CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN FRANCISCO BAY REGION

NPDES PERMIT NO. CA0029122

Order No.: R2-2005-0019

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

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REISSUING WASTE DISCHARGE REQUIREMENTS FOR:
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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.

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).

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 April27, 2010 or until the Board adopts TMDL-based effluent limitations for mercury. For lead, nickel, and zinc, the compliance schedule extends until 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, narrative	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 $CaCO_3$.

[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 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 WOQs/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 $CaCO_3$.

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 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 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 $CaCO_3$, 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 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 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 congers 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.

c. There may be some redundancy between the Pollution Prevention Program and the Pollutant Minimization Program requirements.

d. 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.

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 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
	kg/day	10.47	15.70
Oil and Grease	mg/L	10	20
	kg/day	3.49	6.98
Settleable Matter	ml/l-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):** 0.0[1] 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:

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[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	[4]	36
Lead	[5]	34
Mercury	[3][6]	0.071
Mercury Mass Limitation	[7]	4.5 g/year
Nickel	[5]	92.9
Selenium	[3]	34.6
Selenium Mass Limitation	[7]	2.20 kg/year
Zinc	[5]	562
Cyanide	[3][8]	5
4,4,'-DDE	[4]	0.05
Dieldrin	[4]	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, 2010 or until the Board amends the limitation based on additional data, SSO, or the WLAs in respective TMDLs.

[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 December 31, 2014 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 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. *Compliance Schedule.* The Discharger should track relevant national studies, participate in regional studies and implement measures identified in their Feasibility Study.. 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.
b. *SSO Study.* The Discharger shall actively participate in the development of regional SSOs for cyanide.	Annual progress reports to be included with the Discharger's Annual Self-Monitoring reports beginning in 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

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 fist 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 TUc, 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 TUc). 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, whole effluent toxicity (acute and/or chronic) 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

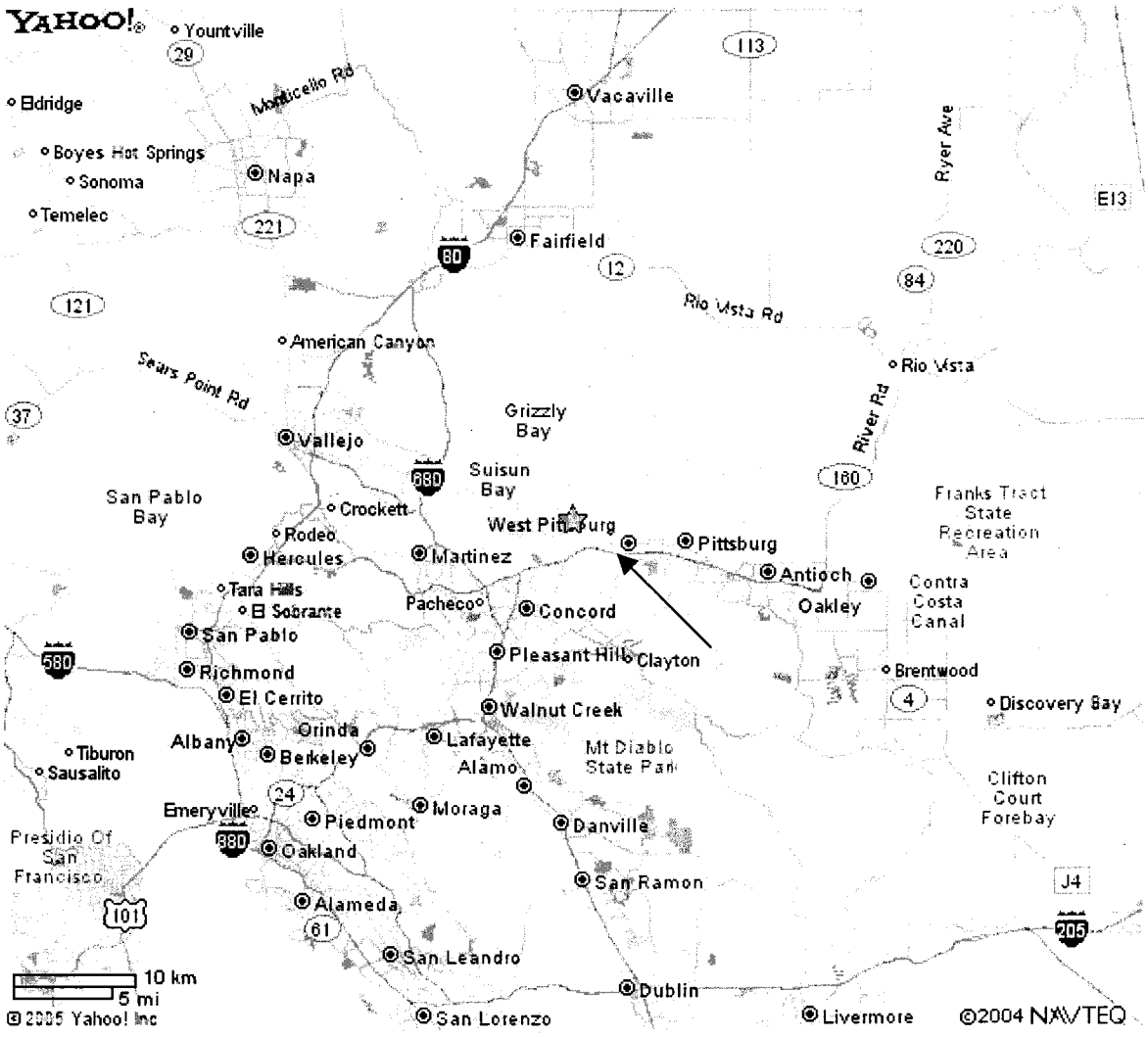
Attachment A

Discharge Facility Location Map

Attachment A

Site Location Map

GWF Power Systems, L. P. Nichols Road (Site V) Power Plant



Attachment B

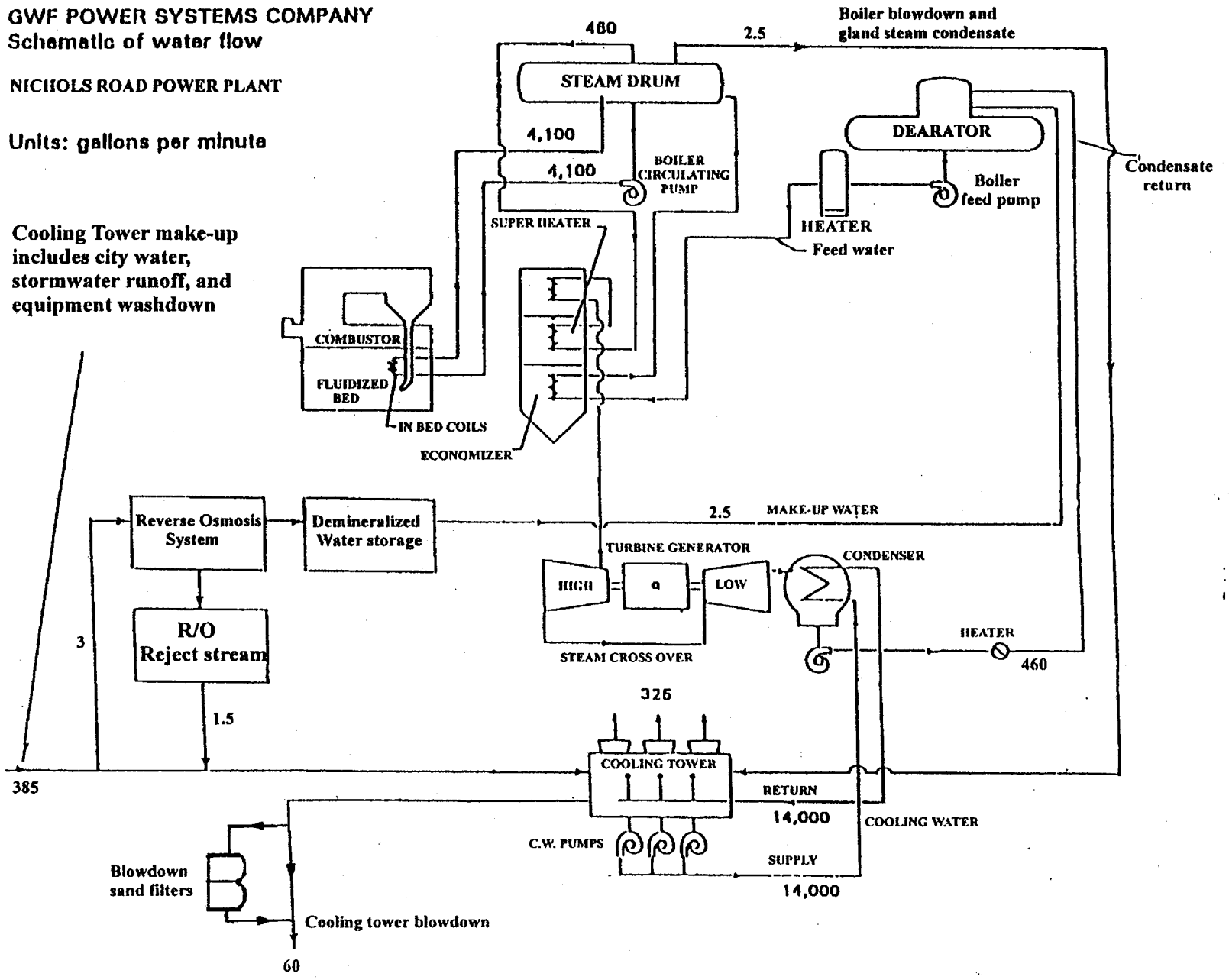
Discharge Facility Process Diagram

GWF POWER SYSTEMS COMPANY
Schematic of water flow

NICHOLS ROAD POWER PLANT

Units: gallons per minute

Cooling Tower make-up includes city water, stormwater runoff, and equipment washdown



Attachment C

Self-Monitoring Plan

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. R2-2005-0019

Consists of:

Part A (not attached)

August 1993

and

Part B (Attached)

Adopted: May 18, 2005

Effective: May 19, 2005

CONTENTS:

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

Station	Description
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

Station	Description
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				
Chlorine Residual	mg/L	[4]	H, when				

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**					
			chlorina -tion				
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

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

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)

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; 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:

Test Species	Frequency
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. IC_{15}, IC_{25}, IC_{40}, and IC_{50} values (or EC_{15}, EC_{25} ... etc.) in percent effluent
7. TUc values (100/NOEC, $100/IC_{25}$, and $100/EC_{25}$)
8. Mean percent mortality ($\pm$ s.d.) after 96 hours in 100% effluent
9. NOEC and LOEC values for reference toxicant test(s)
10. IC_{50} or EC_{50} 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(IC_{25} or EC_{25}), 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 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. R2-2005-0019.

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

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-Karber. EC_{25} is the concentration of toxicant (in percent effluent) that causes a response in 25 percent of the test organisms.

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

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

Toxicity Test References:

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

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

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

Table B. Critical Life Stage Toxicity Tests for Fresh Waters

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

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
1515 CLAY STREET, SUITE 1400
OAKLAND, CA 94612
(510) 622 – 2300 Fax: (510) 622 - 2460

FACT SHEET
for

NPDES PERMIT AND WASTE DISCHARGE REQUIREMENTS FOR

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

NPDES PERMIT NO. CA0029122
ORDER NO. R2-2005-0019

PUBLIC NOTICE:

Written Comments

- Interested persons are invited to submit written comments concerning this draft permit.
- Comments must be submitted to the Regional Board no later than 5:00 p.m. on March 3, 2005.
- Send comments to the Attention of Ann Powell.

Public Hearing

- The draft permit will be considered for adoption by the Board at a public hearing during the Board's regular monthly meeting at: Elihu Harris State Office Building, 1515 Clay Street, Oakland, CA; 1st floor Auditorium.
- This meeting will be held on: May 18, 2005, starting at 9:00 am.

Additional Information

- For additional information about this matter, interested persons should contact Water Board staff member: Ms. Ann Powell, Phone: (510) 622-2474;
  email: APowell@waterboards.ca.gov

This Fact Sheet contains information regarding a reissuance of waste discharge requirements and National Pollutant Discharge Elimination System (NPDES) permit for the GWF Power Systems, L.P. Nichols Road (Site V) Power Plant for industrial wastewater discharges. The Fact Sheet describes the factual, legal, and methodological basis for the sections addressed in the proposed permit and provides supporting documentation to explain the rationale and assumptions used in deriving the effluent limitations.

I. INTRODUCTION

The Discharger applied for reissuance of waste discharge requirements and a permit to discharge wastewater to waters of the State and the United States under the NPDES program. The application and Report of Waste Discharge are dated January 20, 2004.

1. Facility Description

The Discharger owns and operates the Nichols Road (Site V) Power Plant, located at 555 Nichols Road, Bay Point, Contra Costa County, California.

The Site V Plant is a petroleum coke combustion, steam electric generating station with a maximum generating capacity of 18.2 net megawatts.

Wastewater is discharged to Suisun Bay via an underwater outfall (Outfall E-001) that extends approximately 170 feet into the Bay. The depth of the diffuser varies from 12 feet to 22 feet. Outfall E-001, the wastewater discharge point for the facility, discharges wastewater composed of steam condensate, demineralizer wastewater, cooling tower blowdown, equipment wash-down waters, and storm water runoff. The cooling tower also receives make-up water from the municipal water source and storm water. The average annual volume discharged through Outfall E-001 is approximately 46,000 gallons per day (gpd) from January 2000 through September 2004.

2. Process Description

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. Effluent from the facility is discharged into Suisun Bay. Effluent discharged via Outfall E-001 is discharged into the Bay at latitude 38° 03' 15" and longitude 121° 59' 15".

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.

3. Receiving Water Beneficial Uses

The receiving waters for the subject discharge are the waters of the Suisun Bay. The beneficial uses for the Bay, as identified in the Regional Board's June 21, 1995 Water Quality Control Plan San Francisco Bay Basin (Region 2) (the Basin Plan) and based on known uses of the receiving waters near 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

4. Receiving Water Salinity

Salinity data for the period of February 1993 – August 2001 monitored through the San Francisco Bay Regional Monitoring Program for Trace Substances (the RMP) at Honker Bay station indicates

a minimum salinity of 0 part per thousand (ppt), a maximum salinity of 7.2 ppt, with 52 % of the measurements less than 1 ppt. The Basin Plan and CTR state that 95% of the data fall below 1 ppt to be classified as freshwater or 95% of the data to be greater than 10 ppt to be classified as saltwater. Therefore, the receiving water is classified as estuarine, the reasonable potential analysis (RPA) and limitations in this Order are based on freshwater or saltwater WQOs/WQC, whichever is more stringent.

5. Receiving Water Hardness

Some WQOs/WQC are hardness dependent. Hardness data collected through the RMP at the Honker Bay station during 1993 through 2001 are used to determine a representative ambient background hardness value. 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 minimum observed hardness value is 52 mg/L and the maximum value is 1230 mg/L. Section F.2.f Hardness, of the CTR (page 31692), states that the derivations of criteria are most accurate between the hardness values of 25 mg/L to 400 mg/L. The hardness data set was censored (from 21 data points to 12 data points) to eliminate hardness values above 400 mg/L and to eliminate hardness values obtained when the receiving water salinity was above 1.0 ppt. From the censored data set, the adjusted geometric mean (AGM, which is the value that 30% of the data points fall below the AGM) was calculated to be 70 mg/L. The following lists the procedure to calculate an AGM:

1. Calculate the logarithms of each hardness value.
2. Calculate the arithmetic mean of the logarithms.
3. Calculate the standard deviation (s) of the logarithms.
4. Calculate the standard error (SE) of the arithmetic mean:
   $SE = s/\sqrt{n}$
5. Calculate A = arithmetic mean - $t_{0.7} \times SE$
   where $t_{0.7}$ is the value of Student's *t* statistics for a one-sided probability of 0.7 with *n-1* degrees of freedom, *n*-sample size. With a sample size of 12, $t_{0.7} = 0.5386$.
6. Take the antilogarithm of A, antilog A is the Adjusted Geometric Mean (AGM).

II. DESCRIPTION OF EFFLUENT

Table A below presents the quality of the discharge at Outfall E-001 from the Report of Waste Discharge (ROWD) dated January 20, 2004 for some pollutants, and based on the self-monitoring data during January 2000 through September 2004 for other pollutants.

