

GWF Nichols Road (Site V) Power Plant
NPDES Permit No. CA0029122

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

NPDES PERMIT NO. CA0029122

Order No.: R2-2005-XXXX

WASTE DISCHARGE REQUIREMENTS FOR:

**GWF POWER SYSTEMS, L.P.
NICHOLS ROAD (SITE V) POWER PLANT
BAY POINT, CONTRA COSTA COUNTY**

Adopted: May 18, 2005

Effective: May 19, 2005

TABLE OF CONTENTS

FINDINGS..... 1

FACILITY DESCRIPTION 1

PROCESS DESCRIPTION 2

EFFLUENT CHARACTERIZATION 2

STORM WATER DISCHARGE..... 2

REGIONAL MONITORING PROGRAM..... 3

APPLICABLE PLANS, POLICIES AND REGULATIONS 3

BENEFICIAL USES 3

CLEAN WATER ACT SECTION 316(A) – THERMAL IMPACT 3

CLEAN WATER ACT SECTION 316(B) – ENTRAINMENT AND IMPINGEMENT IMPACTS 4

BASIS FOR EFFLUENT LIMITATIONS..... 4

 General Basis..... 4

 Specific Basis 11

 Development of Effluent Limitations..... 16

 Whole Effluent Acute Toxicity 24

 Whole Effluent Chronic Toxicity..... 24

POLLUTANT MINIMIZATION/ POLLUTION PREVENTION..... 24

REQUIREMENT FOR MONITORING OF POLLUTANTS IN EFFLUENT AND RECEIVING WATER TO
 IMPLEMENT NEW STATEWIDE REGULATIONS AND POLICY 25

MONITORING REQUIREMENTS (SELF-MONITORING PROGRAM)..... 25

BASIN PLAN DISCHARGE PROHIBITION 26

REMOVAL OF PCB PROHIBITION 26

OTHER DISCHARGE CHARACTERISTICS AND PERMIT CONDITIONS 26

A. DISCHARGE PROHIBITIONS 27

B. EFFLUENT LIMITATIONS..... 27

 CONVENTIONAL POLLUTANTS 27

 TOXIC POLLUTANTS..... 28

C. RECEIVING WATER LIMITATIONS..... 31

D. PROVISIONS 34

 1. PERMIT COMPLIANCE AND RESCISSION OF PREVIOUS WASTE DISCHARGE REQUIREMENTS 34

 2. EFFLUENT CHARACTERIZATION FOR SELECTED CONSTITUENTS..... 34

 3. RECEIVING WATER MONITORING..... 34

 4. CYANIDE COMPLIANCE SCHEDULE AND SITE-SPECIFIC OBJECTIVE (SSO) STUDY 35

 5. POLLUTANT PREVENTION / POLLUTION MINIMIZATION PROGRAM..... 35

 6. COMPLIANCE ATTAINABILITY ANALYSIS FOR LEAD, NICKEL, AND ZINC 37

 7. STORM WATER POLLUTION PREVENTION PLAN AND ANNUAL REPORT 38

 8. BEST MANAGEMENT PRACTICES PROGRAM..... 38

 9. WHOLE EFFLUENT ACUTE TOXICITY..... 38

 10. WHOLE EFFLUENT CHRONIC TOXICITY 39

 11. OPTIONAL SITE-SPECIFIC TRANSLATOR STUDY AND SCHEDULE FOR COPPER, LEAD,
 AND NICKEL 40

 12. OPTIONAL MASS OFFSET 41

 13. OPERATIONS AND MAINTENANCE MANUAL, REVIEW AND STATUS REPORTS 41

GWF Nichols Road (Site V) Power Plant
NPDES Permit No. CA0029122

14	CONTINGENCY PLAN, REVIEW AND STATUS REPORTS.....	42
15.	303(D)-LISTED POLLUTANTS, SITE-SPECIFIC OBJECTIVE AND TMDL STATUS REVIEW	42
16.	NEW WATER QUALITY OBJECTIVES	42
17.	SELF-MONITORING PROGRAM	42
18.	STANDARD PROVISIONS AND REPORTING REQUIREMENTS	43
19.	CHANGE IN CONTROL OR OWNERSHIP	43
20.	PERMIT REOPENER	43
21.	NPDES PERMIT EFFECTIVE DATE	43
22.	ORDER EXPIRATION AND REAPPLICATION	43

SELF-MONITORING PROGRAM, PART B

I.	DESCRIPTION OF SAMPLING AND OBSERVATION STATIONS.....	3
II.	SCHEDULE OF SAMPLING, ANALYSES AND OBSERVATIONS	3
III.	REPORTING REQUIREMENTS.....	7
IV.	ADDITIONS TO PART A OF SELF-MONITORING PROGRAM	8
V.	CHRONIC TOXICITY MONITORING REQUIREMENTS	9
VI.	CHRONIC TOXICITY REPORTING REQUIREMENTS	10
VII.	MISCELLANEOUS REPORTING	10
VIII.	SELECTED CONSTITUENTS MONITORING.....	11
IX.	MONITORING METHODS AND MINIMUM DETECTION LEVELS	11
X.	SELF-MONITORING PROGRAM CERTIFICATION	11

GWF Nichols Road (Site V) Power Plant
NPDES Permit No. CA0029122

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

NPDES PERMIT NO. CA0029122

**REISSUING WASTE DISCHARGE REQUIREMENTS FOR:
GWF POWER SYSTEMS, L.P.
NICHOLS ROAD (SITE V) POWER PLANT
BAY POINT, CONTRA COSTA COUNTY**

FINDINGS

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

1. *Discharger and Permit Application.* GWF Power Systems, L.P., Nichols Road (Site V) Power Plant (hereinafter called the Discharger) has applied for reissuance of waste discharge requirements and a permit to discharge treated wastewater to waters of the State and the United States under the National Pollutant Discharge Elimination System (NPDES). The Discharger's Report of Waste Discharge (ROWD) is dated January 20, 2004.

Facility Description

2. *Facility Location.* The Discharger owns and operates the Nichols Road (Site V) Power Plant (the power plant), located at 555 Nichols Road, Bay Point, Contra Costa County, California. A location map of the facility is included as **Attachment A** of this Order.
3. *Generation Capacity.* The power plant has the capacity to generate approximately 18.2 net Megawatts (MW).
4. *Discharge Location.* Wastewater is discharged into Suisun Bay, a water of the State and United States, through a discharge pipe equipped with a diffuser at the end of the pipe, that extends approximately 170 feet into the Bay. The depth of the diffuser varies from 12 feet to 22 feet. Previous Order No. 99-057 grants a 10:1 dilution credit to this discharge, which is continued under this Order. The discharge point is shown in Table 1.

Table 1. Discharge Location

Outfall Number	Discharge Description	Latitude	Longitude
E-001	Cooling tower blowdown and/or storm water runoff	38° 03' 15"	121° 59' 15"

5. *Discharge Description and Volume.* The Report of Waste Discharge describes the discharge as depicted by Table 2.

Table 2. Discharge Description and Volume

Outfall Number	Contributory Waste Stream	Treatment Description	Annual Average Flow (gallons per day) (gpd)
E-001	Cooling Tower Blowdown	Neutralization	47,000
	Storm water Runoff	Best management practices (BMPs)	2,000

The Discharger discharged an average flow of 46,041 gpd through Outfall E-001 into Suisun Bay from January 2000 through September 2004.

6. The U.S. Environmental Protection Agency (U.S. EPA) and the Board has classified this Discharger as a minor discharger because the discharge contains less than 1 MGD of process wastewater and the maximum generating capacity is less than 500 MW.

Process Description

7. *Industrial Process.* Steam is generated by the combustion of petroleum coke in a fluidized bed. Superheated steam expands through a turbine, producing electricity. Steam turbine effluent is condensed, cooled via a cooling tower, and recycled.

Cooling Tower. Cooling water, supplied to the cooling tower, is made up of municipal water, boiler/steam condensate, reverse osmosis (RO) demineralizer wastewater, equipment wash-down water and/or storm water runoff. A bromine-based compound is used to control microorganisms within the cooling tower. Cooling tower blowdown is neutralized using sulfuric acid before discharging through Outfall E-001.

A process schematic diagram is included as **Attachment B** of this Order.

Effluent Characterization

8. Table A of the Fact Sheet presents the quality of the discharge at Outfall E-001. The characterization is based on (1) conventional and non-conventional pollutant data collected from 1999 through 2003, (2) inorganic priority pollutant data collected from January 2000 through September 2004, and (3) all other organic priority pollutants data collected in March 2002, September 2002, February 2003, and August 2003.

Storm Water Discharge

9. *Storm Water Regulations.* U.S. EPA promulgated federal regulations for storm water discharges on November 19, 1990. The regulations (Title 40 Code of Federal Regulations [40 CFR] Parts 122, 123, and 124) require specific categories of industrial activity (industrial storm water) to obtain an NPDES permit and to implement Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) to control pollutants in industrial storm water discharges.

GWF Nichols Road (Site V) Power Plant
NPDES Permit No. CA0029122

10. *Exemption from Coverage under Statewide Storm Water General Permit.* The State Water Resources Control Board's (the State Board's) statewide NPDES permit for storm water discharges associated with industrial activities (NPDES General Permit CAS000001- the General Permit) was adopted on November 19, 1991, amended on September 17, 1992, and reissued on April 17, 1997. Storm water discharge through Outfall E-001 is exempt from coverage under the State General Permit. For any other storm water discharges, the Discharger will need to obtain coverage under the General Permit.

Regional Monitoring Program

11. On April 15, 1992, the Board adopted Resolution No. 92-043 directing the Executive Officer to implement the Regional Monitoring Program (RMP) for the San Francisco Bay. Subsequent to a public hearing and various meetings, Board staff requested major permit holders in this region, under authority of section 13267 of California Water Code, 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 (formerly the Aquatic Habitat Institute). This effort has come to be known as the San Francisco Bay Regional Monitoring Program for Trace Substances. The Discharger is either required to perform its own site-specific receiving water monitoring or participate in the RMP, which involves collection of data on pollutants and toxicity in water, sediment and biota of the estuary, in lieu of site-specific receiving water monitoring.

Applicable Plans, Policies and Regulations

12. Water quality objectives (WQOs), water quality criteria (WQC), effluent limitations, and calculations contained in this Order are based on the statutes, regulations, policies, documents, and guidance detailed in Section III of the attached Fact Sheet, which is incorporated here by reference.

Beneficial Uses

13. Beneficial uses for Suisun Bay, as identified in the *Water Quality Control Plan, San Francisco Bay Basin* (the Basin Plan, 1995) and based on known uses of the receiving waters in the vicinity of the discharge, are:
 - a. Ocean, Commercial, and Sport Fishing
 - b. Estuarine Habitat
 - c. Industrial Service Supply
 - d. Fish Migration
 - e. Navigation
 - f. Preservation of Rare and Endangered Species
 - g. Water Contact Recreation
 - h. Noncontact Water Recreation
 - i. Fish Spawning
 - j. Wildlife Habitat

Clean Water Act Section 316(a) – Thermal Impact

14. On September 18, 1975, the State Board adopted the *Water Quality Control Plan for Control of Temperature in the Coastal Interstate Waters and Enclosed Bays and Estuaries of California* (Thermal Plan). The Thermal Plan contains WQOs governing cooling water discharges. The Thermal Plan provides specific numeric and narrative WQOs for new discharges of heat. Thermal discharges defined as "existing" discharges are subject to narrative WQOs. Existing discharges of

heat to Enclosed Bays (including Suisun Bay) must “comply with limitations necessary to assure protection of beneficial uses.”

15. The Discharger is considered an existing, continuous discharger as defined in the Thermal Plan. The discharge is low volume cooling tower blowdown, primarily to remove dissolved solids from the cooling water. This Order requires that the low volume discharge be less than 86°F. Because the discharge is to a deep water outfall, and the temperature and flows are relatively low, it is not anticipated that the discharge will cause any thermal impacts. The Discharger has collected temperature data of the effluent as required by the previous permit, the temperature of the discharge has always been below 86°F.

Clean Water Act Section 316(b) – Entrainment and Impingement Impacts

16. Section 316(b) of the Clean Water Act 33 U.S.C. Section 1326(b) requires that the location, design, construction, and capacity of cooling water intake structures reflect Best Technology Available (BTA) for minimizing adverse environmental impacts.
17. The facility does not have an intake water structure; therefore CWA 316(b) requirements do not apply to this facility.

Basis for Effluent Limitations

General Basis

Applicable Water Quality Objectives and Criteria

18. The WQOs and WQC applicable to the receiving water of this discharge are from the Basin Plan, the U.S. EPA’s May 18, 2000, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California (the California Toxics Rule, or the CTR), and U.S. EPA’s National Toxics Rule (the NTR).
19. 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 fresh water, lead, mercury, nickel, silver, zinc, and total polynuclear aromatic hydrocarbons (PAHs) in salt water. The narrative toxicity objective states in part “all waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms.” The bioaccumulation objective states in part “controllable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life. Effects on aquatic organisms, wildlife and human health will be considered.” Effluent limitations and provisions contained in this Order are designed to implement these objectives, based on available information.
20. 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 inland surface waters and enclosed bays and estuaries such as Suisun Bay, except where the Basin Plan’s Tables 3-3 and 3-4 specify numeric objectives for specific priority toxic pollutants, the Basin Plan’s numeric objectives apply over the CTR (except in the South Bay south of the Dumbarton Bridge).

GWF Nichols Road (Site V) Power Plant
NPDES Permit No. CA0029122

21. The NTR established numeric aquatic life criteria for selenium, numeric aquatic life and human health criteria for cyanide, and numeric human health criteria for 34 toxic organic pollutants for waters of San Francisco Bay upstream to, and including, Suisun Bay and the Sacramento-San Joaquin Delta. This includes the receiving water for this Discharger.
22. On January 21, 2004, the Board adopted Resolution No. R2-2004-0003 amending the Basin Plan to (1) update the dissolved WQOs for metals to be identical to the CTR WQC except for cadmium, (2) to change the Basin Plan definitions of marine, estuarine, and freshwater to be consistent with the CTR definitions, (3) to update NPDES implementation provisions to be consistent with the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (the State Implementation Plan, or the SIP), and (4) other editorial changes. On October 4, 2004, the Office of Administrative Law (OAL) approved the Board's Basin Plan Amendment, which was previously approved by SWRCB on July 22, 2004. U.S. EPA approved the Basin Plan Amendment on January 5, 2005.
23. Where numeric effluent limitations have not been established or updated in the Basin Plan, 40 CFR Part 122.44(d) specifies that water quality-based effluent limitations (WQBELs) may be set based on U.S. EPA criteria, supplemented where necessary by other relevant information, to attain and maintain narrative WQC to fully protect designated beneficial uses. The Fact Sheet for this Order discusses the specific bases and rationales for effluent limitations, and is incorporated as part of this Order.

Basin Plan and CTR Receiving Water Salinity Policy

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

Receiving Water Salinity

25. The receiving waters for the discharge are the waters of Suisun Bay, which support estuarine beneficial use per the Basin Plan. Board staff evaluated RMP salinity data from the Honker Bay Station for the period of February 1993 – August 2001. This is the closest station to the discharge and represents the best available information for salinity of the receiving water after it has mixed with the discharge. During that period, the receiving water's minimum salinity was 0 ppt, its maximum salinity was 7.2 ppt, 52% of the measurements are less than 1 ppt. Therefore, the receiving water is classified as estuarine, and the reasonable potential analysis (RPA) and limitations in this Order are based on freshwater or saltwater WQOs/WQC, whichever is more stringent.

Receiving Water Hardness

26. Some WQOs are hardness dependent. Hardness data collected through the RMP are available for water bodies in the San Francisco Bay Region. In determining the WQOs/WQC for this Order, the Board used a hardness of 70 mg/L, which is the adjusted geometric mean calculated from the hardness measurements at the RMP Honker Bay Station during 1993-2001. This is the closest station

to the discharge and represents the best available information for hardness of the receiving water after it has mixed with the discharge. The associated Fact Sheet provides the detail information on how this value was derived.

