaged mode was used to compute steady state salinity for the imposed salinity boundary conditions, tributary inflows from the beginning of the calibration period, and the average tide for the period. Using the steady state results as initial conditions, the inter-tidal simulation mode was used to compute time-varying salinity throughout the entire Bay and Delta.

Interagency Ecological Program (IEP) EC data (converted to salinity) for Sacramento River at Greens Landing and San Joaquin River at Vernalis were used to set time-varying salinity boundary conditions. Yolo Bypass salinity was estimated at twice that of Sacramento River. Estimated constant salinity boundaries were set for Mokelumne, Cosumnes and Napa Rivers, and the miscellaneous eastside flows. Golden Gate salinity was set constant at 31 ppt. No other salinity sources were applied.

Hydrodynamics from the October – November 1980 calibration period were used for the salinity calibration. Thus the same calibration period was used: October 10 through November 14, 1980.

Computed and observed dry weather salinity time series plots are shown in Figures 3-1 and 3-2. As with the velocity results, computed depth averaged salinity is comparable to observed salinity at 40% depth under homogeneous flow conditions. Higher salinity values are typically found lower in the water column, as saline water has greater density than fresh water. During dry weather periods such as this calibration period, there is little salinity stratification present in the Bay because of the low volume of fresh Delta outflow.

Computed and observed dry weather salinity time series at station C18 are shown in Figure 3-1 for the entire simulation period. Computed salinity falls slightly below observed salinity data around October 16 – 19 and October 29 – November 1, however it is generally in excellent agreement with observed data.

At station C24, observed data are only available for the first six days of the calibration period. Computed and observed salinity for these days is plotted in Figure 3-2. Computed values are generally in good agreement with observed data.

3.2 DYE STUDY

A dye study was performed during March 20 through 25, 1978 (E.H. Smith and Associates, 1978). Dye was injected into the NSD outfall and released into the Bay with effluent. The dye was injected at a constant rate for six hours a day for six consecutive days. Samples were taken from a helicopter along transects originating at the outfall to map the path and dilution of the dye plume.

To simulate the dye study, hydrodynamics were modeled using NOAA tide data at the Golden Gate, and daily average inflows and exports from the dye study period and time varying effluent flows. Water quality simulations were then performed with initial dye concentrations set at zero. The dye loadings were input with the NSD effluent flows over 6-hour dye injection periods as noted in the dye study data.

The initial distribution of the dye is difficult to reproduce because the elements in which the dye is input in the model are larger than the actual outfall area. Simulation of the dye release events focused on approximating the movement of the plume, which is the most important and reliable information gained from these studies.

Depictions of dye distribution were provided in the dye study report for several dates and times during the investigation. Figures 3-3 through 3-6 show simulation results as color contours of dye concentration for comparison with the depictions of actual dye distribution. Distributions for March 23 at 14:00 are shown in Figure 3-3. The simulated dye plume is heading south and staying along the western shoreline as seen in the observed distribution, however it has spread less than observed at this time. During the dye study period, the net Delta outflow is fairly high, causing stratification in the deeper channel in San Pablo Bay. Under these conditions on flood tide, saline water moves upstream low in the water column, while the fresher Delta water moves downstream at the surface. This results in a counterclockwise circulation in San Pablo Bay that drives the NSD plume more rapidly to the south. The 2-D depth averaged model cannot capture this stratification induced circulation, however it is conservative, and the model is being used to simulate worst case, e.g. low flow scenarios where stratification is not an issue. Therefore, the 2-D depth averaged approximation is appropriate. Similar behavior is seen on March 24 at 13:00, in Figure 3-4. Concentrations are lower on March 27 at 12:45, in Figure 3-5. Computed concentrations are similar to observed, as is the general shape and location of the plume. The observed plume is being pushed south more strongly than computed. On March 30 at 16:00, dye concentrations are very low as seen in Figure 3-6, and there is trapping of the dye in the creek. The computed 0.1 ppb line is closer to shore than observed, but exhibits the same shape. In other words, computed concentrations are slightly lower than observed at this time, but the shape and location of the plume appears to be in agreement with the observed plume.

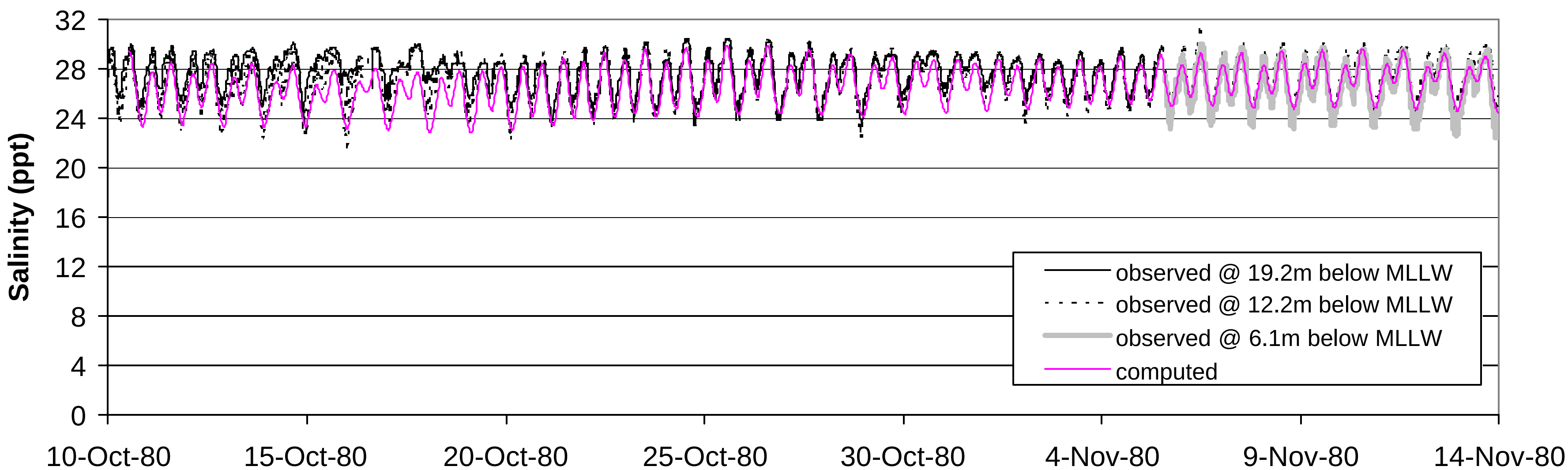


Figure 3-1 Computed and observed salinity at station C18 in San Pablo Bay.

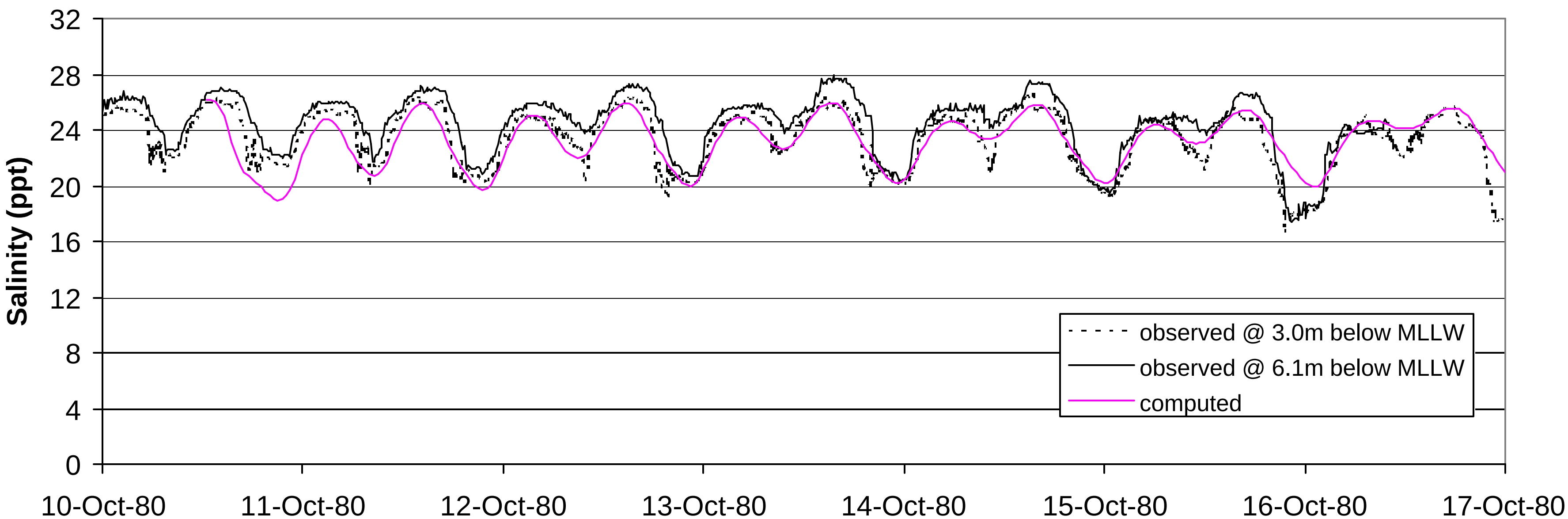


Figure 3-2 Computed and observed salinity at station C22 in San Pablo Bay.

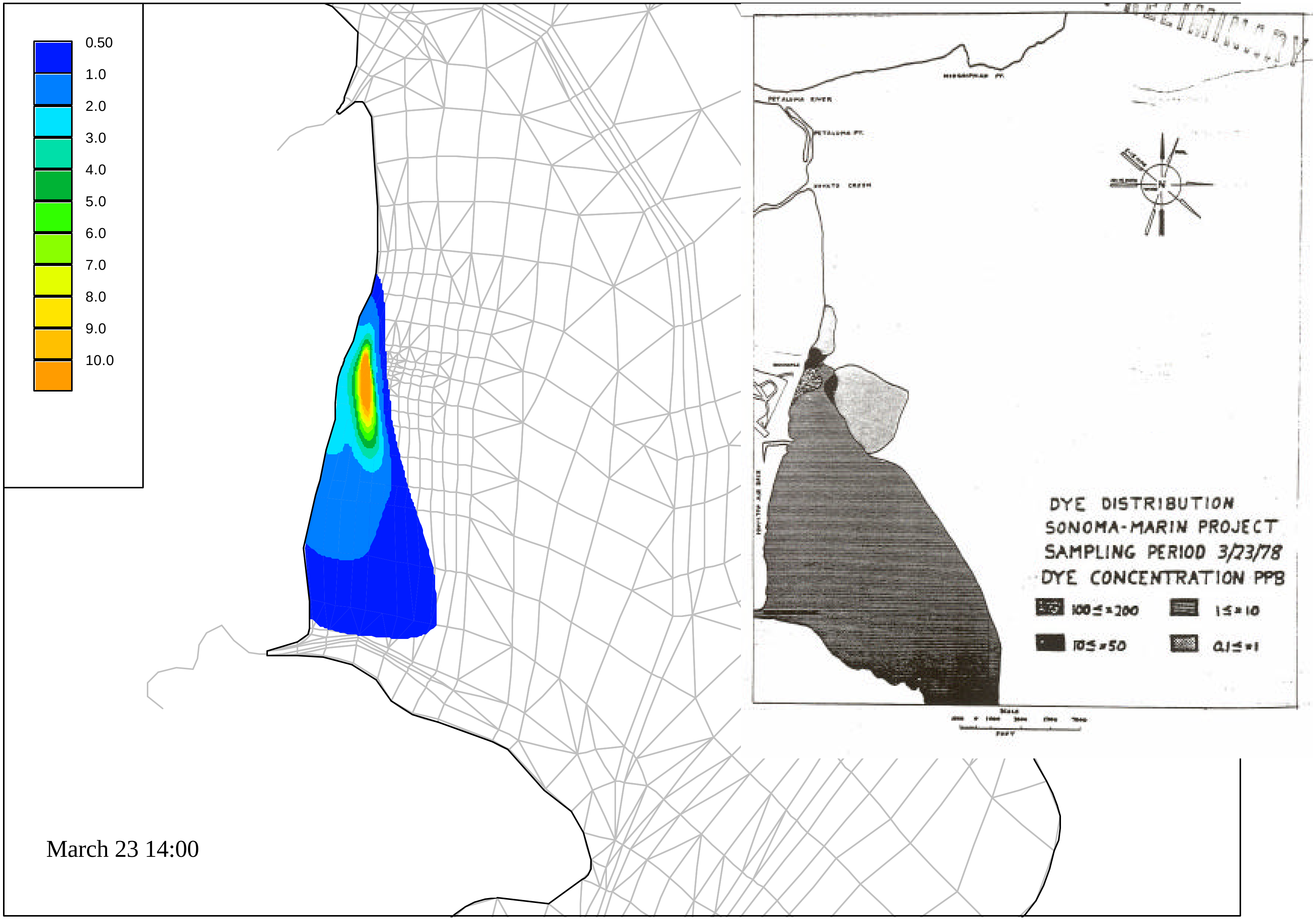


Figure 3-3 Computed and observed dye concentration contours on March 23, 1978.

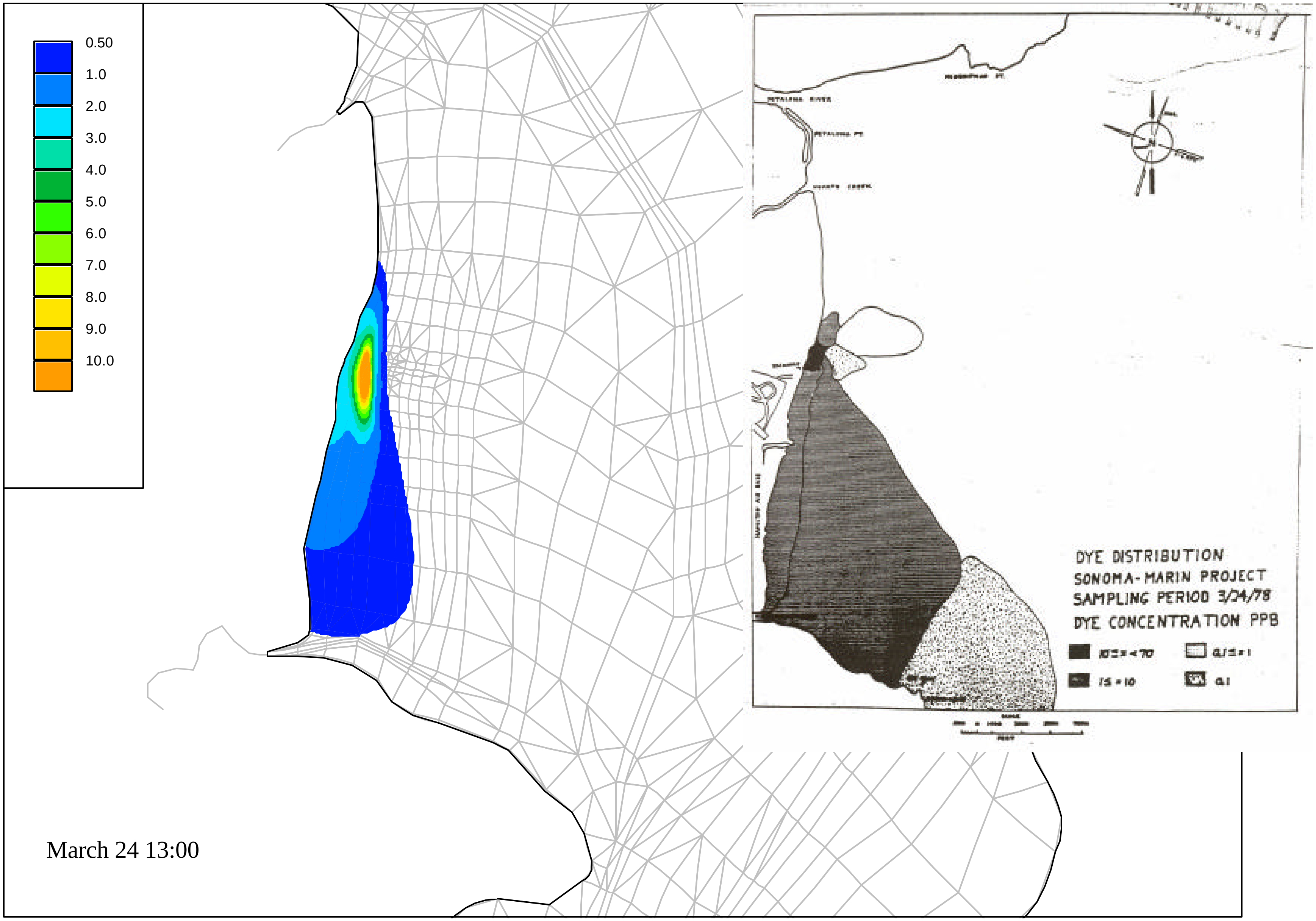


Figure 3-4 Computed and observed dye concentration contours on March 24, 1978.

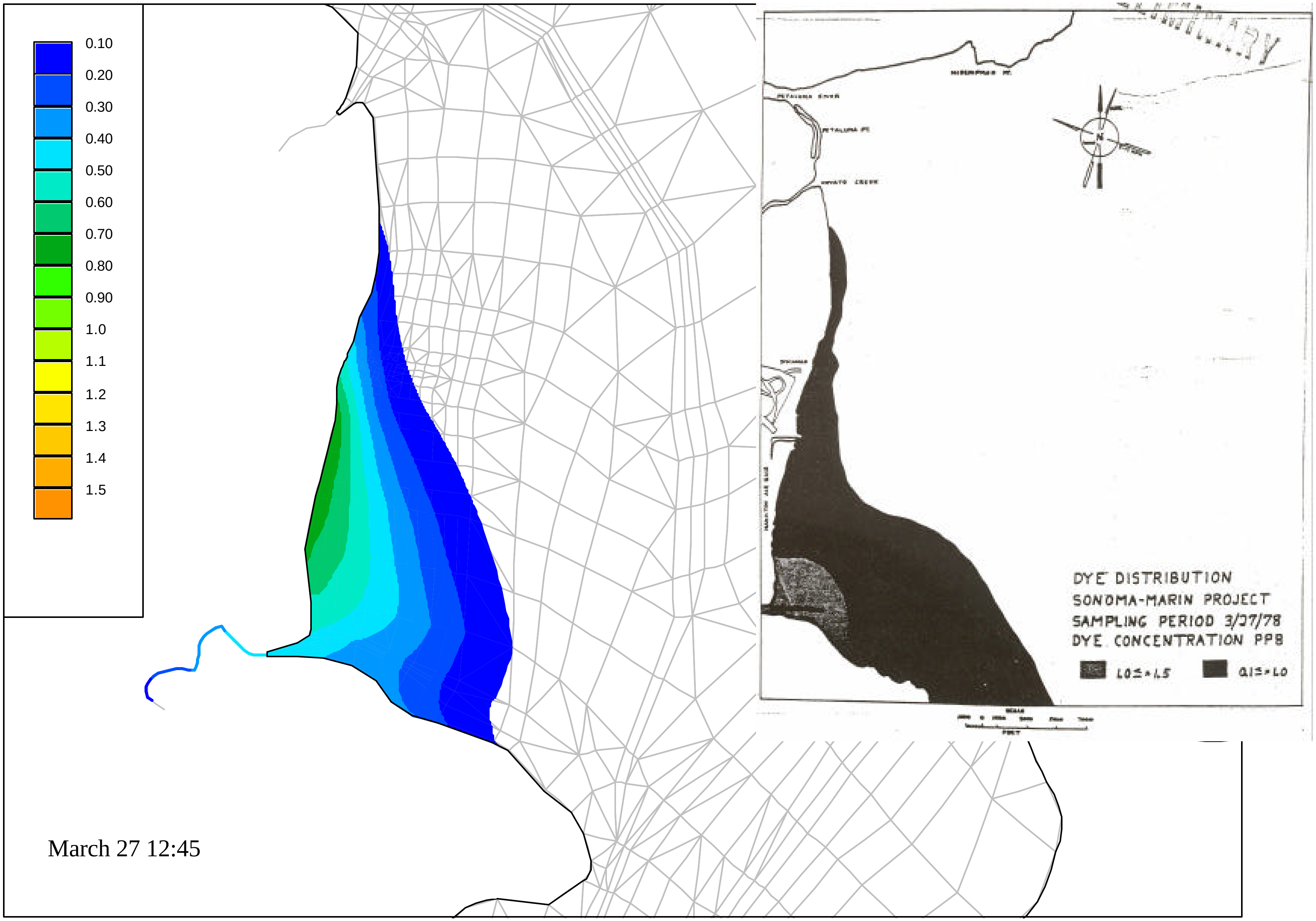


Figure 3-5 Computed and observed dye concentration contours on March 27, 1978.

Figure 3-6 Computed and observed dye concentration contours on March 30, 1978.

4 DISSOLVED COPPER

4.1 *DISSOLVED COPPER MODEL CALIBRATION*

Sources of dissolved copper contamination of Bay waters include wet weather runoff, tributary stream inflows, tidal exchange, municipal and industrial discharges, atmospheric deposition, and exchange with Bay sediments. Data are available to set boundary conditions for the tributary stream inflows, municipal and industrial discharges, and tidal exchange. The remaining loads are unknown. Previous studies have shown that point loads of dissolved copper alone are insufficient to explain observed water column concentrations. To parameterize all of the unknown and unquantified sources and processes that contribute to the dissolved copper concentrations in the water column, an additional distributed source is added in the model. This distributed load varies for different areas of the Bay. In terms of evaluating the impacts of an individual discharge, this approach may be considered conservative in that the entire copper load remains in the water column as a dissolved copper plume. This approach has been used successfully in studies for the South Bay System Authority, Palo Alto Regional Water Quality Control Plant, Central Contra Costa Sanitary District, Delta Diablo Sanitation District, the Bay Area Dischargers Association, and a previous Novato Sanitary District study.

As with salinity, calibration of the dissolved copper model was a two step process. First the tidally averaged mode was used to compute the steady state concentrations using average hydrology for the period. Using the steady state results as initial conditions, the inter-tidal simulation mode was used to compute the inter-tidal variations in water quality for a period of 28 days. The mixing coefficients that were calibrated for the salinity model remain the same, and the distributed loading rate was adjusted such that the difference between the computed and observed dissolved copper concentrations was minimized.

San Francisco Estuary Regional Monitoring Program (RMP) monitoring data were used in the calibration of the dissolved copper model. Dissolved copper data were collected three times per year from 1993 through 2001 at stations throughout San Francisco Bay. For this study, dissolved copper model calibration focused on monitoring data for stations from the Golden Gate up through Suisun Bay. Station locations are shown in Figure 4-1.

Dry weather dissolved copper calibration was performed for August 1994. Average dry weather mass loadings from all municipal and industrial wastewater discharges to the Bay were input to the model. Boundary concentrations were set to August 1994 RMP measurements for the Golden Gate, Sacramento River, San Joaquin River, and Napa River. Mokelumne River, Yolo Bypass and miscellaneous eastside flows were set to the Sacramento River value. Observed river flows, exports, and Golden Gate tidal elevations from August 4 through August 31, 1994 were used. Average dry weather flows and concentrations for municipal, industrial, and tributary inflows are listed in Table 1.

The model was run with the dry weather copper loading described above, and the distributed loading rates were adjusted to bring the average computed dissolved copper concentrations as close as possible to RMP values.

A profile from the Golden Gate to Honker Bay of observed dissolved copper concentrations in August 1994, and minimum, average and maximum computed dissolved copper concentrations for the August 1994 simulation period is shown in Figure 4-2. The concentration gradient over the profile is well represented. Computed dissolved copper concentration ranges bracket the August 1994 observed data at all sampling stations in the profile up to Pacheco Creek. Note that the dip in the computed profile from San Pablo to Pinole is the result of a cross channel concentration gradient. Concentrations are higher in the shallower areas of San Pablo Bay where the San Pablo station is located, and lower in the deeper main channel where the Pinole station is located. At Grizzly Bay and Honker Bay, computed values are slightly higher than observed. This is possibly due to Sacramento and San Joaquin River inflow concentrations being set too high. The RMP measurements for the Sacramento and San Joaquin Rivers are taken near the confluence, whereas the boundary conditions in the model are applied further upstream. No data are available at the model boundary locations. At the Golden Gate, the minimum computed value is equal to the observed value because the boundary concentration was set equal to the observed concentration. The concentration at flood tide (=observed) is always lower than at ebb tide.

Table 4-1 Dry weather flows and dissolved copper concentrations.

Source	Flow	Dissolved Copper Concentration (µg/L)
Golden Gate	--	0.61
Sacramento River	varies	2.16
San Joaquin River	varies	2.11
Mokelumne & Cosumnes Rivers	varies	2.13
misc. eastside flows	varies	2.16
Napa River	varies	2.90
Yolo Bypass	varies	2.10
Petaluma River	0.035 cfs	3.4
Sonoma River	0.88 cfs	3.4
Novato Creek	0.035 cfs	3.4
Gallinas Creek	0.035 cfs	3.4
Novato SD	5.2 mgd	11.0
CCCSD	43.1 mgd	7.0
C&H Sugar	0.81 mgd	15.3
Central Marin San.	7.40 mgd	7.0
Chevron USA	4.89 mgd	2.74
City and Co. of S.F., southeast	67.0 mgd	8.4
City of Benicia	2.30 mgd	7.0
City of Hercules/Pinole	2.43 mgd	7.0
City of Petaluma	4.45 mgd	5.15
City of San Mateo	10.0 mgd	9.2
Delta Diablo SD 38	13.1 mgd	7.0
EBDA	77.9 mgd	7.0
EBMUD	71.5 mgd	7.0
Exxon	2.05 mgd	23.3
Fairfield/Suisun	9.20 mgd	7.0
Las Gallinas Valley SD	2.20 mgd	9.2
Mt. View SD	1.23 mgd	9.2
Napa SD	2.84 mgd	5.15
North Bayside System Unit	14.7 mgd	9.2
Palo Alto SD	24.0 mgd	5.15
San Jose SD	134 mgd	5.15
Sausalito/Marin City	1.48 mgd	15.3
Sewerage Agency of S. Marin	2.02 mgd	9.2
Shell Oil Co.	4.31 mgd	11.6
Sonoma Valley Co. SD	2.60 mgd	7.0
South Bayside System Authority	14.7 mgd	5.15
Sunnyvale SD	15.7 mgd	4.1
Tosco Corp	4.69 mgd	7.43
Union Oil	1.90 mgd	5.13
USS Posco	8.75 mgd	1.82
Vallejo San. and Flood	11.4 mgd	9.2
West County Agency	13.1 mgd	7.0

4.2 DISSOLVED COPPER ANALYSIS

The calibrated model was used to simulate dissolved copper for NSD existing average dry weather flow (ADWF), current permitted ADWF and future ADWF. Existing ADWF and current permitted ADWF were simulated with existing effluent quality (these simulations will be referred to as "existing" and "current permit", respectively). Future ADWF was simulated with existing effluent quality ("future"), upgraded secondary effluent quality ("future secondary"), and upgraded tertiary effluent quality ("future tertiary"). Table 4-2 summarizes NSD discharge rates and concentrations for each of the simulation scenarios. All simulations were performed for October 7 – November 8, 1977 and October 11 – November 15, 1980 hydrology. October – November 1980 represents normal dry weather hydrology with an average net delta outflow (NDO) of 6559 cfs, and a low NDO of 3556 cfs. October - November 1977 represents extreme low flow conditions. Average net delta outflow for this period was approximately 2300 cfs. The mass loadings from all municipal and industrial wastewater discharges to the Bay, and all boundary concentrations were set the same as for the calibration simulation.

Table 4-2 Summary of NSD discharge rates and concentrations.

Simulation	ADWF (mgd)	Effluent dissolved copper concentration (µg/L)
Existing	5.2	11.0
Current permit	6.55	11.0
Future	7.0	11.0
Future secondary	7.0	7.0
Future tertiary	7.0	5.5

4.2.1 October – November 1977

Computed copper concentration time series are plotted for the last 14 days of the October – November 1977 simulations in Figures 4-3 through 4-9 at the outfall, 250 m north of the outfall, 250 m east of the outfall, 250 m south of the outfall, 2500 m north of the outfall, 2500 m east of the outfall and 2500 m south of the outfall. The “future” simulation produces the highest concentrations, peaking at 8.7 µg/L at the outfall and 3.3 µg/L at 250 m east of the outfall. Concentrations for the “current permit” simulation are very similar to the “future” concentrations. Concentrations for the “existing” simulation peak at 8.3 µg/L at the outfall and 2.9 µg/L at 250 m east of the outfall. Future flows with upgraded treatment result in lower dissolved copper concentrations. Concentrations for the “secondary” simulation peak at 5.7 µg/L at the outfall and 2.7 µg/L at 250 m east of the outfall, while concentrations for the “tertiary” simulation peak at 4.3 µg/L at the outfall and 2.5 µg/L at 250 m east of the outfall. At 2500 m from the outfall in any direction there are no significant differences among the simulation results. Peak concentrations for each simulation are summarized in Table 4-3. Over the outfall, the “future” concentration is increased 4% over “existing” concentrations and less than 1% over “current permit” concentrations. With advanced treatment, concentrations over the outfall are reduced below “current permit” concentrations by 33% and 49% for secondary and tertiary treatment, respectively.

Profile plots of maximum hourly average and maximum daily average dissolved copper concentrations are plotted in Figures 4-11 through 4-13 along three transects: an east-west transect through the outfall, a transect along the length of the plume, and a transect along the shoreline. The transect locations are shown in Figure 4-10. Maximum hourly average results are plotted in Figures 4-11, 4-13 and 4-15, and maximum daily average results are plotted in Figures 4-12, 4-14 and 4-16. Maximum daily average concentrations over the outfall are approximately 60% lower than the maximum hourly average concentrations. As with the time series discussed above, these plots show the maximum concentrations occur for the “future” and “current permit” simulations, while the “secondary” and “tertiary” simulations result in concentrations that are reduced below “existing” concentrations. The differences among the simulations are very small beyond about 500 m to 1000 m from the outfall. The transects illustrate that the influence of the NSD discharge on dissolved copper concentrations in San Pablo Bay is localized in the immediate vicinity of the outfall. Concentrations diminish to ambient levels within about 1000 m of the outfall.

4.2.2 October – November 1980

Plots similar to those described above are provided for the October – November 1980 simulation as well. Results for the 1980 normal low flow hydrology simulation do not differ significantly from the 1977 extreme low flow hydrology simulation. Computed copper concentration time series are plotted for the last 14 days of the October – November 1980 simulations in Figures 4-17 through 4-23 at the outfall, 250 m north of the outfall, 250 m east of the outfall, 250 m south of the outfall, 2500 m north of the outfall, 2500 m east of the outfall and 2500 m south of the outfall. The “future” simulation produces the highest concentrations, peaking at 8.5 µg/L at the outfall and 3.4 µg/L at 250 m east of the outfall. Concentrations for the “current permit” simulation are very similar to the “future” concentrations. Concentrations for the “existing” simulation peak at 8.1 µg/L at the outfall and 3.1 µg/L at 250 m east of the outfall. Future flows with upgraded treatment result in lower dissolved copper concentrations. Concentrations for the “secondary” simulation peak at 5.7 µg/L at the outfall and 2.9 µg/L at 250 m east of the outfall, while concentrations for the “tertiary” simulation peak at 4.4 µg/L at the outfall and 2.7 µg/L at 250 m east of the outfall. As with the 1977 simulations, at 2500 m from the outfall in any direction there are no significant differences among the simulations. Results are summarized in Table 4-3. Over the outfall, the “future” concentration is increased 5% over “existing” concentrations and 1% over “current permit” concentrations. With advanced treatment, concentrations over the outfall are reduced below “current permit” concentrations by 32% and 48% for secondary and tertiary treatment, respectively.

Profile plots of maximum hourly average and maximum daily average dissolved copper concentrations are plotted in Figures 4-24 through 4-29 along the three transects shown in Figure 4-10. As with the time series discussed above, these plots show the maximum concentrations occur for the “future” and “current permit” simulations, while the “secondary” and “tertiary” simulations result in concentrations that are reduced below “existing” concentrations. The influence of the NSD discharge on dissolved copper concentrations in San Pablo Bay under October – November 1980 hydrology is localized around the outfall. Concentrations diminish to ambient levels within about 1000 m from the outfall.

Table 4-3 Summary of dissolved copper simulation results.

Simulation	Peak Dissolved Copper Concentration (µg/L) at:						
	outfall	250 m N	250 m E	250 m S	2500 m N	2500 m E	2500 m S
1977 existing	8.31	2.28	2.94	2.82	2.20	1.90	2.18
1977 current permit	8.58	2.37	3.22	2.96	2.20	1.90	2.19
1977 future	8.65	2.41	3.31	3.02	2.20	1.90	2.19
1977 future secondary	5.72	2.27	2.74	2.64	2.20	1.90	2.18
1977 future tertiary	4.36	2.21	2.48	2.46	2.19	1.90	2.17
1980 existing	8.11	2.60	3.11	2.94	2.55	2.20	2.47
1980 current permit	8.41	2.67	3.34	3.06	2.55	2.20	2.48
1980 future	8.51	2.70	3.41	3.10	2.55	2.20	2.48
1980 future secondary	5.68	2.56	2.92	2.80	2.55	2.20	2.46
1980 future tertiary	4.38	2.50	2.70	2.66	2.54	2.20	2.45

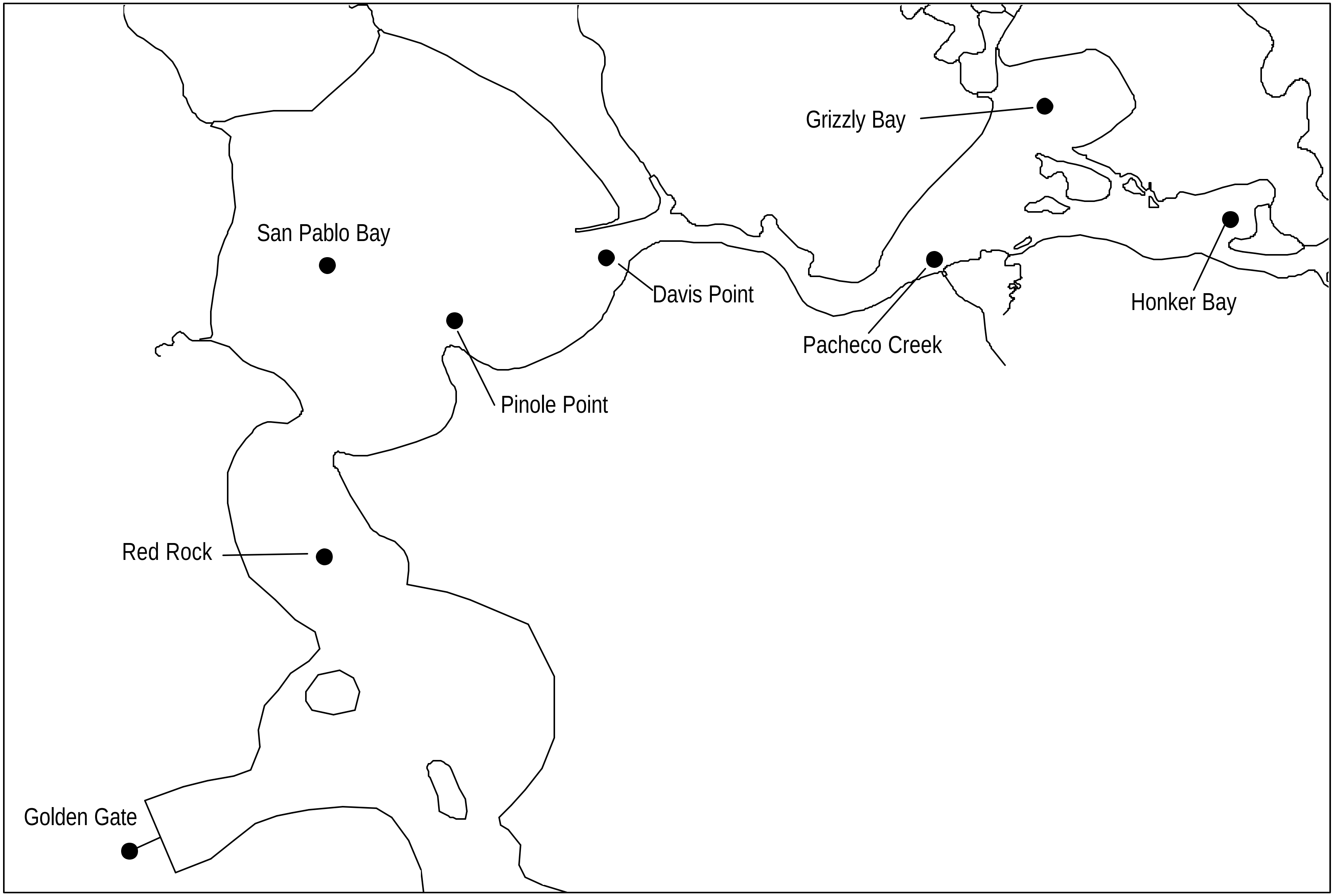


Figure 4-1 Locations of RMP monitoring stations.

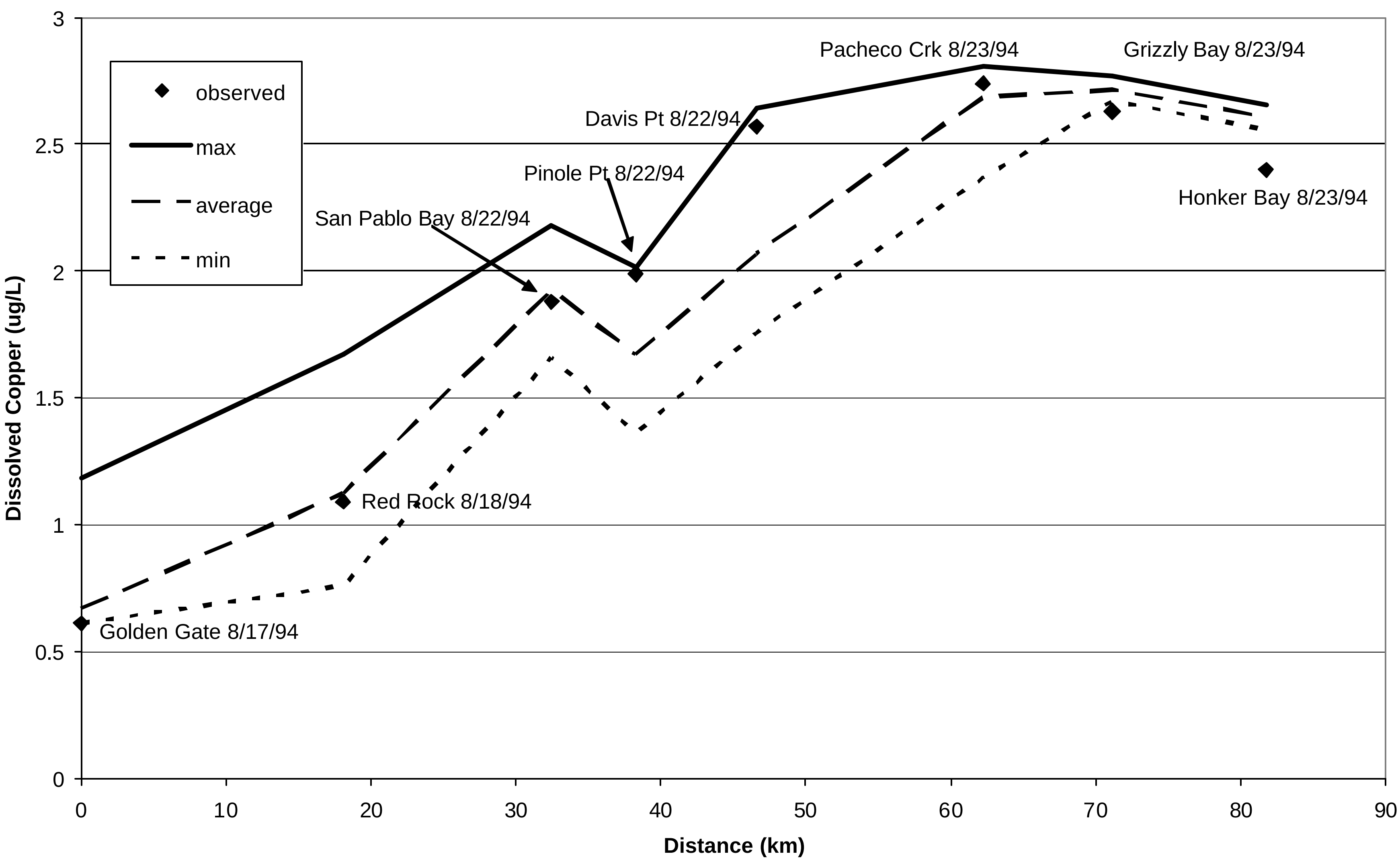


Figure 4-2 Profile from Golden Gate Bridge to Honker Bay of maximum, average and minimum dissolved copper concentrations computed for August 1994, plotted with observed copper concentration data collected between August 17 and August 23, 1994.

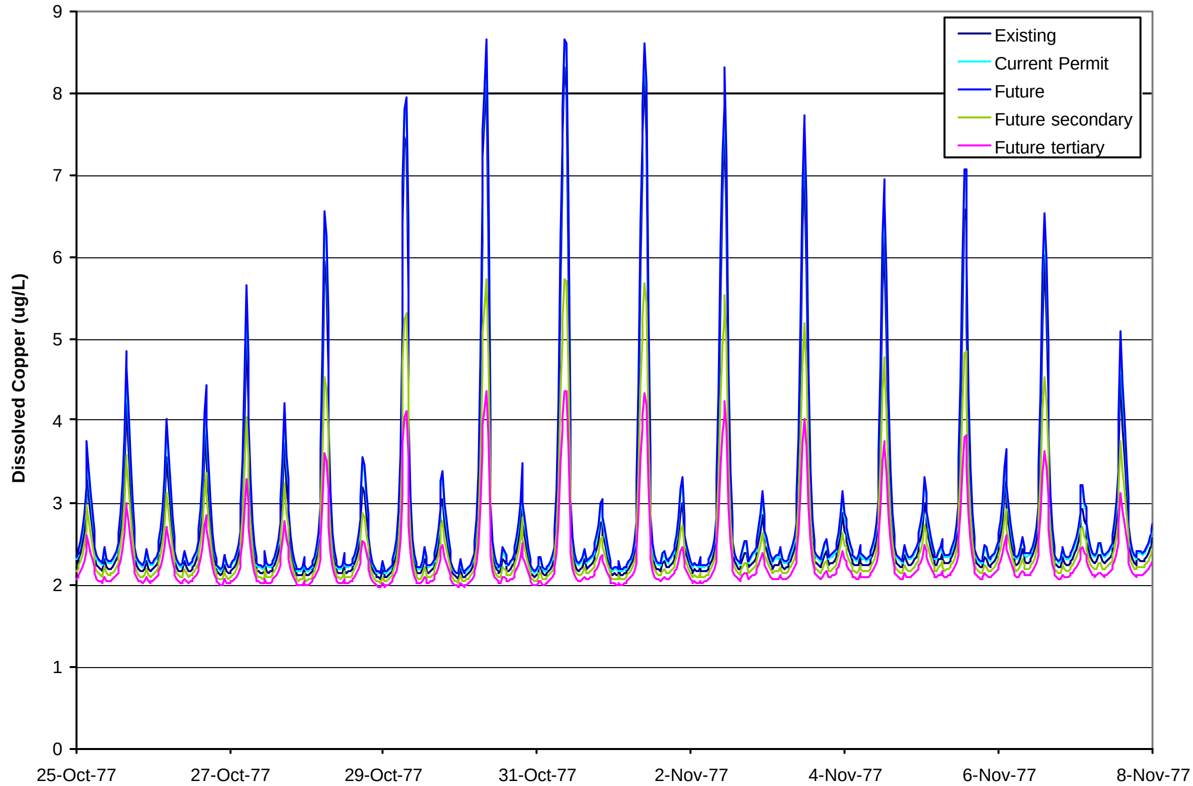


Figure 4-3 Dissolved copper concentrations at outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1977 simulation).

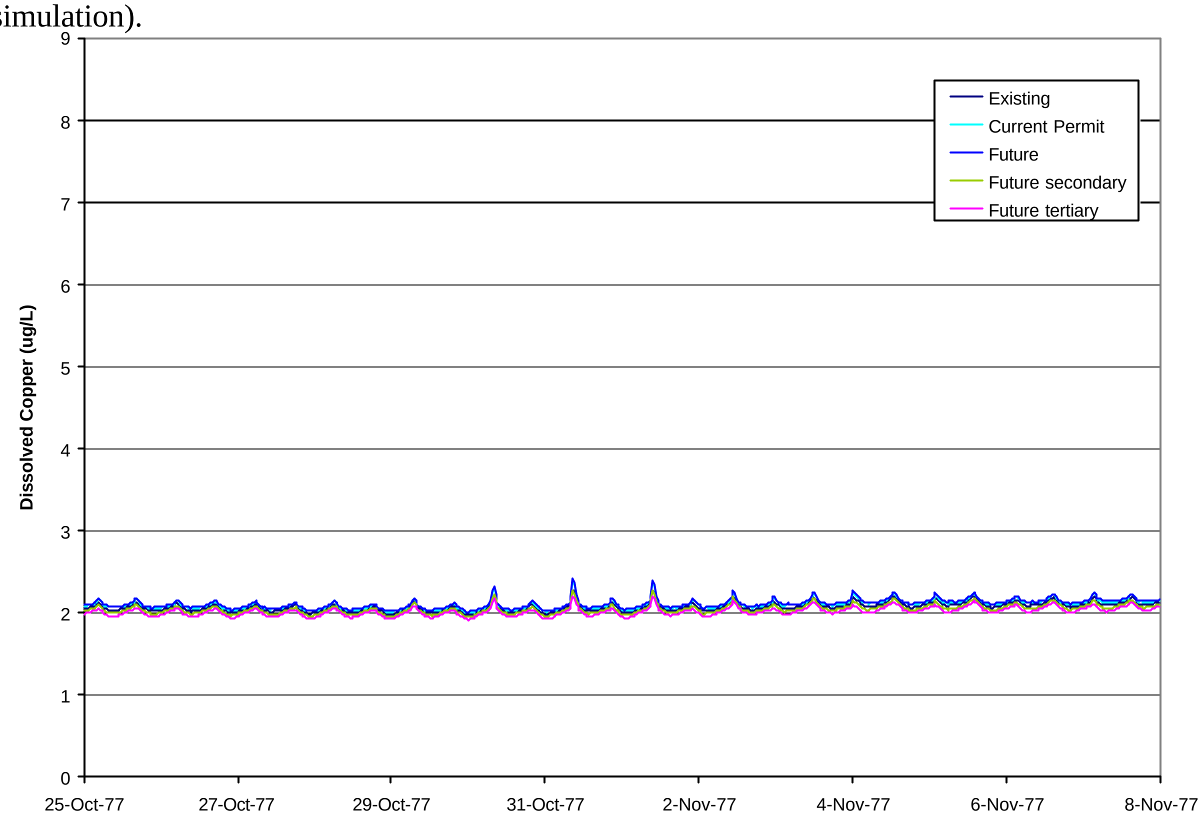


Figure 4-4 Dissolved copper concentrations 250 meters north of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1977 simulation).

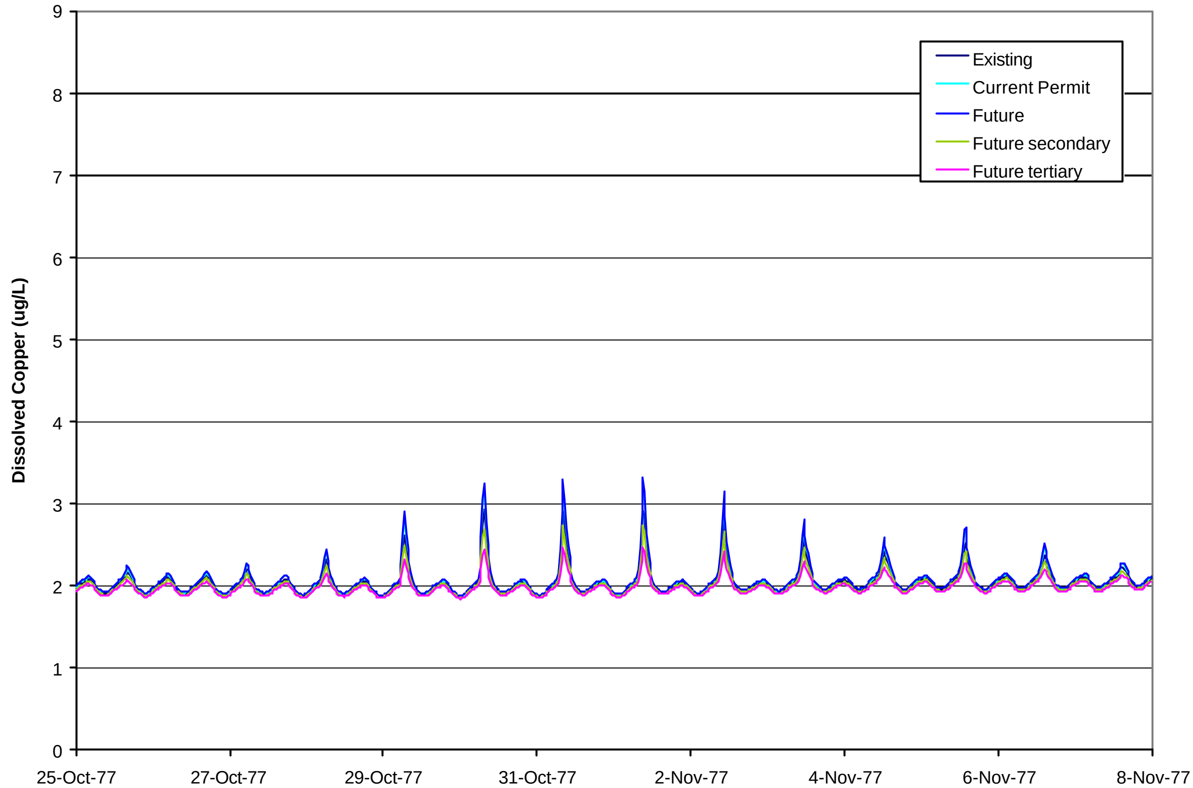


Figure 4-5 Dissolved copper concentrations 250 meters east of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1977 simulation).

