CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

RESPONSE TO WRITTEN COMMENTS
ON THE REISSUANCE OF WASTE DISCHARGE REQUIREMENTS FOR:

GWF Power Systems, L.P.
Third Street (Site I) Plant
Pittsburg, Contra Costa County
NPDES No. CA0029106

Comments from GWF Power Systems, L.P. (GWF)

Note: The format of this staff response begins with a synopsis of the party's comments in *italics***, followed by staff's response in** normal type face**. Interested persons should refer to the original letters to ascertain the full substance and context of each comment.**

GWF Comment A.1.

This comment refers to Prohibition III.C and the corresponding information about Prohibition III.C in the Fact Sheet. Prohibition III.C is as follows:

"Chemicals used for any metal components cleaning, flushing, washdown, algae control, or corrosion and deposition inhibition shall not contain detectable concentrations of priority pollutants (listed in Attachment G, Table C)."

GWF objected to how the provision was paraphrased in the Fact Sheet because it implies that all heavy metals are restricted and because it refers to just heavy metals and not priority pollutants.

GWF noted that the facility was built after 1982, so the technology-based effluent limitations should be based on New Source Performance Standards in 40 CFR 423.15 rather than on the Best Practicable Treatment control technology (BPT, 40 CFR 423.12) standards and Best Available Technology economically achievable (BAT, 40 CFR 423.13) standards referenced in the fact sheet.

GWF objected to the language of Prohibition III.C because it restricts the internal use of chemicals that may be used for cooling tower maintenance. GWF requested that the language be changed to be more consistent with the requirement of 40 CFR 423.15, and it proposed language for Prohibition III.C.

Response to GWF Comment A.1

We revised sections IV.A.3, IV.A.4, and IV.C.a of the Fact Sheet to reflect that New Source Performance Standards (40 CFR 423.15) apply to this facility. We also revised Prohibition III.C, as follows, to be consistent with 40 CFR 423.15:

> "The Discharge shall not contain detectable concentrations of priority pollutants (listed in Attachment G, Table C), except for chromium and zinc, contained in chemicals added for cooling tower maintenance. Compliance with this prohibition shall be determined through annual reports by the Discharge identifying all priority pollutants (listed in Attachment G, Table C), except for chromium and zinc, contained in chemicals the Discharger used for cooling tower maintenance in the previous calendar year. The annual report shall be submitted with the annual Self-Monitoring Report required in Monitoring and Reporting Program VII.B.2 (Attachment E of this Order)."

The last two sentences are added to clarify how compliance with Prohibition III.C will be determined.

Because of this narrowing of the scope of the prohibition requested, we must add the technology-based effluent limitations in 40 CFR 423.15(j)(1) for total chromium to Table 7 of the revised tentative order. However, we did not add the technology-based effluent limitations for zinc to the revised tentative permit because the water quality-based effluent limitations for zinc are more stringent. We also added monitoring for total chromium to Table E-2 of the Monitoring and Reporting Program.

GWF Comment A.2

This comment refers to ambient hardness values used calculate the water quality objectives and effluent limits for hardness-dependent metals. The tentative order uses the adjusted geometric mean (90 mg/L) of the ambient hardness values with values 400 mg/L and above excluded from the data set. GWF asserts this method of calculating the receiving water hardness is inconsistent with the California Toxics Rule (CTR) which sets guidance for hardness-dependent effluent limitations. GWF cites 40 CFR 131.38 (c)(4) of the CTR which defines the use of hardness for hardness-dependent effluent limitations as follows:

> *Application of metals criteria. (i) For purposes of calculating freshwater aquatic life criteria for metals from the equations in paragraph (b)(2) of this section, for waters with a hardness of 400 mg/L or less as calcium carbonate, the actual ambient hardness of the surface water shall be used in those equations. For waters with a hardness of over 400 mg/L as calcium carbonate, a hardness of 400 mg/L as calcium carbonate shall be used with a default Water-Effect Ratio (WER) of 1, or the actual hardness of the ambient surface water shall be used with a WER. The same provisions apply for calculating the metals criteria for the comparisons provided for in paragraph (c)(3)(iii) of this section.*

(ii) The hardness values used shall be consistent with the design discharge conditions established in paragraph (c)(2) of this section for design flows and mixing zones.

GWF interprets the above-cited section of the CTR to mean that the hardness of a water body is determined by using the geometric mean of <u>all</u> observed hardness values for the receiving water body using the default value of 400 mg/L for values over 400 mg/L and using the actual hardness for those values with a hardness of 400 mg/L or less.