Table A. Summary of Discharge Data

Parameter	Average	Range (Maximum daily)	No. of samples
Biochemical oxygen demand (BOD)[1]	<6	6 (max)	5
Chemical oxygen demand (COD)[1]	46.2	70 (max)	5
Total organic carbon, mg/L[1]	16.5	35 (max)	4
TSS, mg/L	4.5[2]	1-18	55
TSS, kg/day	1.5[2]	0.1-7.6	49
Temperature, °F	--	49-86	1622

Parameter	Average	Range (Maximum daily)	No. of samples
Oil and Grease, mg/L	4.7[2]	0.36-13	60
Oil and Grease, kg/day	0.1[2]	0.1-4.4	55
pH, standard unit	--	6.8-8.6	1622
Settable matter, ml/L-hr	<0.1[3]	<0.1	54
Ammonia mg/L[1]	0.16	0.24 (max)	5
Acute Toxicity, Percent Survival (both species),	--	90-100	368
Antimony, µg/L	0.85	0.6-1.1	4
Arsenic, µg/L	8.3	2-11	4
Beryllium, µg/L	<0.06[3]	<0.06	4
Cadmium, µg/L	0.13	0.07-0.3	4
Chromium, Total, µg/L	8.3[4]	0.8-127	40
Chromium VI, µg/L	2.4[4]	1-5.6	10
Copper, µg/L	20.5	8-32.4	73
Lead, µg/L	4.1[4]	0.3-34	43
Mercury, µg/L	0.024[4]	<0.0005-0.6	68
Nickel, µg/L	11.7[4]	3.3-92.9	51
Selenium, µg/L	7.8	2-19.8	26
Silver, µg/L	0.08[5]	<0.02-<0.1	41
Thallium, µg/L	<0.03[3]	<0.03	4
Zinc, µg/L	74.3	7-390	75
Cyanide, µg/L	3.2[4]	<0.6-2	23
TCDD TEQ, pg/L	0.306	0.0306-0.966	4

[1] These statistics are from the Discharger's ROWD.
[2] These average concentrations were calculated by taking the detection limits of the measurements, if the measurements are non-detect.
[3] All values are non-detect, with the same detection limit.
[4] These average concentrations were calculated by taking the half detection limits of the non-detected values.
[5] This is the only sample that was detected below the reporting limit (detected but not quantified).

III. GENERAL RATIONALE AND REGULATORY BASES

- the Federal *Water Pollution Control Act*, Sections 301 through 305, and 307, and amendments thereto, as applicable (the Clean Water Act – the CWA);

- the Board's June 21, 1995 *Water Quality Control Plan San Francisco Bay Basin (Region 2)* (the Basin Plan), and amendments thereto, as subsequently approved by the State Water Resources Control Board (the State Board), the Office of Administrative Law (OAL) and the U.S. EPA;

- the State Water Resource Control Board's (the State Board's) March 2, 2000 *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of*

California (the State Implementation Plan - the SIP), as subsequently approved by the OAL and the U.S. EPA;

- 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 – the CTR);

- the U.S. EPA's National Toxics Rule as promulgated [Federal Register Volume 57, 22 December 1992, page 60848] and subsequently amended (the NTR);

- the U.S. EPA's *Quality Criteria for Water* [EPA 440/5-86-001, 1986], and subsequent amendments, (the U.S. EPA Gold Book);

- applicable Federal Regulations [40 CFR Parts 122 and 131];

- 40 CFR Part 131.36(b) and amended [Federal Register Volume 60, Number 86, 4 May 1995, pages 22229-22237];

- the U.S. EPA's December 10, 1998 *National Recommended Water Quality Criteria* compilation [Federal Register Vol. 63, No. 237, pp. 68354-68364];

- the U.S. EPA's December 27, 2002 *Revision of National Recommended Water Quality Criteria* compilation [Federal Register Vol. 67, No. 249, pp. 79091-79095]; and

- guidance provided with State Board actions remanding permits to the Board for further consideration.

IV. SPECIFIC RATIONALE

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

1. Recent Facility Performance

Section 402(o) of Clean Water Act (CWA) and 40 CFR § 122.44(l) require that water quality-based effluent limitations (**WQBELs**) in re-issued permits be at least as stringent as in the previous permit. The SIP specifies that interim effluent limitations, if required, must be based on current facility performance or on previous permit limitations whichever is more stringent (unless anti-backsliding requirements are met). In determining what constitutes "recent plant performance," best professional judgment (**BPJ**) was used. Effluent data collected from January 2000 through September 2004 for conventional and most non-conventional pollutants are considered representative of recent plant performance.

2. Impaired Water Bodies on 303(d) List

On June 6, 2003, the U.S. EPA approved a revised list of impaired water bodies prepared by the State (hereinafter referred to as the 2002 303(d) list), prepared pursuant to provisions of Section 303(d) of the federal CWA requiring identification of specific water bodies where it is expected that water quality standards will not be met after implementation of technology-based effluent limitations on point sources. The pollutants impairing the Suisun Bay include chlordane, DDT,

diazinon, dieldrin, dioxin compounds, exotic species, furan compounds, mercury, nickel, total PCBs, PCBs (dioxin like), and selenium.

The SIP requires final effluent limitations for all 303(d)-listed pollutants to be based on total maximum daily loads (TMDLs) and associated waste load allocations (WLAs). The SIP and U.S. EPA regulations also require that final concentration-based WQBELs be included for all pollutants having reasonable potential to cause or contribute to an exceedence of applicable water quality standards (having reasonable potential or RP). The SIP requires that where the discharger has demonstrated infeasibility to meet the final WQBELs, interim performance-based limitations (IPBLs) or previous permit limitations (whichever is more stringent) be established in the permit, together with a compliance schedule that shall remain in effect until final effluent limitations are adopted. The SIP also requires the inclusion of appropriate provisions for waste minimization and source control where interim limitations are established.

3. State Thermal Plan and Clean Water Act Section 316(a)

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 Estuaries (including Suisun Bay) must "comply with limitations necessary to assure protection of beneficial uses."

The Discharger is not 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.

4. Entrainment and Impingement Impacts—Clean Water Act Section 316(b)

On June 9, 2004, U.S. EPA promulgated new requirements to minimize adverse environmental impacts associated with existing cooling water intake structures under Section 316(b) of the Clean Water Act. This regulation, commonly referred to as "316(b) Phase II", became effective for qualifying facilities on September 7th, 2004, 60 days after its publication in the Federal Register on July 9th, 2004. In summary, the 316(b) regulations require existing facilities to either demonstrate a current ability to meet the performance standards outlined in the rule, or select one of four other compliance alternatives to minimize adverse environmental impacts associated with cooling water intake structure operations. If unable to demonstrate immediate compliance with the performance standards, the facility must undertake a multi-step process, which, together with input from the permitting authority (Board), will determine the most economically and technologically feasible alternatives when making an assessment of Best Technology Available (BTA).

The facility does not have an intake water structure; therefore CWA 316(b) requirements do not apply to this facility.

5. Basis for Prohibitions

a). Prohibition A.1 (no discharges other than as described in the permit): This prohibition is based on the Basin Plan, the previous Order, and BPJ.

b). Prohibition A.2 (no discharges without 10:1 dilution): This prohibition is to ensure that GWF uses the deep water diffuser as they had described in their application. This is because toxic pollutant effluent limits in the Order were calculated using a 10:1 dilution credit. This results in limits that are higher than they would be without the dilution credit. This prohibition ensures protection of water quality should GWF fail to maintain its outfall.

c). Prohibition A.3 (no discharges of chemicals used in any metal components cleansing, flushing, washdown, algae control, or corrosion and deposition inhibition containing copper, zinc, chromium, or other heavy metal constituents): This prohibition is based on the Basin Plan, the previous Order, and BPJ.

d). Prohibition A.5 (no discharges of toxic and deleterious substances, above those levels which can be achieved by a program acceptable to the Board): This prohibition is based on the Basin Plan, the previous Order, and BPJ.

6. Basis for Effluent Limitations

a) Effluent Limitations B.1 (Outfall E-001): Effluent limits for conventional and non-conventional pollutants.

	Constituent	Units	Monthly Average	Daily Average	Daily Maximum	Instantaneous Maximum
B.1.a	Total Suspended Solids	mg/L	30	--	45	--
	TSS	lb/day	23.02	--	34.54	--
	TSS	kg/day	10.47	--	15.70	--
B.1.b	Oil and Grease	mg/L	10	--	20	--
	Oil and Grease	lb/day	7.68	--	15.35	--
	Oil and Grease	kg/day	3.49	--	6.98	--
B.1.c	Settleable Matter	mg/L	0.1	--	0.2	--
B.2	pH	standard	(not to exceed 9 nor be less than 6)			
B.3	Total Chlorine Residual	mg/L	--	--	--	0.0
B.4.	Temperature	degrees F	--	86	--	--

b) Effluent Limitation B.1.a (Total Suspended Solids): This effluent limitation is unchanged from the previous permit and is based on the effluent limitation guidelines at 40 CFR Part 423. However, the daily maximum effluent limitation of 45 mg/L is more stringent than the current 40 CFR 423 requirement of 100 mg/L. Because the previous daily maximum effluent limitation for total suspended solids is more stringent than the current requirement and compliance has been demonstrated at the lower level, the more stringent limitation is carried over into this Order to comply with Federal Antibacksliding provisions. A mass limitation is required by 40 CFR Part 423, and are unchanged from the previous Order. Compliance has been achieved as demonstrated by the historical effluent data.

c) Effluent Limitation B.1.b (Oil and Grease): This effluent limitation is unchanged from the previous permit and is based on the effluent limitation guidelines at 40 CFR Part 423. However, the monthly average effluent limitation of 10 mg/L is more stringent than the current 40 CFR 423 requirement of 15 mg/L. Because the previous monthly average effluent limitation for oil and grease is more stringent than the current requirement and compliance has been demonstrated at the lower level, the more stringent limitation is carried over into this Order to comply with Federal Antibacksliding provisions. A mass limitation is required by 40 CFR Part 423 for oil and grease, and are unchanged from the previous Order. Compliance has been achieved as demonstrated by the historical effluent data.

d) Effluent Limitation B.1.c (Settleable Matter): This effluent limitation is unchanged from the previous permit.

e) Effluent Limitation B.2 (pH, minimum 6, maximum 9): This effluent limitation is unchanged from the previous permit. The limitation is based on the Basin Plan (Chapter 4, Table 4-2), which is derived from federal requirements (40 CFR 133.102), for deep water discharges. This is a previous permit effluent limitation and compliance has been demonstrated by existing plant performance.

f) Effluent Limitation B.3 (Total Chlorine Residual): This limitation is based on the Basin Plan (Chapter 4, Table 4-2), which is derived from federal requirements (40 CFR 133.102). A chlorine technology based effluent limitation is required for all steam electric power generating plants (40 CFR 423). While limitation B.3 is a water quality based effluent limitation, it is more stringent than technology based requirements in 40 CFR 423, and therefore satisfies federal requirements. Since chlorine is not used at the site, chlorine residual monitoring is conditionally waived (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).

g) Effluent Limitation B.4 (Temperature): This effluent limitation is unchanged from the previous permit. The limitation is based on the California Thermal Plan. This is a previous permit effluent limitation and compliance has been demonstrated by existing plant performance.

h) Effluent Limitation B.5 (Whole Effluent Acute Toxicity): The Basin Plan specifies a narrative objective for toxicity, requiring that all waters shall be maintained free of toxic substances in concentrations that are lethal to or produce other detrimental response on aquatic organisms. Detrimental response includes but is not limited to decreased growth rate, decreased reproductive success of resident or indicator species, and/or significant alternations in population, community ecology, or receiving water biota. These effluent toxicity limitations are necessary to ensure that this objective is protected. The whole effluent acute toxicity limitations for an eleven-sample median and an eleven-sample 90th percentile value are consistent with the previous permit and are based on the Basin Plan (Table 4-4, pg. 4–70).

The previous Order required testing of two species: three-spine stickleback and rainbow trout, or fathead minnow. The Discharger has conducted an acute species sensitivity study to determine the most sensitive species between fathead minnows and rainbow trout. 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 or fathead minnows.

i) Effluent Limitation B.6 (Whole Effluent Chronic Toxicity): The chronic toxicity objective/limitation is based on the Basin Plan's narrative toxicity objective on page 3-4 and Table 4-6 of Basin Plan. Chronic toxicity requirements were not included in the previous permit, but have been added in this permit to be consistent with SIP requirements.

j) Effluent Limitation B.7 (Toxic Substances):

1) Reasonable Potential Analysis (RPA)

Code of Federal Regulations Title 40, Part 122.44(d)(1)(i) (40 CFR 122.44(d)(1)(i)) specifies that permits must 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" (have Reasonable Potential or RP). Thus, assessing whether a pollutant has RP is the fundamental step in determining whether or not a WQBEL is required. The following sections describe the RPA and the results of such an analysis for the pollutants identified in the Basin Plan and the CTR.

i) *WQOs and WQC*: The RPA uses Basin Plan WQOs, including narrative toxicity objectives in the Basin Plan, and applicable WQC in the CTR/NTR, or site-specific objectives (SSOs) if available, after adjusting for site-specific hardness and translators, if applicable. The governing WQOs/WQC are shown in Attachment 1 of this Fact Sheet.

ii) *Methodology*: The RPA uses the methods and procedures prescribed in Section 1.3 of the SIP. Board staff has analyzed the effluent and background data and the nature of facility operations to determine if the discharge shows reasonable potential with respect to the governing WQOs or WQC. Attachment 1 of this Fact Sheet shows the step-wise process described in Section 1.3 of the SIP.

iii) *Effluent and background data*: The RPA is based on effluent data collected by the Discharger from January 2000 through September 2004 for most priority pollutants. Water quality data collected from the Sacramento River monitoring station through the RMP in 1993 to 2002 were reviewed to determine the maximum observed background values. The RMP station at the Sacramento River has been sampled for most of the inorganic and some of the organic toxic pollutants; however, not all the constituents listed in the CTR were analyzed by the RMP during this time. On May 15, 2003, a group of several San Francisco Bay Region dischargers (known as the Bay Area Clean Water Agencies, or BACWA) submitted a collaborative receiving water study, entitled the *San Francisco Bay Ambient Water Monitoring Interim Report*. 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 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.

iv) *RPA determination*: The RPA results are shown below in Table B and Attachment 1 of this Fact Sheet. The pollutants that exhibit reasonable potential are copper, lead, mercury, nickel, selenium, zinc, cyanide, 2,3,7,8-TCDD, 4,4'-DDE, and dieldrin.

Table B. Summary of Reasonable Potential Results

CTR No.	Priority Pollutants	Applicable WQO/WQC	MEC or Minimum DL[1] (µg/L)	Maximum Background or Minimum DL[1] (µg/L)	RP Determination[2]
1	Antimony	4300	**1.1**	**0.337**	No
2	Arsenic	36	**11**	**3.65**	No
3	Beryllium	No Criteria	0.06	**0.126**	Uo
4	Cadmium	0.86	**0.3**	**0.06**	No
5a	Chromium (III or total)	155	**127**	**80.37**	No
5b	Chromium (VI)	11.4	**5.6**	NA	No
6	Copper	3.7	**32.4**	**9.86**	**Yes**
7	Lead	2.0	**34**	**2.35**	**Yes**
8	Mercury (303d listed)	0.025	**0.06**	**0.0377**	**Yes**
9	Nickel (303d listed)	8.3	**92.9**	**21.8**	**Yes**
10	Selenium (303d listed)	5	**19.8**	**0.3**	**Yes**
11	Silver	2.2	**0.08**	**0.0566**	No
12	Thallium	6.3	0.03	**0.14**	No
13	Zinc	86	**390**	**18.21**	**Yes**
14	Cyanide	1	**2**	**0.5**	**Yes**
15	Asbestos	No Criteria	0.2	**NA**	Uo
	TCDD TEQ (303d listed)	0.000000014	**9.66E-07**	**4.8E-08**	**Yes**
17	Acrolein	780	1	0.5	No
18	Acrylonitrile	0.66	1	0.03	No
19	Benzene	71	0.27	0.05	No
20	Bromoform	360	**4.6**	0.5	No
21	Carbon Tetrachloride	4.4	0.42	**0.06**	No
22	Chlorobenzene	21000	0.19	0.5	No
23	Chlorodibromomethane	34	**0.9**	0.05	No
24	Chloroethane	No Criteria	0.34	0.5	Uo
25	2-Chloroethylvinyl ether	No Criteria	0.31	0.5	Uo
26	Chloroform	No Criteria	0.24	0.5	Uo
27	Dichlorobromomethane	46	**0.5**	0.05	No
28	1,1-Dichloroethane	No Criteria	0.28	0.05	Uo
29	1,2-Dichloroethane	99	0.18	**0.04**	No
30	1,1-Dichloroethylene	3.2	0.37	0.5	No
31	1,2-Dichloropropane	39	0.2	0.05	No

CTR No.	Priority Pollutants	Applicable WQO/WQC	MEC or Minimum DL[1] (µg/L)	Maximum Background or Minimum DL[1] (µg/L)	RP Deter-mination[2]
32	1,3-Dichloropropylene	1700	0.2	NA	No
33	Ethylbenzene	29000	0.3	0.5	No
34	Methyl Bromide	4000	0.42	0.5	No
35	Methyl Chloride	No Criteria	0.36	0.5	Uo
36	Methylene Chloride	1600	0.38	0.5	No
37	1,1,2,2-Tetrachloroethane	11	0.3	0.05	No
38	Tetrachloroethylene	8.85	0.32	0.05	No
39	Toluene	200000	0.25	0.3	No
40	1,2-Trans-Dichloroethylene	140000	0.3	0.5	No
41	1,1,1-Trichloroethane	No Criteria	0.35	0.5	Uo
42	1,1,2-Trichloroethane	42	0.27	0.05	No
43	Trichloroethylene	81	0.29	0.5	No
44	Vinyl Chloride	525	0.34	0.5	No
45	2-Chlorophenol	400	0.4	1.2	No
46	2,4-Dichlorophenol	790	0.3	1.3	No
47	2,4-Dimethylphenol	2300	0.3	1.3	No
48	2-Methyl- 4,6-Dinitrophenol	765	0.4	1.2	No
49	2,4-Dinitrophenol	14000	0.3	0.7	No
50	2-Nitrophenol	No Criteria	0.3	1.3	Uo
51	4-Nitrophenol	No Criteria	0.2	1.6	Uo
52	3-Methyl 4-Chlorophenol	No Criteria	0.3	1.1	Uo
53	Pentachlorophenol	7.9	0.4	1	No
54	Phenol	4600000	0.2	1.3	No
55	2,4,6-Trichlorophenol	6.5	0.2	1.3	No
56	Acenaphthene	2700	0.17	**0.0029**	No
57	Acenaphthylene	No Criteria	0.03	**0.00012**	Uo
58	Anthracene	110000	0.16	**0.000197**	No
59	Benzidine	0.00054	0.3	0.0015	No
60	Benzo(a)Anthracene	0.049	0.12	**0.0011**	No
61	Benzo(a)Pyrene	0.049	0.09	**0.000547**	No
62	Benzo(b)Fluoranthene	0.049	0.11	**0.0019**	No
63	Benzo(ghi)Perylene	No Criteria	0.06	**0.000705**	Uo
64	Benzo(k)Fluoranthene	0.049	0.16	**0.00093**	No
65	Bis(2-Chloroethoxy)Methane	No Criteria	0.3	0.3	Uo
66	Bis(2-Chloroethyl)Ether	1.4	0.3	0.3	No
67	Bis(2-Chloroisopropyl)Ether	170000	0.6	NA	No
68	Bis(2-Ethylhexyl)Phthalate	5.9	**0.8**	10	No
69	4-Bromophenyl Phenyl Ether	No Criteria	0.4	0.23	Uo
70	Butylbenzyl Phthalate	5200	0.4	0.52	No
71	2-Chloronaphthalene	4300	0.3	0.3	No
72	4-Chlorophenyl Phenyl Ether	No Criteria	0.4	0.3	Uo
73	Chrysene	0.049	0.14	**0.00106**	No