Technology Based Effluent Limitations

27. Technology based effluent limitations for conventional pollutants are established for steam electric power plants at 40 CFR Part 423, including limitations for discharges of cooling tower blowdown that apply to the Discharger. These limitations are included in the Order for the discharges through Outfall E-001 and are the same as in the previous Order.

Water Quality-Based Effluent Limitations (WQBELs)

28. Toxic substances are regulated by WQBELs derived from the Basin Plan, Tables 3-3 and 3-4, the CTR, the NTR, and/or best professional judgment (BPJ) as defined in Section IV of the attached Fact Sheet. WQBELs in this Order are revised and updated from the limits in the previous Order, and their presence in this Order is based on the evaluation of the Discharger's data as described below under the Reasonable Potential Analysis. Numeric WQBELs are required for all constituents that have a reasonable potential to cause or contribute to an excursion above any State water quality standard. Reasonable potential is determined and final WQBELs are developed using the methodology outlined in the SIP. If the Discharger demonstrates that the final limits will be infeasible to meet and provides justification for a compliance schedule, then interim limits are established, with a compliance schedule to achieve the final limits. Further details about the effluent limitations are given below and in the associated Fact Sheet.

- a. Maximum Daily Effluent Limitations (MDELs) are used in this Order to protect against acute water quality effects. It is impracticable to use weekly average limitations to guard against acute effects. Although weekly averages are effective for monitoring the performance of biological wastewater treatment plants, the MDELs are necessary for preventing fish kills or mortality to aquatic organisms.
- b. NPDES regulations, the SIP, and U.S. EPA's Technical Support Document (TSD) provide the basis to establish MDELs:

(1) NPDES regulations at 40 CFR Part 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:

(a) Maximum daily and average monthly discharge limitations for all discharges other than publicly owned treatment works (POTWs); ...”

(2) The SIP (page 8, Section 1.4) requires WQBELs be expressed as MDELs and average monthly effluent limitations (AMELs).

(3) The TSD states a maximum daily limitation is appropriate because the 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would

be missed. A maximum daily limitation would be toxicologically protective of potential acute toxicity impacts.

Receiving Water Ambient Background Data used in RPA

29. Ambient background values are used in the RPA and in the calculation of effluent limitations. For the RPA, ambient background concentrations are the observed maximum 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/objectives intended to protect human health from carcinogenic effects, the arithmetic mean of observed ambient water concentrations. Data from Sacramento River RMP station is used to represent ambient background for this discharge. Under the RMP, these stations have been sampled since 1993 for most of the inorganic (CTR constituent numbers 1-15) and some of the organic (CTR constituent numbers 16 – 126) toxic pollutants. Not all the constituents listed in the CTR were analyzed by the RMP during this time. These data gaps are addressed by the 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 Board's August 6, 2001 Letter. The Board's August 6, 2001 Letter formally requires the Discharger (pursuant to Section 13267 of the California Water Code) to conduct ambient background monitoring and effluent monitoring for those constituents not currently sampled by the RMP and to provide this technical information to the Board. On May 16, 2003, a group of several San Francisco Bay Region dischargers (known as the Bay Area Clean Water Agencies, or BACWA) submitted a collaborative receiving water study, entitled the *San Francisco Bay Ambient Water Monitoring Interim Report* (the BACWA report), which includes the monitoring results for those constituents not currently sampled by the RMP, at three RMP stations including Sacramento River station which represents the ambient background for the dischargers that discharge into Suisun Bay, Sacramento River and Delta. On June 15, 2004, a final report on this study was submitted. The final report addresses monitoring results from sampling events in the years 2002 and 2003 (four events) for the remaining priority pollutants not monitored by the RMP.

The reasonable potential analysis (RPA) was conducted and the WQBELs were calculated using RMP data from the years 1993 through 2002 for inorganics and organics at the Sacramento River station, and additional data from the BACWA report for the Sacramento River RMP station. The Board recognizes that additional data on ambient background priority pollutant concentrations in the receiving water will be obtained during the term of this Order. Therefore, use of the Sacramento RMP station as the background location for this Order does not establish a precedent for any future reissuance of these Waste Discharge Requirements. When a new RPA is conducted and WQBELs are recalculated, the Board will consider all available information (including, as appropriate, data developed by the RMP, BACWA, and the Discharger) to establish background priority pollutant concentrations in the receiving water.

Constituents Identified in the 303(d) List

30. On June 6, 2003, U.S. EPA approved a revised list of impaired water bodies prepared by the State. The list (hereinafter referred to as the 2002 303(d) list) was prepared in accordance with Section 303(d) of the Federal Clean Water Act to identify specific water bodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations on point sources. Suisun Bay is listed as an impaired water body. The pollutants impairing Suisun Bay include chlordane, DDT, diazinon, dieldrin, dioxin compounds, exotic species, furan compounds, mercury, nickel, total PCBs, PCBs (dioxin-like), and selenium.

Dilution and Assimilative Capacity

31. In response to the State Board's Order No. 2001-06, Board staff have evaluated the assimilative capacity of the receiving water for 303(d)-listed pollutants for which the subject discharge has reasonable potential to cause or contribute to an excursion above a water quality standard. The evaluation included a review of RMP data, effluent data, and WQC/WQOs. From this evaluation, it is determined that the assimilative capacity is highly variable due to the complex hydrology of the receiving water. Therefore, there is uncertainty associated with the representative nature of the appropriate ambient background data to conclusively quantify the assimilative capacity of the receiving water. Pursuant to Section 1.4.2.1 of the SIP, "dilution credit may be limited or denied on a pollutant-by-pollutant basis..."
- a. For certain bioaccumulative pollutants, based on BPJ, dilution credit is not included in calculating the final WQBELs. The Board placed selenium, mercury, and PCBs on the CWA Section 303(d) list. The U.S. EPA added dioxins and furans compounds, chlordane, dieldrin, and 4,4'-DDT on the CWA Section 303(d) list. Dilution credit is not included for the following pollutants: mercury, dieldrin, 4,4'-DDE, and dioxins and furans. The following factors suggest that there is no more assimilative capacity in the Bay for these pollutants.
 - i. San Francisco Bay fish tissue data shows that these pollutants, except for selenium, exceed screening levels. The fish tissue data are contained in "Contaminant Concentrations in Fish from San Francisco Bay 1997" May 1997. Denial of dilution credits for these pollutants is further justified by fish advisories to the San Francisco Bay. The Office of Environmental Health and Hazard Assessment (OEHHA) performed a preliminary review of the data from the 1994 San Francisco Bay pilot study, "Contaminated Levels in Fish Tissue from San Francisco Bay." The results of the study showed elevated levels of chemical contaminants in the fish tissues. Based on these results, OEHHA issued an interim consumption advisory covering certain fish species from the bay in December 1994. This interim consumption advice was issued and is still in effect due to health concerns based on exposure to sport fish from the bay contaminated with mercury, PCBs, dioxins, and pesticides (e.g., DDT).
 - ii. For selenium, the denial of dilution credits is based on Bay waterfowl tissue data presented in the California Department of Fish and Game's Selenium Verification Study (1986-1990). These data show elevated levels of selenium in the livers of waterfowl that feed on bottom dwelling organisms such as clams. Additionally, in 1987 the Office of Environmental Health Hazard Assessment issued an advisory for the consumption of two species of diving ducks in the north bay found to have high tissue levels of selenium. This advisory is still in effect.
 - b. Furthermore, Section 2.1.1 of the SIP states that for bioaccumulative compounds on the 303(d) list, the Board should consider whether mass-loadings should be limited to current levels. The Board finds that mass loading limitations are warranted for certain bioaccumulative compounds on the 303(d) list for the receiving waters of this discharge. This is to ensure that this discharge does not contribute further to impairment of the narrative objective for bioaccumulation.
 - c. For non-bioaccumulative constituents, a conservative allowance of 10:1 dilution for discharges to the receiving waters is necessary for protection of beneficial uses. This is based on SIP

provision in Section 1.4.2.1, which allows the Board to further limit dilution credits. The derivation of the dilution credit is outlined below.

- i. A far-field background station is appropriate because the receiving waterbody is a very complex estuarine system with highly variable and seasonal upstream freshwater inflows and diurnal tidal saltwater inputs.
- ii. Due to the complex hydrology of Suisun Bay, a mixing zone cannot be accurately established.
- iii. The SIP allows limiting a mixing zone and dilution credit for persistent pollutants (e.g., copper, nickel, and lead).

The main justification for using a 10:1 dilution credit is uncertainty in accurately determining ambient background and uncertainty in accurately determining the mixing zone in a complex estuarine system with multiple wastewater discharges. The detailed rationale is described in the Fact Sheet.

Total Maximum Daily Loads (TMDLs) and Waste Load Allocations (WLAs)

32. The Board plans to adopt Total Maximum Daily Loads (TMDLs) for pollutants on the 303(d) list for the Suisun Bay within the next ten years, with the exception of dioxin and furan compounds. For dioxins and furans, the Board intends to consider this matter further after U.S. EPA completes its national health reassessment. Future review of the 303(d) list for Suisun Bay may result in revision of the schedules and/or provide schedules for other pollutants.
33. The TMDLs will establish waste load allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources, and will result in achieving the water quality standards for the water bodies. Final WQBELs for 303(d)-listed pollutants in this discharge will be based on WLAs contained in the respective TMDLs.
34. The Board's strategy to collect water quality data and to develop TMDLs is summarized below:
 - a. *Data collection*—The Board has given the dischargers the option to collectively assist in developing and implementing analytical techniques capable of detecting 303(d)-listed pollutants to at least their respective levels of concern or WQOs. This collective effort may include development of sample concentration techniques for approval by U.S. EPA. The Board will require dischargers to characterize the pollutant loads from their facilities into the water quality-limited water bodies. The results will be used in the development of TMDLs, and may be used to update or revise the 303(d) list and/or change the WQOs for the impaired water bodies including Suisun Bay.
 - b. *Funding mechanism*—The Board has received, and anticipates continuing to receive, resources from Federal and State agencies for TMDL development. To ensure timely development of TMDLs, the Board intends to supplement these resources by allocating development costs among dischargers through the RMP or other appropriate funding mechanisms.

Interim Limitations and Compliance Schedules

35. Section 2.1.1 of the SIP states:

“the compliance schedule provisions for the development and adoption of a TMDL only apply when: ... (b) the Discharger has made appropriate commitments to support and expedite the development of the TMDL. In determining appropriate commitments, the RWQCB should consider the discharge’s contribution to current loadings and the Discharger’s ability to participate in TMDL development.”

The Discharger agreed to assist the Board in TMDL development through active participation in and contribution to the RMP.

36. The SIP and the Basin Plan authorize compliance schedules in a permit if an existing discharger cannot immediately comply with a new and more stringent effluent limitation. Compliance schedules for limitations derived from CTR or the NTR WQC are based on Section 2.2 of the SIP, and compliance schedules for limitations derived from Basin Plan WQOs are based on the Basin Plan. Both the SIP and the Basin Plan require the discharger to demonstrate the infeasibility of achieving immediate compliance with the new limitation to qualify for a compliance schedule. The SIP and Basin Plan require the following documentation to be submitted to the Board to support a finding of infeasibility:
- Descriptions of diligent efforts the discharger has made to quantify pollutant levels in the discharge, sources of the pollutant in the waste stream, and the results of those efforts.
 - Descriptions of source control and/or pollution minimization efforts currently under way or completed.
 - A proposed schedule for additional or future source control measures, pollutant minimization, or waste treatment.
 - A demonstration that the proposed schedule is as short as practicable.
37. Until final WQBELs or WLAs are adopted for 303(d)-listed pollutants, State and Federal anti-backsliding and antidegradation policies and the SIP require that the Board include interim effluent limitations for them. The interim effluent limitations will be the lower of the current performance or the previous permit’s limitations.
38. On February 1, 2005, the Discharger submitted a feasibility study (the 2005 Feasibility Study), asserting it is infeasible to immediately comply with the WQBELs, calculated according to SIP Section 1.4, for copper, lead, mercury, nickel, selenium, zinc, cyanide, 4,4’-DDE, and dieldrin. Board staff conducted comparative and/or statistical analysis of recent data for these pollutants, as further detailed in later findings under the heading *Development of Specific Effluent Limitations* and also in Section IV.6, Table, D and Table E of the attached Fact Sheet. This Order establishes compliance schedules for copper, lead, mercury, nickel, selenium, zinc, cyanide, 4,4’-DDE, and dieldrin. For dioxin compounds, since there is not enough information, this permit does not contain an interim limitation or a compliance schedule for TCDD TEQ. The final limitations for TCDD TEQ will be based on the WLA assigned to the Discharger in the TMDL.
39. For limitations based on CTR or NTR criteria (copper, selenium, cyanide, 4,4’-DDE, and dieldrin), this Order establishes a 5-year compliance schedule from the permit effective date as allowed by the CTR and SIP. The Basin Plan provides for 10-year compliance schedules. This provision has been construed as authorizing compliance schedules for new interpretations of existing standards (such as the numeric WQOs specified in the Basin Plan) resulting in more stringent limitations than those in the previous permit. For mercury, the compliance schedule is until April ~~2827~~, 2010 or until the

Board adopts TMDL-based effluent limitations for mercury. For lead, nickel, and zinc, the compliance schedule extends until ~~January 1, 2015~~ **December 31, 2014**, i.e., 10 years from the 2004 Basin Plan amendment when the new WQOs for lead, nickel, and zinc become effective. The Board may take appropriate enforcement actions if interim limitations and requirements are not met. However, a provision in this Order requires the Discharger to submit a performance evaluation and compliance attainability analysis at least 180 days prior to the permit expiration. The Board will review the information and determine whether a shorter compliance schedule is feasible for lead, nickel, and zinc during the next permit reissuance.

40. This Order establishes compliance schedules that extend beyond one year for copper, lead, mercury, nickel, selenium, zinc, cyanide, 4,4'-DDE, and dieldrin. Pursuant to the SIP and 40 CFR 122.47, the Board shall establish interim numeric limitations and interim requirements to control these pollutants. This Order establishes interim limitations for these pollutants based on the previous permit limitations or existing plant performance. This Order also establishes interim requirements in a provision for development and/or improvement of a Pollution Prevention and Minimization Program to reduce pollutant loadings to the facility, and for submittal of annual reports on this Program.

Since the compliance schedules exceed or equal to the length of the permit, these calculated final limits are intended as points of reference for the infeasibility demonstration and are only included in the findings by reference to the Fact Sheet. Additionally, the actual final WQBELs for some of these pollutants will very likely be based on either the Site Specific Objective (SSO) or TMDL/WLA as described in other findings specific to each of the pollutants.

Antibacksliding and Antidegradation

41. The limitations in this Order are in compliance with the Clean Water Act Section 402(o) prohibition against establishment of less stringent WQBELs because the limits from the previous Order have not been relaxed in this Order.

Specific Basis

Reasonable Potential Analysis

42. 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.” Using the method prescribed in Section 1.3 of the SIP, Board staff has analyzed the effluent data to determine if the discharges, which are the subject of this Permit and Order, have a reasonable potential to cause or contribute to an excursion above a State water quality standard (“Reasonable Potential Analysis” or “RPA”). For all parameters that have reasonable potential, numeric WQBELs are required. The RPA compares the effluent data with numeric and narrative WQOs in the Basin Plan and numeric WQC from the NTR, and the CTR.

Reasonable Potential Methodology

43. The method for determining RPA involves identifying the observed maximum pollutant concentration in the effluent (MEC) for each constituent, based on effluent concentration data. The RPA for all constituents is based on zero dilution, according to section 1.3 of the SIP. There are three triggers in determining reasonable potential.

