CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2003-0089

NPDES NO. CA0079898

WASTE DISCHARGE REQUIREMENTS FOR CITY OF GRASS VALLEY WASTEWATER TREATMENT PLANT NEVADA COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Regional Board) finds that:

BACKGROUND

1. The City of Grass Valley (hereafter Discharger) submitted a Report of Waste Discharge, dated 29 October 2002, and applied for a permit renewal to discharge waste under the National Pollutant Discharge Elimination System (NPDES) from the City's Wastewater Treatment Plant (WWTP). Supplemental information to complete filing of the application was received on 26 December 2002

2. The Discharger owns and operates a wastewater collection, treatment, and disposal system, and provides sewerage service to Grass Valley with a population of approximately 12,100. In addition, the Grass Valley WWTP has been treating water that has been surfacing from an abandoned mine portal located on City property. The treatment plant and discharge point are located on Assessor's Parcel Number (APN) 29-290-26 in T15N, R3E, MDB&M, at the point latitude 39º 12' 20" (degrees, minutes, seconds) and longitude 121º 04' 05", as shown on Attachment A, a part of this Order. Treated wastewater is discharged to Wolf Creek, which is tributary to the Bear River.

3. The treatment system at this facility consists of bar screening; primary sedimentation; alkalinity adjustment; biological treatment by activated sludge, including nitrification and denitrification; secondary sedimentation; filtration; disinfection; and dechlorination. The outfall is equipped with a stream-side rock pile diffuser. Sludge is treated by an anaerobic digester and dewatered using a belt filter press. Treated, dewatered sludge is applied to land.

4. The Report of Waste Discharge, EPA Form 2A, Sections A.12 and B.6, describes the wastewater discharge to Wolf Creek (Outfall 001) as follows:

Design Average Dry Weather Flow Rate	2.78	million gallons per day (mgd)
Average Daily Flow Rate	2.1	mgd
Maximum Daily Flow Rate	7.6	mgd
Average Daily Temperature, Summer	72	ºF
Average Daily Temperature, Winter	55	ºF

Average Daily Biochemical Oxygen Demand (BOD)[1]	3.2	mg/*l*
Maximum Daily BOD	12	mg/*l*
Average Daily Total Suspended Solids (TSS)	2.54	mg/*l*
Maximum Daily TSS	20.8	mg/*l*

[1] 5-day, 20ºC biochemical oxygen demand

5. As stated by the Discharger in the Report of Waste Discharge (EPA Form 1), "…*water that has been determined to be surfacing on City property from an abandoned mine shaft is also being routed through this facility.*" The discharge from the WWTP includes approximately 0.35 mgd of treated mine drainage. The Discharger, Regional Board staff, and U.S. EPA Region IX staff have collected samples of the mine drainage. The analytical laboratory results have indicated that the drainage contains concentrations of iron, manganese, and sulfate as high as 9,850 µg/*l* (disturbed condition), 1,400 µg/*l* (undisturbed), and 73 mg/*l* (undisturbed), respectively. The sulfate concentration and the pH (less than 6.0 standard units) indicate acid mine drainage. In addition, during the occasions when the drainage is disturbed following high stormwater flow events, the iron concentrations increase in the drainage and result in discoloration (brownish orange) of the drainage and contribute to discoloration of Wolf Creek. It is being considered whether to discontinue the diversion of the drainage to the WWTP and treat it separately. Elimination of the mine drainage from the WWTP influent would significantly reduce the concentrations of iron, manganese, and sulfate and aid in meeting Effluent Limitations for these constituents.

6. The Regional Board adopted a *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (hereafter Basin Plan). The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve water quality objectives for all waters of the Basin. These requirements implement the Basin Plan.

7. The United States Environmental Protection Agency (U.S. EPA) adopted the *National Toxics Rule* (NTR) on 5 February 1993 and the *California Toxics Rule* (CTR) on 18 May 2000. These Rules contain water quality standards applicable to this discharge. The State Water Resources Control Board (SWRCB) adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the *State Implementation Plan* or SIP), which contains guidance on implementation of the *National Toxics Rule* and the *California Toxics Rule.*

BENEFICIAL USES OF THE RECEIVING STREAM

8. The Basin Plan at page II-2.00 states: "*Existing and potential beneficial uses which currently apply to surface waters of the basins are presented in Figure II-1 and Table II-1. The beneficial uses of any specifically identified water body generally apply to its tributary streams.*" The Basin Plan does not specifically identify beneficial uses for Wolf Creek, but the Basin Plan does identify present and potential uses for the Bear River, to which Wolf Creek is tributary. The Basin Plan identifies the following beneficial uses for the Bear River: municipal and domestic supply, agricultural irrigation and stockwatering, hydropower generation, water contact recreation

(including canoeing and rafting), non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, cold spawning habitat, and wildlife habitat. Other beneficial uses identified in the Basin Plan apply to Wolf Creek, including groundwater recharge and freshwater replenishment. In addition, State Board Resolution No 88-63, incorporated into the Basin Plan pursuant to Regional Board Resolution 89-056, requires the Regional Board to assign the municipal and domestic supply use to water bodies that do not have beneficial uses listed in Table II-1. The Basin Plan states, on page II-1.00, "*Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning…*" and with respect to disposal of wastewaters states that "*disposal of wastewaters is* [not] *a prohibited use of waters of the state; it is merely a use which cannot be satisfied to the detriment of beneficial uses*."

In reviewing whether the existing and/or potential uses of the Bear River apply to Wolf Creek**,** the Regional Board has considered the following facts:

a. *Domestic Supply and Agricultural Supply*

The Regional Board is required to apply the beneficial uses of municipal and domestic supply to Wolf Creek based on State Board Resolution No. 88-63 which was incorporated in the Basin Plan pursuant to Regional Board Resolution 89-056. In addition, the SWRCB has issued water rights to existing water users along Wolf Creek downstream of the discharge for domestic and stockwatering uses and along both Wolf Creek and the Bear River downstream of the discharge for irrigation uses. Since Wolf Creek is an ephemeral stream, Wolf Creek likely provides groundwater recharge during periods of low flow. The groundwater is a source of drinking water. In addition to the existing water uses, growth in the area, downstream of the discharge is expected to continue, which presents a potential for increased domestic and agricultural uses of the water in Wolf Creek.

b. *Water Contact and Noncontact Recreation and Aesthetic Enjoyment*

The Regional Board finds that the discharge flows through residential areas, exclusion of the public is unrealistic, contact recreational activities currently exist along Wolf Creek and downstream waters, and these uses are likely to increase as the population in the area grows. Prior to flowing into the Bear River, Wolf Creek flows through areas of public access, including residential areas. The Bear River also offers recreational opportunities.

c. *Groundwater Recharge*

In areas where groundwater elevations are below the stream bottom, water from the stream will percolate to groundwater. Since Wolf Creek would, without the discharge and the contribution of irrigation flows provided by Nevada Irrigation District, at times be dry, it is reasonable to assume that the stream water is lost by evaporation, flow downstream and percolation to groundwater providing a source of municipal and irrigation water supply.

d. *Freshwater Replenishment*

When water is present in Wolf Creek, there is hydraulic continuity between Wolf Creek and the Bear River. During periods of hydraulic continuity, Wolf Creek adds to the water quantity and may impact the quality of water flowing down stream in the Bear River.

e. *Warm and Cold Freshwater Habitats (including preservation or enhancement of fish and invertebrates) and Wildlife Habitat*

Wolf Creek flows to the Bear River. The California Department of Fish and Game (DFG) has verified that the fish species present in Wolf Creek and downstream waters are consistent with both cold and warm water fisheries and that rainbow and brown trout, both cold water species, have been found in the vicinity of the wastewater treatment plant. The Basin Plan (Table II-1) designates the Bear River as being both a cold and warm freshwater habitat. Therefore, pursuant to the Basin Plan (Table II-1, Footnote (2)), the cold designation applies to Wolf Creek. The cold-water habitat designation necessitates that the in-stream dissolved oxygen concentration be maintained at, or above, 7.0 mg/*l*.

Upon review of the flow conditions, habitat values, and beneficial uses of Wolf Creek, and the facts described above, the Regional Board finds that the beneficial uses identified in the Basin Plan for the Bear River are applicable to Wolf Creek.

The Regional Board also finds that based on the available information and on the Discharger's application, that Wolf Creek, absent the discharge, is a low-flow stream. The low-flow nature of Wolf Creek means that the designated beneficial uses must be protected, but that no credit for receiving water dilution is available. Although the discharge, at times, maintains the aquatic habitat, constituents may not be discharged that may cause harm to aquatic life. At other times, natural flows within Wolf Creek help support the aquatic life. Both conditions may exist within a short time span, where Wolf Creek would be dry without the discharge and irrigation flows and periods when sufficient background flows provide hydraulic continuity with the Bear River. Dry conditions occur primarily in the autumn months (after the irrigation season ends and before the rain and snow season begins), but dry conditions may also occur throughout the year, particularly in low rainfall years. The lack of dilution results in more stringent effluent limitations to protect contact recreational uses, drinking water standards, agricultural water quality goals, and aquatic life. Significant dilution may occur during and immediately following high rainfall events.

9. The Basin Plan includes numeric water quality objectives for various beneficial uses and water bodies. Numeric Basin Plan objectives that are applicable to this discharge and which have been included as Receiving Water Limitations are:

a. *Bacteria*—The Basin Plan includes a water quality objective that "[i]*n waters designated for contact recreation (REC-1), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day*

period exceed 400/100 ml." The Bear River is designated as having a beneficial use of contact recreation. As described in Finding 8.b, the beneficial use of water contact recreation is applicable to Wolf Creek. A numeric Receiving Water Limitation for bacteria is included in this Order and is based on the Basin Plan objective for bacteria.

b. *Dissolved Oxygen*—The Basin Plan includes a water quality objective that "[f]*or surface water bodies outside the legal boundaries of the Delta, the monthly median of the mean daily dissolved oxygen (DO) concentration shall not fall below 85 percent of saturation in the main water mass, and the 95 percentile concentration shall not fall below 75 percent saturation*." In addition, for water bodies designated as having the beneficial uses of cold freshwater habitat or spawning, reproduction, and/or early development, the Basin Plan includes an objective that the dissolved oxygen concentration not fall below 7.0 mg/*l* at any time. The Bear River is designated as having the beneficial uses both of cold freshwater habitat and of spawning, reproduction, and/or early development. As described in Finding 8.e, the beneficial use of cold freshwater habitat is applicable to Wolf Creek. Numeric Receiving Water Limitations for minimum dissolved oxygen concentration and percent saturation are included in this Order and are based on the Basin Plan objectives.