CTR No.	Priority Pollutants	Applicable WQO/WQC	MEC or Minimum DL[1] (µg/L)	Maximum Background or Minimum DL[1] (µg/L)	RP Determination[2]
74	Dibenzo(a,h)Anthracene	0.049	0.04	**0.00067**	No
75	1,2-Dichlorobenzene	17000	0.4	0.3	No
76	1,3-Dichlorobenzene	2600	0.2	0.3	No
77	1,4-Dichlorobenzene	2600	0.12	0.3	No
78	3,3 Dichlorobenzidine	0.077	0.3	0.004	No
79	Diethyl Phthalate	120000	0.4	0.24	No
80	Dimethyl Phthalate	2900000	0.4	0.24	No
81	Di-n-Butyl Phthalate	12000	0.4	**1.72**	No
82	2,4-Dinitrotoluene	9.1	0.3	0.27	No
83	2,6-Dinitrotoluene	No Criteria	0.3	0.29	Uo
84	Di-n-Octyl Phthalate	No Criteria	0.4	0.38	Uo
85	1,2-Diphenylhydrazine	0.54	0.3	**0.0087**	No
86	Fluoranthene	370	0.03	**0.003**	No
87	Fluorene	14000	0.02	**0.00072**	No
88	Hexachlorobenzene	0.00077	0.4	**0.000053**	No
89	Hexachlorobutadiene	50	0.2	0.3	No
90	Hexachlorocyclopentadiene	17000	0.1	0.31	No
91	Hexachloroethane	8.9	0.2	0.2	No
92	Indeno(1,2,3-cd)Pyrene	0.049	0.04	**0.0013**	No
93	Isophorone	600	0.3	0.3	No
94	Naphthalene	No Criteria	0.05	**0.0028**	Uo
95	Nitrobenzene	1900	0.3	0.25	No
96	N-Nitrosodimethylamine	8.1	0.4	0.3	No
97	N-Nitrosodi-n-Propylamine	1.4	0.3	0.001	No
98	N-Nitrosodiphenylamine	16	0.4	0.001	No
99	Phenanthrene	No Criteria	0.03	**0.00168**	Uo
100	Pyrene	11000	0.03	**0.0025**	No
101	1,2,4-Trichlorobenzene	No Criteria	0.3	0.3	Uo
102	Aldrin	0.00014	0.003	NA	No
103	alpha-BHC	0.013	0.002	**0.000347**	No
104	beta-BHC	0.046	0.001	**0.000118**	No
105	gamma-BHC	0.063	0.001	**0.0010032**	No
106	delta-BHC	No Criteria	0.001	**0.000038**	Uo
107	Chlordane (303d listed)	0.00059	0.01	**0.000302**	No
108	4,4'-DDT (303d listed)	0.00059	0.001	**0.000349**	No
109	4,4'-DDE (linked to DDT)	0.00059	0.001	**0.00092**	Yes
110	4,4'-DDD	0.00084	0.001	**0.000347**	No
111	Dieldrin (303d listed)	0.00014	0.002	**0.00038**	Yes
112	alpha-Endosulfan	0.0087	0.002	**0.000036**	No
113	beta-Endolsulfan	0.0087	0.001	**0.000042**	No
114	Endosulfan Sulfate	240	0.001	**0.0002**	No
115	Endrin	0.0023	0.002	**0.000019**	No

CTR No.	Priority Pollutants	Applicable WQO/WQC	MEC or Minimum DL[1] (µg/L)	Maximum Background or Minimum DL[1] (µg/L)	RP Determination[2]
116	Endrin Aldehyde	0.81	0.002	NA	No
117	Heptachlor	0.00021	0.003	**0.000011**	No
118	Heptachlor Epoxide	0.00011	0.002	**0.000097**	No
119-125	PCBs sum (2)	0.00017	0.07	NA	No
126	Toxaphene	0.0002	0.2	NA	No
	Tributylin	0.01	0.00141	0.002	No
	Total PAHs	15	0.17	**0.023085**	No

[1] Values for MEC or maximum background in bold are the actual detected concentrations, otherwise the values shown are the minimum detection levels.
NA = Not Available (there is no monitoring data or WQO/WQC for this constituent).

[2] RP =Yes, if either MEC or background > WQO/WQC.
RP = No, if both MEC or background < WQO/WQC or all effluent concentrations non-detect and background <WQO/WQC or no background available.
RP = Uo (undetermined if no objective promulgated).

v) *Pollutants with no reasonable potential*: WQBELs are not included in the Order for constituents that do not have reasonable potential to cause or contribute to exceedance of applicable WQOs or WQC. However, monitoring for those pollutants is still required, under the provisions of the Board's August 6, 2001 Letter. If concentrations of these constituents are found to increase significantly, the Discharger will be required to investigate the source(s) of the increase(s). Remedial measures are required if the increases pose a threat to water quality in the receiving water. If the Discharger has fulfilled the sampling requirements according to its approved sampling plan submitted per the August 6, 2001 Letter, the Discharger shall perform a minimum of one sampling event of all 126 priority pollutants during the life of the permit, and submit the results at least 180 days prior to permit expiration (with the permit renewal application).

vi) *Permit reopener:* The permit includes a reopener provision to allow numeric effluent limitations to be added for any constituent that in the future exhibits reasonable potential to cause or contribute to exceedance of a WQO or WQC. This determination, based on monitoring results, will be made by the Board.

2) Dilution

The previous permit suggested the outfall can achieve a dilution of at least 10:1. However, the Discharger has not provided any documentation with its application to substantiate this. The Board believes a conservative 10:1 dilution credit for discharges of non-bioaccumulative pollutants to Suisun Bay is necessary for protection of beneficial uses. The basis for limiting the dilution credit is based on SIP provisions in Section 1.4.2. The following outlines the basis for derivation of the dilution credit:

i). Due to the complex hydrology of the Bay, a mixing zone cannot be accurately established.

ii). Previous dilution studies do not fully account for the cumulative effects of other wastewater discharges to the system.
iii). The SIP allows limiting a mixing zone and dilution credit for persistent pollutants (e.g., arsenic, copper, lead, nickel, and zinc).

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.

i). **Complex Estuarine System Necessitates Far-Field Background** - The SIP allows background to be determined on a discharge-by-discharge or water body-by-water body basis (SIP section 1.4.3). Consistent with the SIP, Board staff has chosen to use a water body-by-water body basis because of the uncertainties inherent in accurately characterizing ambient background in a complex estuarine system on a discharge-by-discharge basis.

With this in mind, the Sacramento River station also fit the guidance for ambient background in the SIP compared to other stations in the Regional Monitoring Program. Section 1.4.3 of the SIP specifies that "preference should be given to...concentrations immediately upstream or near the discharge, but not within an allowed mixing zone for the discharge." The SIP further states that data are applicable if they are "representative of the ambient receiving water column that will mix with the discharge." The Sacramento River station is upstream, not within a mixing zone, and does represent water that will mix with the discharge. The Sacramento River is the primary source of fresh inflow water to the Suisun Bay and its flow varies seasonally.

ii). **Uncertainties Prevent Accurate Mixing Zones in Complex Estuarine Systems** - There are uncertainties in accurately determining the mixing zones for each discharge. The models that have been used by dischargers to predict dilution have not considered the three-dimensional nature of the currents in the estuary resulting from the interaction of tidal flushes and seasonal fresh water outflows. Salt water is heavier than fresh water. Colder salt water from the ocean flushes in twice a day generally under the warmer fresh rivers waters that flows out annually. When these waters mix and interact, complex circulation patterns occur due to the different densities of these waters. These complex patterns occur throughout the estuary but are most prevalent in the San Pablo Bay, Carquinez Strait, and Suisun Bay areas. The locations change depending on the strength of each tide and the variable rate of delta outflow. Additionally, sediment loads to the Bay from the Central Valley also change on a longer-term basis. These changes can result in changes to the depths of different parts of the Bay making some areas more shallow and/or other areas more deep. These changes affect flow patterns that in turn can affect the initial dilution achieved by a discharger's diffuser.

iii). **Dye studies do not account for cumulative effects from other discharges** - The tracer and dye studies conducted are often not long enough in duration to fully assess the long residence time of a portion of the discharge that is not flushed out of the system. In other words, some of the discharge, albeit a small portion, makes up part of the dilution water. So unless the dye studies are of long enough duration, the diluting effect on the dye measures only the initial dilution with "clean" dilution water rather than the actual dilution with "clean" dilution water plus some amount of original discharge that resides in the system. Furthermore, both models and dye studies that have been conducted have not considered the effects of discharges from other nearby discharge sources, nor the

cumulative effect of discharges from over 20 other major dischargers to San Francisco Bay system. While it can be argued the effects from other discharges are accounted for by factoring in the local background concentration in calculating the limitations, accurate characterization of local background levels are also subject to uncertainties resulting from the interaction of tidal flushing and seasonal fresh water outflows described above.

iv). **Mixing Zone Is Further Limited for Persistent Pollutants** - Discharges to the Bay Area waters are not completely-mixed discharges as defined by the SIP. Thus, the dilution credit should be determined using site-specific information for incompletely-mixed discharges. The SIP in section 1.4.2.2 specifies that the Regional Board "significantly limit a mixing zone and dilution credit as necessary… For example, in determining the extent of … a mixing zone or dilution credit, the RWQCB shall consider the presence of pollutants in the discharge that are … persistent." The SIP defines persistent pollutants to be "substances for which degradation or decomposition in the environment is nonexistent or very slow." The pollutants at issue here are persistent pollutants (e.g., copper, lead, nickel, and zinc). The dilution studies that estimate actual dilution do not address the effects of these persistent pollutants in the Bay environment, such as their long-term effects on sediment concentrations."

3) Applicable WQOs/WQC for WQBEL Calculation

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). 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. The WQOs or WQC used for each pollutant with Reasonable Potential is indicated in Table C below as well as in Attachment 2.

Table C. Water Quality Objectives/Criteria for Pollutants with Reasonable Potential

Pollutant	Chronic WQO/WQC (µg/L)	Acute WQO/WQC (µg/L)	Human Health WQC (µg/L)	Basis of Lowest WQO /WQC Used in RP[1]
Copper	3.7	5.8	--	CTR, sw
Lead	2.0	52	--	BP, fw, H=70 mg/L
Mercury	0.025	2.1	0.051	BP, sw
Nickel	8.3	75	4,600	BP, sw
Selenium	5	20	--	NTR, sw/fw
Zinc	86	86	--	BP, fw, H=70 mg/L
Cyanide	1	1	220,000	NTR, sw
TCDD TEQ	--	--	1.4×10^{-8}	CTR, hh
4,4'-DDE	--	--	0.00059	CTR, hh
Dieldrin	0.0019	0.71	0.00014	CTR, hh

4) Interim Limitations

Interim effluent limitations were derived for those constituents (copper, lead, mercury, nickel, selenium, zinc, cyanide, 4,4'-DDE, and dieldrin) for which the Discharger has shown infeasibility of complying with the respective final limitations and has demonstrated that compliance schedules are justified based on the Discharger's source control and pollution minimization efforts in the past and continued efforts in the present and future. The interim effluent concentration limitations for copper, lead, mercury, nickel, selenium, and zinc are either based on previous permit effluent limitation, the MEC, or based on the statistical analyses of data submitted by the Discharger. Interim limitations were established for cyanide, 4,4'-DDE, and dieldrin based on their respective minimum levels (MLs). The interim limitations are discussed in more detail below. For TCDD TEQ, due to the limited effluent data, this permit does not contain an interim limitation for dioxin. The final limitations for dioxins will be based on the WLA assigned to the Discharger in the TMDL.

5) Feasibility Evaluation and Final WQBELs

The Discharger submitted an infeasibility to comply report on February 1, 2005 for copper, lead, mercury, nickel, selenium, zinc, cyanide, 4,4'-DDE, and dieldrin. For constituents that Board staff could perform a meaningful statistical analysis (i.e., copper, lead, mercury, nickel, selenium), it used self-monitoring data from 2000-2004 to compare the mean, 95th percentile, and 99th percentile with the long-term average (LTA), AMEL, and MDEL to confirm if it is feasible for the Discharger to comply with WQBELs. If any of the LTA, AMEL, and MDEL exceeds the mean, 95th percentile, and 99th percentile, the infeasibility for the Discharger to comply with WQBELs is confirmed statistically.

For cyanide, there are only two detected but not quantified concentrations, i.e., lower than the method detection limit but higher than the reporting limit, out of 23 data points. The calculated AMEL is lower than the SIP ML value. Therefore, the Board concurred with the Discharger on the infeasibility of compliance with cyanide.

The Board concurred that there is infeasibility for immediate compliance with the 4,4'-DDE and dieldrin WQBELs, as both pollutants were not detected in the effluent with method detection limits (MDLs) above the SIP specified minimum levels (MLs), in addition, the MLs are above the WQBELs for 4,4'-DDE and dieldrin.

Table D below shows these comparisons in µg/L:

Table D: Summary of Feasibility Analysis

Constituent	Mean / LTA	95th / AMEL	99th / MDEL	Feasible to Comply
Copper	20.5 > 2.9	29.1> 3.5	34 > 4.7	**No**
Lead	4.1> 0.52	12.2 > 1.3	25 > 3.7	**No**
Mercury	0.02 > 0.013	0.050> 0.020	0.060 > 0.042	**No**
Nickel	11.7 > 4.8	11.9> 7.0	23.5 > 12.9	**No**
Selenium	7.8>2.7	16.4>4.1	23.8>8.1	**No**
Zinc	MEC (390) >AMEL (281)			**No**
Cyanide, 4,4'-DDE, and dieldrin	ML>AMEL			**No**

For TCDD TEQ, there are four effluent data measurements available, and all are above the WQBELs, in addition, the MLs (see BACWA Letter dated April 23, 2002) for all 17 dioxin congers are higher than the WQBELs, therefore, the Board has determined that it is infeasible for the Discharger to achieve immediate compliance.

Table E below summarizes the calculated WQBELs, and the feasibility to comply analysis for all pollutants with effluent limitations. The WQBELs calculation is attached as Attachment 2 of this Fact Sheet.

Table E. Final WQBELs and Feasibility to Comply

Pollutant	MDEL µg/L	AMEL µg/L	Feasible to Comply?
Copper	4.7	3.5	**No**
Lead	3.7	1.3	**No**
Mercury	0.042	0.020	**No**
Nickel	12.9	7.0	**No**
Selenium	8.1	4.1	**No**
Zinc	696	281	**No**
Cyanide	5.5	2.7	**No**
TCDD TEQ	1.4×10^{-8}	2.8×10^{-8}	**No**
4,4'-DDE	0.00118	0.00059	**No**
Dieldrin	0.00028	0.00014	**No**

6) Interim Limitations and Compliance Schedules

This Order establishes a compliance schedule until April 27, 2010 for mercury, selenium, and cyanide; May 17, 2010 for copper, 4,4'-DDE, and dieldrin; and until December 31, 2014 for lead, nickel, and zinc. These compliance schedules either equal to or exceed the length of the permit; therefore, the calculated final limitations are intended for point of reference for the feasibility demonstration.