- a. The first trigger is activated when the maximum effluent concentration (MEC) is greater than or equal to the lowest applicable WQO/WQC, which has been adjusted for pH, and translator data, if appropriate. An MEC that is greater than or equal to the (adjusted) WQO/WQC means that there is reasonable potential for that constituent to cause or contribute to an excursion above the WQO/WQC and a WQBEL is required.
- b. The second trigger is activated if observed maximum ambient background concentration (B) is greater than the adjusted WQO/WQC and the MEC is less than the adjusted WQO or the pollutant was not detected in any of the effluent samples. If B is greater than the adjusted WQO/WQC, then a WQBEL is required.
- c. The third trigger is activated after a review of other information determines that a WQBEL is required even though both MEC and B are less than the WQO/WQC. A limitation is only required under certain circumstances to protect beneficial uses.

RPA Determinations

44. The RPA was based on effluent water data collected from January 2000 through September 2004 on a monthly basis for inorganic priority pollutants, and organic priority pollutant data collected in March 2002, September 2002, February 2003, and August 2003. Ambient background data are from the Sacramento River RMP station, collected during 1993 through 2002, and additional data from the BACWA study at the Sacramento River station, collected in 2002 and 2003.
45. The MEC, WQOs/WQC, bases for the WQOs/WQC, background concentrations used and reasonable potential conclusions from the RPA are listed in Table 3 for all constituents analyzed. Further details on the RPA can be found in the Fact Sheet. Based on the methodology described above and in the SIP, the following constituents have been found to have reasonable potential to cause or contribute to an excursion above WQOs/WQC: copper, lead, mercury, nickel, selenium, zinc, cyanide, TCDD TEQ, 4,4'-DDE, and dieldrin. Based on the RPA, numeric WQBELS are required to be included in the permit for these constituents.

RPA Results for Impairing Pollutants

46. While TMDLs and WLAs are being developed, interim concentration limitations are established in this Order for 303(d)-listed pollutants that have a reasonable potential to cause or contribute to an excursion above the water quality standard. Constituents on the 303(d) list for which the RPA determined a need for effluent limitations are mercury, nickel, selenium, TCDD TEQ, 4,4'-DDE, and dieldrin. Final determination of reasonable potential for some other constituents identified on the 303(d) list could not be performed owing to the lack of an established WQO or WQC.

Table 3. Reasonable Potential Analysis Results

CTR No.	Constituent ^[1]	WQO/ WQC (µg/L)	Basis ^[2]	MEC (µg/L)	Maximum Ambient Background Conc. (µg/L)	Reasonable Potential (Trigger Type) ^[3]
1	Antimony	14	CTR, hh	1.1	0.337	No
2	Arsenic	36	BP, sw	11	3.65	No
4	Cadmium	0.86	BP, fw, H=70	0.3	0.06	No
5b	Chromium (VI)	11.4	BP, fw	5.6	NA	No
6	Copper	3.7	CTR, sw	32.4	9.9	Yes (Trigger 1)
7	Lead	2.0	BP, fw, H=70	34	2.35	Yes (Trigger 1)
8	Mercury*	0.025	BP, sw	0.06	0.038	Yes (Trigger 1)
9	Nickel*	8.3	BP, sw	92.9	21.8	Yes (Trigger 1)
10	Selenium*	19.8	NTR, fw/sw	5	0.3	Yes (Trigger 1)
11	Silver	2.2	BP, fw, H=70	0.08	0.057	No
12	Thallium	1.7	CTR, hh	<0.03	0.14	No
13	Zinc	86	BP, fw, H=70	390	18.2	Yes (Trigger 1)
14	Cyanide	1.0	NTR, sw	2	0.5	Yes (Trigger 1)
	TCDD TEQ*	1.4×10 ⁻⁸	BP,	9.66×10 ⁻⁷	4.8×10 ⁻⁸	Yes (Trigger 1)
109	4,4'-DDE*	0.00059	CTR, hh	<0.001	0.00092	Yes (Trigger 2)
111	Dieldrin*	0.00014	CTR, hh	<0.002	0.00038	Yes (Trigger 2)
119- 125	Total Polychlorinated Bipheyls (PCBs)	0.00017	CTR, hh	<0.08	Not available	No
	Total PAHs	15	BP, sw	<0.17	0.01478	No
	CTR nos. 17– 126 except 68, 109 and 111	Various or NA	CTR, hh	Non- detect, less than WQC, or no WQC	Less than WQC or not available	No or undetermined ^[4]

[1] * Indicates constituents on 303(d) list, TCDD TEQ applies to Toxicity Equivalent Factors (TEQs) of 2,3,7,8-TCDD.

[2] BP = Basin Plan; for TCDD TEQ it is based on the narrative objective for bioaccumulation.
 CTR = California Toxics Rule, NTR = National Toxics Rule, sw = salt water, fw = fresh water, hh = human health, H=hardness, 70 mg/L as CaCO₃.

[3] See Finding 43 for the definition of three trigger types.

[4] Undetermined because of the lack of WQO/WQC and/or lack of effluent data (see Table B of the Fact Sheet for full RPA results).

Specific Pollutants

47. Dioxin TEQ

- a. The CTR establishes a numeric human health WQC of 0.014 picograms per liter (pg/L) for 2,3,7,8-tetrachlorinated dibenzo-p-dioxin (2,3,7,8-TCDD) based on consumption of aquatic organisms. The preamble of the CTR states that California NPDES permits should use toxicity equivalents (TEQs) where dioxin-like compounds have a reasonable potential with respect to narrative criteria. In U.S. EPA's National Recommended WQOs, December 2002, U.S. EPA published the 1998 World Health Organization (WHO) Toxicity Equivalence Factor (TEF) scheme. The 1998 WHO scheme includes TEFs for dioxin-like PCBs. Since dioxin-like PCBs are already included within "Total PCBs," for which the CTR has established a specific standard, dioxin-like PCBs are not included in this Order's version of the TEF scheme. In addition, the CTR preamble states U.S. EPA's intent to adopt revised WQC guidance subsequent to their health reassessment for dioxin-like compounds. The SIP applies to all toxic pollutants, including dioxins and furans. The SIP requires a limitation for 2,3,7,8-TCDD, if a limitation is necessary, and requires monitoring for a minimum of 3 years by all major NPDES dischargers for the other 16 dioxin and furan compounds.
- b. The Basin Plan contains a narrative WQO for bioaccumulative substances:

"Many pollutants can accumulate on particulates, in sediments, or bioaccumulate in fish and other aquatic organisms. Controllable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life. Effects on aquatic organisms, wildlife, and human health will be considered."

This narrative WQO applies to dioxin and furan compounds, based in part on the consensus of the scientific community that these compounds associate with particulates, accumulate in sediments, and bioaccumulate in the fatty tissue of fish and other organisms.
- c. U.S. EPA's 303(d) listing determined that the narrative objective for bioaccumulative pollutants was not met because of the levels of dioxins and furans in the fish tissue.
- d. The Discharger has conducted four sampling events for dioxins and furans, all four TCDD TEQ sample concentrations are higher than the WQC, therefore, there is reasonable potential for TCDD TEQ.

48. 4,4'-DDE and Dieldrin.

- a. Board staff could not perform RPA Trigger 1 analysis for 4,4'-DDE and dieldrin because the effluent data consisted of all nondetect values, and all the detection limits reported are higher than the WQC (Section 1.3 of the SIP). Board staff conducted the RPA by comparing the WQC with RMP ambient background concentration data gathered using research-based sample collection, concentration, and analytical methods. This analysis concluded that the background concentrations are greater than the WQC, and therefore, 4,4'-DDE and dieldrin have reasonable potential, and numeric WQBELs are required.
- b. The current 303(d) list includes Suisun Bay as impaired for dieldrin and DDT; 4,4'-DDE is chemically linked to the presence of DDT. The Board intends to develop TMDLs that will lead to the overall reduction of dieldrin and 4,4'-DDE. The WQBELs specified in this Order may be

changed to reflect the WLAs from this TMDL. Ongoing studies are investigating the feasibility and reliability of different methods of increasing sample volumes to lower the detection limits for pesticides. If analytical methodologies improve and the detection levels decrease to a point that show discharge concentrations above the limitations in this Order, the Board will reevaluate the Discharger's feasibility to comply with the limitations and determine the need for a compliance schedule and interim performance-based limitations at that time.

49. *Polychlorinated Biphenyl Compounds (PCBs).*

PCB effluent data from 2002-2003 indicate non-detect values, where the method detection limits (MDL) range from 0.03 to 0.08 µg/L for the six aroclors, which exceed the WQC or 0.00017 µg/L. Therefore, trigger 1 (MEC>WQC) is not activated (as per the SIP). Trigger 2 (B>WQC) for PCBs was not evaluated in the RPA because background data are unavailable. PCBs are not used in the Discharger's transformers nor have PCB-contaminated materials/wastes been found at the site and wastes containing PCBs have not been historically stored at the site. Based on a complete RPA (evaluating all three triggers), the Board determined that a PCB effluent limitations are not warranted at this time.

50. *Polynuclear Aromatic Hydrocarbons (PAHs).*

This Order implements the policy and regulations of the CTR and SIP in regard to PAHs, i.e., reasonable potential is determined for individual PAHs. The Basin Plan contains a WQO for total PAHs for the protection of saltwater aquatic life of 15 µg/L, as a 24-hour average; therefore, a RPA was also performed for total PAHs. The Discharger has monitoring data collected from four sampling events in 2002-2003 for all 16 individual PAHs, and all of the concentrations are non-detect with MDLs ranging from 0.02-0.17 µg/L. Therefore, the total PAH concentration is determined to be zero, and there is no reasonable potential for individual or total PAHs based on Trigger 1. The maximum background concentration at Sacramento River RMP station is also lower than the WQO. Continued monitoring for these pollutants is required by Provision D.2.

51. *Other Organics.*

The Discharger has performed sampling and analysis for most organic constituents listed in the CTR. The data were used to perform the RPA. The full RPA is presented as an attachment in the Fact Sheet. The Discharger will continue to monitor for these constituents in the effluent and the receiving water in accordance with the Board's August 6, 2001 letter and Self-Monitoring Program using analytical methods that provide the best feasible detection limits. When additional data become available, further RPA will be conducted to determine whether to add numeric effluent limitations to the Order or to continue monitoring.

52. *Effluent Monitoring.* This Order does not include effluent limitations for constituents that do not show reasonable potential, but continued monitoring for them is required as described in the SMP and a separate letter dated August 6, 2001, from the Executive Officer. If concentrations of these constituents increase significantly the discharger will be required to investigate the source of the increases and establish remedial measures if the increases result in a reasonable potential to cause or contribute to an excursion above the applicable WQO/WQC.

53. *Permit Reopener.* The Order includes a reopener provision to allow numeric effluent limitations to be added or deleted in the future for any constituent that exhibits or does not exhibit, respectively, reasonable potential. The Board will make this determination based on monitoring results.

Development of Effluent Limitations

54. Copper

- a. *Copper WQC.* The saltwater criteria for copper in the CTR are 3.1 µg/L for chronic protection and 4.8 µg/L for acute protection, as dissolved metal. Included in the CTR are translator values to convert the dissolved criteria to total criteria. Using the CTR translator of 0.83, translated criteria of 3.7 µg/L for chronic protection and 5.8 µg/L for acute protection were used to determine reasonable potential and calculate effluent limitations.
- b. *RPA Results.* This Order establishes effluent limitations for copper because the 32.4 µg/L MEC exceeds the governing WQC of 3.7 µg/L, demonstrating reasonable potential by Trigger 1 as defined in Finding 43.
- c. *WQBELs for Copper.* The copper WQBELs calculated according to the SIP procedures are 3.5 µg/L as the AMEL and 4.7 µg/L as the MDEL.
- d. *Immediate Compliance Infeasible.* The Discharger's Feasibility Study asserts the Discharger cannot immediately comply with the copper WQBELs. Based on a statistical analysis of the Discharger's effluent data from January 2000 through September 2004, the assertion of infeasibility is substantiated for copper (see Section IV.6.j and Table D of the attached Fact Sheet for the statistical analysis).
- e. *Interim Limitation.* Because it is infeasible that the Discharger will immediately comply with the copper WQBELs, an interim limitation is needed. Traditionally, the interim limitation is based on the 99.87th percentile of the recent performance data. The 99.87th percentile was calculated to be 39.8 µg/L, which is less stringent than the previous Order's effluent limitation of 36 µg/L. Therefore, this order establishes a copper interim limitation of 36.0 µg/L, expressed as a maximum daily effluent limitation.
- f. *Plant Performance and Attainability.* During the period of January 2000 through September 2004, the Discharger's effluent concentrations for copper ranged from 8 µg/L to 32.4 µg/L (73 samples). All 73 samples were below the interim limitation of 36.0 µg/L. It is therefore expected that the facility can comply with the interim limitation for copper. Continued monitoring for copper is required under this Order to provide effluent data for future permit amendment or permit reissuance.
- g. *Term of Interim Effluent Limitation.* The copper interim limitation shall remain in effect until ~~April 28~~ May 17, 2010, or until the Board amends the limitations based on additional data or an SSO.
- h. *Antibacksliding/Antidegradation.* The copper effluent limitations in this Order are in compliance with the Clean Water Act Section 402(o) prohibition against establishment of less stringent WQBELs because the limits from the previous Order have not been relaxed in this Order.

55. Lead

- a. *Lead WQOs/WQC.* The freshwater WQOs/WQC for lead in the Basin Plan and CTR are 2.0 µg/L for chronic protection and 52 µg/L for acute protection, based on a hardness value of 70 mg/L as CaCO₃.

- b. *RPA Results.* This Order establishes effluent limitations for lead because the 34 µg/L MEC exceeds the governing WQO of 2.0 µg/L, demonstrating reasonable potential by Trigger 1 as defined in Finding 43.
- c. *WQBELs for Lead.* The lead WQBELs calculated according to the SIP procedures are 1.3 µg/L as the AMEL and 3.7 µg/L as the MDEL.
- d. *Immediate Compliance Infeasible.* The Discharger's Feasibility Study asserts the Discharger cannot immediately comply with the lead WQBELs. Based on a statistical analysis of the Discharger's effluent data from January 2000 through September 2004, the assertion of infeasibility is substantiated for lead (see IV.6.j and Table D of the attached Fact Sheet for detailed results of the statistical analysis).
- e. *Interim Performance-based Limitation (IPBL).* Because it is infeasible that the Discharger will immediately comply with the lead WQBELs, this order establishes a lead IPBL of 34 µg/L, expressed as a daily maximum. The IPBL is based on the MEC of the effluent data collected during January 2000 through September 2004. The previous permit does not include a lead effluent limitation.
- f. *Plant Performance and Attainability.* During the period of January 2000 through September 2004, the Discharger's effluent concentrations ranged from 0.3 µg/L to 34 µg/L (43 samples). All samples are below the interim limitation. It is therefore expected that the facility can comply with the interim limitation of 34 µg/L for lead. Continued monitoring for lead is required under this Order to provide effluent data for future permit amendment or permit reissuance.
- g. *Term of Interim Effluent Limitation.* The lead interim limitation shall remain in effect until ~~January 1, 2015~~ **December 31, 2014**, or until the Board amends the limitations based on additional data, information, or an SSO. However, during the next permit reissuance, the Board may reevaluate the lead interim limitation or evaluate the feasibility of granting a shorter compliance schedule.
- h. *Antibacksliding/Antidegradation.* The lead effluent limitations in this Order are in compliance with the Clean Water Act Section 402(o) prohibition against establishment of less stringent WQBELs because there are no lead limitations in the previous Order, therefore no limitations were relaxed.

56. Mercury

- a. *Mercury WQOs/WQC.* Both the Basin Plan and the CTR include objectives and criteria that govern mercury in the receiving water. The Basin Plan specifies objectives for the protection of aquatic life of 0.025 µg/L as a 4-day average and 2.1 µg/L as a 1-hour average. The CTR specifies a long-term average criterion for protection of human health of 0.051 µg/L.
- b. *RPA results.* This Order establishes effluent limitations for mercury because the 0.06 µg/L MEC exceeds the governing WQO of 0.025 µg/L, demonstrating reasonable potential by Trigger 1 as defined in Finding 43.
- c. *Effluent Concentration Limitation for Mercury.* The mercury WQBELs calculated according to the SIP procedures are 0.020 µg/L as the AMEL and 0.042 µg/L as the MDEL.

