

# City of Grass Valley

A CENTENNIAL CITY

## PUBLIC WORKS DEPARTMENT

Facilities / Streets Maintenance  
Parks and Recreation  
Water / Wastewater Operations

October 24, 2008

Mr. Ken Landau  
California Regional Water Quality Control Board  
Central Valley Region  
11020 Sun Center Drive #200  
Rancho Cordova, CA 95670-6114

**Subject: Comments on Tentative Order and Cease and Desist Order, City of Grass Valley, NPDES Permit No. CA 0079898**

Dear Mr. Landau,

This letter is written in response to your letter dated September 23, 2008 pertaining to the Tentative Order for the City of Grass Valley's NPDES permit and the accompanying Cease and Desist Order.

As you are aware, the City owns and operates an advanced wastewater treatment facility that produces high quality effluent prior to discharge to Wolf Creek. The City has established an excellent record of compliance with its NPDES permit, providing reliable protection for the beneficial uses of Wolf Creek and downstream waters. The City is currently moving forward with an upgrade project to install ultraviolet disinfection facilities to further improve its effluent quality and continues to work to eliminate the discharge of untreated mine drainage from the Drew Tunnel which is impacting the City's capacity and effluent quality. The City has worked closely with your staff over the past several years to ensure that permit requirements are properly reflective of the City's discharge situation to afford the City a reasonable opportunity to achieve full compliance with its NPDES permit. The City appreciates the past effort of your staff and requests that the same spirit of cooperation and fairness be used in this important NPDES permit renewal.

In a letter dated September 16, 2008, the City provided information to your office in response to a Regional Board letter dated August 25, 2008 in which you had provided the results of a reasonable potential analysis and preliminary effluent limits for the proposed renewed permit. In that letter, the City responded to questions regarding the City's February 2008 Translator Study and other issues, and requested that an administrative draft of the proposed permit be submitted to the City for review prior to issuance of the Tentative Order, as has been the practice of the Regional Board in recent permits. It was hoped that questions regarding the assumptions and calculations used in the derivation of effluent limits could be resolved during that review step. The City regrets that the administrative order step was not implemented.

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City representatives met with Regional Board and Tetra Tech staff on October 20 to discuss questions regarding the proposed Tentative Order and proposed Cease and Desist Order. During that meeting, the City pointed out that the August 25 letter did not indicate that reasonable potential existed for copper or zinc. Apparently, a determination was reached that the site-specific Water-Effect Ratios (WERs) for copper and zinc developed by the City were not yet approvable subsequent to the August 25 letter and prior to the issuance of the Tentative Order. Therefore, the proposed effluent limits in the Tentative Order for copper and zinc were unexpected by the City.

At the meeting on October 20, representatives from Tetra Tech provided input to the City regarding the basis for not approving the site-specific translator and WER values for copper and zinc. The Tetra Tech representatives noted that they had conveyed these assessments to the Regional Board in writing in three separate memos. The City had received one of the three memos pertaining to the City's February 2008 translator studies as an attachment to the August 25 letter. The City received the two additional Tetra Tech memos dated July 27, 2008 and September 19, 2008 pertaining to the City's translator and WER studies on October 20, 2008. At the meeting on October 20, the City committed to communicate directly with Tetra Tech and to prepare responses to address the concerns raised in the Tetra Tech memos.

City representatives conferred with Tetra Tech representatives by phone on October 21 to further clarify the issues raised regarding the City's translator and WER studies. The City has worked diligently to address comments contained in the three memos and has included information herein with the expectation that this information will resolve outstanding questions regarding the subject studies.

### **Request for revisions to Tentative Order**

The City notes that it is requesting changes to effluent limits in the Tentative Order that may require re-noticing all or a portion of the proposed permit. The City requests that the Regional Board make the requested changes to the proposed permit and re-notice the Tentative Order to avoid the need for a re-opening of the permit in early 2009, saving staff resources for both the Regional Board and the City and avoiding unnecessary permit compliance jeopardy for the City.