c. *pH*—The Basin Plan includes water quality objectives that the pH "…*not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses*." The Bear River is designated as having both COLD and WARM beneficial uses. As described in Finding 8.e, the beneficial uses of cold and warm freshwater habitat are applicable to Wolf Creek. The change in pH of 0.5 (standard pH units) is not included as necessary to protect aquatic life in U.S. EPA's Ambient Criteria for the Protection of Freshwater Aquatic Life as long as pH does not fall below 6.5 or exceed 8.5 units. Therefore, an averaging period of 30 days has been applied to the Basin Plan receiving water objective for changes in pH. Numeric Receiving Water Limitations for pH are included in this Order and are based on the Basin Plan objectives for pH.

d. *Temperature*—The Basin Plan includes a water quality objective that "[a]*t no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5ºF above natural receiving water temperature*." The Bear River is designated as having both COLD and WARM beneficial uses. As described in Finding 8.e, the beneficial uses of cold and warm freshwater habitat are applicable to Wolf Creek. A numeric Receiving Water Limitation for temperature is included in this Order and is based on the Basin Plan objective for temperature.

e. *Turbidity*—The Basin Plan includes a water quality objective that "[i]*ncreases in turbidity attributable to controllable water quality factors shall not exceed the following limits:*

- *Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU.*

- *Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent.*
- *Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.*
- *Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent."*

The discharge from the Grass Valley WWTP is a controllable water quality factor. Tertiary wastewater treatment plants are technically capable of achieving an average effluent turbidity of 2 nephelometric turbidity units (NTU). In high quality ephemeral or low-flow streams, the natural turbidity may be less than 5 NTU. Turbidity at these levels is based on antidegradation and is not expected to have any impact on aquatic life. A numeric Receiving Water Limitation for turbidity is included in this Order and is based on the Basin Plan objective for turbidity. An averaging period of 30 days, where the natural upstream turbidity is less than 5 NTU, has been applied to the Receiving Water Limitation.

EFFLUENT LIMITATIONS AND REASONABLE POTENTIAL

10. Effluent limitations, and toxic and pretreatment effluent standards established pursuant to Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act (CWA) and amendments thereto are applicable to the discharge.

11. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above a narrative or numerical water quality standard. This Order contains provisions that:

    a. require the Discharger to provide information as to whether the levels of CTR, NTR, and U.S. EPA priority toxic pollutants in the discharge cause or contribute to an in-stream excursion above a water quality standard;

    b. if the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard, require the Discharger to submit information to calculate effluent limitations for those constituents; and

    c. allow the Regional Board to reopen this Order and include effluent limitations for those constituents.

    The required analysis must be sufficient to fully characterize the quality of the effluent and be submitted with the Report of Waste Discharge which is due 180 days prior to permit expiration.

12. Section 13263.6(a), California Water Code, requires that "*the regional board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW for all substances that the most recent toxic chemical release data reported to the state emergency response commission pursuant to Section 313 of the Emergency Planning and Community Right to Know Act of 1986 (42 United States Code Section 11023) (EPCRKA) indicate as discharged into the POTW, for*

which the state board or the regional board has established numerical water quality objectives, and has determined that the discharge is or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to, an excursion above any numeric water quality objective". The Regional Board has adopted California's primary maximum contaminant level 1,300 µg/*l* for copper as a numeric chemical constituent water quality objective in the Basin Plan. U.S. EPA's Toxics Release Inventory database lists only copper compounds for the 95945 ZIP code (Grass Valley, CA). The maximum detected effluent copper concentration from the WWTP was 6.9 µg/*l*. There is no reasonable potential for this constituent to cause or contribute to an excursion above the numeric water quality objective for copper contained in the Basin Plan, so no effluent limitations are included in this permit pursuant to CWC Section 13263.6(a).

13. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs the Regional Board finds that the discharge does have a reasonable potential to cause or contribute to an in-stream excursion above water quality objectives for aluminum, ammonia, chlorine, chloroform, copper, cyanide, dibromochloromethane, dichlorobromomethane, iron, lead, manganese, mercury, methyl tert butyl ether, methylene blue active substances (MBAS), and zinc. Effluent limitations for these constituents are included in this Order.

14. The Basin Plan includes a list of Water Quality Limited Segments (WQLSs), which are defined as "*…those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR 130, et seq.).*" The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to WQLSs. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment*." The upper Bear River is listed as a WQLS for mercury and Wolf Creek is listed as a WQLS for fecal coliform organisms in the 303(d) list of impaired water bodies. Therefore, the receiving water for the discharge has no assimilative capacity for these constituents and applicable water quality standards must be applied as end-of-pipe effluent limitations. Effluent Limitations for these constituents are included in this Order.

    a. ***Mercury***— Municipal and domestic supply is a beneficial use of Wolf Creek and the Bear River. The current U.S. EPA Ambient Water Quality Criteria for Protection of Freshwater Aquatic Life, continuous concentration, for mercury is 0.77 µg/*l* (30-day average, chronic criteria). The CTR contains a human health criterion (based on a one-in-a-million cancer risk) of 0.050 µg/*l* for waters from which both water and aquatic organisms are consumed. In 40 CFR Part 131, U.S. EPA acknowledges that the human health criteria may not be protective of some aquatic or endangered species. Both values are controversial and subject to change. In the CTR, U.S. EPA reserved the mercury criteria for freshwater and aquatic life and may adopt new criteria at a later date. The maximum observed effluent mercury

concentration was 0.0107 µg/*l*. The upper Bear River has been listed as an impaired water body pursuant to Section 303(d) of the Clean Water Act because of mercury. Because the upper Bear River has been listed as an impaired water body for mercury, the discharge must not cause or contribute to increased mercury levels. The SIP, Section 1.3, requires the establishment of an effluent limitation for a constituent when the receiving stream background water quality exceeds an applicable criterion or objective. This Order contains Effluent Limitations for mercury based on the CTR human health criterion of 0.050 µg/*l*. In addition, due to the bioaccumulative effects of mercury, this Order contains an interim performance-based mass loading Effluent Limitation of 0.068 lbs/twelve months for mercury for the effluent discharge to the Feather River. This limitation is based on maintaining the mercury loading at the current level until a total maximum daily load (TMDL) can be established and/or U.S. EPA develops mercury standards that are protective of human health. The mass limitation was derived using the maximum observed effluent mercury concentration and the reported average daily effluent flow rate. Compliance time schedules have not been included since the discharge currently meets the concentration based limitation and the mass limitation can be met through source control measures and/or by limiting new sewer discharges containing mercury concentrations. If U.S. EPA develops new water quality standards for mercury, this permit may be reopened and the Effluent Limitations adjusted.

b. ***Fecal Coliform Organisms***—As described later in Finding 28, this Order requires the Discharger to treat to a tertiary level when less than 20:1 dilution is available and to a secondary level when 20:1 dilution or greater is available. A tertiary level of treatment results in a 7-day median total coliform organisms concentration of 2.2 MPN/100 m*l* or better. Compliance with this Order will result in a discharge that does not cause or contribute to an exceedance of the water quality objectives for fecal coliform organisms.

15. ***Aluminum***—The Basin Plan prohibits the discharge of toxic materials in toxic concentrations. Aquatic habitat is a beneficial use of the receiving stream. Based on information included in analytical laboratory reports submitted by the Discharger, aluminum in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a level necessary to protect aquatic life. U.S. EPA developed recommended ambient water quality criteria for protection of freshwater aquatic life for aluminum. The recommended four-day average (chronic) and one-hour average (acute) criteria for aluminum are 87 µg/*l* and 750 µg/*l*, respectively. U.S. EPA recommends that the ambient criteria are protective of the aquatic beneficial uses of receiving waters in lieu of site-specific criteria. The maximum observed effluent aluminum concentration was 112 µg/*l*. Effluent Limitations for aluminum are included in this Order and are based on U.S. EPA's Ambient Water Quality Criteria for the protection of the beneficial use of freshwater aquatic habitat.

16. ***Ammonia, nitrite, and nitrate***—Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas,

which is then released to the atmosphere. The Discharger uses nitrification to remove ammonia from the waste stream. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. Ammonia is known to cause toxicity to aquatic organisms in surface waters. Aquatic habitat is a beneficial use of the receiving stream. The Basin Plan prohibits the discharge of toxic materials in toxic concentrations. Nitrate and nitrite are known to cause adverse health effects in humans. The Basin Plan prohibits the discharge of chemical constituents in concentrations that adversely affect beneficial uses. Domestic water supply is a beneficial use of the Bear River. U.S. EPA has developed Primary Maximum Contaminant Levels (MCLs) for the protection of human health for nitrite and nitrate of 1 mg/*l* and 10 mg/*l*, respectively, and pH- and temperature-dependent Ambient Water Quality Criteria for ammonia. The discharge from the Grass Valley Wastewater Treatment Plant has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for ammonia, nitrite, and nitrate. The Discharger recently completed an upgrade and expansion of the WWTP that included the addition of nitrification and denitrification facilities. Effluent Limitations for ammonia, nitrite, and nitrate are included in this Order to assure the treatment process continues to adequately nitrify and denitrify the waste stream to protect the beneficial uses of aquatic habitat and municipal and domestic supply.

17. ***Chlorine***—The Discharger uses chlorine for disinfection of the effluent waste stream. Aquatic habitat is a beneficial use of Wolf Creek. Chlorine can cause toxicity to aquatic organisms when discharged to surface waters. The Basin Plan prohibits the discharge of toxic constituents in toxic concentrations. U.S. EPA recommends, in its Ambient Water Quality Criteria for the protection of fresh water aquatic life, maximum 1-hour average and 4-day average chlorine concentrations of 0.019 µg/*l* and 0.011 µg/*l*, respectively. The use of chlorine as a disinfectant presents a reasonable potential that it could be discharged in toxic concentrations. Effluent Limitations for chlorine have been included in this Order to protect the receiving stream aquatic life beneficial uses. Effluent Limitations have been established based on the ambient water quality criteria for chlorine.

18. ***Chloroform***—Municipal and domestic supply is a beneficial use of the receiving stream. The narrative toxicity objective and this beneficial use designation comprise a water quality standard applicable to pollutants in the receiving stream. The Basin Plan contains the *Policy for Application of Water Quality Objectives*, which provides that narrative objectives may be translated using numerical limits published by other agencies and organizations. The California Environmental Protection Agency (Cal/EPA) Office of Environmental Health Hazard Assessment (OEHHA) has published the Toxicity Criteria Database, which contains cancer potency factors for chemicals, including chloroform, that have been used as a basis for regulatory actions by the boards, departments and offices within Cal/EPA. The OEHHA cancer potency value for oral exposure to chloroform is 0.031 milligrams per kilogram body weight per day (mg/kg-day). By applying standard toxicologic assumptions used by OEHHA and U.S. EPA in evaluating health risks via drinking water exposure of 70 kg body weight and two liters per day water consumption, this cancer potency factor is equivalent to a concentration in drinking water of 1.1 µg/*l* (ppb) at the one-in-a-million cancer risk level. This risk level is consistent with that used by the Department of Health Services (DHS) to set *de minimis* risks from involuntary exposure to carcinogens in drinking water in developing MCLs and Action Levels and by OEHHA to set negligible cancer

risks in developing Public Health Goals for drinking water. The one-in-a-million cancer risk level is also mandated by U.S. EPA in applying human health protective criteria contained in the NTR and the CTR to priority toxic pollutants in California surface waters. The maximum observed effluent chloroform concentration was 24 µg/*l*. Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to degradation of the municipal and domestic supply beneficial use by discharging elevated concentrations of chloroform. Therefore, an Effluent Limitation for chloroform is included in this Order and is based on the Basin Plan toxicity objective and OEHHA Toxicity Criteria for the protection of human health.