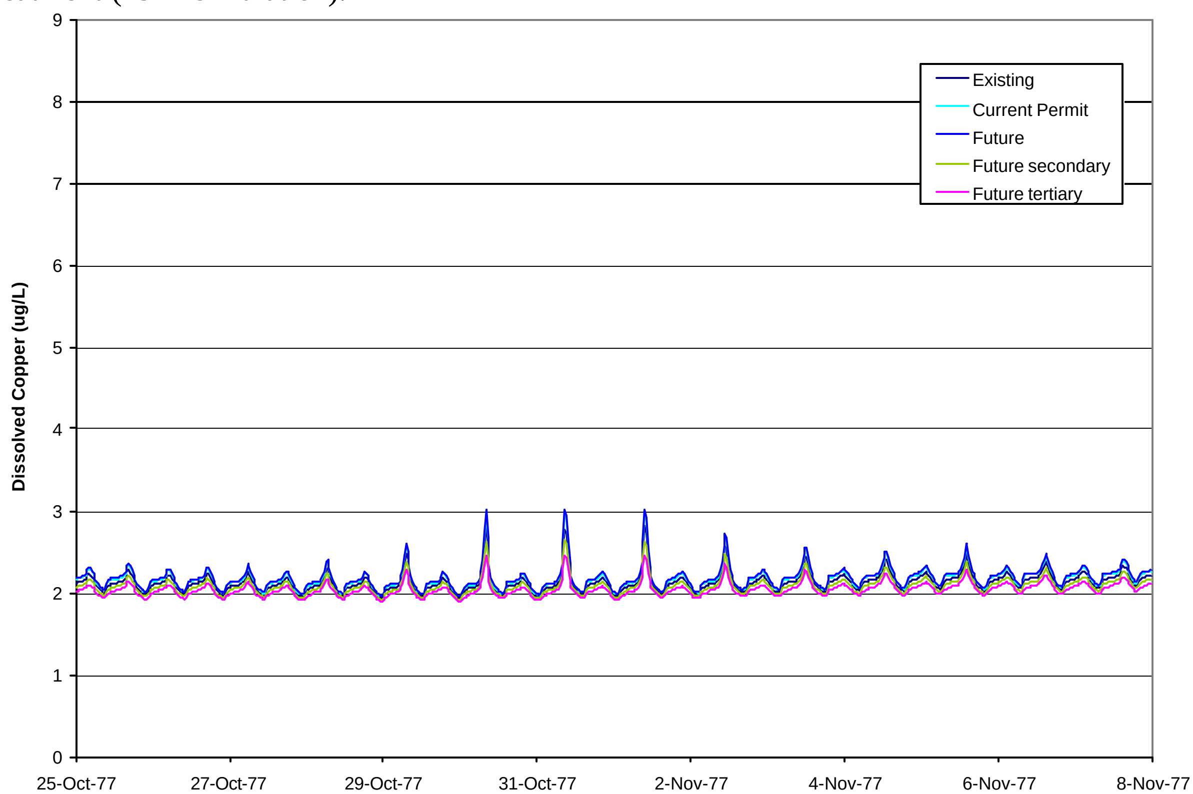


Figure 4-6 Dissolved copper concentrations 250 meters south of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1977 simulation).

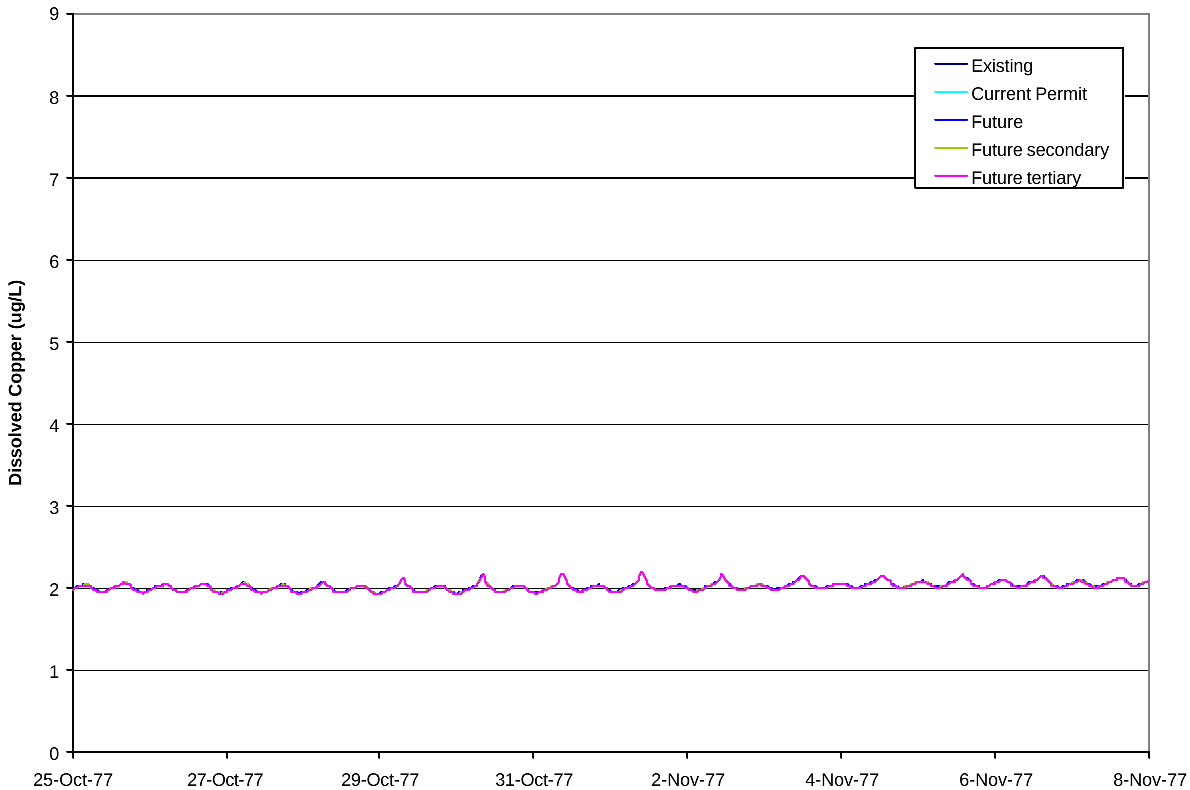


Figure 4-7 Dissolved copper concentrations 2500 meters north of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1977 simulation).

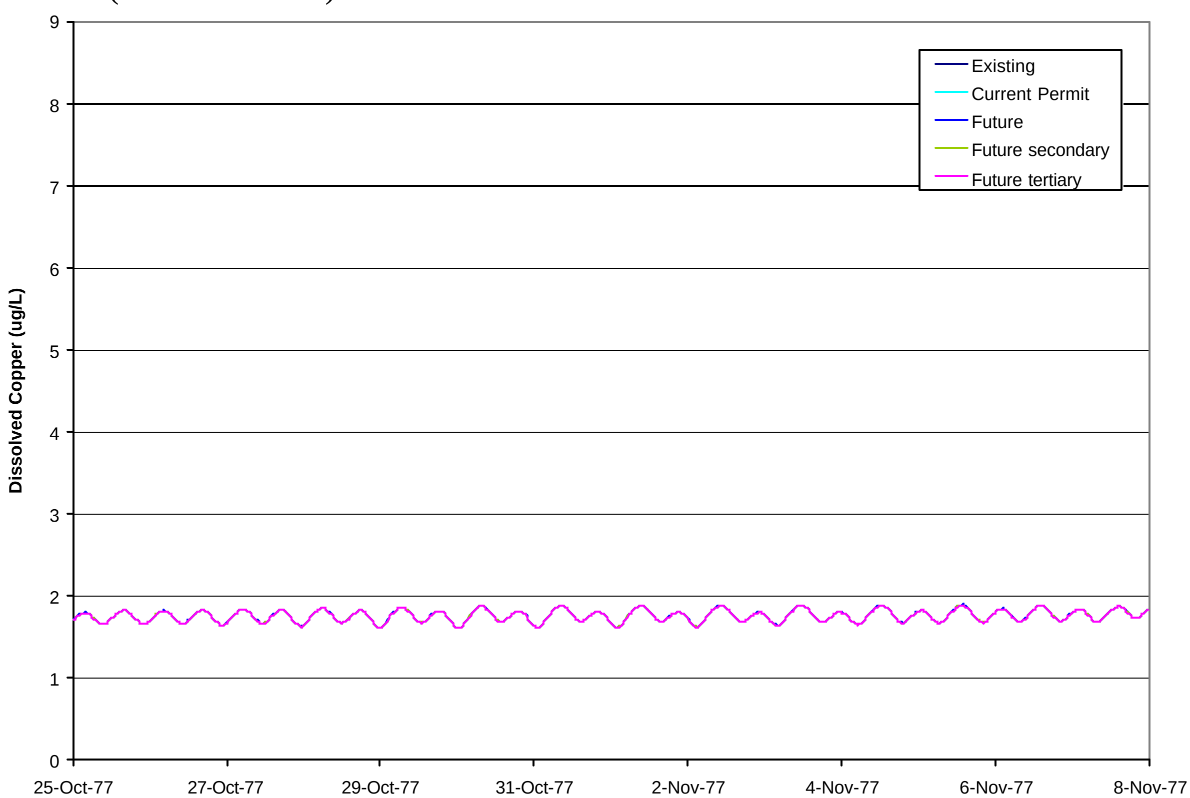


Figure 4-8 Dissolved copper concentrations 2500 meters east of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1977 simulation).

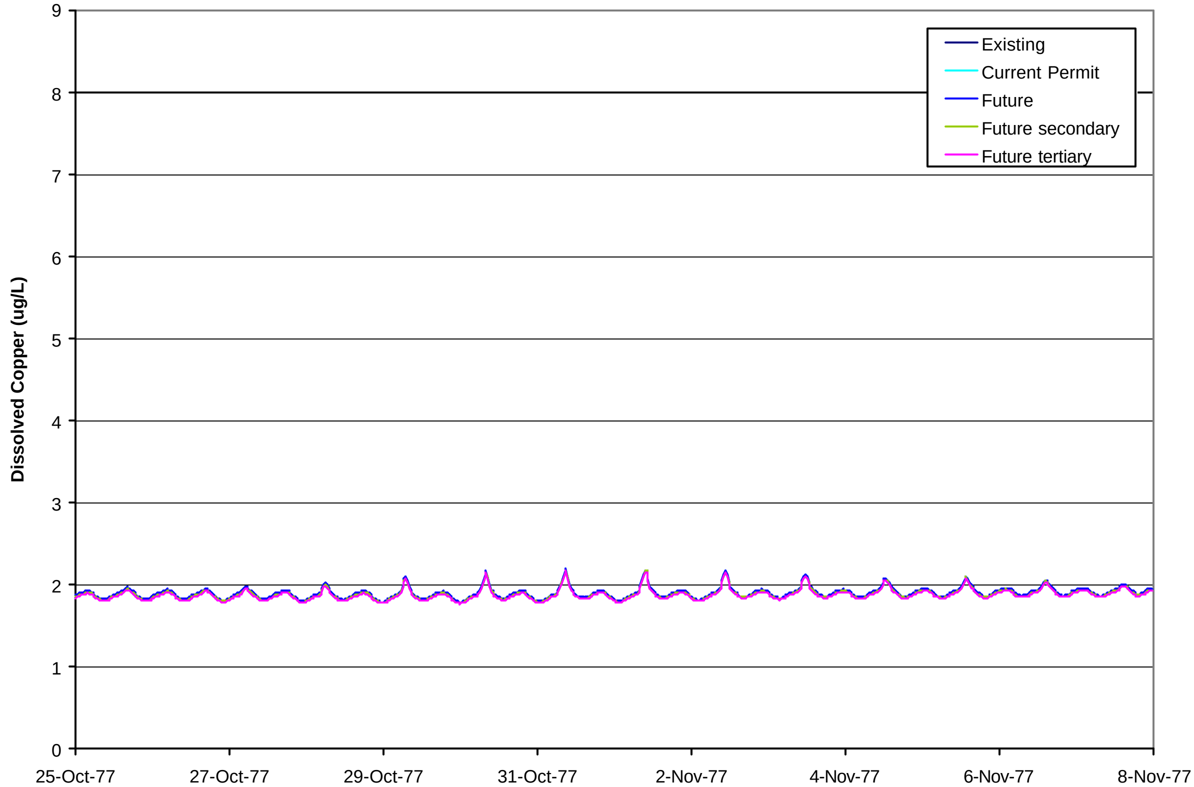


Figure 4-9 Dissolved copper concentrations 2500 meters south of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1977 simulation).

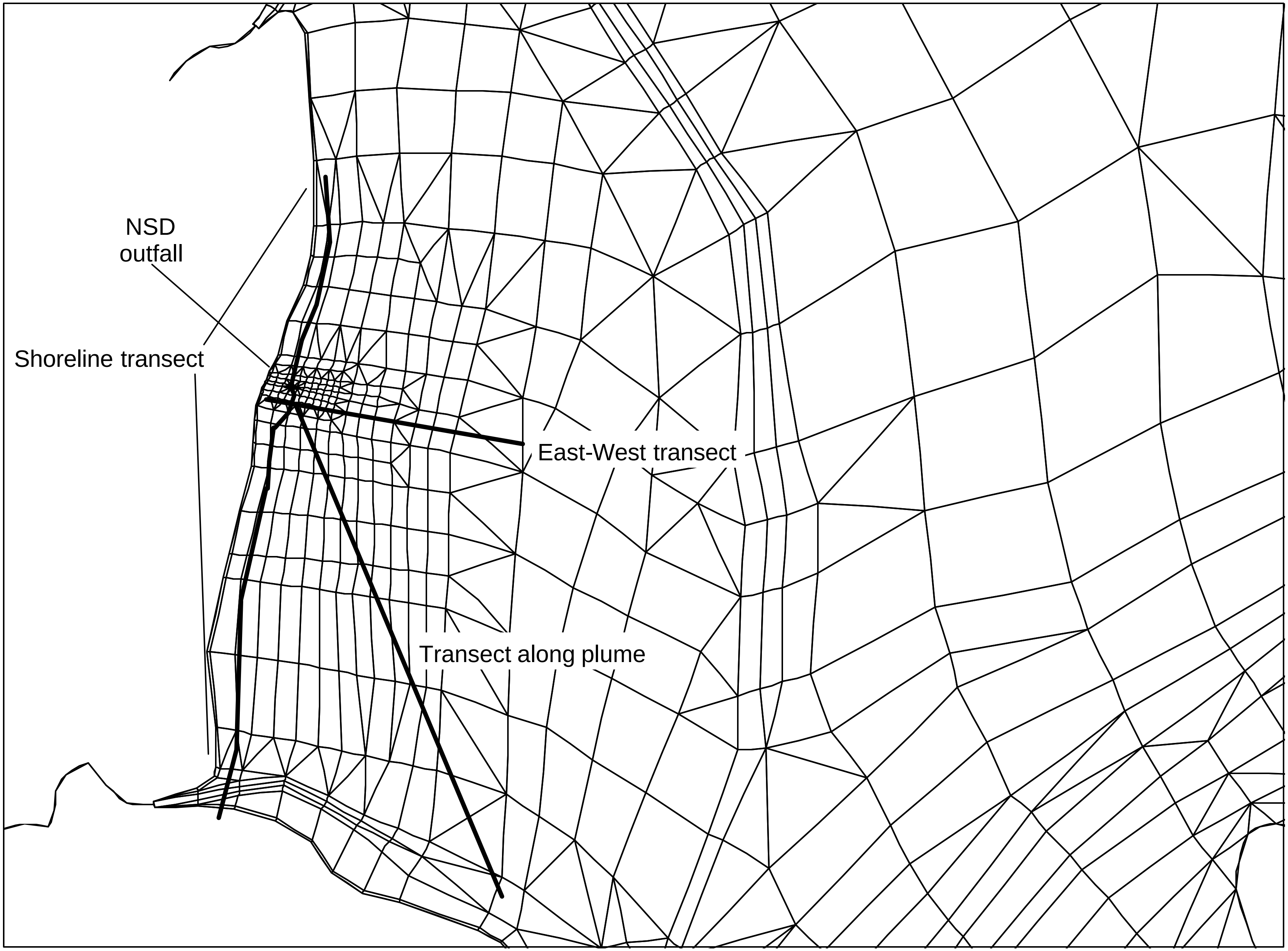


Figure 4-10 Profile plot transect locations.

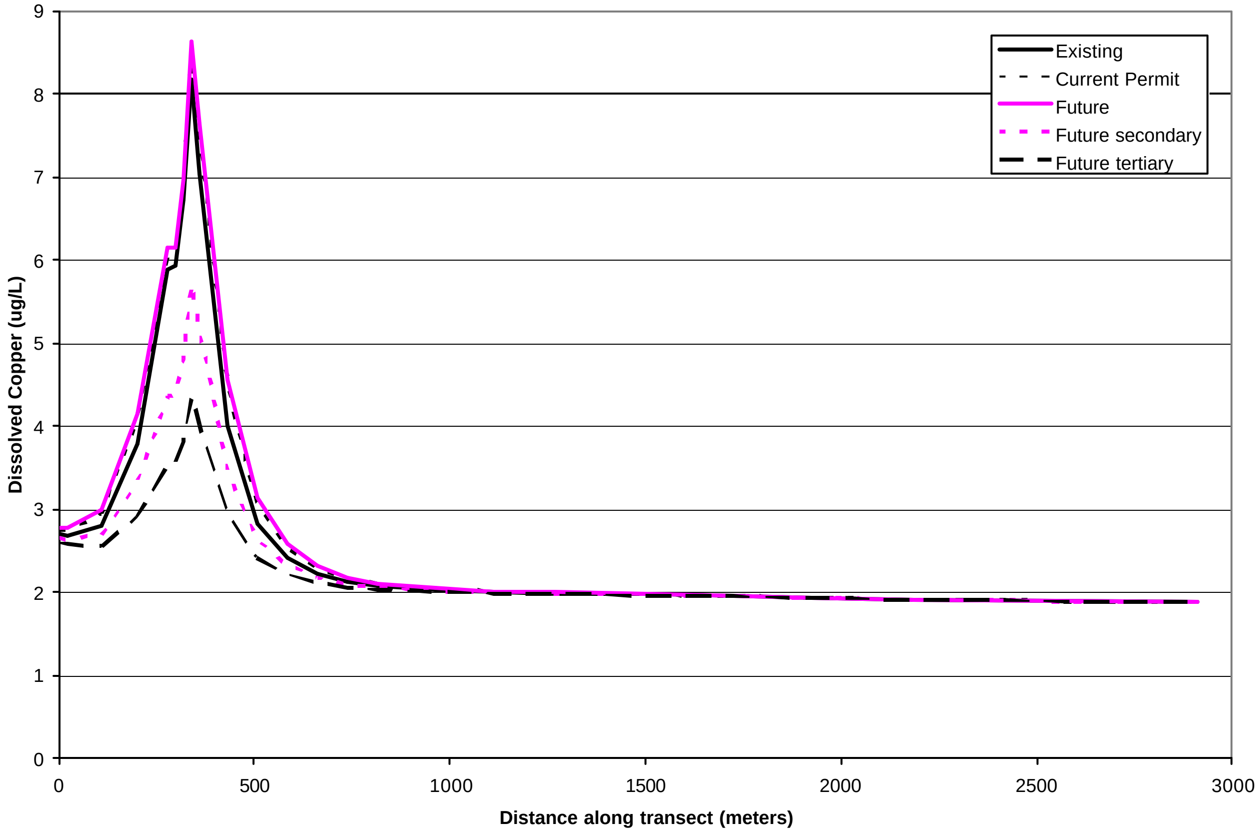


Figure 4-11 Maximum hourly average dissolved copper concentrations along east-west transect (1977 simulation).

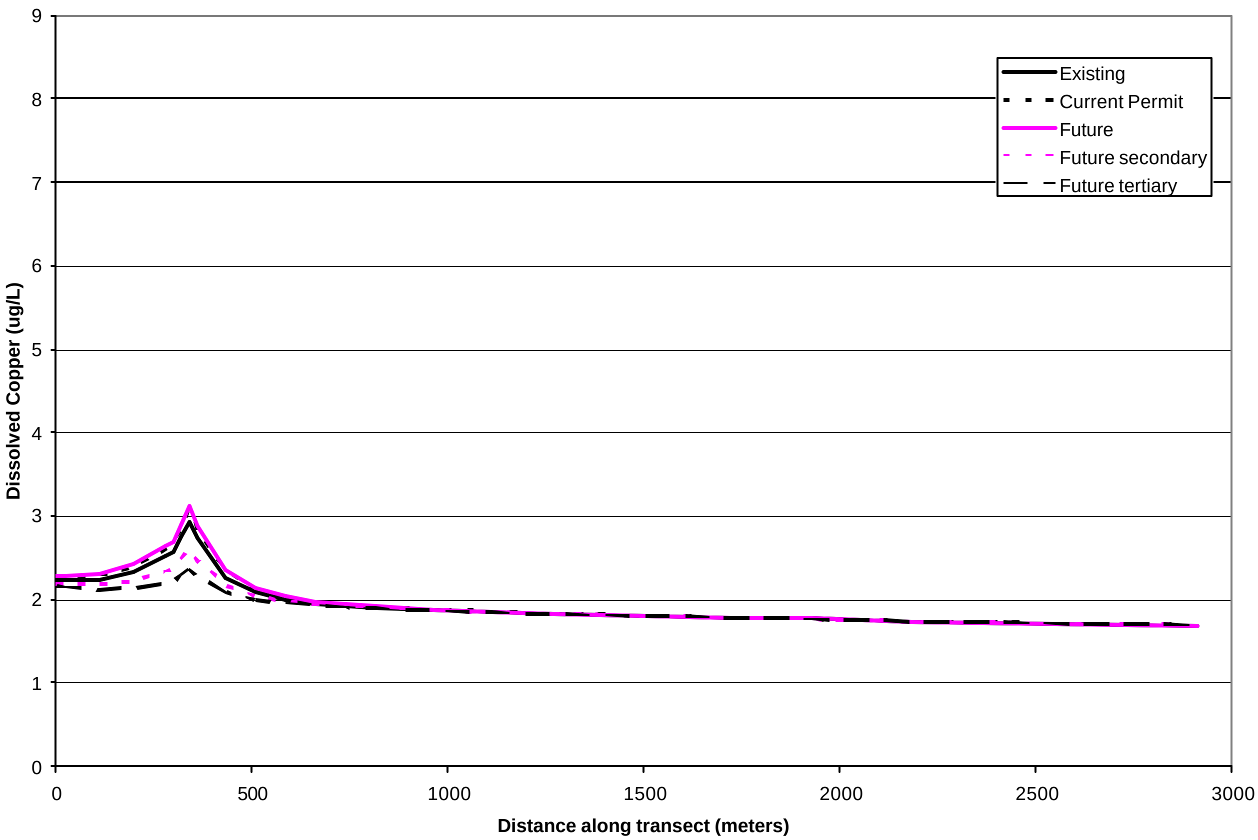


Figure 4-12 Maximum daily average dissolved copper concentrations along east-west transect (1977 simulation).

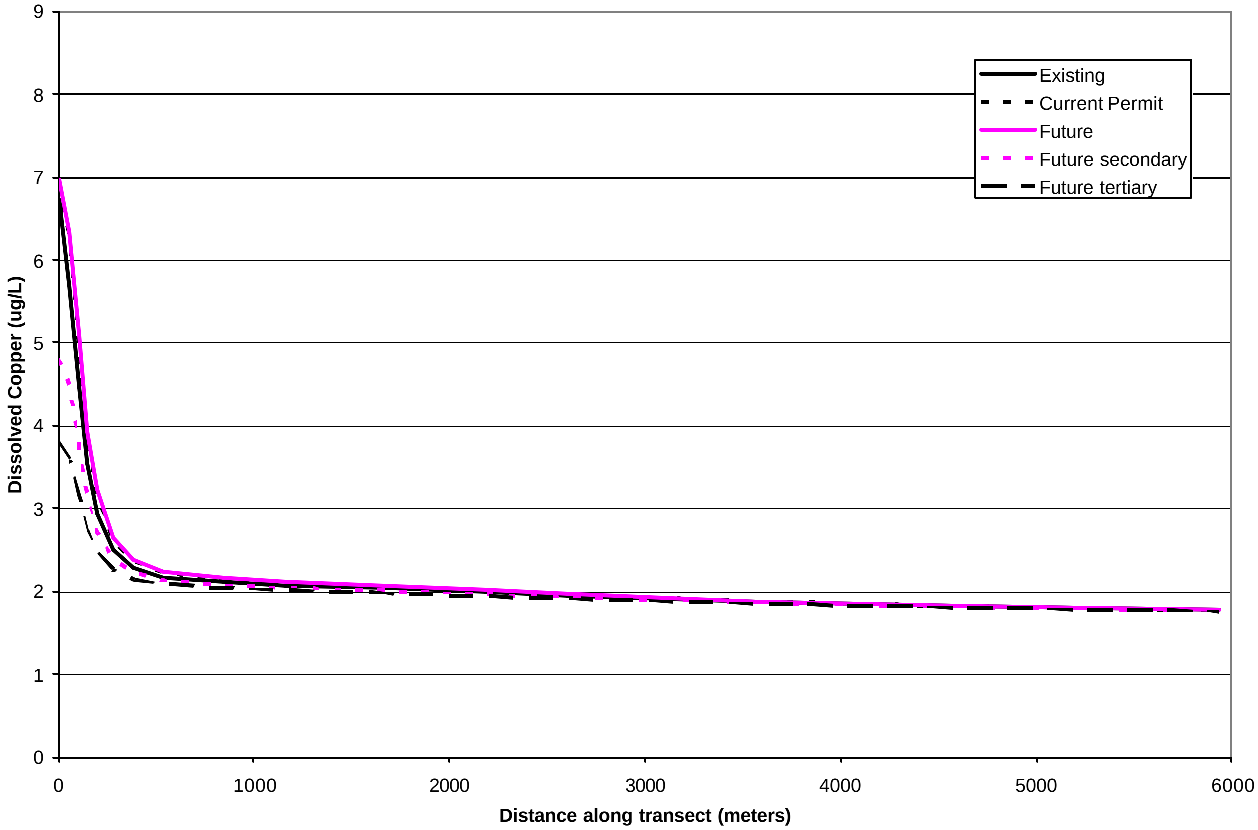


Figure 4-13 Maximum hourly average dissolved copper concentrations for transect along length of plume (1977 simulation).

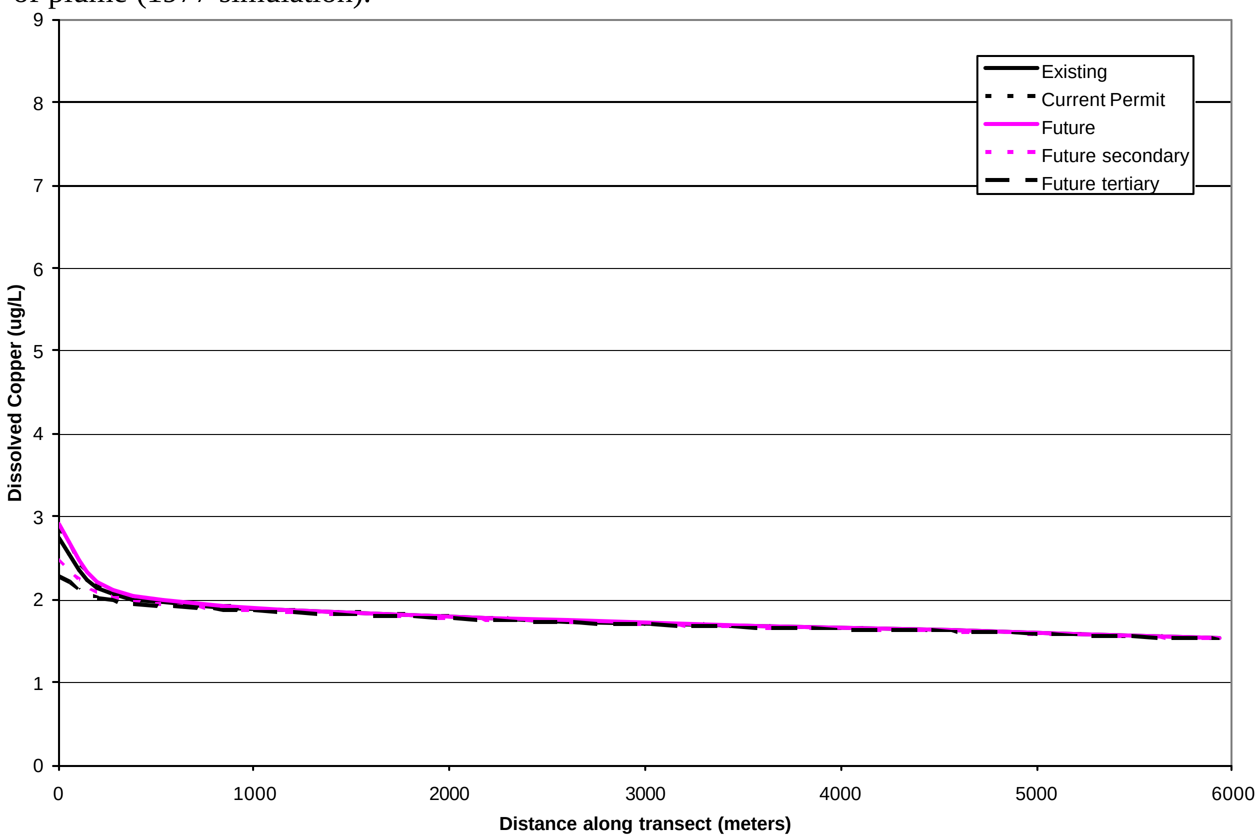


Figure 4-14 Maximum daily average dissolved copper concentrations for transect along length of plume (1977 simulation).

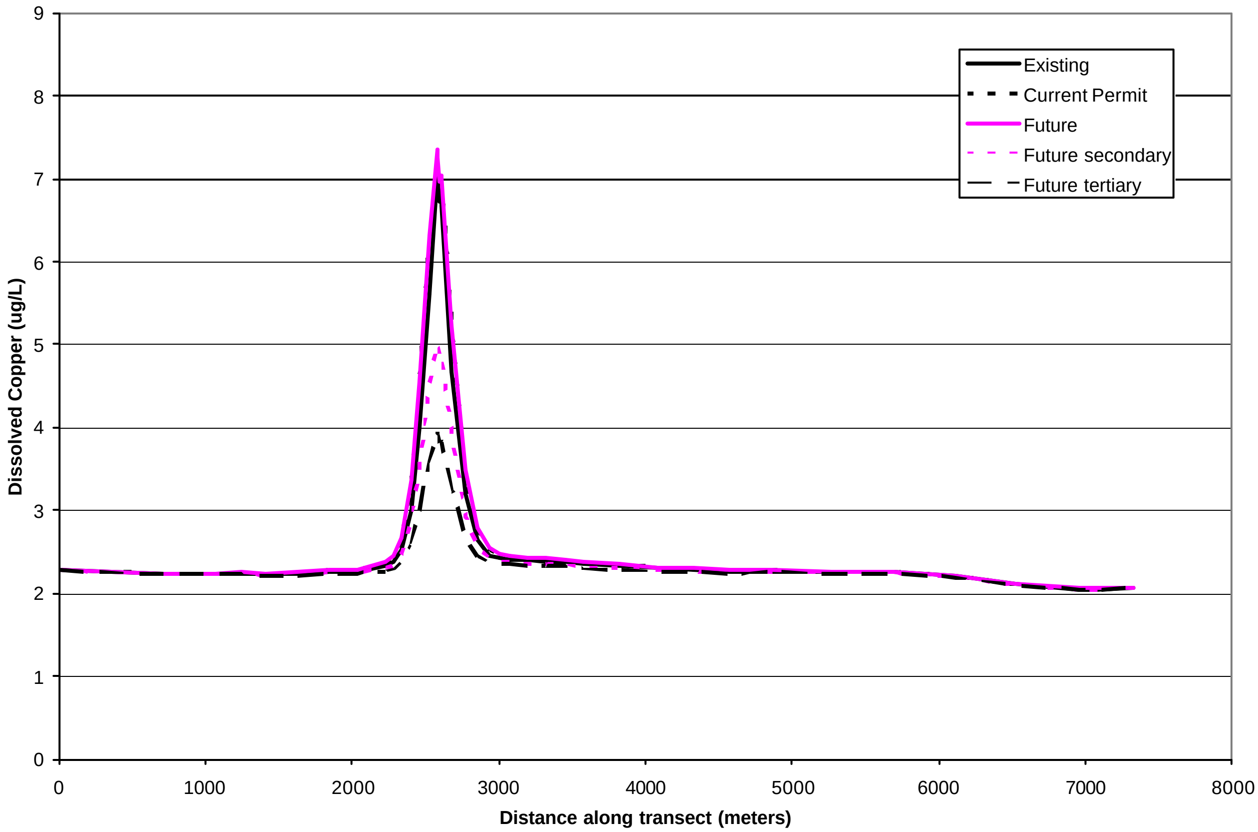


Figure 4-15 Maximum hourly average dissolved copper concentrations along shoreline transect (1977 simulation).

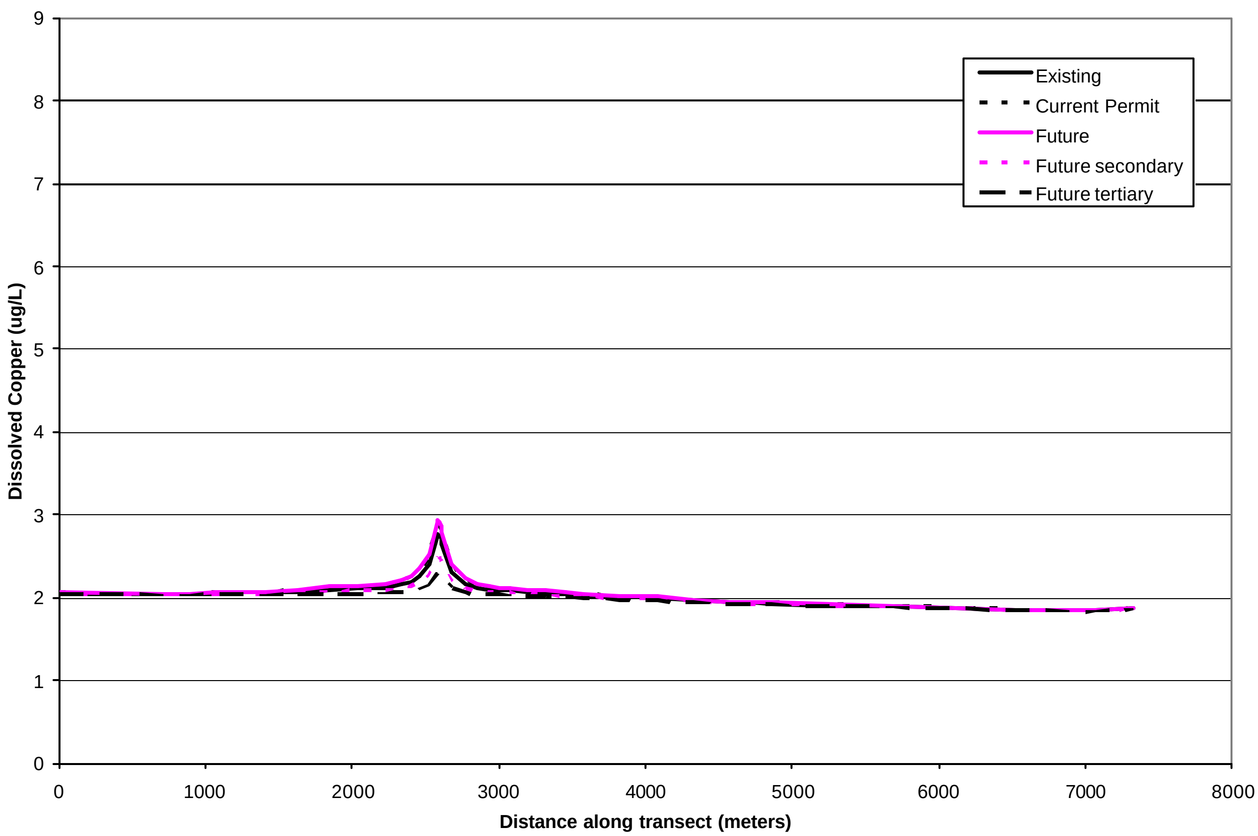


Figure 4-16 Maximum daily average dissolved copper concentrations along shoreline transect (1977 simulation).

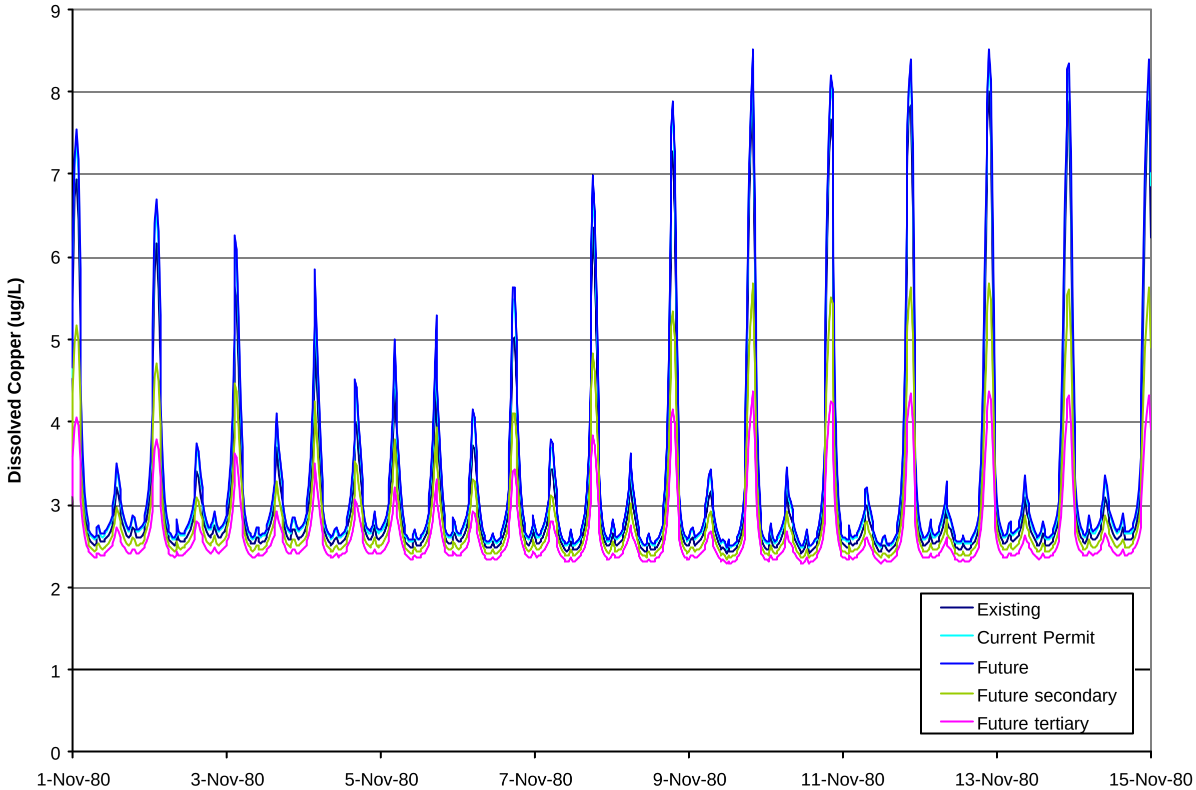


Figure 4-17 Dissolved copper concentrations at outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1980 simulation).

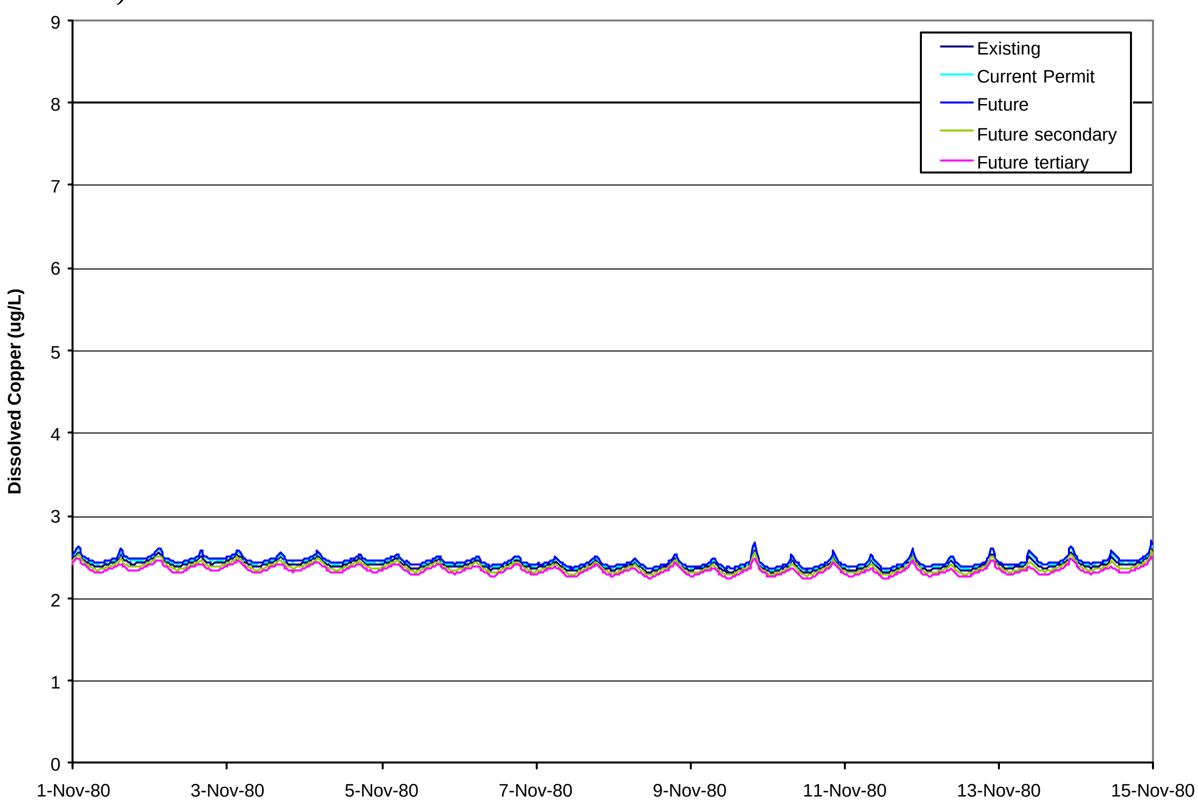


Figure 4-18 Dissolved copper concentrations 250 meters north of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1980 simulation).

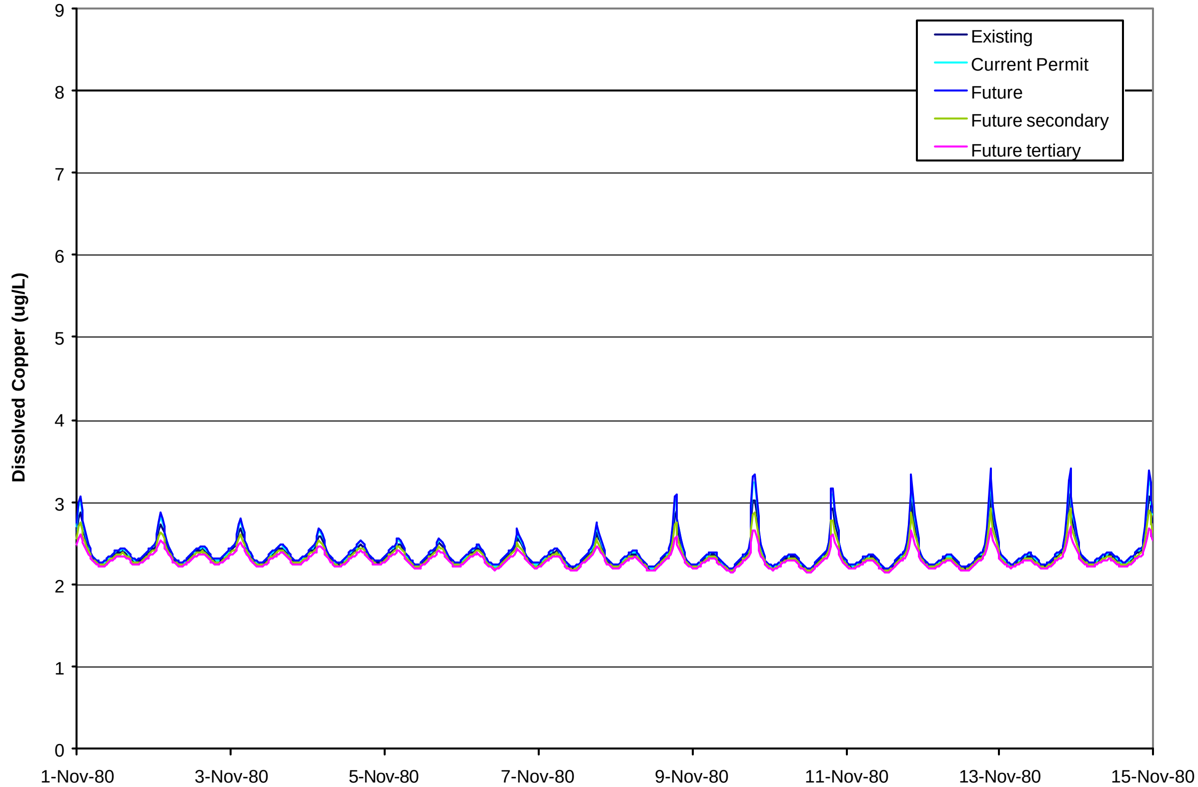


Figure 4-19 Dissolved copper concentrations 250 meters east of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1980 simulation).

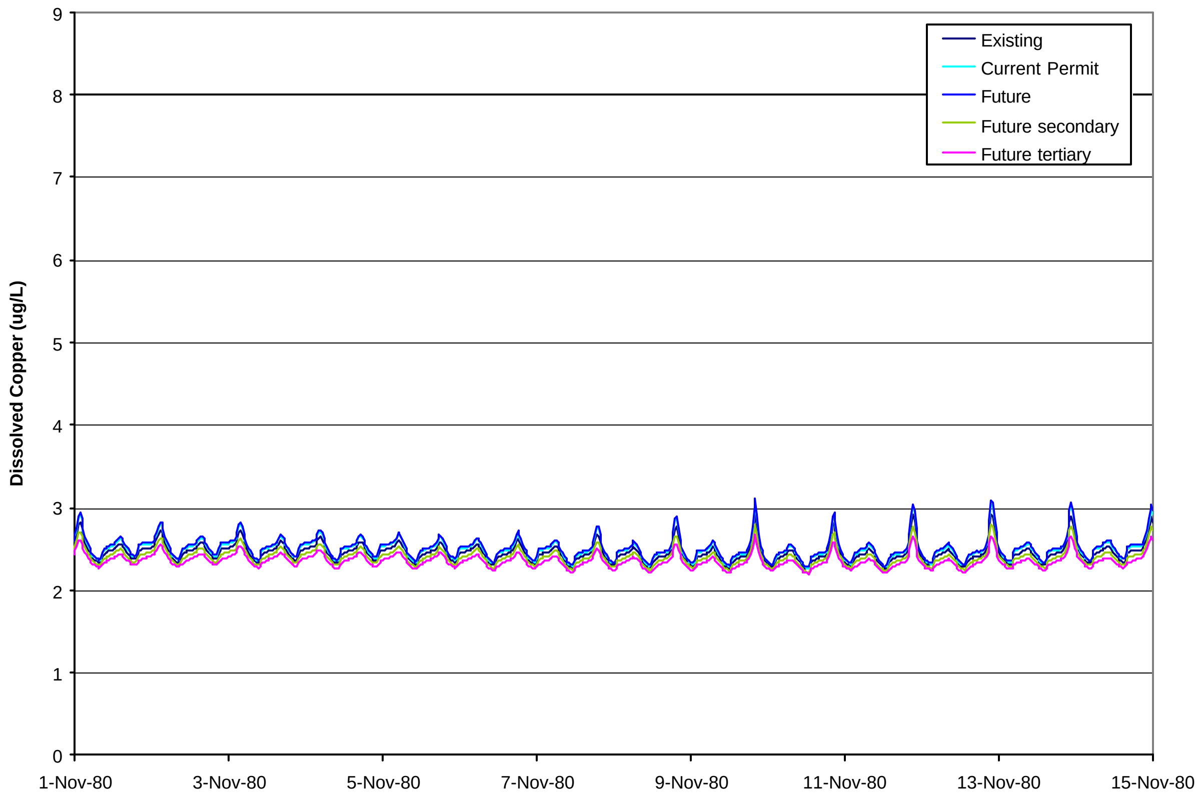


Figure 4-20 Dissolved copper concentrations 250 meters south of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1980 simulation).

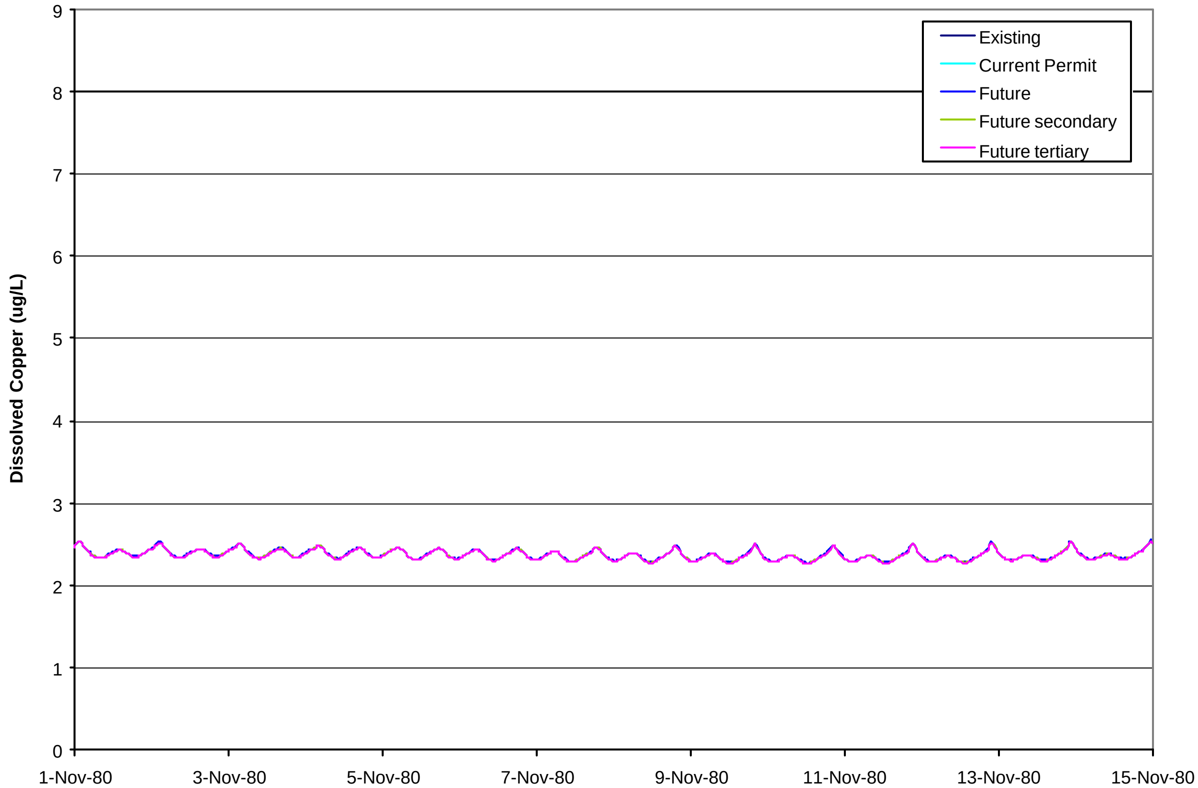


Figure 4-21 Dissolved copper concentrations 2500 meters north of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1980 simulation).