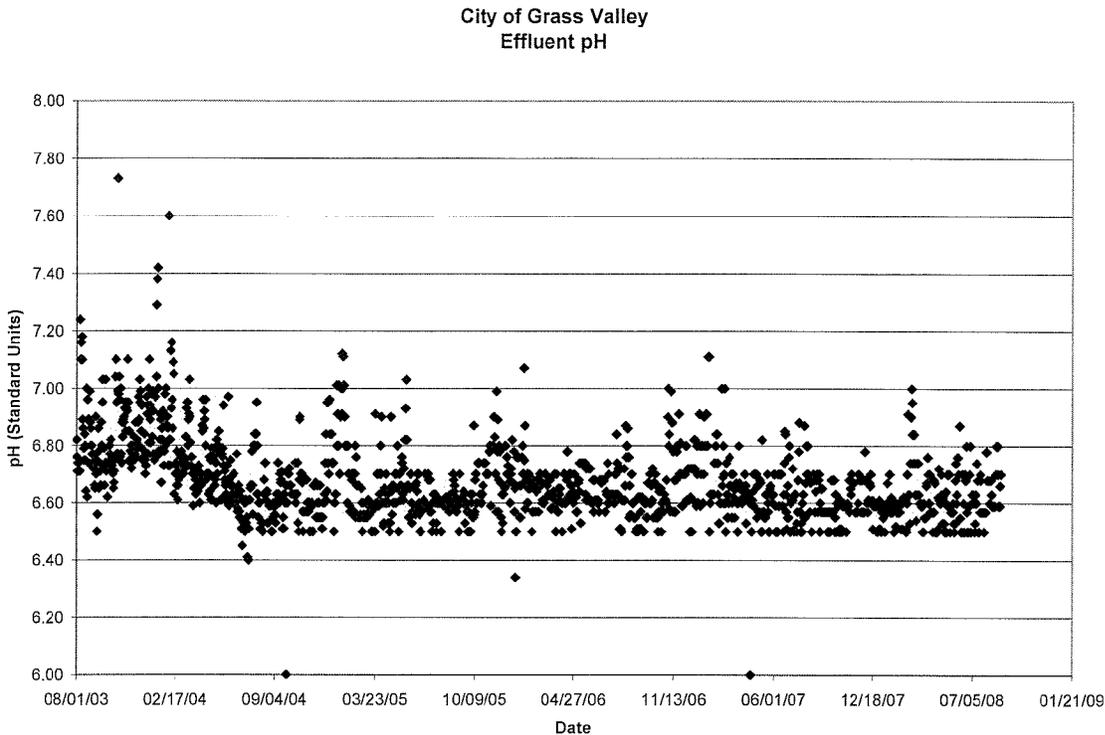
### **Ammonia**

The City operates a fully functioning nitrification and denitrification facility to convert a large portion of the ammonia in raw wastewater first to nitrate and then to nitrogen gas. The proposed effluent limits for ammonia in the Tentative Order are so stringent that they would place in the City in significant compliance jeopardy. The City has requested that the Fact Sheet be modified to more completely describe the assumptions used in the derivation of the proposed ammonia limits.

Based on information received from Regional Board and Tetra Tech staff at the meeting of October 20, the City understands that a modification of pH effluent limits from the 6.5 to 8.5 range to a range of 6.5 to 8.0 would increase effluent limits for ammonia to an AMEL of 1.6 mg/l and an MDEL of 5.5 mg/l, limits that the City could reliably achieve based on historic performance. Given this information, the City requests that the proposed upper pH limit be modified to 8.0 to provide the stated change in ammonia effluent limits.

As discussed in the October 20 meeting, the City can consistently comply with a proposed upper pH limit of 8.0, given its ability to control effluent pH through the operation of its alkalinity

control process. Please refer to the time series of historical effluent pH values since 2003 shown below.



**Figure 1. Times Series of Effluent pH**

As shown, the City is able to consistently comply with an effluent pH of 8.0.

The City requests that the following changes in the proposed permit and Fact sheet be made to address the revised ammonia and pH effluent limits:

- NPDES permit page 9 (Table 6) – Revise ammonia effluent limits and effluent loadings based on maximum pH of 8.0.
- NPDES permit page 9 (Table 6) – Revise maximum pH from 8.5 to 8.0.
- Fact Sheet page F-19 – Revise ammonia acute criterion based on maximum pH of 8.0.
- Fact Sheet page F-20 – Revise ammonia effluent limits based on maximum pH of 8.0.
- Fact Sheet page F-30 (Table F-8) – Revise WQBEL calculations for ammonia based on a maximum effluent pH of 8.0.
- Fact Sheet page F-32 (Table F-14) – Revise ammonia WQBELs based on a maximum effluent pH of 8.0.
- Fact Sheet page F-35 (Table F-15) – Revise ammonia effluent limits and effluent loadings based on maximum pH of 8.0.
- Fact Sheet page F-35 (Table F-15) – Revise maximum pH from 8.5 to 8.0.