During the compliance schedules, interim limitations are included based on current treatment facility performance or on previous permit limitations, whichever is more stringent, to maintain existing water quality. **Attachment 4** details the general basis for final compliance dates. The Board may take appropriate enforcement actions if interim limitations and requirements are not met.

i. Copper – Further Discussion and Rationale for Interim Effluent Limitation: Interim effluent limitations are required for copper since the Discharger has demonstrated and the Board verified that the final effluent limitations calculated according to the SIP (AMEL of 3.5 µg/L and MDEL of 4.7 µg/L) will be infeasible to meet. The SIP requires the interim numeric effluent limitation for the pollutant be based on either current treatment facility performance, or on the previous Order's limitation, whichever is more stringent. Self-monitoring data from 2000 - 2004 indicate that effluent copper concentrations ranged from 8 µg/L to 32.4 µg/L (73 samples). Board staff calculated an interim performance-based limitation (IPBL) of 39.8 µg/L (3 standard deviations above the mean). The previous permit's effluent limitation for copper was 36 µg/L. Therefore, 36

µg/L is established in this Order as the interim limitation, and will remain effect until May 17, 2010, or until the Board amends the limitation based on SSO or additional data.

ii. Lead – Further Discussion and Rationale for Interim Effluent Limitation: Interim effluent limitations are required for lead since the Discharger has demonstrated and the Board verified that the final effluent limitations calculated according to the SIP (AMEL of 1.3 µg/L and MDEL of 3.7 µg/L) will be infeasible to meet. The SIP requires the interim numeric effluent limitation for the pollutant be based on either current treatment facility performance, or on the previous Order's limitation, whichever is more stringent. Self-monitoring data from 2000 - 2004 indicate that effluent lead concentrations ranged from 0.3 µg/L to 34 µg/L (43 samples). Due to the existence of potential outliers, there is high uncertainty in estimating the extreme percentile of the 99.87th percentile (which was estimated to be 51.3 µg/L). Therefore, the MEC was chosen as the interim limitation for lead. The previous permit does not contain effluent limitations for lead. Therefore, 34 µg/L is established in this Order as the interim limitation, and will remain effect until December 31, 2014, or until the Board amends the limitation based on additional data.

iii. Mercury – Further Discussion and Rationale for Interim Effluent Limitation: Interim effluent limitations are required for mercury since the Discharger has demonstrated and the Board verified that the final effluent limitations calculated according to the SIP (AMEL of 0.020 µg/L and MDEL of 0.042 µg/L) will be infeasible to meet. The SIP requires the interim numeric effluent limitation for the pollutant be based on either current treatment facility performance, or on the previous Order's limitation, whichever is more stringent. The previous permit's effluent limitation for mercury was 0.21 µg/L. Effluent concentrations from 2000 - 2004 ranged from <0.0005 to 0.06 µg/L (68 samples). Board staff calculated an IPBL of 0.071 µg/L (3 standard deviations above the mean). This IPBL shall remain in effect until April 27, 2010, or until the Board amends the limitation based on a WLA in the TMDL for mercury.

iv. Nickel – Further Discussion and Rationale for Interim Effluent Limitation: Interim effluent limitations are required for nickel since the Discharger has demonstrated and the Board verified that the final effluent limitations calculated according to the SIP (AMEL of 7.0 µg/L and MDEL of 12.9 µg/L) will be infeasible to meet. The SIP requires the interim numeric effluent limitation for the pollutant be based on either current treatment facility performance, or on the previous Order's limitation, whichever is more stringent. Self-monitoring data from 2000 - 2004 indicate that effluent nickel concentrations ranged from 3.3 µg/L to 92.9 µg/L (51 samples). The 99.87th percentile of the effluent data was estimated to be 35.5 µg/L (3 standard deviations above the mean), however, there are two effluent concentrations higher than this value and there is no evidence to show these two values as invalid. The previous permit does not include an effluent limitation for nickel. Therefore, the MEC of 92.9 µg/L is established in this Order as the interim limitation, and will remain effect until December 31, 2014, or until the Board amends the limitation based on a WLA in the TMDL for nickel.

v. Selenium – Further Discussion and Rationale for Interim Effluent Limitation: Interim effluent limitations are required for selenium since the Discharger has demonstrated and the Board verified that the final effluent limitations calculated according to the SIP (AMEL of 4.1 µg/L and MDEL of 8.1 µg/L) will be infeasible to meet. Self-monitoring data from 2000 - 2004 indicate that effluent lead concentrations ranged from 2 µg/L to 19.8 µg/L (26 samples). The SIP requires the interim numeric effluent limitation for the

pollutant be based on either current treatment facility performance, or on the previous Order's limitation, whichever is more stringent. Board staff calculated an interim performance-based limitation (IPBL) of 34.6 µg/L (3 standard deviations above the mean). The previous permit does not contain an effluent limitation for selenium. Therefore, 34.6 µg/L is established in this Order as the interim limitation, and will remain effect until April 27, 2010, or until the Board amends the limitation based on a selenium TMDL.

vi. Cyanide – Further Discussion and Rationale for Interim Effluent Limitation: Interim effluent limitations are required for cyanide since the Discharger has demonstrated and the Board verified that the final effluent limitations calculated according to the SIP (AMEL of 2.7 µg/L and MDEL of 5.5 µg/L) will be infeasible to meet. Self-monitoring data from 2000 - 2004 indicate that effluent lead concentrations ranged from <0.6 µg/L to 2 µg/L (23 samples). Since the SIP ML is higher than the AMEL, the SIP ML of 5 µg/L is established in this Order as the interim limitation, and will remain effect until April 27, 2010, or until the Board amends the limitation based on add ional information or an SSO for cyanide.

vii. Zinc – Further Discussion and Rationale for Interim Effluent Limitation: Interim effluent limitations are required for zinc since the Discharger has demonstrated and the Board verified that the final effluent limitations calculated according to the SIP (AMEL of 281 µg/L and MDEL of 696 µg/L) will be infeasible to meet. The SIP requires the interim numeric effluent limitation for the pollutant be based on either current treatment facility performance, or on the previous Order's limitation, whichever is more stringent. Self-monitoring data from 2000 - 2004 indicate that effluent zinc concentrations ranged from 7 µg/L to 390 µg/L (75 samples). Due to the lack of good distribution fit to the data, there is high uncertainty in estimating the extreme percentile of the 99.87th percentile. The previous permit contains an effluent limitation of 562 µg/L, as daily maximum. Therefore, 562 µg/L is retained in this Order as the interim limitation, and will remain effect until December 31, 2014, or until the Board amends the limitation based on additional data.

viii. 4,4'-DDE and Dieldrin – Further Discussion and Rationale for Interim Effluent Limitations: Interim effluent limitations are required for these pollutants because compliance with the final WQBELs (AMEL of 0.00059 µg/L and MDEL of 0.0012 µg/L for 4,4'-DDE and AMEL of 0.00014 µg/L and MDEL of 0.00028 µg/L for dieldrin) cannot be determined at this time as the MLs are higher than the final calculated WQBELs. 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. These interim limits shall remain in effect until May 17, 2010, or until the Board amends the limitation based on WLAs in the TMDL for 4,4'-DDE or dieldrin.

7) Attainability of Interim Performance-Based Limitations

i. Copper

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 are below the interim limitation of 36.0 µg/L. It is therefore expected that the facility can comply with the interim limitation for copper.

ii. Lead

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 of 34 µg/L. It is therefore expected that the facility can comply with the interim limitation of 51.3 µg/L for lead.

iii. Mercury

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 samples 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.

iv. Nickel

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 blow the interim limitation of 92.9 µg/L. It is therefore expected that the facility can comply with the interim limitation of 92.9 µg/L for nickel.

v. Selenium
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 26 are blow the interim limitation of 34.6 µg/L. It is therefore expected that the facility can comply with the interim limitation of 34.6 µg/L for selenium.

vi. Zinc
During the period of January 2000 through September 2004, the Discharger's effluent concentrations ranged from 7 µg/L to 390 µg/L (75 samples). All 75 samples are blow the interim limitation of 562 µg/L. It is therefore expected that the facility can comply with the interim limitation of 562 µg/L for zinc.

vii. Cyanide
During the period of January 2000 through September 2004, the Discharger's effluent concentrations ranged from <0.6 µg/L to 2 µg/L (23 samples). All 23 samples are blow the interim limitation of 5 µg/L. It is therefore expected that the facility can comply with the interim limitation of 5 µg/L for cyanide.

v. 4,4'-DDE and Dieldrin

Self-monitoring effluent data are available from 2002-2003. Neither pollutant was detected in the effluent in any of the samples and therefore, the interim limitations are attainable.

8) Mercury and Selenium Interim Mass Emission Limitation

The Order contains a mass emission limitation of 4.5 grams per year for mercury and a mass limitation of 2.2 kilograms per year for because the Board has determined that there is

reasonable potential for mercury and selenium in the Discharger's effluent and there is no additional assimilative capacity for mercury or selenium in the Bay and Delta system. This determination is consistent with SIP Section 2.1.1 requirements that the Regional Board consider whether additional assimilative capacity exists for 303(d)-listed bioaccumulative pollutants. That determination also considered the fact that elevated mercury in fish and elevated selenium in waterfowl from the San Francisco Bay and Delta has been detected.

9) Comparison to Previous Permit Limitations

The effluent limitations for TSS, oil and grease, settable matter, pH, and temperature have been retained from the previous Order. A chlorine effluent limitation is included if the Discharger uses chlorination in the future. The interim effluent limitation for copper is unchanged from the previous Order. The WQBEL limit for zinc is retained from the previous Order. The interim limitation is more stringent for mercury in this Order. Effluent limitations are added for lead, nickel, selenium, and cyanide. In addition, there are new interim limitations for 4,4'-DDE and dieldrin, which are based on their respective MLs. There are no effluent limitations and sampling requirements for chronic toxicity in the previous permit.

7. Basis for Receiving Water Limitations

a). Receiving water limitations C.1 and C.2 (conditions to be avoided): These limitations are based on the previous permit and the narrative/numerical objectives contained in Chapter 3 of the Basin Plan, pages 3-2 – 3-5.

b). Receiving water limitation C.3 (compliance with State Law): This requirement is in the previous permit, requires compliance with Federal and State law, and is self-explanatory.

8. Basis for Self-Monitoring Requirements

The SMP includes monitoring at the outfall for conventional, non-conventional, and toxic pollutants, and acute and chronic toxicity. The sampling requirement for conventional and non-conventional pollutants has retained from the previous permit. Monthly acute bioassay is required to determine compliance with effluent limitations: This is the same as in the previous permit. Acute toxicity may be reduced to quarterly upon demonstration that no acute toxicity is observed and upon approval by the Executive Officer. Semiannual chronic toxicity test is required to determine compliance with the effluent limitations: This requirement is new. For copper, lead, mercury, nickel, selenium, zinc and cyanide, the Discharger will perform monthly monitoring to demonstrate compliance with interim limitations. For 4,4'-DDE, and dieldrin, semiannual monitoring is required to demonstrate compliance with the interim limits. Moreover, the Discharger shall collect twice yearly monitoring for all the 2,3,7,8-TCDD congeners using the minimum detection limit that can be achieved. In lieu of near field discharge specific ambient monitoring, it is generally acceptable that the Discharger participate in collaborative receiving water monitoring with other dischargers under the provisions of the Board's August 6, 2001 Letter and the RMP. During the permit life, the Discharger shall perform a minimum one sampling event of the 126 priority pollutants, and submit the results with permit renewal application, at least 180 days prior to permit expiration.

9. Basis for Provisions

a) Provision D.1. (Permit Compliance and Rescission of Previous Permit): Time of compliance is based on 40 CFR 122. The basis of this Order superceding and rescinding the previous permit is based on 40 CFR 122.46.

b) Provision D.2 (Effluent Characterization Study): This provision is based on the Basin Plan and the SIP.

c) Provision D.3 (Receiving Water Study): This provision is based on the Basin Plan and the SIP.

d) Provision D.4 (Cyanide Compliance Schedule and Site-Specific Objective (SSO) Study). This provision, based on BPJ, requires the Discharger to characterize background ambient cyanide concentrations and to participate in an on-going group effort to develop an SSO for cyanide.

e) Provision D.5 (Pollutant Prevention and Minimization Program): This provision is based on the Basin Plan, pages 4-25 – 4-28, and the SIP, Section 2.1.

f) Provision D.6 (Compliance Attainability Analysis for Lead, Nickel, and zinc). This provision is based on the SIP and BPJ to establish compliance schedules as short as feasible.

g) Provision D.7 (Storm Water Pollution Prevention Plan and Annual Report). This is based on the Basin Plan, 40 CFR part 122, and Regional Board Resolution No. 74-10.

h) Provision D.8 (Best Management Practices Program): This provision is based on the Clean Water Act, Section 304(e), and 40 CFR part 122.44(k).

i) Provision D.9 (Whole Effluent Acute Toxicity): This provision establishes conditions by which compliance with permit effluent limitations for acute toxicity will be demonstrated. Conditions initially include the use of 96-hour static renewal bioassays, the use of rainbow trout or fathead minnow, and the use of approved test methods as specified, currently 5th Edition U.S. EPA protocol.

j) Provision D.10 (Whole Effluent Chronic Toxicity): This provision establishes conditions and protocol by which compliance with the Basin Plan narrative WQO for toxicity will be demonstrated. Conditions include required monitoring and evaluation of the effluent for chronic toxicity and numerical values for chronic toxicity evaluation to be used as 'triggers' for initiating accelerated monitoring and toxicity reduction evaluation(s). These conditions apply to the discharges to Suisun Bay and the numerical values for chronic toxicity evaluation are based on a minimum initial dilution ratio of 10:1. This provision also requires the Discharger to conduct screening phase monitoring and implement toxicity identification and reduction evaluations when there is consistent chronic toxicity in the discharge. The screening phase monitoring is important to help determine which test species is most sensitive to the toxicity of the effluent for future compliance monitoring. The proposed conditions in the draft permit for chronic toxicity are based on the Basin Plan narrative WQO for toxicity, Basin Plan effluent limitations for chronic toxicity (Basin Plan, Chapter 4), U.S. EPA and SWRCB Task Force guidance, applicable federal regulations [40 CFR 122.44(d)(1)(v)], and BPJ.

k) Provision D.11 (Option Site-Specific Translator Study and Schedule for Copper, Lead, and Nickel): This provision allows the Discharger to conduct an optional copper, lead, and nickel translator study, based on BPJ and the SIP. This provision is based on the need to gather site-specific information in order to apply a different translator from the default translator specified in the CTR and SIP. Without site-specific data, the default translators from CTR have been used to translate the dissolved WQC/WQOs for copper, lead, and nickel to total standards in recoverable metals.

l) Provision D.12 (Optional Mass Offset): This option is provided to encourage the Discharger to further implement aggressive reduction of mass loads to the Sacramento/San Joaquin Delta.

m) Provision D.13 (Operations and Maintenance Manual, Review and Status Reports) and D.14 (Contingency Plan, Review and Status Report): These provisions are based on the Basin Plan, the requirements of 40 CFR 122, and the previous permit.

n) Provision D.15 (303(d)-listed Pollutants Site-Specific Objective and TMDL Status Review): Consistent with the SIP, the Discharger shall participate in the development of region-wide TMDL or SSO studies. By January 31 of each year, the Discharger shall submit an update to the Board to document progress made on source control and pollutant minimization measures and development of TMDL or SSO. Regional 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.

o) Provision D.16 (New Water Quality Objectives): This provision allows future modification of the permit and permit effluent limitations as necessary in response to updated WQOs that may be established in the future. This provision is based on 40 CFR 123.

p) Provision D.17 (Self-Monitoring Program): The Discharger is required to conduct monitoring of the permitted discharges in order to evaluate compliance with permit conditions. Monitoring requirements are contained in the Self Monitoring Program (SMP) of the Permit. This provision requires compliance with the SMP, and is based on 40 CFR 122.63. The SMP is a standard requirement in almost all NPDES permits issued by the Board, including this Order. It contains definitions of terms, specifies general sampling and analytical protocols, and sets out requirements for reporting of spills, violations, and routine monitoring data in accordance with NPDES regulations, the California Water Code, and Board's policies. The SMP also contains a sampling program specific for the facility. It defines the sampling stations and frequency, the pollutants to be monitored, and additional reporting requirements. Pollutants to be monitored include all parameters for which effluent limitations are specified. Monitoring for additional constituents, for which no effluent limitations are established, is also required to provide data for future completion of RPAs for them.

q) Provision D.18 (Standard Provisions and Reporting Requirements): The purpose of this provision is to require compliance with the standard provisions and reporting requirements given in this Board's document titled *Standard Provisions and Reporting Requirements for NPDES Surface Water Discharge Permits, August 1993* (the Standard Provisions), or any amendments thereafter. That document is incorporated in the permit as an attachment to it. Where provisions or reporting requirements specified in the permit are different from

equivalent or related provisions or reporting requirements given in the Standard Provisions, the permit specifications shall apply. The standard provisions and reporting requirements given in the above document are based on various state and federal regulations with specific references cited therein.

r) Provision D.19 (Change in Control or Ownership): This provision is based on 40 CFR 122.61.

s) Provision D.20 (Permit Reopener): This provision is based on 40 CFR 123.

t) Provision D.21 (NPDES Permit): This provision is based on 40 CFR 123.

u) Provisions D.22 (Order Expiration and Reapplication): This provision is based on 40 CFR 122.46(a).

V. WASTE DISCHARGE REQUIREMENT APPEALS

Any person may petition the State Water Resources Control Board to review the decision of the Board regarding the Waste Discharge Requirements. A petition must be made within 30 days of the Board public hearing.