- d. *Immediate Compliance Infeasible.* The Discharger's Feasibility Study asserts the Discharger cannot immediately comply with the mercury WQBELs. Based on statistical analysis of the Discharger's effluent data from January 2000 through September 2004 the assertion of infeasibility is substantiated for mercury (see Section IV.6.j and Table D of the attached Fact Sheet for detailed results of the statistical analysis).
- e. *IPBL.* Because it is infeasible that the Discharger will immediately comply with the mercury WQBELs, this Order establishes a mercury IPBL of 0.071 µg/L, expressed as a maximum daily limitation. The IPBL is based on the 99.87th percentile of effluent samples collected from January 2000 through September 2004. The previous Order included a maximum daily effluent limitation for mercury of 0.21 µg/L.
- f. *Plant Performance and Attainability.* During the period of January 2000 through September 2004, the Discharger's effluent concentrations ranged from <0.0005 µg/L to 0.06 µg/L (68 samples). All measurements are below the interim limitation of 0.071 µg/L. It is therefore expected that the facility can comply with the interim limitation of 0.071 µg/L for mercury. Continued monitoring for mercury is required under this Order to provide effluent data for future permit amendment or permit reissuance.
- g. *Term of IPBL.* The mercury IPBL shall remain in effect until April 27, 2010, or until the Board amends the limitation based on the Discharger's WLA in mercury TMDL. Mercury is listed in the 303(d) list for Suisun Bay.
- h. *Interim Mercury Mass-Emission Limitation.* In addition to the concentration-based mercury IPBL, this Order establishes an interim mercury mass-based effluent limitation of 4.5 grams/year (g/year). This limitation is calculated based on the concentration-based maximum daily interim effluent limitation (0.071 µg/L) and the long-term average effluent flow (46,041 gpd). The previous permit, Order No. 99-057, did not include mass-based effluent limitations for mercury. The mass-based effluent limitation in this Order maintains current loadings and is consistent with state and federal antidegradation and antibacksliding requirements.
- i. *Expected Final Mercury Limitations.* The need for final mercury WQBELs will be revised to be consistent with the WLA assigned in the adopted mercury TMDL. A mass limitation based on the WLA will be incorporated. While the TMDL is being developed, the Discharger will comply with the performance-based mercury concentration and mass limitation to cooperate in maintaining current ambient receiving water conditions.
- j. *Antibacksliding/Antidegradation.* The mercury effluent limitations in this Order are in compliance with the Clean Water Act Section 402(o) prohibition against establishment of less stringent WQBELs because the limits from the previous Order have not been relaxed in this Order.

57. *Nickel*

- a. *Nickel WQOs/WQC.* The saltwater WQOs/WQC for nickel in the Basin Plan and CTR are 7.9 µg/L for chronic protection and 71.3 µg/L for acute protection, as dissolved metal. Included in the CTR are translator values to convert the dissolved objectives to total objectives. Using the CTR translator of 0.951, translated criteria of 8.3 µg/L for chronic protection and 75 µg/L for acute protection were used to determine reasonable potential and calculate effluent limitations.

- b. *RPA Results.* This Order establishes effluent limitations for nickel because the 92.9 µg/L MEC exceeds the governing WQO/WQC of 8.3 µg/L, demonstrating reasonable potential by Trigger 1 as defined in Finding 43.
- c. *WQBELs for Nickel.* The nickel WQBELs calculated according to the SIP procedures are 7.0 µg/L as the AMEL and 12.9 µg/L as the MDEL.
- d. *Immediate Compliance Infeasible.* The Discharger's Feasibility Study asserts the Discharger cannot immediately comply with the nickel WQBELs. Based on a statistical analysis of the Discharger's effluent data from January 2000 through September 2004, the assertion of infeasibility is substantiated for nickel (see IV.6.j and Table D of the attached Fact Sheet for detailed results of the statistical analysis).
- e. *Interim Performance-based Limitation (IPBL).* Because it is infeasible that the Discharger will immediately comply with the nickel WQBELs, this order establishes a nickel IPBL of 92.9 µg/L, expressed as a maximum daily effluent limitation. The IPBL is based on the MEC of the effluent data collected from January 2000 through September 2004. The previous permit does not include a nickel limitation.
- f. *Plant Performance and Attainability.* During the period of January 2000 through September 2004, the Discharger's effluent concentrations ranged from 3.3 µg/L to 92.9 µg/L (51 samples). All 51 samples are below the interim limitation, it is therefore expected that the Discharger can comply with the interim limitation of 92.9 µg/L for nickel. Continued monitoring for nickel is required under this Order to provide effluent data for future permit amendment or permit reissuance.
- g. *Term of Interim Effluent Limitation.* The nickel interim limitation shall remain in effect until ~~January 1, 2015~~ **December 31, 2014**, or until the Board amends the limitations based on additional data, an SSO, or a WLA from a TMDL. During the next permit reissuance, however, the Board may re-evaluate the nickel interim limitation or evaluate the feasibility of granting a shorter compliance schedule. Nickel is listed in the 303(d) list for Suisun Bay.
- h. *Antibacksliding/Antidegradation.* The nickel effluent limitations in this Order are in compliance with the Clean Water Act Section 402(o) prohibition against establishment of less stringent WQBELs because the limits from the previous Order have not been relaxed in this Order.

58. Selenium

- a. *Selenium WQC.* The freshwater criteria for selenium in the NTR are 5 µg/L for chronic protection and 20 µg/L for acute protection.
- b. *RPA Results.* This Order establishes effluent limitations for selenium because the 19.8 µg/L MEC exceeds the governing WQC of 5 µg/L, demonstrating reasonable potential by Trigger 1 as defined in Finding 43.
- c. *WQBELs for Selenium.* The selenium WQBELs calculated according to the SIP procedures are 4.1 µg/L as the AMEL and 8.1 µg/L as the MDEL.
- d. *Immediate Compliance Infeasible.* The Discharger's Feasibility Study asserts the Discharger cannot immediately comply with the selenium WQBELs. Based on a statistical analysis of the

Discharger's effluent data from January 2000 through September 2004, the Board concurs with the assertion of infeasibility (see Section IV.6.j and Table D of the attached Fact Sheet for detailed results of the statistical analysis).

- e. *Interim Performance-based Limitation (IPBL)*. Because it is infeasible that the Discharger will immediately comply with the selenium WQBELs, this order establishes a selenium IPBL of 34.6 µg/L, which is the 99.87th percentile of effluent data collected during January 2000 through September 2004, expressed as a maximum daily effluent limitation. The previous permit does not contain a selenium effluent limitation.
- f. *Plant Performance and Attainability*. During the period of January 2000 through September 2004, the Discharger's effluent concentrations ranged from 2 µg/L to 19.8 µg/L (26 samples). All measurements are below the interim limitation, it is therefore expected that the facility can comply with the interim limitation of 34.6 µg/L for selenium. Continued monitoring for selenium is required under this Order to provide effluent data for future permit amendment or permit reissuance.
- i. *Term of Interim Effluent Limitation*. The selenium interim limitation shall remain in effect until April 27, 2010, or until the Board amends the limitations based on additional data or a selenium TMDL. Selenium is listed in the 303(d) list for Suisun Bay.
- j. *Interim Selenium Mass-Emission Limitation*. In addition to the concentration-based selenium IPBL, this Order establishes an interim selenium mass-based effluent limitation of 2.2 kg/year. This limitation is calculated based on the concentration-based maximum daily interim effluent limitation (34.6 µg/L) and the long-term average effluent flow (46,000 gpd). The previous permit, Order No. 99-057, did not include mass-based effluent limitations for selenium. The mass-based effluent limitation in this Order maintains current loadings and is consistent with state and federal antidegradation and antibacksliding requirements.
- k. *Antibacksliding/Antidegradation*. The selenium effluent limitations in this Order are in compliance with the Clean Water Act Section 402(o) prohibition against establishment of less stringent WQBELs because there are no selenium limitations in the previous Order, therefore no limitations were relaxed.

59. Zinc

- a. *Zinc WQOs/WQC*. The freshwater WQOs/WQC for zinc in the Basin Plan and CTR are 86 µg/L for chronic protection and 86 µg/L for acute protection, based on a hardness value of 70 mg/L as CaCO₃, and were used to determine reasonable potential and calculate effluent limitations.
- b. *RPA Results*. This Order establishes effluent limitations for zinc because the 390 µg/L MEC exceeds the governing WQO of 86 µg/L, demonstrating reasonable potential by Trigger 1 as defined in Finding 43.
- c. *WQBELs for Zinc*. The zinc WQBELs calculated according to the SIP procedures are 281 µg/L as the AMEL and 696 µg/L as the MDEL. Although the calculated MDEL is greater than the previous Order's zinc MDEL of 562 µg/L, the new WQBELs derived using the SIP procedures are considered to be more protective of the water quality. The SIP methodology projects the zinc WQOs (both acute and chronic) as a maximum daily limit and average monthly limit while incorporating site-specific data variability. The AMEL will limit the discharge to a lower long-

term average level than the previous permit limitation, which only limits the daily maximum concentration of the effluent, and as a result, the Discharger could practically discharge an effluent with long-term average at the previous MDEL level. Therefore, the new WQBELs are considered to be more stringent.

- d. *Immediate Compliance Infeasible.* The Discharger's Feasibility Study asserts the Discharger cannot immediately comply with the zinc WQBELs. The effluent data show elevated zinc concentrations in 2003, with the MEC higher than the AMEL. Because of the increasing trend of zinc concentrations in 2003, Board staff could not fit the effluent data a good probability distribution. Since the MEC is greater than the AMEL, however, the Board therefore concurs with the assertion of infeasibility.
- e. *Interim Performance-based Limitation.* Because it is infeasible that the Discharger will immediately comply with the zinc WQBELs, this order retains the previous permit limit of 562 µg/L, expressed as a maximum daily effluent limitation.
- f. *Plant Performance and Attainability.* During the period of January 2000 through September 2004, the Discharger's effluent concentrations for zinc ranged from 7 µg/L to 390 µg/L (75 samples). All 75 samples were below the interim limitation of 562 µg/L. It is therefore expected that the facility can comply with the interim limitation for zinc. Continued monitoring for zinc is required under this Order to provide effluent data for future permit amendment or permit reissuance.
- g. *Term of Interim Effluent Limitation.* The zinc interim limitation shall remain in effect until ~~January 1, 2015~~ December 31, 2014, or until the Board amends the limitations based on additional data or information.
- h. *Antibacksliding/Antidegradation.* The zinc effluent limitations in this Order are in compliance with the Clean Water Act Section 402(o) prohibition against establishment of less stringent WQBELs because the limits from the previous Order have not been relaxed in this Order.

60. Cyanide

- a. *Cyanide WQC.* The saltwater criteria for cyanide in the NTR are 1 µg/L for chronic protection and 1 µg/L for acute protection.
- b. *RPA Results.* This Order establishes effluent limitations for cyanide because the 2 µg/L MEC exceeds the governing WQC of 1 µg/L, demonstrating reasonable potential by Trigger 1 as defined in Finding 43.
- c. *WQBELs for Cyanide.* The cyanide WQBELs calculated according to the SIP procedures are 2.7 µg/L as the AMEL and 5.5 µg/L as the MDEL.
- d. *Immediate Compliance Infeasible.* The Discharger's Feasibility Study asserts the Discharger cannot immediately comply with the cyanide WQBELs. Since the Discharger's effluent data consists primarily of non-detected values, with only two detected but not quantified (DNQ) concentrations, i.e., higher than the method detection limit but lower than reporting limit or SIP ML, it is not possible to conduct a statistical analysis to determine compliance feasibility. The SIP has specified a ML of 5 µg/L for cyanide analysis; the AMEL is lower than the ML.

Therefore, the Board concurred that the Discharger cannot achieve immediate compliance for cyanide.

- e. *Interim Performance-based Limitation (IPBL)*. Because it is infeasible that the Discharger will immediately comply with the cyanide WQBELs, this order establishes a cyanide IPBL of 5 µg/L, which is the SIP ML for cyanide.
- f. *Plant Performance and Attainability*. During the period of January 2000 through September 2004, the Discharger's effluent concentrations range from 0.6 µg/L to 2 µg/L (23 samples). All 23 samples are non-detect, at or below the interim limitation of 5 µg/L. It is therefore expected that the Discharger can comply with the interim limitation for cyanide. Continued monitoring for cyanide is required under this Order to provide effluent data for future permit amendment or permit reissuance.
- g. *Term of Interim Effluent Limitation*. The cyanide interim limitation shall remain in effect until April 27, 2010, or until the Board amends the limitations based on additional data or a cyanide SSO.
- h. *Antibacksliding/Antidegradation*. The cyanide effluent limitations in this Order are in compliance with the Clean Water Act Section 402(o) prohibition against establishment of less stringent WQBELs because there are no cyanide limitations in the previous Order, therefore no limitations were relaxed.

61. 4,4'-DDE and Dieldrin

- a. *4,4'-DDE and Dieldrin WQC*. In the CTR, the lowest criteria for 4,4'-DDE and dieldrin are the human health values of 0.00059 µg/L and 0.00014 µg/L, respectively.
- b. *RPA Results*. This Order establishes limitations for 4,4'-DDE and dieldrin because the ambient background concentrations (0.00092 µg/L and 0.00038 µg/L, respectively) exceed the governing WQC, demonstrating reasonable potential by Trigger 2 in Finding 43.
- c. *Effluent Limitation for 4,4'-DDE and Dieldrin*. The 4,4'-DDE and dieldrin WQBELs calculated according to SIP procedures are 0.00059 µg/L as the AMEL and 0.0012 µg/L as the MDEL for 4,4'-DDE, and 0.00014 µg/L as the AMEL and 0.00028 µg/L as the MDEL for dieldrin.
- d. *Immediate Compliance Infeasible*. All 4,4'-DDE and dieldrin effluent values are non-detect and the detection limits are above the water quality criteria. In addition, the minimum levels (MLs) are higher than the final WQBELs. Therefore, the Board concurs that the Discharger cannot achieve immediate compliance.
- e. *Interim Effluent Limitations*. Interim limitations are established at the respective MLs. The interim limitations are as follows: 4,4'-DDE is 0.05 µg/L and dieldrin is 0.01 µg/L. Continued monitoring for 4,4'-DDE and dieldrin is required under this Order to provide effluent data for future permit amendment or permit reissuance.
- f. *Plant Performance and Attainability*. Neither 4,4'-DDE or dieldrin have been detected in the effluent to date and there are no known sources of these pollutants. The Discharger, therefore, will be able to comply with the interim limitations. Continued monitoring for 4,4'-DDE and

dieldrin is required under this Order to provide effluent data for future permit amendment or permit reissuance.

- g. *Term of Interim Effluent.* The 4,4'-DDE and dieldrin interim effluent limitations shall remain in effect until ~~April 28~~ May 17, 2010 or until the Board adopts TMDL based effluent limitations for both pollutants. 4,4'-DDE and dieldrin are listed in the 303(d) list for Suisun Bay.
- h. *Expected Final 4,4'-DDE and Dieldrin Effluent Limitations.* The Board intends to establish a TMDL that will lead towards overall reduction of 4,4'-DDE and dieldrin mass loadings into Suisun Bay. If the Discharger is found to be contributing to 4,4'-DDE and dieldrin impairment Suisun Bay, the final effluent limitations will be based on the Discharger's WLAs in the TMDL.
- i. *Antibacksliding/Antidegradation.* There were no WQBELs for 4,4'-DDE and dieldrin in the previous permit; therefore, anti-backsliding and anti-degradation provisions do not apply.