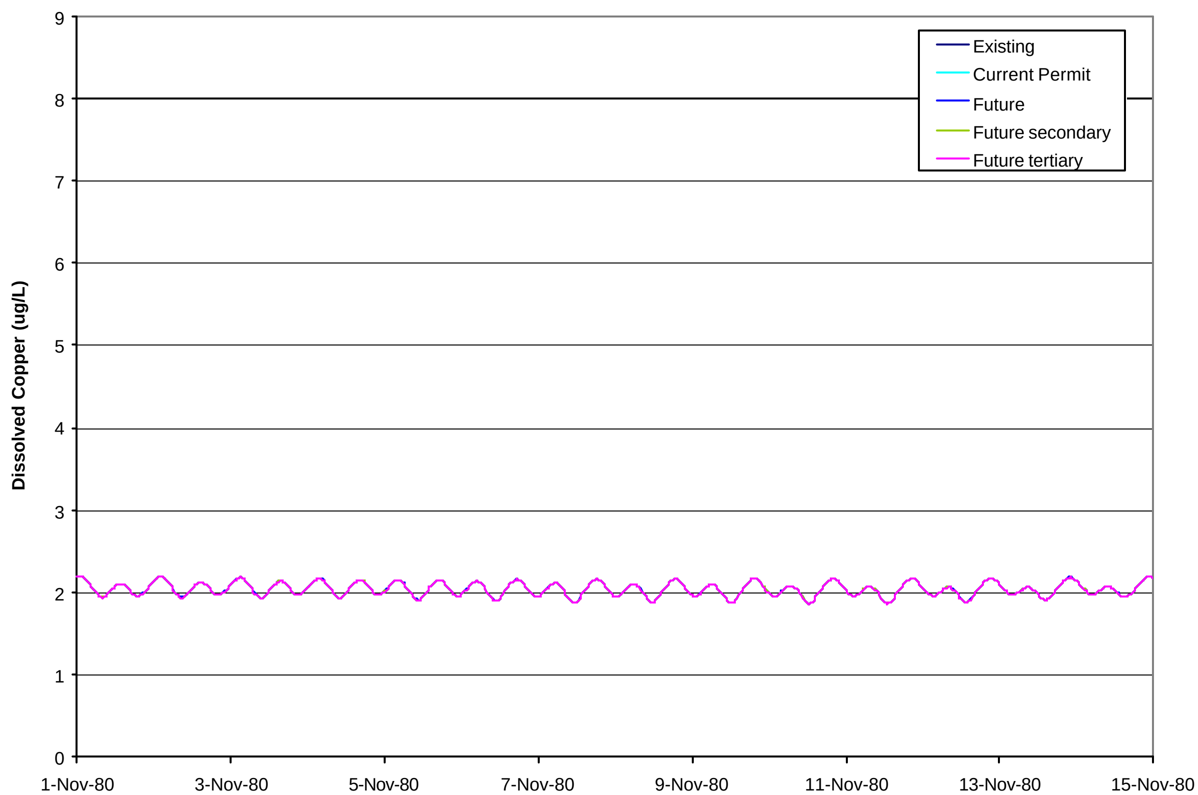


Figure 4-22 Dissolved copper concentrations 2500 meters east of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1980 simulation).

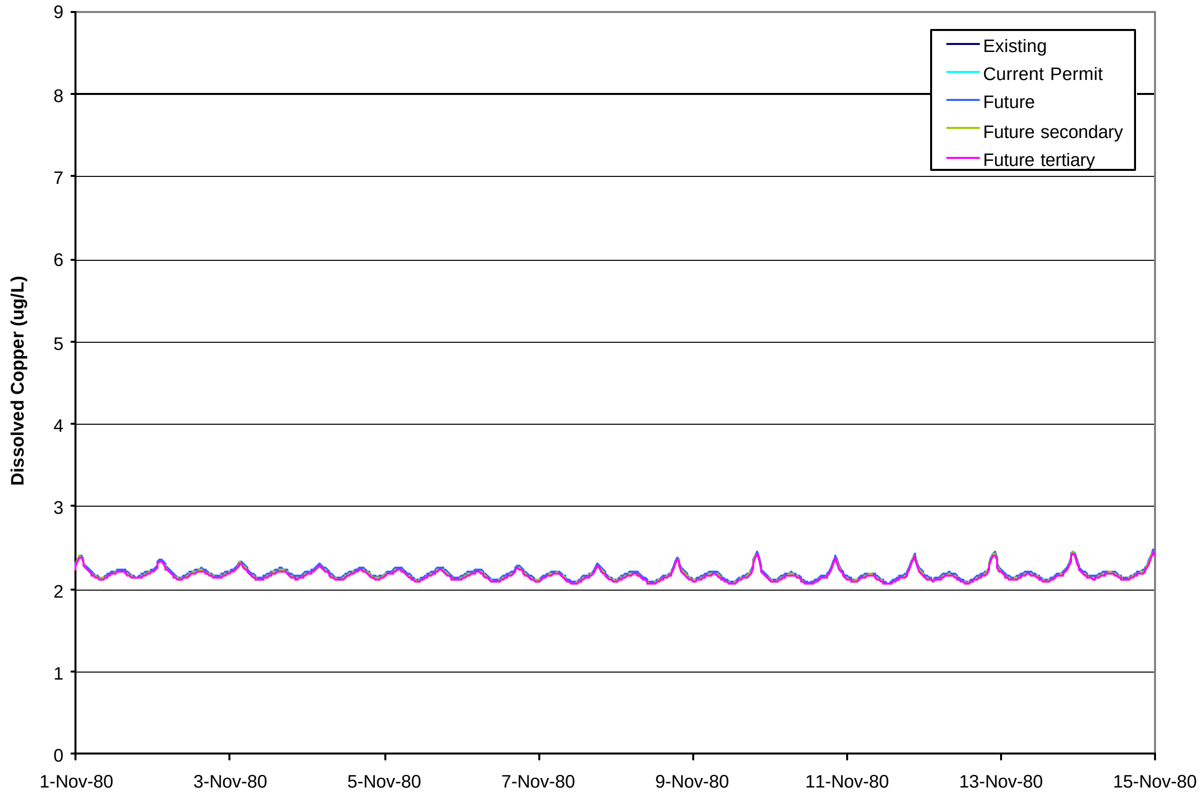


Figure 4-23 Dissolved copper concentrations 2500 meters south of outfall for existing conditions, current permit, future flow, future flow with secondary treatment, and future flow with tertiary treatment (1980 simulation).

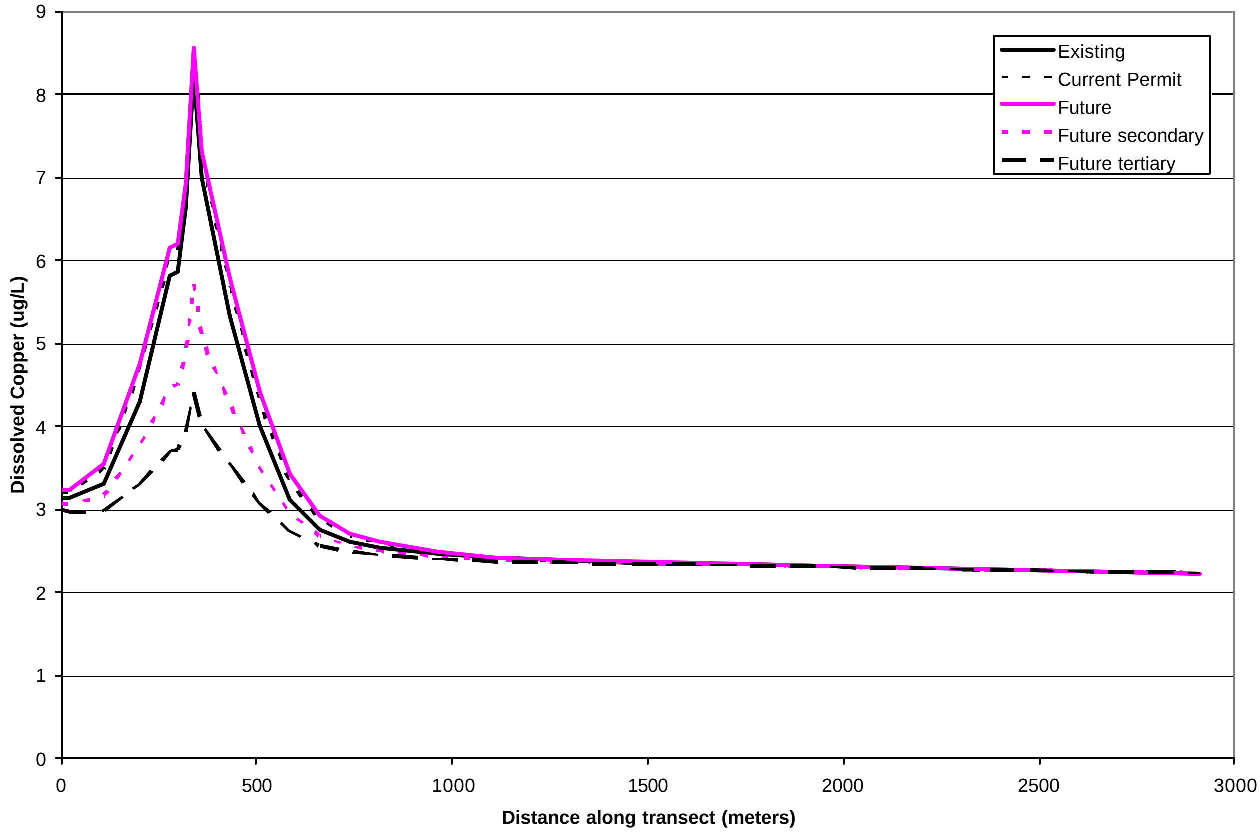


Figure 4-24 Maximum hourly average dissolved copper concentrations along east-west transect (1980 simulation).

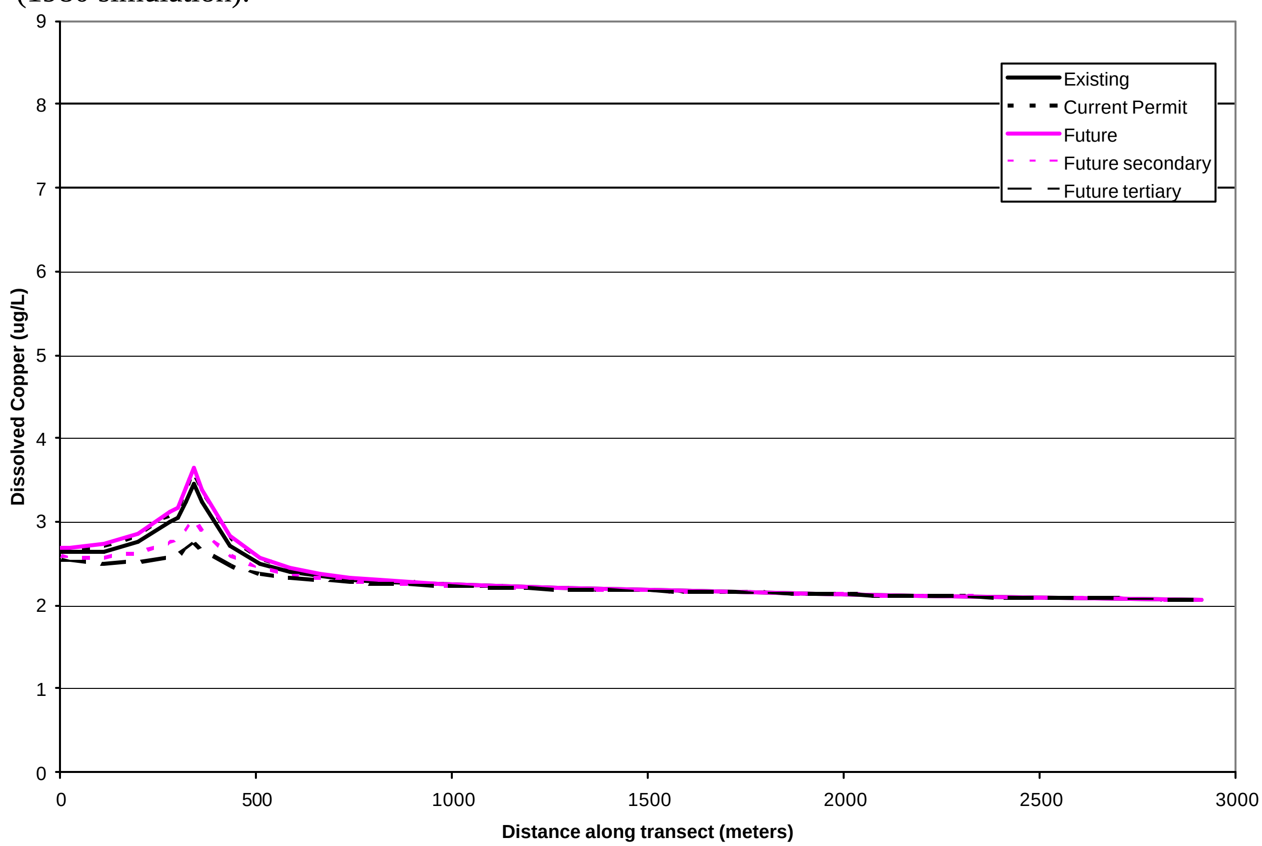


Figure 4-25 Maximum daily average dissolved copper concentrations along east-west transect (1980 simulation).

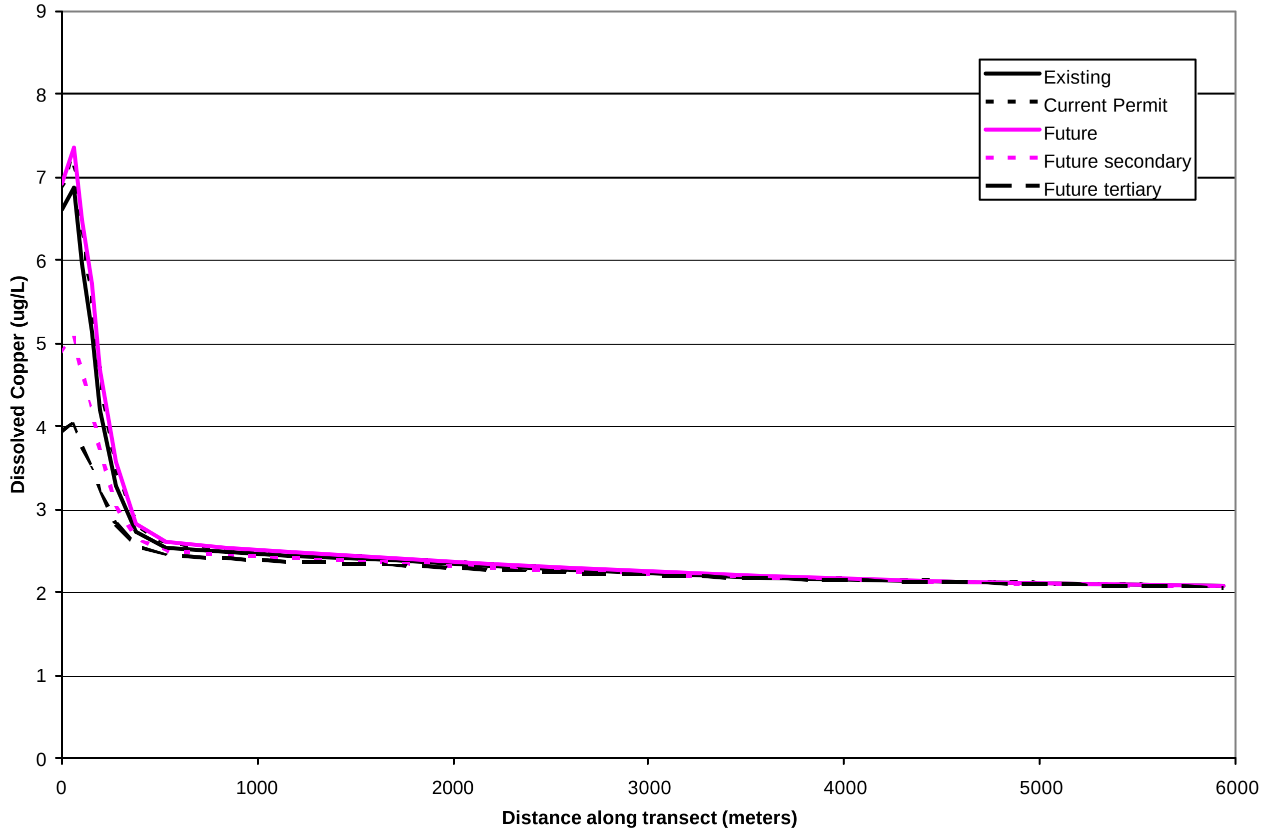


Figure 4-26 Maximum hourly average dissolved copper concentrations for transect along length of plume (1980 simulation).

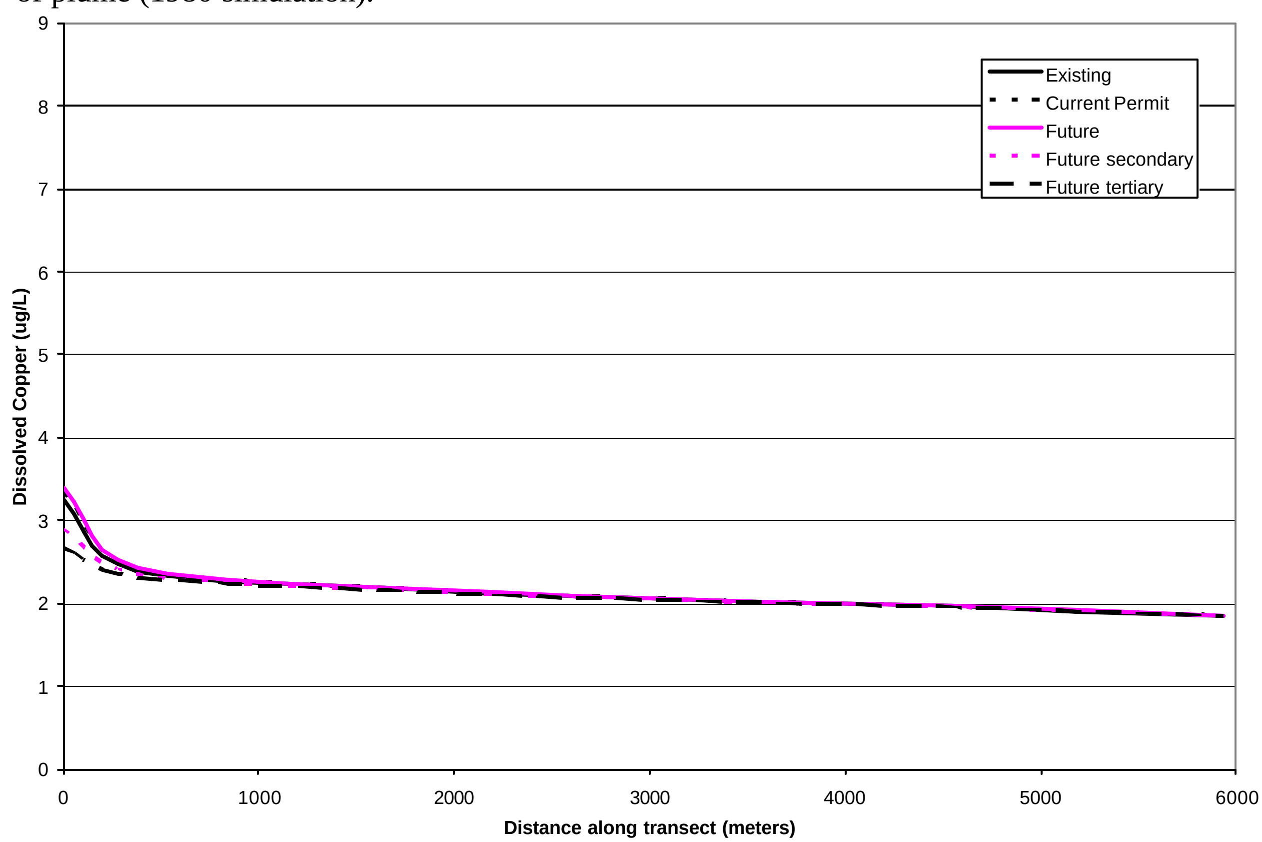


Figure 4-27 Maximum daily average dissolved copper concentrations for transect along length of plume (1980 simulation).

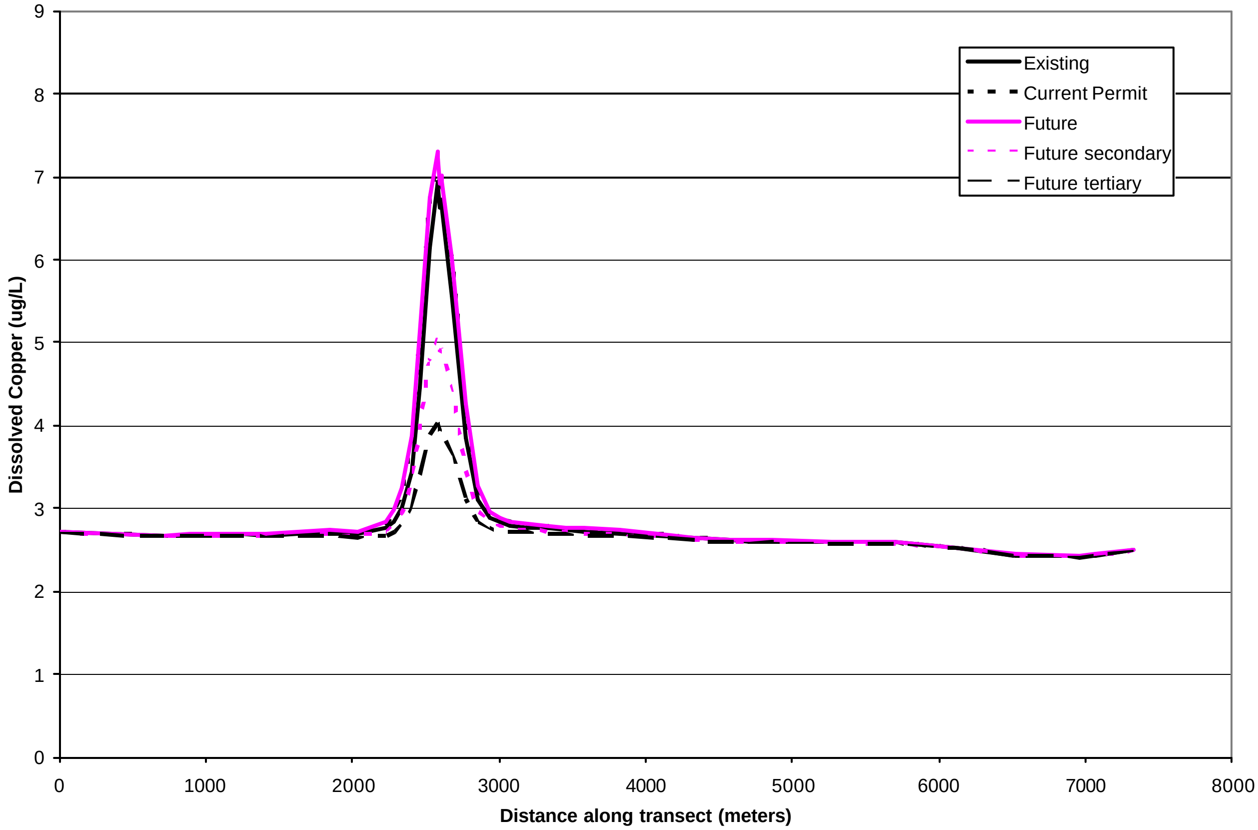


Figure 4-28 Maximum hourly average dissolved copper concentrations along shoreline transect (1980 simulation).

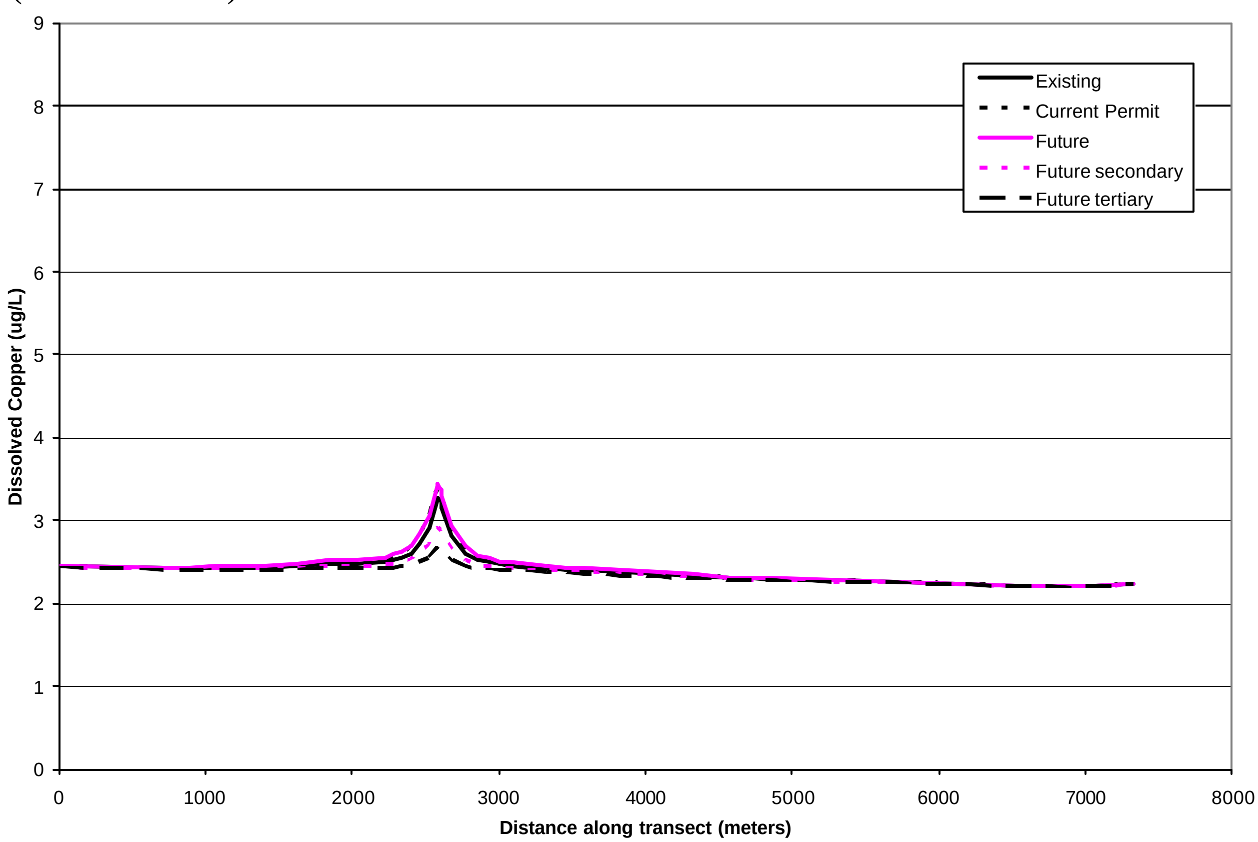


Figure 4-29 Maximum daily average dissolved copper concentrations along shoreline transect (1980 simulation).

5 DISSOLVED NICKEL

5.1 DISSOLVED NICKEL MODEL CALIBRATION

Sources of dissolved nickel contamination of Bay waters are similar to those for dissolved copper. Data are available to set boundary conditions for the tributary stream inflows, municipal and industrial discharges, and tidal exchange. To parameterize the unknown and unquantified sources and processes that contribute to the dissolved nickel concentrations in the water column, an additional distributed source is added. This distributed load varies for different areas of the Bay.

Dissolved nickel was calibrated in the same manner as dissolved copper. First the steady state concentrations were computed. Using the steady state results as initial conditions, the inter-tidal variations in water quality were computed for a period of approximately 28 days. The mixing coefficients that were calibrated for the salinity model remain the same, and the distributed loading rate was adjusted such that the difference between the computed and observed dissolved nickel concentrations was minimized.

For dissolved nickel calibration, average dry weather mass loadings from all municipal and industrial wastewater discharges to the Bay were input to the model. Boundary concentrations were set to August 1994 RMP dissolved nickel measurements for the Golden Gate, Sacramento River, San Joaquin River, and Napa River. Mokelumne River, Yolo Bypass and miscellaneous eastside flows were set to the Sacramento River value. The same hydrology from the dissolved copper simulation was used for dissolved nickel. Average flows and concentrations for municipal, industrial, and tributary inflows are listed in Table 3.

The model was run with the dry weather dissolved nickel loading described above, and the distributed loading rates were adjusted to bring the average computed dissolved nickel concentrations as close as possible to RMP values.

A profile from the Golden Gate to Honker Bay of observed dissolved nickel concentrations in August 1994, and minimum, average and maximum computed dissolved nickel concentrations for the August 1994 simulation period is shown in Figure x. The concentration gradient over the profile is generally well represented. Note that, as with dissolved copper, the dip in the computed dissolved nickel profile from San Pablo to Pinole is the result of a cross channel concentration gradient. Concentrations are higher in the shallower areas of San Pablo Bay where the San Pablo station is located, and lower in the deeper main channel where the Pinole station is located. Computed values bracket the observed data at most sampling stations in the profile. The maximum computed value at Pinole is within 0.02 µg/L of observed and the minimum value at Pacheco is within 0.03 µg/L of observed. At Honker Bay, computed values are slightly higher than observed. This is possibly due to Sacramento and San Joaquin River inflow concentrations being set too high due to the downstream location of the Sacramento and San Joaquin River sampling stations. At the Golden Gate, the minimum computed value is equal to the observed value because the boundary concentration was set equal to the observed concentration. The concentration at flood tide (=observed) is always lower than at ebb tide.

Table 5-1 Dry weather flows and dissolved nickel concentrations.

Source	Flow	Dissolved Nickel Concentration (µg/L)
Golden Gate	--	0.73
Sacramento River	varies	1.32
San Joaquin River	varies	1.00
Mokelumne & Cosumnes Rivers	varies	1.32
misc. eastside flows	varies	1.32
Napa River	varies	2.47
Yolo Bypass	varies	1.32
Petaluma River	0.035 cfs	2.85
Sonoma River	0.88 cfs	2.85
Novato Creek	0.035 cfs	2.85
Gallinas Creek	0.035 cfs	2.85
Novato SD	5.2 mgd	4.1
CCCSD	43.1 mgd	5.0
C&H Sugar	0.81 mgd	0.0
Central Marin San.	7.40 mgd	5.0
Chevron USA	4.89 mgd	0.0
City and Co. of S.F., southeast	67.0 mgd	4.6
City of Benicia	2.30 mgd	5.0
City of Hercules/Pinole	2.43 mgd	5.0
City of Petaluma	4.45 mgd	4.4
City of San Mateo	10.0 mgd	5.0
Delta Diablo SD 38	13.1 mgd	5.0
EBDA	77.9 mgd	5.0
EBMUD	71.5 mgd	5.0
Exxon	2.05 mgd	0.0
Fairfield/Suisun	9.20 mgd	5.0
Las Gallinas Valley SD	2.20 mgd	5.0
Mt. View SD	1.23 mgd	5.0
Napa SD	2.84 mgd	4.4
North Bayside System Unit	14.7 mgd	5.0
Palo Alto SD	24.0 mgd	4.4
San Jose SD	134 mgd	4.4
Sausalito/Marin City	1.48 mgd	9.4
Sewerage Agency of S. Marin	2.02 mgd	9.2
Shell Oil Co.	4.31 mgd	0.0
Sonoma Valley Co. SD	2.60 mgd	5.0
South Bayside System Authority	14.7 mgd	4.4
Sunnyvale SD	15.7 mgd	4.1
Tosco Corp	4.69 mgd	7.2
Union Oil	1.90 mgd	0.0
USS Posco	8.75 mgd	0.0
Vallejo San. and Flood	11.4 mgd	5.0
West County Agency	13.1 mgd	5.0

5.2 DISSOLVED NICKEL ANALYSIS

The calibrated model was used to simulate dissolved nickel for NSD existing ADWF, current permitted ADWF and future ADWF. Existing ADWF and current permitted ADWF were simulated with existing effluent quality (these simulations will be referred to as "existing" and "current permit", respectively). Future ADWF was simulated with existing effluent quality ("future"), and upgraded tertiary effluent quality ("future tertiary"). Table 5-2 summarizes NSD discharge rates and dissolved nickel concentrations for each of the simulation scenarios. All simulations were performed for the same periods used in the dissolved copper analysis: October 7 – November 8, 1977 and October 11 – November 15, 1980. The mass loadings from all municipal and industrial wastewater discharges to the Bay, and all boundary concentrations were set the same as for the dissolved nickel calibration simulation.

Table 5-2 Summary of NSD discharge rates and concentrations.

Simulation	ADWF (mgd)	Effluent dissolved nickel concentration (µg/L)
Existing	5.2	4.1
Current permit	6.55	4.1
Future	7.0	4.1
Future tertiary	7.0	3.61

5.2.1 October – November 1977

Computed dissolved nickel concentration time series are plotted for the last 14 days of the October – November 1977 simulations in Figures 5-2 through 5-8 at the outfall, 250 m north of the outfall, 250 m east of the outfall, 250 m south of the outfall, 2500 m north of the outfall, 2500 m east of the outfall and 2500 m south of the outfall. The "future" simulation produces the highest concentrations, peaking at 3.6 µg/L at the outfall and 2.4 µg/L at 250 m east of the outfall. Concentrations for the "current permit" and "existing" simulation are very similar to the "future" concentrations. Future flows with tertiary treatment result in slightly lower dissolved nickel concentrations over the outfall, but further fom the outfall, concentrations are nearly identical to existing conditions. Concentrations for the "tertiary" simulation peak at 3.3 µg/L at the outfall and 2.4 µg/L at 250 m east of the outfall. At 250 m from the outfall in any direction, concentrations are very similar for each of the simulations, and at 2500 m in any direction, concentrations are virtually identical for all simulations, indicating that the impact of increased NSD discharge on dissolved nickel concentrations in San Pablo Bay is localized in the immediate vicinity of the outfall. Peak concentrations for each location are summarized in Table 5-3. Over the outfall, the "future" concentration is increased 3% over "existing" concentrations and less than 1% over "current permit" concentrations. With tertiary treatment, concentrations over the outfall are reduced below "current permit" concentrations by 9%.

Profile plots of maximum hourly average and maximum daily average dissolved nickel concentrations are plotted in Figures 5-9 through 5-14 along three transects: an east-west transect through the outfall, a transect along the length of the plume, and a transect along the shoreline. The transect locations are shown in Figure 4-10. As with the time series discussed above, the hourly averaged profile plots shows the concentrations for the "future", "current permit" and existing simulations are very similar, while the "tertiary" simulation results in concentrations that are slightly lower. On a daily averaged basis, the differences among the simulations results are even smaller. Maximum daily average concentrations over the outfall are approximately 30% lower than maximum hourly average concentrations. These transects also illustrate that the influence of the NSD discharge on dissolved nickel concentrations in San Pablo Bay is very localized around the outfall. Concentrations diminish to ambient levels within about 1000 m of the outfall.

5.2.2 October – November 1980

Plots similar to those described above are provided for the October – November 1980 simulation as well. Results for the 1980 normal low flow hydrology simulation do not differ significantly from the 1977 extreme low flow hydrology simulation. Computed dissolved nickel concentration time series are plotted for the last 14 days of the October – November 1980 simulations in Figures 5-15 through 5-21 at the outfall, 250 m north of the outfall, 250 m east of the outfall, 250 m south of the outfall, 2500 m north of the outfall, 2500 m east of the outfall and

2500 m south of the outfall. The "future" simulation produces the highest concentrations, with a peak of 3.6 µg/L at the outfall and 2.6 µg/L at 250 m east of the outfall. Concentrations for the "current permit" and "existing" simulations are very similar to the "future" concentrations, peaking at 3.5 µg/L at the outfall and again at 2.6 µg/L at 250 m east of the outfall. Future flows with tertiary treatment result in slightly lower dissolved nickel concentrations over the outfall for the 1980 simulation as well, but further from the outfall concentrations are nearly identical to existing conditions. Concentrations for the "tertiary" simulation peak at 3.2 µg/L at the outfall and 2.6 µg/L at 250 m east of the outfall. At 250 m and further from the outfall in any direction, concentrations are virtually the same for all of the simulations, indicating that under normal dry weather conditions, the impact of increased NSD discharge on dissolved nickel concentrations in San Pablo Bay is localized in the immediate vicinity of the outfall just as for the 1977 simulation. Peak concentrations for each location are summarized in Table 5-3. Over the outfall, the "future" concentration is increased 3% over "existing" concentrations and less than 1% over "current permit" concentrations. With tertiary treatment, concentrations over the outfall are reduced below "current permit" concentrations by 8%.

Profile plots of maximum hourly average and maximum daily average dissolved nickel concentrations are plotted in Figures 5-22 through 5-27 along the transect locations shown in Figure 4-10. These results show the same characteristics as the 1977 simulation profile plots.

Table 5-3 Summary of dissolved nickel simulation results.

Simulation	Peak Dissolved Nickel Concentration (µg/L) at:						
	outfall	250 m N	250 m E	250 m S	2500 m N	2500 m E	2500 m S
1977 existing	3.56	2.29	2.37	2.46	2.37	1.98	2.32
1977 current permit	3.62	2.31	2.43	2.49	2.37	1.98	2.32
1977 future	3.65	2.32	2.45	2.50	2.37	1.98	2.32
1977 future tertiary	3.29	2.30	2.38	2.46	2.37	1.98	2.32
1980 existing	3.47	2.50	2.57	2.60	2.59	2.19	2.49
1980 current permit	3.54	2.51	2.61	2.62	2.59	2.19	2.50
1980 future	3.56	2.52	2.63	2.63	2.60	2.19	2.50
1980 future tertiary	3.25	2.50	2.57	2.60	2.59	2.19	2.49

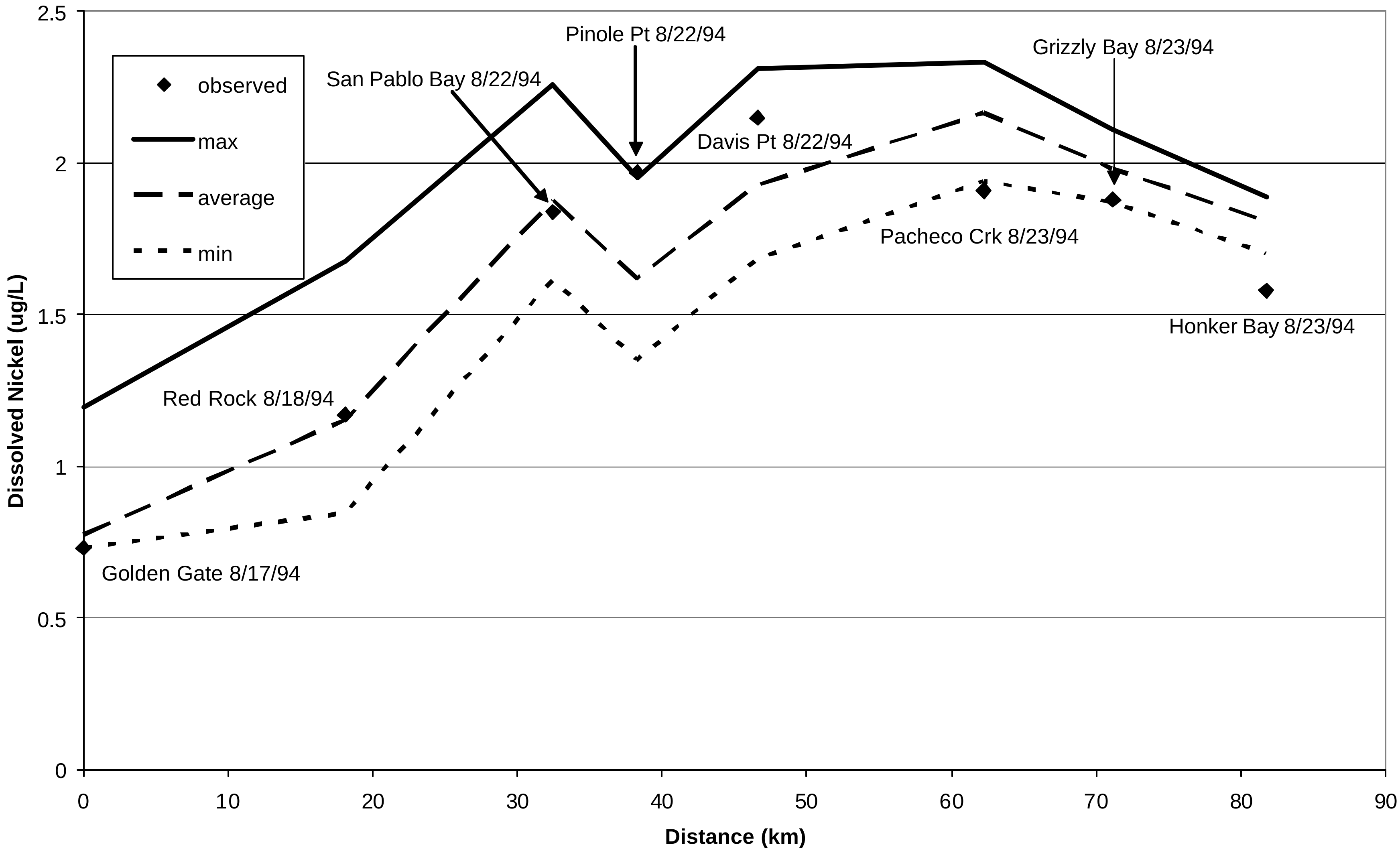


Figure 5-1 Profile from Golden Gate Bridge to Honker Bay of maximum, average and minimum dissolved nickel concentrations

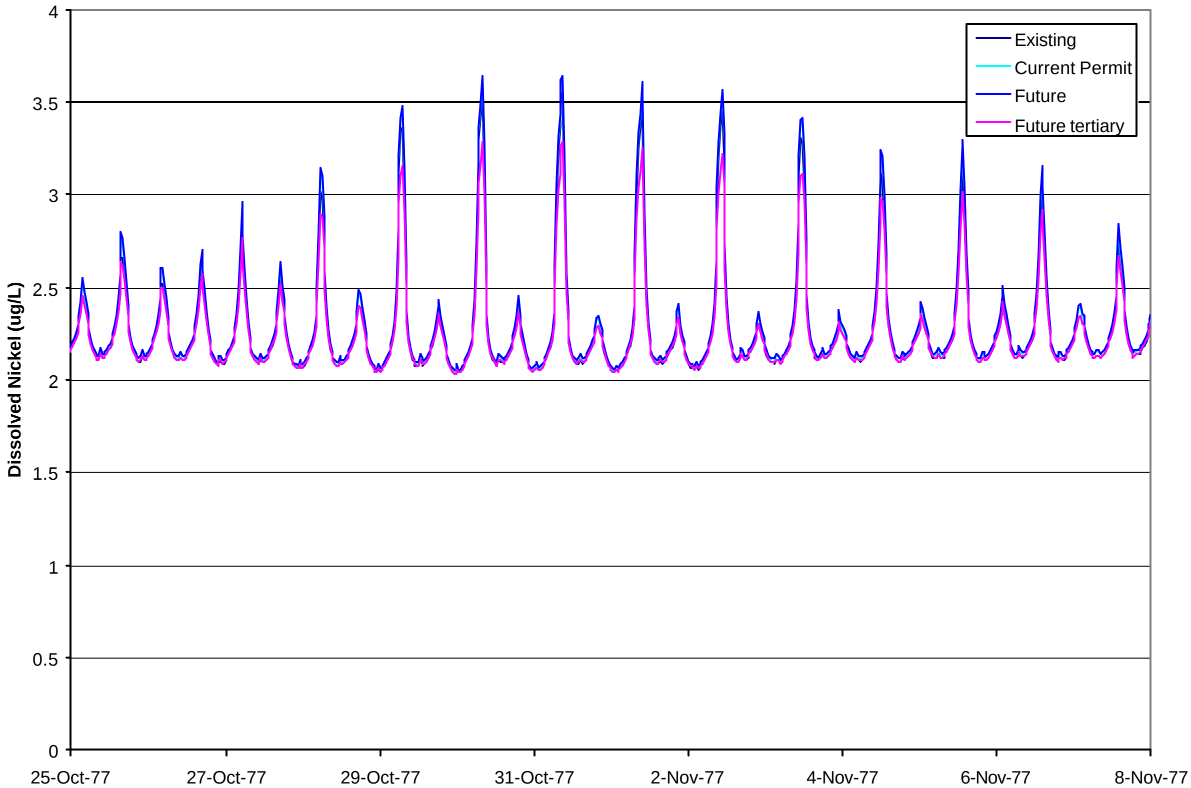


Figure 5-2 Dissolved Nickel concentrations at outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1977 simulation).

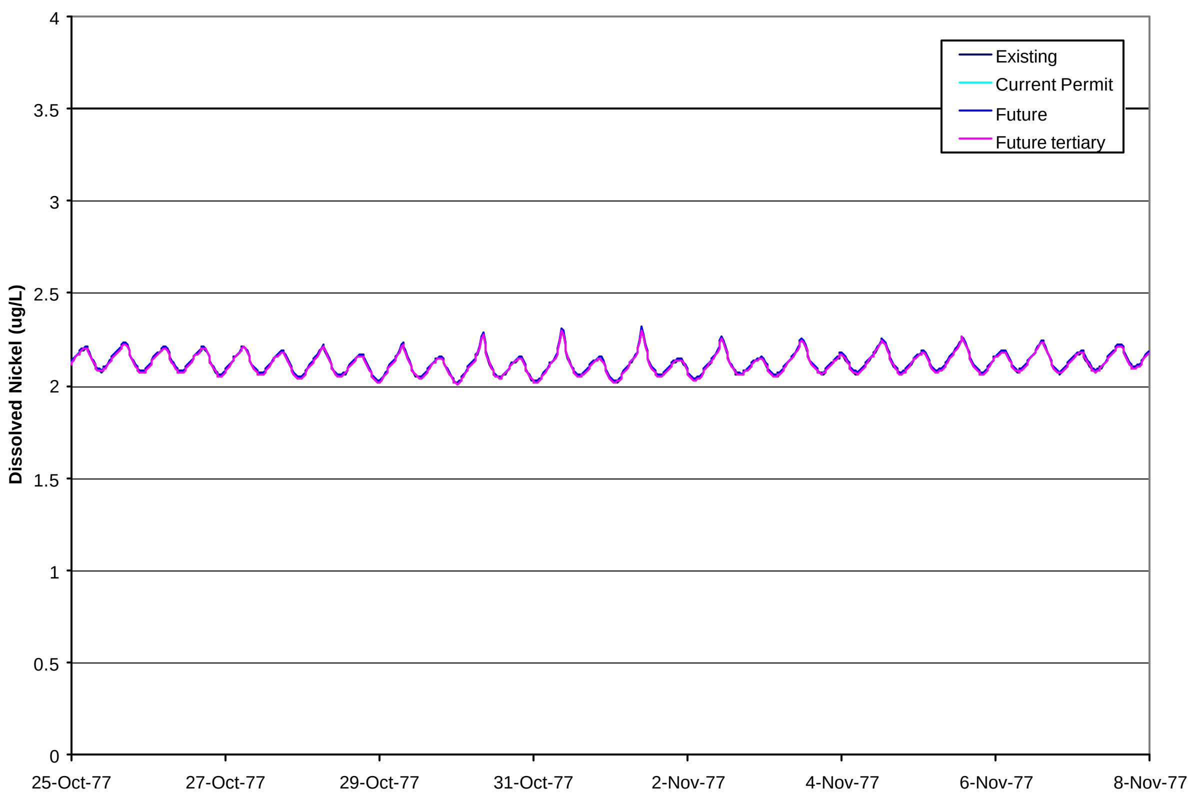


Figure 5-3 Dissolved Nickel concentrations 250 meters north of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1977 simulation).

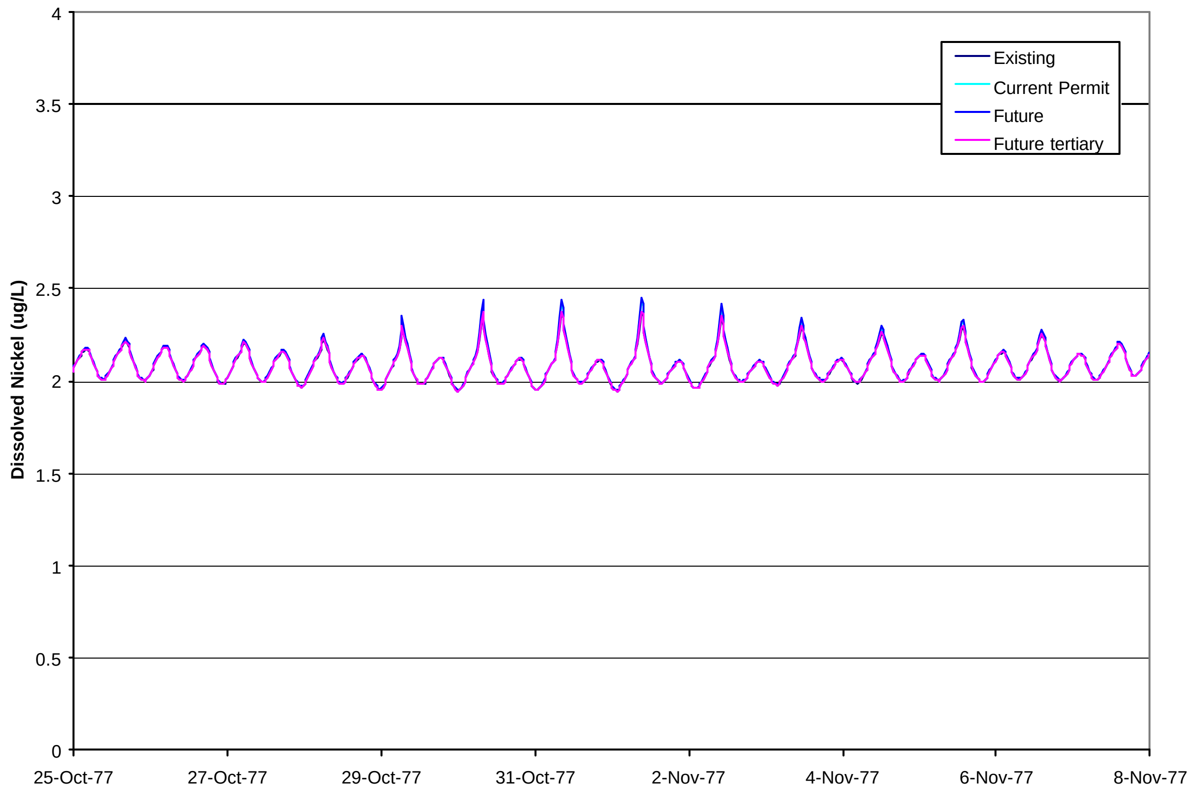


Figure 5-4 Dissolved Nickel concentrations 250 meters east of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1977 simulation).