The City also requests that corresponding changes be made in the proposed Cease and Desist Order to address the revised effluent limits for ammonia.

## **Trace Metals**

As described above, the City requests a reassessment of the decision to not include site-specific translators for copper, lead and zinc and Water-Effect Ratio (WER) values for copper and zinc in the NPDES permitting process to determine the need for effluent limits for these metals. At significant expense, and with the endorsement of the Regional Board, the City performed translator studies for copper, lead and zinc and WER studies for copper and zinc in compliance with USEPA methods and protocols. Use of those site-specific values is of significant importance to the City since it influences the presence of effluent limits in the permit that will cause significant and unwarranted compliance problems for the City.

If the site-specific WER and translator values for copper and zinc are used in the permitting process, the determination will be made that effluent limits will not be required for these metals. This action will be protective of beneficial uses in Wolf Creek, since the site-specific WER and translators indicate that historical copper and zinc concentrations in the City's effluent have no reasonable potential to adversely impact aquatic organisms or to cause violations of appropriate site-specific objectives for these metals. If the site-specific translator and WER values are not utilized in the reasonable potential analysis, the renewed permit would require copper and zinc effluent limits. Based on the values stated in the Tentative Order, the required limits would be limits that the City cannot reliably achieve.

In two memorandums dated June 27, 2008 and a third memorandum dated September 19, 2008, Tetra Tech reviewers raised several concerns regarding the February 2008 site-specific WER and translator studies performed by the City. City representatives have communicated with the Tetra Tech reviewers to clarify the nature of the concerns with the City's studies and have prepared responses to address those concerns in two letters to the Regional Board dated October 23, 2008. Those letters are attached to this comment letter for use by the Regional Board and Tetra Tech in their continued evaluation of the City's studies. The concerns raised and responses to those concerns are briefly described below.

For the City's WER study, a concern was raised that sampling events did not include the summer period. This concern may not be of significance, since the WER values to be used in the NPDES permitting process are those related to the City's undiluted effluent. The City's effluent quality does not vary considerably between the summer and fall. It must also be noted that the decision to sample in the fall rather than the summer was an intentional decision, since the critical low flow period in Wolf Creek occurs in the October through December time frame. Summer flows in the Creek are typically elevated due to the presence of flows released from NID reservoirs to convey water to downstream users. In the attached response, data is provided to show that water quality conditions in Wolf Creek observed in WER sampling are similar to the water quality conditions that occur in the summer.

Additional issues raised in the June 27, 2008 WER memorandum prepared by Tetra Tech were related to documentation and clarification of methodologies utilized in the study. These issues have been clarified in the attached responses, and all requested documentation (i.e. raw toxicity test data) has been provided as an attachment to this letter. Based on conversations with the Tetra Tech reviewer, it is believed that this information will resolve the questions and concerns that were contained in the June 27 Tetra Tech memorandum.

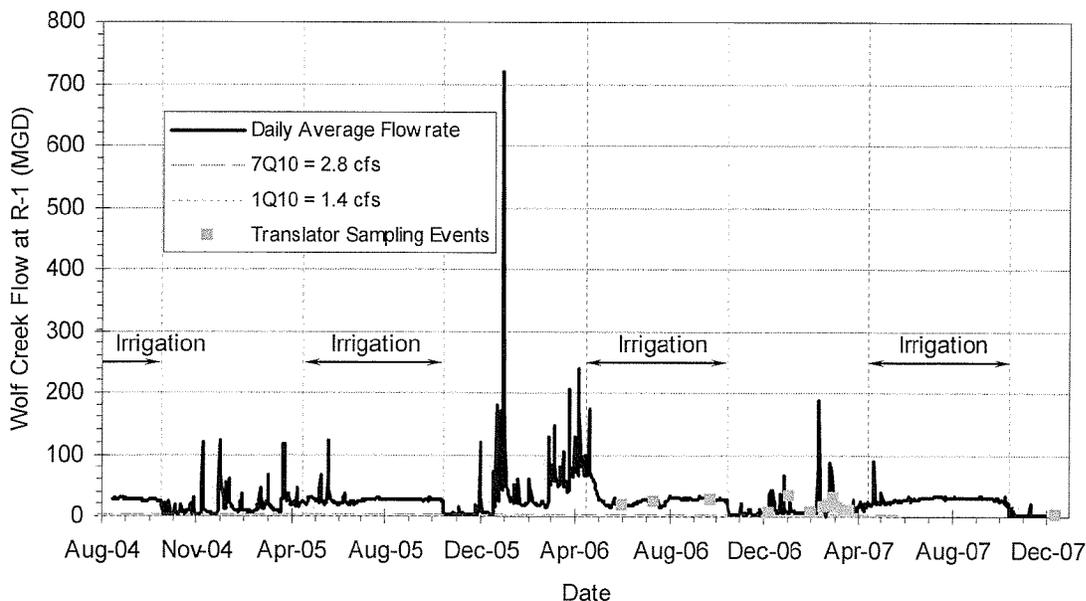
The recommended WER values stated in the City's 2008 WER Report for use in the reasonable potential evaluation for copper and zinc are listed below.