62. Dioxins and Furans

- a. *Dioxin WQC.* The CTR establishes a numeric human health WQC of 0.014 pg/L for 2,3,7,8-TCDD based on consumption of organisms. The preamble of the CTR states that California NPDES permits should use TEQs where dioxin-like compounds have reasonable potential with respect to narrative criteria. The preamble further states that U.S. EPA intends to use the 1998 World Health Organization TEF scheme in the future and encourages California to use this scheme in State programs. In addition, the CTR preamble states U.S. EPA's intent to adopt revised WQC guidance subsequent to their health reassessment for dioxin-like compounds. The Board is using TEQs to translate the narrative WQOs to numeric WQOs for the other 16 congeners.
- b. *RPA Results.* The dioxin TEQ MEC of 0.966 pg/L is above the governing WQC, which triggers reasonable potential using Trigger 1 as defined by Finding 43.
- c. *Effluent Limitations for Dioxins and Furans.* The TCDD TEQ WQBELs calculated according to SIP procedures are 0.014 pg/L as the AMEL and 0.028 pg/L as the MDEL.
- d. *Immediate Compliance Infeasible and Dioxin Effluent Limitations.* For TCDD TEQ, there are four effluent measurements available, and all are above the WQBELs, in addition, the MLs for all 17 dioxin congeners range from 5 pg/L to 25 pg/L (see BACWA Letter dated April 23, 2002), which are higher than the WQBELs, therefore, the Board has determined that it is infeasible for the Discharger to achieve immediate compliance. Since the effluent data are too limited, this permit does not contain an interim limitation or a compliance schedule for TCDD TEQ. The final limitations for TCDD TEQ will be based on the WLA assigned to the Discharger in the TMDL.
- e. *Effluent Monitoring.* This Order requires additional dioxin monitoring to complement the Clean Estuary Project's special dioxin project, consisting of impairment assessment and a conceptual model for dioxin loading into the Bay. Continued monitoring for dioxins and furans compounds is required under this Order to provide effluent data for future permit amendment or permit reissuance.
- f. The permit will be reopened, as appropriate, to include interim dioxin limitations when additional data become available.

Whole Effluent Acute Toxicity

63. This Order includes monitoring and effluent limitations for whole-effluent acute toxicity that are similar to the previous order. Compliance evaluation is based on 96-hour flow-through bioassays. All bioassays shall be performed according to the U.S. EPA-approved method in 40 CFR Part 136, currently "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water, 5th Edition", with exceptions granted to the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP). The previous Order required testing of two species (three-spine stickleback and rainbow trout (or fathead minnow). Monthly bioassay tests of both species has shown 90-100% survival since January 2000. The Discharger has conducted an acute species sensitivity study dated December 10, 2003 to determine the more sensitive species between fathead minnow and rainbow trout, using U.S. EPA 4th Edition Method, and static renewal protocol. The results of the study indicate that the two species show no significant difference in sensitivity to Site V effluent. Therefore, this Order requires the Discharger to use the U.S. EPA most recently promulgated testing method, currently the 5th edition with one testing species: rainbow trout (*Oncorhynchus mykiss*) or fathead minnow (*Pimephales promelas*).

Whole Effluent Chronic Toxicity

64. a. *Permit Requirements.* This permit includes requirements for chronic toxicity monitoring based on the Basin Plan narrative toxicity objective, and in accordance with U.S. EPA and SWRCB Task Force guidance, and BPJ. This permit includes the Basin Plan narrative toxicity objective as the applicable effluent limitation, implemented via monitoring with numeric values as "triggers" to initiate accelerated monitoring and to initiate a chronic toxicity reduction evaluation (TRE) as necessary. The permit requirements for chronic toxicity are also consistent with the CTR and SIP requirements.
- b. *Compliance Species.* The Discharger was not required to conduct chronic toxicity monitoring under the previous permit, therefore test species have not been selected. Therefore, the Discharger is required to conduct an initial species screening to determine the most sensitive species. After which, the compliance species will be selected by the Discharger, and approved by the Executive Officer prior to commencing toxicity testing.
- c. *Permit Reopener.* The Board will consider amending this permit to include numeric toxicity limitations if the Discharger fails to aggressively implement all reasonable control measures included in its approved TRE workplan, following detection of consistent significant non-artifactual toxicity.

Pollutant Minimization/ Pollution Prevention

65. The Discharger has not established a Pollution Prevention Program.
- a. For constituents identified under Effluent Limitations, Section B, the Discharger will conduct appropriate source control or pollutant minimization measures that are consistent with its request and justification for compliance schedules in accordance with SIP Section 2.1 (see Finding 38). For constituents with compliance schedules under this permit, the applicable source control and pollutant minimization requirements of Section 2.1 of the SIP will apply.
- b. Additionally, Section 2.4.5 of the SIP specifies under what situations and for which priority pollutant(s) (i.e., reportable priority pollutants) the Discharger shall be required to conduct a Pollutant Minimization Program in accordance with Section 2.4.5.1.

- cb. There may be some redundancy between the Pollution Prevention Program and the Pollutant Minimization Program requirements.
- de. Where the two programs' requirements overlap, the Discharger is allowed to continue, modify, or expand its existing Pollution Prevention Program to satisfy the Pollutant Minimization Program requirements.
- ~~d. For constituents identified under Effluent Limitations, Section B, the Discharger will conduct appropriate source control or pollutant minimization measures that are consistent with its approved Pollution Prevention Program. For constituents with compliance schedules under this permit, the applicable source control and pollutant minimization requirements of Section 2.1 of the SIP will also apply.~~

Requirement for Monitoring of Pollutants in Effluent and Receiving Water to Implement New Statewide Regulations and Policy

- 66. *SIP-Required Dioxin Study.* The SIP states that each Board shall require major and minor publicly owned treatment works (POTWs) and industrial dischargers in its region to conduct effluent monitoring for the 2,3,7,8-TCDD congeners, whether or not an effluent limitation is required for 2,3,7,8-TCDD. The Discharger complied with this requirement by sampling 2,3,7,8-TCDD and 16 congeners on March 14, 2002, September 26, 2002, February 4, 2003, and August 5, 2003.
- 67. On August 6, 2001, the Board sent a letter to all the permitted dischargers pursuant to Section 13267 of the California Water Code requiring the submittal of effluent and receiving water data on priority pollutants. This formal request for technical information addresses the insufficient effluent and ambient background data, and the dioxin study. The letter (described above) is referenced throughout the permit as the "August 6, 2001 Letter".
- 68. Pursuant to the August 6, 2001 Letter from Board Staff, the Discharger was required to submit workplans and sampling results for characterizing the levels of selected constituents in the effluent. The Discharger collected and analyzed 4 effluent samples for the 126 priority pollutants during 2002/2003. These data were used in the RPA and limitation calculations in this Order. The Discharger is required to complete the remaining monitoring requirements, if any, according to its approved sampling plan submitted under the August 6, 2001 Letter.

Monitoring Requirements (Self-Monitoring Program)

- 69. The SMP includes monitoring at the outfall and receiving waters for conventional, non-conventional, toxic pollutants, acute and chronic toxicity.

Effluent Monitoring. The SMP contains the same monitoring requirements for conventional pollutants for both effluent and receiving water. TSS, oil and grease, and settleable matter sampling are required monthly to evaluate compliance with technology based effluent limitations and to evaluate the quality of the discharge. Continuous temperature and pH monitoring is required. Monthly monitoring is required for copper, lead, mercury, nickel, selenium, zinc and cyanide to determine compliance with effluent limitations. For TCDD TEQ, 4,4'-DDE, and dieldrin, semiannual monitoring is required to determine compliance with permit requirements. A minimum of one sampling is required for the 126 priority pollutants, and the results to be submitted at least 180 days prior to the permit expiration, with the permit renewal application. This Order requires monthly acute toxicity monitoring for the first 12 months after the permit becomes effective, which is the

same as the previous permit, then the sampling may be reduced to quarterly if no acute toxicity is detected, upon approval by the Executive Officer (the SMP specifies the detailed requirements for this switch). Semiannual chronic toxicity sampling has been added to determine compliance with permit requirements, if effluent limitations are exceeded, accelerated monitoring should be performed on a monthly basis until compliance is achieved.

Chlorine Residual Monitoring. A chlorine technology based effluent limitation is required for all steam electric power generating plants (40 CFR 423). Since chlorine is not currently used at the site, chlorine residual monitoring is conditionally waived (Hourly chlorine monitoring is required when and if chlorine is used in the future). The authority to waive monitoring for a constituent with technology based effluent limitations is contained in 40 CFR 122.44(a)(2).

Basin Plan Discharge Prohibition

70. The Basin Plan prohibits the discharge of any wastewater, which has particular characteristics of concern to beneficial uses at any point at which the wastewater does not receive an initial dilution of at least 10:1. In part, the Basin Plan states, "this prohibition will ... provide a buffer against the effects of abnormal discharges caused by temporary plant upsets or malfunctions..."
71. The ~~cooling water~~ discharge is consistent with Prohibition 1. This is because the discharge is low volume (currently long term average flow rate is 46,041 gpd), contains primarily non-process cooling tower blowdown, and is to deep water in Suisun Bay.

Removal of PCB Prohibition

72. The PCB discharge prohibition is not continued into this Order. Instead, an RPA was conducted to determine whether PCB effluent limitations were necessary. The RPA did not trigger the need for a PCB effluent limitation (see Finding 49).

Other Discharge Characteristics and Permit Conditions

73. *O & M Manual.* An Operations and Maintenance Manual and Procedures are maintained by the Discharger for purposes of providing plant and regulatory personnel with a source of information describing all equipment, recommended operation strategies, process control monitoring, and maintenance activities as they pertain to compliance with this permit. In order to remain a useful and relevant document, the manual or procedures shall be kept updated to reflect significant changes in relevant facility equipment and operation practices.
74. *NPDES Permit.* This Order serves as an NPDES Permit, adoption of which is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code [California Environmental Quality Act (CEQA)] pursuant to Section 13389 of the California Water Code.
75. *Notification.* The Discharger and interested agencies and persons have been notified of the Board's intent to reissue *requirements* for the existing discharge and have been provided an opportunity to submit their written views and recommendations.
76. *Public Hearing.* The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to the provisions of Division 7 of the California Water Code and regulations adopted thereunder, and to the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, that the GWF Power Systems Company, Inc., Nichols Road (Site V) Power Plant shall comply with the following:

A. DISCHARGE PROHIBITIONS

1. Discharge of wastewater at a location or in a manner different from that described in this Order is prohibited.
2. Discharge of wastewater at E-001 at any point at which the wastewater does not receive a minimum initial dilution of at least 10:1 is prohibited.
3. Chemicals used in any metal components cleansing, flushing, washdown, algae control, or corrosion and deposition inhibition shall not contain copper, zinc, chromium, or other heavy metal constituents.
4. Discharges of water, materials, or wastes other than storm water, which are not otherwise authorized by an NPDES permit, to a storm drain system or waters of the State are prohibited.
5. The discharge of all toxic and deleterious substances, above those levels which can be achieved by a program acceptable to the Board, is prohibited.

B. EFFLUENT LIMITATIONS

The following effluent limitations apply to effluent discharged to Suisun Bay:

Conventional Pollutants

1. **Discharge E-001** shall not exceed the following limitations:

Constituent	Units	30-Day Average	Maximum Daily
Total Suspended Solids	mg/L	30	45
	lb/day	23.02	34.54
Oil and Grease	kg/day	10.47	15.70
	mg/L	10	20
Settleable Matter	lb/day	7.68	15.35
	kg/day	3.49	6.98
	ml/1-hr	0.1	0.2

2. **pH:** The pH of the discharge shall not exceed 9 nor be less than 6 standard units. If the Discharger employs continuous pH monitoring, the Discharger shall be in compliance with the pH limitation specified herein, provided that both of the following conditions are satisfied:
 - (1) The total time during which the pH values are outside the required range shall not exceed 7 hours and 26 minutes in any calendar month.
 - (2) No individual excursion from the required range of pH values shall exceed 60 minutes.

3. Chlorine residual (if chlorine is used): 0.0¹ mg/L, as instantaneous maximum

4. Temperature Requirement:

The temperature of the discharge shall not exceed a daily average of 86 degrees F.

Toxic Pollutants

5. Whole Effluent Acute Toxicity

a. Representative samples of Discharge E-001 shall meet the following limitations for acute toxicity. Compliance with these limitations shall be achieved in accordance with Provision D.9 of this Order.

i. The survival of bioassay test organisms in 96-hour bioassays of undiluted effluent shall be:

(1) An 11-sample median value of not less than 90 percent survival ^{(a(ii)(1))} ; and

(2) An 11-sample 90th percentile value of not less than 70 percent survival ^{(a(ii)(2))} .

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

(1) 11-sample median limit:

Any bioassay test showing survival of 90 percent or greater is not a violation of this limit. If five or more of the past ten or fewer bioassay tests also show less than 90 percent survival, then survival of less than 90 percent on the next sample represents a violation of the effluent limitation.

(2) 90th percentile limit:

Any bioassay test showing survival of 70 percent or greater is not a violation of this limit. If one or more of the past ten or fewer bioassay tests also show less than 70 percent survival, then survival of less than 70 percent on the next sample represents a violation of the effluent limitation.

b. If in the future, the Discharger will perform acute toxicity tests on a quarterly basis after the conditions and requirements, as described in Finding 69 and in the Self-Monitoring Program, Table 1, Footnote [6], are met, the following effluent limitations shall be used to determine compliance:

xxviii—

¹ Requirement defined as below the limit of detection in standard test methods defined in the latest EPA approved edition of *Standard Methods for the Examination of Water and Wastewater*. The discharger may elect to use a continuous on-line monitoring system(s) for measuring flows, chlorine and sodium bisulfite dosage (including a safety factor) and concentration to prove that chlorine residual exceedances are false positives. If convincing evidence is provided, Board staff will conclude that these false positive chlorine residual exceedances are not violations of this permit limitation. Chlorine residual monitoring is required only if chlorine is used.

- i. The survival of bioassay test organisms in 96-hour bioassays of undiluted effluent shall be:
 - (1) A 3-sample median value of not less than 90 percent survival ^{(b)(ii)(1)}; and
 - (2) A single sample maximum not less than 70 percent survival.
- ii. 3-sample median limit is further defined as:

Any bioassay test showing survival of 90 percent or greater is not a violation of this limit. If one of the past two or fewer bioassay tests also show less than 90 percent survival, then survival of less than 90 percent on the next sample represents a violation of the effluent limitation.
- c. Bioassays shall be performed using the most up-to-date U.S. EPA 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.
- d. If the Discharger demonstrates to the satisfaction of the Executive Officer that toxicity exceeding the levels cited above is caused by ammonia and that the ammonia in the discharge is not adversely impacting receiving water quality or beneficial uses, then such toxicity does not constitute a violation of this effluent limit.

6. Whole Effluent Chronic Toxicity

- a. Compliance with the Basin Plan narrative toxicity objective shall be demonstrated according to the following tiered requirements based on results from representative samples of the treated effluent meeting test acceptability criteria and Provision D.10:
 - (1) Routine monitoring;
 - (2) Accelerated monitoring after exceeding a single sample maximum of 10 TUc or greater. Accelerated monitoring shall be performed on a monthly basis.
 - (3) Return to routine monitoring if accelerated monitoring does not exceed the “trigger” in “2”, above;
 - (4) Initiate approved toxicity identification evaluation/toxicity reduction evaluation (TIE/TRE) work plan if accelerated monitoring confirms consistent toxicity above the “trigger” in “2”, above;
 - (5) Return to routine monitoring after appropriate elements of TRE work plan are implemented and either the toxicity drops below “trigger” level in “2”, above or, based on the results of the TRE, the Executive Officer authorizes a return to routine monitoring.

- b. *Test Species and Methods*: The Discharger shall conduct routine monitoring with the most sensitive species determined during the most recent chronic toxicity screening performed by the Discharger and approved by the Executive Officer. Chronic Toxicity Monitoring Screening Phase Requirements, Critical Life Stage Toxicity Tests and definitions of terms used in the chronic toxicity monitoring are identified in Attachment A of the SMP. The Discharger shall comply with these requirements as applicable to the discharge. In addition, bioassays may be conducted in compliance with the most recently promulgated test methods, currently “Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water 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).