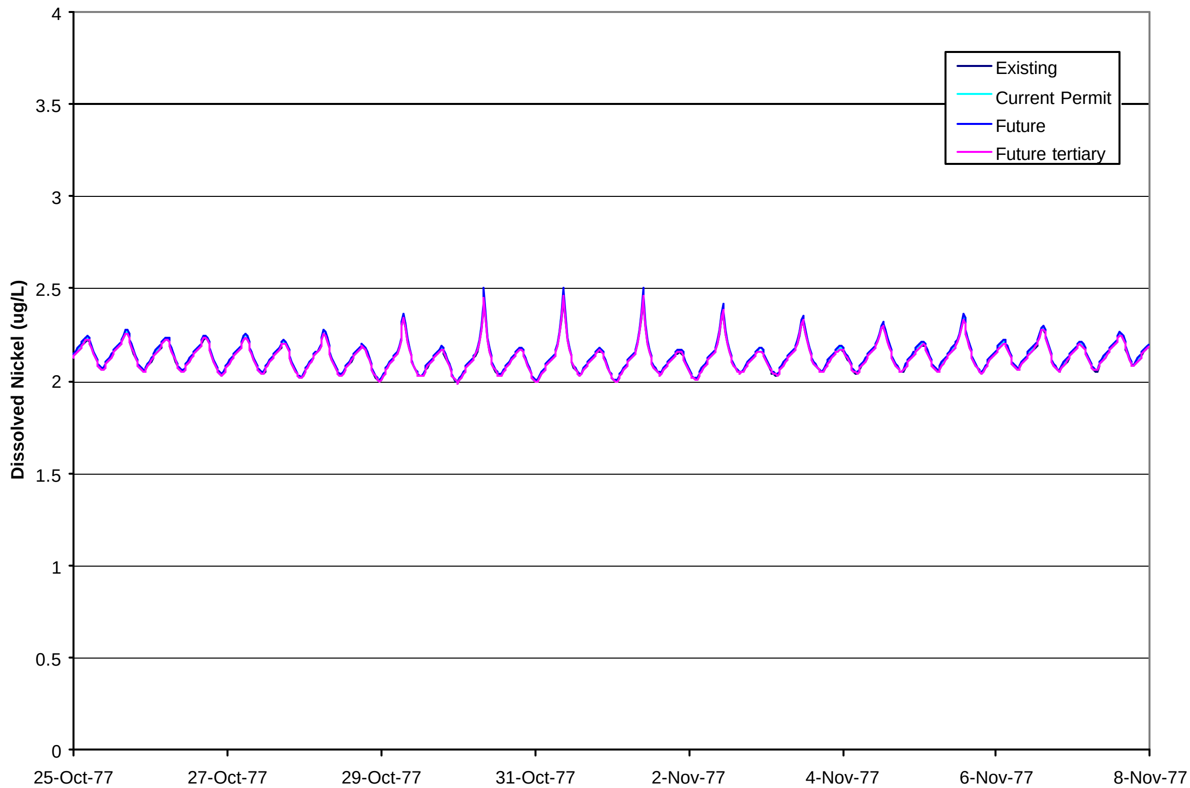


Figure 5-5 Dissolved Nickel concentrations 250 meters south of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1977 simulation).

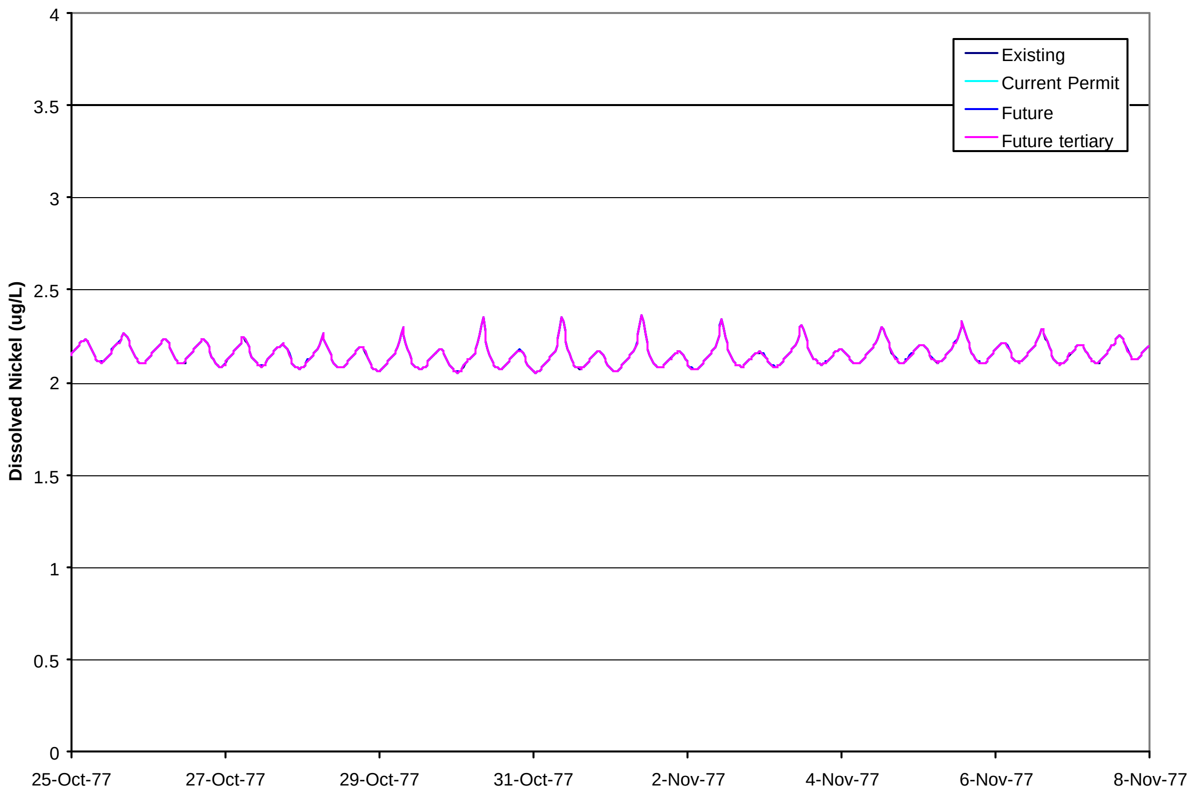


Figure 5-6 Dissolved Nickel concentrations 2500 meters north of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1977 simulation).

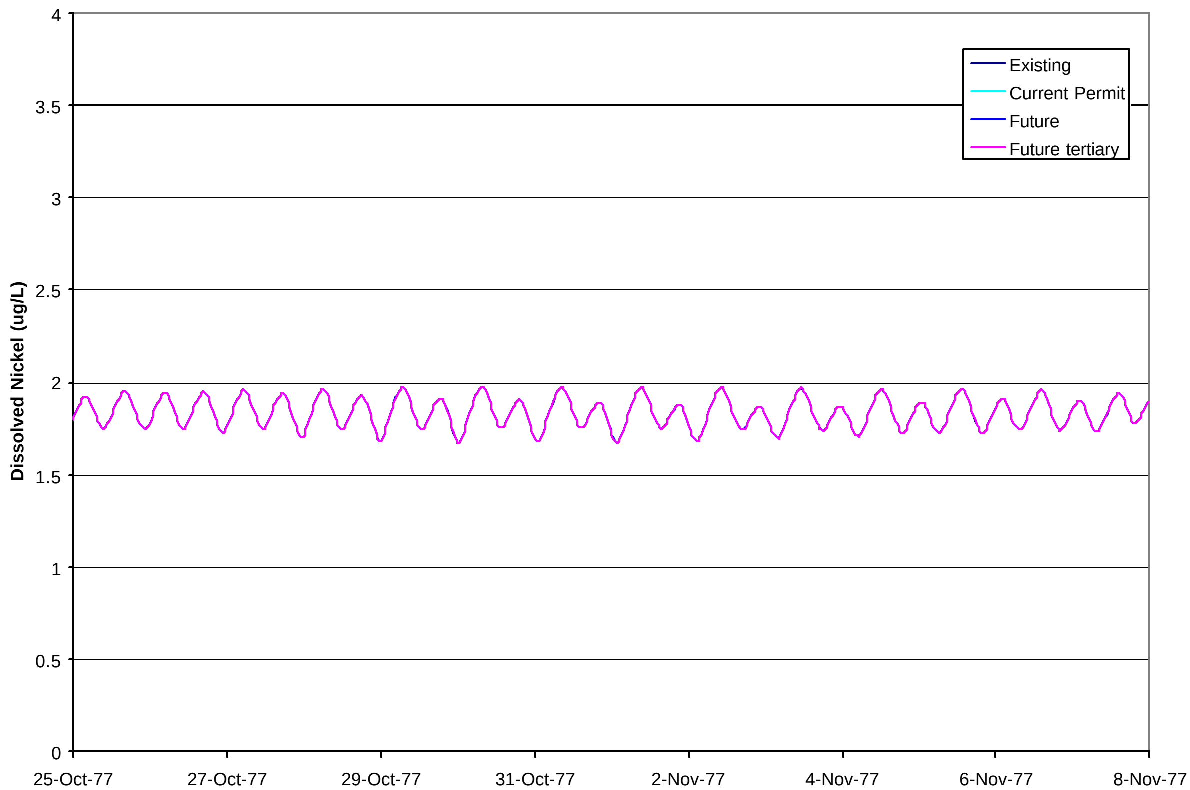


Figure 5-7 Dissolved Nickel concentrations 2500 meters east of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1977 simulation).

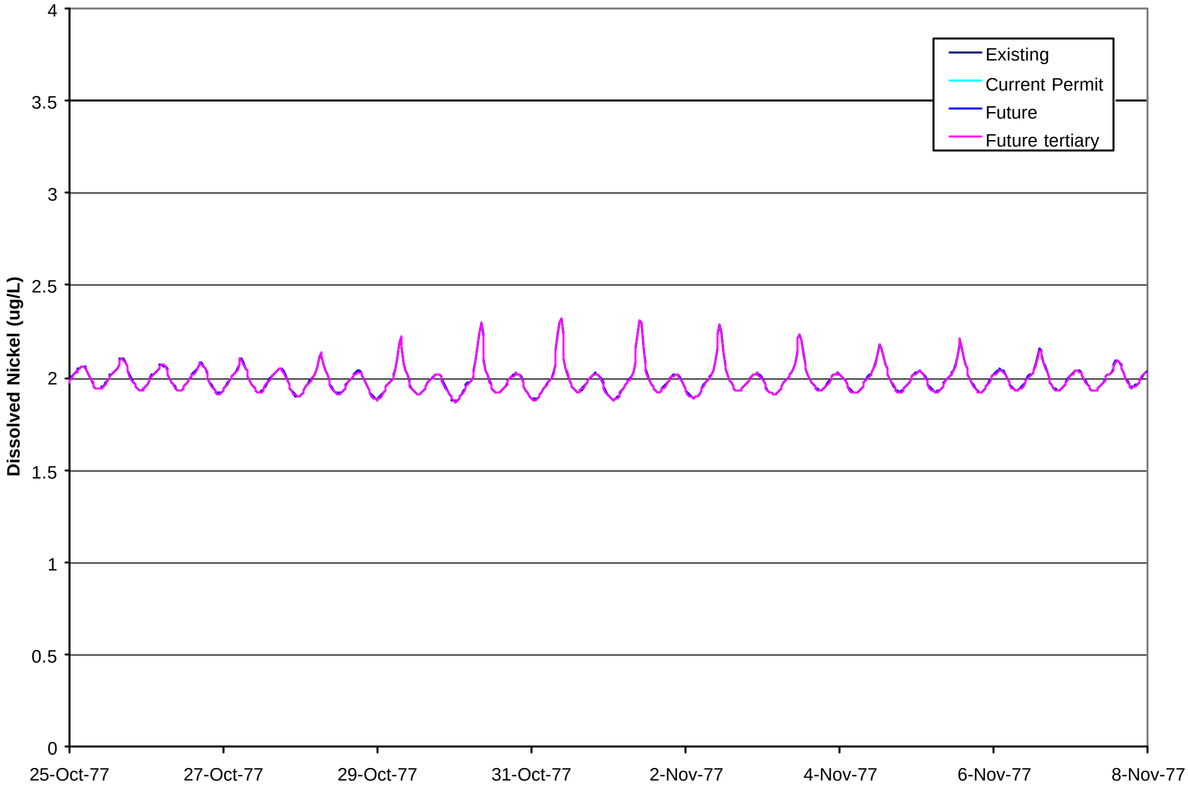


Figure 5-8 Dissolved Nickel concentrations 2500 meters south of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1977 simulation).

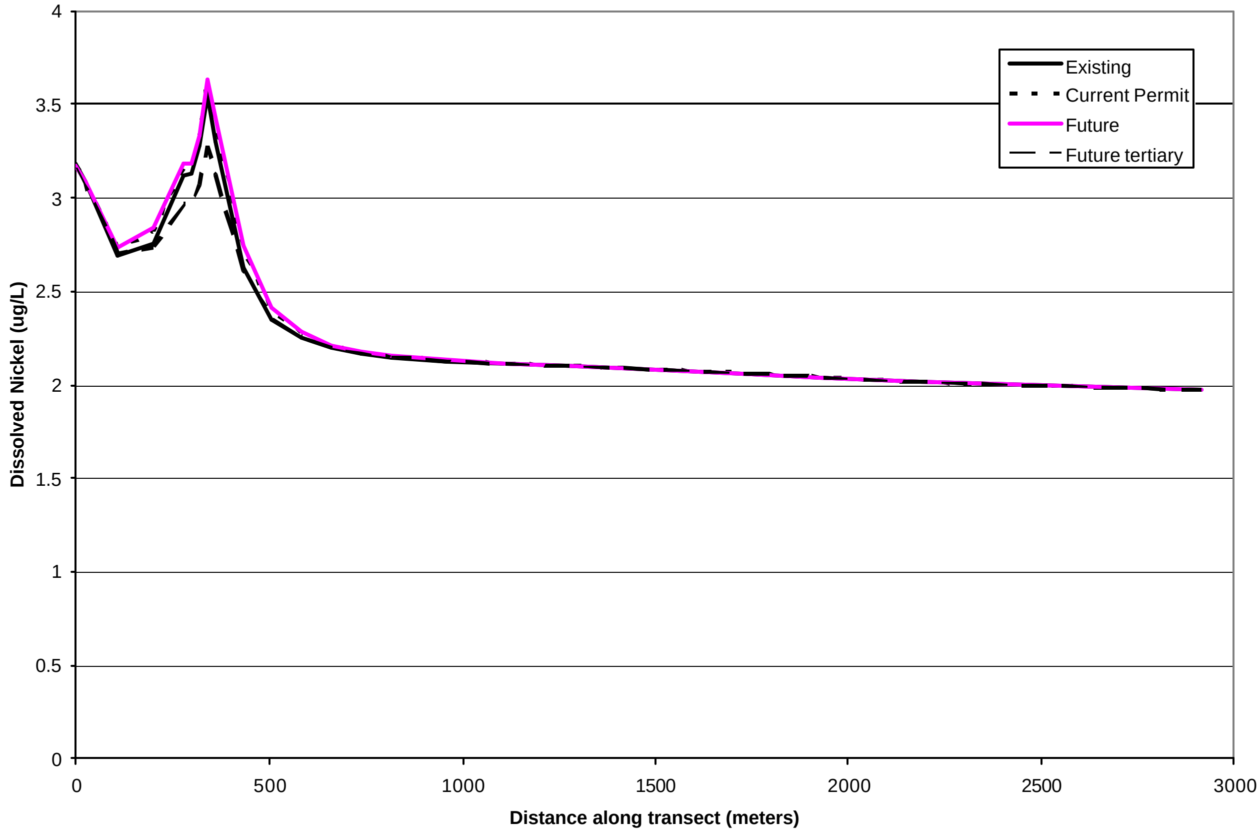


Figure 5-9 Maximum hourly average dissolved nickel concentrations along east-west transect (1977 simulation).

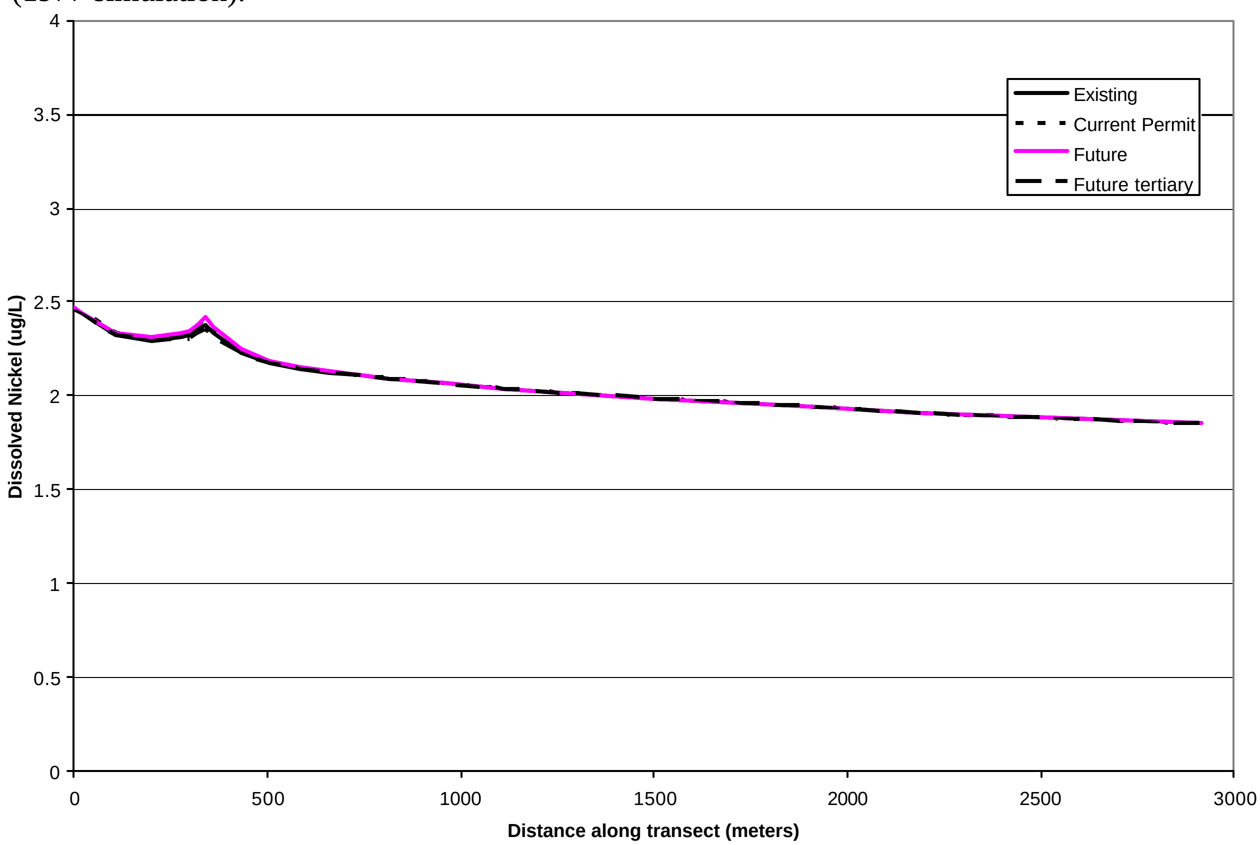


Figure 5-10 Maximum daily average dissolved nickel concentrations along east-west transect (1977 simulation).

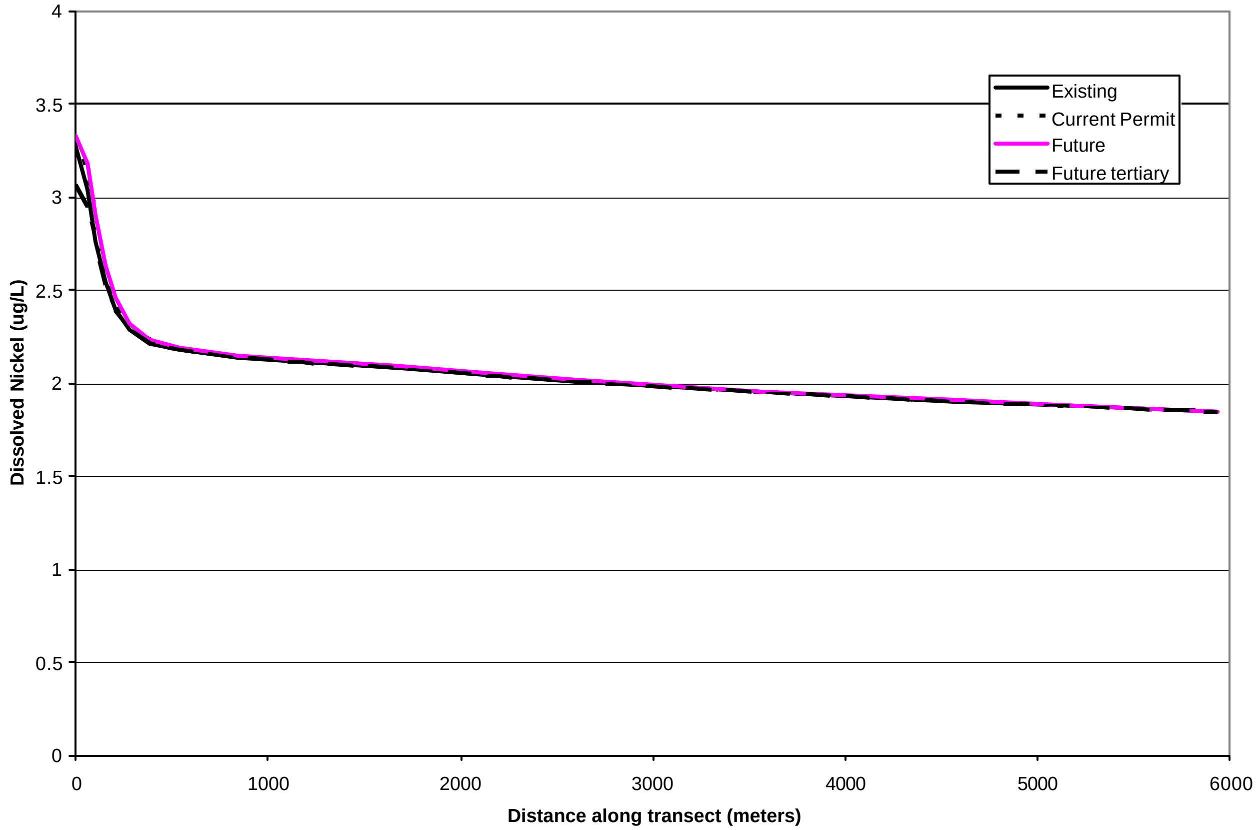


Figure 5-11 Maximum hourly average dissolved nickel concentrations for transect along length of plume (1977 simulation).

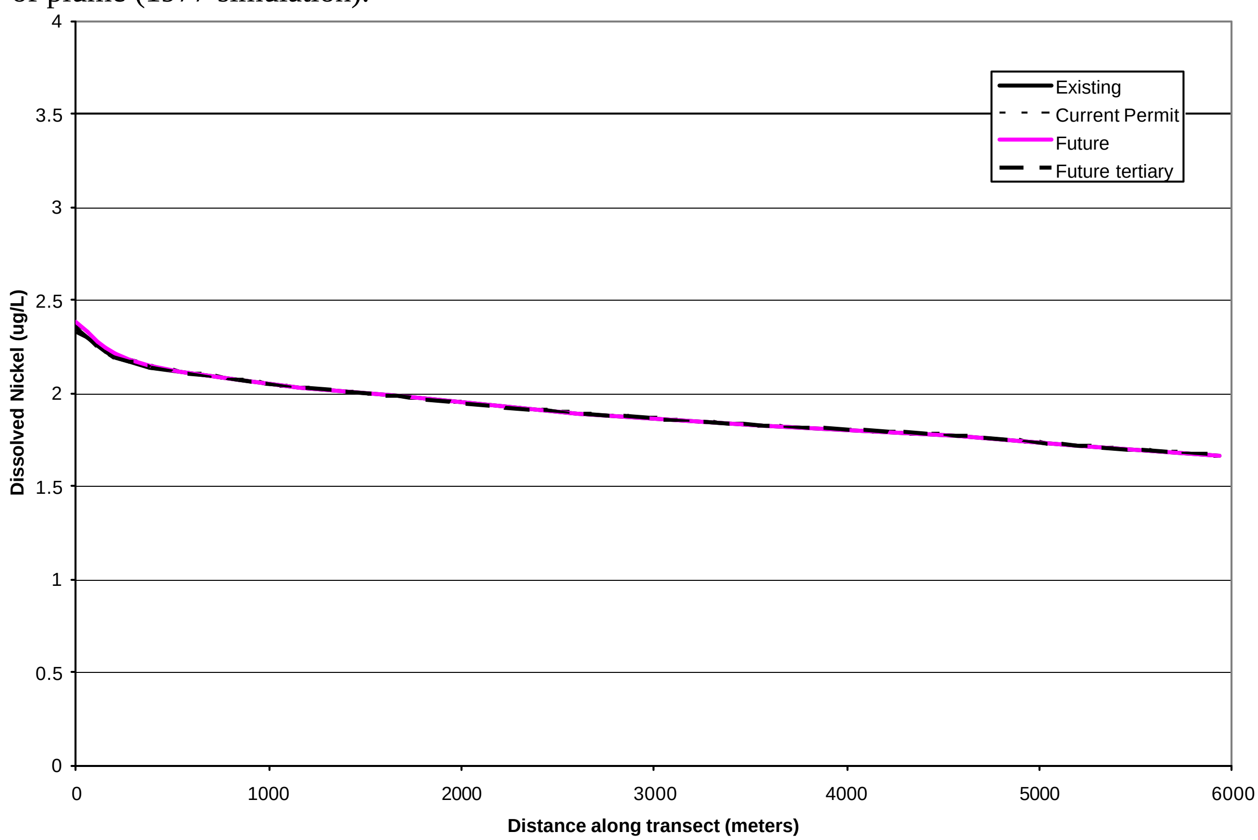


Figure 5-12 Maximum daily average dissolved nickel concentrations for transect along length of plume (1977 simulation).

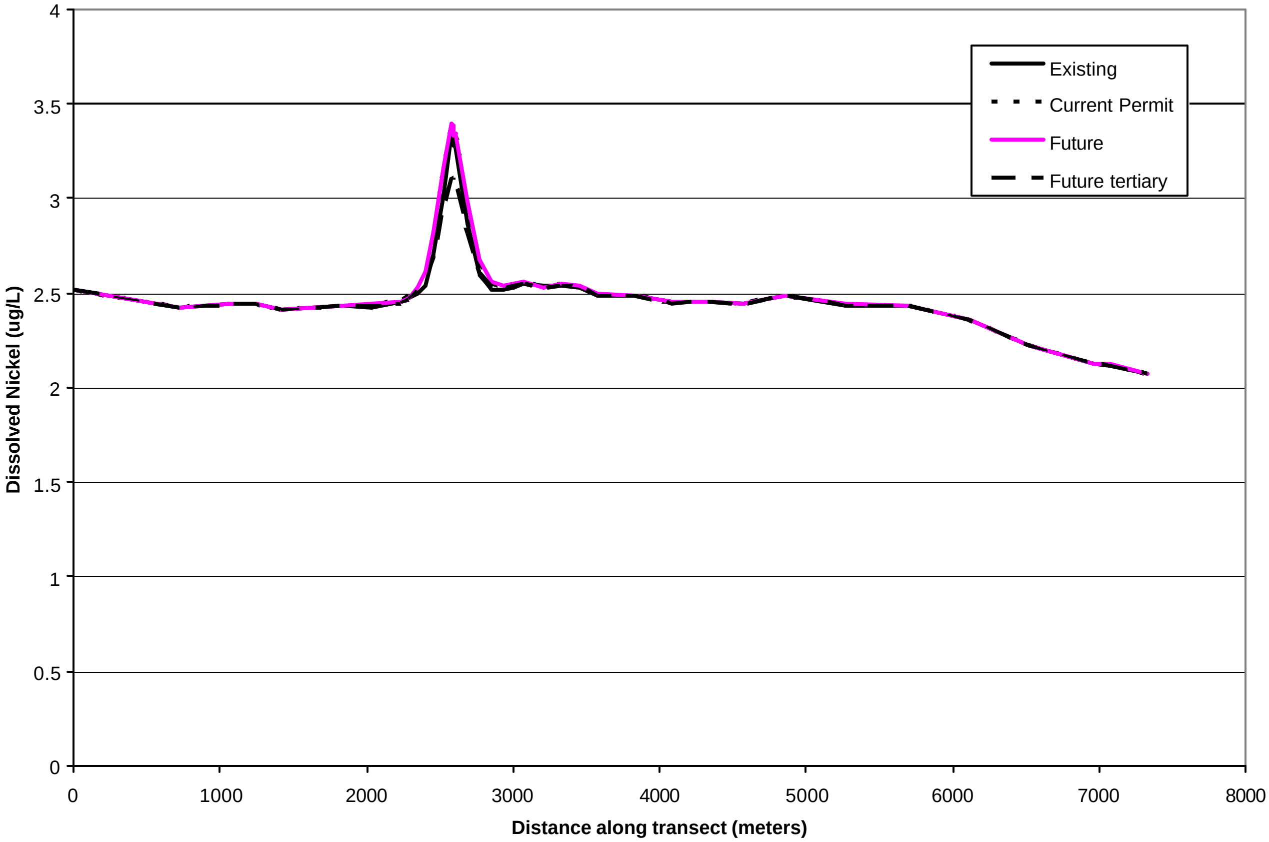


Figure 5-13 Maximum hourly average dissolved nickel concentrations along shoreline transect

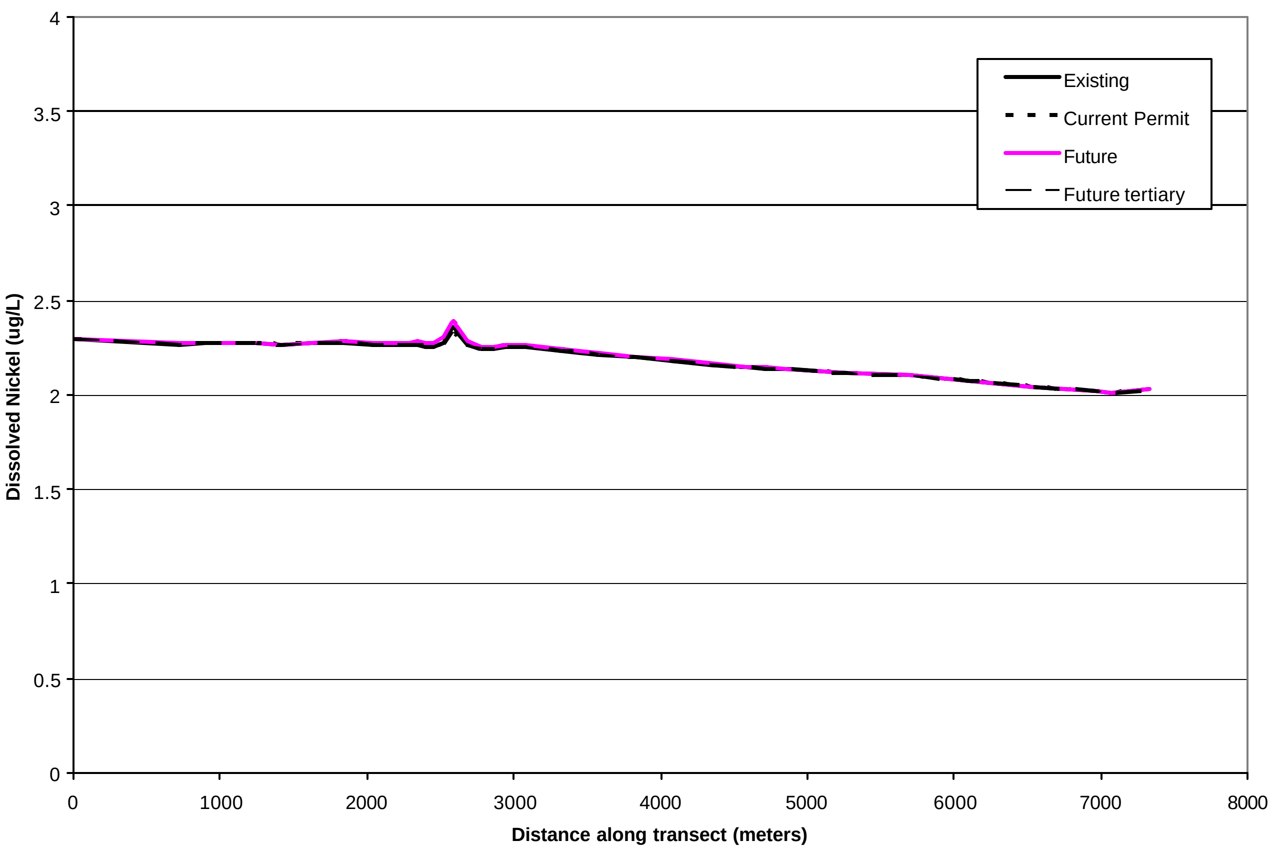


Figure 5-14 Maximum daily average dissolved nickel concentrations along shoreline transect (1977 simulation).

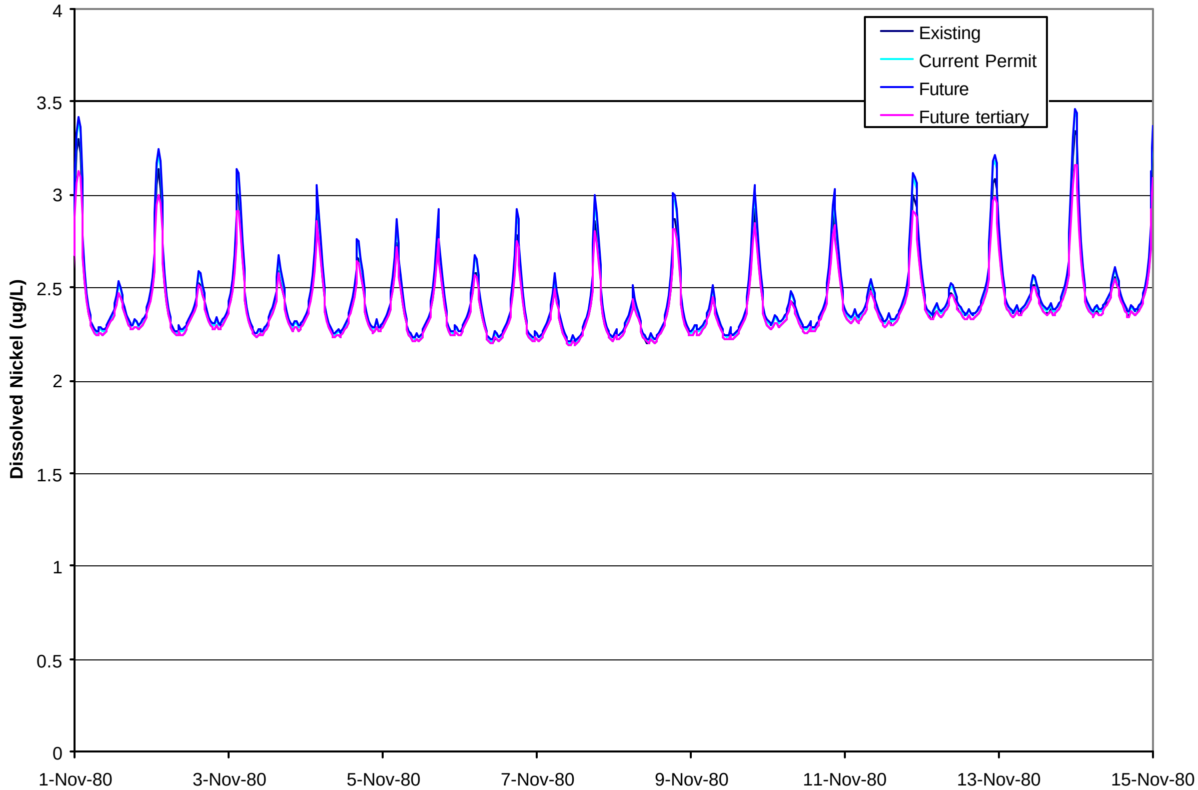


Figure 5-15 Dissolved Nickel concentrations at outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1980 simulation).

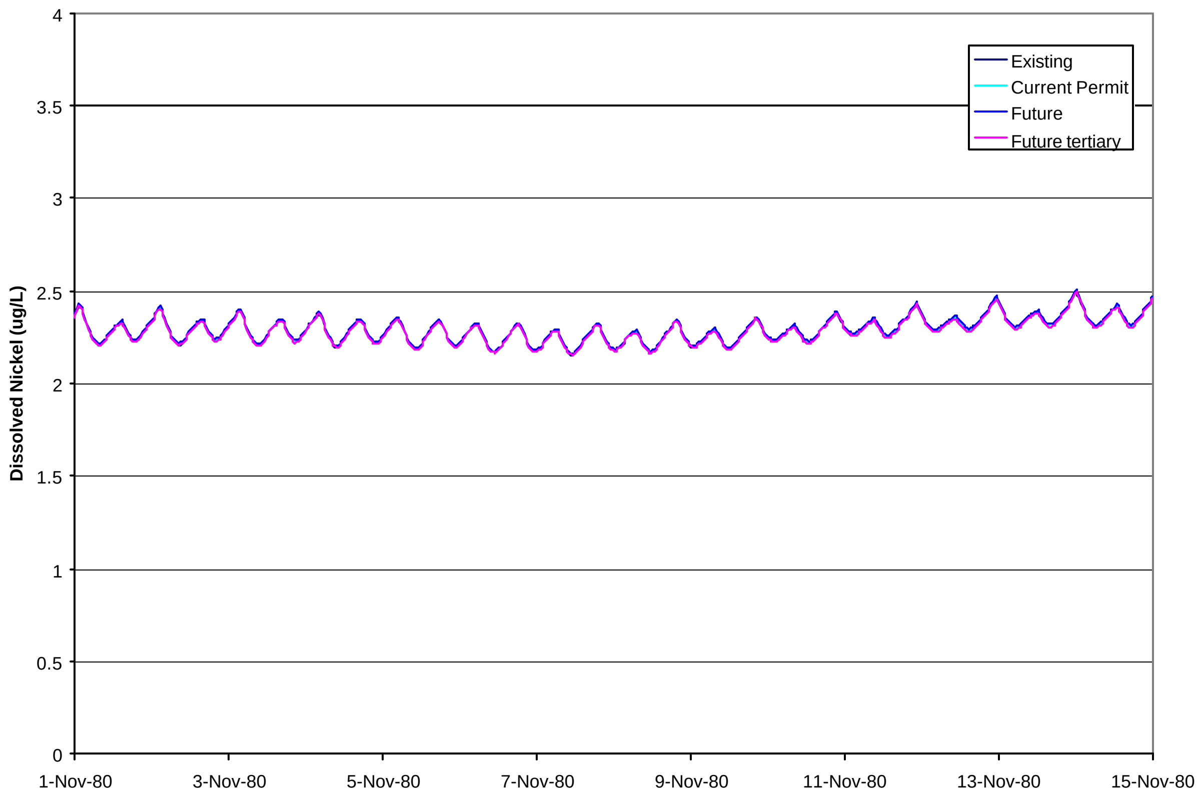


Figure 5-16 Dissolved Nickel concentrations 250 meters north of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1980 simulation).

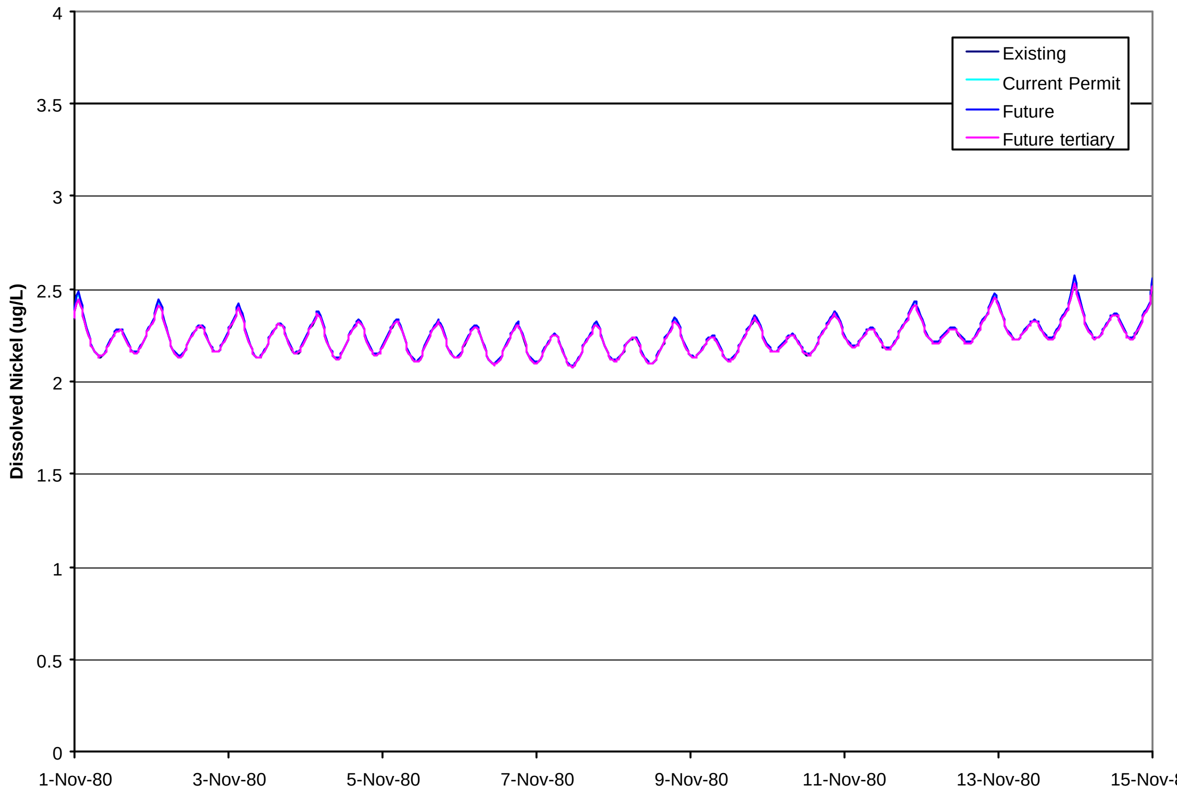


Figure 5-17 Dissolved Nickel concentrations 250 meters east of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1980 simulation).

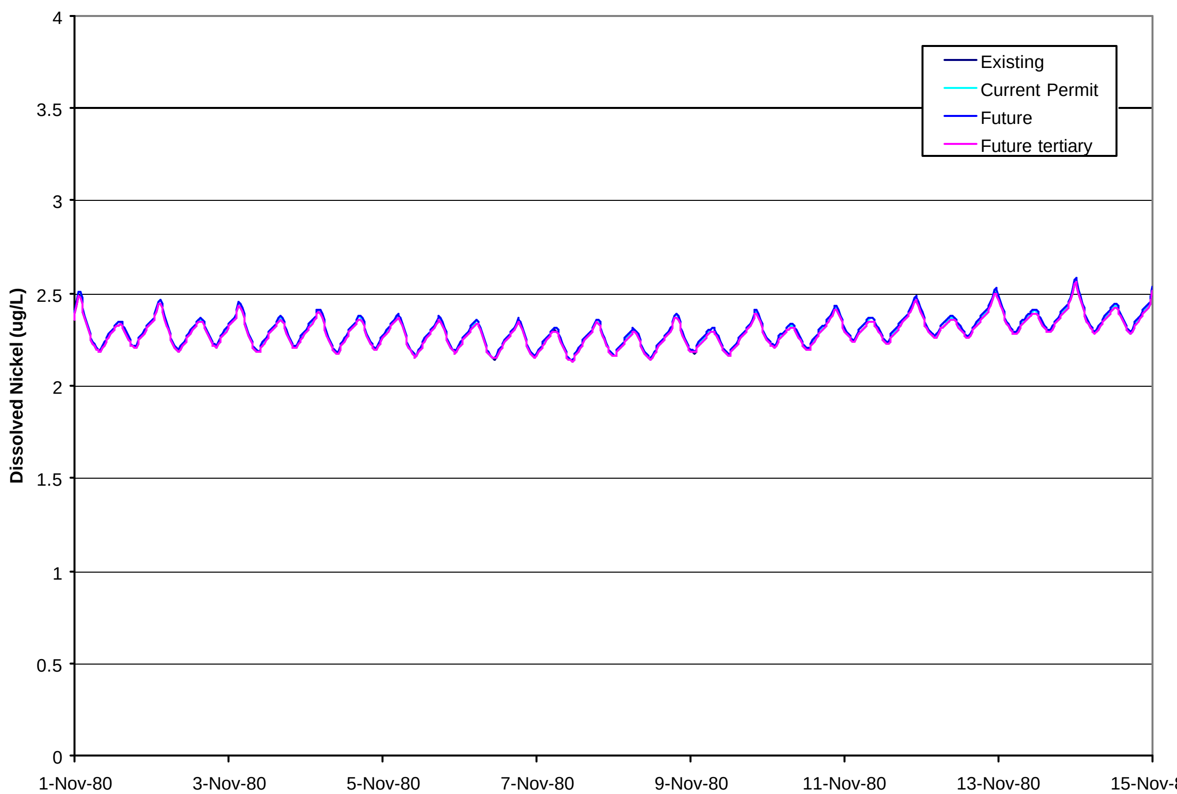


Figure 5-18 Dissolved Nickel concentrations 250 meters south of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1980 simulation).

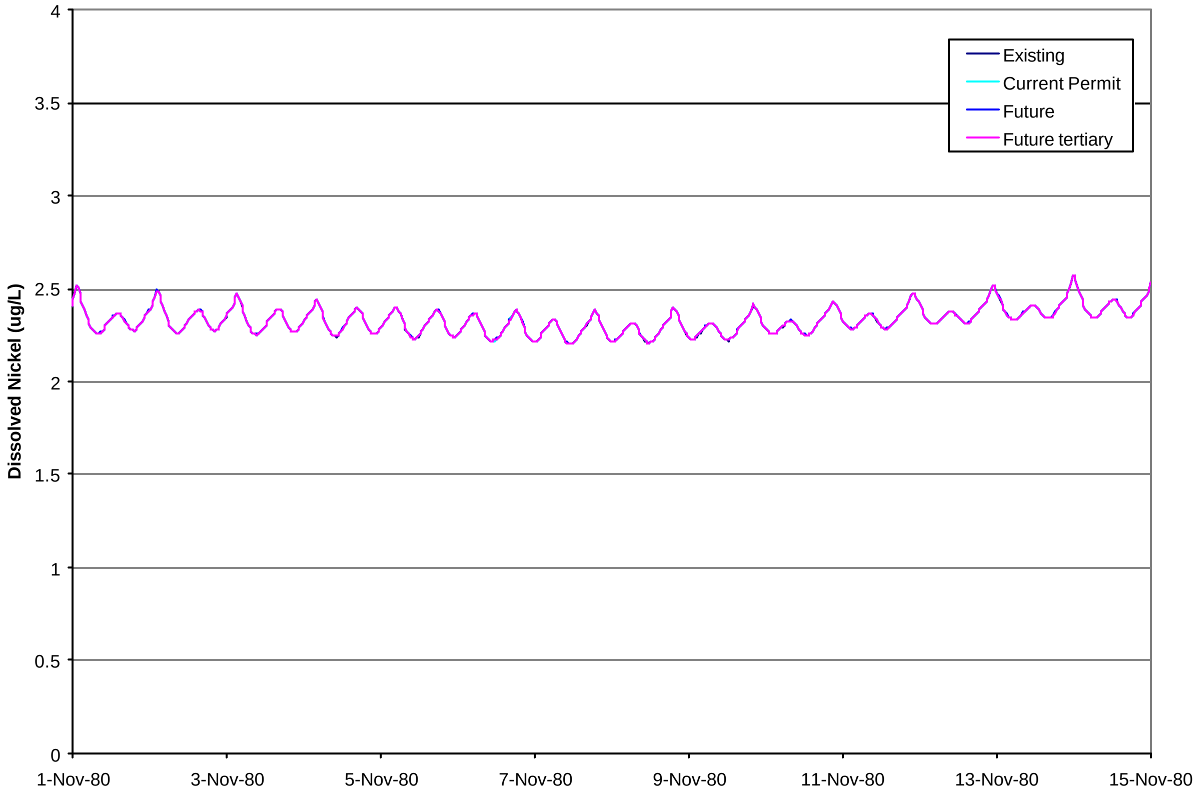


Figure 5-19 Dissolved Nickel concentrations 2500 meters north of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1980 simulation).

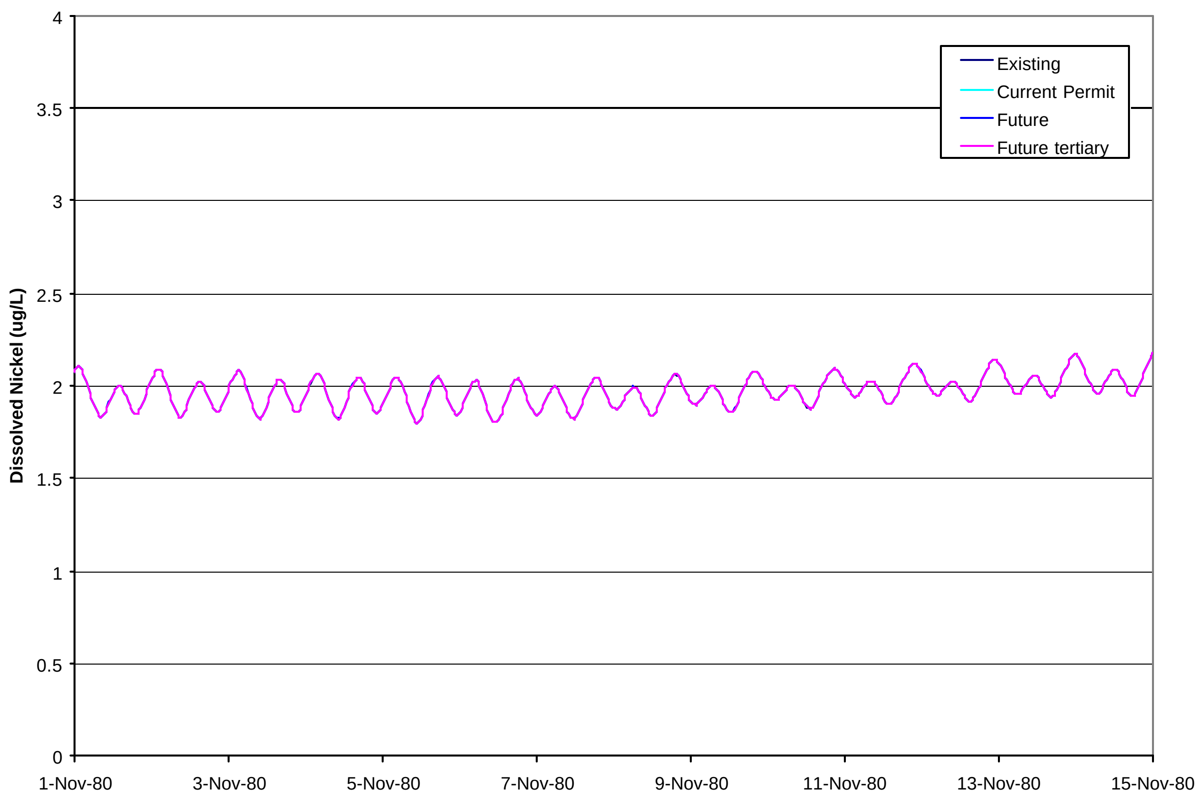


Figure 5-20 Dissolved Nickel concentrations 2500 meters east of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1980 simulation).