19. ***Copper***—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for copper. The CTR includes hardness-dependent standards for the protection of both freshwater and saltwater aquatic life for copper. Freshwater aquatic habitat is a beneficial use of the receiving water. The standards for metals are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for copper in freshwater are 0.960 for both the acute and the chronic criteria. Using the worst-case (lowest of receiving water and effluent) measured hardness of 15 mg/*l*, the corresponding standards are 2.3 µg/*l* and 1.8 µg/*l* for the acute and chronic criteria, respectively. The maximum observed effluent copper concentration was 6.9 µg/*l*. The Effluent Limitations for copper included in this Order are presented in total concentrations, and are based on CTR standards for the protection of freshwater aquatic life.

20. ***Cyanide***— Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for cyanide. The CTR includes standards for the protection of freshwater aquatic life, saltwater aquatic life, and human health. CTR standards include maximum 1-hour average and 4-day average cyanide concentrations of 22 µg/*l* and 5.2 µg/*l*, respectively, for the protection of freshwater aquatic life. The freshwater aquatic life standards are protective of both freshwater aquatic life and human health. Freshwater aquatic habitat is a beneficial use of Wolf Creek and the Bear River. The maximum observed effluent cyanide concentration was 11.0 µg/*l*. The maximum observed receiving water cyanide concentration was 9.0 µg/*l*. Effluent Limitations for cyanide are included in this Order and are based on CTR standards for the protection of freshwater aquatic life.

21. ***Dibromochloromethane***—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for dibromochloromethane. The CTR includes standards for the protection of human health based on a one-in-a-million cancer risk for dibromochloromethane. Municipal and domestic supply is a beneficial use of the receiving stream. The standard for waters from which both water and organisms are consumed is 0.41 µg/*l*. The maximum observed effluent dibromochloromethane concentration was 1.4 µg/*l*. Effluent Limitations for dibromochloromethane are included in this Order and are based on the CTR

standard for the protection of human health.

22. ***Dichlorobromomethane***—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for dichlorobromomethane. The CTR includes standards for the protection of human health based on a one-in-a-million cancer risk for dichlorobromomethane. Municipal and domestic supply is a beneficial use of the receiving water. The standard for waters from which both water and organisms are consumed is 0.56 µg/*l*. The maximum observed effluent dichlorobromomethane concentration was 9.2 µg/*l*. Effluent Limitations for dichlorobromomethane are included in this Order and are based on the CTR standard for the protection of human health.

23. ***Iron***—The Basin Plan includes a water quality objective that "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449*." Municipal and domestic supply is a beneficial use of the receiving stream. Based on information included in analytical laboratory reports submitted by the Discharger, iron in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 300 µg/*l*. The Basin Plan also includes a water quality objective that water "…*shall be free of discoloration that causes nuisance or adversely affects beneficial uses*." The Basin Plan identifies non-contact water recreation, which includes aesthetic enjoyment, as a beneficial use of the Bear River. Iron concentrations in excess of the Secondary MCL-Consumer Acceptance Limit cause aesthetically undesirable discoloration. The maximum observed effluent iron concentration was 264 µg/*l*. The projected maximum effluent concentration is 845 µg/*l*. An Effluent Limitation for iron is included in this Order and is based on protection of the Basin Plan water quality objectives for chemical constituents and color and the DHS Secondary MCL.

24. ***Lead***—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for lead. The CTR includes hardness-dependent standards for the protection of both freshwater and saltwater aquatic life for lead. Freshwater aquatic habitat is a beneficial use of the receiving water. The standards for metals are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for lead in freshwater are 1.46203-[0.145712 X ln(hardness)] for both the acute and the chronic criteria. Using the worst-case (lowest of receiving water and effluent) measured hardness of 15 mg/*l*, the corresponding standards are 7.3 µg/*l* and 0.28 µg/*l* for the acute and chronic criteria, respectively. The maximum observed effluent lead concentration was 0.60 µg/*l*. The Effluent Limitations for lead included in this Order are presented in total concentrations, and are based on the CTR standards for the protection of freshwater aquatic life.

25. ***Manganese***—The Basin Plan includes a water quality objective that "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449*." Municipal and domestic supply is a beneficial use of the Bear River. Based on information included in analytical laboratory reports submitted by the Discharger, manganese in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 50 µg/*l* for manganese. The Basin Plan also includes water quality objectives that water be free of discoloration and taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan identifies non-contact water recreation, which includes aesthetic enjoyment, as a beneficial use of the Bear River. Manganese concentrations in excess of the Secondary MCL-Consumer Acceptance Limit produce aesthetically undesirable discoloration and taste. The maximum observed effluent manganese concentration was 137 µg/*l*. An Effluent Limitation for manganese is included in this Order and is based on protection of the Basin Plan water quality objectives for chemical constituents, color, and tastes and odors and the DHS Secondary MCL.

26. ***Methyl tert butyl ether (MTBE)***—The Basin Plan includes a water quality objective that "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449*." Municipal and domestic supply is a beneficial use of the receiving stream. Based on information included in analytical laboratory reports submitted by the Discharger, MTBE in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 5 µg/*l* for MTBE. The maximum observed effluent MTBE concentration was 1.7 µg/*l*. The projected maximum effluent MTBE concentration is 5.4 µg/*l*. An Effluent Limitation for MTBE is included in this Order and is based on protection of the Basin Plan water quality objectives for chemical constituents and the DHS Secondary MCL.

27. ***Methylene blue active substances (MBAS)***—The Basin Plan includes a water quality objective that "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449*." Municipal and domestic supply is a beneficial use of the Bear River. Based on information included in analytical laboratory reports submitted by the Discharger, MBAS in the discharge have a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 500 µg/*l* for foaming agents (MBAS). The Basin Plan also includes water quality objectives that water not contain floating material or taste- or odor-

producing substances in concentrations that causes nuisance or adversely affect beneficial uses. The Basin Plan identifies non-contact water recreation, which includes aesthetic enjoyment, as a beneficial use of the Bear River. MBAS concentrations in excess of the Secondary MCL-Consumer Acceptance Limit produce aesthetically undesirable froth, taste, and odor. The maximum observed effluent MBAS concentration was 280 µg/*l*. The projected maximum effluent MBAS concentration is 900 µg/*l*. An Effluent Limitation for MBAS is included in this Order and is based on protection of the Basin Plan water quality objectives for chemical constituents, floating material, and tastes and odors and the DHS Secondary MCL.

28. ***Pathogens***—The beneficial uses of Wolf Creek and the Bear River include contact recreation uses and irrigation. To protect these beneficial uses, the Regional Board finds that the wastewater must be disinfected and adequately treated to prevent disease. The principal infectious agents (pathogens) that may be present in raw sewage may be classified into three broad groups: bacteria, parasites, and viruses. Tertiary treatment, consisting of chemical coagulation, sedimentation, and filtration, has been found to remove approximately 99.5% of viruses. Filtration is an effective means of reducing viruses and parasites from the waste stream. The wastewater must be treated to tertiary standards (filtered), or equivalent, to protect contact recreational and food crop irrigation uses.

The California Department of Health Services (DHS) has developed reclamation criteria, California Code of Regulations, Title 22, Division 4, Chapter 3 (Title 22), for the reuse of wastewater. Title 22 requires that for spray irrigation of food crops, parks, playgrounds, schoolyards, and other areas of similar public access, wastewater be adequately disinfected, oxidized, coagulated, clarified, and filtered, and that the effluent total coliform levels not exceed 2.2 MPN/100 m*l* as a 7-day median. Title 22 also requires that recycled water used as a source of water supply for nonrestricted recreational impoundments be disinfected tertiary recycled water that has been subjected to conventional treatment. A nonrestricted recreational impoundment is defined as "…an impoundment of recycled water, in which no limitations are imposed on body-contact water recreational activities." Title 22 is not directly applicable to surface waters; however, the Regional Board finds that it is appropriate to apply an equivalent level of treatment to that required by DHS's reclamation criteria because Wolf Creek and the Bear River are used for irrigation of agricultural land and for contact recreation purposes. The stringent disinfection criteria of Title 22 are appropriate since the undiluted effluent may be used for the irrigation of food crops and/or for body-contact water recreation. Coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing other pathogens. The method of treatment is not prescribed by this Order; however, wastewater must be treated to a level equivalent to that recommended by DHS.

In addition to coliform testing, a turbidity effluent limitation has been included as a second indicator of the effectiveness of the treatment process and to assure compliance with the required level of treatment. The tertiary treatment process, or equivalent, is also capable of reliably meeting a turbidity limitation of 2 nephelometric turbidity units (NTU) as a daily average. Failure of the filtration system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for

monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. Coliform testing, by comparison, is not conducted continuously and requires several hours, to days, to identify high coliform concentrations.

The wastewater treatment plant is currently testing the effectiveness of the addition of polymer prior to filtration. The current NPDES permit contains effluent limitations that are equivalent to tertiary, except that the total coliform organisms limitation of 2.2 MPN/100 m*l* is expressed as a monthly median rather than the 7-day median currently recommended by DHS; the average daily BOD and TSS limitations are 30 mg/*l* instead of the 20 mg/*l* that is technically achievable by a tertiary treatment system; and the average turbidity limitation of 2 NTU is expressed as a weekly average rather than the daily average currently recommended by DHS. The total coliform organisms, BOD, TSS, and turbidity limitations have been revised to reflect current tertiary treatment standards. A schedule is included in this permit to allow the Discharger time to evaluate the newly constructed facilities' ability to comply with tertiary limitations and to determine the most effective coagualant/polymer.

The Discharger has requested that this Order contain secondary treatment plus filtration effluent limitations to provide relief under a significant storm event when a 20-to-1 dilution is available. The DHS has recommended that secondary treatment with a minimum dilution of 20-to-1 provides an equivalent protection of human health as does tertiary treatment. The Discharger will be required to establish an in-stream flow measuring system to accurately determine periods when 20-to-1 dilution exists. The BOD and TSS limitations for secondary treatment plus filtration are set at 15 mg/*l* as a monthly average and the total coliform organisms limitation is 23 MPN/100 m*l* as a 7-day median. Full tertiary treatment is required when less than 20-to-1 dilution is available.