7. Toxic Substances Effluent Limitations

The discharge of effluent containing constituents in excess of the following limitations contained in Table 4 is prohibited:

Table 4. Effluent Limitations for Toxic Pollutants ^{[1][2]}

Table 5.

CONSTITUENTS	NOTES	Interim Daily Maximum Effluent Limitations (µg/L)
Copper	[34]	36
Lead	[45]	34
Mercury	[3][56]	0.071
Mercury Mass Limitation	[67]	4.5 g/year
Nickel	[45]	92.9
Selenium	[3]	34.6
Selenium Mass Limitation	[67]	2.20 kg/year
Zinc	[45]	562
Cyanide	[3][78]	5
4,4,'-DDE	[34]	0.05
Dieldrin	[34]	0.01

[1] a. All analyses shall be performed using current U.S. EPA methods, or equivalent methods approved in writing by the Executive Officer. The Discharger is in violation of the limitation if the discharge concentration exceeds the effluent limitation and the reported ML for the analysis for that constituent.

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

[2] A daily maximum or average monthly value for a given constituent shall be considered noncompliant with the effluent limitations only if it exceeds the effluent limitation and the reported ML for that

constituent. The table below indicates the lowest ML that the Discharger's laboratory must achieve for compliance determination purposes.

Constituent	ML (µg/L)
Copper	0.5
Lead	0.5
Mercury	0.002
Nickel	1
Selenium	1
Zinc	1
Cyanide	5
4,4'-DDE	0.05
Dieldrin	0.01

[3] These interim limitations shall remain in effect until April ~~27~~³⁰, 2010 or until the Board amends the limitation based on additional data, SSO, or the WLAs in respective TMDLs ~~for selenium, 4,4'-DDE or dieldrin.~~

~~[4] These interim limitations shall remain in effect until May 17, 2010 or until the Board amends the limitation based on additional data, SSO, or the WLAs in respective TMDLs~~

~~[5] These interim limitations for lead, nickel, and zinc shall remain in effect until ~~January~~^{December} 31, 201~~4~~⁵ or until the Board amends the limitation based on additional data, SSO, or the WLA from a nickel TMDL.~~

~~[6] Effluent mercury monitoring shall be performed by using ultra-clean sampling and analysis techniques, with a method detection limit of 0.002 µg/L or lower.~~

~~[7] Compliance with mercury and selenium mass limitations shall be determined annually using the sum of the 12-month mass loading calculated using the monthly average effluent flow rate and the monthly average concentration, by calendar year. If a concentration is non-detect, the detection limit shall be used in the calculation. Results of the calculation shall be submitted with the annual report.~~

~~[8] Compliance may be demonstrated by measurement of weak acid dissociable cyanide.~~

C. RECEIVING WATER LIMITATIONS

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 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 (except as allowed by this permit), 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 which will cause deleterious effects on wildlife, waterfowl, or other aquatic biota, or which 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 limitations to be exceeded in waters of the State at any place within one foot of the water surface:

- a. Dissolved Oxygen: 7.0 mg/L, minimum

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, then the discharge shall not cause further reduction in ambient dissolved oxygen concentrations.

- b. Dissolved Sulfide: 0.1 mg/L, maximum

- c. pH: Variation from normal ambient pH by more than 0.5 pH units.

- d. Un-ionized Ammonia: 0.025 mg/L as N, annual median; and

0.16 mg/L as N, maximum.

- e. 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 Board or the State Board as required by the Clean Water Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Clean Water Act, or amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

D. PROVISIONS

1. Permit Compliance and Rescission of Previous Waste Discharge Requirements

The Discharger shall comply with all sections of this Order upon the effective date of this Order, which is May 19, 2005. At which time the Requirements prescribed by this Order supersede the requirements prescribed by Order No. 99-057, and Order No. 99-057 will be rescinded.

Special Studies

2. Effluent Characterization for Selected Constituents

The Discharger shall continue to monitor and evaluate the discharge from Outfall E-001 for the constituents listed in Enclosure A of the Board's August 6, 2001 Letter, according to its approved sampling plan submitted under the August 6, 2001 Letter. If all sampling requirements have been fulfilled prior to this permit effective date, the Discharger shall monitor, for a minimum of one sampling event, the 126 priority pollutants, during the permit effective term. Compliance with this

Formatted: Bullets and Numbering

Formatted: Bullets and Numbering

GWF Nichols Road (Site V) Power Plant
NPDES Permit No. CA0029122

requirement shall be achieved in accordance with the specifications stated in the Board's August 6, 2001 Letter under Effluent Monitoring for Minor Dischargers.

~~Reporting:~~ The Discharger shall submit a report that presents all the data to the Board with the application for permit reissuance.

Formatted: Bullets and Numbering

~~Un-ionized Ammonia: 0.025 mg/L as N, annual median; and~~

~~0.16 mg/L as N, maximum.~~

~~e. 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.~~

Formatted: Bullets and Numbering

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

D. PROVISIONS

1. Permit Compliance and Rescission of Previous Waste Discharge Requirements

~~The Discharger shall comply with all sections of this Order upon the effective date of this Order, which is May 19, 2005. At which time the Requirements prescribed by this Order supersede the requirements prescribed by Order No. 99-057, and Order No. 99-057 will be rescinded.~~

Special Studies

2. Effluent Characterization for Selected Constituents

~~The Discharger shall continue to monitor and evaluate the discharge from Outfall E-001 for the constituents listed in Enclosure A of the Board's August 6, 2001 Letter, according to its approved sampling plan submitted under the August 6, 2001 Letter. If all sampling requirements have been fulfilled prior to this permit effective date, the Discharger shall monitor, for a minimum of one sampling event, the 126 priority pollutants, during the permit effective term. Compliance with this requirement shall be achieved in accordance with the specifications stated in the Board's August 6, 2001 Letter under Effluent Monitoring for Minor Dischargers.~~

~~Reporting: The Discharger shall submit a report that presents all the data to the Board with the application for permit reissuance.~~

3. Receiving Water Monitoring

The Discharger shall continue to collect or participate in collecting background ambient receiving water data with other dischargers and/or through the RMP. This information is required to perform reasonable potential analysis (RPA) and to calculate effluent limitations. To fulfill this requirement, the Discharger shall submit data sufficient to characterize the concentration of each toxic pollutant listed in the CTR in the ambient receiving water. The data on the conventional water quality parameters (pH, salinity, and hardness) shall also be sufficient to characterize these parameters in the ambient receiving water at a point after the discharge has mixed with the receiving waters.

Reporting: The Discharger shall submit a report that presents all the data to the Board with the application for permit reissuance.

4. Cyanide Compliance Schedule and Site-Specific Objective (SSO) Study

The Discharger shall comply with the following tasks and deadlines:

Tasks	Compliance Date
a. <i>Compliance Schedule.</i> The Discharger should track relevant national studies, and participate in regional studies and implement measures identified in their Feasibility Study, as described in findings (under Cyanide) above. Results from these studies should enable the Board to determine compliance with final WQBELS during the next permit reissuance.	Annual progress reports to be included with the Discharger's Annual Self-Monitoring reports beginning in 2006, with the first report due February 28, 2006.
b. <i>SSO Study.</i> The Discharger shall actively participate in the development of regional SSOs for cyanide. Participation through BACWA studies will comply.	Annual progress reports to be included with the Discharger's Annual Self-Monitoring reports beginning in 2006, by cyanide work group with the first report due January 31, 2006.
c. Conduct evaluation of compliance attainability with appropriate final limitations, and submit report to the E.O. describing conclusions.	180 days prior to Order expiration. Within 2 years of the effective date of this Order.

5. Pollutant Prevention / Pollution Minimization Program

- a. The Discharger shall develop a Pollution Prevention Program in order to reduce pollutant loadings to the receiving waters.
- b. The Discharger shall submit an annual report, acceptable to the Executive Officer, no later than February 28th of each year. Annual reports shall cover January through December of the preceding year.

Annual report shall include at least the following information:

- (i) *A brief description of the facility.*
- (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/or which pollutants may be potential future problems. This discussion shall include the reasons why the pollutants were chosen. In particular, the Discharger shall include those pollutants with effluent limits identified in Section B of this Order.

- (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 should also identify sources or potential sources not directly within the ability or authority of the Discharger to control such as pollutants in the 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) *Continuation of outreach tasks for employees.* The Discharger shall develop outreach tasks for its employees. The overall goal of this task is to inform employees about the pollutants of concern, potential sources, and how they might be able to help reduce the discharge of pollutants of concern into the facility. The Discharger may provide a forum for employees to provide input to the Program.
 - (vi) *Discussion of criteria used to measure the Program's and tasks' effectiveness.* The Discharger shall establish criteria to evaluate the effectiveness of its Pollution Prevention Program. This shall also include a discussion of the specific criteria used to measure the effectiveness of each of the tasks in item b. (iii), b. (iv), and b. (v).
 - (vii) *Documentation of efforts and progress.* This discussion shall detail all of the Discharger's activities in the Pollution Prevention Program during the reporting year.
 - (viii) *Evaluation of Program's and tasks' effectiveness.* This Discharger shall utilize the criteria established in b. (vi) to evaluate the Program's and tasks' effectiveness.
 - (ix) *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 in its effluent.
- c. According to Section 2.4.5 of the SIP, when there is evidence that a priority pollutant is present in the effluent above an effluent limitation and either:
- (i) A sample result is reported as detected, but not quantified (less than the Minimum Level) and the effluent limitation is less than the reported Minimum Level; or
 - (ii) A sample result is reported as not detected (less than the Method Detection Limit) and the effluent limitation is less than the Method Detection Limit, or
 - (iii) For Dioxin TEQ, if the effluent concentrations exceed the WQC.

The Discharger shall expand its existing Pollution Prevention Program to include the reportable priority pollutant. A priority pollutant becomes a reportable priority pollutant when (1) there is evidence that it is present in the effluent above an effluent limitation and either (c)(i) or (c) (ii) is triggered or (2) if the concentration of the priority pollutant in the

monitoring sample is greater than the effluent limitation and greater than or equal to the reported Minimum Level.

- d. If triggered by the reasons in (c) above and notified by the Executive Officer, the discharger's Pollution Prevention Program shall, within 6 months, also include:
- (i) An annual review and semi-annual monitoring of potential sources of the reportable priority pollutant(s), 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 pollutant(s) in the influent, or 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 pollutant(s) in the effluent at or below the effluent limitation;
 - (iv) Development of appropriate cost-effective control measures for the reportable priority pollutant(s), consistent with the control strategy; and
 - (v) An annual status report that shall be sent to the RWQCB including:
 - 1. All Pollution Prevention monitoring results for the previous year;
 - 2. A list of potential sources of the reportable priority pollutant(s);
 - 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.
- e. To the extent where the requirements of the Pollution Prevention Program and the Pollutant Minimization Program overlap, the discharger is allowed to continue/modify/expand its existing Pollution Prevention Program to satisfy the Pollutant Minimization Program requirements.
- f. These Pollution Prevention/Pollutant Minimization Program requirements are not intended to fulfill the requirements in The Clean Water Enforcement and Pollution Prevention Act of 1999 (Senate Bill 709).

6. Compliance Attainability Analysis for Lead, Nickel, and Zinc

The Discharger shall compile and submit the lead, nickel, and zinc effluent data collected during the permit term, and a WQBEL attainability analysis at least 180 days prior to the permit expiration. This analysis shall indicate whether it is feasible for the Discharger to comply with the final WQBELs for lead, nickel, and zinc before the permit expires. This analysis shall also include information on the Discharger's past pollution prevention and source control measures to address lead, nickel, and zinc in the effluent, and propose new measures to reduce the pollutants in the future, if applicable.

7. Storm Water Pollution Prevention Plan and Annual Report

The Discharger shall submit an updated Storm Water Pollution Prevention Plan (SWPPP) acceptable to the Executive Officer by October 1st of each year. If the Discharger determines that it does not need to update its SWPPP, it shall submit a letter to the Executive Officer that indicates no revisions are necessary and the last year it updated its SWPPP. The Discharger shall implement the SWPPP and the SWPPP shall comply with the requirements contained in the attached Standard provisions. The first annual update under this Order is due October 1, 2005.

The Discharger shall submit an annual storm water report by July 1st of each year covering data for the previous wet weather season for the identified storm water discharge points. The annual storm water report shall, at a minimum, include: (a) a tabulated summary of all sampling results and a summary of visual observations taken during the inspections; (b) a comprehensive discussion of the compliance record and any corrective actions taken or planned to ensure compliance with waste discharge requirements; and (c) a comprehensive discussion of source identification and control programs for constituents that do not have effluent limitations (e.g., total suspended solids).

8. Best Management Practices Program

The Discharger shall review, maintain, and update annually its Best Management Practices (BMP) program. The BMP program shall be consistent with the requirements of U.S. EPA regulation 40 CFR 125, Subpart K and the general guidance contained in the "NPDES Best Management Guidance Document", U.S.EPA Report No. 600/9-79-045, December 1979 (revised June 1981). If the Discharger determines that it does not need to update its BMP, it shall state this in its annual Self-Monitoring report.

Toxicity Requirements

9. Whole Effluent Acute Toxicity

Compliance with acute toxicity requirements of this Order shall be achieved in accordance with the following:

- a. Compliance with the acute toxicity effluent limitations of this Order shall be evaluated by measuring survival of test organisms exposed to 96-hour flow through bioassays.
- b. Test species shall be either fathead minnow or rainbow trout.
- c. All bioassays shall be performed according to the "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms," (currently 5th Edition), with exceptions granted to the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP).
- d. If the Discharger will use static renewal tests, or continue to use 4th Edition Method, they must submit a technical report within 90 days of the permit adoption date, identifying the reasons why flow-through bioassay is not feasible using the approved U.S. EPA protocol (currently 5th Edition).

10. Whole Effluent Chronic Toxicity

The Discharger shall monitor and evaluate the effluent from Outfall E-001 for chronic toxicity in order to demonstrate compliance with the Basin Plan narrative toxicity objective. Compliance with this requirement shall be achieved in accordance with the following.

- a. The Discharger shall conduct routine chronic toxicity monitoring in accordance with the SMP of this Order.
- b. If data from routine monitoring exceed a single-sample maximum value of 10 TU_c, then the Discharger shall conduct accelerated chronic toxicity monitoring. Accelerated monitoring shall be performed on a monthly basis.
 - (1) TU_c (chronic toxicity unit): A TU_c equals 100/NOEL (e.g., If NOEL = 100, then toxicity = 1 TU_c). NOEL is the no observed effect level determined from IC, EC, or NOEC values.
 - (2) The terms IC, EC, NOEL and NOEC and their use are defined in **Attachment A** of the Self-Monitoring Program (SMP).
- c. If data from accelerated monitoring tests are found to be in compliance with the evaluation parameters, then routine monitoring shall be resumed.
- d. If accelerated monitoring tests continue to exceed either evaluation parameter, then the Discharger shall initiate a chronic toxicity reduction evaluation (TRE).
- e. The TRE shall be conducted in accordance with the following:
 - (1) The Discharger shall prepare and submit to the Board for Executive Officer approval a TRE workplan. An initial generic workplan shall be submitted within 120 days of the date of adoption of this Order. The workplan shall be reviewed and updated as necessary in order to remain current and applicable to the discharge and discharge facilities.
 - (2) The TRE shall be initiated within 30 days of the date of completion of the accelerated monitoring test observed to exceed either evaluation parameter.
 - (3) The TRE shall be conducted in accordance with an approved workplan.
 - (4) The TRE needs to be specific to the discharge and Discharger facility, and may be in accordance with current technical guidance and reference materials including U.S. EPA guidance materials. TRE should 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 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 processes.