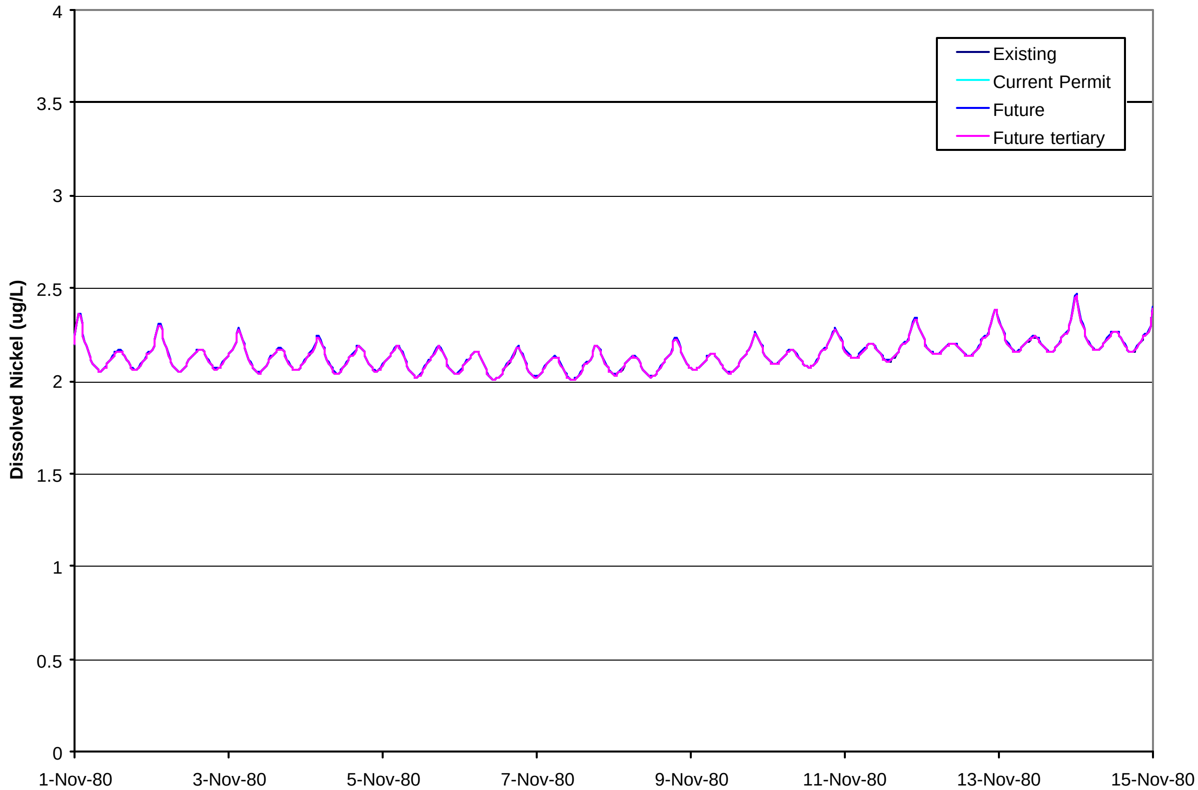


Figure 5-21 Dissolved Nickel concentrations 2500 meters south of outfall for existing conditions, current permit, future flow and future flow with tertiary treatment (1980 simulation).

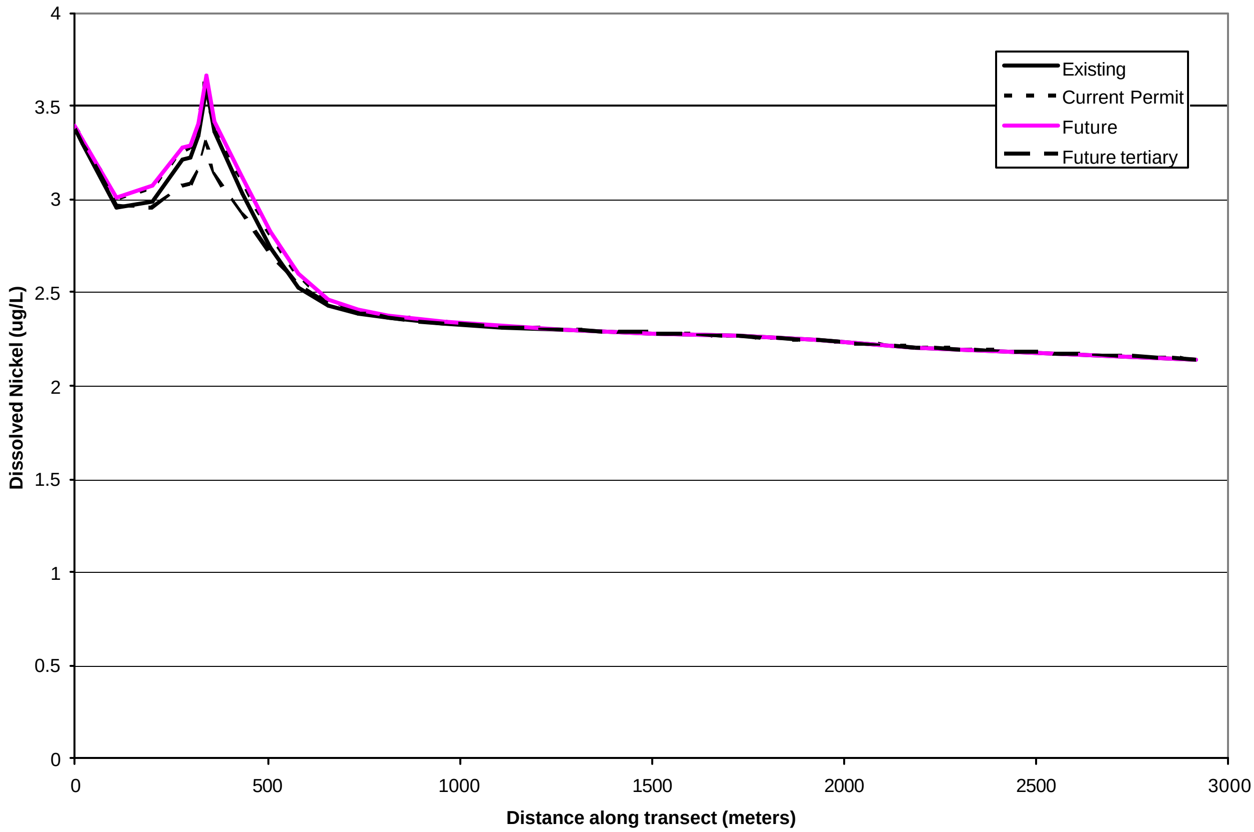


Figure 5-22 Maximum hourly average dissolved nickel concentrations along east-west transect (1980 simulation).

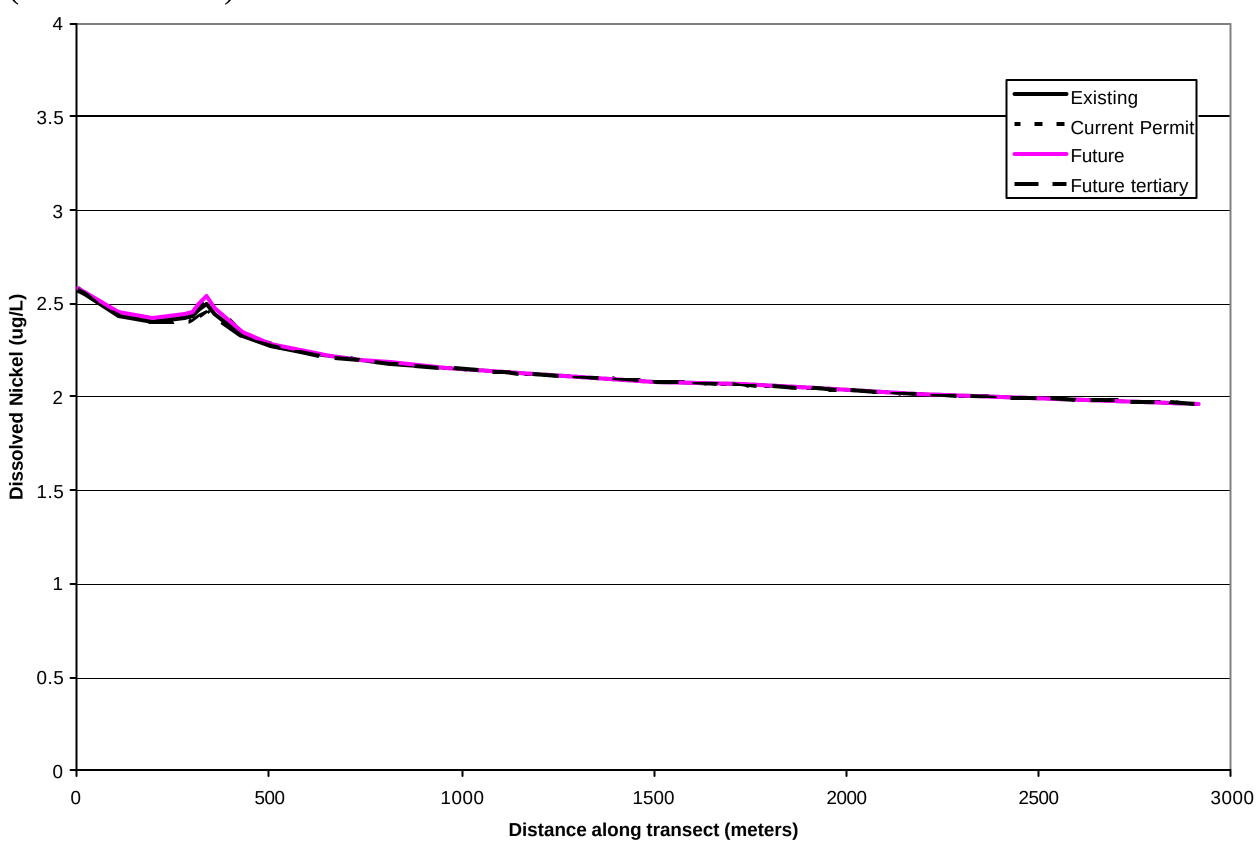


Figure 5-23 Maximum daily average dissolved nickel concentrations along east-west transect (1980 simulation).

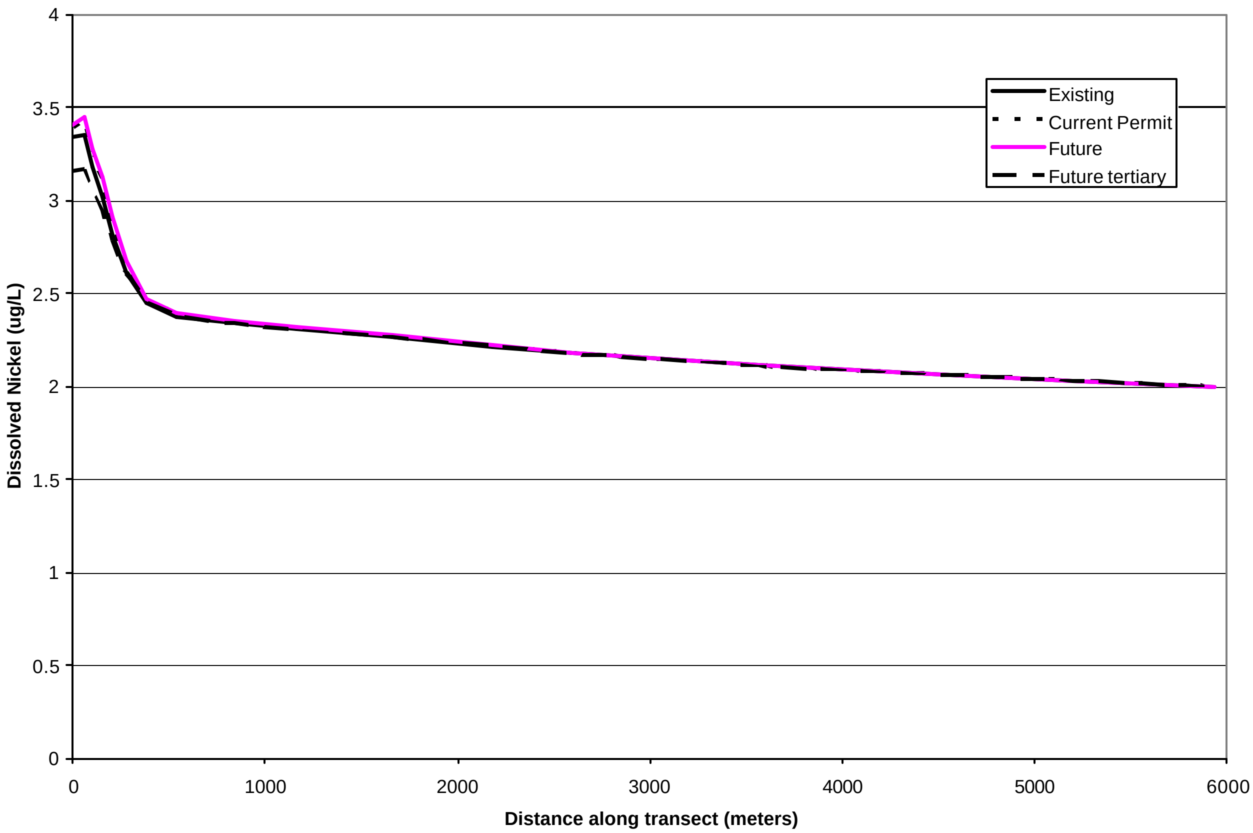


Figure 5-24 Maximum hourly average dissolved nickel concentrations for transect along length of plume (1980 simulation).

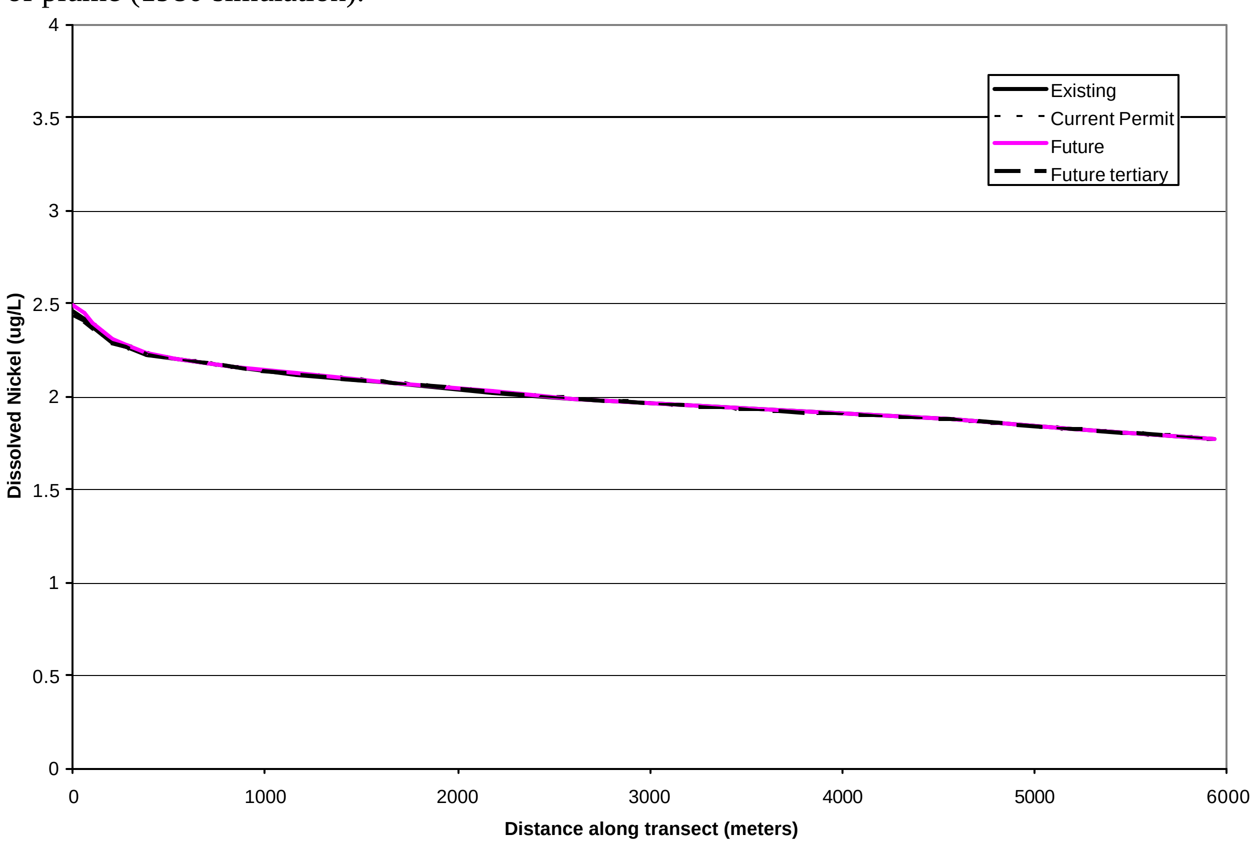


Figure 5-25 Maximum daily average dissolved nickel concentrations for transect along length of plume (1980 simulation).

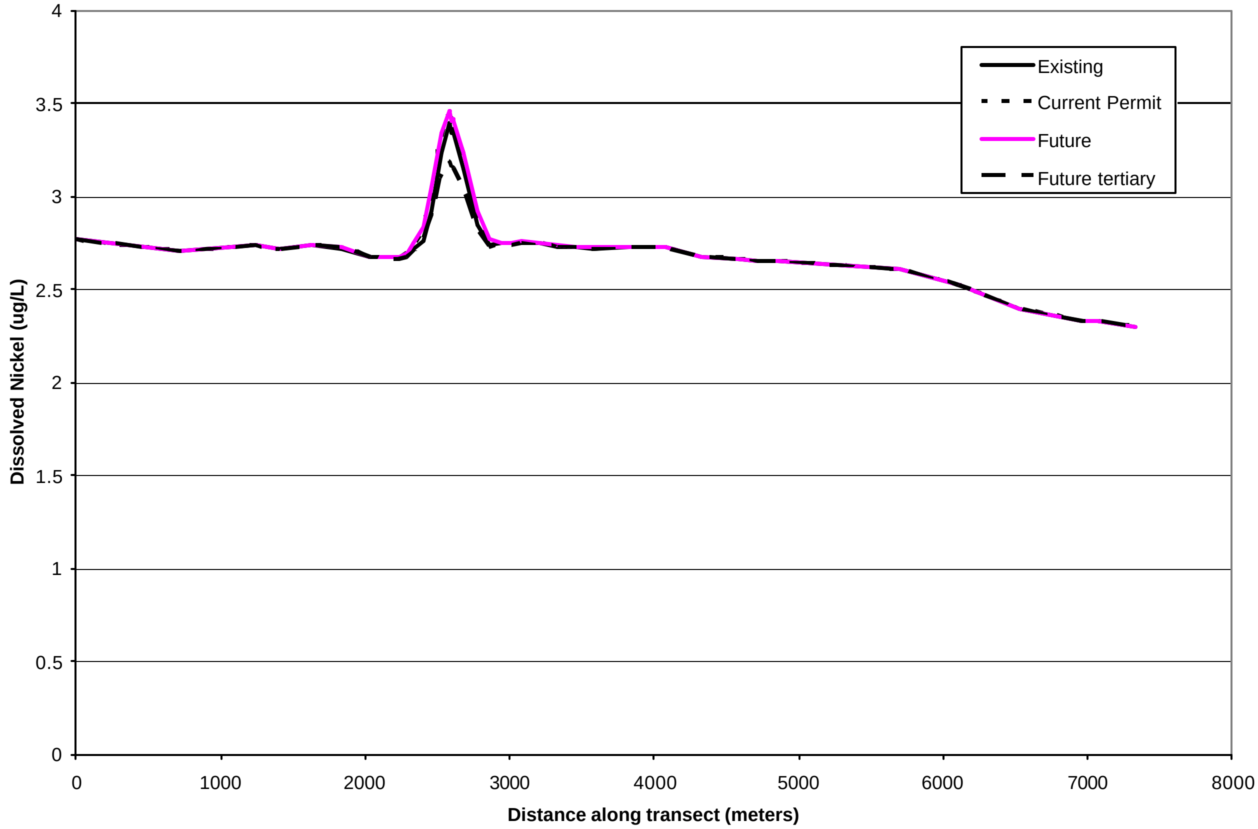


Figure 5-26 Maximum hourly average dissolved nickel concentrations along shoreline transect (1980 simulation).

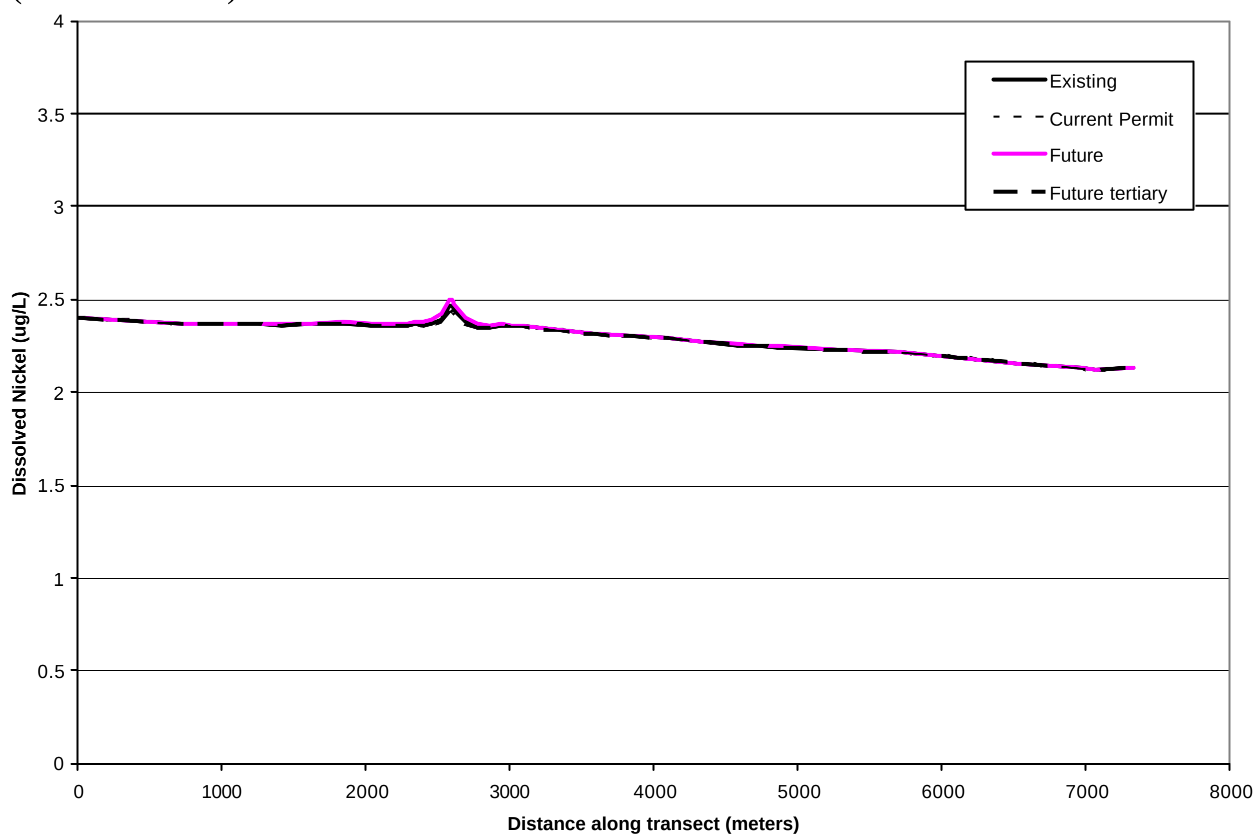


Figure 5-27 Maximum daily average dissolved nickel concentrations along shoreline transect (1980 simulation).

6 TRACER SIMULATION

To facilitate the analysis of dilution of the NSD discharge, movement of the discharge plume, and the impacts of increased treatment plant flows, an effluent tracer was simulated. Simulations were performed with NSD existing, current permit and future ADWF. For each flow condition, a tracer was applied to the NSD discharge with no other sources of tracer. The simulations were started with zero tracer concentration throughout the Bay. The tracer simulations were performed for the average dry weather hydrology period of October – November 1980, and the extreme low flow conditions of October – November 1977. Repeating tides were used so that the simulation could be run for a longer time period, allowing the system to approach dynamic equilibrium. Each tracer simulation was run for 180 days, repeating the 28 days of hydrodynamics. Results analyzed in the sections below represent the final 14 days of the 180 day simulation.

6.1 OCTOBER – NOVEMBER 1977

Computed tracer concentration time series are plotted for the October – November 1977 simulations in Figures 6-1 through 6-7 at the outfall, 250 m north of the outfall, 250 m east of the outfall, 250 m south of the outfall, 2500 m north of the outfall, 2500 m east of the outfall and 2500 m south of the outfall. Tracer concentration results can be interpreted as % effluent, as the input concentration is 100. Concentrations over the outfall peak at 70% with existing ADWF and 75% with future ADWF. At 250 m east of the outfall, existing ADWF result in a concentration of 11% while future ADWF result in a concentration of 15%. At 2500 m from the outfall in any direction, all flow conditions produce wastewater concentrations of less than 1%. Concentrations for all simulations and locations are summarized in Table 6-1.

In Figures 6-8 through 6-19, profiles of % effluent are plotted along the transects shown in Figure 4-10. Hourly average and daily average future ADWF results are plotted with existing ADWF results and current permitted ADWF results. These profiles illustrate that there is very little discernible difference between the current permitted ADWF results and the future ADWF results at any location, particularly on a daily average basis. There is a larger increase from the existing ADWF to the future ADWF results, but the difference between the two diminishes to almost nothing within 1000 m of the outfall. In any of the simulations, the tracer concentration falls below 10% within 300 m or less of the outfall.

Color contours of wastewater dilution are plotted in Figures 6-20 and 6-21 for the future ADWF simulation. Figure 6-20 represents hourly averaged dilution at slack tide, and Figure 6-21 represents daily averaged dilution on the day of peak concentration over the outfall. In Figure 6-20, dilutions of 1:1 and lower are seen immediately over the outfall, but the dilution increases to more than 20:1 within approximately 500 m of the outfall, and more than 100:1 within 2000 m of the outfall. At other times during the simulation when concentrations over the outfall are lower and the plume is more elongated, the 100:1 line can extend as far as 3300 m from the outfall. On a daily averaged basis in Figure 6-21, peak dilution is between 5:1 and 10:1 immediately over the outfall, increases above 20:1 within about 90 m, and 100:1 within about 900 m. On other days during the simulation when concentrations over the outfall are lower and the plume is more elongated, the 100:1 line can extend as far as 1400 m from the outfall.

6.2 OCTOBER – NOVEMBER 1980

Computed tracer concentration time series are plotted for the October – November 1980 simulations in Figures 6-22 through 6-28 at the outfall, 250 m north of the outfall, 250 m east of the outfall, 250 m south of the outfall, 2500 m north of the outfall, 2500 m east of the outfall and 2500 m south of the outfall. Concentrations over the outfall peak at 69% with existing ADWF and 76% with future ADWF. At 250 m east of the outfall, existing ADWF result in a concentration of 16% while future ADWF result in a concentration of 20%. At 2500 m from the outfall in any direction, all flow conditions produce wastewater concentrations of less than 1%. Concentrations for all simulations and locations are summarized in Table 6-1.

In Figures 6-29 through 6-40, profiles of % effluent are plotted along the transects shown in Figure 4-10. Hourly average and daily average future ADWF results are plotted with existing ADWF results and current permitted ADWF results. These plots exhibit the same characteristics seen in the 1977 simulation profiles.

Color contours of wastewater dilution are shown in Figures 6-41 and 6-42 for the future ADWF simulation. Figure 6-41 shows hourly average results at slack after ebb tide and the Figure 6-42 shows daily average results. Dilution contours for the October – November 1980 simulations are very similar to those for the October – November 1977 simulation.

Table 6-1 Summary of tracer simulation results.

Simulation	Peak Tracer Concentration (% effluent) at:						
	outfall	250 m N	250 m E	250 m S	2500 m N	2500 m E	2500 m S
1977 existing	70.49	2.26	10.91	7.34	0.20	0.08	0.49
1977 current permit	74.02	3.08	14.25	9.36	0.24	0.10	0.61
1977 future	74.92	3.52	15.30	10.05	0.26	0.11	0.65
1980 existing	68.81	5.25	15.70	12.73	0.19	0.06	0.46
1980 current permit	74.34	7.73	19.26	16.28	0.24	0.08	0.57
1980 future	76.05	8.58	20.41	17.52	0.25	0.09	0.61

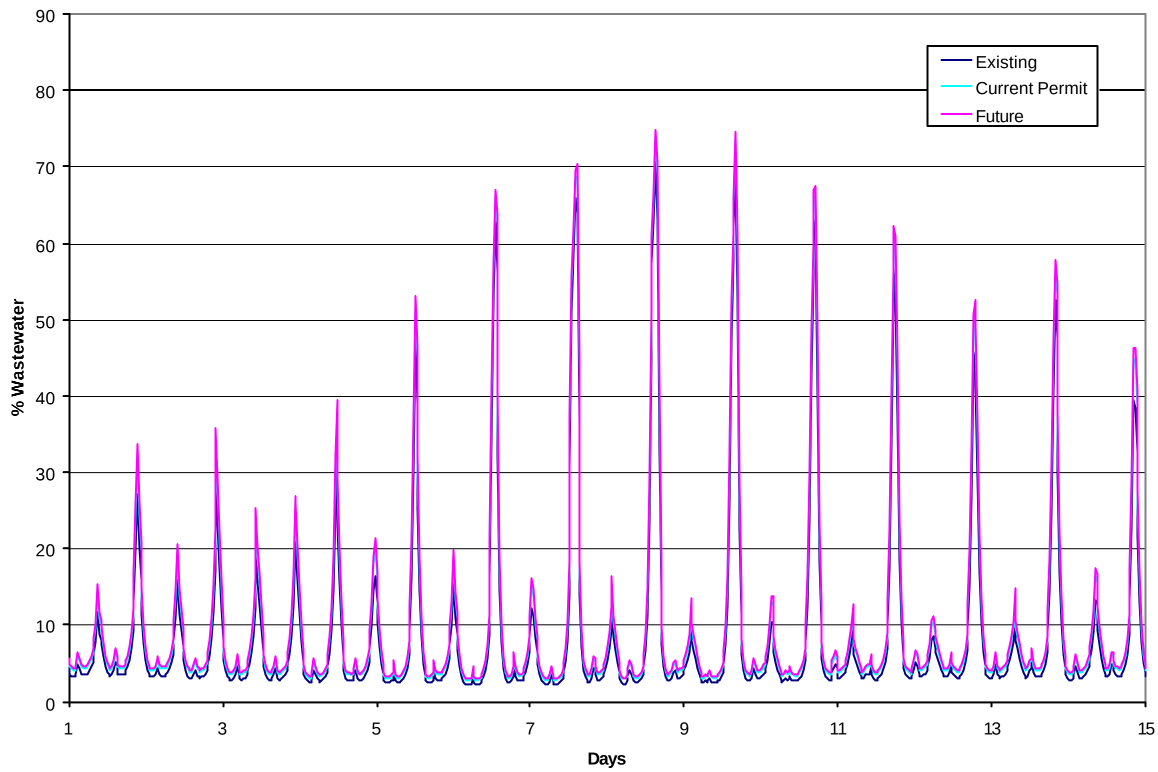


Figure 6-1 Wastewater concentrations at outfall for existing, current permit and future flow conditions, October 1977.

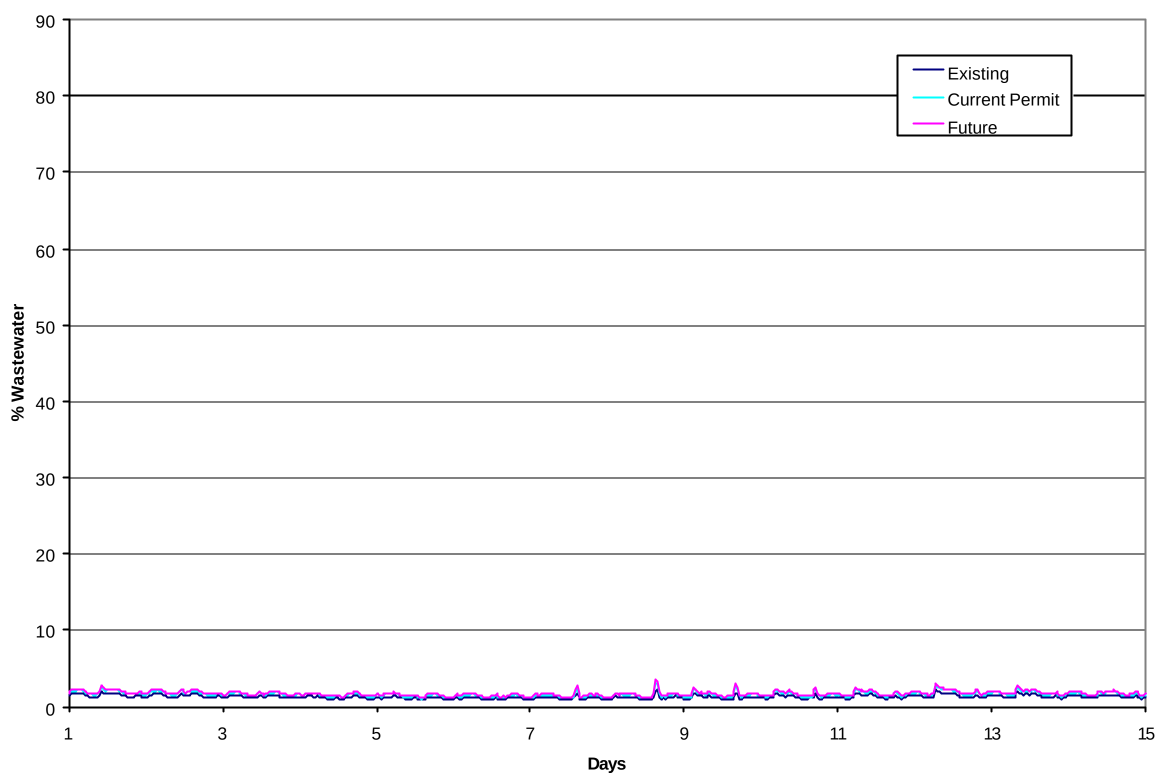


Figure 6-2 Wastewater concentrations 250 meters north of outfall for existing, current permit and future flow conditions, October 1977.

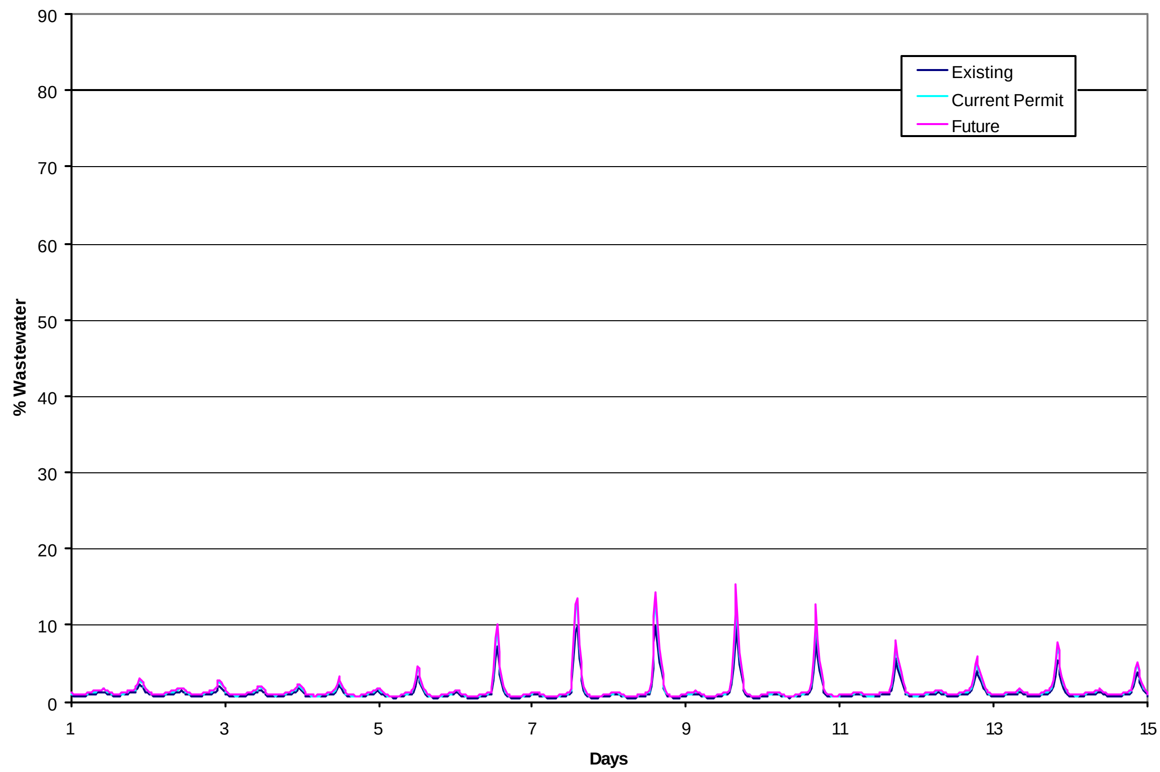


Figure 6-3 Wastewater concentrations 250 meters east of outfall for existing, current permit and future flow conditions, October 1977.

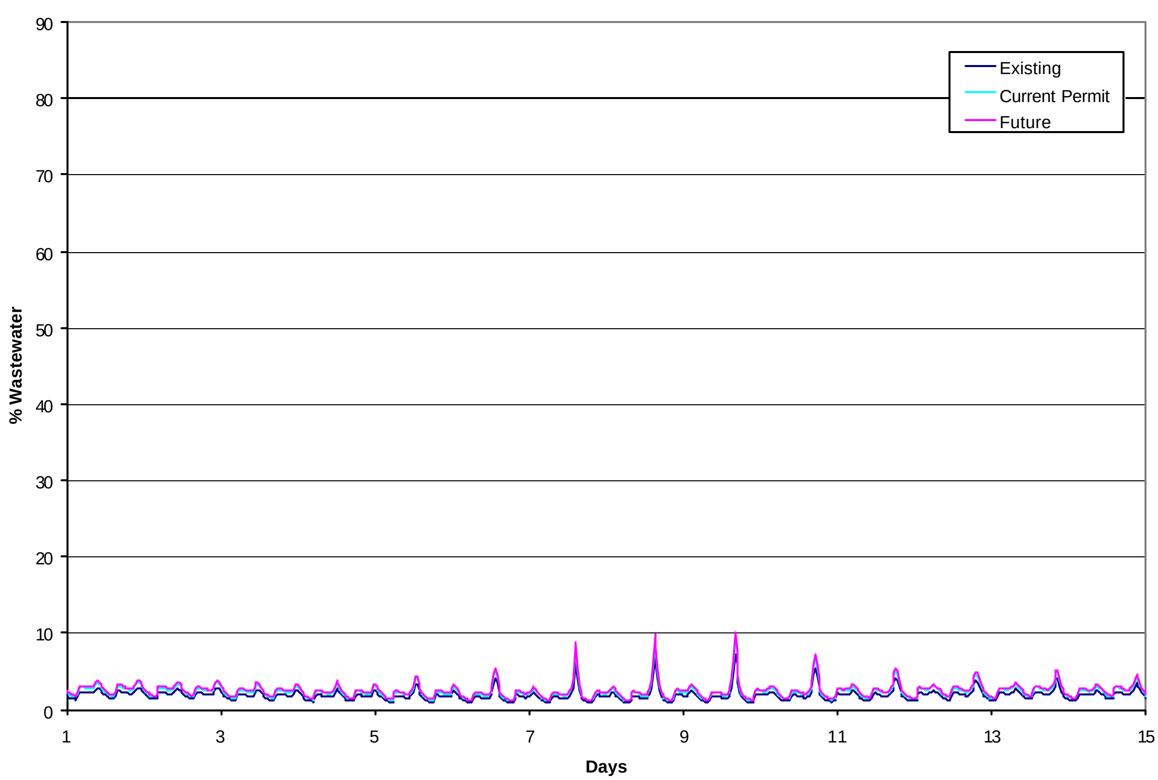


Figure 6-4 Wastewater concentrations 250 meters south of outfall for existing, current permit and future flow conditions, October 1977.

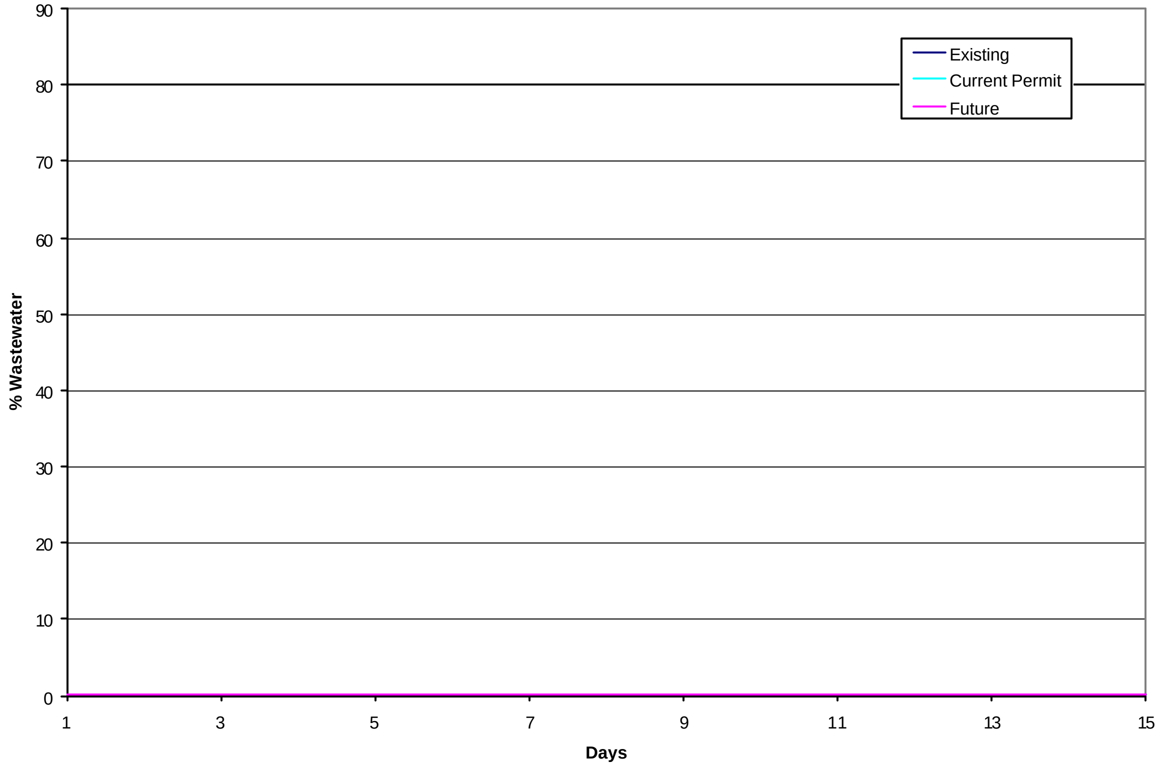


Figure 6-5 Wastewater concentrations 2500 meters north of outfall for existing, current permit and future flow conditions, October 1977.

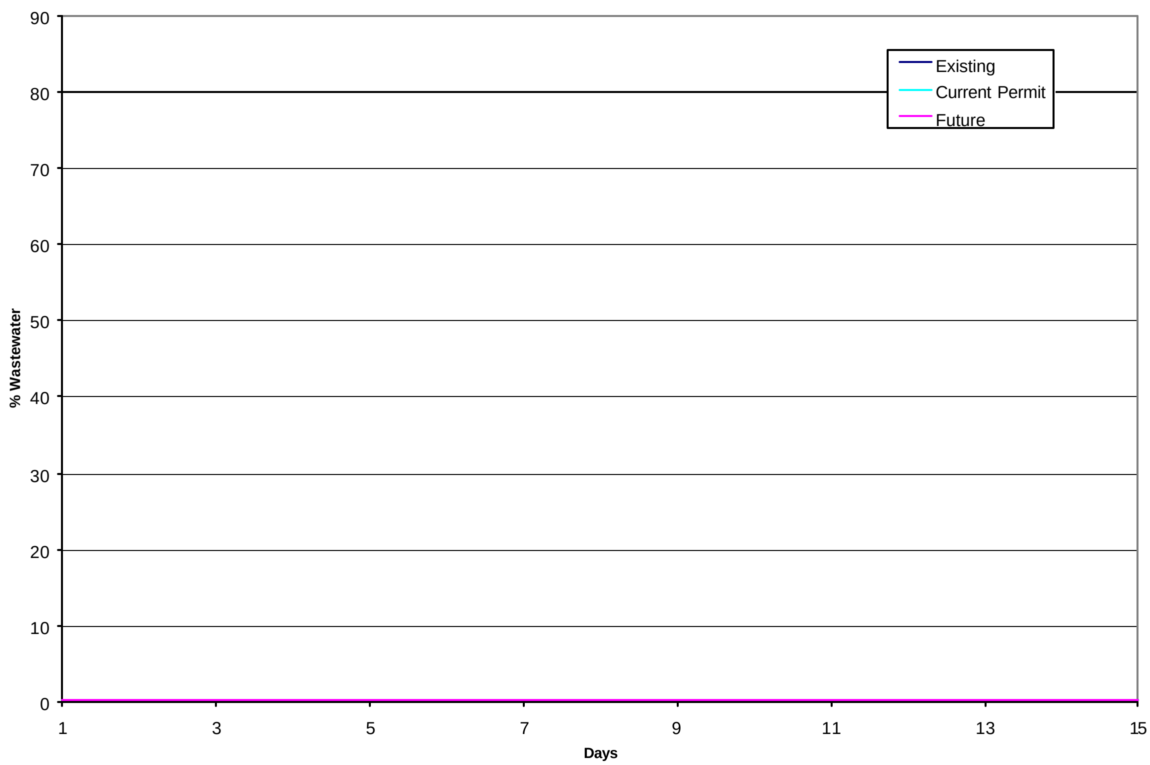


Figure 6-6 Wastewater concentrations 2500 meters east of outfall for existing, current permit and future flow conditions, October 1977.

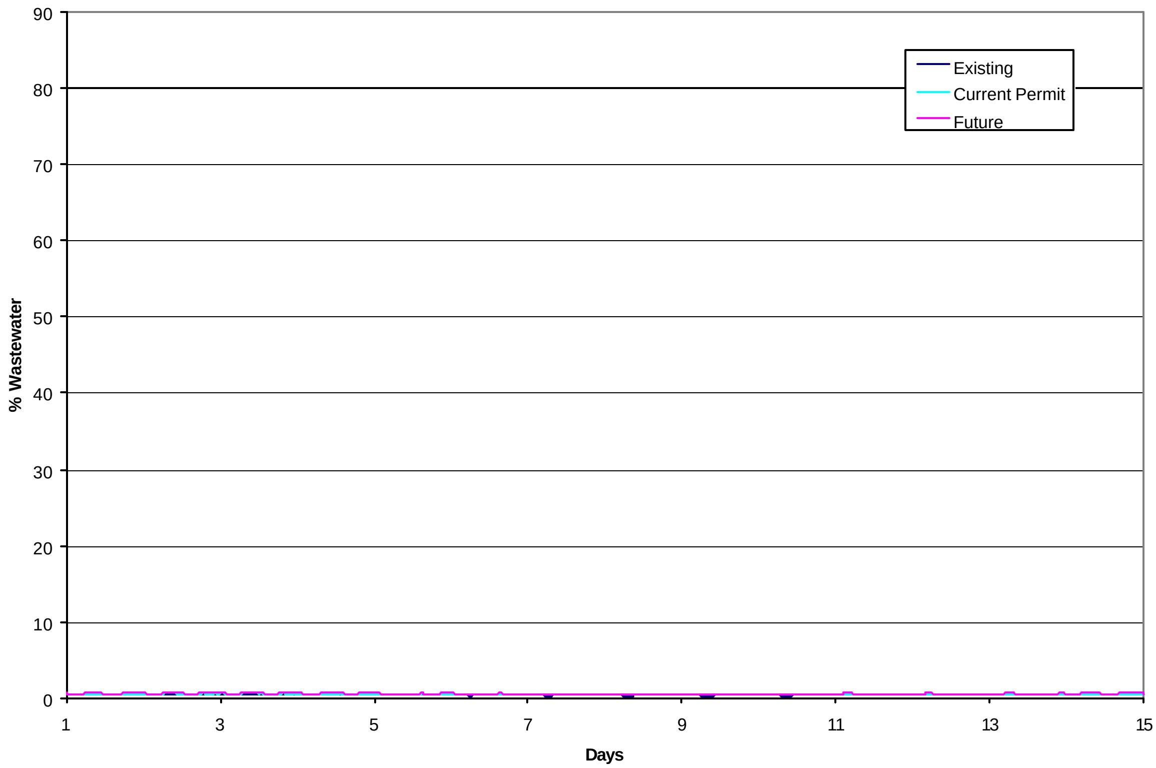


Figure 6-7 Wastewater concentrations 2500 meters south of outfall for existing, current permit and future flow conditions, October 1977.