29. ***pH—***The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the "*…pH shall not be depressed below 6.5 nor raised above 8.5.*" No reliable dilution is available in the receiving stream, so this Order includes Effluent Limitations for pH at the Basin Plan objective values.

30. ***Zinc***—Based on information included in analytical laboratory reports submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for zinc. The CTR includes hardness-dependent standards for the protection of both freshwater and saltwater aquatic life for zinc. Freshwater aquatic habitat is a beneficial use of the Bear River. The hardness-dependent CTR standards for metals are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for zinc in freshwater are 0.978 for the acute criteria and 0.986 for the chronic criteria. Using the worst-case (lowest of receiving water and effluent) measured hardness of 15 mg/*l*, the corresponding standards are 24 µg/*l* and 24 µg/*l* for the acute and chronic criteria, respectively. The maximum observed effluent zinc concentration was 80 µg/*l*. Effluent Limitations for zinc (in total concentrations) are included in this Order and are based on the CTR standards for the protection of freshwater aquatic life.

31. Section 2.1 of the SIP provides that: "*Based on an existing discharger's request and demonstration that it is infeasible for the discharger to achieve immediate compliance with a CTR criterion, or with an effluent limitation based on a CTR criterion, the RWQCB may establish a compliance schedule in an NPDES permit.*" Section 2.1, further states that compliance schedules may be included in NPDES permits provided that the following justification has been submitted: …"*(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; (b) documentation of source control measures and/or pollution minimization measures efforts currently underway or completed; (c) a proposal for additional or future source control measures, pollutant minimization actions, or waste treatment (i.e., facility upgrades); and (d) a demonstration that the proposed schedule is as short as practicable.*" This Order requires the Discharger to provide this information. The new water quality based effluent limitations for copper, cyanide, dibromochloromethane, dichlorobromomethane, lead, and zinc become effective on 1 October 2003 if a compliance schedule justification is not completed and submitted by the Discharger to the Regional Board. Otherwise, final water quality based effluent limitations for copper, cyanide, dibromochloromethane, dichlorobromomethane, lead, and zinc become effective 1 June 2008.

32. As stated in the above Findings, the U.S. EPA adopted the NTR and the CTR, which contains water quality standards applicable to this discharge and the SIP contains guidance on implementation of the NTR and CTR. The SIP, Section 2.2.1, requires that if a compliance schedule is granted for a CTR or NTR constituent, the Regional Board shall establish interim requirements and dates for their achievement in the NPDES permit. The interim limitations must: be based on current treatment plant performance or existing permit limitations, whichever is more stringent; include interim compliance dates separated by no more than one year, and; be included in the Provisions. The interim limitations in this Order are based on the current treatment plant performance. In developing the interim limitation, where there are ten sampling data points or more, sampling and laboratory variability is accounted for by establishing interim limits that are based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean (*Basic Statistical Methods for Engineers and Scientists, Kennedy and Neville, Harper and Row*). Therefore, the interim limitations in this Order are established as the mean plus 3.3 standard deviations of the available data. Where actual sampling shows an exceedance of the proposed 3.3-standard deviation interim limit, the maximum detected concentration has been established as the interim limitation. When there are less than ten sampling data points available, the *Technical Support Document for Water Quality Based Toxics Control* ((EPA/505/2-90-001)TSD) recommends a coefficient of variation of 0.6 be utilized as representative of wastewater effluent sampling. The TSD recognizes that a minimum of ten data points is necessary to conduct a valid statistical analysis. The multipliers contained in Table 5-2 of the TSD are used to determine a maximum daily limitation based on a long-term average objective. In this case, the long-term average objective is to maintain, at a minimum, the current plant performance level. Therefore, when there are less than ten sampling points for a constituent, interim limitations are based on 3.11 times the maximum observed sampling point to obtain the daily maximum interim limitation (*TSD, Table 5-2*). The Regional Board finds that the Discharger can undertake source control and treatment plant measures to maintain compliance with the interim limitations included in this Order. Interim limitations are established when compliance with NTR-

and CTR-based Effluent Limitations cannot be achieved by the existing discharge. Discharge of constituents in concentrations in excess of the final Effluent Limitations, but in compliance with the interim Effluent Limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis. For example, U.S. EPA states in the Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life for copper, that it will take an unstressed system approximately three years to recover from a pollutant in which exposure to copper exceeds the recommended criterion. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the Effluent Limitation can be achieved.

33. The *SIP* states that if "*…all reported detection limits of the pollutant in the effluent are greater than or equal to the C* [water quality criterion or objective] *value, the RWQCB* [Regional Board] *shall establish interim requirements…that require additional monitoring for the pollutant….*" All reported detection limits for acrylonitrile; hexachlorobenzene; hexachlorobutadiene; 1,2-benzanthracene; 1,2-diphenylhydrazine; 2,4-dinitrotoluene; 3,3'-dichlorobenzidine; 3,4-benzfluoranthene; benzidine; benzo(a)pyrene; benzo(k)fluoranthene; bis(2-chloroethyle) ether; bis (2-ethylhexyl) phthalate; chrysene; di-n-butylphthalate; di-n-octylphthalate; dibenzo (a,h)-anthracene; indeno(1,2,3-c,d)pyrene; N-nitrosodimethylamine; N-nitrosodi-n-propylamine; 4,4'-DDD; 4,4'-DDE; 4,4'-DDT; alpha-hexachlorocyclohexane (α-BHC); aldrin; chlordane; dieldrin; heptachlor; heptachlor epoxide; PCB-1016; PCB-1221; PCB-1232; PCB-1242; PCB-1248; PCB-1254; PCB-1260; toxaphene; and 2,3,7,8-TCDD (Dioxin) are greater than or equal to corresponding applicable water quality criteria or objectives. Monitoring for these constituents has been included in this Order in accordance with the SIP.

34. As stated in *Standard Provisions and Reporting Requirements, For Waste Discharge Requirements, 1 March 1991, General Provisions, No. 13,* this Order prohibits bypass from any portion of the treatment facility. Federal Regulations, 40 CFR 122.41 (m), define "bypass" as the intentional diversion of waste streams from any portion of a treatment facility. This section of the Federal Regulations, 40 CFR 122.41 (m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Regional Board's prohibition of bypasses, the SWRCB adopted a precedential decision, Order No. WQO 2002-0015, which cites the Federal Regulations, 40 CFR 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation. In the case of United States *v*. City of Toledo, Ohio (63 F. Supp 2d 834, N.D. Ohio 1999), the federal court ruled that "*any bypass which occurs because of inadequate plant capacity is unauthorized…to the extent that there are 'feasible alternatives', including the construction or installation of additional treatment capacity*".

The Federal Clean Water Act, Section 301, requires that not later than July 1, 1977, publicly owned wastewater treatment works meet effluent limitations based on secondary treatment or any more stringent limitation necessary to meet water quality standards. Federal Regulations, 40 CFR, Part 133, establish the minimum level of effluent quality attainable by secondary treatment for BOD, TSS, and pH. Tertiary treatment requirements for BOD and TSS are based on the technical capability of the process. Biochemical oxygen demand (BOD) is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The solids content—suspended (TSS)

and settleable (SS)—is also an important characteristic of wastewater. The secondary and tertiary treatment standards for BOD and TSS are indicators of the effectiveness of the treatment processes. Secondary treatment has been shown to be effective for pathogen removal. The principal infectious agents (pathogens) that may be present in raw sewage may be classified into three broad groups: bacteria, parasites, and viruses. For additional pathogen reductions, tertiary treatment, consisting of chemical coagulation, sedimentation, and filtration, has been found to remove approximately 99.5% of viruses. Filtration is an effective means of reducing viruses and parasites from the waste stream. A wet weather influent waste stream may contain significantly diluted levels of BOD and TSS. A bypassed, diluted waste stream may have BOD and TSS levels that meet the secondary or tertiary objectives, either alone or when blended with treated wastewater. However, the bypassed waste stream would not have been treated to reduce pathogens or other individual pollutants. The indicator parameters of BOD and TSS cannot be diluted to a level that may indicate the adequate treatment has occurred as an alternative to providing appropriate treatment.

PRETREATMENT REQUIREMENTS

35. U.S EPA Region IX staff conducted inspections of two categorical industries located in the Grass Valley WWTP service area in August 2002. As a result of those inspections, LanMark Circuits and BK Powder Coating were issued Findings of Violation and Administrative Orders CWA-307-9-03-010 (LanMark Circuits) and CWA-307-9-03-011 (BK Powder Coating). Other industries that may discharge constituents of concern are located within the Discharger's service area. This Order includes a Provision requiring the City of Grass Valley to develop any necessary local limits for these industries.

The Federal Clean Water Act, Section 307(b), and Federal Regulations, 40 CFR Part 403, require certain publicly owned treatment works to develop an acceptable industrial pretreatment program. 40 CFR 403.8(a) requires formal pretreatment programs for publicly owned treatment works with design flows of 5 mgd or greater. 40 CFR 403.8(a) also states that POTWs with design flows of less than 5 mgd may be required to develop pretreatment programs if it is found that "…*the nature or volume of the industrial influent, treatment process upsets, violations of POTW effluent limitations, contamination of municipal sludge, or other circumstances warrant in order to prevent Interference with the POTW or Pass Through.*" The source of pollutants that have been limited by this Order may be from industrial discharges. A pretreatment program is required to prevent the introduction of pollutants that will interfere with treatment plant operations or sludge disposal and prevent pass through of pollutants that exceed water quality objectives, standards, or permit limitations. Federal Regulations (40 CFR 403.8) and this Order require the Discharger to develop and submit for approval by the Regional Board an acceptable industrial pretreatment program within one year of adoption of this Order.

GROUNDWATER

36. The beneficial uses of the underlying ground water are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.

37. The Discharger utilizes emergency storage/flow equalization basins lined with a one-foot deep layer of a soil/cement/clay mixture, which are also used for blending in mine drainage and for emergency storage. During construction of improvements, the Discharger identified a spring on the east side of the basins. Wolf Creek lies to the west of the ponds. A French drain was constructed under the ponds to prevent the spring or elevated groundwater levels from rupturing or uplifting the basin liner. A perforated pipeline was installed in the French drain to carry the spring, groundwater and any seepage from the ponds to Wolf Creek. During construction, the French drain was covered with a 20-foot wide plastic liner to minimize seepage from the basins into the French drain. The dewatering activity is considered a discharge of waste to surface water. The possible seepage of wastewater from the basins commingled with the spring/groundwater would also be considered a discharge of waste to surface waters. The Discharger has not characterized the discharge in terms of either volume or quality. This Order requires the Discharger to characterize the discharge and submit an NPDES Report of Waste Discharge for the dewatering/seepage discharge to Wolf Creek. Diversion of the discharge to the WWTP headworks would eliminate the need for an individual NPDES permit; however, the discharge should be characterized to determine any possible impacts to the treatment system. The WWTP, including the equalization basins, does not utilize percolation to groundwater. The discharge does not threaten groundwater quality.