<b>Metal</b>	<b>WER</b>
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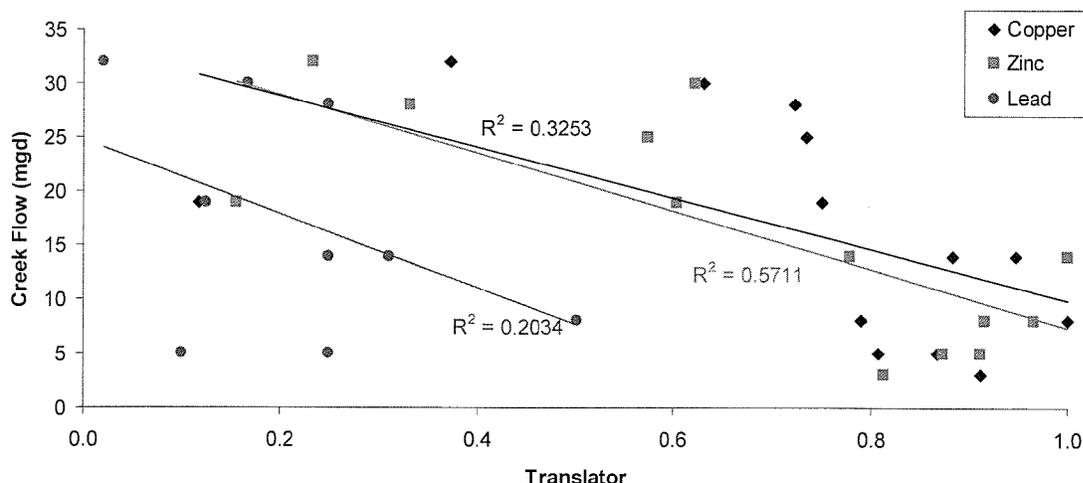
Dissolved Copper	6.49
Dissolved Zinc	1.70

For the City's Translator Study, concern was raised in the Tetra Tech memorandums regarding the impact of variable flow conditions on the calculated translator values. As discussed in Tetra Tech's comments, there is a slightly negative relationship between flow and translator values.

The historic flow record for Wolf Creek is presented in Figure 2 with the irrigation seasons and the flow rates corresponding to translator sampling events called out on the figure. During the months evaluated for this study, creek flows varied between 3 – 55 MGD, whether the season was "wet" or "dry." In response to comments made by Tetra Tech in review of the Translator Report, additional analysis was made to narrow the data range used in translator derivation to those data points collected at flows less than 26 MGD in Wolf Creek. This analysis was performed because the relationship between flow and translator values collected during this study was statistically significant (see Figure 3 below). The results of use of the narrower data range focused on low flow conditions resulted in slightly more conservative translator values. Therefore, although all samples are equally representative of critical conditions (i.e., greatest dissolved concentration) from a translator perspective, a more conservative approach was used in the exclusion of all events where flows were greater than 26 MGD. The recommended translator values are protective at critical low flows and would not be expected to vary significantly with the addition of more low flow data points.



**Figure 2: Time Series of Wolf Creek Flow rates, Irrigation Seasons, and Translator Sampling Events.**



**Figure 3: Relationship between Translators and Flow**

Flow in Wolf Creek ranges from 2 – 718 MGD, with an average of 26 MGD. Therefore, analyzing all “below average” flow samples presents a distinction between high and low flow regimes. Translator calculations using all data where flows are less than 26 MGD are compared below to the analysis contained in the City’s February 2008 Translator Study (where all data with flows less than 55 MGD were used). Analyzing this smaller dataset is more conservative than including all samples collected during the low flow season. Ten samples were collected at flows below 26 MGD, which satisfies the Translator Guidance recommended sampling frequency.