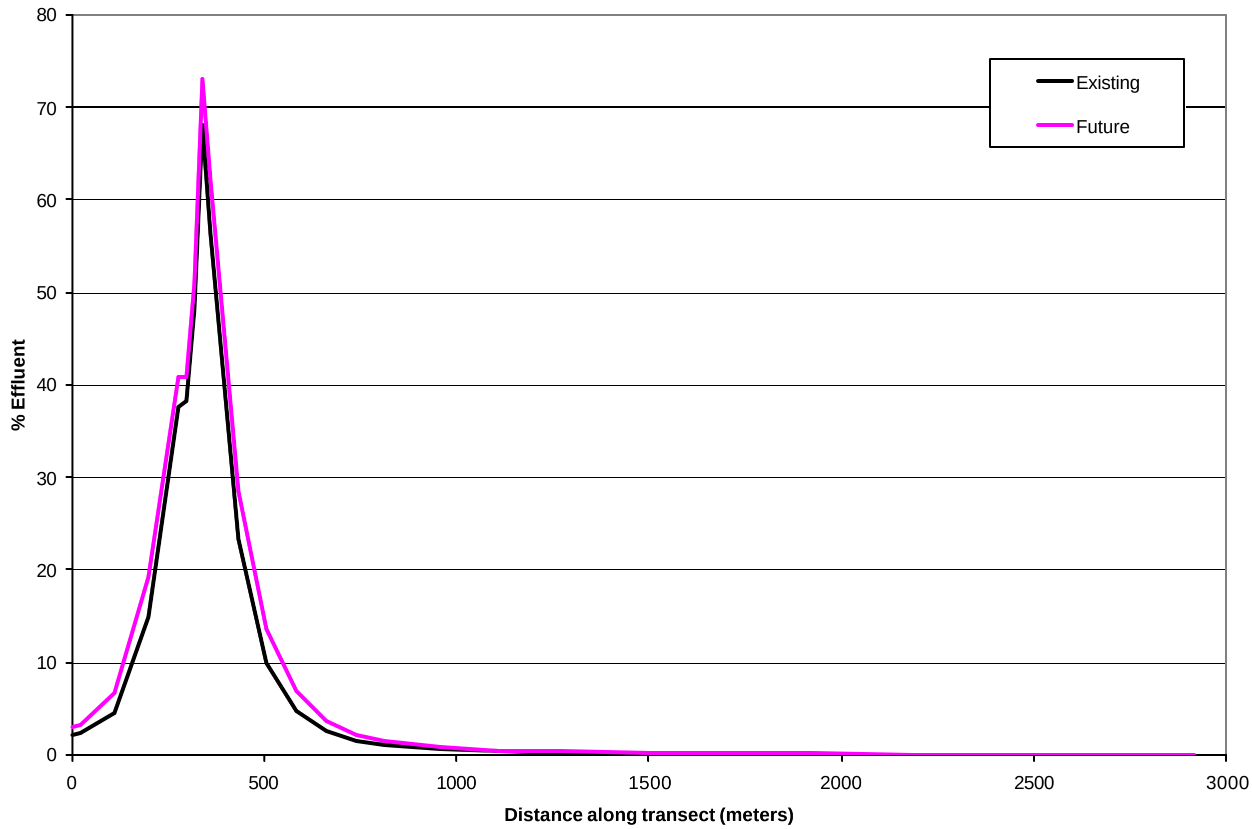


Figure 6-8 Maximum hourly average percent effluent along east-west transect for existing and future conditions (1977 simulation).

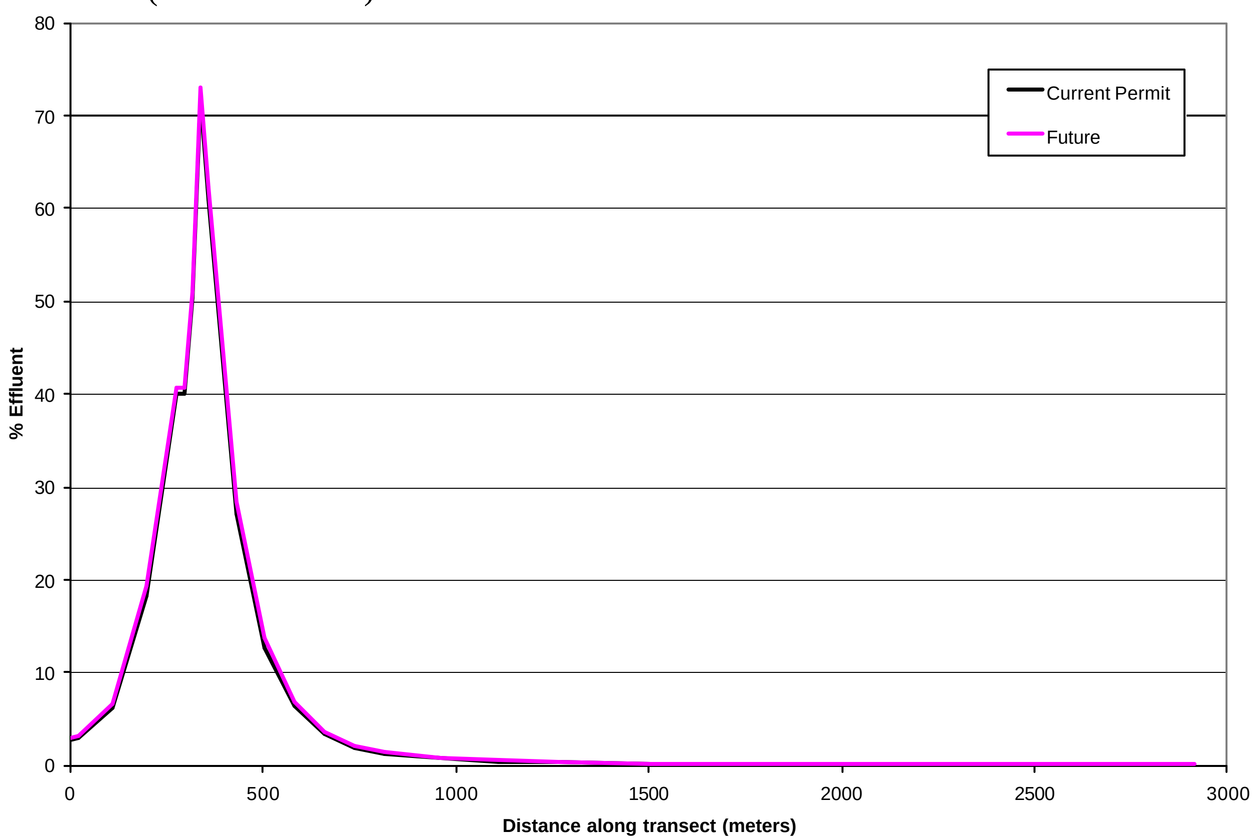


Figure 6-9 Maximum hourly average percent effluent along east-west transect for current permit and future conditions (1977 simulation).

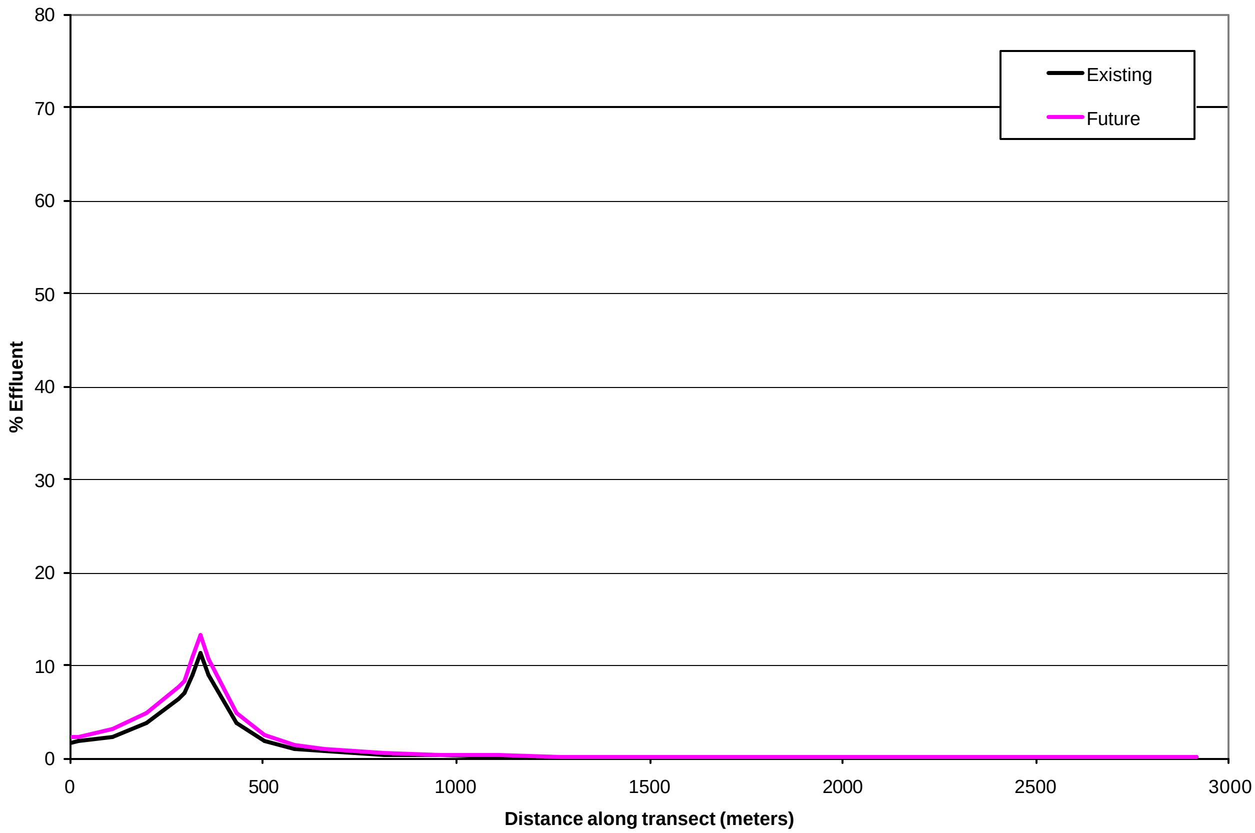


Figure 6-10 Maximum daily average percent effluent along east-west transect for existing and future conditions (1977 simulation).

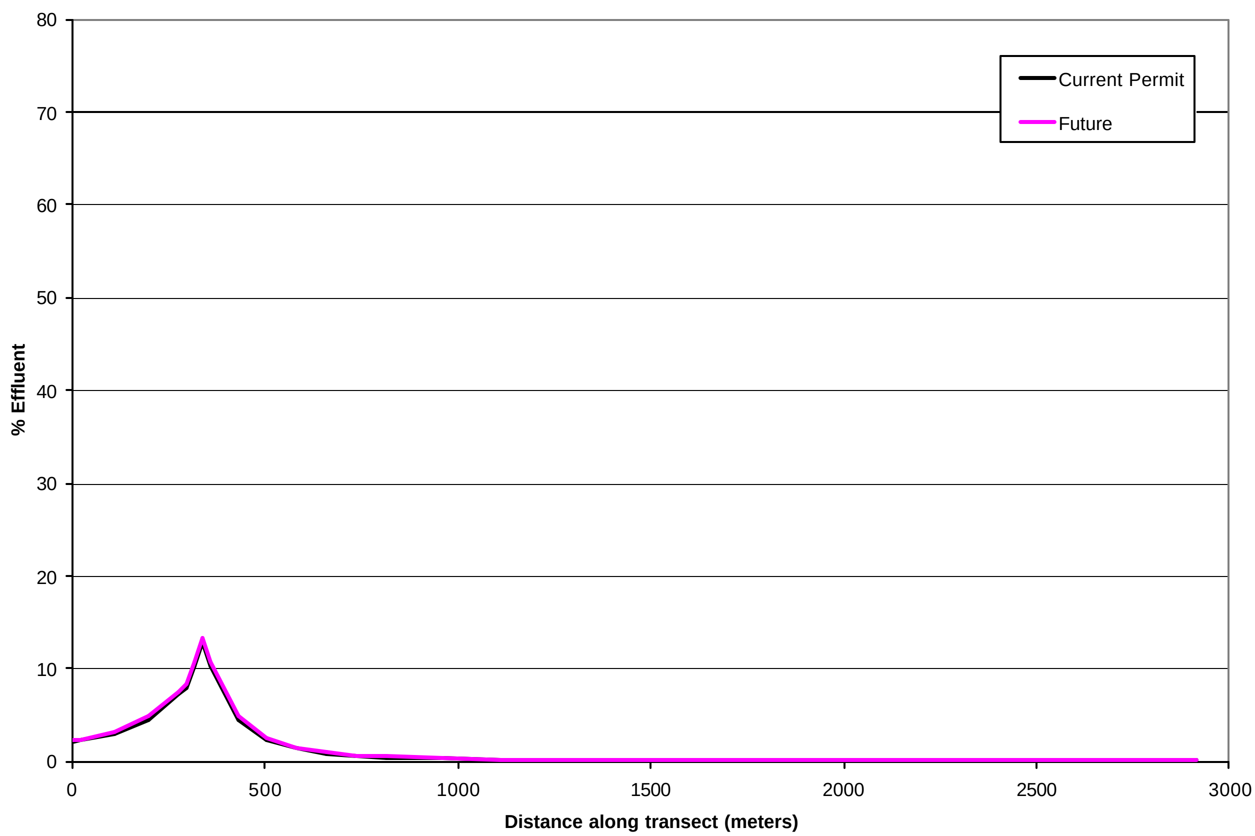


Figure 6-11 Maximum daily average percent effluent along east-west transect for current permit and future conditions (1977 simulation).

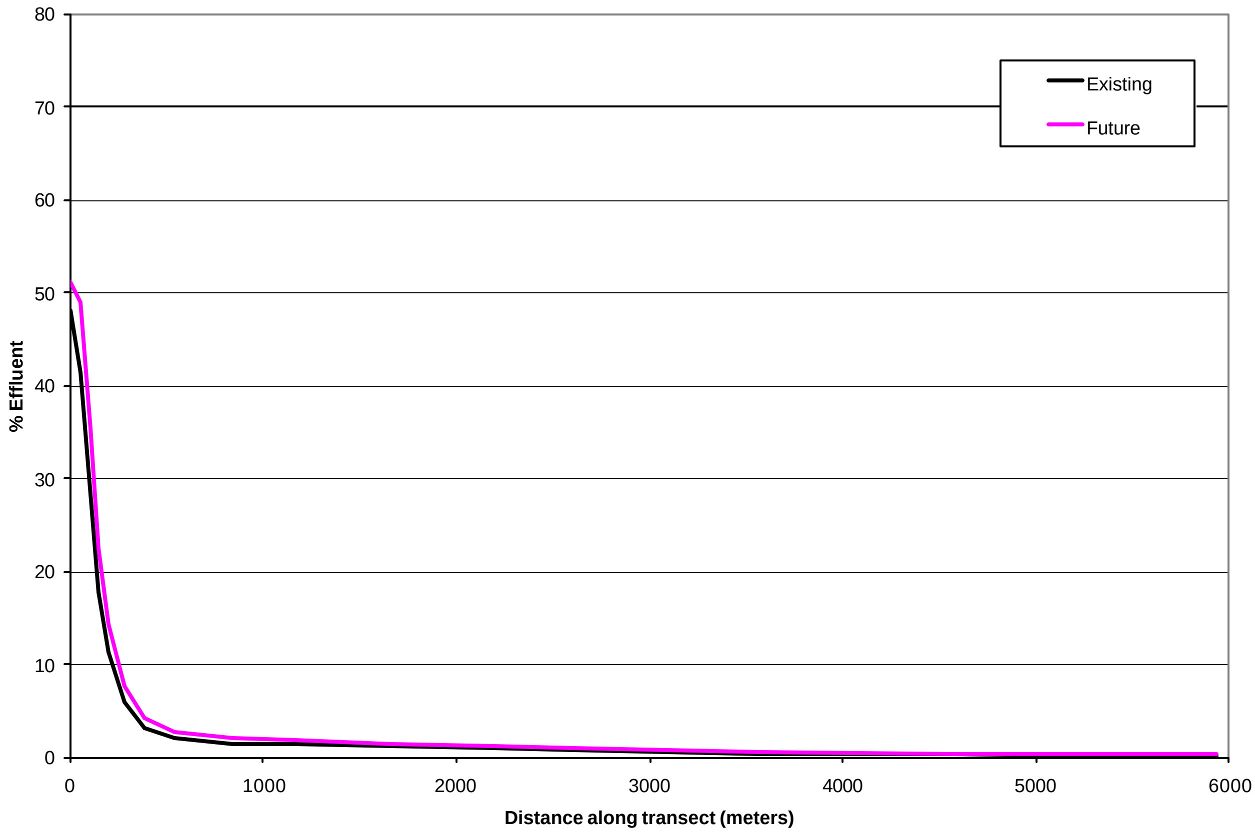


Figure 6-12 Maximum hourly average percent effluent for transect along length of plume for existing and future conditions (1977 simulation).

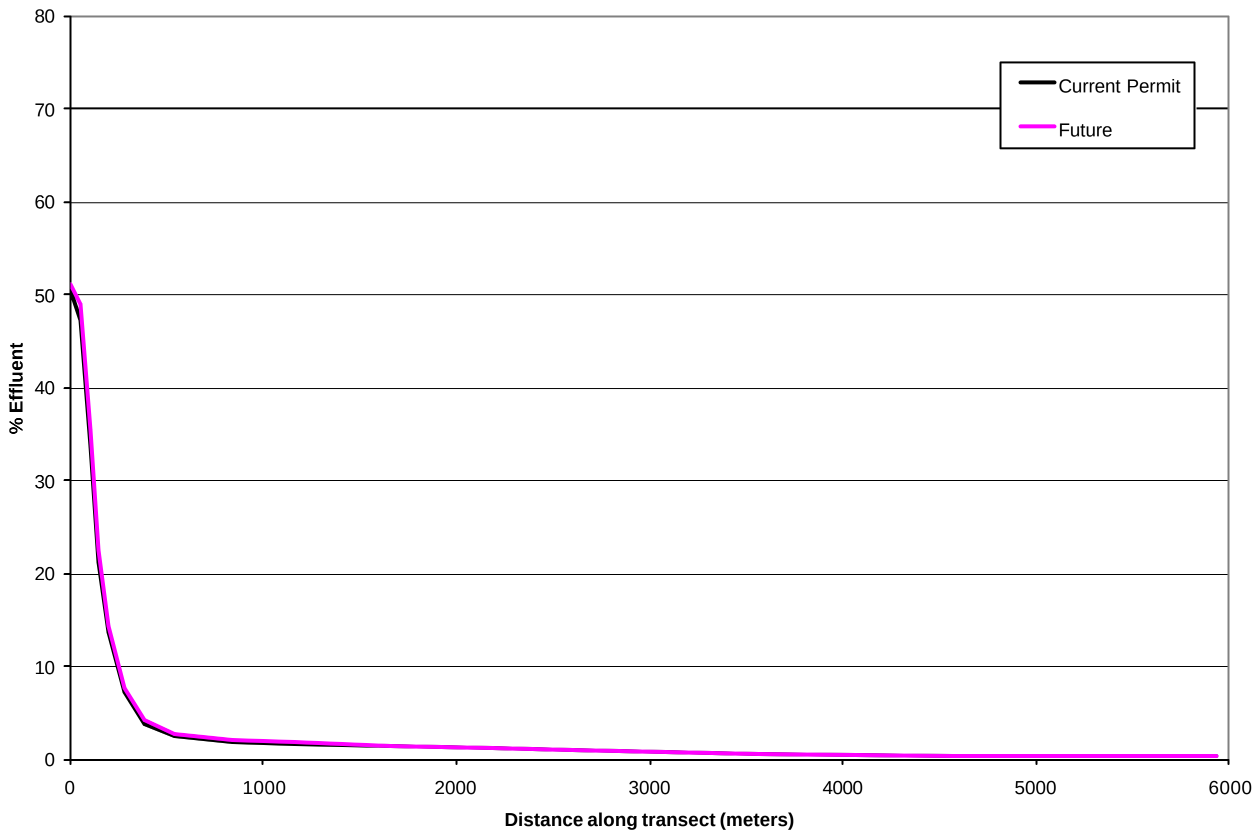


Figure 6-13 Maximum hourly average percent effluent for transect along length of plume for current permit and future conditions (1977 simulation).

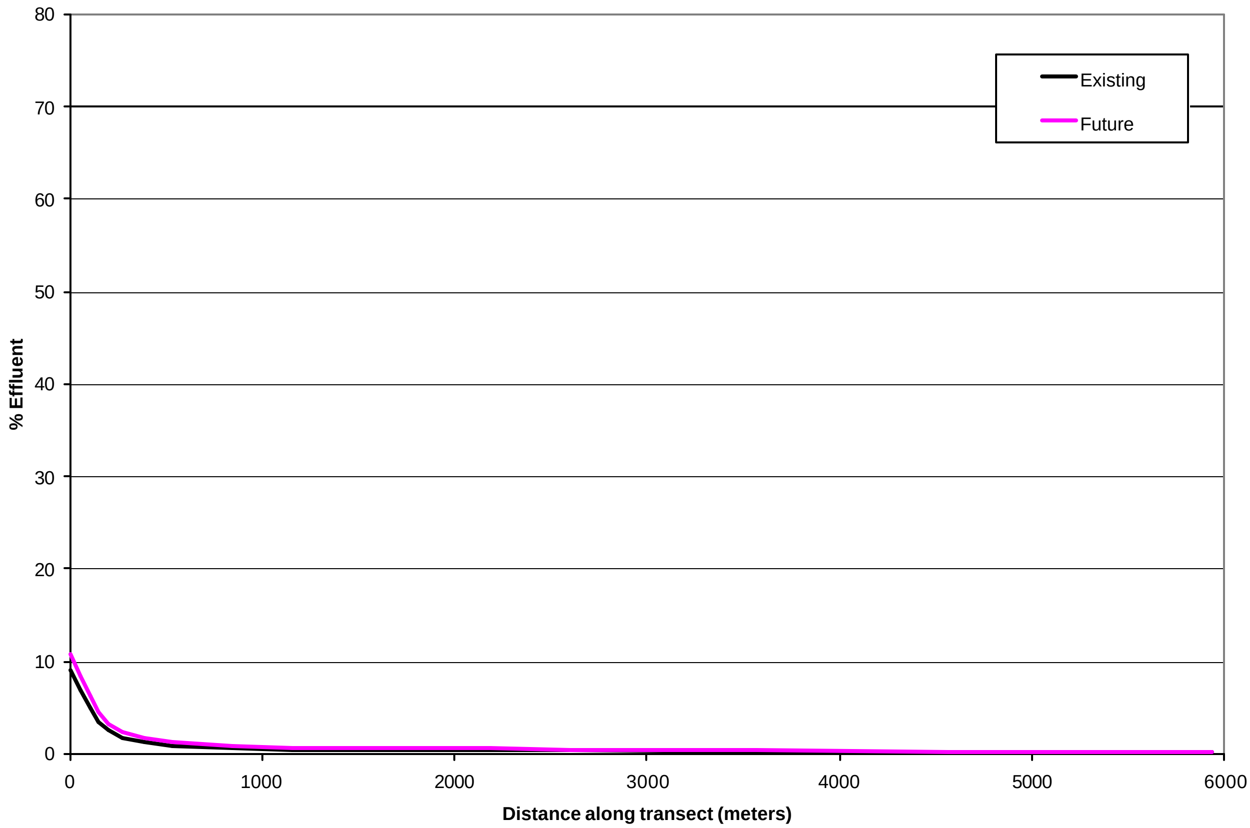


Figure 6-14 Maximum daily average percent effluent for transect along length of plume for existing and future conditions (1977 simulation).

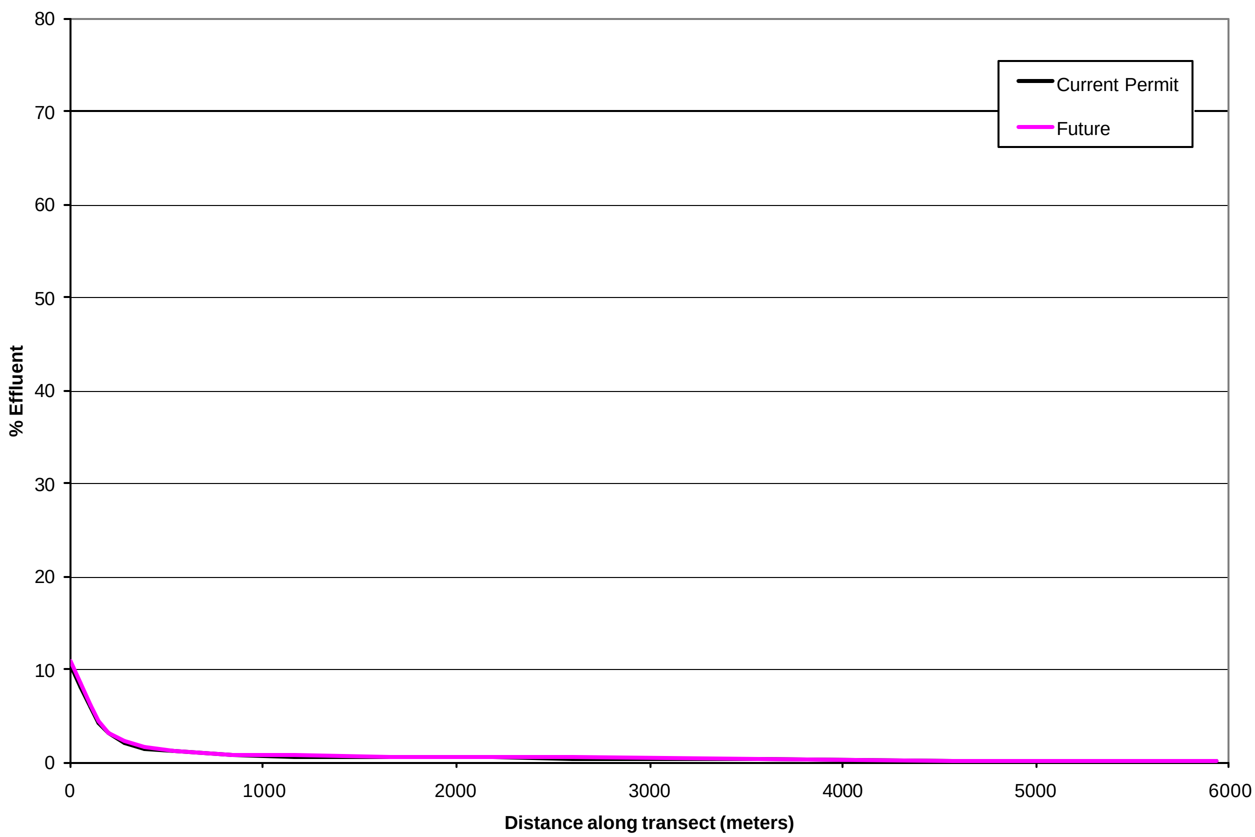


Figure 6-15 Maximum daily average percent effluent for transect along length of plume for current permit and future conditions (1977 simulation).

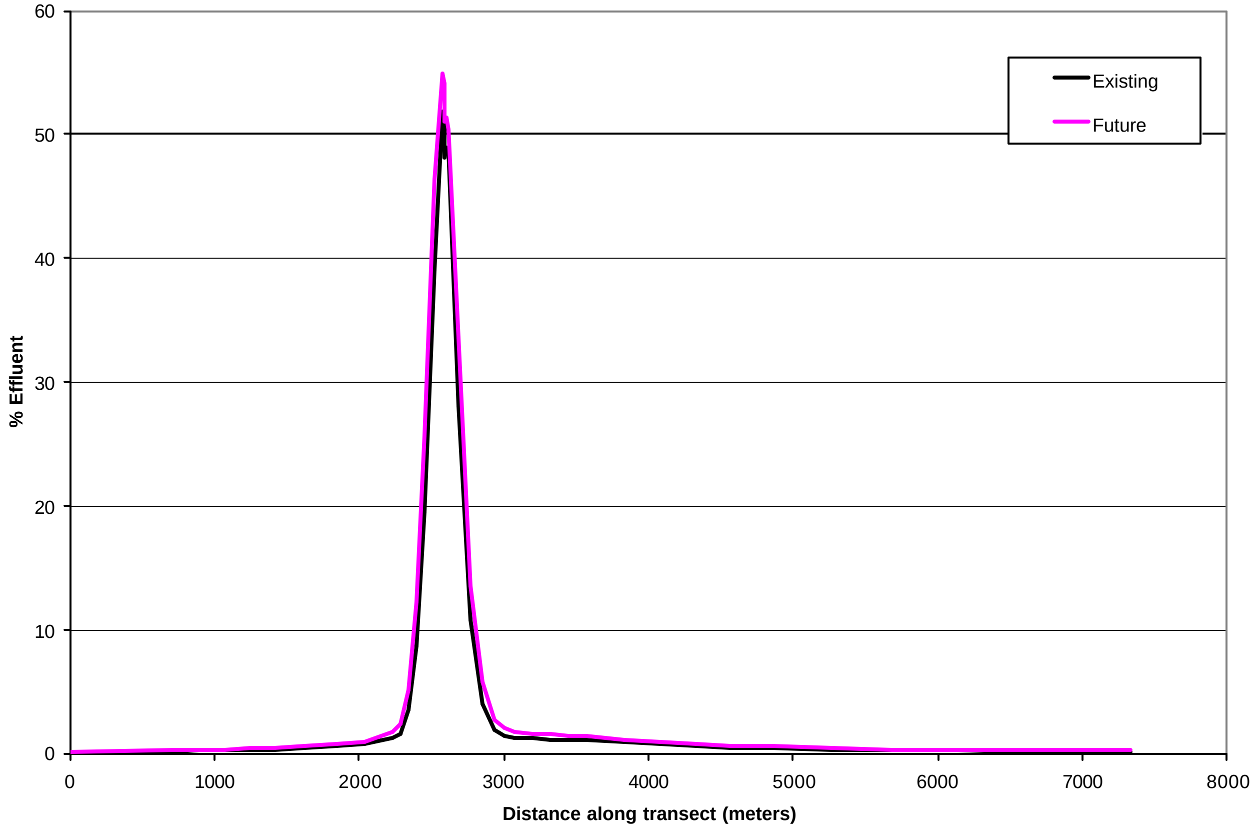


Figure 6-16 Maximum hourly average percent effluent along shoreline transect for existing and future conditions (1977 simulation).

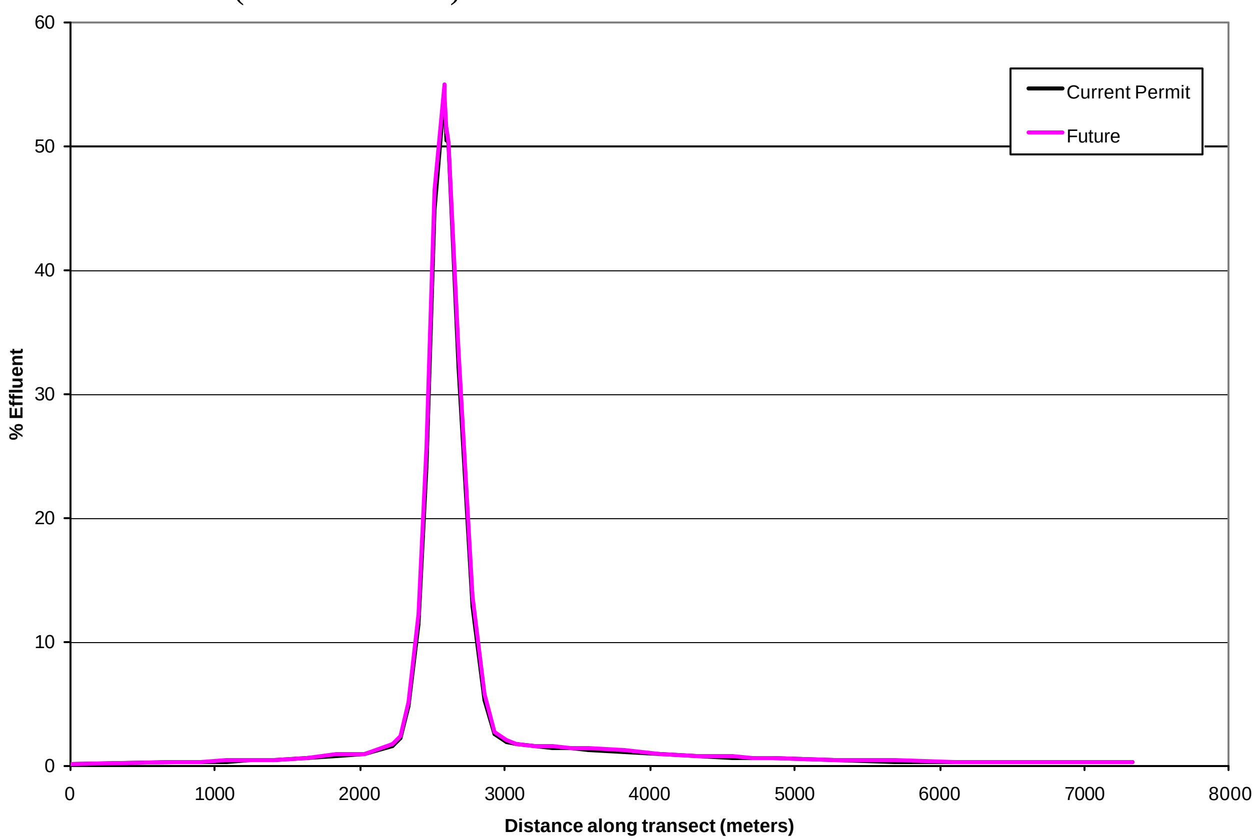


Figure 6-17 Maximum hourly average percent effluent along shoreline transect for current permit and future conditions (1977 simulation).

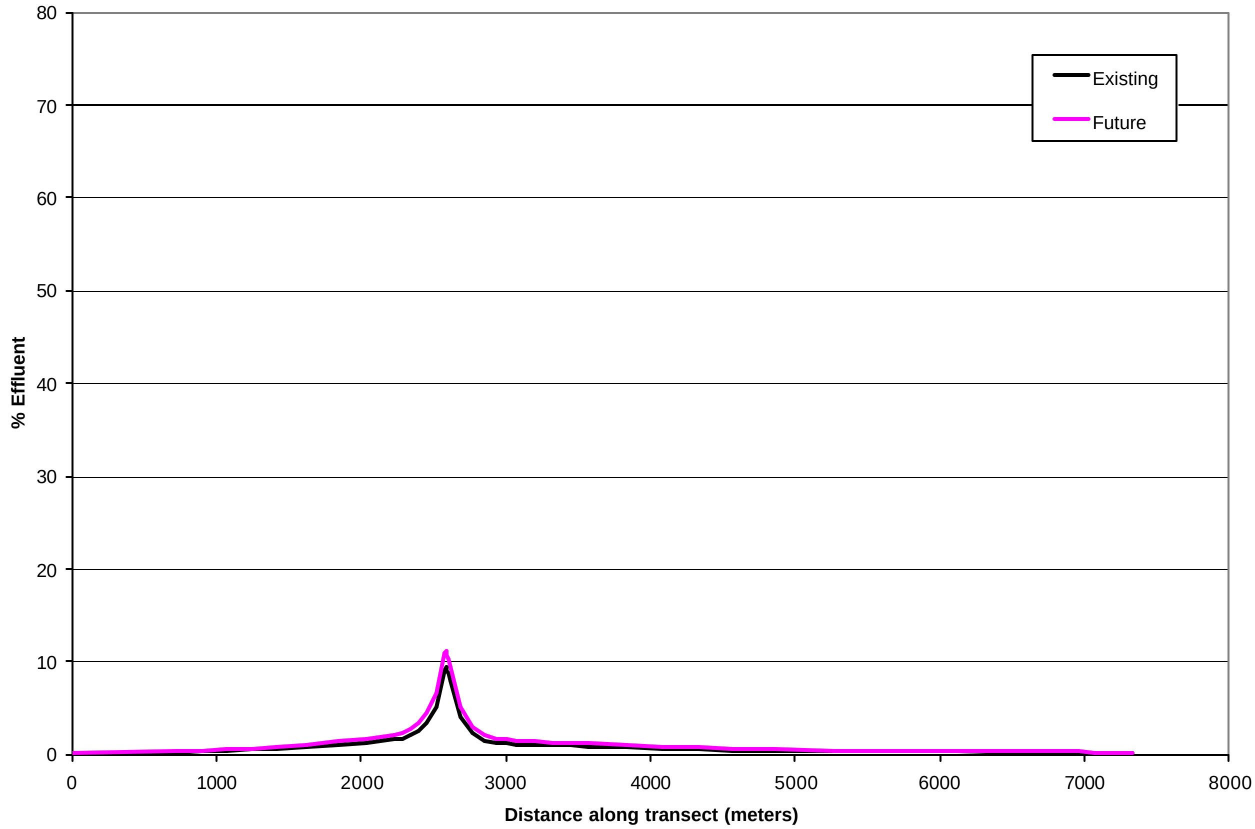


Figure 6-18 Maximum daily average percent effluent along shoreline transect for existing and future conditions (1977 simulation).

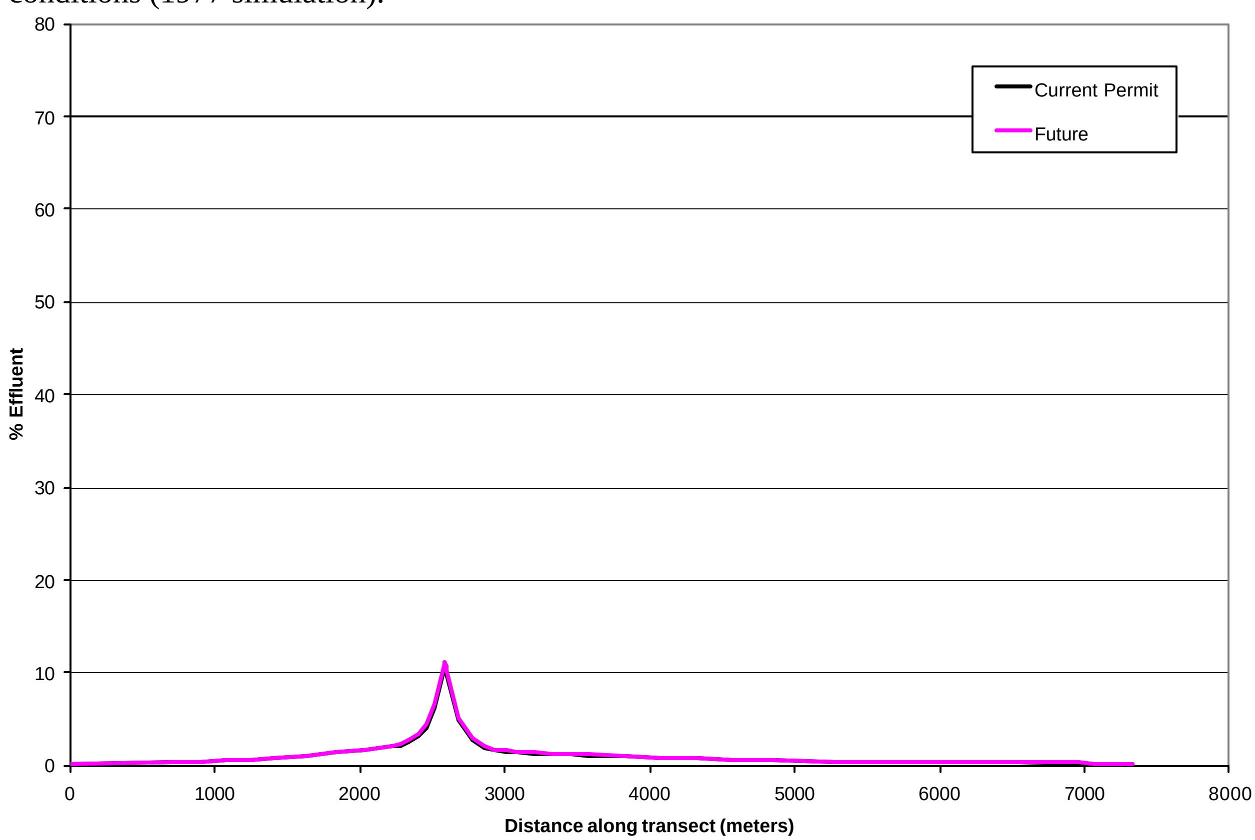


Figure 6-19 Maximum daily average percent effluent along shoreline transect for current permit and future conditions (1977 simulation).

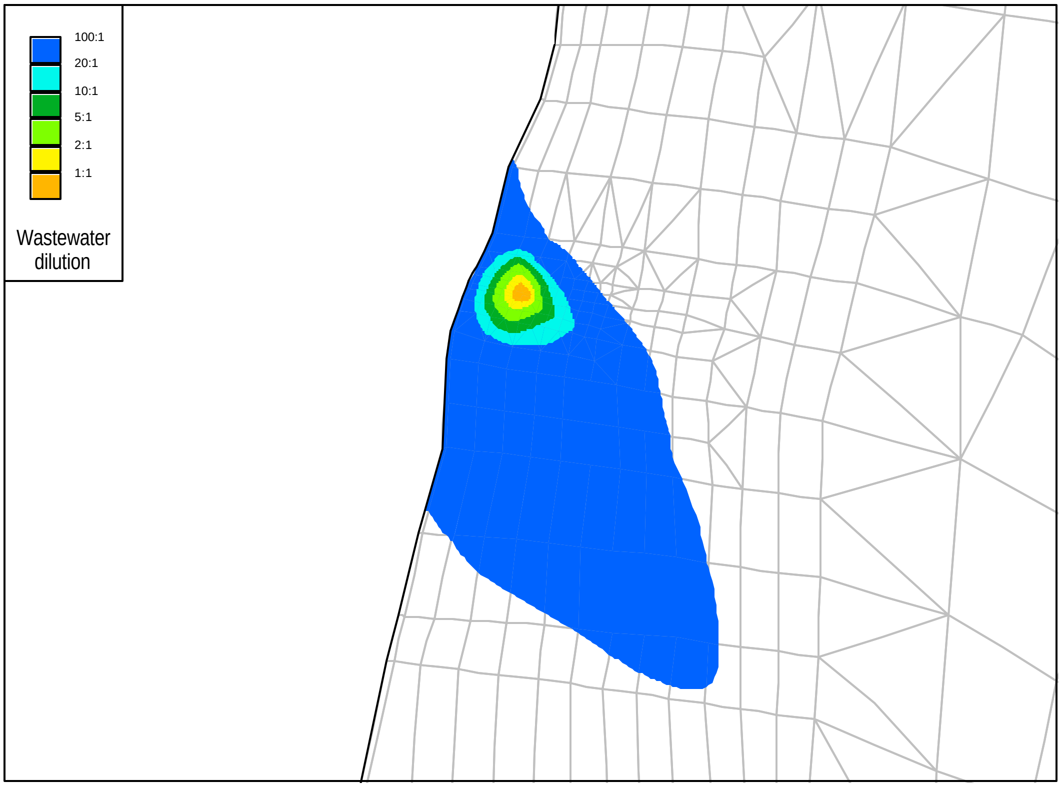


Figure 6-20 Hourly average wastewater dilution contours at slack tide during the 1977 simulation.

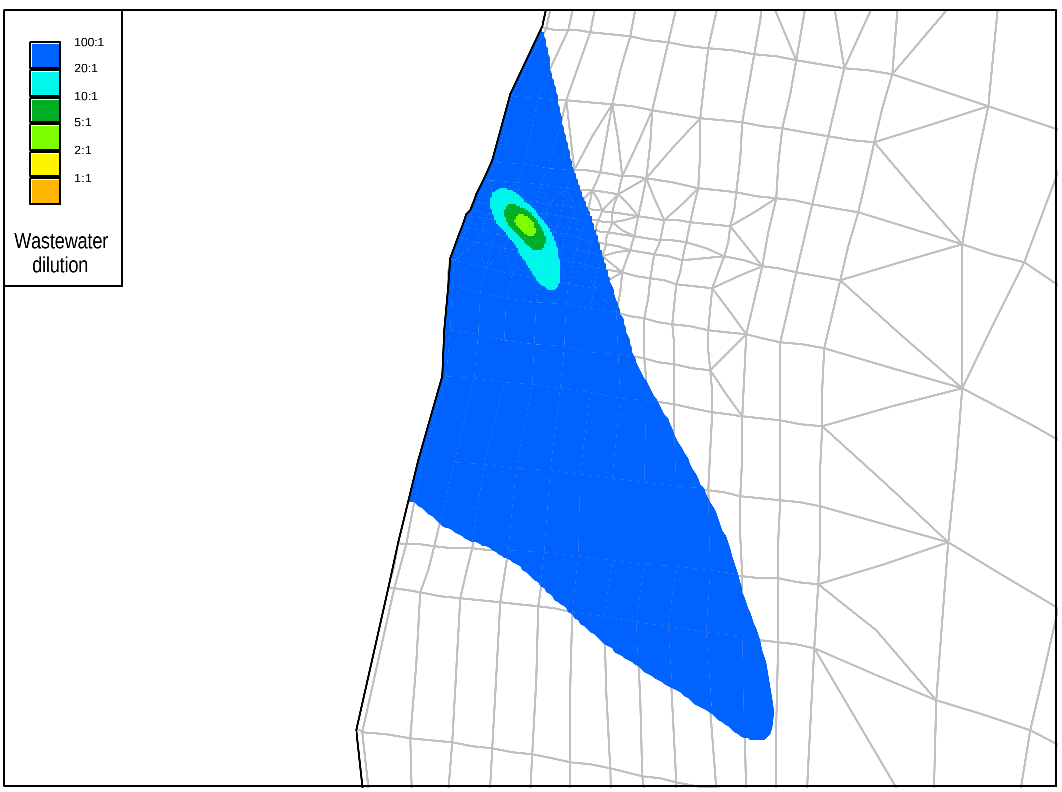


Figure 6-21 Daily average wastewater dilution contours during the 1977 simulation.

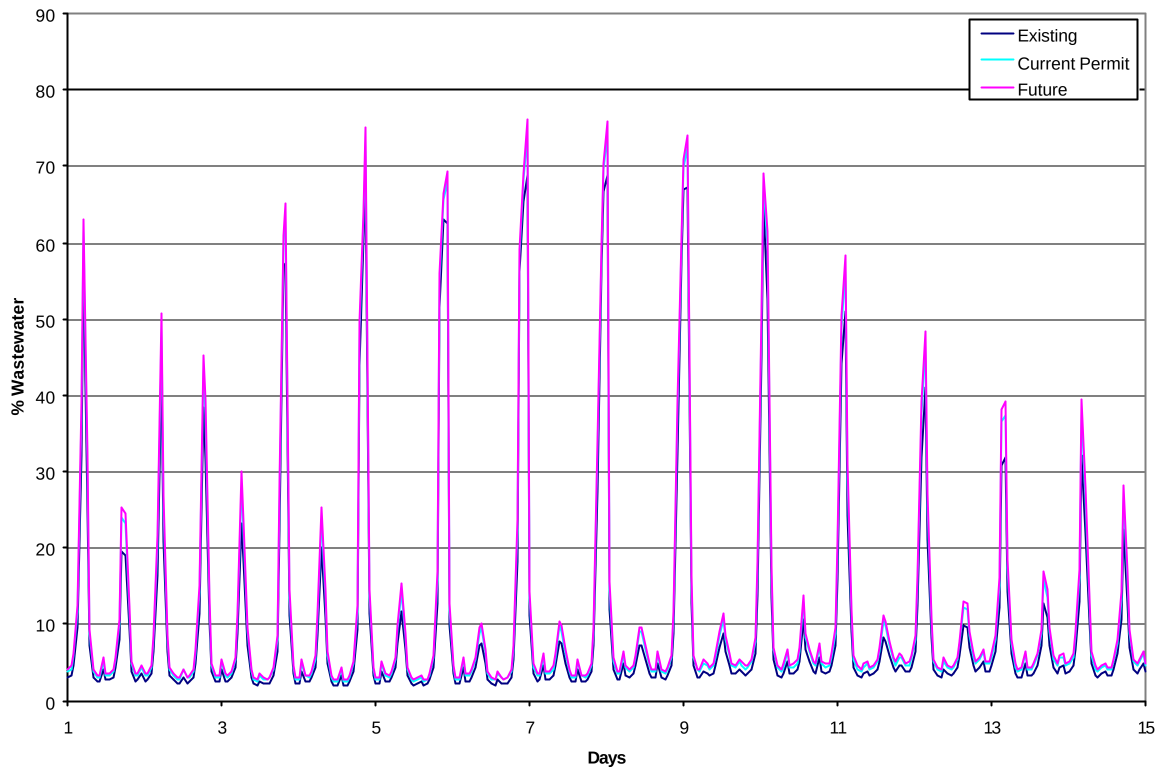


Figure 6-22 Wastewater concentrations at outfall for existing, current permit and future flow conditions, October 1980.

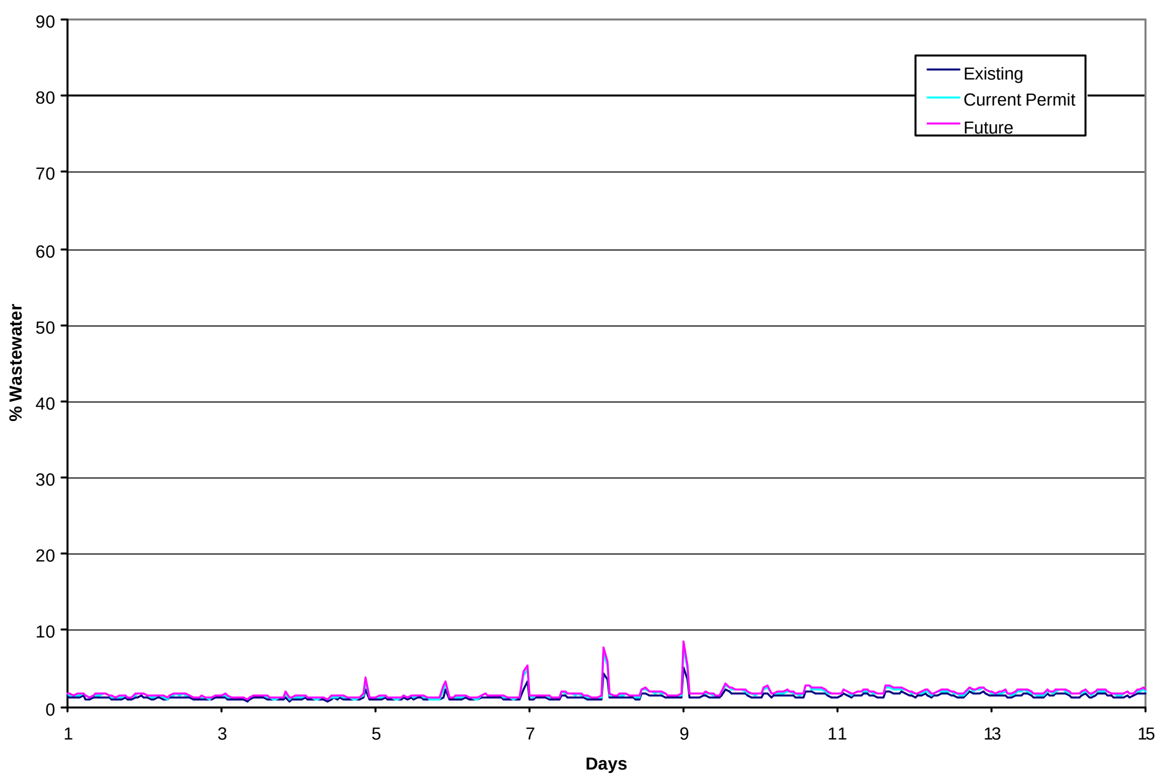


Figure 6-23 Wastewater concentrations 250 meters north of outfall for existing, current permit and future flow conditions, October 1980.