38. This Order requires the Discharger to characterize the dewatering discharge and either submit a Report of Waste Discharge or route the discharge to the WWTP.

COLLECTION SYSTEM

39. The Discharger's sanitary sewer system collects wastewater using sewers, pipes, pumps, and/or other conveyance systems and directs this raw sewage to the wastewater treatment plant. A "sanitary sewer overflow" is defined as a discharge to ground or surface water from the sanitary sewer system at any point upstream of the wastewater treatment plant. Temporary storage and conveyance facilities (such as wet wells, regulated impoundments, tanks, highlines, etc.) may be part of a sanitary sewer system and discharges to these facilities are not considered sanitary sewer overflows, provided that the waste is fully contained within these temporary storage/conveyance facilities.

40. Sanitary sewer overflows consist of varying mixtures of domestic sewage, industrial wastewater, and commercial wastewater. This mixture depends on the pattern of land use in the sewage collection system tributary to the overflow. The chief causes of sanitary sewer overflows include grease blockages, root blockages, debris blockages, sewer line flood damage, manhole structure failures, vandalism, pump station mechanical failures, power outages, storm or groundwater inflow/infiltration, lack of capacity, and contractor caused blockages.

41. Sanitary sewer overflows often contain high levels of suspended solids, pathogenic organisms, toxic pollutants, nutrients, oxygen demanding organic compounds, oil and grease, and other pollutants. Sanitary sewer overflows can cause temporary exceedances of applicable water quality objectives, pose a threat to public health, adversely affect aquatic life, and impair the public recreational use and aesthetic enjoyment of surface waters in the area.

42. The Discharger is expected to take all necessary steps to adequately maintain and operate its sanitary sewer collection system. This Order requires the Discharger to prepare and implement a Sanitary Sewer System Operation, Maintenance, Overflow Prevention, and Response Plan.

STORMWATER

43. U.S. EPA promulgated Federal Regulations for storm water on 16 November 1990 in 40 CFR Parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates storm water discharges from municipal sanitary sewer systems. Storm water discharges from the Grass Valley Wastewater Treatment Plant are regulated under the General Permit for Discharges of Storm Water Associated with Industrial Activities (State Water Resources Control Board, Water Quality Order No. 97-03-DWQ, NPDES General Permit No. CAS000001). The Discharger's waste discharge identification (WDID) number for the storm water permit is 5S29S006044.

GENERAL

44. Monitoring is required by this Order for the purposes of assessing compliance with permit limitations and water quality objectives and gathering information to evaluate the need for additional limitations.

45. Section 13267 of the California Water Code states, in part, "*(a) A regional board, in establishing…waste discharge requirements… may investigate the quality of any waters of the state within its region"* and *"(b) (1) In conducting an investigation…, the regional board may require that any person who… discharges… waste…that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports.*" The attached Monitoring and Reporting Program is issued pursuant to California Water Code Section 13267. The groundwater monitoring and reporting program required by this Order and the attached Monitoring and Reporting Program are necessary to assure compliance with these waste discharge requirements. The City of Grass Valley is responsible for the discharges of waste at the facility subject to this Order.

46. The SIP, Section 2.1, allows compliance schedules to be included in NPDES permits for priority pollutants, provided that: diligent efforts have been made to quantify the pollutant, there is documentation that source control measures are underway; there is a proposed schedule for achieving compliance, and the schedule is as short as practicable. The Discharger has made diligent efforts to quantify the constituents limited in this Order, source control measures (in the

form of the sewer use ordinances) are underway, and this Order includes a compliance time schedule for priority pollutants.

47. The Regional Board has considered the information in the attached Fact Sheet in developing the Findings of this Order. The Fact Sheet, Monitoring and Reporting Program No. R5-2003-0089, and Attachments A through G are a part of this Order.

48. This discharge is presently governed by Waste Discharge Requirements in Order No. 98-060, adopted by the Regional Board on 17 April 1998, and amended 14 June 2001.

49. U.S. EPA and the Regional Board have classified this discharge as a major discharge.

50. The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

51. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, *et seq*.), requiring preparation of an environmental impact report or negative declaration in accordance with Section 13389 of the California Water Code.

52. The Regional Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

53. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.

54. This Order serves as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and takes effect on **1 August 2003**, provided U.S. EPA has no objections.

IT IS HEREBY ORDERED that Order No. 98-060 is rescinded and City of Grass Valley, its agents, successors and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. Discharge Prohibitions:

1. Discharge of wastewater at a location or in a manner different from that described in the Findings is prohibited.

2. The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by Standard Provision A.13. [See attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)"].

3. Neither the discharge nor its treatment shall create a nuisance as defined in Section 13050 of the California Water Code.

B. Effluent Limitations—Discharge to Wolf Creek (001):

1. Effluent shall not exceed the following limits when less than 20:1 dilution is available:

Constituents	Units	Average Monthly	7-Day Median	Average Weekly	Average Daily	Instantaneous Maximum
BOD[1]	mg/*l*	10[2]	--	15[2]	20[2,3]	--
	lbs/day[4]	230	--	350	500[2,3]	--
Total Suspended Solids	mg/*l*	10[2]	--	15[2]	20[2,3]	--
	lbs/day[4]	230	--	350	500[2,3]	--
Settleable Solids	m*l*/*l*-hr	0.1	--	--	0.2	--
Total Coliform Organisms	MPN/100 m*l*	--	2.2[5]	--	--	23[6]
Turbidity	NTU	--	--	--	2[7]	5[8]

1 5-day, 20ºC biochemical oxygen demand (BOD)

2 To be ascertained by a 24-hour composite

3 The average daily effluent limitations for BOD and TSS shall be 30 mg/l and 700 lbs/day **until 1 November 2005**.

4 Based upon a design treatment capacity of 2.78 mgd (*x* mg/*l* X 8.345 X 2.78 mgd = *y* lbs/day)

5 A monthly median, rather than a 7-day median, may be used **until 1 November 2005**.

6 The total coliform organisms concentration shall not exceed 23 MPN/100 m*l* more than once in any 30-day period. No sample shall exceed a concentration of 240 MPN/100 m*l*.

7 The average daily turbidity limitation applies **1 November 2005** forward.

8 The turbidity shall not exceed 5 NTU more than 5 percent of the time within a 24-hour period. At no time shall the turbidity exceed 10 NTU.

2. Effluent shall receive secondary treatment and be filtered and shall not exceed the following limits when 20:1 dilution (receiving water:effluent), or greater, is available:

Constituents	Units	Average Monthly	7-Day Median	Average Weekly	Average Daily	Instantaneous Maximum
BOD[1]	mg/*l*	15[2]	--	25[2]	40[2]	--
	lbs/day[3]	350	--	580	930	--
Total Suspended Solids	mg/*l*	15[2]	--	25[2]	40[2]	--
	lbs/day[3]	350	--	580	930	--
Settleable Solids	m*l*/*l*-hr	0.1	--	--	0.2	--
Total Coliform Organisms	MPN/100 m*l*	--	23	--	--	240[4]

1 5-day, 20ºC biochemical oxygen demand (BOD)
2 To be ascertained by a 24-hour composite
3 Based upon a design treatment capacity of 2.78 mgd (*x* mg/*l* X 8.345 X 2.78 mgd = *y* lbs/day)
4 Not to be exceeded more than once in a 30-day period

3. Effluent shall not exceed the following limits (from adoption until **29 February 2008**):

Constituents	Units	Average Monthly	Average 4-Day	Average 1-Hour
Aluminum[1]	µg/*l*	--	87	750
	lbs/day[2]	--	2.0	17
Ammonia (as N)	mg/*l*	Attachment B	Attachment C	Attachment D
	lbs/day[3]	[4]	[4]	--
Chlorine, Total Residual	mg/*l*	--	0.01	0.02
	lbs/day[3]	--	0.26	0.44
Chloroform	µg/*l*	1.1	--	--
	lbs/day[2]	0.026	--	--
Iron (total recoverable)	µg/*l*	300[5]	--	--
	lbs/day[6]	20	--	--

1 Acid-soluble or total
2 Based upon a design treatment capacity of 2.78 mgd [*x* µg/*l* X (1 mg/1000 µg) X 8.345 X 2.78 mgd = *y* lbs/day]
3 Based upon a design treatment capacity of 2.78 mgd (*x* mg/*l* X 8.345 X 2.78 mgd = *y* lbs/day)
4 The mass limit (lb/day) for ammonia shall be equal to the concentration limit (from Attachments) multiplied by the design flow of 2.78 mgd and the unit conversion factor of 8.345 (see footnote 2 for equation).
5 To be ascertained by a 24-hour composite.
6 Based upon a design equalized peak flow treatment capacity of 7 mgd (*x* µg/*l* X (1 mg/1000 µg) X 8.345 X 7 mgd = *y* lbs/day)

Constituents	Units	Average Monthly	Average 4-Day	Average 1-Hour
Manganese	µg/*l*	50[5]	--	--
(total recoverable)	lbs/day[6]	3	--	--
Mercury	µg/*l*	0.050[5]	--	--
(total recoverable)	lbs/day[2]	--	--	--
Methyl tert butyl ether	µg/*l*	5	--	--
(MTBE)	lbs/day[2]	0.1	--	--
Methylene blue active	µg/*l*	500[5]	--	--
substances (MBAS)	lbs/day[2]	10	--	--
Nitrite	mg/*l*	1	--	--
(as N)	lbs/day[3]	20	--	--
Nitrate + Nitrite	mg/*l*	10	--	--
(as N)	lbs/day[3]	200	--	--

	Interim Average Daily Limitations for Priority Pollutants	
Constituents	µg/*l*	lbs/day[1]
Copper (total recoverable)	9.1[2]	0.21
Cyanide (total recoverable)	15[2]	0.35
Dibromochloromethane	2.47	0.0573
Dichlorobromomethane	14	0.33
Lead	1.2[2]	0.028
Zinc	110[2]	2.6

[1] Based upon a design treatment capacity of 2.78 mgd [*x* µg/*l* x (1 mg/1000 µg) x 8.345 x 2.78 mgd = *y* lbs/day]

[2] To be ascertained by a 24-hour composite.