	Flow <26 MGD		Flow <55 MGD	
	Copper	Zinc	Copper	Zinc
Acute translator	0.95	0.97	0.94	0.96
Chronic translator	0.84	0.84	0.79	0.78

The values in the above table show that slightly higher (more conservative) translator values result when the data derived from sampling during lower flows is used. Therefore, the City requests that the following translator values be used in the effluent limit calculations for copper and zinc:

	Copper	Zinc
Acute translator	0.95	0.97
Chronic translator	0.84	0.84

Concern was also raised by Tetra Tech regarding the lead translator values described in the City’s February 2008 Translator Report. The concern deals with the number of samples that were obtained that had detected concentrations for both total and dissolved lead. Two of the eleven events resulted in non-detected dissolved and total lead concentrations and could not be used. Two of the remaining nine sample points had detected dissolved and total concentration, and seven of the remaining nine samples had non-detected dissolved and detected total concentrations. The proposed translators (acute = 0.35, chronic = 0.25) are based on nine sample points and are calculated with a conservative approach. In the cases where the

dissolved lead concentration was non-detected, but the total lead concentration was detected, the City utilized the non-detect level for the dissolved lead concentration to calculate a translator value. Using the full non-detect level in the calculation is the most conservative approach to calculation of the translator.

The City used U.S. EPA approved, low detection limit methodology (*EPA Method 200.8, Determination of Trace Elements in Waters and Wastes by ICP-MS*) and clean sampling techniques for the detection of total and dissolved lead in effluent and Wolf Creek samples. While the recommended number of translator samples (10) with detected values for both total and dissolved lead was not achieved, it is apparent that dissolved lead is present at very low concentrations in Wolf Creek and that the collection of additional samples would likely produce more non-detected dissolved lead results. By assuming the dissolved lead concentration is equal to the detection limit for non-detect samples, the calculations add a layer of conservatism, since the actual concentrations would necessarily be lower than the detection limit, yielding lower (less conservative) translator values. As a final note, the California Toxics Rule criteria for lead in freshwater are 65 ug/L (acute) and 2.5 ug/L (chronic) at the lowest hardness conditions seen in Wolf Creek. The ambient concentrations detected in Wolf Creek were well below these levels, indicating that a concern for lead-based toxicity in Wolf Creek is not warranted.

The City believes the translators for lead developed in its Translator Report are protective and are reflective of low flow conditions in Wolf Creek. Additionally, the City does not believe that additional sampling is needed to support lead translator development. The City requests that the Regional Board determine that the translator values recommended in the Translator Report for lead be accepted for use in the development of the City's permit.

To summarize, if the recommended site-specific WERs and translators for copper, zinc and lead are approved in the development of the City's NPDES permit, the following water quality objectives would result. The objectives for copper and zinc were calculated using a hardness value of 90 mg/L. The objectives for lead were based on an effluent hardness of 90 mg/l as CaCO<sub>3</sub> and a receiving water hardness of 21 mg/l as CaCO<sub>3</sub>.

	<b>Total Metal CMC (ug/L)</b>	<b>CCC (ug/L)</b>
Copper	83	63
Zinc	188	217
Lead	134	7.4

Use of the above objectives yields a finding that there is no reasonable potential for the City's effluent to cause or contribute to violations of these copper, zinc, or lead objectives in Wolf Creek. Therefore, the proposed permit should not include effluent limits for these constituents and the proposed Cease and Desist Order should be modified to reflect the absence of these effluent limits in the permit.

### **Factual Errors/Discrepancies**

The City has noted the following discrepancies or factual errors in the Tentative Order that should be corrected:

NPDES permit page 6 (M.) - The City does not have reasonable potential for lead, nickel, and silver.

NPDES permit page 9 (Table 6) – The cyanide AMEL and MDEL were calculated to be 4.1 and 9.0 ug/L, respectively. The corresponding loading limits should be 0.095 and 0.21 lb/day, respectively.

NPDES permit page 9 (Table 6) – The dichlorobromomethane MDEL was calculated to be 1.2 ug/L. The corresponding loading limit should be 0.0012 lb/day.