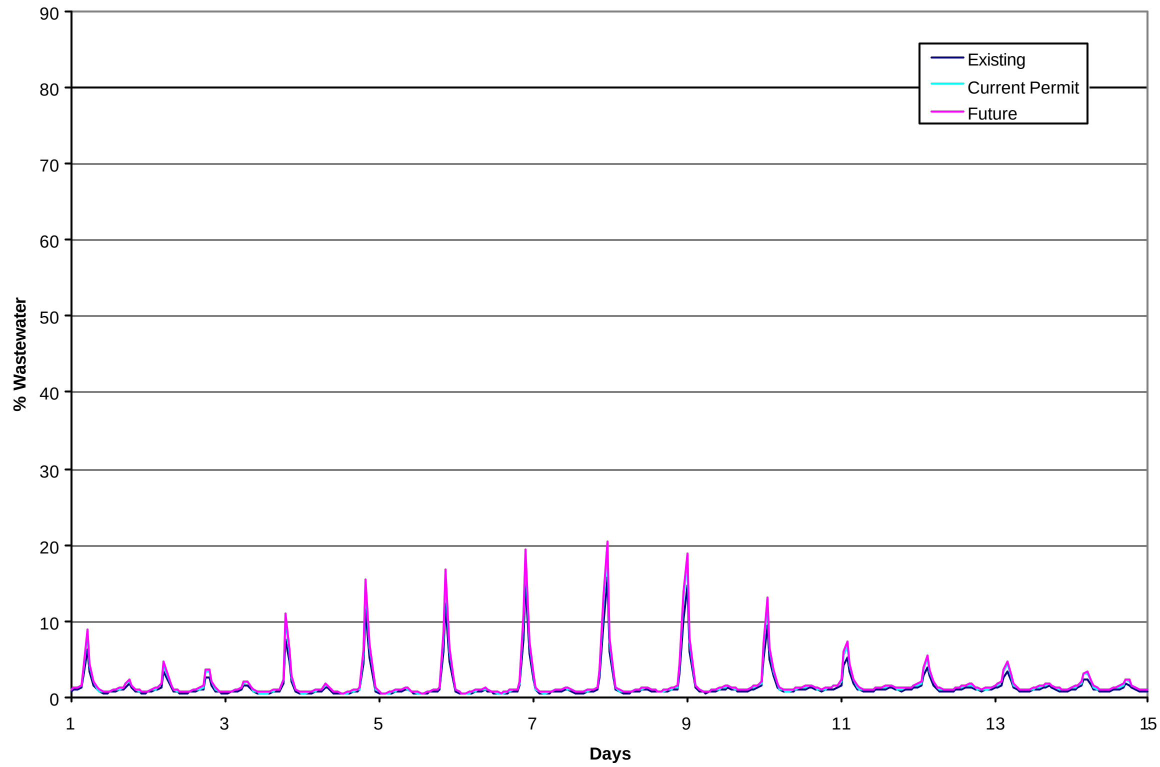


Figure 6-24 Wastewater concentrations 250 meters east of outfall for existing, current permit and future flow conditions, October 1980.

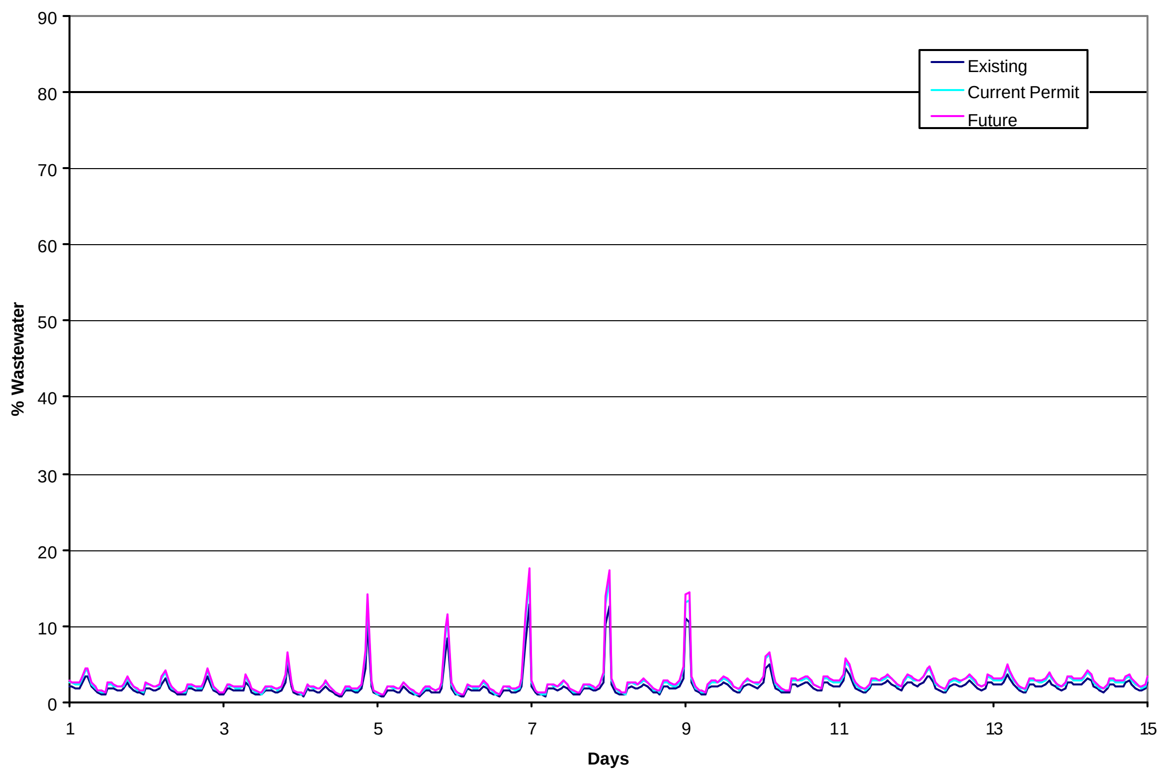


Figure 6-25 Wastewater concentrations 250 meters south of outfall for existing, current permit and future flow conditions, October 1980.

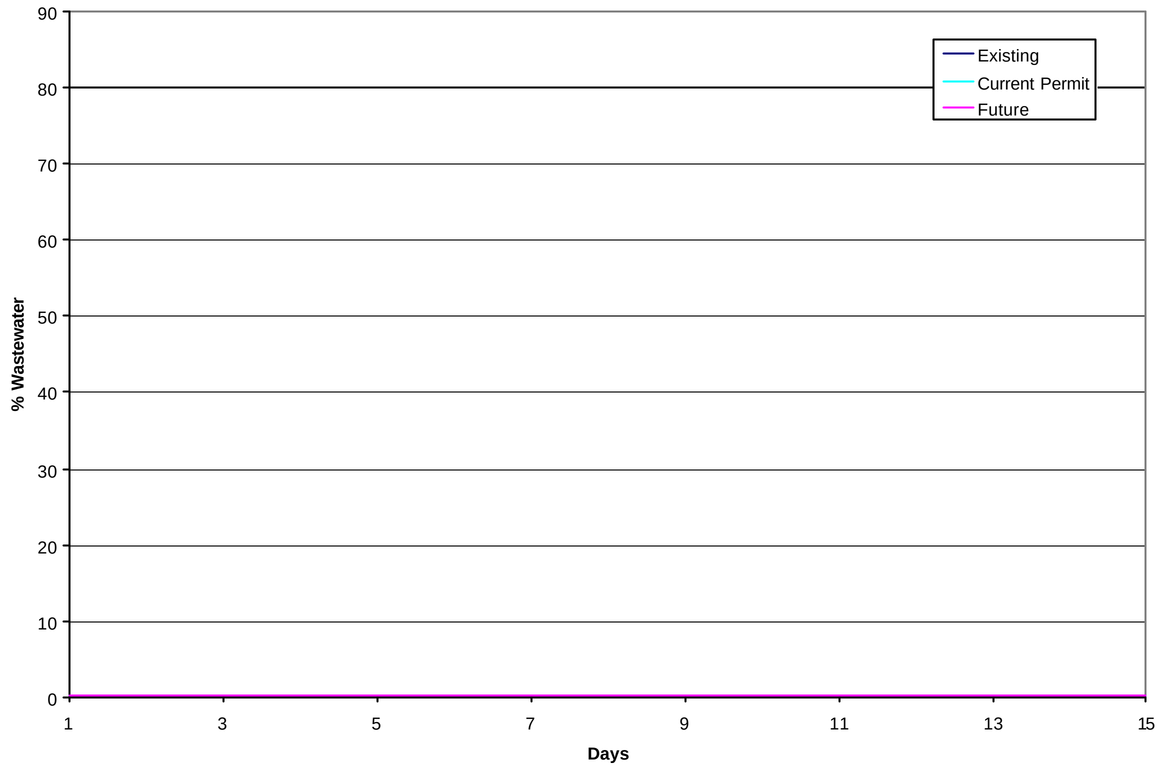


Figure 6-26 Wastewater concentrations 2500 meters north of outfall for existing, current permit and future flow conditions, October 1980.

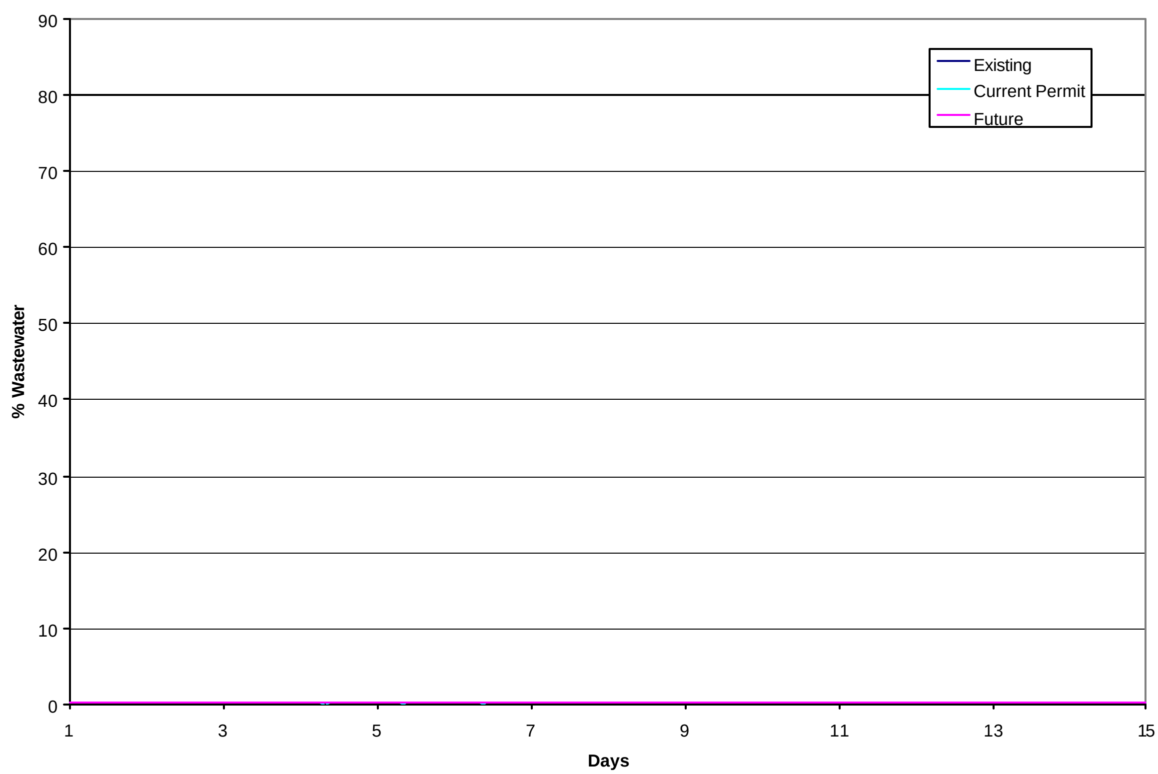


Figure 6-27 Wastewater concentrations 2500 meters east of outfall for existing, current permit and future flow conditions, October 1980.

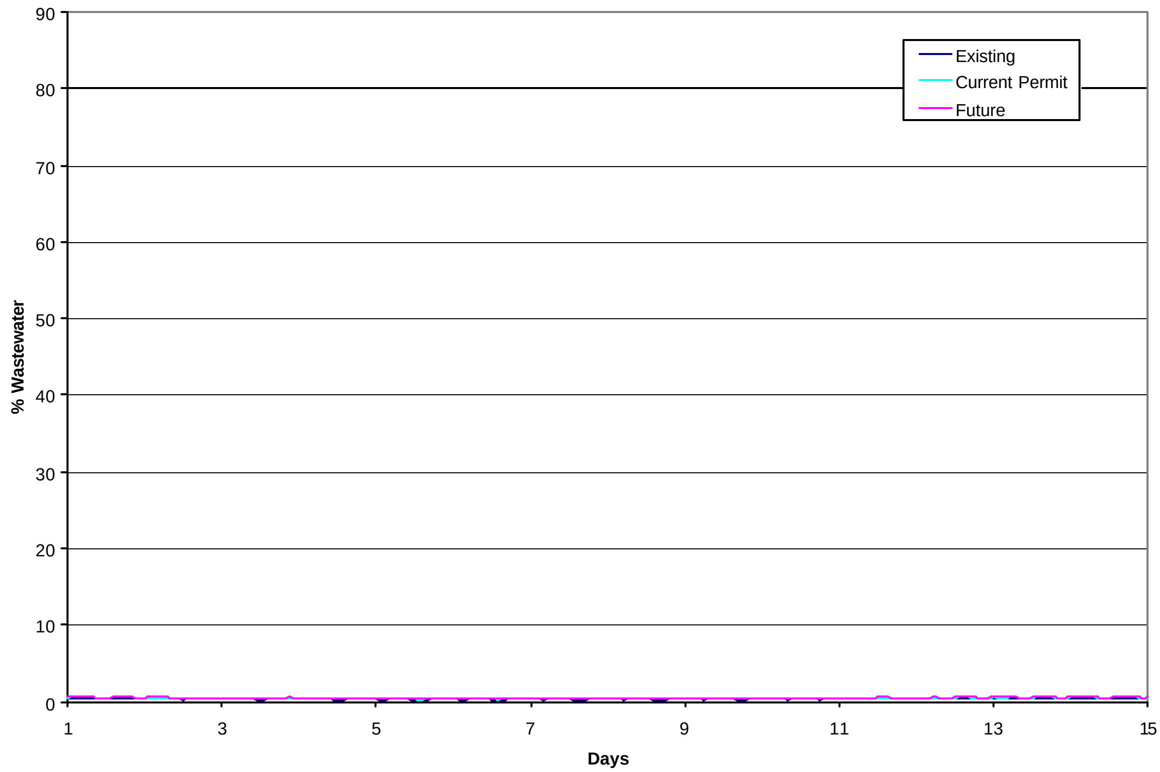


Figure 6-28 Wastewater concentrations 2500 meters south of outfall for existing, current permit and future flow conditions, October 1980.

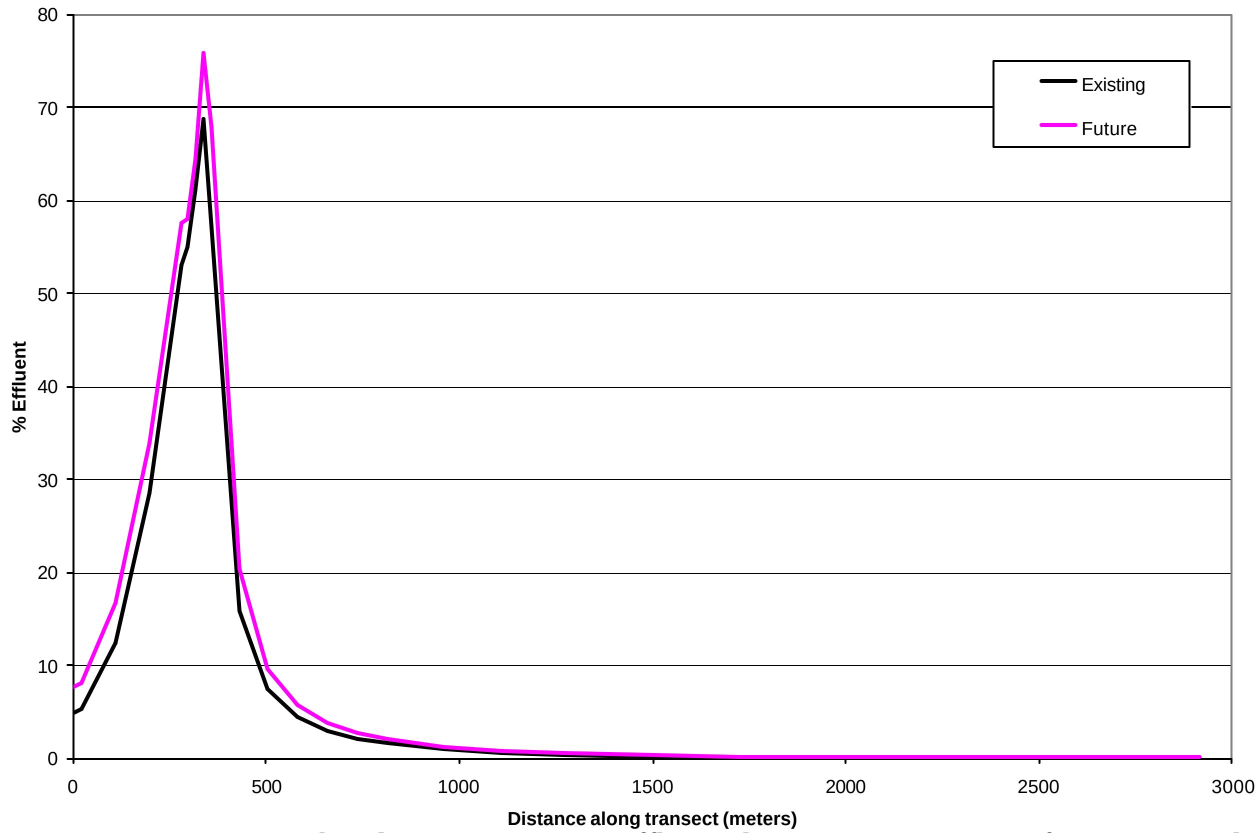


Figure 6-29 Maximum hourly average percent effluent along east-west transect for existing and future conditions (1980 simulation).

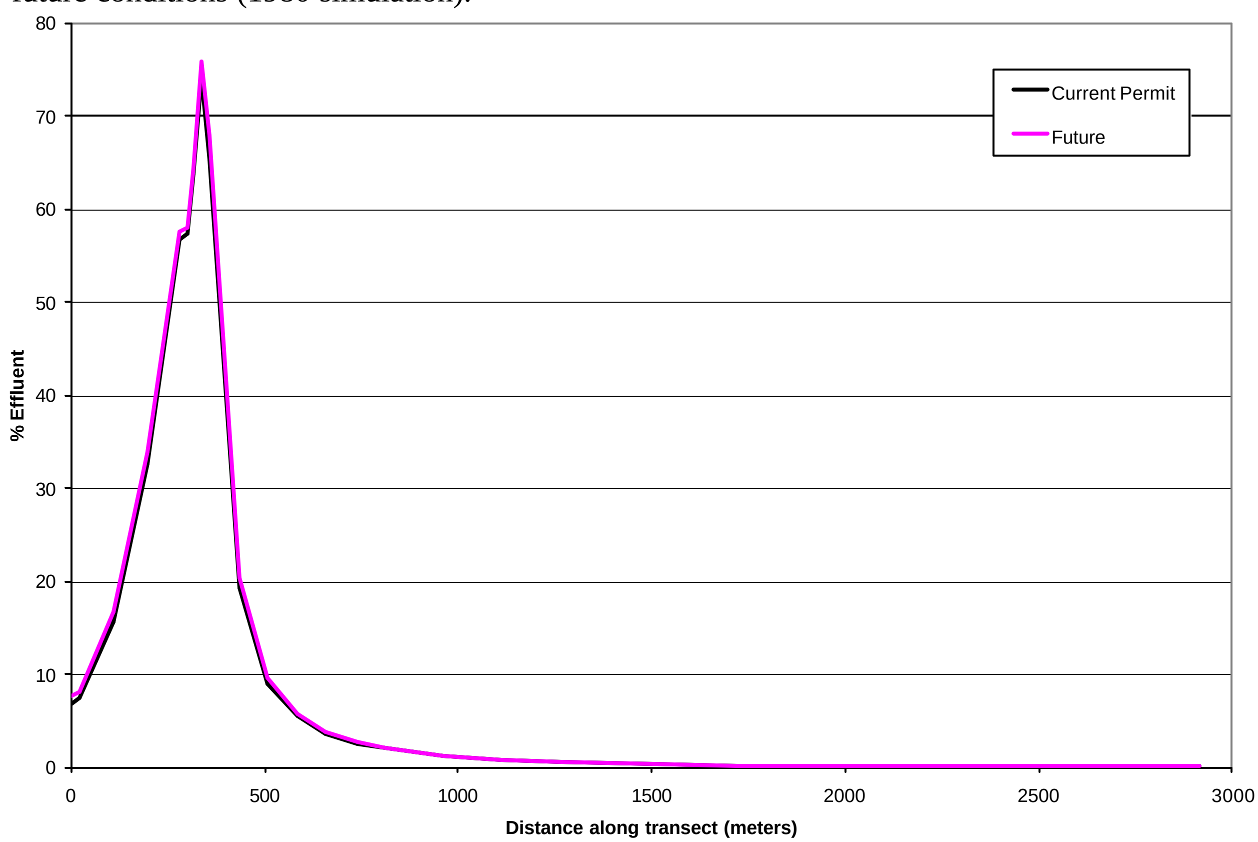


Figure 6-30 Maximum hourly average percent effluent along east-west transect for current permit and future conditions (1980 simulation).

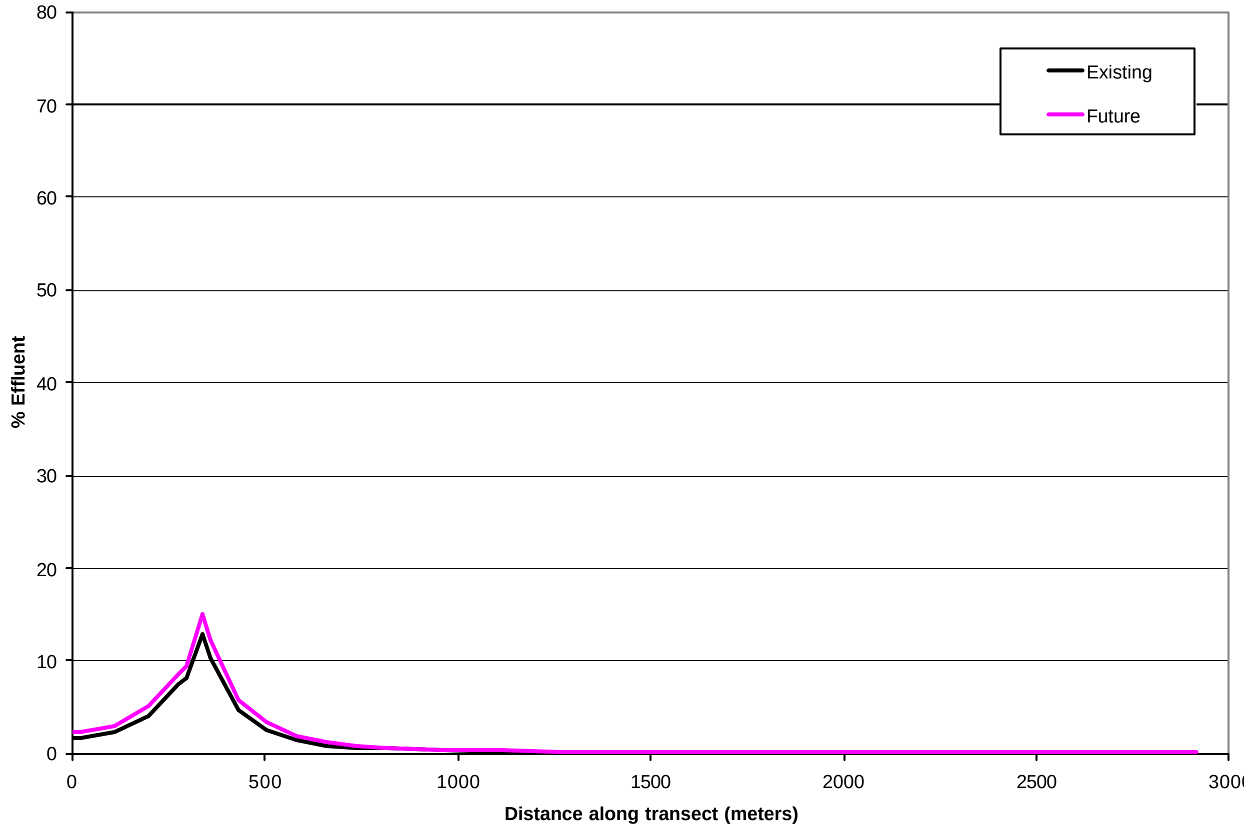


Figure 6-31 Maximum daily average percent effluent along east-west transect for existing and future conditions (1980 simulation).

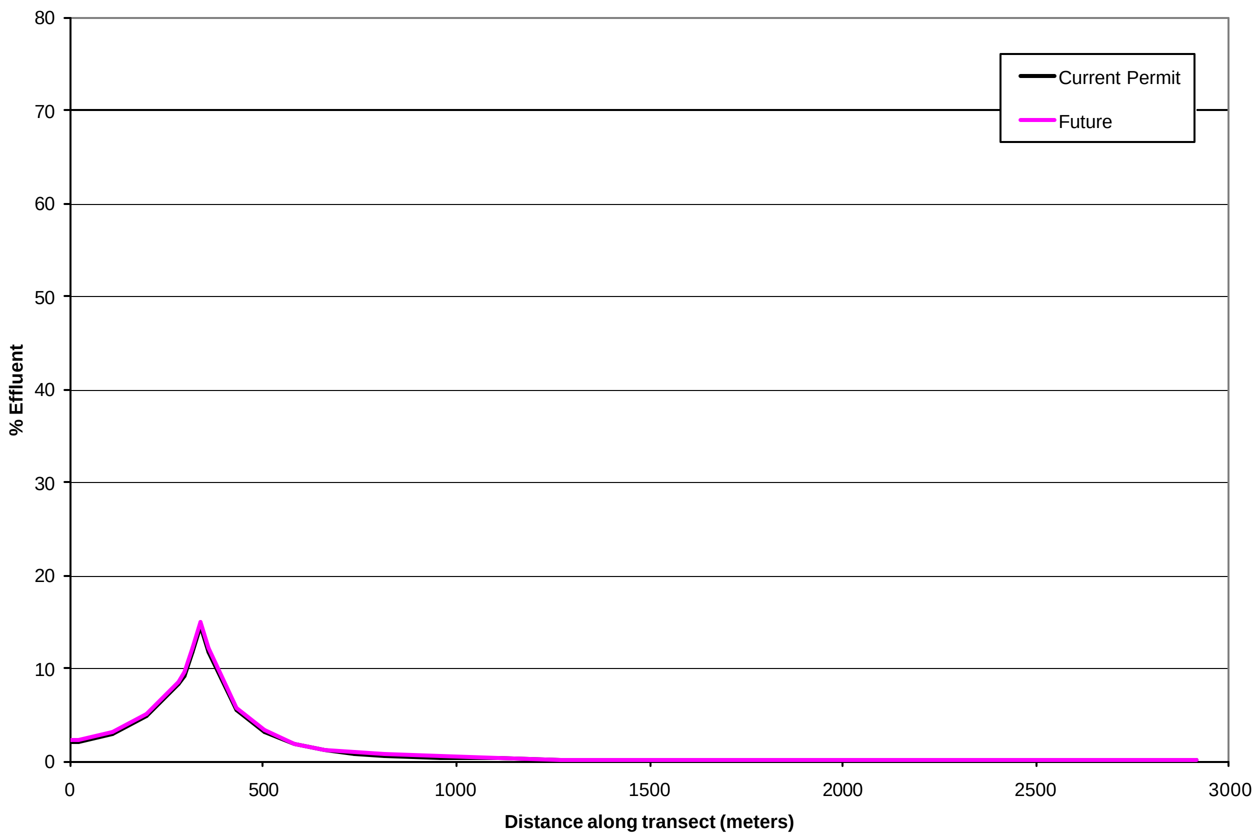


Figure 6-32 Maximum daily average percent effluent along east-west transect for current permit and future conditions (1980 simulation).

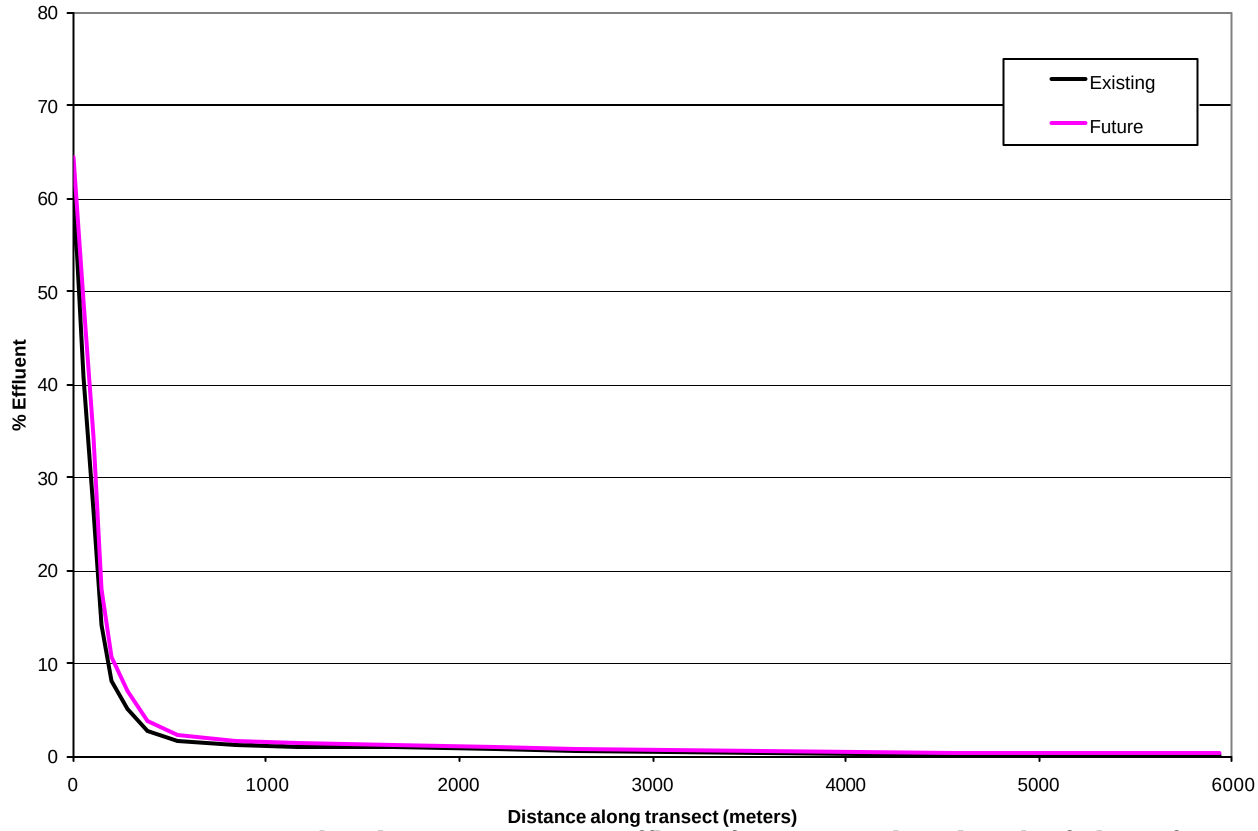


Figure 6-33 Maximum hourly average percent effluent for transect along length of plume for existing and future conditions (1980 simulation).

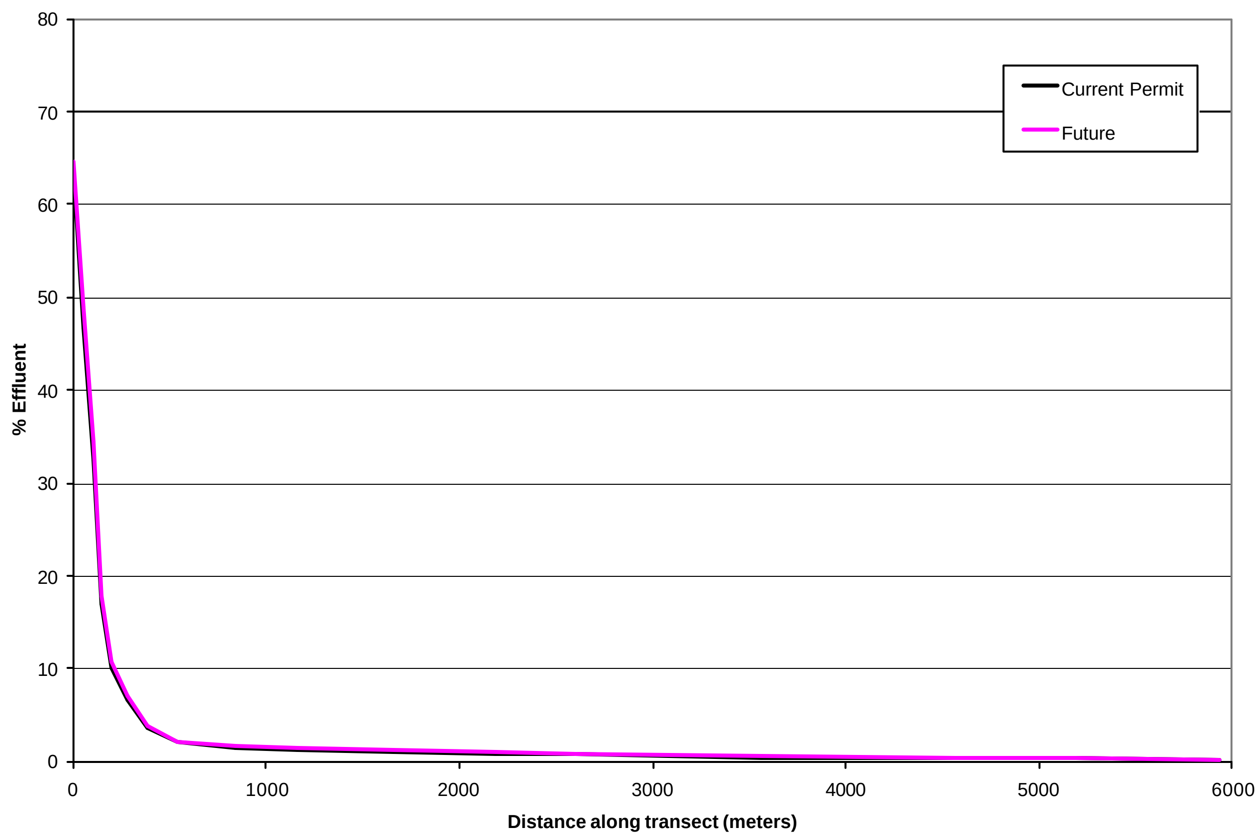


Figure 6-34 Maximum hourly average percent effluent for transect along length of plume for current permit and future conditions (1980 simulation).

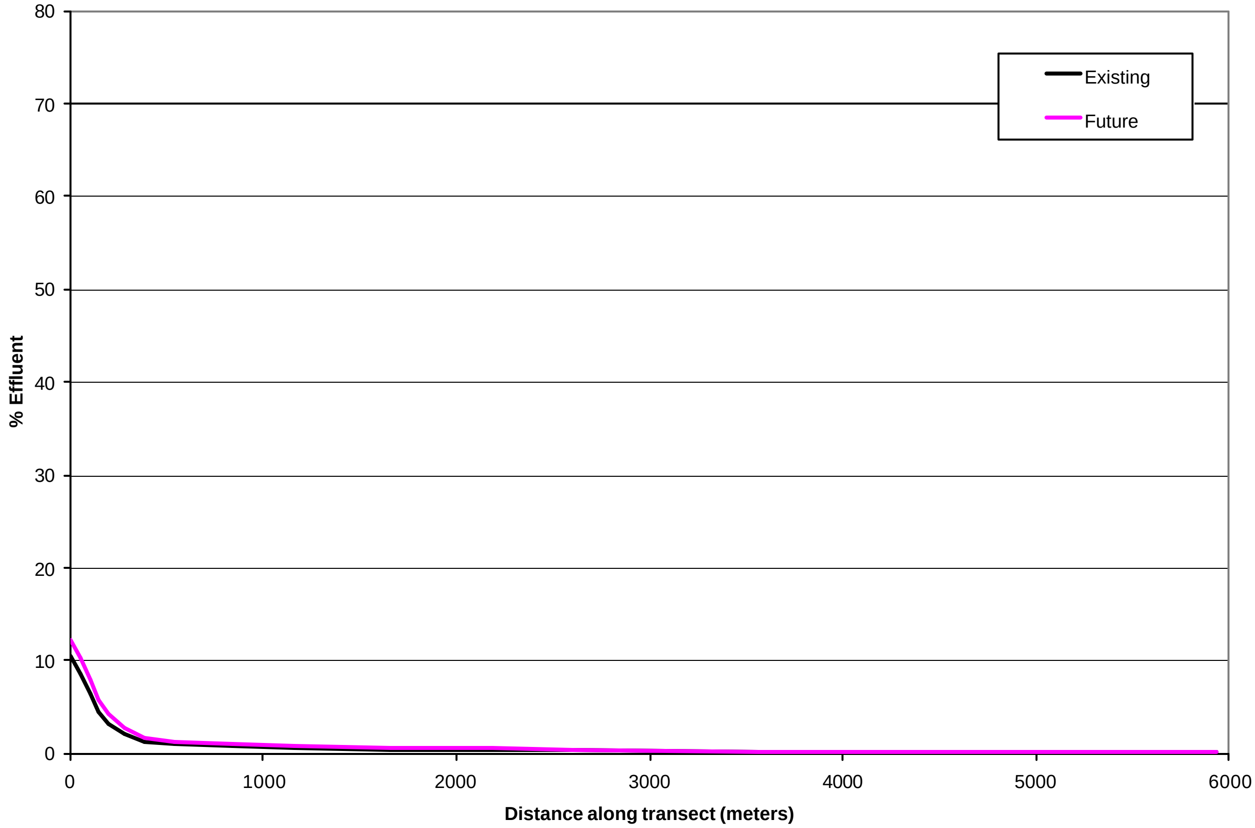


Figure 6-35 Maximum daily average percent effluent for transect along length of plume for existing and future conditions (1980 simulation).

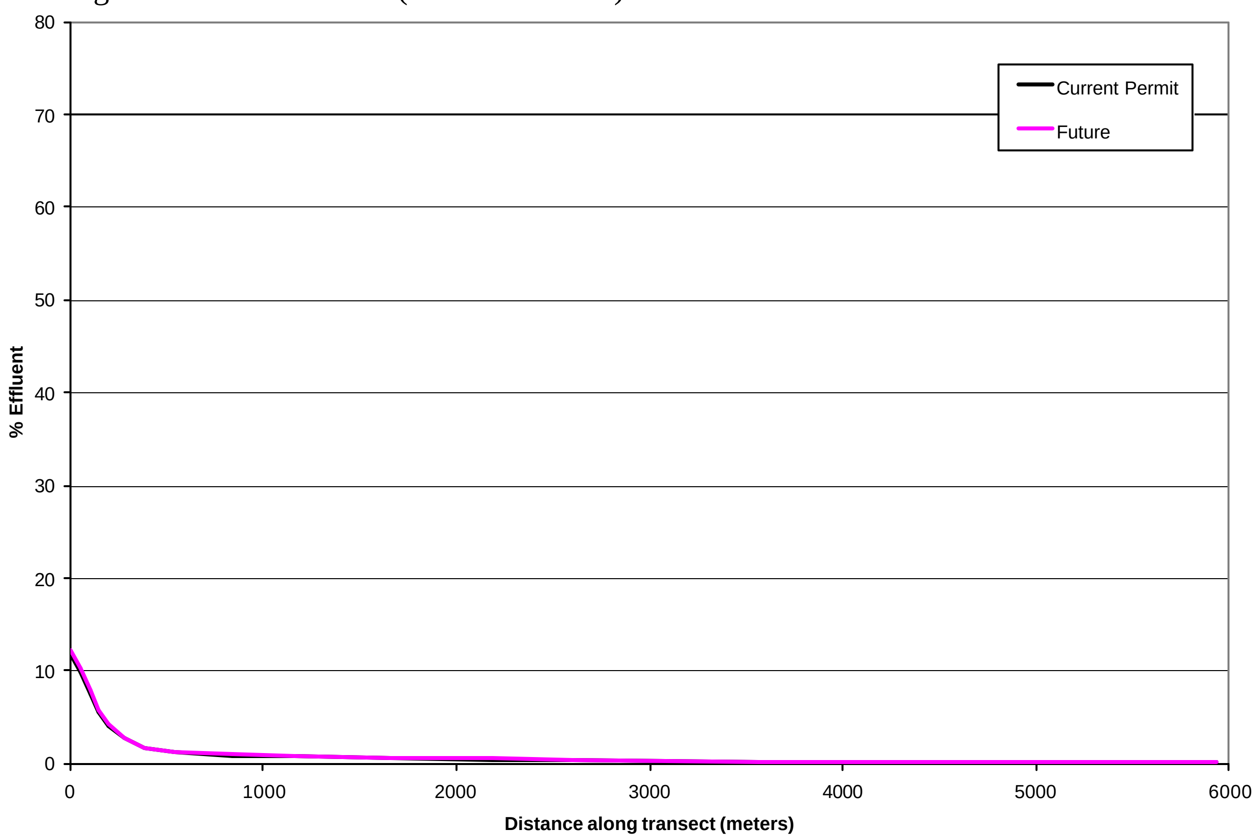


Figure 6-36 Maximum daily average percent effluent for transect along length of plume for current permit and future conditions (1980 simulation).

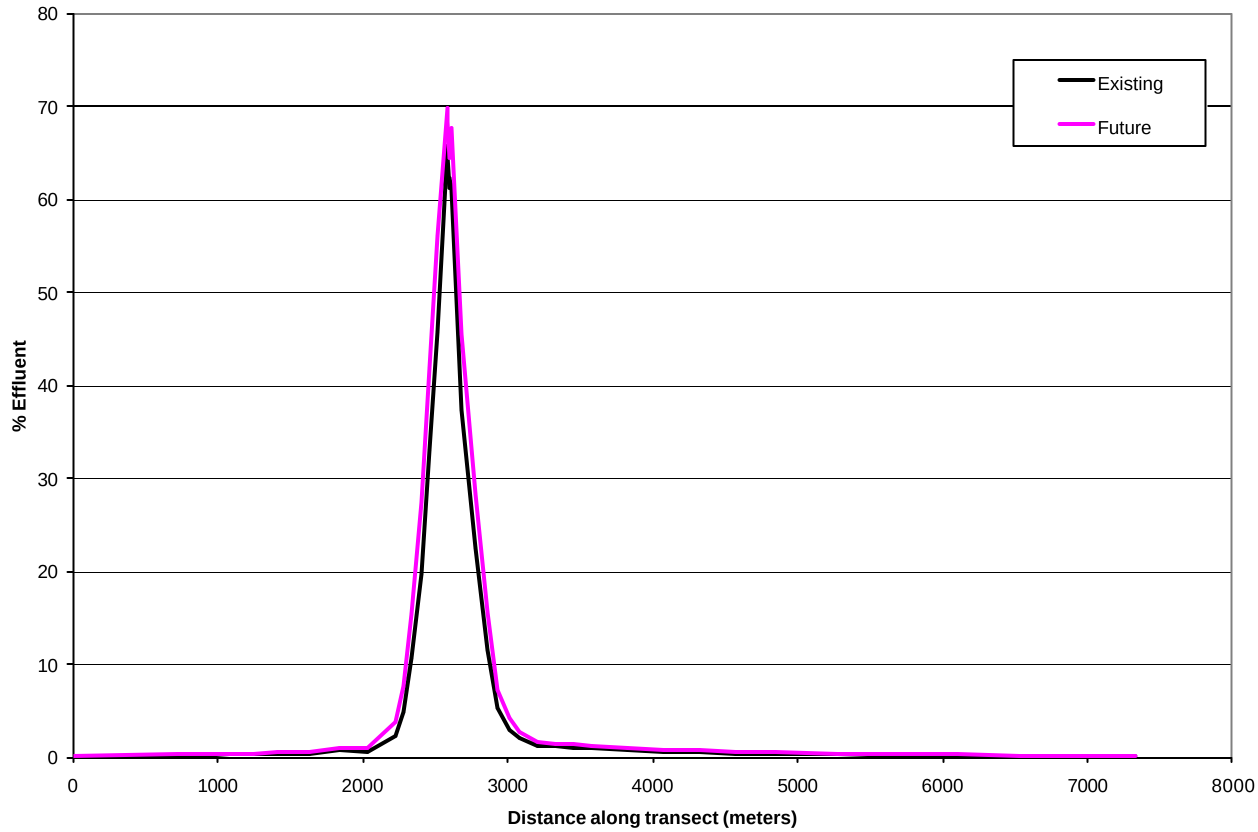


Figure 6-37 Maximum hourly average percent effluent along shoreline transect for existing and future conditions (1980 simulation).

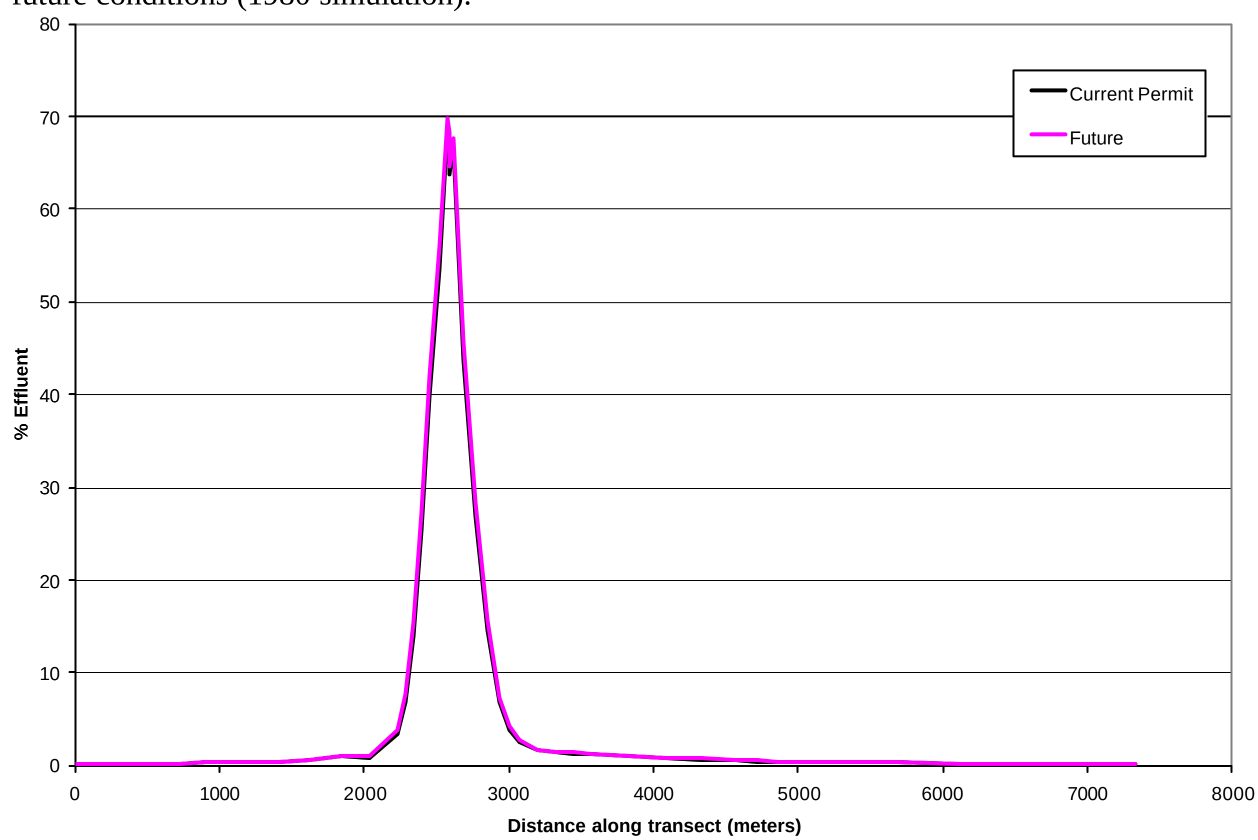


Figure 6-38 Maximum hourly average percent effluent along shoreline transect for current permit and future conditions (1980 simulation).

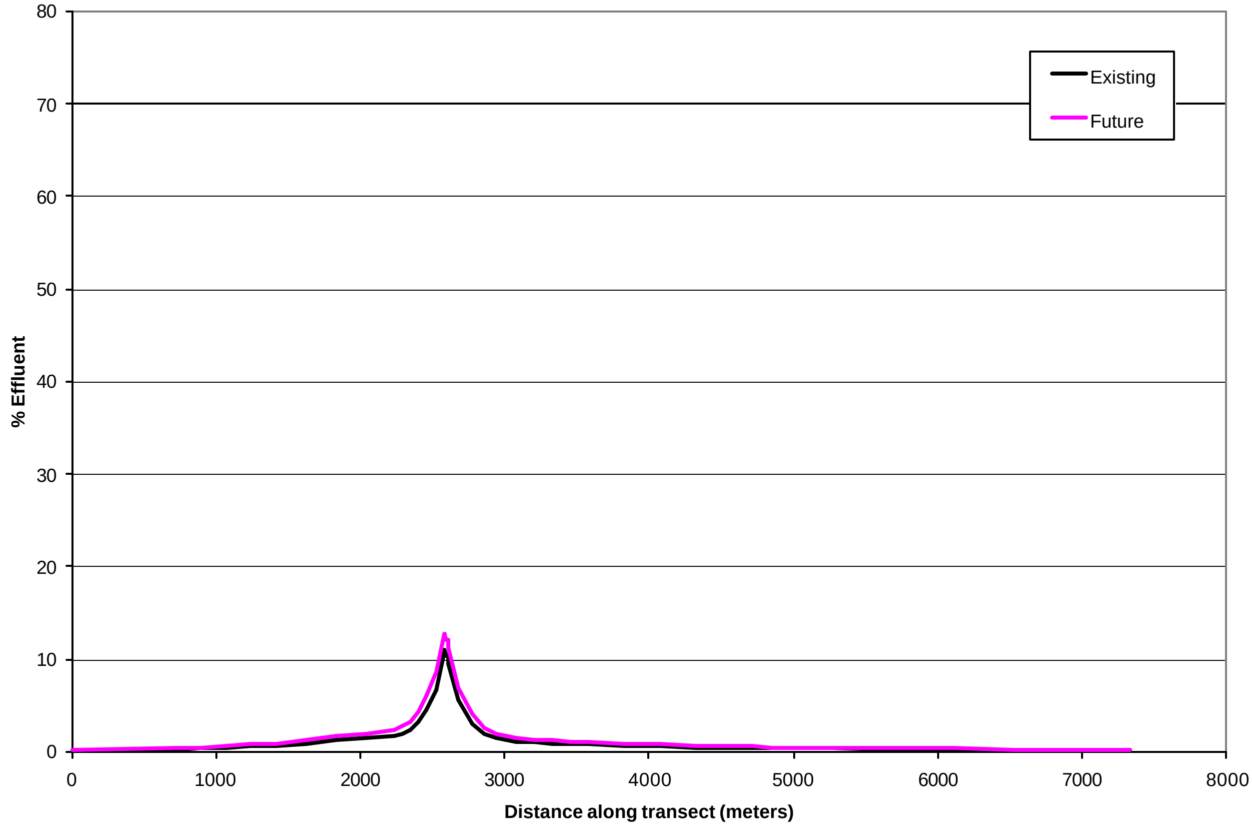


Figure 6-39 Maximum daily average percent effluent along shoreline transect for existing and future conditions (1980 simulation).