GWF also believes that the CTR does not allow omission of hardness data points above 400 mg/L since this would result in an inaccurately low measure of the actual hardness of the receiving waters.

GWF supported its conclusion by summarizing the hardness/toxicity relationship discussed in the Federal Register associated with the CTR. At high hardness values, there is indication that water quality characteristics do not have as much of an effect on toxicity as at low hardness values. Also, related water quality characteristics do not correlate well at higher hardnesses as they do at lower hardnesses. This reduced linkage explains why the CTR takes a different approach between water bodies with high hardness and low hardness and it demonstrates why it is important to use all the data points to provide the "best available information" on the actual, underlying physical chemistry of the water body.

GWF provided effluent hardness data from its discharge collected during its toxicity tests and requested that the effluent hardness provided by GWF be used to calculate the hardness after it has mixed with the discharge using a dilution ratio of 10:1. GWF provided the proposed calculations and found that the combined effluent hardness at 10:1 dilution would be 149 mg/L, and that the resulting effluent limits for lead would be 25 mg/L AMEL and 57 mg/L MDEL.

GWF proposed reasoning for why the newly calculated limits would not violate anti-backsliding policies.

<u>Response to GWF Comment A.2</u>

We recalculated the hardness using the geometric mean of data available from both the Sacramento River and San Joaquin RMP stations. Values greater than 400 mg/L were set to 400 mg/L. The data are attached to this document and the Fact Sheet. The newly calculated hardness increased from 90 mg/L to 104 mg/L. We recalculated the Water Quality Objectives (WQOs) for hardness-dependent metals and revised Table F-10 [Reasonable Potential Analysis (RPA) summary] accordingly. The recalculated WQOs did not change the results of the RPA for any pollutants. For the pollutants that triggered reasonable potential, only lead was affected by the new WQO. The Water Quality-Based Effluent Limitations (WQBELs) for lead were recalculated and those calculations are shown in Table F-11. The new WQBELs for lead are 9.3 µg/L Average Monthly Effluent Limit (AMEL) and 21 µg/L Maximum Daily Effluent Limit (MDEL).

However, the newly calculated WQBELs are greater than the WQBELs in the previous permit (5.5 µg/L AMEL and 21 µg/L MDEL), so the previous limits were retained to avoid backsliding. While the newly calculated WQBELs may qualify for an exception to anti-backsliding requirements as GWF noted, we see no reason to allow backsliding since GWF can comply with their existing limits. Moreover, 40 CFR 303(d)(4) requires that less stringent limits comply with antidegradation requirements, and GWF has not provided an antidegradation analysis to support less stringent limits. We revised Table 7 of the tentative Order, Fact Sheet section IV.D.4.c(2), and Fact Sheet section IV.D.2(e), to reflect these changes.

On the issue of using effluent hardness data to calculate an ambient hardness value, we disagree with the approach suggested by GWF, which is to arithmetically mix the geometric means of the receiving water hardness with effluent hardness at a 10:1 ratio to mimic the actual ambient water hardness after the discharge has mixed with receiving waters. Arithmetically averaging geometric means of these two data sets would not yield a hardness that is representative of actual receiving water because it ignores the fact that the effluent sampling events do not correspond with ambient sampling events.

GWF Comment A.3

GWF objected to the ambient background values the Regional Water Board staff used to calculate water quality-based effluent limitations because the analysis inappropriately included data influenced by significant storm events not representative of ambient conditions.

GWF requested that we exclude the values that were collected from the Sacramento RMP station on January 29, 1997 because the samples were collected after a significant storm event and therefore do not reflect ambient conditions. The State Implementation Policy (SIP) specifically cites that samples collected after a significant storm event is sufficient justification to omit sample data points.

GWF provided evidence that the January 29, 1997 samples were outliers caused by a storm event. Therefore, the Regional Water Board should use its discretion authorized by the SIP to omit the January 29, 1997 samples and recalculate the effluent limits for lead, copper, and zinc.

Finally, GWF provided the results of the Water Quality-Based Effluent Limitations (WQBELs) for lead, copper, and zinc using two scenarios; using the Sacramento RMP data with the outliers thrown out, and using Sacramento hardness values after adjusting for mixing with the effluent. GWF also provided rationale for why anti-backsliding requirements don't apply under these scenarios.

Response to GWF Comment A.3

While the SIP allows excluding non-representative values, we chose to include the 1997 values because those data are valid and are representative of storm conditions that have occurred and that may occur again in the future. Also, GWF can comply with the resulting effluent limits in the tentative order.