NPDES permit page 9 (Table 6) – The mercury loading limit should be 0.0012 lb/day.

NPDES permit page 9 (Table 6) – There should not be an effluent limit for nickel as it does not have reasonable potential.

Monitoring and Reporting E-3 (Table E-3) – pH sampling is specified as both grab and continuous, which seems contradictory.

Fact Sheet page F-6 (Table F-2b) – The mercury MEC is 0.0163 ug/L.

Fact Sheet page F-6 (Table F-2b) – The MTBE MEC is <0.09 ug/L.

Fact Sheet page F-12 – Replace average daily discharge flow with Average Dry Weather Flow (ADWF).

Fact Sheet page F-17 – The City does not have reasonable potential for lead, nickel, and silver.

Fact Sheet page F-23 – The City has five other non-detect heptachlor epoxide results. The text only references two other non-detect samples.

Fact Sheet page F-27 – The maximum electrical conductivity result in the City's effluent does not exceed 700 umhos/cm.

Fact Sheet page F-28 – The maximum total dissolved solids result in the City's effluent does not exceed 450 mg/L.

Fact Sheet page F-32 (Table F-14) – Chloroform is in this table, but not in any other tables.

Fact Sheet page F-32 (Table F-14) – Nitrite is not in this table, but in other tables.

Fact Sheet page F-35 (Table F-15) – The cyanide AMEL and MDEL were calculated to be 4.1 and 9.0 ug/L, respectively. The corresponding loading limits should be 0.095 and 0.21 lb/day, respectively.

Fact Sheet page F-35 (Table F-15) – The dichlorobromomethane MDEL was calculated to be 1.2 ug/L. The corresponding loading limit should be 0.0012 lb/day.

Fact Sheet page F-35 (Table F-15) – The mercury loading limit should be 0.0012 lb/day.

Fact Sheet page F-35 (Table F-15) – There should not be an effluent limit for nickel as it did not have reasonable potential.

### **Harmonic Mean Dilution for Human Health-based constituents**

The City has collected data on the flow rate in Wolf Creek as a requirement of the adoption of its current permit in 2003. That permit required the City to monitor flow rates in Wolf Creek to determine whether a dilution credit may be appropriate in the establishment of effluent limits. Analysis of the data collected for the period August 2004 through August 2008 indicates that the harmonic mean flow in Wolf Creek is 11.1 mgd and provides a dilution (D) of 4.0 at the City's ADWF of 2.78 mgd. In accordance with the CTR and the SIP, this harmonic mean dilution should appropriately be used in setting human health-based effluent limits for specific priority pollutants, including the trihalomethanes Chlorodibromomethane and Dichlorobromomethane. The City requests that the following effluent limits be adopted for these trihalomethanes, based on available ambient data in upstream receiving waters and a harmonic mean dilution of 4.0. The City requests that the proposed Cease and Desist Order be modified to reflect these changes in effluent limits.

Constituent	AMEL (ug/L)	MDEL (ug/L)
Chlorodibromomethane	2.1	4.5
Dichlorobromomethane	2.8	5.7

Wolf Creek flows are highly dependent on the managed releases from reservoirs in the Nevada Irrigation District system. NID uses Wolf Creek as a conduit in its distribution network to serve downstream users. The flows in the creek since 2004 are reflective of NID operations during dry water years. Anecdotal information from NID indicates that the flow data used to determine the harmonic mean flow rate in Wolf Creek are representative of historic flow conditions and, if anything, under represent the long term harmonic mean flow conditions.

The City requests that the Regional Board also consider the adoption of effluent limits for nitrate and nitrite, two human health based limits, based on a consideration of harmonic mean dilution. Unfortunately, ambient upstream data is not currently available to allow the derivation of effluent limits for these constituents. The City requests that reopener language be included in the permit to allow revision of the effluent limits for nitrate and nitrite once adequate upstream ambient data is collected.

### **Effluent Limitations**

Table 6 enumerates effluent limitations that the City must meet in its final effluent. The table lists mass limits for numerous constituents. The mass limits were derived based on average dry weather flow conditions. It is requested that language be added to the table and to the compliance section of the permit to state that compliance with these mass limits shall only be determined during dry weather flow conditions.