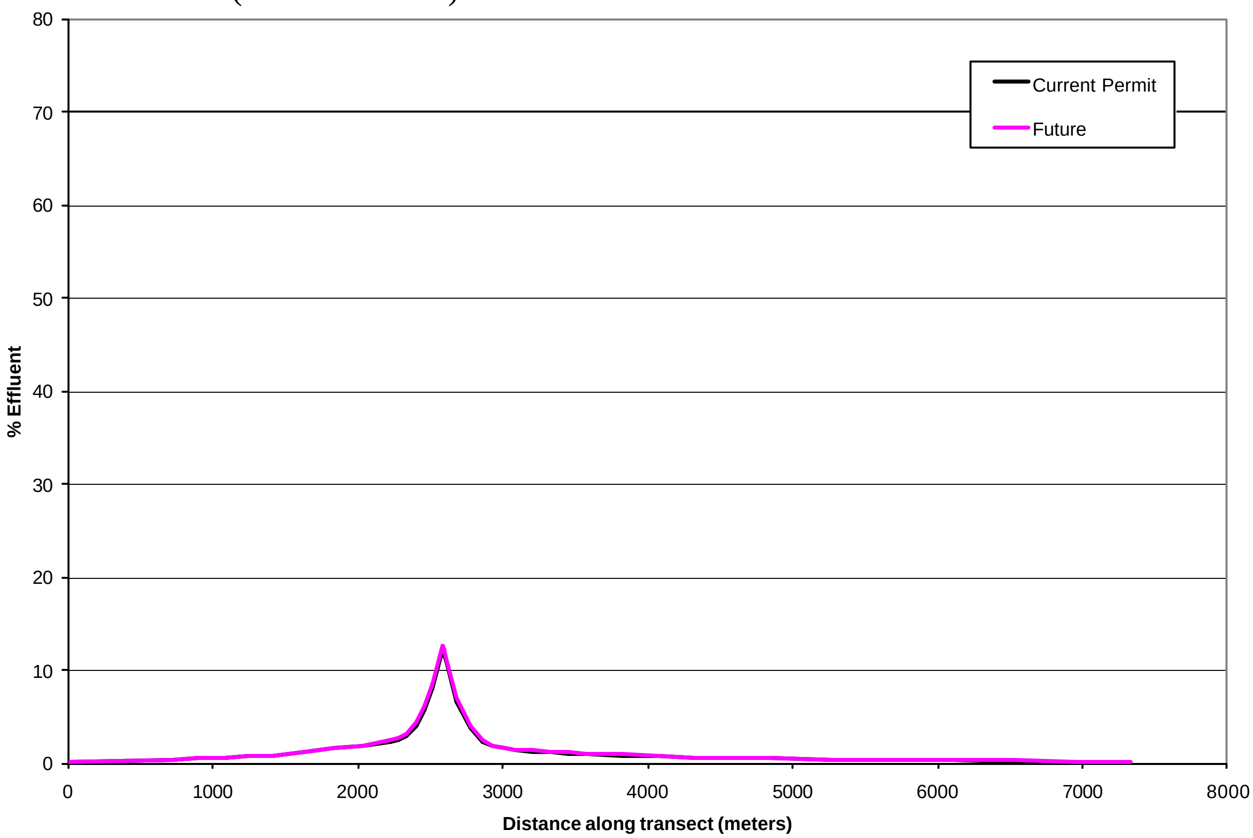


Figure 6-40 Maximum daily average percent effluent along shoreline transect for current permit and future conditions (1980 simulation).

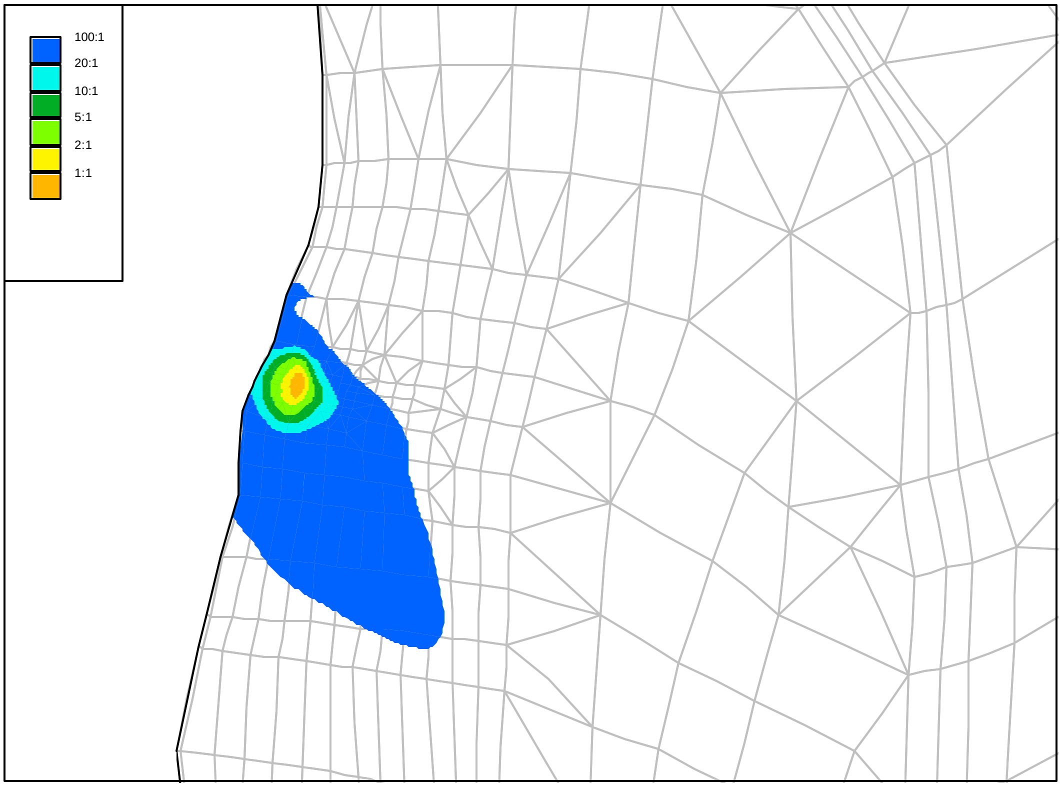


Figure 6-41 Hourly average wastewater dilution contours at slack tide during the 1980 simulation.

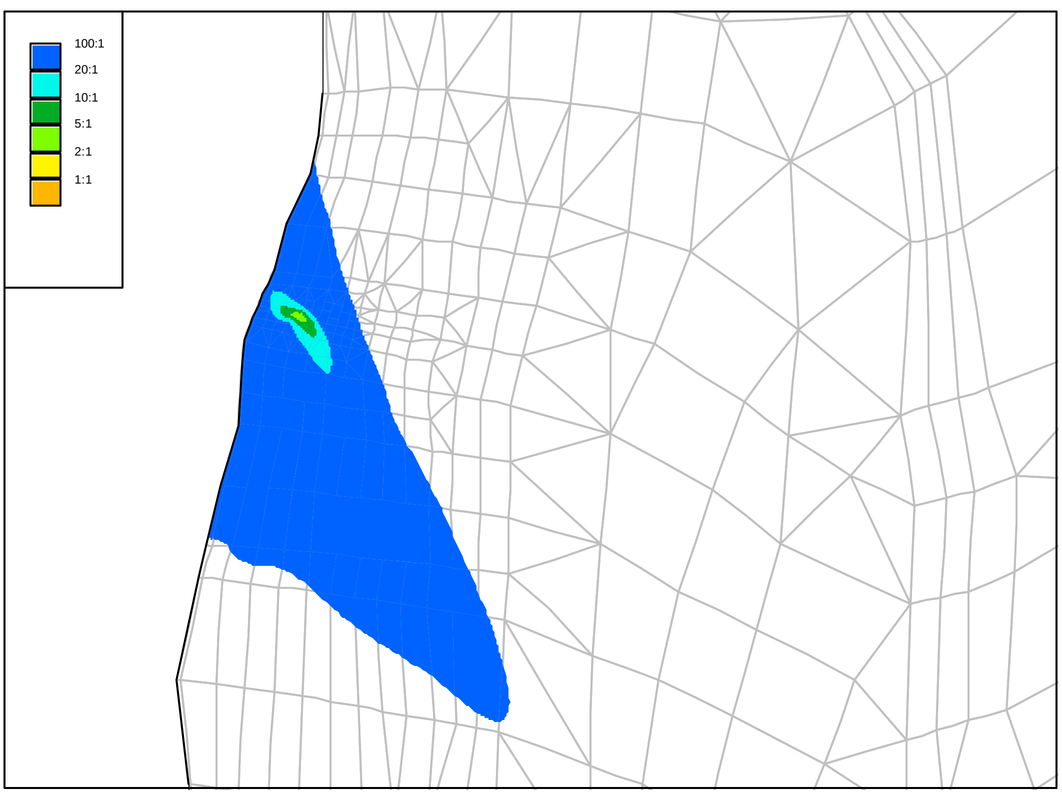


Figure 6-42 Daily average wastewater dilution contours during the 1980 simulation.

7 SUMMARY

The RMA finite element models for 2-D depth averaged flow (RMA-2) and water quality transport (RMA-11) have been configured and applied to simulation of Novato Sanitation District's discharge to San Francisco Bay. The models have been used to evaluate dissolved copper, dissolved nickel and wastewater dilution under a variety of different conditions. Two dry-weather hydrology periods were simulated as well as several different NSD loading scenarios.

7.1 HYDRODYNAMIC MODEL CALIBRATION

An existing finite element representation of the San Francisco Bay-Delta system was refined in the vicinity of the NSD outfall to better represent steep concentration gradients resulting from the NSD discharge. The revised model was re-calibrated for two October – November 1980 with emphasis on stage and velocity measurements in and near San Pablo Bay. This calibration effort demonstrated that the magnitude and phasing of the tide is well represented and good agreement was achieved between the computed and observed velocity.

7.2 WATER QUALITY MODEL CALIBRATION

The water quality transport model was calibrated to salinity data to assure that the model accurately represents the distribution of other dissolved and particulate materials. Calibration of the water quality model to salinity demonstrated that the model does a good job of reproducing observed salinity concentration time series in the area of interest.

Additionally, the water quality model was calibrated to dye study observations to assure proper representation of plume movement near the outfall. The dye study calibration demonstrated that the model reasonably reproduces the dye plume movement, but the simulated dye plume does not spread as far south as observed, and therefore maintains slightly higher concentrations nearer the outfall and lower concentrations near the southwest shoreline. The discrepancy between computed and observed is the result of the 2-D depth averaged approximation, which does not account for stratification induced circulation during periods of higher net Delta outflow, such as the dye study period. However, for the NSD discharge analysis, which focuses on low net Delta outflow periods when stratification does not occur, the model is an appropriate tool.

7.3 DISSOLVED COPPER

The dissolved copper model was calibrated to August 1994 San Francisco Estuary Regional Monitoring Program data. Calibration illustrated that the dissolved copper concentration gradient from the Golden Gate up to Honker Bay is well represented. Computed dissolved copper concentration ranges bracket the August 1994 observed data at all sampling stations from the Golden Gate to Pacheco Creek. At Grizzly Bay and Honker Bay, computed values are slightly higher than observed, possibly as a result of upstream boundary specifications.

The calibrated dissolved copper model was used to compute ambient dissolved copper concentrations resulting from existing, current permit, and proposed future NSD discharge under dry weather conditions. Upgrades to secondary and tertiary treatment processes were considered for the future discharge as well. The proposed future capacity results in an increase in ambient dissolved copper concentration at the outfall of approximately 4 to 5% above the existing condition concentrations, and 1% or less above the current permitted capacity concentrations. With secondary treatment, concentration over the outfall decreases by more than 30% below the current permit concentration. With tertiary treatment, the concentration over the outfall decreases by nearly 50%.

7.4 DISSOLVED NICKEL

The dissolved nickel model was calibrated to August 1994 San Francisco Estuary Regional Monitoring Program data. Calibration illustrated that the dissolved nickel concentration gradient from the Golden Gate up to Honker Bay is well represented. Computed dissolved nickel concentration ranges were within 2% of the August 1994 observed data at all sampling stations from the Golden Gate to Grizzly Bay. At Honker Bay, computed values are slightly higher than observed, possibly as a result of upstream boundary specifications.

The calibrated dissolved nickel model was used to compute ambient dissolved nickel concentrations resulting from existing, current permit, and proposed future NSD discharge under dry weather conditions. Upgrade to tertiary treatment processes was considered for the future discharge rate. The proposed future capacity results in an increase in ambient dissolved nickel concentration at the outfall of approximately 3% above the existing condition concentrations, and less than 1% above the current permitted capacity concentrations. With secondary treatment, concentration over the outfall decreases by approximately 8 to 9% below the current permit concentration.

7.5 TRACER

Tracer simulations were performed for dry weather conditions with the NSD discharge as the only source of tracer. Simulations results showed peak wastewater concentrations over the outfall of approximately 70%. Concentrations fall below 10% within 300 m of the outfall, and below 1% within 2500 m of the outfall.

In terms of dilution, immediately over the outfall dilution can be greater than 1:1 on an hourly averaged basis, and between 5:1 and 10:1 on a daily averaged basis. Hourly averaged dilutions of more than 100:1 are reached within 3300 m of the outfall. Daily averaged dilutions of more than 100:1 are reached within 1400 m of the outfall.

8 REFERENCES

E.H. Smith and Associates, 1978 “Mathematical Model Verification Data for East Marin – Southern Sonoma County Clean Water Grant Project”.

King, I. P., 1986 “Finite Element Model for Two-Dimensional Depth Averaged Flow, RMA-2V, Version 3.3”, Resource Management Associates.

King, I. P., 1995 “RMA-11 – A Two-Dimensional Finite Element Quality Model”, Resource Management Associates.

ATTACHMENT 5
Reasonable Potential Analysis

RPA for Unionized Ammonia[1] (mg/L)	
Median	0.032
Maximum	0.239
Standard Deviation	0.049
Average	0.051
CV	0.959
Number of Samples	89
Pn	0.967
Zpn	1.837
σ^2	0.652
C_{99}	4.725
C_{pn}	3.183
Ratio	1.485
Percent Effluent at Edge of 6:1 Mixing Zone	14.3%
Projected 99th Percentile RWC	0.051
Maximum WQO	0.16
50th Percentile RWC	0.0045
Annual Median WQO	0.025
Reasonable Potential?	No

1. Based on effluent data presented in Attachment 1 in accordance with TSD.

ATTACHMENT 6
Information on Aquatic Life in or Passing through the Mixing Zone

The waters of San Pablo Bay are classified as polyhaline, meaning that salinity ranges between 18.0 and 30.0 ppt. The phytoplankton community is typically dominated by diatoms followed by dinoflagellates and cryptosphores. Most of the phytoplankton species in San Francisco Bay can tolerate broad rangers of salinity and temperature[11], and as a result can be found throughout the Bay-Delta. Similarly, the freshwater species, *Skeletonema potamos* is carried into the Bay with the freshwater flows from the Delta and can be found in San Pablo Bay in higher abundance than other parts of the Bay-Delta[12]. Because of the flow of ocean water from Central Bay into San Pablo Bay, the red algae, *Polysiphonia denudata*, can occasionally be observed floating in the water[13].

The San Pablo Bay zooplankton community consists of small invertebrate organisms that spend all or a portion of their life cycle in the water column and include microzooplankton (tintinnids, rotifers, and copepod nauplii), larger copepods (small crustaceans), cladocerans (small crustaceans or water fleas), and the larvae of benthic and pelagic invertebrate animals and fish (meroplankton). Zooplankton species typically change seasonally with a few species being present throughout the year. Bay meroplankton is dominated by the northern anchovy (*Engraulis mordax*), longfin smelt (*Spirinchus thaleichtys*), Pacific herring (*Clupea pallasii*), plainfin midshipman (*Porichthys notatus*), the ctenophore *Pleruobranchia bachei*, the isopod *Syndotea laticauda*, the shrimps *Palaemon macrodactylus, Crangon franciscorum*, and *C. nigricauda*, the mysid *Neomysis kadiakensis*, and the medusa *Polyorchis spp*.[14] Ovigerous female Bay shrimp, *Crangon franciscorum*, are most abundant in the late winter and spring in South, Central, and lower San Pablo bays. Bay shrimp are commercially harvested within San Francisco Bay as part of a bait fishery.

The abundance and species composition of fish inhabiting the San Francisco Bay-Delta Estuary vary in response to salinity gradients. Salinities in San Pablo Bay vary in response to tidal cycle as well as seasonally in response to Delta outflow. The fish community inhabiting the high-salinity areas of San Francisco Bay , including San Pablo Bay, is typically dominated by northern anchovy (*Engraulis mordax*), which accounts for approximately 90% of the fish taxa observed followed by Pacific herring (*Clupea pallasii*), American shad (*Alosa sapidissima*), jack smelt (*Atherinopsis californiensis*), longfin smelt, and striped bass (*Morone saxatilis*)[15]. Other taxa that are known to be present include Chinook salmon (*Onchorhynchus tshawytscha*), topsmelt (*atherinops affinis*), shiner perch (*Cymatogaster aggregate*), white croaker (*Genyonemus lineatus*), plainfin midshipman, threadfin shad (*Dorosoma petenense*), and walleye surfperch (*Hyperprosopom argenteum*).

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[11] National Oceanographic and Atmospheric Administration (NOAA) 2007a. Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay. Prepared by NOAA National Marine Fisheries Service. Santa Rosa, CA. June 2007.
[12] NOAA 2007a
[13] NOAA 2007a
[14] NOAA 2007a
[15] California Department of Fish and Game (CDFG). 2006 – 2008. Interagency Ecological Program for San Francisco Estuary. Monthly Mid-water and Otter-Trawl Survey Data for San Francisco Estuary.

In the low-salinity areas of Suisun Bay and the western Delta the most abundant taxa include striped bass, prickly sculpin, Pacific staghorn sculpin, threadfin shad, yellowfin goby, and starry flounder. All of these taxa are potentially present within San Pablo Bay, and therefore, in the vicinity of the outfall. Anadromous fish species such as Chinook salmon, steelhead, American shad, striped bass, and sturgeon utilize the entire estuarine system as a migration corridor and foraging habitat.

Several types of aquatic vegetation can be found in San Pablo Bay, including *Ulva/Enteromorpha* spp., which is a frequent inhabitant of shallow mud flats, and eelgrass (Zostera marina)[16].

Benthic invertebrates known to inhabit intertidal mudflats in San Pablo Bay include the amphipods *Ampelisca abdits, Corophium heteroceratum,* and *Monocorophium acherusicum*, the bivalves *Corbula amurensis, Gemma gemma, Macoma petalum*, *Musculista senhousia*, *Mya arenaria and Venerupis philippinarum*, the bryozoan *Anguinella palmate*, the cumacean *Nippoleucon hinumensis*, the shrimp *Pyromaia tuberculata*, the gastropod snails *Ilyanassa obsolete* and *Sakuraeolis enosimensis*, and the polychaete worms *Euchone limnicola, Heteromastus filiformis,* and *Sabaco elongates*[17].

The northwest region of the San Pablo Bay is typically heavily influenced by freshwater flow from the Petaluma River. Depending on the winter storm season and the amount of freshwater flows in to the Bay, seasonal shifts in marine biota present can be expected to occur. All marine communities go through some seasonality with benthic infauna increasing productivity during the spring and summer months. However, the greatest influencing factor for most of the north San Pablo Bay is the influence of high freshwater flows from the Petaluma River and any increased sediment load carried by winter storms into the north region of the San Pablo Bay. Naturally occurring high freshwater flow over the mudflats and near subtidal benthic habits often results in massive die-off of benthic invertebrates that can require several years to recover.

[16] Merkel & Associates, Inc. 2005. Eelgrass Community Pilot Study for San Francisco Bay: Techniques for Examining Invertebrate and Fish Assemblages within Multiple Eelgrass Beds. Report for San Francisco – Oakland Bay Bridge East Span Seismic Safety Project. October 2005.

[17] NOAA 2007a

ATTACHMENT 7
Receiving Water Unionized Ammonia Concentrations at RMP Station BD20

Date	Station	Salinity (o/oo)	Temperature (K)	pH	Percent Unionized	Total Ammonia (mg/L)	Unionized Ammonia (mg/L)
09/15/93	BD20	24.0	293.7	7.8	2.22	0.018	0.0004
02/07/94	BD20	20.0	284.7	7.8	1.17	0.126	0.0015
04/26/94	BD20	21.9	287.1	8.0	2.33	0.013	0.0003
08/22/94	BD20	25.4	292.2	8.0	3.03	0.044	0.0013
02/13/95	BD20	11.7	285.0	7.7	1.00	0.074	0.0007
04/19/95	BD20	7.0	285.9	7.8	1.47	0.090	0.0013
08/21/95	BD20	20.2	293.5	8.0	3.20	0.014	0.0005
02/12/96	BD20	3.9	286.2	7.5	0.72	0.078	0.0006
04/22/96	BD20	9.0	289.2	8.0	2.43	0.028	0.0007
07/24/96	BD20	17.3	294.2	7.8	2.62	0.004	0.0001
01/27/97	BD20	0.4	283.5	7.6	0.69	0.091	0.0006
08/04/97	BD20	22.2	293.1	7.7	1.75	0.073	0.0013
02/02/98	BD20	4.2	284.3	7.6	0.70	0.110	0.0008
04/14/98	BD20	3.7	287.1	8.3	4.58	0.045	0.0021
07/27/98	BD20	14.5	294.2	8.0	3.42	0.039	0.0013
02/08/99	BD20	6.9	283.4	7.6	0.71	0.096	0.0007
04/19/99	BD20	12.2	288.8	7.9	1.94	0.040	0.0008
07/19/99	BD20	20.7	291.9	7.9	2.49	0.094	0.0023
02/07/00	BD20	10.5	284.9	7.8	1.12	0.161	0.0018
07/17/00	BD20	22.4	292.2	7.9	2.70	0.092	0.0025
02/12/01	BD20	19.0	282.5	8.0	1.69	0.149	0.0025
08/06/01	BD20	25.2	293.6	8.0	3.21	0.108	0.0035

APPENDIX D

RESPONSE TO COMMENTS

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

Response to Written Comments on March 2010 Draft NPDES Permit and Cease and Desist Order for Novato Sanitary District and Collection System Novato, Marin County

The Regional Water Board received written comments on a tentative permit and a tentative cease and desist order distributed for public comment from the following parties:

1. Novato Sanitary District, dated April 7, 2010
2. Bay Area Clean Water Agencies, dated April 7, 2010

This response to those comments summarizes each comment in *italics* (often quoted and sometimes paraphrased for brevity) followed by the Regional Water Board staff response. For the full context and content of each comment, refer to the comment letters.

NOVATO SANITARY DISTRICT (DISTRICT)

District Comment Nos. 1- 4. *The District requests to make minor revisions to Table 4 (and Table F-1) to correctly characterize the plant's secondary capacity, and to make revisions to permit findings to reflect the current operations and recycled water program.*

District Comment Nos. 1-4. We revised the tentative permit as requested.

District Comment No. 5. *The District requests the Treatment Facilities Upgrade Project description include information about the cost ($90 million) of the project.*

Response to District Comment No. 5. We revised the tentative permit based on this request (toward the beginning of section II.B.4).

District Comment No. 6. *The District requests Finding E pertaining to the California Environmental Quality Act (CEQA) be revised for accuracy (replace "provisions" with "Chapter 3").*

Response to District Comment No. 6. We revised the tentative permit as requested.

District Comment No. 7. *The District requests that the phrase pertaining to Best Professional Judgment be removed from Finding F, as it is not applicable.*

Response to District Comment No. 7. We revised the tentative permit as requested.

District Comment No. 8. *The District requests Finding O pertaining to the Endangered Species Act be removed from the tentative permit, as it does not apply.*

Response to District Comment No. 8. We disagree. This is a statement of fact that appears in all reissued NPDES permits using the State standard template. It clarifies that nothing in the tentative permit should be construed as authorizing any taking of a threatened or endangered species under the California Endangered Species Act or the Federal Endangered Species Act. Finding O is a reminder that the tentative permit, with its prohibitions and limitations, is intended to protect beneficial uses, including the preservation of rare and endangered species. As stated in the finding, the District is responsible for meeting all Endangered Species Act requirements.

In addition, we believe this requirement is consistent with the "Memorandum of Agreement (MOA) between the Environmental Protection Agency, Fish and Wildlife Service and National Marine Fisheries Service Regarding Enhanced Coordination Under the Clean Water Act and Endangered Species Act," Notice, February 22, 2001. (See http://www.epa.gov/fedrgstr/EPA-WATER/2001/February/Day-22/w2170.htm.) This MOA describes coordination regarding the protection of endangered and threatened species under the Endangered Species Act and the Clean Water Act's NPDES program. It provides guidance to regional and field offices regarding consultations on U.S. EPA's approval of new or revised water quality standards, and addresses the procedures that U.S. EPA and the Services will follow in overseeing the operation of state NPDES permits to protect listed species and habitats.

District Comment No. 9. *The District requests that Finding R pertaining to requirements under state law be removed. The District argues that there are many provisions in the permit promulgated under state law only, including requirements for technology-based and water-quality based effluent limits as well as special studies, pollution prevention, and other activities. In particular, there are several instances where the permit requirements are more stringent than required by the federal Clean Water Act.*

Response to District Comment No. 9. We disagree. All requirements in the tentative permit are required to protect the waters of the United States. Therefore, these requirements are to implement both State and federal law, and the Regional Water Board is authorized to impose them under the federal Clean Water Act. None of the requirements in this permit implement State law only.

District Comment No. 10. *The District requests that the following text be added to language in Discharge Prohibition III.B to be consistent with other parts of the permit: "the requirements in section VI.C.4(c) of this Order are satisfied and approval from the Executive Officer is received."*

Response to District Comment No. 10. We did not revise the tentative permit as requested. This prohibition states specific conditions under which blending is allowed. Executive Officer approval is not required in these instances. The requested change does not provide any additional clarity.

District Comment No.11. *The District requests the language in Discharge Prohibition III.C be revised with the correct flow monitoring location: flow will be monitored at A-002, the Novato Plant influent monitoring location, because the new plant is not equipped with effluent flow monitoring devices.*

Response to District Comment No. 11. We revised the tentative permit as requested.

District Comment No. 12. *The District requests additional time to report estimated dilution, to comply with Prohibition E, in the event of an emergency discharge.*

Response to District Comment No. 12. We revised the tentative permit to remove the requirement for reporting dilution associated with emergency discharges. Due to the tidal influence of the receiving water, dilution of emergency discharges may not be very different than that for wet season discharges. The District's 1997 dilution study contains a relatively comprehensive evaluation of dilution. Considering the time and cost associated with additional studies to estimate dilution for specific emergency discharges, which may not provide useful information, removing this requirement seems appropriate.

District Comment No. 13. *The District requests that the units for reporting enterococcus bacteria be changed from colonies per 100 mL to CFU/100ml or MPN/100 mL. The units of MPN/100 mL or CFU/100 mL for enterococcus bacteria is needed for conducting an analysis using either the membrane filtration method or the IDEXX Enterolert Method, both approved methods (40 CFR Part 136). In addition, consistency is needed in the permit with respect to this parameter. The effluent limitation is expressed as colonies/100 mL in the permit; however, in Table E-4 the units are expressed as MPN/100 mL."*

Response to District Comment No. 13. We revised the tentative permit (Table E-4) as requested.

District Comment No. 14. *The District requests that the fecal coliform bacteria effluent limitation be removed from the tentative permit. The District argues that the District's previous Bacteriological Confirmation study, dated June 21, 2006, confirms that the receiving water adjacent to the outfall is a "lightly used area." The District's outfall is located 950 feet offshore in the mudflats of San Pablo Bay, which are subject to daily tidal fluctuations. The vicinity of the outfall is extremely difficult to access and no shellfish harvesting occurred during the confirmation study period. Further, according to information from the California Department of Fish and Game (CDFG), no commercial shellfish harvesting occurs within San Francisco Bay-Delta.*

The District further argues that fecal coliform effluent limits are based on the water quality objectives for shellfish harvesting contained in Basin Plan Table 3-1, and these objectives are based on National Shellfish Sanitation Program (NSSP) guidelines intended to protect areas where recreational or commercial shellfishing occurs. The State Water Resources Control Board *is currently conducting a project to re-assess the areas designated for the shellfish harvesting beneficial use. Therefore, given the current reassessment of the shellfish harvesting beneficial use designations and the lack of commercial or recreational activities observed in the District's receiving waters, the District concludes that inclusion of effluent limits based on shellfish harvesting is inappropriate.*

The District is also concerned that it would be receiving an effluent limit for a constituent for which it has never conducted any effluent monitoring. The proposed fecal coliform effluent limits are very low, and compliance attainability is uncertain and expected to be unachievable. The District requests that, if the Regional Water Board still desires to protect nonexistent shellfish harvesting, the District would prefer total coliform limits (instead of both enterococcus plus fecal coliform limits), or dilution for fecal coliform limits, as alternatives to the proposed fecal coliform limits.

Response to District Comment No. 14. The District's receiving water is San Pablo Bay, and the Basin Plan lists San Pablo Bay as supporting shellfish harvesting. While it may be true that shellfish harvesting in the area has not been observed, the Regional Water Board cannot de-designate a beneficial use through permit reissuance; it has to be done through Basin Plan amendment. Therefore, this permit must include appropriate bacteriological effluent limits to protect shellfish harvesting.

However, we agree that the Regional Water Board may establish a mixing zone for fecal coliform, thereby allowing dilution credits when calculating effluent limits. The District provided a dilution analysis, dated April 7, 2010, justifying a mixing zone with 10:1 dilution. We revised the tentative permit to grant a dilution credit when calculating the fecal coliform effluent limit. Specifically, we calculated fecal coliform effluent limits based on a 10:1 dilution credit (or dilution credit = 9) and included the new effluent limits in the revised tentative permit.

District Comment No. 15. *The District requests that the total chlorine residual limitation and monitoring requirements apply only when chlorination is used for disinfection of the effluent, stating, "The District will be implementing an UV disinfection system as part of the Treatment Facilities Upgrade project. When the UV system is operational, and chlorination is not used for disinfection, a total chlorine residual limitation is not necessary."*

Response to District Comment No. 15. We revised the tentative permit as requested (see Effluent Limit for chlorine residual and Table E-3 footnote).

District Comment No. 16. *The District requests that reasonable potential for lead be removed. The lead reasonable potential analysis was conducted using the ambient total recoverable lead concentration data collected by the Regional Monitoring Program (RMP) at the San Pablo Bay RMP station (BD20), as well as total recoverable lead concentrations from the District's effluent monitoring data from January 2004 through April 2009. Reasonable potential was triggered only by the receiving water data. The District's lead concentrations are well below the lowest applicable water quality objective expressed in the total recoverable form.*

The District contends that the water quality criteria in the California Toxics Rule are expressed as dissolved lead concentrations. A review of the actual receiving water dissolved lead concentrations shows that the receiving water dissolved lead concentrations are well below the lowest applicable dissolved concentrations. In particular, the ambient maximum dissolved lead concentration at 0.37 μg/L is much lower than the lowest applicable dissolved criterion of 4.8 μg/L. Using this more scientifically accurate approach, reasonable potential should not be triggered. The District believes this approach is also consistent with SIP Section 1.2, which describes the method for determining reasonable potential.

Response to District Comment No. 16. We agree. We revised the tentative permit to remove reasonable potential for lead, and, as a result, we removed the effluent limits for lead. We still used the total recoverable lead effluent concentrations for the reasonable potential analysis, with the CTR default conversion factors (used to convert dissolved metal criteria to total recoverable criteria), but the effluent data do not trigger reasonable potential.

District Comment No. 17. *The District requests that the existing ammonia effluent limit be retained since reasonable potential is not triggered as shown by a comprehensive mixing zone analysis.*

The District's plant upgrade project, to be completed by December 31, 2010, is designed to meet an average monthly ammonia effluent limit of 6.0 mg/L. This limit has been in the District's permit for many years and was expected to continue for the planning horizon of the capital improvements. In addition, the District believes this limit is already very low in comparison to other secondary wastewater treatment plants in the Bay Area. The tentative permit contained a proposed 1.3 mg/L monthly average effluent limit and 4.7 mg/L maximum daily effluent limit for ammonia.

The District has submitted a mixing zone analysis that contains a request for the Regional Water Board to grant a 6:1 dilution credit for ammonia, based on modeling and analysis of mixing zone size and other conditions in support of SIP requirements. It is expected that, with this approach, and taking antibacksliding into account, the District would retain its 6.0 mg/L average monthly effluent limit as a technology-based limit, since, based on USEPA's Technical Support Document *reasonable potential analysis procedure, there would be no reasonable potential to cause or contribute to the exceedance of water quality objectives.*

Response to District Comment No. 17. We did not revise the tentative permit as suggested, but we made other changes that resulted in ammonia limits similar to those requested.

The revised tentative permit finds reasonable potential for ammonia because the discharge contains ammonia, and, based on effluent data, the projected maximum receiving water un-ionized ammonia concentration is above the Basin Plan water quality objectives. Therefore, the revised tentative permit contains water quality-based effluent limits for ammonia.

We did not consider dilution in the reasonable potential analysis. The Basin Plan (Section 4.5.3) states that in developing and setting water quality-based effluent limitations for toxic pollutants, all attempts shall be made to ensure consistency among permits when exercising best professional judgment. To set limits for toxic pollutants (section 4.5.5.2), the Basin Plan states that water quality-based effluent limits shall be calculated according to the SIP. Section 3.3.20 of the Basin Plan refers to ammonia as a toxic pollutant, so the use of the SIP to determine and establish limits for ammonia is consistent with the Basin Plan. The SIP does not provide for dilution in reasonable potential analysis in part because of the enclosed nature of bays and estuaries. We have not considered dilution in reasonable potential analysis for ammonia in any permits since 2007 when the State Water Board's EBMUD remand order brought the issue of the need for ammonia limits to our attention. Thus, not considering dilution in the reasonable potential analysis is consistent with Basin Plan policy.

The water quality-based effluent limits for ammonia reflect the smallest practicable mixing zone and dilution credit. The District provided a comprehensive mixing zone and dilution analysis, dated April 7, 2010, to justify a mixing zone in accordance with SIP requirements. The analysis supports a mixing zone associated with a 6:1 dilution credit as meeting all SIP criteria. This zone would be about 24 acres in area covering about 0.04% of San Pablo Bay. However, the SIP also requires that a mixing zone be as small as practical. In this case, the District can comply with water quality-based effluent limits calculated based on a smaller mixing zone and smaller dilution credit. Since the District claims the upgraded plant was designed and will be constructed to comply with an average monthly effluent limit of 6.0 mg/L, we conclude that any mixing zone resulting in a limit higher than this would not be as small as practicable. The dilution credit associated with the smallest practicable mixing zone for ammonia is 4.6:1 or D = 3.6. This dilution credit yields an average monthly effluent limit of 6.0 mg/L and a maximum daily effluent limit of 21 mg/L.

The District will be able to comply with these effluent limits when the plant upgrade project is completed (June 30, 2011). Until then, the feasibility of compliance is uncertain. For this reason, the revised tentative cease and desist order continues to address threatened non-compliance with ammonia limits. However, full compliance is required when the plant upgrades are complete.

District Comment No. 18. *The District requests that the criteria for accelerated chronic toxicity monitoring be consistent with the District's existing NPDES permit, which requires accelerated chronic toxicity monitoring when both a three-sample median of 1 chronic toxicity unit and a single-sample maximum of 2 TUc or greater are exceeded. The tentative order indicates that accelerated monitoring shall be conducted when either of these two triggers are exceeded.*

Response to District Comment No. 19. We disagree. The use of "and" instead of "or" in this requirement is inconsistent with the Basin Plan and other NPDES permits in this region. Basin Plan Table 4-6 includes conditions for accelerated monitoring, such as the three-sample median trigger and the single-sample maximum trigger. Basin Plan section 4.5.5.3.2 states, "Dischargers with chronic toxicity limits in their permits monitoring quarterly or less frequently are required to accelerate the frequency to monthly (or as otherwise specified by the Executive Officer) when conditions such as those listed in Table 4-6 occur." Our interpretation of this requirement is that accelerated monitoring must be conducted, at a minimum, when any of these individual triggers is exceeded.

District Comment No. 19. *The District requests that the appropriate chronic toxicity test method, applicable to the District's test species, be included in Section IV.C.2 of the tentative permit, specifically "Short-Term Methods For Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms," currently fourth edition (EPA-821-R-02-013)."*

Response to District Comment No. 19. We agree. We revised the tentative permit as requested.

District Comment No. 20. *The District requests the removal of the duplicative and vague requirements in Provision VI.C.2(d) pertaining to reclamation pond operations. The District proposes to remove the last requirement in this provision, which is new in this tentative order:*

> *If the Discharger previously diverts treated wastewater that are of any water quality concern other than chlorine residual, e.g., effluent with abnormal appearance (color, turbidity, etc.), bypassed effluent, during plant upset, to these ponds, when discharging from the reclamation ponds to San Pablo Bay, the Discharger shall arrange all routine effluent sampling on the days that that the largest amount of water is released from the ponds. Attachment E, Monitoring and Reporting Program specifies the monitoring requirements for this scenario.*

The District claims that given the nature of discharges from the storage ponds to the combined outfall, it is impractical to predict when the largest amount of water will be released from the ponds. Since discharges from the storage ponds to San Pablo Bay during both the wet and dry weather months must already meet the requirements of the tentative permit, the added paragraph is unnecessary and has potential to cause confusion in interpretation.

The District also proposes to monitor the pond water once before a discharge from the ponds occurs during the wet season.

Response to District Comment No. 20 We agree. We removed the last requirement in this provision. Because unused effluent stored in the storage ponds will be discharged to San Pablo Bay, these discharges shall be subjected to effluent limits in the permit. Therefore, we revised the tentative permit to specify monitoring requirements when discharging from the storage ponds. The data collected from this monitoring will be used to determine compliance with applicable effluent limits.

District Comment No. 21. *The District requests that the Biosolids Management Practices Requirements, specified in the Special Provisions of the tentative permit, be consistent with the 40 CFR Part 503 regulations. Section VI.C.5.b.(3) of the tentative permit requires that only biosolids that have been digested be placed in the dedicated disposal site. The 503 regulations allow for disposal of raw sludge in a dedicated disposal site provided that the vector attraction reduction requirement described in 503.33(b)(11) is met (daily cover of active disposal site with soil or other material).*

Response to District Comment No. 21. We agree. We revised the tentative permit as requested.

District Comment Nos. 22 and 23. *The District requests the Copper Action Plan and Cyanide Action Plan (Task 1 – identify sources and Task 2 under both provisions) be revised to reflect the tasks already completed by the District. The District has completed both Tasks 1 and 2 of the Copper Action Plan and Cyanide Action Plan as required by Order No. R2-2005-0026 (amending R2-2004-0093).*

Response to District Comment Nos. 22 and 23. We revised the copper and cyanide action plans to acknowledge that the District has completed these tasks, and be more consistent with our most updated, and clearer, permit language.

District Comment No. 24. *The District requests the Monitoring Station Location Names remain as they were designated in both Order R2-2004-0093 and Order R2-2008-0026.*

Response to District Comment No. 24. We agree. We revised the tentative permit to maintain the same names for the monitoring station locations as were designated in both Order R2-2004-0093 and Order R2-2008-0026.

District Comment No. 25. *The District requests the location in which treated effluent is monitored be consistent with the 2008 Permit Amendment (Order No. R2-2008-0026) and the Treatment Facilities Upgrade Project.*

Response to District Comment No. 25. We agree. We revised the tentative permit to be consistent with the District's current practice that all effluent monitoring is conducted at E-002 (Novato Plant effluent monitoring station), except acute toxicity, which is monitored at the final outfall station (E-003) before the plant upgrade project is completed.

District Comment No. 26. *The District requests that flow be monitored at the influent monitoring station, consistent with the Treatment Facilities Upgrade Project. The new Plant is not equipped with effluent flow measuring devices.*

Response to District Comment No. 26. We agree. We moved the flow monitoring requirement from E-002 (Table E-3) to A-002, influent flow monitoring (Table E-2).

District Comment No. 27. *The District requests that total chlorine residual monitoring be required only when chlorination is used for disinfection of the effluent because UV disinfection will replace the current chlorination for discharges to the Bay and storage ponds.*

Response to District Comment No. 27. We agree. We revised the tentative permit (Table E-3, Footnote 4) as requested.

District Comment No. 28. *The District requests that the requirement to calculate mass for total chlorine residual be removed. Calculating mass (kg/day) for total chlorine residual is not in the existing permit, Order No. R2-2004-0093, and is not necessary for any practical purposes.*

Response to District Comment No. 28. We agree. We revised the tentative permit (Table E-3) as requested.

District Comment No. 29. *The District requests the frequency of carbon tetrachloride monitoring be revised from monthly to twice per year. Since only one outlier triggered reasonable potential, the District expects that this value had quality control issues, and this monitoring frequency is consistent with other organic priority pollutants.*

Response to District Comment No. 29. We agree. We revised Table E-3 of the tentative permit as requested.

District Comment No. 30. *The District requests that the pretreatment program monitoring be allowed to satisfy relevant parts of the Remaining Priority Pollutants effluent monitoring. The effluent pretreatment monitoring conducted in accordance with Table E-5 of the tentative permit should be allowed to satisfy effluent monitoring requirements in Table E-4. This allowance is consistent with other recently adopted NPDES permits.*

Response to District Comment No. 30. We agree. We revised Table E-3, footnote 6, as requested pertaining to monitoring of the Remaining Priority Pollutants.

District Comment No. 31. *The District requests that monitoring frequency of Standard Observations be monthly, consistent with the District's existing NPDES permit.*

Response to District Comment No. 31. We agree. We revised Table E-3 of the tentative permit as requested.

District Comment No. 32. *The District requests that the Near-Field Receiving Water Monitoring Requirements contained in Table E-4 be integrated into a Special Provision study in the tentative permit, and that Table E-4 be removed from the Monitoring and Reporting Program. The intent of the newly established receiving water monitoring station (RSW-001) and monitoring requirements contained in Table E-4 are to characterize the near-field ambient ammonia conditions. A more effective approach, consistent with other recently adopted shallow water discharge NPDES permits, is to include a provision requiring the District to conduct a special study that evaluates diurnal receiving water ammonia conditions.*

Response to District Comment No. 32. We agree. We removed Table E-4 from the Monitoring and Reporting Program, and added a provision requiring completion of an ammonia receiving water study in the revised tentative permit. This change will generate the same useful information about receiving water quality.

District Comment No. 33. *With the removal of reasonable potential for ammonia and preservation of existing effluent limits, the ammonia language in the CDO should be removed from the Cease and Desist Order.*

Response to District Comment No. 33. We disagree. See our response to District Comment No. 17 above. Because effluent data from the existing treatment plant shows that it cannot immediately comply with the new ammonia water quality-based effluent limits (WQBELs), a cease and desist order is necessary. However, we expect the plant to achieve full compliance with these WQBELs once the upgrade project is completed. Therefore, we revised the tentative cease and desist order to move ammonia under the tasks required by Table 3 and deleted the ammonia-specific tasks.

District Comment No. 34. *The District requests the requirement to collect multiple grab samples for pretreatment monitoring be removed because it sees no apparent regulatory basis for requiring these sampling procedures. 40 CFR 403.12 is incorrectly referenced as defining sampling requirements for publicly-owned treatment works (POTWs). This section describes sampling requirements for categorical industrial users and annual reporting requirements for POTWs. It does not specify grab sampling or composite sampling for POTWs.*

The Fact Sheet further references Attachment G, Regional Standard Provisions, and Monitoring and Reporting Requirements, as a source of the required sampling regime. Attachment G contains the definition of a composite sample and requires, "Grab samples comprising time-based composite samples shall be collected at intervals not greater than those specified in the MRP." Attachment G, however, only provides a definition, not a regulatory basis for the requirement for multiple grab samples.

Response to District Comment No. 34. We did not revise the multiple grab sampling requirement for VOC, BNA, hexalvalent chromium, and cyanide. Because discharges from industrial users usually are intermittent, concentrations in the plant's influent and effluent vary (may be significant in influent) throughout the day. Multiple grab sampling for the pretreatment program monitoring will provide samples more representative of daily treatment plant operations. However, we acknowledged that the District is not staffed 24 hours a day; therefore, we revised footnote 4a to Table E-5, to allow the grab samples to be equally spaced throughout a work shift.

Attachment H, Appendix H-3 includes the requirements for biosolids pretreatment sampling, which states that the biosolids analyzed are to be a composite sample of biosolids for final disposal (more than one grab sample). We revised the table to specify a sampling frequency for biosolids monitoring, which is in the existing permit and was inadvertently left out in the initial Tentative Order.

We also revised the Fact Sheet to include a more accurate rationale for these requirements.

District Comment No. 35. *The District requests the removal of the Blending Event Monitoring Requirements from the Monitoring and Reporting Program since they duplicate Attachment G.*

Attachment G was adopted as part of the blanket permit amendment in March to standardize requirements among dischargers. The District considers the addition of this requirement to run counter to this purpose for Attachment G. Having separate and slightly different duplicative requirements creates confusion by having different requirements in different parts of the permit for the same activity.

Response to District Comment No. 35. We agree. The proposed permit does not include the daily maximum effluent limit for enterococcus (which is used as a trigger for monitoring for all other pollutants in the existing permit). Since TSS is more correlated with concentrations of other pollutants, using TSS as a trigger alone is appropriate.

The District has started half of its new secondary treatment units on April 12, 2010, such that the plant can now provide secondary treatment for 23.5 million gallons per day (mgd) of flow during wet weather (a big increase from 9 mgd). Based on historical flow data, blending is not likely to occur during the 2010-2011 discharge season, and no blending will occur after the upgrade project is completed by June 30, 2011. Therefore, the District will not likely need to perform any more blending monitoring in the future.

District Comment No. 36. *The District requests that the Fact Sheet be revised to correctly reflect the* Technical Support Document *Reasonable Potential Analysis procedure. The text describing Step 3 of the procedure includes a definition for sigma squared that is inconsistent with the* Technical Support Document*.*

Response to District Comment No. 36. We agree. We revised the tentative permit to correct this error. The reasonable potential analysis result remains the same**.**

District Comment No. 37. *The District requests that the ammonia Reasonable Potential Analysis be revised to eliminate an erroneous effluent data value and to reflect the corrected sigma and sigma squared values. One of the un-ionized ammonia values used in the Reasonable Potential Analysis calculations, dated 1/10/2009, was included even though pH and temperature data were not available for that date. This un-ionized ammonia value was calculated as if the temperature and pH values were equal to zero, resulting in an outlier that skewed the statistical calculations. This value should be removed from the data set, and the subsequent calculations should be revised. In addition, the corrected sigma and sigma squared values (see previous comment), should also be reflected in the calculations, and the text should be revised.*

Response to District Comment No. 37. We revised the tentative permit to correct this error.

District Comment No. 38. *The District requests that the Regional Water Board include a 6:1 dilution ratio (dilution credit=5) in the ammonia Reasonable Potential Analysis calculations, as discussed in the District's Mixing Zone Analysis.*

Response to District Comment No. 38. As discussed in our Response to District Comment No. 17, we do not believe it would be appropriate to consider dilution when undertaking the ammonia reasonable potential analysis for this permit. However, we did use a dilution credit of

4.6:1 (dilution credit = 3.6) to calculate a monthly average effluent limit of 6.0 mg/L and a daily maximum effluent limit of 21 mg/L.

District Comment Nos. 39 - 44. *Comments 39 through 44 pertain to typographical errors contained in the tentative permit.*

Response to District Comment No. 39-44. We revised the tentative permit to correct these errors.

BAY AREA CLEAN WATER AGENCIES (BACWA)

BACWA Comment No. 1. BACWA made the same comment as District Comment No. 14 regarding fecal coliform effluent limits to protect shellfish harvesting.

Response to BACWA Comment No. 1. See our Response to District Comment No. 14.

BACWA Comment No. 2. *BACWA is concerned that the tentative permit's average monthly effluent limit for ammonia is more than four times lower than that in the District's current permit. The District's $90 million plant upgrade project does not include changes that will allow the District to achieve the new ammonia limits. The District has completed and will shortly be submitting the results of mathematical modeling and an analysis of mixing zone size and other conditions in support of State Implementation Policy requirements that will demonstrate that the previous permit's ammonia effluent limit is protective of water quality. BACWA requests that the tentative order retain the previous permit's ammonia effluent limits until the Regional Water Board evaluates the study.*

Response to BACWA Comment No. 2. See our Response to District Comment No. 17.

STAFF INITIATED TEXT CHANGES

(1) Added findings regarding Sediment Quality Objectives (under II.H, Fact Sheet section III.C.1, IV.D.2, IV.D.3.e).

(2) Added a finding on Compliance Schedules and Interim Requirements as required by Standardized permit template (Finding II.K of the revised tentative permit).

(3) Updated findings on progress of the District's construction project (Finding II.B.4, Fact Sheet Finding II.A)

(4) Revised Monitoring and Reporting Program, Acute Toxicity Monitoring, V.A.5, to be consistent with updated permit requirements;

(5) Added Appendix E (Chronic Toxicity) because they were inadvertently left out in the initial Tentative Order.

(6) Removed or simplified some findings to avoid redundancy with Attachment G, such as Finding VII. Compliance Determination; Monitoring and Reporting Program, Section I, X.B.4.f, on determing compliance with DNQ/ND.

(7) Revised the definition of "Quarter" in Table E-6 to line up with the dry/wet season, and to be consistent with other shallow water discharge permits.

(8) We replaced the old Attachment G in the initial Tentative Order with the newly adopted Attachment G (March 2010).