4. The effluent shall not exceed the following limitations (from **1 March 2008** forward):

Constituents	Units	Average Monthly	Average 4-Day	Average Daily	Average 1-Hour
Aluminum[1]	µg/*l*	--	87	--	750
	lbs/day[2]	--	2.0	--	17
Ammonia	mg/*l*	Attachment B	Attachment C	--	Attachment D
(as N)	lbs/day[3]	[4]	[4]	--	--

[1] Acid-soluble or total

[2] Based upon a design treatment capacity of 2.78 mgd [*x* µg/*l* X (1 mg/1000 µg) X 8.345 X 2.78 mgd = *y* lbs/day]

[3] Based upon a design treatment capacity of 2.78 mgd (*x* mg/*l* X 8.345 X 2.78 mgd = *y* lbs/day)

Constituents	Units	Average Monthly	Average 4-Day	Average Daily	Average 1-Hour
Chlorine, Total Residual	mg/*l*	--	0.01	--	0.02
	lbs/day[3]	--	0.26	--	0.44
Chloroform	µg/*l*	1.1	--	--	--
	lbs/day[2]	0.026	--	--	--
Copper	µg/*l*	Attach. E[5]	--	Attach. E[5]	--
(total recoverable)	lbs/day[2]	[6]	--	[6]	--
Cyanide	µg/*l*	3.6[5]	--	9.6[5]	--
(total recoverable)	lbs/day[2]	0.085	--	0.22	--
Dibromochloromethane	µg/*l*	0.41	--	1.0	--
	lbs/day[2]	0.0095	--	0.024	--
Dichlorobromomethane	µg/*l*	0.56	--	1.1	--
	lbs/day[2]	0.013	--	0.026	--
Iron	µg/*l*	300[5]	--	--	--
(total recoverable)	lbs/day[7]	20	--	--	--
Lead	µg/*l*	Attach. F[5]	--	Attach. F[5]	--
(total recoverable)	lbs/day[2]	[6]	--	[6]	--
Manganese	µg/*l*	50[5]	--	--	--
(total recoverable)	lbs/day[7]	3	--	--	--
Mercury	µg/*l*	0.050[5]	--	--	--
(total recoverable)	lbs/day[2]	0.0011	--	--	--
Methyl tert butyl ether	µg/*l*	5	--	--	--
(MTBE)	lbs/day[2]	0.1	--	--	--
Methylene blue active	µg/*l*	500[5]	--	--	--
Substances (MBAS)	lbs/day[2]	10	--	--	--
Nitrite	mg/*l*	1	--	--	--
(as N)	lbs/day[3]	20	--	--	--
Nitrate + Nitrite	mg/*l*	10	--	--	--
(as N)	lbs/day[3]	200	--	--	--

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[4] The mass limit (lb/day) for ammonia shall be equal to the concentration limit (from Attachments) multiplied by the design flow of 2.78 mgd and the unit conversion factor of 8.345 (see footnote 2 for equation).

[5] To be ascertained by a 24-hour composite.

[6] The mass limit (lbs/day) shall be equal to the concentration limit (from corresponding Attachment, for corresponding period) multiplied by the design flow of 2.78 mgd and the unit conversion factor of 8.345 and divided by 1000 µg/*l* per mg/*l* (see footnote 1 for equation).

[7] Based upon a design equalized peak flow treatment capacity of 7 mgd (*x* µg/*l* X (1 mg/1000 µg) X 8.345 X 7 mgd = *y* lbs/day)

Constituents	Units	Average Monthly	Average 4-Day	Average Daily	Average 1-Hour
Zinc	µg/*l*	Attach. G[5]	--	Attach. G[5]	--
(total recoverable)	lbs/day[2]	[6]	--	[6]	--

5. The arithmetic mean of 20°C BOD (5-day) and of total suspended solids in effluent samples collected over a calendar month shall not exceed 15 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85 percent removal).

6. The effluent mass mercury loading to Wolf Creek shall not exceed 0.068 pounds as a twelve-month average.

   a. In calculating for compliance, the Discharger shall count all non-detect results at one half of the method detection limit and shall apply the monthly average flow from the discharge. If compliance with the effluent limit is not attained due to the non-detect contribution, the Discharger shall improve and implement available analytical capabilities and compliance will be evaluated with consideration of the detection limits.

   b. Twelve month mass loadings shall be calculated for each calendar month. For monthly measures, calculate monthly loadings using average monthly flow and the average of all mercury analyses conducted that month. The Discharger shall submit a cumulative total of mass loadings for the previous twelve months with each self-monitoring report. Compliance will be determined based on monitoring results from the previous twelve calendar months.

7. The discharge shall not have a pH less than 6.5 nor greater than 8.5.

8. The average dry weather discharge flow shall not exceed 2.78 million gallons per day.

9. Wastewater shall continue to be oxidized and filtered, or equivalent treatment provided.

10. Wastewater shall be oxidized, coagulated, and filtered, or equivalent treatment provided by **1 November 2005.**

11. Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

    Minimum for any one bioassay - - - - - - - - - 70%
    Median for any three consecutive bioassays - - - - 90%

C. Emergency Storage/Flow Equalization Basin Limitations:

1. Public contact with wastewater shall be precluded through such means as fences, signs, and other acceptable alternatives.

2. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the wastewater treatment and disposal areas.

3. As a means of discerning compliance with Land Discharge Specification No. 2, the dissolved oxygen content in the upper zone (1 foot) of wastewater in the basins shall not be less than 1.0 mg/*l*.

4. Basin freeboard shall never be less than two feet (measured vertically to the lowest point of overflow).

5. Basins shall not have a pH less than 6.5 or greater than 8.5 as a daily average.

6. Basins shall be managed to prevent breeding of mosquitoes. In particular,

    a. An erosion control program should assure that small coves and irregularities are not created around the perimeter of the water surface.

    b. Weeds shall be minimized.

    c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

D. Sludge Disposal:

1. Collected screenings, sludges, and other solids removed from liquid wastes shall be disposed of in a manner consistent with *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste,* as set forth in California Code of Regulations, Title 27, Division 2, Subdivision 1, Section 20005, *et seq*.

2. Any proposed change in sludge use or disposal practice from a previously approved practice shall be reported to the Executive Officer and U.S. EPA Regional Administrator at least **90 days** in advance of the change.

3. Use and disposal of sewage sludge shall comply with existing Federal and State laws and regulations, including permitting requirements and technical standards included in 40 CFR 503.

4. If the State Water Resources Control Board and the Regional Water Quality Control Boards are given the authority to implement regulations contained in 40 CFR 503, this Order may be reopened to incorporate appropriate time schedules and technical standards. The Discharger

must comply with the standards and time schedules contained in 40 CFR 503 whether or not they have been incorporated into this Order.

5. The Discharger is encouraged to comply with the "Manual of Good Practice for Agricultural Land Application of Biosolids" developed by the California Water Environment Association.

E. Receiving Water Limitations:

Receiving Water Limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this permit.

1. The discharge shall not cause the following in Wolf Creek or downstream waters:

   a. The fecal coliform concentration, based on a minimum of not less than five samples for any 30-day period, to exceed a geometric mean of 200 MPN/100 m*l* or cause more than 10 percent of total samples taken during any 30-day period to exceed 400 MPN/100 m*l*.

   b. Biostimulatory substances that promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.

   c. Esthetically undesirable discoloration.

   d. Concentrations of dissolved oxygen to fall below 7.0 mg/*l*. The monthly median of the mean daily dissolved oxygen concentration shall not be caused to fall below 85 percent of saturation in the main water mass, and the 95^{th} percentile concentration shall not be caused to fall below 75 percent of saturation.

   e. Floating material to be present in amounts that cause nuisance or adversely affect beneficial uses.

   f. Oils, greases, waxes, or other materials to accumulate in concentrations that cause nuisance, result in a visible film or coating on the water surface or on objects in the water, or otherwise adversely affect beneficial uses.

   g. The ambient pH to fall below 6.5, exceed 8.5, or change by more than 0.5 units. A one-month averaging period may be applied when calculating the pH change of 0.5 units.

   h. Radionuclides to be present in concentrations that harm human, plant, animal or aquatic life; or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

   i. Deposition of material that causes nuisance or adversely affects beneficial uses.

j. Taste- or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses.

k. The ambient temperature to increase more than 5°F.

l. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.

m. The turbidity to increase as follows:

i. More than 1 Nephelometric Turbidity Units (NTUs) where natural turbidity is between 0 and 5 NTUs.

ii. More than 20 percent where natural turbidity is between 5 and 50 NTUs.

iii. More than 10 NTUs where natural turbidity is between 50 and 100 NTUs.

iv. More than 10 percent where natural turbidity is greater than 100 NTUs.

When wastewater is treated to a tertiary level (including coagulation) or equivalent, a one-month averaging period may be used when determining compliance with Receiving Water Limitation E.1.m.

n. Aquatic communities and populations, including vertebrate, invertebrate, and plant species, to be degraded.

2. Upon adoption of any applicable water quality standard for receiving waters by the Regional Board or the State Water Resources Control Board pursuant to the CWA and regulations adopted thereunder, this permit may be reopened and receiving water limitations added.

F. Groundwater Limitations:

1. The discharge shall not cause the underlying groundwater to be degraded.

G. Provisions:

1. The treatment facilities shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

2. The Discharger shall not allow pollutant-free wastewater to be discharged into the collection, treatment, and disposal system in amounts that significantly diminish the system's capability

to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.

3. There are indications that the discharge may contain dioxins that have a reasonable potential to cause or contribute to an exceedance of water quality objectives. Dioxins are specifically listed in a technical report requirement issued by the Executive Officer on 10 September 2001. The Discharger shall comply with the following time schedule in conducting a study of the potential effect(s) of dioxins in surface waters:

Task	Compliance Date
Submit Study Report for Dioxins	**1 March 2004**

This Order is intended to be consistent with the requirements of the 10 September 2001 technical report. The technical report requirements shall take precedence in resolving any conflicts. The Discharger shall submit to the Regional Board on or before each compliance due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Board by letter when it returns to compliance with the time schedule.

If, after review of the study results, it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality objective, this Order may be reopened and effluent limitations added for the subject constituents.

4. The Discharger shall comply with the following time schedule to characterize the spring/groundwater/equalization basin seepage discharge, including any seasonal characteristics of the spring:

Task	Compliance Date
Submit Workplan	**1 December 2003**

The workplan shall The Discharger shall submit to the Regional Board on or before each compliance due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Board by letter when it returns to compliance with the time schedule.

If, after review of the study results, it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality objective for constituents other than those limited by this Order, this Order may be reopened and effluent limitations added for the subject constituents.