- (e) Tier 5 consists of evaluation of options for modifications of in-plant 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.
 - (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 should 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 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 Board will be based in part on the Discharger's actions and efforts to identify and control or reduce sources of consistent toxicity.
- g. Chronic Toxicity Monitoring Screening Phase Requirements, Critical Life Stage Toxicity Tests and definitions of terms used in the chronic toxicity monitoring are identified in **Attachment A** of the SMP. The Discharger shall comply with these requirements as applicable to the discharge. In addition, bioassays may be conducted in compliance with the most recently promulgated test methods, currently "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water 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).

Optional Studies

11. Optional Site-Specific Translator Study and Schedule for Copper, Lead, Nickel, and Zinc

To develop information that may be used to establish WQBELs based on dissolved criteria for metals that the Discharger has reasonable potential and has shown unable to achieve immediate compliance with the final WQBELs. Optionally, the Discharger may implement a sampling plan to collect data for development of dissolved-to-total translators for copper, lead, nickel, and zinc

in the Discharger’s direct receiving water. If the Discharger chooses to proceed with the study, the work shall be performed in accordance with the following tasks:

Tasks	Schedule
a. Translator study plan: the study plan shall be acceptable to the Executive Officer and shall outline data collection for establishment of dissolved-to-total copper, lead, nickel, and zinc translators, as discussed in the findings. The study plan shall provide for development of translators in accordance with the State Board’s SIP, U.S. EPA guidelines, California Department of Fish and Game approval, and any relevant portions of the Basin Plan, as amended.	At the Discharger’s discretion during the Order term.
b. Implementation of the plan: if the Discharger conducts a translator study, it will use field sampling data approximate to the discharge point and in the vicinity of the discharge point, or as otherwise provided for in the approved workplan.	As specified in the study plan.
c. Final report: A final report, acceptable to the Executive Officer, should be submitted, documenting the results of the copper, lead, nickel, and zinc translator study.	As specified in the study plan, but at least 180 days prior to permit expiration.

12. Optional Mass Offset

The Discharger may submit to the Board for approval a mass offset plan to reduce 303(d)-listed pollutants to the same watershed or drainage basin. The Board may modify this Order to allow an approved mass offset program.

Facilities Status Reports and Permit Administration

13. Operations and Maintenance Manual, Review and Status Reports

- a. The Discharger shall maintain an Operations and Maintenance Manual (O & M Manual) as described in the findings of this Order for the Discharger's facilities. The O & M Manual shall be maintained in useable condition, and available for reference and use by all applicable personnel.
- b. The Discharger shall regularly review, and revise or update as necessary, the O & M Manual(s) in order for the document(s) to remain useful and relevant to current equipment and operation practices. Reviews shall be conducted annually, and revisions or updates shall be completed as necessary. For any significant changes in facility equipment or operation practices, applicable revisions shall be completed within 90 days of completion of such changes.

- c. The Discharger shall provide the Executive Officer, upon his or her request, a report describing the current status of its operations and maintenance manual, 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 applicable changes to, its operations and maintenance manual.

14 Contingency Plan, Review and Status Reports.

- a. The Discharger shall maintain a Contingency Plan as required by Board Resolution 74-10 (attached), and as prudent in accordance with current facility emergency planning. The discharge of pollutants in violation of this Order where the Discharger has failed to develop and/or adequately implement a contingency plan will be the basis for considering such discharge a willful and negligent violation of this Order pursuant to Section 13387 of the California Water Code.
- b. The Discharger shall regularly review, and update as necessary, the Contingency Plan in order for the plan to remain useful and relevant to current equipment and operation practices. Reviews shall be conducted annually, and updates shall be completed as necessary.
- c. The Discharger shall provide the Executive Officer, upon his or her request, a report describing the current status of its contingency plan and review, 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 applicable changes to, its operations and maintenance manual.

15. 303(d)-Listed Pollutants, Site-Specific Objective and TMDL Status Review

The Discharger shall participate in the development of region-wide TMDL or SSO programs. By January 31 of each year, the Discharger shall submit an update to the Board to document its participation efforts toward development of the TMDL(s) or SSO(s). Board staff shall review the status of TMDL development. This Order may be reopened in the future to reflect any changes required by TMDL development.

16. New Water Quality Objectives

As new or revised water quality objectives come into effect for the Bay and contiguous water bodies (whether statewide, regional or site-specific), effluent limitations in this Order will be modified as necessary to reflect updated water quality objectives. Adoption of effluent limitations contained in this Order are not intended to restrict in any way future modifications based on legally adopted water quality objectives.

17. Self-Monitoring Program

The Discharger shall comply with the Self-Monitoring Program (SMP) for this Order as adopted by the Board. The SMP may be amended by the Executive Officer pursuant to U.S. EPA regulations 40 CFR122.63.

18. Standard Provisions and Reporting Requirements

The Discharger shall comply with all applicable items of the *Standard Provisions and Reporting Requirements for NPDES Surface Water Discharge Permits, August 1993* (attached), or any amendments thereafter. Where provisions or reporting requirements specified in this Order are different from equivalent or related provisions or reporting requirements given in 'Standard Provisions', the specifications of this Order shall apply.

19. Change in Control or Ownership

- a. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Board.
- b. To assume responsibility of and operations under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order (see *Standard Provisions & Reporting Requirements, August 1993, Section E.4.*). Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code.

20. Permit Reopener

The Board may modify, or revoke and reissue, this Order and Permit if present or future investigations demonstrate that the discharge(s) governed by this Order will or have the potential to cause or contribute to adverse impacts on water quality and/or beneficial uses of the receiving waters.

21. NPDES Permit Effective Date

This Permit is effective upon adoption, May 19, 2005. This Order shall serve as a National Pollutant Discharge Elimination System (NPDES) permit pursuant to Section 402 of the Clean Water Act or amendments thereto provided the U.S. EPA Regional Administrator has no objection. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

22. Order Expiration and Reapplication

- a. This Order expires on April 19, 2010.
- b. In accordance with Title 23, Chapter 3, Subchapter 9 of the California Administrative Code, the Discharger must file a report of waste discharge no later than 180 days before the expiration date of this Order as application for reissue of this permit and waste discharge requirements. The application shall be accompanied by a summary of all available water quality data including conventional pollutant data from no less than the most recent three years, and of toxic pollutant data no less than from the most recent five years, in the discharge and receiving water. Additionally, the Discharger must include with the application the final results of any studies that may have bearing on the limitations and requirements of the next permit. Such studies include dilution studies, translator studies and alternate bacteria indicator studies, ~~and~~ whole effluent toxicity (acute and/or chronic)

GWF Nichols Road (Site V) Power Plant
NPDES Permit No. CA0029122

screening studies ~~and final limit compliance feasibility studies for cyanide (Provision D.4), lead, nickel, zinc (Provision D.6), copper, mercury, and selenium.~~

I, Bruce H. Wolfe, Executive Officer, do hereby certify that 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 18, 2005.

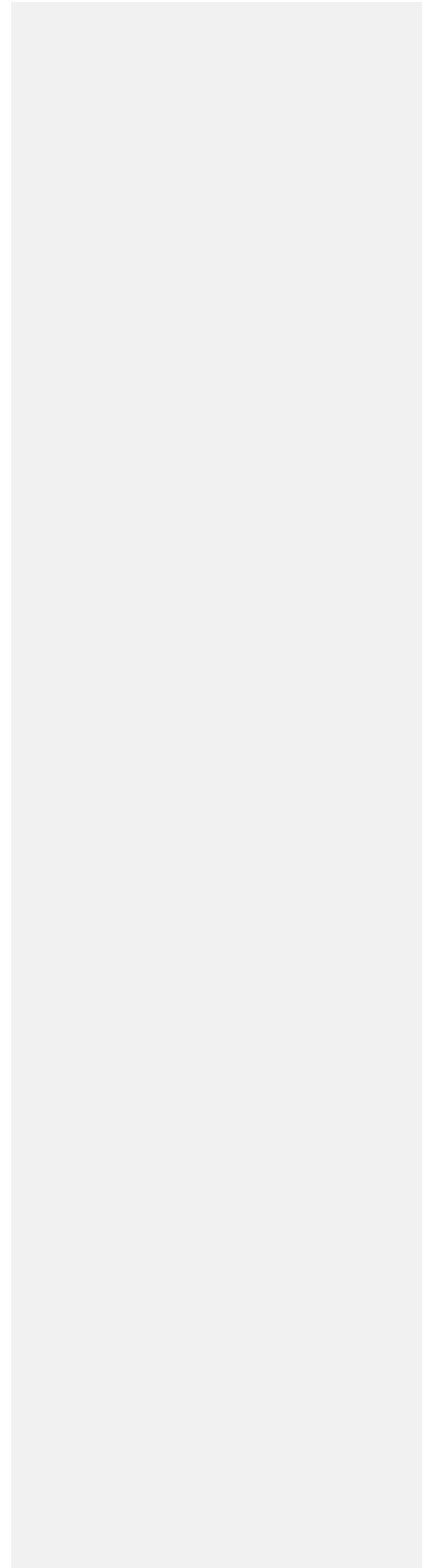
BRUCE H. WOLFE
Executive Officer

Attachments:

- A. Discharge Facility Location Map
- B. Discharge Facility Process Diagrams
- C. Self-Monitoring Program (SMP), Part B
- D. Fact Sheet
- E. February 1, 2005 Infeasibility Study for Site V
- F. The following documents are part of this Permit, but are not physically attached due to volume. They are available on the web at: www.waterboards.ca.gov/sanfranciscobay/Download.htm
 - Self-Monitoring Program, Part A (August 1993)
 - Standard Provisions and Reporting Requirements, August 1993
 - Board Resolution No. 74-10
 - August 6, 2001 Letter

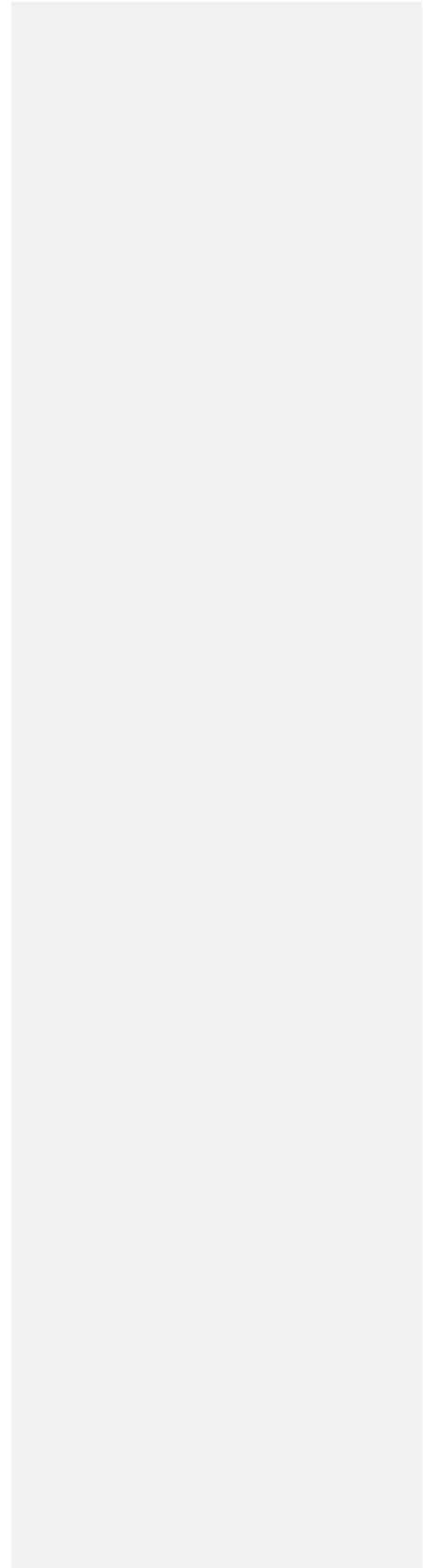
GWF Site V Permit

Attachment A
Discharge Facility Location Map



GWF Site V Permit

Attachment B
Discharge Facility Process Diagram



GWF Site V Permit

Attachment C
Self-Monitoring Plan

GWF Nichols Road (Site V) Power Plant
NPDES Permit No. CA0029122

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN FRANCISCO BAY REGION

TENTATIVE SELF-MONITORING PROGRAM

FOR

GWF POWER SYSTEMS COMPANY, INC.

NICHOLS ROAD (SITE V) POWER PLANT

BAY POINT, CONTRA COSTA COUNTY

NPDES PERMIT NO. CA0029122

ORDER NO. R2-2005-XXXX

Consists of:

Part A (not attached)

August 1993

and

Part B (Attached)

Adopted: May 18, 2005

Effective: May 19, 2005

GWF Nichols Road (Site V) Power Plant
NPDES Permit No. CA0029122

CONTENTS:

- I.** DESCRIPTION of SAMPLING and OBSERVATION STATIONS
- II.** SCHEDULE of SAMPLING, ANALYSES and OBSERVATIONS (Table 1)
- III.** SPECIFICATIONS for SAMPLING, ANALYSES and OBSERVATIONS
- IV.** SELECTED CONSTITUENTS MONITORING (Table 2)
- V.** REPORTING REQUIREMENTS
- VI.** RECORDING REQUIREMENTS - RECORDS TO BE MAINTAINED
- VII.** SELF-MONITORING PROGRAM CERTIFICATION

I. DESCRIPTION of SAMPLING and OBSERVATION STATIONS

NOTE: A sketch showing the locations of all sampling and observation stations shall be included in the Annual Report, and in the monthly report if stations change.

A. EFFLUENT

<u>Station</u>	<u>Description</u>
E-001	Discharge from the cooling tower to Outfall E-001. At any point after discharge from the cooling tower and before discharge to Suisun Bay.

B. RECEIVING WATER STATIONS

<u>Station</u>	<u>Description</u>
C-1	300 feet upstream from the point of discharge, equidistant from the shoreline with that of the diffuser.
C-2	300 feet downstream from the point of discharge, equidistant from the shoreline with that of the diffuser.
C-3	In Suisun Bay, located right above the Nichols Road Power Plant effluent diffuser and 2 feet below water surface.

II. SCHEDULE of SAMPLING, ANALYSES and OBSERVATIONS

The schedule of sampling, analysis and observation shall be that given in Table 1 below.