GWF Comment A.4

GWF objected to the frequency of acute toxicity testing in the draft permit. The current permit requires quarterly testing and the draft permit requires monthly testing. GWF has not violated any acute toxicity requirements during the last permit cycle so there is no justification for increasing the monitoring frequency.

Response to GWF Comment A.4

We revised Table E-2 of the Monitoring and Reporting Program to require quarterly monitoring for acute toxicity as requested. However, we also added chronic toxicity testing to Table E-2 so with the next permit cycle we can determine if there is reasonable potential for chronic toxicity. One chronic toxicity bioassay is required during this permit cycle using the most sensitive species identified during the most recent chronic toxicity screening. Since the screening study was completed July 2006, the revised permit does not require an additional screening analysis at this time. We revised Section VII.B of the Fact Sheet to reflect this change.

GWF Comment B.1

The Receiving Water permit limitation is for "dissolved sulfide", not "sulfide". Please clarify the Receiving Water Monitoring requirement by changing it to "Dissolved Sulfide".

Response to GWF Comment B.1

We revised Table E-3 of the Monitoring and Reporting Program to refer to "dissolved sulfide" as requested.

GWF Comment B.2

The Monitoring and Reporting Program requires that the applicable Reporting Level (RL) and Method Detection Limit (MDL) be reported in the monitoring reports. It is not possible to report this information in the Electronic Reporting System (ERS) as it is currently configured. GWF cannot report this information in ERS, but will include this information in its hard copy submittals.

Response to GWF Comment B.2

The ERS forms will be revised in the future and we expect GWF to report the required information in that manner when it is possible to do so.

GWF Comment B.3

This comment refers to section 4.A.3 of the Fact Sheet regarding Discharge Prohibition III.C (No use of chemicals containing heavy metals). If the Regional Water Board chooses to retain the language of Prohibition III.C (see GWF Comment A.1), the language in the Fact Sheet should be revised to be consistent with the permit by referring to detectable concentrations of priority pollutants.

Response to GWF Comment B.3

See response to GWF Comment A.1.

GWF Comment B.4

The effluent concentration values (95th percentile, 99th percentile, and mean values) for copper, lead, zinc, and cyanide are listed incorrectly in section 4.c of the Fact Sheet. While the values utilized in the calculations of the limitations are correct, for some reason the values were not correctly documented in the Fact Sheet. GWF provided the correct values.

Response to GWF Comment B.4

We corrected the values in the Fact Sheet where needed. All values were rounded to two significant figures. However, the revisions do not include all values provided by GWF. Different programs use different algorithms to calculate the percentiles of a data set. The percentiles GWF listed appear to have been estimated using Excel. Excel uses the maximum value in the data set as the 100th percentile, and interpolates the other percentiles from that value. This is not an appropriate method to calculate percentiles because the results can never be higher than the maximum value. Therefore, we used the probability distribution of the data set using Minitab, and estimated the percentiles from that distribution. We used the normal distribution or the log normal distribution, depending on which curve best fit the data, and used half the detection limit for non-detect values. Those distributions are attached to this document and the Fact Sheet.

GWF Comment B.5

This comment refers to section 4.c(2)(e) of the Fact Sheet regarding anti-backsliding. This section incorrectly states that the previous permit contained interim performance-based limits for lead and did not contain final WQBELs. The previous permit contained

final WQBELs of 5.5 µg/L AMEL and 14.1 µg/L for lead. There were no interim limits. The final limits in the tentative permit are more stringent than the previous permit.

Response to GWF Comment B.5

We revised section IV.D.4.c(2)(e) of the Fact Sheet to reflect the changes discussed in our response to comment A.2.

GWF Comment B.6

This comment refers to Table F-11 of the Fact Sheet. The final AMEL for lead is listed as 5.7 µg/L. The correct value is 5.4 µg/L.

Response to GWF Comment B.6

We corrected Table F-11 as discussed in our response to comment A.2.

GWF Comment B.7

This comment refers to section E.3 (More Stringent Effluent Limits) of the Fact Sheet. Lead should be added to this section because the AMEL and MDEL for lead in the tentative permit are more stringent than the previous permit.

Response to GWF Comment B.7

As discussed in our response to comment A.2, the WQBELs for lead are no longer more stringent than the previous permit. We revised section IV.E.3 of the Fact Sheet accordingly.