### **Monitoring and Reporting requirements**

The City requests the following changes to the proposed Monitoring and Reporting requirements contained in the Tentative Order:

- Monitoring and Reporting E-3 (Table E-3) – Reduce monitoring frequency for lead, nickel and silver to once per year, since there is no reasonable potential for the City's effluent to cause or contribute to water quality objective violations.
- Monitoring and Reporting E-3 (Table E-3) – Presuming agreement that copper and zinc do not result in reasonable potential after consideration of the site-specific WER and

translator values, please reduce sampling frequency for copper and zinc to once per year.

### **Change in Facility Contact**

In Table 4, under Facility Information, the City requests that Norm Benton, Treatment Plant Operator, be substituted for Rick Beckley as the Facility Contact. The City requests that this change be made in other appropriate locations in the NPDES permit, Fact Sheet and Cease and Desist Order.

### **Clarification regarding Beneficial Use Designations**

The City requests that Table 5 of the Tentative Order titled "Basin Plan Beneficial Uses" be modified through the use of footnotes to clarify that the Basin Plan does not directly designate any beneficial uses for Wolf Creek. The beneficial uses identified in this table are designated for the Bear River, to which Wolf Creek is a tributary. It is requested that footnotes be used to state that the uses shown for Wolf Creek are arrived at through application of the so-called Tributary Rule.

Additionally, the City notes that the written text on page 4 does not match the beneficial uses listed in Table 5 (i.e. Ground Water Recharge, Freshwater replenishment). The City requests appropriate modifications to ensure consistency and informational accuracy regarding use designations.

### **Findings regarding Drew Tunnel Discharge to City's Treatment System**

The City requests that the findings shown on page F-6 of the Fact Sheet for the Tentative Order be repeated in the Findings section of the permit and modified to indicate that the Drew Tunnel discharge creates the following difficulties for the City: (a) Significant loading of manganese, aluminum and iron to the City plant, resulting in violations of the proposed manganese effluent limit and creating risk to the City regarding future compliance with aluminum and iron objectives and (b) performance problems for the City in its biological treatment system, particularly the nitrification/denitrification system, due to the large volume and cool temperatures of the Drew Tunnel mine drainage discharge. The findings should state that the City's occasional compliance difficulties in meeting limits for nitrate and nitrite are directly attributable to the presence of the Drew Tunnel mine drainage flows in the City's flow stream.

The City also requests that language be added to the permit which states that the City's ability to comply with the manganese effluent limits of 50 ug/l by the March 1 2010 compliance date is wholly dependent on timely resolution and subsequent action by Newmont to either pre-treat the Drew Tunnel mine discharge or to remove that discharge entirely from the City's plant. The permit and Cease and Desist Order should acknowledge the understanding by the Regional Board of the potential need to reopen the permit to extend the compliance schedule if circumstances beyond the City's control impede the City's ability to comply with manganese effluent limits.

The City also requests that the information regarding the magnitude of the flow emanating from the Drew Tunnel be clarified to state that the Drew Tunnel flow averages approximately 0.5 mgd and peaks during the winter at an approximate maximum of 1.5 mgd. This information should be stated in Attachment F – Fact Sheet (Page F-4) and in other suitable locations in the permit

documentation. The City also requests that a clear statement is made that the Drew Tunnel flows do not surface, but instead enter directly into the City's treatment plant piping system.

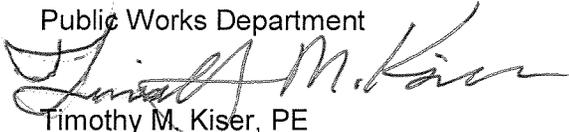
The City appreciates the past efforts of your office to expedite resolution of the untreated mine drainage discharge problem and asks that you continue to take appropriate regulatory steps in parallel with the City's NPDES permitting process to address this prolonged situation.

In summary, the City requests the above referenced changes to the proposed Tentative Order and associated changes to the proposed Cease and Desist Order. With regard to the use of site-specific WER values and translators for copper and zinc, the City requests that the Regional Board adoption hearing be postponed, if necessary, to allow for complete consideration and utilization of this information in the permitting process.

Thank you in advance for your careful consideration of the information provided in this letter.

Sincerely,

**CITY OF GRASS VALLEY**  
Public Works Department



Timothy M. Kiser, PE  
Public Works Director/City Engineer

Attachments

Cc: Tom Grovhoug, Larry Walker Associates  
Mike Healy, Public Works Assistant Director, Operations  
File