VI. ATTACHMENTS

Attachment 1: RPA Results for Priority Pollutants
Attachment 2: Effluent Data
Attachment 3: Calculation of Final WQBELs
Attachment 4: General Basis for Final Compliance Dates

Attachment 1

RPA Results for Priority Pollutants

GWF Power Systems Site V
Resonable Potential Analysis Results

Beginning			Step 2	Step 3				Step 4	Step 2	Step 3	Step 5			Step 6	Steps 7 & 8	Final Result	
	Constituent name	C (µg/L) Lowest (most stringent) Criteria (Enter "No Criteria" for no criteria)	Effluent Data Available (Y/N)?	Are all data points non-detects (Y/N)?	If all data points ND Enter the min detection limit (MDL) (ug/L)	Enter the pollutant effluent detected max conc (ug/L)	If all data points are ND and MinDL>C, interim monitoring is required	Concentration from the effluent (MEC) (MEC= deteted max value; if all ND & MDL<C then MEC = MDL)	MEC vs. C 1. If MEC> or =C, effluent limitation is required; 2. If MEC<C, go to Step 5	B Available (Y/N)?	Are all B data points non-detects (Y/N)?	If all data points ND Enter the min detection limit (MDL) (ug/L)	Enter the pollutant B detected max conc (ug/L)	If all B is ND, is MDL>C?	B vs. C If B>C, effluent limitation is required	7) Review other information in the SIP page 4. If information is unavailable or insufficient: 8) the RWQCB shall establish interim monitoring requirements.	RPA Result	Reason
1	Antimony	4300	Y	N		1.1		1.1	MEC<C, go to Step 5	Y	N		0.337		B<C, Step 7		No	MEC<C & B<C
2	Arsenic [b]	36	Y	N		11		11	MEC<C, go to Step 5	Y	N		3.85		B<C, Step 7		No	MEC<C & B<C
3	Beryllium	No Criteria	Y	Y	0.06		No Criteria	No Criteria	No Criteria	Y	N		0.126		No Criteria	No Criteria	Uo	No Criteria
4	Cadmium [b]	0.86	Y	N		0.3		0.3	MEC<C, go to Step 5	Y	N		0.06		B<C, Step 7		No	MEC<C & B<C
5a	Chromium (III or total)	154.55	Y	N		127		127	MEC<C, go to Step 5	Y	N		80.37		B<C, Step 7		No	MEC<C & B<C
5b	Chromium (VI) [b]	11.43	Y	N		5.6		5.6	MEC<C, go to Step 5	N					No detected value of B, Step		No	Ud;MEC<C & B is ND
6	Copper	3.73	Y	N		32.4		32.4	MEC>=C, Effluent Limits Required	Y	N		9.86		B>C, Effluent Limit Required		Yes	MEC>C or MEC=C
7	Lead [b]	2.02	Y	N		34		34	MEC>=C, Effluent Limits Required	Y	N		2.35		B>C, Effluent Limit Required		Yes	MEC>C or MEC=C
8	Mercury (303d listed) [b]	0.025	Y	N		0.06		0.06	MEC>=C, Effluent Limits Required	Y	N		0.0377		B>C, Effluent Limit Required		Yes	MEC>C or MEC=C
9	Nickel [b]	8.28	Y	N		92.9		92.9	MEC>=C, Effluent Limits Required	Y	N		21.8		B>C, Effluent Limit Required		Yes	MEC>C or MEC=C
10	Selenium (303d listed) [b]	5	Y	N		19.8		19.8	MEC>=C, Effluent Limits Required	Y	N		0.3		B<C, Step 7		Yes	MEC>C or MEC=C
11	Silver [b]	2.20	Y	N		0.08		0.08	MEC<C, go to Step 5	Y	N		0.0566		B<C, Step 7		No	MEC<C & B<C
12	Thallium	6.3	Y	Y	0.03		All ND, MDL<C, MEC=MDL	0.03	MEC<C, go to Step 5	Y	N		0.14		B<C, Step 7		No	MEC<C & B<C
13	Zinc [b]	85.62	Y	N		390		390	MEC>=C, Effluent Limits Required	Y	N		18.21		B<C, Step 7		Yes	MEC>C or MEC=C
14	Cyanide [b]	1	Y	N		2		2	MEC>=C, Effluent Limits Required	Y	N		0.5		B<C, Step 7		Yes	MEC>C or MEC=C
15	Asbestos	No Criteria	Y	Y	0.76		No Criteria	No Criteria	No Criteria	N					No Criteria	No Criteria	Uo	No Criteria
	TCDD TEQ (303d listed)	0.000000014	Y	N		9.66E-07		0.000000966	MEC>=C, Effluent Limits Required	Y	N		4.8E-08		B>C, Effluent Limit Required		Yes	MEC>C or MEC=C
17	Acrolein	780	Y	Y	1		All ND, MDL<C, MEC=MDL	1	MEC<C, go to Step 5	Y	Y	0.5		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
18	Acrylonitrile	0.66	Y	Y	1		All ND, MinDL>C, Go to Step 5			Y	Y	0.03		N	No detected value of B, Step		No	UD; effluent data and B are ND
19	Benzene	71	Y	Y	0.27		All ND, MDL<C, MEC=MDL	0.27	MEC<C, go to Step 5	Y	Y	0.05		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
20	Bromoform	360	Y	N		4.6		4.6	MEC<C, go to Step 5	Y	Y	0.5		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
21	Carbon Tetrachloride	4.4	Y	Y	0.42		All ND, MDL<C, MEC=MDL	0.42	MEC<C, go to Step 5	Y	N		0.06		B<C, Step 7		No	MEC<C & B<C
22	Chlorobenzene	21000	Y	Y	0.19		All ND, MDL<C, MEC=MDL	0.19	MEC<C, go to Step 5	Y	Y	0.5		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
23	Chlorodibromomethane	34	Y	N		1.60		1.60	MEC<C, go to Step 5	Y	Y	0.05		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
24	Chloroethane	No Criteria	Y	Y	0.34		No Criteria	No Criteria	No Criteria	Y	Y	0.5		N	No Criteria	No Criteria	Uo	No Criteria
25	2-Chloroethylvinyl ether	No Criteria	Y	Y	0.31		No Criteria	No Criteria	No Criteria	Y	Y	0.5		N	No Criteria	No Criteria	Uo	No Criteria
26	Chloroform	No Criteria	Y	Y	0.24		No Criteria	No Criteria	No Criteria	Y	Y	0.5		N	No Criteria	No Criteria	Uo	No Criteria
27	Dichlorobromomethane	46	Y	N		0.5		0.5	MEC<C, go to Step 5	Y	Y	0.05		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
28	1,1-Dichloroethane	No Criteria	Y	Y	0.28		No Criteria	No Criteria	No Criteria	Y	Y	0.05		N	No Criteria	No Criteria	Uo	No Criteria
29	1,2-Dichloroethane	99	Y	Y	0.18		All ND, MDL<C, MEC=MDL	0.18	MEC<C, go to Step 5	Y	N		0.04		B<C, Step 7		No	MEC<C & B<C
30	1,1-Dichloroethylene	3.2	Y	Y	0.37		All ND, MDL<C, MEC=MDL	0.37	MEC<C, go to Step 5	Y	Y	0.5		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
31	1,2-Dichloropropane	39	Y	Y	0.2		All ND, MDL<C, MEC=MDL	0.2	MEC<C, go to Step 5	Y	Y	0.05		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
32	1,3-Dichloropropylene	1700	Y	Y	0.2		All ND, MDL<C, MEC=MDL	0.2	MEC<C, go to Step 5	N					No detected value of B, Step		No	Ud;MEC<C & B is ND
33	Ethylbenzene	29000	Y	Y	0.3		All ND, MDL<C, MEC=MDL	0.3	MEC<C, go to Step 5	Y	Y	0.5		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
34	Methyl Bromide	4000	Y	Y	0.42		All ND, MDL<C, MEC=MDL	0.42	MEC<C, go to Step 5	Y	Y	0.5		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
35	Methyl Chloride	No Criteria	Y	Y	0.36		No Criteria	No Criteria	No Criteria	Y	Y	0.5		N	No Criteria	No Criteria	Uo	No Criteria
36	Methylene Chloride	1600	Y	Y	0.38		All ND, MDL<C, MEC=MDL	0.38	MEC<C, go to Step 5	Y	Y	0.5		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
37	1,1,2,2-Tetrachloroethan	11	Y	Y	0.3		All ND, MDL<C, MEC=MDL	0.3	MEC<C, go to Step 5	Y	Y	0.05		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
38	Tetrachloroethylene	8.85	Y	Y	0.32		All ND, MDL<C, MEC=MDL	0.32	MEC<C, go to Step 5	Y	Y	0.05		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
39	Toluene	200000	Y	Y	0.25		All ND, MDL<C, MEC=MDL	0.25	MEC<C, go to Step 5	Y	Y	0.3		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
40	1,2-Trans-Dichloroethyle	140000	Y	Y	0.3		All ND, MDL<C, MEC=MDL	0.3	MEC<C, go to Step 5	Y	Y	0.5		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
41	1,1,1-Trichloroethane	No Criteria	Y	Y	0.35		No Criteria	No Criteria	No Criteria	Y	Y	0.5		N	No Criteria	No Criteria	Uo	No Criteria
42	1,1,2-Trichloroethane	42	Y	Y	0.27		All ND, MDL<C, MEC=MDL	0.27	MEC<C, go to Step 5	Y	Y	0.05		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
43	Trichloroethylene	81	Y	Y	0.29		All ND, MDL<C, MEC=MDL	0.29	MEC<C, go to Step 5	Y	Y	0.5		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
44	Vinyl Chloride	525	Y	Y	0.34		All ND, MDL<C, MEC=MDL	0.34	MEC<C, go to Step 5	Y	Y	0.5		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
45	2-Chlorophenol	400	Y	Y	0.4		All ND, MDL<C, MEC=MDL	0.4	MEC<C, go to Step 5	Y	Y	1.2		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
46	2,4-Dichlorophenol	790	Y	Y	0.3		All ND, MDL<C, MEC=MDL	0.3	MEC<C, go to Step 5	Y	Y	1.3		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
47	2,4-Dimethylphenol	2300	Y	Y	0.3		All ND, MDL<C, MEC=MDL	0.3	MEC<C, go to Step 5	Y	Y	1.3		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
48	2-Methyl- 4,6-Dinitrophe	765	Y	Y	0.4		All ND, MDL<C, MEC=MDL	0.4	MEC<C, go to Step 5	Y	Y	1.2		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
49	2,4-Dinitrophenol	14000	Y	Y	0.3		All ND, MDL<C, MEC=MDL	0.3	MEC<C, go to Step 5	Y	Y	0.7		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
50	2-Nitrophenol	No Criteria	Y	Y	0.3		No Criteria	No Criteria	No Criteria	Y	Y	1.3		N	No Criteria	No Criteria	Uo	No Criteria
51	4-Nitrophenol	No Criteria	Y	Y	0.2		No Criteria	No Criteria	No Criteria	Y	Y	1.6		N	No Criteria	No Criteria	Uo	No Criteria
52	3-Methyl 4-Chlorophenol	No Criteria	Y	Y	0.3		No Criteria	No Criteria	No Criteria	Y	Y	1.1		N	No Criteria	No Criteria	Uo	No Criteria
53	Pentachlorophenol	7.9	Y	Y	0.4		All ND, MDL<C, MEC=MDL	0.4	MEC<C, go to Step 5	Y	Y	1		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
54	Phenol	4600000	Y	Y	0.2		All ND, MDL<C, MEC=MDL	0.2	MEC<C, go to Step 5	Y	Y	1.3		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
55	2,4,6-Trichlorophenol	6.5	Y	Y	0.2		All ND, MDL<C, MEC=MDL	0.2	MEC<C, go to Step 5	Y	Y	1.3		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
56	Acenaphthene	2700	Y	Y	0.17		All ND, MDL<C, MEC=MDL	0.17	MEC<C, go to Step 5	Y	N		0.0029		B<C, Step 7		No	MEC<C & B<C
57	Acenaphthylene	No Criteria	Y	Y	0.03		No Criteria	No Criteria	No Criteria	Y	N		0.00012		No Criteria	No Criteria	Uo	No Criteria
58	Anthracene	110000	Y	Y	0.16		All ND, MDL<C, MEC=MDL	0.16	MEC<C, go to Step 5	Y	N		0.000197		B<C, Step 7		No	MEC<C & B<C
59	Benzidine	0.00054	Y	Y	0.3		All ND, MinDL>C, Go to Step 5			Y	Y	0.0015		Y	No detected value of B, Step		No	UD; effluent data and B are ND
60	Benzo(a)Anthracene	0.049	Y	Y	0.12		All ND, MinDL>C, Go to Step 5			Y	N		0.0011		B<C, Step 7		No	UD; effluent data ND, MDL>C & B<C
61	Benzo(a)Pyrene	0.049	Y	Y	0.09		All ND, MinDL>C, Go to Step 5			Y	N		0.000547		B<C, Step 7		No	UD; effluent data ND, MDL>C & B<C
62	Benzo(b)Fluoranthene	0.049	Y	Y	0.11		All ND, MinDL>C, Go to Step 5			Y	N		0.0019		B<C, Step 7		No	UD; effluent data ND, MDL>C & B<C
63	Benzo(ghi)Perylene	No Criteria	Y	Y	0.06		No Criteria	No Criteria	No Criteria	Y	N		0.000705		No Criteria	No Criteria	Uo	No Criteria
64	Benzo(k)Fluoranthene	0.049	Y	Y	0.16		All ND, MinDL>C, Go to Step 5			Y	N		0.00093		B<C, Step 7		No	UD; effluent data ND, MDL>C & B<C
65	Bis(2-Chloroethoxy)Meth	No Criteria	Y	Y	0.3		No Criteria	No Criteria	No Criteria	Y	Y	0.3		N	No Criteria	No Criteria	Uo	No Criteria
66	Bis(2-Chloroethyl)Ether	1.4	Y	Y	0.3		All ND, MDL<C, MEC=MDL	0.3	MEC<C, go to Step 5	Y	Y	0.3		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
67	Bis(2-Chloroisopropyl)Et	170000	Y	Y	0.6		All ND, MDL<C, MEC=MDL	0.6	MEC<C, go to Step 5	N					No detected value of B, Step		No	Ud;MEC<C & B is ND
68	Bis(2-Ethylhexyl)Phthalat	5.9	Y	N		0.8		0.8	MEC<C, go to Step 5	Y	Y	10		Y	No detected value of B, Step		No	Ud;MEC<C & B is ND
69	4-Bromophenyl Phenyl E	No Criteria	Y	Y	0.4		No Criteria	No Criteria	No Criteria	Y	Y	0.23		N	No Criteria	No Criteria	Uo	No Criteria
70	Butylbenzyl Phthalate	5200	Y	Y	0.4		All ND, MDL<C, MEC=MDL	0.4	MEC<C, go to Step 5	Y	Y	0.52		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
71	2-Chloronaphthalene	4300	Y	Y	0.3		All ND, MDL<C, MEC=MDL	0.3	MEC<C, go to Step 5	Y	Y	0.3		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
72	4-Chlorophenyl Phenyl E	No Criteria	Y	Y	0.4		No Criteria	No Criteria	No Criteria	Y	Y	0.3		N	No Criteria	No Criteria	Uo	No Criteria
73	Chrysene	0.049	Y	Y	0.14		All ND, MinDL>C, Go to Step 5			Y	N		0.00106		B<C, Step 7		No	UD; effluent data ND, MDL>C & B<C
74	Dibenzo(a,h)Anthracene	0.049	Y	Y	0.04		All ND, MDL<C, MEC=MDL	0.04	MEC<C, go to Step 5	Y	N		0.00067		B<C, Step 7		No	MEC<C & B<C
75	1,2-Dichlorobenzene	17000	Y	Y	0.4		All ND, MDL<C, MEC=MDL	0.4	MEC<C, go to Step 5	Y	Y	0.3		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
76	1,3-Dichlorobenzene	2600	Y	Y	0.2		All ND, MDL<C, MEC=MDL	0.2	MEC<C, go to Step 5	Y	Y	0.3		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
77	1,4-Dichlorobenzene	2600	Y	Y	0.12		All ND, MDL<C, MEC=MDL	0.12	MEC<C, go to Step 5	Y	Y	0.3		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
78	3,3 Dichlorobenzidine	0.077	Y	Y	0.3		All ND, MinDL>C, Go to Step 5			Y	Y	0.004		N	No detected value of B, Step		No	UD; effluent data and B are ND
79	Diethyl Phthalate	120000	Y	Y	0.4		All ND, MDL<C, MEC=MDL	0.4	MEC<C, go to Step 5	Y	Y	0.24		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
80	Dimethyl Phthalate	2900000	Y	Y	0.4		All ND, MDL<C, MEC=MDL	0.4	MEC<C, go to Step 5	Y	Y	0.24		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
81	Di-n-Butyl Phthalate	12000	Y	Y	0.4		All ND, MDL<C, MEC=MDL	0.4	MEC<C, go to Step 5	Y	N		1.72		B<C, Step 7		No	MEC<C & B<C
82	2,4-Dinitrotoluene	9.1	Y	Y	0.3		All ND, MDL<C, MEC=MDL	0.3	MEC<C, go to Step 5	Y	Y	0.27		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
83	2,6-Dinitrotoluene	No Criteria	Y	Y	0.3		No Criteria	No Criteria	No Criteria	Y	Y	0.29		N	No Criteria	No Criteria	Uo	No Criteria
84	Di-n-Octyl Phthalate	No Criteria	Y	Y	0.4		No Criteria	No Criteria	No Criteria	Y	Y	0.38		N	No Criteria	No Criteria	Uo	No Criteria
85	1,2-Diphenylhydrazine	0.54	Y	Y	0.3		All ND, MDL<C, MEC=MDL	0.3	MEC<C, go to Step 5	Y	N		0.0087		B<C, Step 7		No	MEC<C & B<C
86	Fluoranthene	370	Y	Y	0.03		All ND, MDL<C, MEC=MDL	0.03	MEC<C, go to Step 5	Y	N		0.003		B<C, Step 7		No	MEC<C & B<C
87	Fluorene	14000	Y	Y	0.02		All ND, MDL<C, MEC=MDL	0.02	MEC<C, go to Step 5	Y	N		0.00072		B<C, Step 7		No	MEC<C & B<C
88	Hexachlorobenzene	0.00077	Y	Y	0.4		All ND, MinDL>C, Go to Step 5			Y	N		0.000053		B<C, Step 7		No	UD; effluent data ND, MDL>C & B<C