Hardness Data from Sacramento River and San Joaquin River RMP Stations

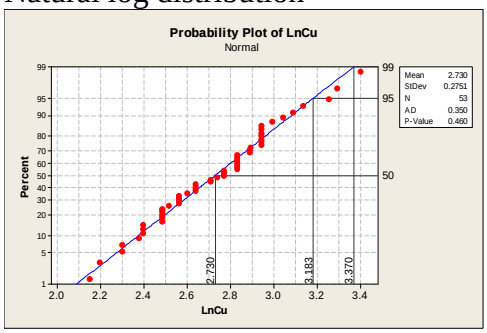
Site Code	Collection Date	All Results	Adjusted results
BG30	02/09/1994	170.0	170.0
BG30	04/28/1994	150.0	150.0
BG30	08/24/1994	530	400.0
BG30	02/15/1995	64.0	64.0
BG30	04/18/1995	68.0	68.0
BG30	08/23/1995	76.0	76.0
BG30	02/14/1996	170.0	170.0
BG30	04/23/1996	96.0	96.0
BG30	07/22/1996	84.0	84.0
BG30	01/29/1997	43.4	43.4
BG30	04/23/1997	70.0	70.0
BG30	08/06/1997	110.0	110.0
BG30	02/04/1998	66.9	66.9
BG30	04/16/1998	67.2	67.2
BG30	07/29/1998	46.9	46.9
BG30	02/10/1999	58.5	58.5
BG30	04/21/1999	62.0	62.0
BG30	07/21/1999	101.0	101.0
BG30	02/09/2000	66.8	66.8
BG30	07/19/2000	108.0	108.0
BG30	02/14/2001	168.0	168.0
BG30	08/07/2001	246.0	246.0
BG30	07/30/2002	218.0	218.0
BG30	08/15/2003	75.3	75.3
BG30	07/23/2004	134.0	134.0
BG30	08/08/2005	134.0	134.0
BG30	08/24/2006	100.0	100.0
BG30	08/07/2007	340	340
BG30	07/09/2008	160.0	160.0

Site Code	Collection Date	All Results	Adjusted results
BG20	02/09/1994	96.0	96.0
BG20	04/28/1994	180.0	180.0
BG20	08/24/1994	420	400
BG20	02/15/1995	68	68
BG20	04/18/1995	56.0	56.0
BG20	08/23/1995	56.0	56.0
BG20	02/14/1996	210.0	210.0
BG20	04/23/1996	68.0	68.0
BG20	07/22/1996	84.0	84.0
BG20	01/29/1997	49.0	49.0
BG20	04/23/1997	74.0	74.0
BG20	08/06/1997	85.0	85.0
BG20	02/04/1998	47.2	47.2
BG20	04/16/1998	74.5	74.5
BG20	07/29/1998	47.9	47.9
BG20	02/10/1999	42.7	42.7
BG20	04/21/1999	67.4	67.4
BG20	07/21/1999	93.1	93.1
BG20	02/09/2000	62.2	62.2
BG20	07/19/2000	97.9	97.9
BG20	02/14/2001	185.5	185.5
BG20	08/07/2001	96.7	96.7
BG20	07/30/2002	394.5	394.5
BG20	08/15/2003	71.8	71.8
BG20	07/23/2004	267.0	267.0
BG20	2/28/2005	125.0	125.0
BG20	08/08/2005	66.0	66.0
BG20	08/24/2006	58.0	58.0
BG20	8/7/2007	400.0	400.0
BG20	7/9/2008	360.0	360.0
		GEOMEAN	**103.6706697**

GWF Third Street (Site I) Probability Plots

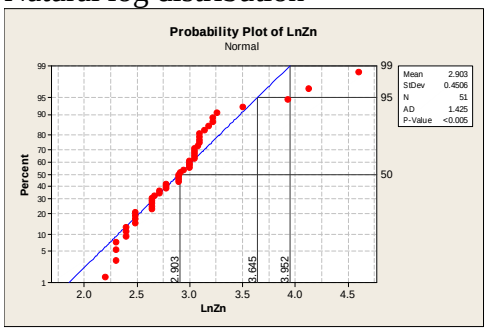
Copper

Natural log distribution



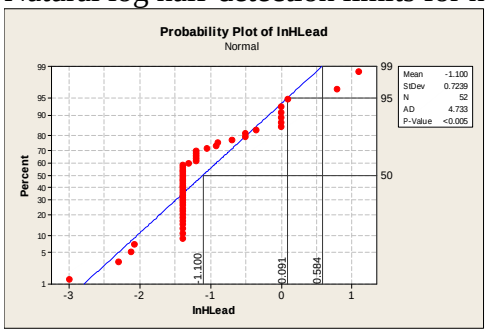
Zinc

Natural log distribution



Lead

Natural log half-detection limits for non-detected lead values



Cyanide

Normal distribution and half the detection limit for non-detect values