5. By **1 June 2004**, the Discharger shall submit a *Sanitary Sewer System Operation, Maintenance, Overflow Prevention, and Response Plan* (SSS Plan) that describes the actions designed to prevent, or minimize the potential for sanitary sewer overflows. The Discharger shall maintain the SSS Plan in an up-to-date condition and shall amend the SSS Plan whenever there is a change (*e.g*. in the design, construction, operation, or maintenance of the sanitary sewer system or sewer facilities) that materially affects the potential for sanitary sewer overflows, or whenever there is a sanitary sewer overflow. The Discharger shall ensure that the up-to-date SSS Plan is readily available to sewer system personnel at all times and that sewer system personnel are familiar with it. A general order to regulate collection systems may be developed by the Regional Board. If a general order for collection systems is adopted by the Regional Board, the Discharger will be required to seek coverage under the general order. Once the Discharger has obtained a general order for the collection system, this permit may be reopened and these requirements may be removed from this permit.

   a. At a minimum, the Operation and Maintenance portion of the plan shall contain or describe the following:

      i. Detailed maps of the sanitary sewer system, identifying sewer mains, manholes, and lift stations;

      ii. A detailed listing of elements to be inspected, a description of inspection procedures and inspection frequency, and sample inspection forms;

      iii. A schedule for routine inspection and testing of all pipelines, lift stations, valves, and other key system components. The inspection/testing program shall be designed to reveal problems that might lead to accidental spills and ensure that preventive maintenance is completed;

      iv. Provisions for repair or replacement of old, worn out, or defective equipment;

      v. Provisions to minimize the need for manual operation of critical systems and provide spill alarms or other “fail safe” mechanisms;

      vi. The ability to properly manage, operate and maintain, at all times, all parts of the collection system that the Discharger owns or over which the Discharger has operational control;

      vii. The ability to provide adequate capacity to convey base flows and peak flows for all parts of the collection system the Discharger owns or over which the Discharger has operational control; and

viii. How the Discharger will take all feasible steps to stop and mitigate the impact of sanitary sewer overflows in portions of the collection system the Discharger owns or over which the Discharger has operational control.

b. At a minimum, the Overflow Prevention and Response Plan shall contain or describe the following:

i. Identification of areas of the collection system that historically have overflowed and an evaluation of the cause of the overflow;

ii. Maintenance activities that can be implemented to address the cause of the overflow and means to prevent future overflows. Maintenance activities may include pretreatment of wastewater from industrial dischargers who discharge high concentrations of oil and grease in their wastewater;

iii. Procedures for responding to sanitary sewer overflows designed to minimize the volume of sewer overflow that enters surface waters, and minimize the adverse effects of sewer overflows on water quality and beneficial uses;

iv. Steps to be taken when an overflow or spill occurs, and procedures that will be implemented to ensure that all overflows and spills are properly identified, responded to and reported; and

v. A public notification plan, in which any posting of areas contaminated with sewage is performed at the direction of the Nevada County Environmental Health Department. All parties with a reasonable potential for exposure to an overflow event shall be notified.

6. The Discharger shall conduct the chronic toxicity testing specified in the Monitoring and Reporting Program. If the testing indicates that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the water quality objective for toxicity, the Discharger shall initiate a Toxicity Identification Evaluation (TIE) to identify the causes of toxicity. Upon completion of the TIE, the Discharger shall submit a workplan to conduct a Toxicity Reduction Evaluation (TRE) and, after Regional Board evaluation, conduct the TRE. This Order may be reopened and a chronic toxicity limitation included and/or a limitation for the specific toxicant identified in the TRE included. Additionally, if a chronic toxicity water quality objective is adopted by the State Water Resources Control Board, this Order may be reopened and a limitation based on that objective included.

7. The Discharger shall comply with the following time schedule to assure compliance with the tertiary treatment requirements and associated Effluent Limitations of this Order:

Task	Compliance Date	Report Due Date
Submit Annual Status Report		**1 June, annually***

Task	Compliance Date	Report Due Date
Complete Design, CEQA Process, and Fnancing	**30 June 2004**	
Full Compliance	**1 November 2005**	

*until full compliance is achieved

The Discharger shall submit to the Regional Board on or before each compliance and report due date, the specified document or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, the reasons for such noncompliance shall be stated; the report shall also include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Board by letter when it returns to compliance with the time schedule.

8. The Discharger shall comply with the following time schedule to assure compliance with the Effluent Limitations contained in B.4 of this Order:

Task	Compliance Date	Report Due Date
Submit Annual Status Report		**1 June, annually**
Submit Workplan/Time Schedule		**1 February 2004**
Full Compliance	**1 March 2008**	

The Discharger shall submit to the Regional Board on or before each compliance and report due date, the specified document or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, the reasons for such noncompliance shall be stated; the report shall also include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Board by letter when it returns to compliance with the time schedule.

9. The Discharger shall use the best practicable treatment or control technique currently available to limit mineralization to no more than a reasonable increment.

10. The Discharger shall report to the Regional Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986".

11. The Discharger shall comply with all the items of the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)", dated 1 March 1991, which are part of this Order. This attachment and its individual paragraphs are referred to as "Standard Provisions".

12. The Discharger shall comply with Monitoring and Reporting Program No.R5-2003-0089, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.

When requested by U.S. EPA, the Discharger shall complete and submit Discharge Monitoring Reports. The submittal date shall be no later than the submittal date specified in the Monitoring and Reporting Program for discharger self-monitoring reports.

13. Minimum levels (as defined in the SIP) for monitoring required by this Order shall, unless impracticable, be adequate to demonstrate compliance with permit limitations.

14. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect on **1 August 2003**, provided U.S. EPA has no objections.

15. This Order expires on **1 June 2008** and the Discharger must file a Report of Waste Discharge in accordance with California Code of Regulations, Title 23, not later than **180 days in advance** of such date in application for renewal of waste discharge requirements if it wishes to continue the discharge.

16. This Order contains Effluent Limitations based on water quality criteria contained in the CTR for dibromochloromethane, dichlorobromomethane, copper, cyanide, lead, and zinc. By **5 August 2003**, the Discharger shall complete and submit a compliance schedule justification for dibromochloromethane, dichlorobromomethane, copper, cyanide, lead, and zinc. The compliance schedule justification shall include all items specified in Paragraph 3, items (a) through (d), of Section 2.1 of the SIP. The new water quality based effluent limitations for dibromochloromethane, dichlorobromomethane, copper, cyanide, lead, and zinc become effective on **1 October 2003** if a compliance schedule justification meeting the requirements of Section 2.1 of the SIP is not completed and submitted by the Discharger. Otherwise, the new final water quality based effluent limitations for dibromochloromethane, dichlorobromomethane, copper, cyanide, lead, and zinc required by this Order shall become effective on **1 June 2008**. As this compliance schedule is greater than one year, the Discharger shall submit semi-annual progress reports on **1 June and 1 December** of each year until the Discharger achieves compliance with the final water quality based effluent limitations for dibromochloromethane, dichlorobromomethane, copper, cyanide, lead, and zinc.

17. The Discharger shall implement, as more completely set forth in 40 CFR 403.5, the necessary legal authorities, programs, and controls to ensure that the following incompatible wastes are not introduced to the treatment system, where incompatible wastes are:

    a. Wastes that create a fire or explosion hazard in the treatment works;

    b. Wastes which will cause corrosive structural damage to treatment works, but in no case wastes with a pH lower than 5.0, unless the works is specially designed to accommodate such wastes;

c. Solid or viscous wastes in amounts which cause obstruction to flow in sewers, or which cause other interference with proper operation or treatment works;

d. Any waste, including oxygen demanding pollutants (BOD, *etc.*), released in such volume or strength as to cause inhibition or disruption in the treatment works, and subsequent treatment process upset and loss of treatment efficiency;

e. Heat in amounts that inhibit or disrupt biological activity in the treatment works, or that raise influent temperatures above 40ºC (104ºF), unless the Regional Board approves alternate temperature limits;

f. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;

g. Pollutants which result in the presence of toxic gases, vapors, or fumes within the treatment works in a quantity that may cause acute worker health and safety problems; and

h. Any trucked or hauled pollutants, except at points predesignated by the Discharger.

18. The Discharger shall implement, as more completely set forth in 40 CFR 403.5, the legal authorities, programs, and controls necessary to ensure that indirect discharges do not introduce pollutants into the sewerage system that, either alone or in conjunction with a discharge or discharges from other sources:

    a. Flow through the system to the receiving water in quantities or concentrations that cause a violation of this Order, or

    b. Inhibit or disrupt treatment processes, treatment system operations, or sludge processes, use, or disposal and either cause a violation of this Order or prevent sludge use or disposal in accordance with this Order.

19. The Discharger shall enforce the Pretreatment Standards promulgated under Sections 307(b), 307(c), and 307(d) of the Clean Water Act. The Discharger shall perform the pretreatment functions required by 40 CFR 403 including, but not limited to:

    a. Adopting the legal authority required by 40 CFR 403.8(f)(1);

    b. Enforcing the Pretreatment Standards of 40 CFR 403.5 and 403.6;

    c. Implementing procedures to ensure compliance as required by 40 CFR 403.8(f)(2); and

d. Providing funding and personnel for implementation and enforcement of the pretreatment program as required by 40 CFR 403.8(f)(3).

20. **Within one year of adoption of this Order**, the Discharger shall submit for Regional Board approval an industrial pretreatment program as described in 40 CFR 403.5, including technically-based local limits.

21. The Discharger shall implement its approved pretreatment program and the program shall be an enforceable condition of this permit. If the Discharger fails to perform the pretreatment functions, the Regional Water Quality Control Board (RWQCB), the State Water Resources Control Board (SWRCB), or the U.S. Environmental Protection Agency (U.S. EPA) may take enforcement actions against the Discharger as authorized by the Clean Water Act.

22. Prior to making any change in the discharge point, place of use, or purpose of use of the wastewater, the Discharger shall obtain approval of, or clearance from, the State Water Resources Control Board (Division of Water Rights).

23. 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 this office.

    To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, address and telephone number of the persons responsible for contact with the Regional Board and a statement. The statement shall comply with the signatory paragraph of Standard Provision D.6 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

I, THOMAS R. PINKOS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 6 June 2003.

_____
THOMAS R. PINKOS, Executive Officer

MRH/mrh

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2003-0089

NPDES NO. CA0079898

FOR

CITY OF GRASS VALLEY
WASTEWATER TREATMENT PLANT
NEVADA COUNTY

This Monitoring and Reporting Program is issued pursuant to California Water Code Section 13267 and 13383. The Discharger shall not implement any changes to this Program unless and until the Regional Board or Executive Officer issues a revised Monitoring and Reporting Program. Specific sample station locations shall be established under direction of the Regional Board's staff, and a description of the stations shall be attached to this Order.

Within **60 days** of permit adoption, the Discharger shall submit a report outlining minimum levels, method detection limits, and analytical methods for approval, with a goal to achieve detection levels below applicable water quality criteria. At a minimum, the Discharger shall comply with the monitoring requirements for CTR constituents as outlined in Section 2.3 and 2.4 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*, adopted 2 March 2000 by the State Water Resources Control Board. All peaks identified by analytical methods shall be reported.

INFLUENT MONITORING

Samples shall be collected at approximately the same time as effluent samples and should be representative of the influent for the period sampled. Influent monitoring shall include at least the following:

Constituents	Units	Type of Sample	Sampling Frequency
20°C BOD_5	mg/*l*, lbs/day	24-hr. Composite[1]	3 Times Weekly
Total Suspended Solids	mg/*l*, lbs/day	24-hr. Composite[1]	3 Times Weekly
pH	Number	Meter	Continuous
Priority Pollutants	µg/*l*	As Appropriate[2]	Annually
Flow	mgd	Meter	Continuous

[1] The BOD and TSS samples shall be flow-proportional composite samples collected on the same day as the effluent samples.