Table 1. Schedule of Sampling, Analyses and Observations [1]

Sampling Station			Effluent		Receiving Water		
			E-001		C-1	C-2	C-3
Type of Sample:			G	C-24	G	G	G
Parameter	Units	Notes					
Flow Rate	gpd	[2]		Cont/D			
pH	Standard units			Cont/D			
Temperature	°C and °F			Cont/D	2/Y	2/Y	2/Y
Dissolved Oxygen (D.O.)	mg/L		W		2/Y	2/Y	
Un-ionized Ammonia (as N)	mg/L				2/Y	2/Y	
Sulfides	mg/L				2/Y	2/Y	
Total Suspended Solids (TSS)	mg/L			M			
Oil & Grease	mg/L	[3]	M				

Sampling Station			Effluent		Receiving Water		
			E-001		C-1	C-2	C-3
Type of Sample:			G	C-24	G	G	G
Parameter	Units	Notes					
Chlorine Residual	mg/L	[4]	H, when chlorination				
Chronic Toxicity	% Survival	[5]		2/Y			
Acute Toxicity	% Survival	[6]		M			
Copper	µg/L & kg/mo			M			
Lead	µg/L & kg/mo			M			
Mercury	µg/L & kg/mo	[7]		M			
Nickel	µg/L & kg/mo			M			
Selenium	µg/L & kg/year			M			
Zinc	µg/L & kg/mo			M			
Cyanide	µg/L & kg/mo		M				
2,3,7,8-TCDD and congeners	pg/L	[8]	2/Y				
4,4'-DDE	µg/L		2/Y				
Dieldrin	µg/L		2/Y				
August 6, 2001, Table 1 Selected Constituents (except those listed above)		[9]	As specified in August 6, 2001 Letter				

LEGEND FOR TABLE 1

Sampling Stations:

E = facility effluent
 C = receiving water

Frequency of Sampling:

Cont/D = continuous monitoring & daily reporting
 D = once each day
 H = once each hour (at hourly intervals)
 M = once each month
 W = once each week
 2/Y = twice each calendar year (at about 6 months intervals)

Types of Samples:

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

Parameter and Unit Abbreviations:

gpd = gallons per day
 mg/L = milligrams per liter
 µg/L = micrograms per liter
 kg/mo = kilograms per month
 pg/L = picograms per liter

FOOTNOTES FOR TABLE 1

- [1] Composite sampling: 24-hour composites may be made up of discrete grabs collected over the course of a day and volumetrically or mathematically flow-weighted. Samples for inorganic pollutants may be combined prior to analysis. Samples for organic pollutants should be analyzed separately. If only one grab sample will be collected, it should be collected during periods of maximum peak flows. Samples shall be taken on random days.
- Grab samples shall be collected coincident with composite samples collected for the analysis of regulated parameters.
- [2] Flow monitoring: Effluent flow shall be measured continuously at Outfall E-001 and recorded and reported daily. For effluent flows, the following information shall also be reported, monthly:
- Daily: Daily Flow (MG)
Monthly: Average Daily Flow (MGD)
Monthly: Maximum Daily Flow (MGD)
Monthly: Minimum Daily Flow (MGD)
Monthly: Total Flow Volume (MG)
- [3] Oil & Grease Monitoring: Each Oil & 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 an 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] Chlorine residual: Monitor dechlorinated effluent at a minimum, every hour, when conducting the chlorination. Report, on a daily basis, both maximum and minimum concentrations, for samples taken both prior to, and following dechlorination. Report each non-zero residual event along with the cause and corrective actions taken. Total chlorine dosage (kg/day) shall be recorded on a daily basis.
- [5] Critical Life Stage Toxicity Test shall be performed and reported in accordance with the Chronic Toxicity Requirements specified in Sections V and VI of the Self-Monitoring Program contained in this Order.
- [6] Bioassays: Effluent used for fish bioassays must be dechlorinated prior to testing. Monitoring of the bioassay water shall include, on a daily basis, the parameters specified in the U.S. EPA-approved method, such as pH, dissolved oxygen, ammonia nitrogen, and temperature. These results shall be reported. If the fish survival rate in the effluent is less than 70 percent or if the control fish survival rate is less than 90 percent, the bioassay test shall be restarted with new batches of fish and shall continue as soon as practicable until compliance is demonstrated. If there are no violations after one year of monthly acute toxicity testing after the Discharger switches to the U.S. EPA 5th Edition, acute toxicity testing frequency may be changed to quarterly, upon approval by the Executive Officer. After any change to quarterly monitoring the monitoring frequency will return to monthly if either: (1) acute toxicity is observed in violation of the permit limitations or (2) changes occur in the volume or characteristics of the effluent that might cause acute toxicity. Monthly monitoring is then required until three consecutive months without violation of the acute toxicity limitations. (See Finding 63 of the Order).
- [7] The Discharger may, at its option, sample effluent mercury either as grab or as 24-hour composite samples. Use ultra-clean sampling (U.S. EPA 1669) to the maximum extent practicable and ultra-clean analytical methods (U.S. EPA 1631) for mercury monitoring. The Discharger may use alternative methods of analysis (such as U.S. EPA 245), if that alternative method has an ML of 2 ng/L or less.

- [8] Chlorinated dibenzodioxins and chlorinated dibenzofurans shall be analyzed using the latest version of U.S. EPA Method 1613; the analysis shall be capable of achieving one-half of the U.S EPA MLs. In addition, the Discharger shall participate as appropriate in the regional collaborative effort to validate the 4-liter sample methodology for lowering the detection limit for dioxins. At a minimum, the Discharger is required to monitor twice a year for the life of this Order. Alternative methods of analysis must be approved by the Executive Officer.
- [9] Sampling for Table 1 Selected Constituents in the SIP is addressed in a letter dated August 6, 2001, from Board Staff: "Requirements for Monitoring of Pollutants in Effluent and Receiving Water to Implement New Statewide Regulations and Policy" (not attached, but available for review or download on the board's website at www.swrcb.ca.gov/rwqcb). The Discharger shall fulfill the sampling requirements as specified in its approved sampling plan submitted under the August 6, 2001 Letter.

Table 2 lists the MLs (SIP) of the priority constituents included in Table 1. For compliance monitoring, analyses shall be conducted using the lowest commercially available and reasonably achievable detection levels. The objective is to provide quantification of constituents sufficient to allow evaluation of observed concentrations with respect to the MLs given below. All MLs are expressed as µg/L, approximately equal to parts per billion (ppb), unless otherwise stated.

Table 2. Minimum Levels (µg/l or ppb)

CTR #	Constituent [1]	Types of Analytical Methods [2]											
		GC	GC MS	LC	Color	FAA	GF AA	ICP	ICP MS	SPG FAA	HYD RIDE	CV AA	DCP
6.	Copper [3]					25	5	10	0.5	2			1000
7.	Lead					20	5	5	0.5	2			10,000
8.	Mercury [4]								0.5			0.2	
9.	Nickel					50	5	20	1	5			1000
10.	Selenium						5	10	2	5	1		1000
13.	Zinc					20		20	1	10			1000
14.	Cyanide				5								
16.	2, 3, 7, 8-TCDD and 16 congeners [5]	EPA 1613, 5 pg/L 5 pg/L – 25 pg/L											
109.	4,4'-DDE	0.05											
111.	Dieldrin	0.01											

FOOTNOTES FOR TABLE 2

- [1] According to the SIP, method-specific factors (MSFs) can be applied. In such cases, this additional factor must be applied in the computation of the reporting limit. Application of such factors will alter the reported ML (as described in section 2.4.1). Dischargers are to instruct laboratories to establish calibration standards so that the ML value is the lowest calibration standard. At no time is the discharger to use analytical data derived from the extrapolation beyond the lowest point of the calibration curve.
- [2] 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; Hydride = Gaseous Hydride Atomic Absorption; CVAA = Cold Vapor Atomic Absorption; ICP = Inductively Coupled Plasma;

GWF Nichols Road (Site V) Power Plant
NPDES Permit No. CA0029122

ICPMS = Inductively Coupled Plasma/Mass Spectrometry; SPGFAA = Stabilized Platform Graphite Furnace Atomic Absorption (i.e. EPA 200.9); DCP = Direct Current Plasma.

- [3] For copper, the Discharger may also use the following laboratory techniques with the relevant minimum level: GFAA with a minimum level of 5 µg/L and SPGFAA with a minimum level of 2 µg/L.
- [4] Use ultra-clean sampling (EPA 1669) to the maximum extent practicable, and ultra-clean analytical methods (EPA 1631) for mercury monitoring. The Discharger may use alternative methods of analysis (such as EPA 245), if that alternate method has a Minimum Level of 2 ng/l or less.
- [5] The SIP does not contain an ML for this constituent. Use Method 1613 for TCDD analysis and test for the seventeen congeners. The Board and BACWA have agreed on the MLs for 17 TCDD congeners (see BACWA letter dated April 23, 2002).

III. REPORTING REQUIREMENTS

- A. If any discrepancies exist between Part A and Part B of the SMP, Part B prevails.
- B. Sections C.3. and C.5. are satisfied by participation in the Regional Monitoring Program.
- C. Modify Section F.4 as follows:

Self-Monitoring Reports

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

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

- g. The Discharger has the option to submit all monitoring results in an electronic reporting format approved by the Executive Officer. The ERS format includes, but is not limited to, a transmittal letter, summary of violation details and corrective actions, and transmittal receipt. If there are any discrepancies between the ERS requirements and the "hard copy" requirements listed in the SMP, then the approved ERS requirements supercede.
- h. If the Discharger wishes to invalidate any measurement taken within the reporting period, the letter of transmittal for the reporting period in question shall include: a formal request by the Discharger to invalidate the measurement; the original measurement in question; the reason for invalidating the measurement; all relevant documentation that supports the invalidation (e.g., laboratory sheet, log entry, test results, etc.); and discussion of the corrective actions taken or planned (with a time schedule for completion), to prevent recurrence of the sampling or measurement problem. The invalidation of a measurement requires the approval of Board staff, and shall be based solely on the documentation submitted with the letter of transmittal.

- D. Add at the end of Section F.5, Annual Reporting, the following:
 - d. A plan view drawing or map showing the Discharger's facility, flow routing and sampling and observation station locations.
- E. Amend Section E as Follows:

Recording Requirements – Records to be Maintained

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

IV. ADDITIONS TO PART A OF SELF-MONITORING PROGRAM

Reporting Data in Electronic Format:

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

- a. *Reporting Method:* The discharger shall submit SMRs electronically via the process approved by the Executive Officer in a letter dated December 17, 1999, Official Implementation of Electronic Reporting System (ERS).
- b. *Modification of reporting requirements:* Reporting requirements F.4 in the attached *Self-Monitoring program, Part A*, dated August 1993, shall be modified as follows. In the future, the Board intends to modify Part A to reflect these changes.
- c. *Monthly Report Requirements:* For each calendar month, a self-monitoring report (SMR) shall be submitted to the Board in accordance with the following:
 - i. The report shall be submitted to the Board no later than the first day of the second month after the reporting period ends.
 - ii. *Letter of Transmittal:* Each report shall be submitted with a letter of transmittal. This letter shall include the following:
 - (1) Identification of all violations of effluent limits or other discharge requirements found during the monitoring period;
 - (2) Details of the violations: parameters, magnitude, test results, frequency, and dates;
 - (3) The cause of the violations;
 - (4) Discussion of corrective actions taken or planned to resolve violations and prevent recurrence, and dates or time schedule of action implementation. If previous reports have been submitted that address corrective actions, reference to such reports is satisfactory;

- (5) Signature: The letter of transmittal shall be signed by the discharger's principal executive officer or ranking elected official, or duly authorized representative, and shall include the following certification statement:

"I certify under penalty of law that this document and all attachments have been prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. 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."

- (6) Compliance evaluation summary: Each report shall include a compliance evaluation summary. This summary shall include the number of samples in violation of applicable effluent limits.
- (7) Results of analyses and observations.
- (8) Tabulations of all required analyses and observations, including parameter, sample date, sample station, and test result.
- (9) If any parameter is monitored more frequently than required by this permit and SMP, the results of this additional monitoring shall be included in the monitoring report, and the data shall be included in data calculations and compliance evaluations for the monitoring period.
- (10) Calculations for all effluent limits that require averaging of measurements shall utilize an arithmetic mean, unless specified otherwise in this permit or SMP.

V. CHRONIC TOXICITY MONITORING REQUIREMENTS

- A. Test Species and Frequency: The Discharger shall collect 24-hour composite samples at E-001 on consecutive days for critical life stage toxicity testing as indicated below:

<u>Test Species</u>	<u>Frequency</u>
the most sensitive species identified in the most recent screening phase test ^{[1],[2]}	twice per year

[1] If the Discharger uses two or more species, after at least twelve test rounds, the Discharger may request the Executive Officer to decrease the required frequency of testing, and/or to reduce the number of compliance species to one. Such a request may be made only if toxicity exceeding the TUC values specified in the effluent limitations was never observed using that test species.

[2] Upon adoption of this Order, the Discharger shall perform a screening phase test to determine the most sensitive species.

- B. Conditions for Accelerated Monitoring: The Discharger shall accelerate the frequency of monitoring to monthly, or as otherwise specified by the Executive Officer, after exceeding a single sample maximum value of 10 TUC.

- C. Methodology: Sample collection, handling and preservation shall be in accordance with U.S. EPA protocols. The test methodology used shall be in accordance with the references cited in the Permit, or as approved by the Executive Officer. A concurrent reference toxicant test shall be performed for each test.
- D. Dilution Series: The Discharger shall conduct tests at 100%, 50%, 25%, 12.5%, and 6.25%, or a different dilution series, as appropriate.

VI. CHRONIC TOXICITY REPORTING REQUIREMENTS

- A. Routine Reporting: Toxicity test results for the current reporting period shall include the following, at a minimum, for each test:
 - 1. Sample date(s)
 - 2. Test initiation date
 - 3. Test species
 - 4. End point values for each dilution (e.g., number of young, growth rate, percent survival)
 - 5. NOEC value(s) in percent effluent
 - 6. IC₁₅, IC₂₅, IC₄₀, and IC₅₀ values (or EC₁₅, EC₂₅ ... etc.) in percent effluent
 - 7. TUC values (100/NOEC, 100/IC₂₅, and 100/EC₂₅)
 - 8. Mean percent mortality (\pm s.d.) after 96 hours in 100% effluent
 - 9. NOEC and LOEC values for reference toxicant test(s)
 - 10. IC₅₀ or EC₅₀ value(s) for reference toxicant test(s)
 - 11. Available water quality measurements for each test (i.e., pH, D.O., temperature, conductivity, hardness, salinity, ammonia)
- B. Compliance Summary: The results of the chronic toxicity testing shall be provided in the most recent self-monitoring report and shall include a summary table of chronic toxicity data from at least eleven of the most recent samples. The information in the table shall include the items listed above under VI.A, item numbers 1, 3, 5, 6(IC₂₅ or EC₂₅), 7, and 8.

VII. MISCELLANEOUS REPORTING

- A. The Discharger shall retain and submit (when required by the Executive Officer) the following information concerning the monitoring program for organic and metallic pollutants:
 - 1. Description of sample stations, times, and procedures.
 - 2. Description of sample containers, storage, and holding time prior to analysis.
 - 3. Quality assurance procedures together with any test results for replicate samples, sample blanks, and any quality assurance tests, and the recovery percentages for the internal surrogate standard.
- B. The Discharger shall submit in the monthly SMR the metallic and organic test results together with the detection limits (including unidentified peaks) and MLs. All unidentified (non-Priority

GWF Nichols Road (Site V) Power Plant
NPDES Permit No. CA0029122

Pollutant) peaks detected in the U.S. EPA 624, 625 test methods shall be identified and semi-quantified. Hydrocarbons detected at less than 10 µg/L based on the nearest internal standard may be appropriately grouped and identified together as aliphatic, aromatic, and unsaturated hydrocarbons. All other hydrocarbons detected at greater than 10 µg/L based on the nearest internal standard shall be identified and semi-quantified.

VIII. SELECTED CONSTITUENTS MONITORING

- A. Effluent monitoring shall include evaluation for all constituents listed in Table 1 by sampling and analysis of final effluent.
- B. Analyses shall be conducted using the lowest commercially available and reasonably achievable detection levels. The objective is to provide quantification of constituents sufficient to allow evaluation of observed concentrations with respect to respective WQOs.

IX. MONITORING METHODS AND MINIMUM DETECTION LEVELS

The Discharger may use the methods listed in Table 2, above, or alternative test procedures that have been approved by the U.S. EPA Regional Administrator pursuant to 40 CFR 136.4 and 40 CFR 136.5 (revised as of May 14, 1999).

X. SELF-MONITORING PROGRAM CERTIFICATION

I, Bruce H. Wolfe, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

- 1. Has been developed in accordance with the procedure set forth in this Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Board Order No. R2-2005-XXXX.
- 2. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the Discharger, and revisions will be ordered by the Executive Officer.
- 3. Is effective as of May 19, 2005.

BRUCE H. WOLFE
EXECUTIVE OFFICER

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-Kärber. 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 U.S. EPA'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 Tables 1 and 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 Table 3 (attached).

GWF Nichols Road (Site V) Power Plant
NPDES Permit No. CA0029122

- 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.
- C. The Discharger shall submit a screening phase proposal to the Executive Officer for approval. The proposal shall address each of the elements listed above.

Table A. Critical Life Stage Toxicity Tests for Estuarine Waters

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

Toxicity Test References:

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

GWF Site V Permit

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 B. Critical Life Stage Toxicity Tests for Fresh Waters

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

Toxicity Test Reference:

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

Table C. Toxicity Test Requirements for Stage One Screening Phase

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

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

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

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

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

Attachment D
Fact Sheet

Attachment E
Infeasibility Study For Site V
February 1, 2005