GWF Power Systems Site V
Resonable Potential Analysis Results

Beginning			Step 2	Step 3				Step 4	Step 2	Step 3	Step 5			Step 6	Steps 7 & 8	Final Result	
	Constituent name	C (µg/L) Lowest (most stringent) Criteria (Enter "No Criteria" for no criteria)	Effluent Data Available (Y/N)?	Are all data points non-detects (Y/N)?	If all data points ND Enter the min detection limit (MDL) (ug/L)	Enter the pollutant effluent detected max conc (ug/L)	If all data points are ND and MinDL>C, interim monitoring is required	Concentration from the effluent (MEC) (MEC= detetad max value; if all ND & MDL<C then MEC = MDL)	MEC vs. C 1. If MEC> or =C, effluent limitation is required; 2. If MEC<C, go to Step 5	B Available (Y/N)?	Are all B data points non-detects (Y/N)?	If all data points ND Enter the min detection limit (MDL) (ug/L)	Enter the pollutant B detected max conc (ug/L)	If all B is ND, is MDL>C?	B vs. C If B>C, effluent limitation is required	7) Review other information in the SIP page 4. If information is unavailable or insufficient: 8) the RWQCB shall establish interim monitoring requirements.	RPA Result	Reason
89	Hexachlorobutadiene	50	Y	Y	0.2		All ND, MDL<C, MEC=MDL	0.2	MEC<C, go to Step 5	Y	Y	0.3		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
90	Hexachlorocyclopentadiene	17000	Y	Y	0.1		All ND, MDL<C, MEC=MDL	0.1	MEC<C, go to Step 5	Y	Y	0.31		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
91	Hexachloroethane	8.9	Y	Y	0.2		All ND, MDL<C, MEC=MDL	0.2	MEC<C, go to Step 5	Y	Y	0.2		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
92	Indeno(1,2,3-cd)Pyrene	0.049	Y	Y	0.04		All ND, MDL<C, MEC=MDL	0.04	MEC<C, go to Step 5	Y	N		0.0013		B<C, Step 7		No	MEC<C & B<C
93	Isophorone	600	Y	Y	0.3		All ND, MDL<C, MEC=MDL	0.3	MEC<C, go to Step 5	Y	Y	0.3		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
94	Naphthalene	No Criteria	Y	Y	0.05		No Criteria	No Criteria	No Criteria	Y	N		0.0028		No Criteria	No Criteria	Uo	No Criteria
95	Nitrobenzene	1900	Y	Y	0.3		All ND, MDL<C, MEC=MDL	0.3	MEC<C, go to Step 5	Y	Y	0.25		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
96	N-Nitrosodimethylamine	8.1	Y	Y	0.4		All ND, MDL<C, MEC=MDL	0.4	MEC<C, go to Step 5	Y	Y	0.3		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
97	N-Nitrosodi-n-Propylamine	1.4	Y	Y	0.3		All ND, MDL<C, MEC=MDL	0.3	MEC<C, go to Step 5	Y	Y	0.001		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
98	N-Nitrosodiphenylamine	16	Y	Y	0.4		All ND, MDL<C, MEC=MDL	0.4	MEC<C, go to Step 5	Y	Y	0.001		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
99	Phenanthrene	No Criteria	Y	Y	0.03		No Criteria	No Criteria	No Criteria	Y	N		0.00168		No Criteria	No Criteria	Uo	No Criteria
100	Pyrene	11000	Y	Y	0.03		All ND, MDL<C, MEC=MDL	0.03	MEC<C, go to Step 5	Y	N		0.0025		B<C, Step 7		No	MEC<C & B<C
101	1,2,4-Trichlorobenzene	No Criteria	Y	Y	0.3		No Criteria	No Criteria	No Criteria	Y	Y	0.3		N	No Criteria	No Criteria	Uo	No Criteria
102	Aldrin	0.00014	Y	Y	0.003		All ND, MinDL>C, Go to Step 5			N					No detected value of B, Step		No	MDL>C & No B
103	alpha-BHC	0.013	Y	Y	0.002		All ND, MDL<C, MEC=MDL	0.002	MEC<C, go to Step 5	Y	N		0.000347		B<C, Step 7		No	MEC<C & B<C
104	beta-BHC	0.046	Y	Y	0.001		All ND, MDL<C, MEC=MDL	0.001	MEC<C, go to Step 5	Y	N		0.000118		B<C, Step 7		No	MEC<C & B<C
105	gamma-BHC	0.063	Y	Y	0.001		All ND, MDL<C, MEC=MDL	0.001	MEC<C, go to Step 5	Y	N		0.0010032		B<C, Step 7		No	MEC<C & B<C
106	delta-BHC	No Criteria	Y	Y	0.001		No Criteria	No Criteria	No Criteria	Y	N		0.000038		No Criteria	No Criteria	Uo	No Criteria
107	Chlordane (303d listed)	0.00059	Y	Y	0.01		All ND, MinDL>C, Go to Step 5			Y	N		0.000302		B<C, Step 7		No	UD; effluent data ND, MDL>C & B<C
108	4,4'-DDT (303d listed)	0.00059	Y	Y	0.001		All ND, MinDL>C, Go to Step 5			Y	N		0.000349		B<C, Step 7		No	UD; effluent data ND, MDL>C & B<C
109	4,4'-DDE (linked to DDT)	0.00059	Y	Y	0.001		All ND, MinDL>C, Go to Step 5			Y	N		0.00092		B>C, Effluent Limit Required		Yes	B>C
110	4,4'-DDD	0.00084	Y	Y	0.001		All ND, MinDL>C, Go to Step 5			Y	N		0.000347		B<C, Step 7		No	UD; effluent data ND, MDL>C & B<C
111	Dieldrin (303d listed)	0.00014	Y	Y	0.002		All ND, MinDL>C, Go to Step 5			Y	N		0.00038		B>C, Effluent Limit Required		Yes	B>C
112	alpha-Endosulfan	0.0087	Y	Y	0.002		All ND, MDL<C, MEC=MDL	0.002	MEC<C, go to Step 5	Y	N		0.000036		B<C, Step 7		No	MEC<C & B<C
113	beta-Endolsulfan	0.0087	Y	Y	0.001		All ND, MDL<C, MEC=MDL	0.001	MEC<C, go to Step 5	Y	N		0.000042		B<C, Step 7		No	MEC<C & B<C
114	Endosulfan Sulfate	240	Y	Y	0.001		All ND, MDL<C, MEC=MDL	0.001	MEC<C, go to Step 5	Y	N		0.0002		B<C, Step 7		No	MEC<C & B<C
115	Endrin	0.0023	Y	Y	0.002		All ND, MDL<C, MEC=MDL	0.002	MEC<C, go to Step 5	Y	N		0.000019		B<C, Step 7		No	MEC<C & B<C
116	Endrin Aldehyde	0.81	Y	Y	0.002		All ND, MDL<C, MEC=MDL	0.002	MEC<C, go to Step 5	N					No detected value of B, Step		No	Ud;MEC<C & B is ND
117	Heptachlor	0.00021	Y	Y	0.003		All ND, MinDL>C, Go to Step 5			Y	N		0.000011		B<C, Step 7		No	UD; effluent data ND, MDL>C & B<C
118	Heptachlor Epoxide	0.00011	Y	Y	0.002		All ND, MinDL>C, Go to Step 5			Y	N		0.000097		B<C, Step 7		No	UD; effluent data ND, MDL>C & B<C
119-125	PCBs sum (2)	0.00017	Y	Y	0.07		All ND, MinDL>C, Go to Step 5			N					No detected value of B, Step		No	MDL>C & No B
126	Toxaphene	0.0002	Y	Y	0.2		All ND, MinDL>C, Go to Step 5			N					No detected value of B, Step		No	MDL>C & No B
	Tributylin	0.01	Y	Y	0.00141		All ND, MDL<C, MEC=MDL	0.00141	MEC<C, go to Step 5	Y	Y	0.002		N	No detected value of B, Step		No	Ud;MEC<C & B is ND
	Total PAHs	15	Y	Y	0.17		All ND, MDL<C, MEC=MDL	0.17	MEC<C, go to Step 5	Y	N		0.01478		B<C, Step 7		No	MEC<C & B<C

a. The most stringent of salt and fresh water criteria were selected for this analysis.

b. According to Table 1 of Section (b)(1) of CTR (40CFR 131.38), those criteria should use Basin Plan objectives; criteria for Se and CN are specified by the NTR.

c. Acronyms in the "Final Result" column; Ud; Cannot determine reasonable potential due to the absence of data, or because Minimum DL is greater than water quality objective or CTR criteria
IM: Interim monitoring is required

Attachment 2

Effluent Data

Green highlight checks for input inconsistency (see "input check" spreadsheet for logic)
Yellow highlights are user input

		EFFLUENT DATA					BACKGROUND DATA (B)					
	Constituent name	Effluent Data Available (Y/N)?	Are all data points non-detects (Y/N)?	If all data points ND Enter the min detection limit (MDL) (ug/L)	Enter the pollutant effluent detected max conc (ug/L)	Input Check	B Available (Y/N)?	Are all B non-detects (Y/N)?	If all data points ND Enter the min detection limit (MDL) (ug/L)	Enter the Detected Maximum Background Conc	Input Check	7) Review other information in the SIP page 4. If information is unavailable or insufficient: B) the RWQCB shall establish interim monitoring requirements.
1	Antimony	Y	N		**1.1**		Y	N		0.337		
2	Arsenic	Y	N		**11**		Y	N		3.65		
3	Beryllium	Y	Y	0.06			Y	N		0.126		No Criteria
4	Cadmium	Y	N		**0.3**		Y	N		0.06		
5a	Chromium (III or total)	Y	N		**127**		Y	N		80.37		
5b	Chromium (VI)	Y	N		**5.6**		N					
6	Copper	Y	N		**32.40**		Y	N		9.86		
7	Lead	Y	N		**34**		Y	N		2.35		
8	Mercury	Y	N		**0.06**		Y	N		0.0377		
9	Nickel	Y	N		**92.9**		Y	N		21.8		
10	Selenium	Y	N		**19.8**		Y	N		0.3		
11	Silver	Y	N		**0.08**		Y	N		0.0566		
12	Thallium	Y	Y	0.03			Y	N		0.14		
13	Zinc	Y	N		**390**		Y	N		18.21		
14	Cyanide	Y	N		**2**		Y	N		0.5		
15	Asbestos	Y	Y	0.76			N					No Criteria
	TCDD TEQ	Y	N		**9.66E-07**		Y	N		0.000000048		
17	Acrolein	Y	Y	1			Y	Y	0.5			
18	Acrylonitrile	Y	Y	1			Y	Y	0.03			
19	Benzene	Y	Y	0.27			Y	Y	0.05			
20	Bromoform	Y	N		**4.6**		Y	Y	0.5			
21	Carbon Tetrachloride	Y	Y	0.42			Y	N		0.06		
22	Chlorobenzene	Y	Y	0.19			Y	Y	0.5			
23	Chlorodibromomethane	Y	N		**1.6**		Y	Y	0.05			
24	Chloroethane	Y	Y	0.34			Y	Y	0.5			No Criteria
25	2-Chloroethylvinyl ether	Y	Y	0.31			Y	Y	0.5			No Criteria
26	Chloroform	Y	Y	0.24			Y	Y	0.5			No Criteria
27	Dichlorobromomethane	Y	N		**0.5**		Y	Y	0.05			
28	1,1-Dichloroethane	Y	Y	0.28			Y	Y	0.05			No Criteria
29	1,2-Dichloroethane	Y	Y	0.18			Y	N		0.04		
30	1,1-Dichloroethylene	Y	Y	0.37			Y	Y	0.5			
31	1,2-Dichloropropane	Y	Y	0.2			Y	Y	0.05			
32	1,3-Dichloropropylene	Y	Y	0.2			N					
33	Ethylbenzene	Y	Y	0.3			Y	Y	0.5			
34	Methyl Bromide	Y	Y	0.42			Y	Y	0.5			
35	Methyl Chloride	Y	Y	0.36			Y	Y	0.5			No Criteria
36	Methylene Chloride	Y	Y	0.38			Y	Y	0.5			
37	1,1,2,2-Tetrachloroethane	Y	Y	0.3			Y	Y	0.05			
38	Tetrachloroethylene	Y	Y	0.32			Y	Y	0.05			
39	Toluene	Y	Y	0.25			Y	Y	0.3			
40	1,2-Trans-Dichloroethylene	Y	Y	0.3			Y	Y	0.5			
41	1,1,1-Trichloroethane	Y	Y	0.35			Y	Y	0.5			No Criteria
42	1,1,2-Trichloroethane	Y	Y	0.27			Y	Y	0.05			
43	Trichloroethylene	Y	Y	0.29			Y	Y	0.5			
44	Vinyl Chloride	Y	Y	0.34			Y	Y	0.5			
45	2-Chlorophenol	Y	Y	0.4			Y	Y	1.2			
46	2,4-Dichlorophenol	Y	Y	0.3			Y	Y	1.3			
47	2,4-Dimethylphenol	Y	Y	0.3			Y	Y	1.3			
48	2-Methyl- 4,6-Dinitrophenol	Y	Y	0.4			Y	Y	1.2			
49	2,4-Dinitrophenol	Y	Y	0.3			Y	Y	0.7			
50	2-Nitrophenol	Y	Y	0.3			Y	Y	1.3			No Criteria
51	4-Nitrophenol	Y	Y	0.2			Y	Y	1.6			No Criteria
52	3-Methyl 4-Chlorophenol	Y	Y	0.3			Y	Y	1.1			No Criteria
53	Pentachlorophenol	Y	Y	0.4			Y	Y	1			
54	Phenol	Y	Y	0.2			Y	Y	1.3			
55	2,4,6-Trichlorophenol	Y	Y	0.2			Y	Y	1.3			
56	Acenaphthene	Y	Y	0.17			Y	N		0.0029		
57	Acenaphthylene	Y	Y	0.03			Y	N		0.00012		No Criteria
58	Anthracene	Y	Y	0.16			Y	N		0.000197		
59	Benzidine	Y	Y	0.3			Y	Y	0.0015			
60	Benzo(a)Anthracene	Y	Y	0.12			Y	N		0.0011		
61	Benzo(a)Pyrene	Y	Y	0.09			Y	N		0.000547		
62	Benzo(b)Fluoranthene	Y	Y	0.11			Y	N		0.0019		
63	Benzo(ghi)Perylene	Y	Y	0.06			Y	N		0.000705		No Criteria
64	Benzo(k)Fluoranthene	Y	Y	0.16			Y	N		0.00093		
65	Bis(2-Chloroethoxy)Methane	Y	Y	0.3			Y	Y	0.3			No Criteria
66	Bis(2-Chloroethyl)Ether	Y	Y	0.3			Y	Y	0.3			
67	Bis(2-Chloroisopropyl)Ether	Y	Y	0.6			N					
68	Bis(2-Ethylhexyl)Phthalate	Y	N		**0.8**		Y	Y	10			
69	4-Bromophenyl Phenyl Ether	Y	Y	0.4			Y	Y	0.23			No Criteria
70	Butylbenzyl Phthalate	Y	Y	0.4			Y	Y	0.52			
71	2-Chloronaphthalene	Y	Y	0.3			Y	Y	0.3			
72	4-Chlorophenyl Phenyl Ether	Y	Y	0.4			Y	Y	0.3			No Criteria
73	Chrysene	Y	Y	0.14			Y	N		0.00106		
74	Dibenzo(a,h)Anthracene	Y	Y	0.04			Y	N		0.00067		
75	1,2-Dichlorobenzene	Y	Y	0.4			Y	Y	0.3			
76	1,3-Dichlorobenzene	Y	Y	0.2			Y	Y	0.3			
77	1,4-Dichlorobenzene	Y	Y	0.12			Y	Y	0.3			
78	3,3-Dichlorobenzidine	Y	Y	0.3			Y	Y	0.004			
79	Diethyl Phthalate	Y	Y	0.4			Y	Y	0.24			
80	Dimethyl Phthalate	Y	Y	0.4			Y	Y	0.24			
81	Di-n-Butyl Phthalate	Y	Y	0.4			Y	N		1.72		
82	2,4-Dinitrotoluene	Y	Y	0.3			Y	Y	0.27			
83	2,6-Dinitrotoluene	Y	Y	0.3			Y	Y	0.29			No Criteria
84	Di-n-Octyl Phthalate	Y	Y	0.4			Y	Y	0.38			No Criteria
85	1,2-Diphenylhydrazine	Y	Y	0.3			Y	N		0.0087		
86	Fluoranthene	Y	Y	0.03			Y	N		0.003		
87	Fluorene	Y	Y	0.02			Y	N		0.00072		
88	Hexachlorobenzene	Y	Y	0.4			Y	N		0.000053		
89	Hexachlorobutadiene	Y	Y	0.2			Y	Y	0.3			
90	Hexachlorocyclopentadiene	Y	Y	0.1			Y	Y	0.31			
91	Hexachloroethane	Y	Y	0.2			Y	Y	0.2			
92	Indeno(1,2,3-cd)Pyrene	Y	Y	0.04			Y	N		0.0013		
93	Isophorone	Y	Y	0.3			Y	Y	0.3			
94	Naphthalene	Y	Y	0.05			Y	N		0.0028		No Criteria
95	Nitrobenzene	Y	Y	0.3			Y	Y	0.25			
96	N-Nitrosodimethylamine	Y	Y	0.4			Y	Y	0.3			
97	N-Nitrosodi-n-Propylamine	Y	Y	0.3			Y	Y	0.001			
98	N-Nitrosodiphenylamine	Y	Y	0.4			Y	Y	0.001			
99	Phenanthrene	Y	Y	0.03			Y	N		0.00168		No Criteria
100	Pyrene	Y	Y	0.03			Y	N		0.0025		

		EFFLUENT DATA					BACKGROUND DATA (B)					
	Constituent name	Effluent Data Available (Y/N)?	Are all data points non-detects (Y/N)?	If all data points ND Enter the min detection limit (MDL) (ug/L)	Enter the pollutant effluent detected max conc (ug/L)	Input Check	B Available (Y/N)?	Are all B non-detects (Y/N)?	If all data points ND Enter the min detection limit (MDL) (ug/L)	Enter the Detected Maximum Background Conc	Input Check	7) Review other information in the SIP page 4. If information is unavailable or insufficient: 8) the RWQCB shall establish interim monitoring requirements.
101	1,2,4-Trichlorobenzene	Y	Y	0.3			Y	Y	0.3			No Criteria
102	Aldrin	Y	Y	0.003			N					
103	alpha-BHC	Y	Y	0.002			Y	N		0.000347		
104	beta-BHC	Y	Y	0.001			Y	N		0.000118		
105	gamma-BHC	Y	Y	0.001			Y	N		0.0010032		
106	delta-BHC	Y	Y	0.001			Y	N		0.000038		No Criteria
107	Chlordane	Y	Y	0.01			Y	N		0.000302		
108	4,4'-DDT	Y	Y	0.001			Y	N		0.000349		
109	4,4'-DDE (linked to DDT)	Y	Y	0.001			Y	N		0.00092		
110	4,4'-DDD	Y	Y	0.001			Y	N		0.000347		
111	Dieldrin	Y	Y	0.002			Y	N		0.00038		
112	alpha-Endosulfan	Y	Y	0.002			Y	N		0.000036		
113	beta-Endosulfan	Y	Y	0.001			Y	N		0.000042		
114	Endosulfan Sulfate	Y	Y	0.001			Y	N		0.0002		
115	Endrin	Y	Y	0.002			Y	N		0.000019		
116	Endrin Aldehyde	Y	Y	0.002			N					
117	Heptachlor	Y	Y	0.003			Y	N		0.000011		
118	Heptachlor Epoxide	Y	Y	0.002			Y	N		0.000097		
119-125	PCBs sum	Y	Y	0.07			N					
126	Toxaphene	Y	Y	0.2			N					
	Tributylin	Y	Y	0.00141			Y	Y	0.002			
	Total PAHs	Y	Y	0.17			Y	N		0.01478		

Attachment 3

Calculation of Final WQBELs

GWF Power Systems Site V
WQBEL Calculation

PRIORITY POLLUTANTS	Copper	Lead	Mercury	Nickel	Zinc	Selenium	Cyanide	TCDD TEQ	4,4'-DDE	Dieldrin
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Basis and Criteria type	CTR SW	BP FW	BP SW (4-d, 1-hr avg)	BP SW (24-hr, Max)	BP FW	CTR SW	CTR SW	CTR HH	CTR HH	CTR HH
Lowest WQO	3.73	2.02	0.025	8.28	85.62	5.00	1.00	1.40E-08	5.90E-04	1.40E-04
Translators										
Dilution Factor (D) (if applicable)	9	9	0	9	9	0	9	0	0	0
No. of samples per month	4	4	4	4	4	4	4	4	4	4
Aquatic life criteria analysis required? (Y/N)	Y	Y	Y	Y	Y	Y	Y	N	N	Y
HH criteria analysis required? (Y/N)	N	N	Y	Y	N	N	Y	Y	Y	Y
Applicable Acute WQO	5.78	51.85	2.1	75	86	20	1	NA	NA	0.71
Applicable Chronic WQO	3.73	2.02	0.025	8.30	86	5	1	NA	NA	0.0019
HH criteria			0.051	4,600			220000	1.40E-08	5.90E-04	1.40E-04
Background (max conc for Aq Life calc)	9.86	2.35	0.0377	21.8	18.21	0.3	0.5			0.00038
Background (avg conc for HH calc)			0.0377	21.80			0.50	0.027750	0.000365	0.000142
Is the pollutant Bioaccumulative(Y/N)? (e.g., Hg)	N	N	Y	N	N	Y	N	Y	Y	Y
ECA acute	5.8	497.3	2.1	553.8	696.11	20	5.5			0.71
ECA chronic	3.7	2.0	0.025	8.3	692.346786	5	5.5			0.0019
ECA HH			0.051	45803.8			2199995.5	0.000000014	0.00059	0.00014
No. of data points <10 or at least 80% of data reported non detect? (Y/N)	N	N	N	N	N	N	Y	Y	Y	Y
Avg of effluent data points	20.474	4.070	0.0240	11.702	74.343	7.767				
Std Dev of effluent data points	4.411	6.289	0.0150	12.865	71.448	4.518				
CV calculated	0.22	1.55	0.63	1.10	0.96	0.58	N/A	N/A	N/A	N/A
CV (Selected) - Final	0.22	1.55	0.63	1.10	0.96	0.58	0.6	0.6	0.6	0.60
ECA acute mult99	0.62	0.14	0.31	0.19	0.21	0.33	0.32			0.32
ECA chronic mult99	0.78	0.26	0.51	0.35	0.38	0.54	0.53			0.53
LTA acute	3.60	70.11	0.65	103.80	147.12	6.59	1.77			0.23
LTA chronic	2.93	0.52	0.013	2.87	266.07	2.68	2.90			1.00E-03
minimum of LTAs	2.93	0.52	0.013	2.87	147.12	2.68	1.77			1.00E-03
AMEL mult95	1.19	2.44	1.58	2.04	1.91	1.53	1.55	1.55	1.55	1.55
MDEL mult99	1.60	7.09	3.23	5.34	4.73	3.03	3.11	3.11	3.11	3.11
AMEL (aq life)	3.47	1.27	0.020	5.85	280.67	4.12	2.74			1.56E-03
MDEL(aq life)	4.69	3.69	0.042	15.29	696.11	8.14	5.50			3.12E-03
MDEL/AMEL Multiplier	1.35	2.91	2.05	2.61	2.48	1.98	2.01	2.01	2.01	2.01
AMEL (human hlth)			0.051	45804			2199996	1.40E-08	5.90E-04	0
MDEL (human hlth)			0.104	119755			4413607	2.81E-08	1.18E-03	0
minimum of AMEL for Aq. life vs HH	3.47	1.27	0.02	5.85	280.67	4.12	2.74	1.40E-08	5.90E-04	1.40E-04
minimum of MDEL for Aq. Life vs HH	4.69	3.69	0.042	15.29	696.11	8.14	5.50	2.81E-08	1.18E-03	2.81E-04
Current limit in permit (30-d avg) (final/interim)										
Current limits in permit (daily) (final/interim)	36	NA	0.21	53	562		NA	NA	NA	NA
Final limit - AMEL	3.5	1.3	0.020	5.8	280.7	4.1	2.7	1.400E-08	5.90E-04	1.4E-04
Final limit - MDEL	4.7	3.7	0.042	15.3	696.1	8.1	5.5	2.809E-08	1.18E-03	2.8E-04
Max Effl Conc (MEC)	32.4	34.0	0.060	92.9	390.0	19.8	2	9.66E-07	ND	ND
Previous permit limit	**36.0**	NA	0.210	NA	562.0	NA	NA	NA	NA	NA
99.87th percentile of recent data	39.8	51.3	0.071	35.5		34.6	NA			
Interim limit if infeasible to comply with WQBELs	**36.0**	**34.0**	**0.071**	**92.9**	**562**	**34.6**	**5**	NA	**0.05**	**0.01**

Mean	20.47	4.07	0.02	11.70	74.34	7.77
95th	29.1	12.2	0.050	16.90	188.00	16.40
99th	34.0	25.0	0.060	23.50	315.00	23.80
INTERIM (Y/N)	Y	Y	Y	Y	Y	Y
99.87th if Interim limit is needed	39.8	51.3	0.071	35.5		34.6

Attachment 4

General Basis for Final Compliance Dates

General Basis for Final Compliance Dates [1]
for Discharges North of the Dumbarton Bridge
Revised March 21, 2005

Constituent	Reference for applicable standard	Maximum compliance schedule allowed	Compliance date and Basis
Cyanide Selenium	NTR	10 years	**April 28, 2010** (10 years from effective date of SIP). Basis is the SIP.
Copper (salt)	CTR	5 years	**May 18, 2010** (this is 10 years from effective date of CTR/SIP). Bases are CTR and SIP.
Cadmium (fresh) Mercury PAH EPA 610	Numeric Basin Plan (BP)	10 years	**April 28, 2010,** which is 10 years from effective date of SIP (April 28, 2000). Basis is the Basin Plan, See note [2a].
Arsenic Cadmium (salt) Chromium (VI) Copper (fresh) Lead Nickel Silver (CMC) Zinc	Numeric BP	10 years	**January 1, 2015.** This is 10 years (using full months) from effective date of 2004 BP amendment (January 5, 2005). Basis is the Basin Plan section 4.3.5.6. See note [2b]. Also, see note [3] for permits issued prior to effective date of 2004 BP amendment.
Dioxins/Furans Tributyltin Other toxic pollutants not in CTR	Narrative BP using SIP methodology	10 years	**10-yr from effective date of permit** (which is when new standard is adopted; no sunset date). Basis is the Basin Plan, see note [2c].
Other priority pollutants on CTR and not listed above	CTR	5 years	**May 18, 2010** (this is 10 years from effective date of CTR/SIP). Basis is the CTR and SIP.

[1] These dates are maximum allowable compliance dates applicable. As required by the Basin Plan, CTR, SIP, and 40CFR122.47, compliance should be as short as possible. These are only applicable for discharges north of the Dumbarton Bridge because applicable criteria for the south bay are different than those cited above.

- For pollutants where there are planned TMDLs or SSOs, and final WQBELs may be affected by those TMDLs and SSOs, maximum timeframes may be appropriate due the uncertain length of time it takes to develop the TMDL/SSO.
- However, for pollutants without planned TMDLs or SSOs, the State Board in the EBMUD remand order (WQO 2002-0012), directs the Regional Board to establish schedules that are as short as feasible in accordance with requirements.

[2] The Basin Plan provides for a 10-year compliance schedule for implementation of measures to comply with new standards as of the effective date of those standards. This provision has been construed to authorize compliance schedules for new interpretations of existing standards, such as the numeric and narrative water quality objectives specified in the Basin Plan, if the new interpretations result in more stringent limits than in the previous permit.

a. For the numeric objectives in place since the 1995 Basin Plan, due to the adoption of the SIP, the Water Board has newly interpreted these objectives. The effective date of this new interpretation is the effective date of the SIP (April 28, 2000) for implementation of these numeric Basin Plan objectives.

b. For numeric objectives for the seven pollutants adopted in the 2004 Basin Plan (amendments), the Water Board has newly adopted these objectives. The effective date of these new objectives is the approval date of the 2004 Basin Plan by U.S. EPA (January 5, 2005) for implementation of these numeric Basin

Plan objectives. December is the last full month directly preceding the sunset date. Compliance should be set on the first day of the month to ease determination of monthly average limits. Therefore, compliance must begin on January 1, 2015.

c. For narrative objectives, the Board newly interpreted these objectives using best professional judgment as defined in the Basin Plan for each permit. Therefore, the effective date of this new interpretation will be the effective date of the permit.

[3] The schedules established in permits effective prior to the 2004 Basin Plan (amendments) should be continued into subsequent permits reissued after the 2004 Basin Plan. For example, Permit XX, adopted Nov 2004 became effective Feb 1, 2005. Permit XX establishes a compliance schedule for copper to end April 1, 2010. When next reissued in 2010, the compliance deadline for the same copper limit should remain April 1, 2010. However, if in applying the 2004 BP objective results in a more stringent limit for copper, then a new compliance schedule may extend to the new date in2015, provided discharger XX justifies the need for the longer compliance schedule.

Attachment E

Infeasibility Study For Site V

February 1, 2005

February 1, 2005

GWF Power Systems, L.P.
Nichols Road Power Plant (Site V), Bay Point, California
National Pollutant Discharge Elimination System Permit Number CA0029122
Request for Compliance Schedules and Demonstration of Infeasibility
To Achieve Immediate Compliance With Final Effluent Limitations For
COPPER, LEAD, MERCURY, NICKEL, SELENIUM,
ZINC, CYANIDE, 4,4'-DDE and DIELDRIN

SUMMARY

This submittal is made by GWF Power Systems, L.P. (GWF) to request schedules to comply with the final effluent limitations for copper, lead, mercury, nickel, cyanide, 4,4'-DDE and dieldrin presented in an Administrative Draft National Pollutant Discharge Elimination System (NPDES) permit and Reasonable Potential Analysis (RPA) prepared for the Nichols Road Power Plant (Site V), Bay Point, California. Additionally, GWF requests interim effluent limitations and compliance schedules for selenium and zinc.

Proposed revisions to GWF's discharge permit (NPDES Permit Number CA0029122) were circulated on January 19, 2005 by TetraTech, Inc. (TetraTech) on behalf of the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB). TetraTech first issued the RPA for this facility on January 10, 2005, and provided a revised RPA (calculations only) on January 19, 2005. At the request of GWF, Brown and Caldwell completed a review of the TetraTech documents and summarized its findings and recommendations in a technical memorandum dated January 28, 2005. Subsequently, TetraTech stated in an e-mail transmittal on January 31, 2005 that the RPA would be revised and water quality effluent limitations (WQBELs) would be established for selenium. In addition, TetraTech notified GWF that WQBELs for zinc at Site V would be modified from those presented in the January 19, 2005 Administrative Draft NPDES permit.

GWF makes this submittal pursuant to Section 2.1 of the State Water Resources Control Board Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (also known as the State Implementation Plan or SIP). Compliance schedules and interim effluent limitations are requested for the subject constituents because it is infeasible for Site V to comply immediately with seven of the final water quality-based effluent limitations (WQBELs) provided in the January 2005 Administrative Draft NPDES permit and RPA. Furthermore, compliance schedules and interim effluent limitations are necessary for selenium and zinc, since Site V cannot meet the WQBELs for these two constituents presented in the TetraTech e-mail of January 31, 2005. Documentation to support GWF's requests is provided herein.

BACKGROUND

Site V discharges to Suisun Bay, which the RWQCB has listed under Section 303(d) of the Clean Water Act (CWA) for water quality impairment due to mercury, nickel, selenium, DDT, and dieldrin, among other pollutants. In the Administrative Draft NPDES permit, it was stated that 4,4'-DDE is "chemically linked to the presence of DDT" and thus is treated as if it were also a listed cause of water quality impairment. Although 4,4'-DDE and dieldrin have never been detected in the GWF discharge, the SIP requires a finding of reasonable potential to cause or contribute to an exceedance of applicable water quality objectives (WQOs), and thus establishment of final effluent limitations, because ambient background concentrations of these constituents in the receiving water have been determined to exceed WQOs. The CWA further requires that effluent limitations for each impairing pollutant listed under Section303(d) (in this case, mercury, nickel, selenium, DDT/4,4'-DDE and dieldrin) be based ultimately on Total Maximum Daily Load (TMDL) studies and accompanying wasteload allocations (WLAs), to be performed by the RWQCB.

Notwithstanding that the requisite TMDL studies and WLAs have not been completed, TetraTech used procedures in the SIP to calculate final WQBELs for GWF Site V. These WQBELs presented in the Administrative Draft NPDES permit are expressed as average monthly effluent limitations (AMELs) and maximum daily effluent limitations (MDELs), as follows:

Constituent	AMEL, µg/L	MDEL, µg/L
Copper	3.5	4.7
Lead	1.3	3.7
Mercury	0.020	0.042
Nickel	7.0	12.9
Selenium	4.1[1]	8.1[1]
Zinc	281[1]	696[1]
Cyanide	2.7	5.5
4,4'-DDE	0.00059	0.0012
Dieldrin	0.00014	0.00028

Note:
µg/L = micrograms per liter
[1]AMEL and MDEL values for selenium and zinc as provided in e-mail correspondence from TetraTech dated January 31, 2005.

GWF understands that TetraTech calculated AMELs and MDELs for Site V using WQOs for Suisun Bay obtained from the following references:

Constituent	Source of Applicable WQO
Copper	CTR[1] (saltwater)
Lead	Basin Plan[2] (freshwater)
Mercury	Basin Plan[2] (freshwater and saltwater)
Nickel	Basin Plan[2] (saltwater)
Selenium	NTR[3] (freshwater)
Zinc	Basin Plan[2] (freshwater)
Cyanide	NTR[3] (saltwater)
4,4'-DDE	CTR[1] (human health)
Dieldrin	CTR[1] (human health)

Notes:
[1]CTR = California Toxics Rule (40 CFR 131.38)
[2]Basin Plan = 1995 San Francisco Bay Basin Water Quality Control Plan, as amended
[3]NTR = National Toxics Rule (40 CFR 131.36)

TetraTech calculated effluent concentration allowances (ECAs) for each constituent using equations provided in the SIP. The AMELs and MDELs were then determined from the ECAs using statistically derived multipliers, as outlined in the SIP. Dilution credits were granted for zinc and cyanide only.

GWF Site V cannot immediately comply with some of the final WQBELs presented in the January 2005 Administrative Draft NPDES permit or in the TetraTech e-mail transmitted on January 31, 2005. In the case of copper, lead, mercury, nickel, selenium, and zinc, maximum effluent concentrations (MECs) and the 99.87 percentile values derived from statistical analyses of GWF's recent effluent monitoring data exceed the corresponding AMELs and/or MDELs. For cyanide, it is impossible to ascertain GWF's compliance status. Over 80 percent of the available effluent cyanide data at Site V (19 of 23 samples) were reported as "not detected," with some analytical detection limits at or above the proposed AMEL and MDEL. Similar issues arise for 4,4'-DDE and dieldrin. The final AMELs and MDELs for these two constituents are also set below the limit of analytical detection, and GWF cannot demonstrate compliance with the proposed final discharge limitations.

INFEASIBILITY ANALYSIS

Appendix 1 of the SIP defines "infeasible" as "not capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." Section 2.1 of the SIP establishes a standard of "immediate compliance" with WQBELs. "Immediate compliance" with WQBELs is also required by the Basin Plan. Therefore, GWF believes that "immediate compliance" is the benchmark to be used in evaluating the feasibility of the AMELs and MDELs presented in the Administrative Draft NPDES permit and TetraTech's subsequent

e-mail correspondence. The actions needed to achieve compliance at Site V cannot be implemented by the permit's effective date (i.e., immediately), and therefore cannot be completed "within a reasonable period of time."

Below, GWF provides the information required by Section 2.1 of the SIP for the RWQCB to support a finding of infeasibility for Site V to immediately comply with the final WQBELs for copper, lead, mercury, nickel, selenium, zinc, cyanide, 4,4'-DDE and dieldrin. This analysis provides sufficient justification for the RWQCB to include interim effluent limitations and compliance schedules for all nine constituents in the revised NPDES permit for Site V.

A. Documentation that diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream, and the results of those efforts

Effluent Concentrations. Copper, mercury and zinc are measured monthly in the Site V discharge. Lead, nickel and cyanide are measured quarterly, and sometimes more frequently. 4,4'-DDE and dieldrin are measured semiannually. Selenium is measured at least semiannually, and often more frequently. The following table shows summary-level statistics for copper, lead, mercury, nickel, selenium, zinc and cyanide during the time period considered by the RPA:

Constituent	MEC, μg/L	99.87th Percentile Value, μg/L	AMEL, μg/L
Copper	32.4	39.8[1]	3.5
Lead	34.0	51.3[1]	1.3
Mercury	0.06	0.071[1]	0.020
Nickel	92.9	35.5[2]	7.0
Selenium	19.8[3]	35.8[3]	4.1[4]
Zinc	390	506[4]	281
Cyanide	<10[5]	NA[6]	2.7

Notes:
[1]Based on a lognormal statistical distribution.
[2]Based on a loglogistic statistical distribution.
[3]Based on analysis presented in Brown and Caldwell memorandum dated January 28, 2005.
[4]Value calculated by Brown and Caldwell.
[5]Cyanide was reported as "not detected" in 21 of 23 GWF Site V effluent samples, with analytical detection limits ranging up to 10 μg/L.
[6]Not applicable. Given the high percentage of "not detected" selenium results in the GWF data base, it is not possible to obtain a satisfactory statistical representation or calculate a 99.87th percentile value for Site V.

For copper, lead, mercury, nickel, selenium, and zinc in the Site V discharge, the MEC and the 99.87th percentile values (where applicable) all exceeded the corresponding AMELs. Since the cyanide detection limits achieved by GWF's contract laboratories typically exceeded, the proposed AMEL, it is impossible to determine whether Site V can comply with the WQBEL provided in the Administrative Draft NPDES permit.

Neither 4,4'-DDE nor dieldrin was detected in the GWF effluent during the period evaluated by the RPA. However, the practical quantitation levels (PQLs) for 4,4'-DDE and dieldrin are 0.05 μg/L and 0.01 μg/L, respectively, substantially higher than the corresponding AMELs and MDELs presented in the Administrative Draft NPDES permit. Thus, a consistent showing of 4,4'-DDE and dieldrin effluent concentrations below PQLs does not necessarily demonstrate that GWF can meet the WQBELs for these constituents.

Sources. There are no known or potential sources of 4,4'-DDE or dieldrin at the GWF facility, and neither constituent is a component of any material used at Site V. GWF has not begun to study potential sources of the other constituents in the Site V discharge for which compliance schedules and interim effluent limits are requested.

B. Documentation of source control and/or pollution minimization efforts currently underway or completed

Existing NPDES Permit Number CA0029122 includes MDELs for copper, mercury and zinc that are substantially higher than the WQBELs established for these constituents by TetraTech. Lead, nickel, selenium, cyanide, 4,4'-DDE and dieldrin are not currently regulated in the Site V discharge. As a result, GWF has not studied any of these constituents in detail and source control/pollution minimization measures have not been evaluated.

C. A proposed schedule for additional or future source control measures, pollutant minimization actions or waste treatment (i.e., facility upgrades)

GWF will conduct the following activities to minimize pollutant discharges at Site V. These activities will be documented in the annual Pollution Prevention Program reports submitted to the RWQCB.

Source Identification and Characterization (Second Quarter 2005 to Second Quarter 2007). As part of its Pollution Prevention Program, GWF will determine the sources of copper, lead, mercury, nickel, selenium, zinc and cyanide in the Site V effluent. GWF will not include 4,4'-DDE and dieldrin in the source characterization study because neither constituent has ever been detected in the discharge.

Site V is an electric power plant that uses water for steam generation and cooling. The only liquid discharge is a blowdown stream from the cooling water system. Nearly all of the water at the facility is recycled through the cooling tower. Only a small fraction is discharged as cooling tower blowdown. Makeup water to the cooling system is a combination of purchased fresh water, stormwater collected on site, and equipment washdown water. Trace constituents in the source water are increased in concentration through water evaporation in the cooling tower.

There are only a few possible sources of copper, lead, mercury, nickel, selenium, zinc and cyanide in this system:

- Cooling tower makeup water
- Stormwater, which is collected and routed to the cooling tower

- Corrosion of piping and other process equipment
- Chemical additives used for water treatment
- Contaminants, especially particulate-bound metals, that are "scrubbed" from the ambient air passing through the cooling tower.

GWF will collect monthly samples of the fresh water supply as well as stormwater inputs to the cooling tower. Samples will be analyzed for copper, lead, mercury, nickel, selenium, zinc and cyanide. This program will continue for two years to quantify the contribution of each source to the concentrations of these seven constituents observed in the Site V effluent. A two-year program is necessary to evaluate the monthly and annual variations in source water priority pollutant contributions. Such variability is expected to be significant.

In addition, GWF will analyze the commercial chemical products used in the Site V cooling water system and determine whether these additives are contributing significant amounts of the constituents of concern.

During this two-year program, GWF will also investigate the sampling and analytical methods used for discharge compliance monitoring at Site V. This evaluation will be aimed at determining whether inadvertent sample contamination has contributed to the trace metal results reported historically to the RWQCB.

Corrosion Control Optimization (Second Quarter 2005 to First Quarter 2006). GWF adds specialty chemical products to its boiler feedwater and cooling system to minimize scaling, biofouling, and corrosion. Scaling and biofouling hinder heat transfer and thus reduce the efficiency of power generation. Corrosion damages equipment and increases long-term maintenance costs. Clearly, GWF has an economic incentive to minimize all three phenomena.

Although corrosion of process piping and equipment is already controlled by GWF, it has not been eliminated entirely. Thus, it is possible that corrosion is contributing to the copper, lead, nickel and/or zinc concentrations observed in the Site V discharge. To further reduce this potential pollutant source, GWF will conduct an investigation to determine whether corrosion control could be improved. This work will be performed in conjunction with GWF's chemical vendors. Those adjustments to the corrosion control program that can be made without adversely affecting scaling, biofouling, or effluent quality will be considered for full-scale implementation.

End-of-Pipe Treatment Evaluation (Third Quarter 2006 to Second Quarter 2007). GWF will evaluate end-of-pipe treatment options if source characterization and optimization of the corrosion control program do not enable Site V to comply with final WQBELs for copper, lead, mercury, nickel, selenium, zinc and cyanide. Site V currently has no wastewater treatment system, so a grassroots installation would be required. GWF will use the preliminary results of the source identification study to screen potential end-of-pipe treatment technologies and select candidate processes for further engineering development.

WQO Translator Study (Third Quarter 2006). GWF will consider conducting site-specific WQO translator studies for copper, lead and zinc if the source characterization study and/or corrosion control optimization program do not lead to compliance with final WQBELs. It is possible that site-specific WQO translators for these three constituents could result in recalculation of new WQBELs that could possibly be achieved in the Site V discharge. Translators will not be considered for constituents subject to TMDLs and mass-based WLAs (mercury, nickel, selenium, DDT/4,4'-DDE and dieldrin) or cyanide, for which WQO translators are not applicable.

Identify, Pilot Test, Design, Procure and Commission Effluent Treatment System (Second Quarter 2007 to Fourth Quarter 2009). If source control measures are not adequate, GWF will take the steps necessary to install an end-of-pipe effluent treatment system to comply with final WQBELs by the expiration date of the NPDES permit. The schedule and scope of these activities cannot be determined until the initial findings of the source characterization study are available. Furthermore, GWF recognizes that WQBELs for Site V are likely to change as a result of the site-specific WQOs and WLAs discussed below. In light of this uncertainty, GWF believes that the proposed 30-month schedule is reasonable to complete engineering, construction and start-up of an end-of-pipe treatment system.

The Administrative Draft NPDES permit determined that effluent limitations are required for 4,4'-DDE and dieldrin solely because background concentrations in the receiving water exceeded applicable WQOs. Since 4,4'-DDE and dieldrin are not used or produced by GWF, it is unclear what additional measures could be taken at Site V to comply with the final WQBELs for these constituents. At a minimum, a compliance demonstration requires improvements to approved analytical methods that would allow commercial laboratories to achieve significantly lower PQLs than are attainable using current technology.

While these activities are underway, GWF will participate in the RWQCB's development of site-specific WQOs for copper, nickel and cyanide. Once final site-specific WQOs for these three constituents have been adopted by the RWQCB and approved by the United States Environmental Protection Agency (EPA), GWF will implement additional source control measures or waste treatment projects as needed to comply with updated WQBELs. However, the scope of such projects, and therefore the time required for implementation, cannot be defined until the new WQBELs have been established.

For all constituents listed under CWA Section 303(d) as impairing receiving water quality (mercury, nickel, selenium, DDT/4,4'-DDE, and dieldrin), the final WQBELs presented in the Administrative Draft NPDES permit (or, in the case of selenium, the TetraTech e-mail dated January 31, 2005) may need adjustment after TMDLs and WLAs have been adopted by the RWQCB. In accordance with the SIP, GWF requests compliance schedules tied to TMDL development. Once TMDLs have been adopted with WLAs for Site V, GWF will implement additional waste treatment projects as needed to achieve compliance with effluent limitations consistent with the WLAs. The scope of such projects cannot be defined until the WLAs have been established. GWF therefore requests the maximum allowable compliance schedules for these five constituents.

GWF agrees to support the RWQCB as TMDLs are prepared for mercury, nickel, selenium, 4,4'-DDE/DDT and dieldrin. GWF will provide annual written updates to the RWQCB to document its participation in these efforts.

GWF also notes that the WQBELs for 4,4'-DDE and dieldrin are based on the CTR, and the maximum duration of compliance schedules for these constituents is currently capped per the provisions of 40 CFR 131.38(e). However, the CTR's 5-year limitation on compliance schedules will expire on May 18, 2005. GWF seeks the latest compliance date possible for 4,4'-DDE and dieldrin, since there are currently no means to demonstrate compliance with the WQBELs for these two constituents. Therefore, if the RWQCB adopts the revised NPDES permit for Site V after May 18, 2005, GWF requests a compliance date of April 28, 2020 for the final WQBELs for 4,4'-DDE and dieldrin. This date is 20 years from the effective date of the SIP and is allowed by SIP Section 2.1 for CTR constituents subject to TMDLs and WLAs.

The following table summarizes GWF's requested compliance schedules for the constituents subject to interim effluent limitations in the reissued NPDES permit for Site V:

Constituent	Requested WQBEL Compliance Deadline	Justification
Copper	May 18, 2010	Maximum compliance schedule allowed under CTR and SIP
Lead	December 31, 2014	Per the Basin Plan, a maximum compliance schedule of 10 years is allowed from the effective date of the 2004 Basin Plan amendments[1]
Mercury	March 31, 2010[2]	Per the Basin Plan, a maximum compliance schedule of 10 years is allowed from the effective date of the SIP, which was considered to be a new interpretation of water quality standards
Nickel	December 31, 2014[2]	Per the Basin Plan, a maximum compliance schedule of 10 years is allowed from the effective date of the 2004 Basin Plan amendments[1]
Selenium	May 18, 2010[2]	Maximum compliance schedule allowed under CTR and SIP

Constituent	Requested WQBEL Compliance Deadline	Justification
Zinc	March 31, 2010	Per the Basin Plan, a maximum compliance schedule of 10 years is allowed from the effective date of the SIP, which was considered to be a new interpretation of water quality standards
Cyanide	May 18, 2010	Maximum compliance schedule allowed under CTR and SIP
4,4'-DDE	May 18, 2010[3]	Maximum compliance schedule allowed under CTR and SIP
Dieldrin	May 18, 2010[3]	Maximum compliance schedule allowed under CTR and SIP

Notes:
[1]EPA approved the 2004 Basin Plan Amendments on January 5, 2005.
[2]Final WQBELs will be recalculated and compliance deadlines will be revised based on an approved TMDL/WLA.
[3]This deadline would apply if the Site V NPDES permit is reissued prior to May 18, 2005, while CTR limits on compliance schedules are still in effect. Otherwise, GWF requests a compliance deadline set at the earlier of April 28, 2020 or five years after recalculation of WQBELs based on an approved TMDL/WLA.

D. A demonstration that the proposed schedule is as short as practicable

The discharge monitoring data summarized above show that the MECs and calculated 99.87 percentile values for copper, lead, mercury, nickel, selenium and zinc at Site V exceed the AMELs developed for these constituents. Therefore, GWF must conduct additional work to comply with the WQBELs presented in the Administrative Draft NPDES permit and TetraTech's e-mail of January 31, 2005.

Unlike other industrial facilities that may be able to optimize existing wastewater treatment systems and reduce effluent priority pollutant concentrations, GWF has very little control over the quality of the Site V discharge. It is likely that most of the constituents of concern originate in source water, ambient air, and or corrosion of process piping and equipment. These constituents become concentrated through evaporation in the cooling tower. GWF's water conservation efforts – such as recycling of internal water streams and stormwater – further increase priority pollutant concentrations in the final discharge. While reduced water conservation would likely decrease trace contaminant concentrations in the Site V effluent, such operational changes would not reduce the mass of copper, lead, mercury, nickel, selenium and zinc discharged by GWF to Suisun Bay.

Given the limited information on the source(s) of these pollutants in the GWF discharge and the lack of existing control options, it is unclear what additional actions and measures may be necessary for Site V to meet the final WQBELs developed by TetraTech. Furthermore, if GWF cannot achieve compliance through pollution prevention alone, then end-of-pipe treatment involving yet-to-be-defined innovative technology will be needed to treat these constituents to the low-μg/L levels required for continued discharge. The number of years needed to identify, pilot test, design, construct and commission facilities to comply with the AMELs and MDELs cannot be reliably estimated. Thus, the proposed compliance schedules, which are consistent with the CTR, SIP and Basin Plan, are the shortest practicable given GWF's current situation.

As for cyanide, 4,4'-DDE, and dieldrin, analytical difficulties preclude GWF from immediately demonstrating compliance with the final WQBELs presented in the Administrative Draft NPDES permit. The compliance schedules for 4,4'-DDE and dieldrin must be long enough for the RWQCB to complete its TMDL studies and prescribe a means for GWF and other dischargers to demonstrate compliance using EPA-approved analytical methods. In the case of cyanide, time is required to develop the additional effluent data needed to determine if compliance with the WQBELs is possible.

CONCLUSION

For the reasons discussed above, GWF believes it is infeasible to comply immediately (i.e., by the effective date of the reissued NPDES permit) with the WQBELs presented in the Administrative Draft NPDES permit and subsequent TetraTech correspondence for copper, lead, mercury, nickel, selenium, zinc, cyanide, 4,4'-DDE and dieldrin. Compliance schedules are needed to allow time for completion of activities that include TMDL/WLA development, approval of site-specific WQOs (where applicable), adjustment of WQBELs to conform to the WLAs and revised site-specific WQOs (as necessary), source characterization and evaluation of source control measures, corrosion optimization, WQO translator studies (if applicable) and, if required, engineering, installation and commissioning of end-of-pipe wastewater treatment facilities.