[2] Volatile samples and samples with hold times of less than 24 hours shall be grab samples; the remainder shall be flow-proportional 24-hour composite samples.

EFFLUENT MONITORING OF DISCHARGE TO WOLF CREEK

Effluent samples shall be collected downstream from the last connection through which wastes can be admitted into the outfall, following the last unit process. Effluent samples should be representative of the volume and quality of the discharge. Time of collection of samples shall be recorded.

Effluent monitoring shall include at least the following:

Constituents	Units	Type of Sample	Sampling Frequency
Flow	mgd	Meter	Continuous
Total Residual Chlorine	mg/*l*, lbs/day	Meter	Continuous
pH	Number	Meter	Continuous
Temperature	°F	Grab	Daily
Settleable Solids	m*l*/*l*	24-hr Composite[1]	5 Times Weekly
Total Coliform Organisms[2]	MPN/l00 m*l*	Grab	3 Times Weekly
20°C BOD_5	mg/*l*, lbs/day	24-hr Composite[1]	3 Times Weekly
Total Suspended Solids	mg/*l*, lbs/day	24-hr Composite[1]	3 Times Weekly
Ammonia (as N)[3, 4, 5,6]	mg/*l*, lbs/day	Grab	Twice Weekly
Electrical Conductivity @ 25°C	µmhos/cm	Grab	Weekly
Nitrite[7]	mg/*l*, lbs/day	Grab	Twice Monthly
Nitrate[7]	mg/*l*, lbs/day	Grab	Twice Monthly
Hardness (as $CaCO_3$)	mg/*l*	24-hr Composite[1]	Monthly
Total Dissolved Solids	mg/*l*, lbs/day	Grab	Monthly
Chloroform	µg/l, lbs/day	Grab	Monthly
Dibromochloromethane	µg/l, lbs/day	Grab	Monthly

1 These samples shall be flow-proportional composite samples.

2 Total coliform organisms samples may be collected at any point following disinfection, provided that samples are dechlorinated at the time of collection. The Discharger shall report the sampling location(s) in the monthly self-monitoring reports.

3 Report as total ammonia.

4 Concurrent with biotoxicity monitoring.

5 In reporting lbs/day, the Discharger shall report both the lbs/day discharged and the calculated lbs/day limitation.

6 Temperature and pH shall be recorded at the time of ammonia sample collection.

7 Monitoring for nitrite and nitrate shall be conducted concurrently.

Constituents	Units	Type of Sample	Sampling Frequency
Dichlorobromomethane	µg/l, lbs/day	Grab	Monthly
MTBE	µg/l, lbs/day	Grab	Monthly
MBAS	µg/l, lbs/day	Grab	Monthly
Aluminum [5,8]	µg/l, lbs/day	Grab	Monthly
Copper (total recoverable)[5]	µg/l, lbs/day	24-hr Composite[1]	Monthly
Cyanide (total recoverable)	µg/l, lbs/day	24-hr Composite[1]	Monthly
Iron (total recoverable)	µg/l, lbs/day	24-hr Composite[1]	Monthly
Lead (total recoverable)[5]	µg/l, lbs/day	24-hr Composite[1]	Monthly
Manganese (total recoverable)	µg/l, lbs/day	24-hr Composite[1]	Monthly
Mercury (total recoverable)	µg/l, lbs/day	24-hr Composite[1]	Monthly
Zinc (total recoverable)[5]	µg/l, lbs/day	24-hr Composite[1]	Monthly
Acute Toxicity[9,10]	% Survival	Grab	Quarterly
Priority Pollutants[11,12]	mg/*l*	As Appropriate[13]	Annually[14]

[8] Acid-soluble or total. Aluminum samples may be analyzed using the acid-soluble method described in U.S. EPA's *Ambient Water Quality Criteria for Aluminum – 1988* [EPA 440/5-86-008], with the modification that an inductively coupled plasma (ICP)/mass spectrometry analysis be substituted for the ICP/atomic emission spectrometric analysis.

[9] The acute bioassay samples shall be analyzed using EPA/821-R-02-012, Fifth Edition, or later amendment with Regional Board staff approval. Temperature and pH shall be recorded at the time of bioassay sample collection. Test species shall be fathead minnows (*Pimephales promelas*), with no pH adjustment unless approved by the Executive Officer following adoption of this Order.

[10] Concurrent with ammonia monitoring.

[11] All peaks are to be reported, along with any explanation provided by the laboratory.

[12] Priority Pollutants is defined as U.S. EPA priority toxic pollutants and consists of the constituents listed in the most recent National Toxics Rule and California Toxics Rule.

[13] Volatile samples and samples with hold times of less than 24 hours shall be grab samples; the remainder shall be 24-hour composite samples.

[14] Hardness, pH, and temperature data shall be collected at the same time and on the same date as the Priority Pollutant samples.

If the discharge is intermittent rather than continuous, then on the first day of each such intermittent discharge, the Discharger shall monitor and record data for all of the constituents listed above, except for priority pollutants, after which the frequencies of analysis given in the schedule shall apply for the duration of each such intermittent discharge. In no event shall the Discharger be required to monitor and record data more often than twice the frequencies listed in the schedule.

RECEIVING WATER MONITORING

All receiving water samples shall be grab samples. Receiving water monitoring shall be conducted when discharging to Wolf Creek and shall include at least the following:

Station	Description
R-1	Approximately 500 feet upstream of the outfall, on the eastern bank of the Wolf Creek
R-2	Approximately 1,000 feet downstream of the outfall, on the western bank of the Wolf Creek

Constituents	Units	Station	Sampling Frequency
Dissolved Oxygen[1]	mg/*l*[2]	R-l, R-2	Weekly
	% saturation[3]		
pH[1]	Number	R-l, R-2	Weekly
Turbidity	NTU	R-l, R-2	Weekly
Temperature[1]	°F (°C)	R-l, R-2	Weekly
Electrical Conductivity @25°C[1]	µmhos/cm	R-l, R-2	Weekly
Fecal Coliform Organisms	MPN/100 m*l*	R-l, R-2	Quarterly
Radionuclides	pCi/*l*[4]	R-l, R-2	Annually
Hardness (as $CaCO_3$)	mg/*l*	R-2	Monthly[5]
Flow	cfs or mgd	R-1	Continuous[6]

1 A hand-held field meter may be used, provided the meter utilizes a U.S. EPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the WWTP.

2 Temperature shall be determined at the time of sample collection for use in determining saturation concentration. Any additional factors or parameters used in determining saturation concentration shall also be reported.

3 Report both percent saturation and saturation concentration.

4 pCi/*l* = picocuries per liter

5 Samples shall be collected on the same date as the effluent metals and priority pollutant samples.

6 Continuous monitoring of receiving water flow shall begin no later than 1 September 2004.

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by Stations R-l and R-2. Attention shall be given to the presence or absence of:

a. Floating or suspended matter
b. Discoloration
c. Bottom deposits
d. Aquatic life
e. Visible films, sheens, or coatings
f. Fungi, slimes, or objectionable growths
g. Potential nuisance conditions

Notes on receiving water conditions shall be summarized in the monitoring report.

EMERGENCY STORAGE/FLOW EQUALIZATION BASIN MONITORING

Pond monitoring shall be conducted when water is present in the basin(s). All basin samples shall be grab samples. Basin monitoring shall, at a minimum, consist of the following:

Constituents	Units	Sampling Frequency
Freeboard	Feet[1,2]	Weekly
Dissolved Oxygen[3]	mg/*l*	Weekly
Odors	--	Weekly
pH	pH units	Weekly

1 To be measured vertically to the lowest point of overflow

2 Include estimation of volume of wastewater in each pond.

3 A hand-held field meter may be used, provided the meter utilizes a U.S. EPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the WWTP.

THREE SPECIES CHRONIC TOXICITY MONITORING

Chronic toxicity monitoring shall be conducted to determine whether the effluent is contributing toxicity to the receiving water. The testing shall be conducted as specified in EPA/821-R-02-013. Chronic toxicity samples shall be collected from the effluent of the wastewater treatment facility when discharging to the Wolf Creek, after the last unit process, prior to its entering the receiving stream. Twenty-four hour composite samples shall be representative of the volume and quality of the discharge. Time of collection of samples shall be recorded. Control waters shall be obtained immediately upstream of the discharge from an area unaffected by the discharge in the receiving waters. The sensitivity of the test organisms to a reference toxicant shall be determined concurrently with each bioassay and reported with the test results. Monthly laboratory reference toxicant tests may be substituted. Both the reference toxicant and effluent test must meet all test acceptability criteria as specified in the chronic manual. If the test acceptability criteria are not achieved, then the Discharger must re-sample and re-test within 14 days. Chronic toxicity monitoring shall include the following:

Species: *Pimephales promelas* (larval stage), *Ceriodaphnia dubia*, and *Selenastrum capricornutum*

Frequency: Monitoring shall be conducted once per quarter, four quarters per year.

Dilution: 100% effluent and one or more additional dilutions to bracket actual conditions.

SLUDGE MONITORING

A composite sample of sludge shall be collected annually in accordance with U.S. EPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989, and tested for the metals listed in Title 22.

Sampling records shall be retained for a minimum of **five years**. A log shall be kept of sludge quantities generated and of handling and disposal activities. The frequency of entries is discretionary; however, the log should be complete enough to serve as a basis for part of the annual report.

Upon removal of sludge, the Discharger shall submit characterization of sludge quality, including sludge percent solids and quantitative results of chemical analysis for the priority pollutants listed in 40 CFR 122 Appendix D, Tables II and III (excluding total phenols). Suggested methods for analysis of sludge are provided in U.S. EPA publications titled "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods" and "Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater". Recommended analytical holding times for sludge samples should reflect those specified in 40 CFR 136.6.3(e). Other guidance is available in U.S. EPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989.

WATER SUPPLY MONITORING

A sampling station shall be established where a representative sample of the municipal water supply can be obtained. Water supply monitoring shall include at least the following:

Constituents	Units	Sampling Frequency
Electrical Conductivity @ 25°C	µmhos/cm	Annually
Total Dissolved Solids	mg/*l*	Annually

If the water supply is from more than one source, the monitoring report shall report the electrical conductivity and total dissolved solids results as a weighted average and include copies of supporting calculations.

REPORTING

Discharger self-monitoring results shall be submitted to the Regional Board monthly. Monitoring results shall be submitted by the **first day of the second month** following sample collection. Quarterly, semi-annual, and annual monitoring results shall be submitted by the **first day of the second month following each calendar quarter**.

In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the reported analytical result are readily discernible. The data shall be summarized in such a manner to clearly illustrate whether the discharge complies with waste discharge requirements. Monthly maximums, minimums, and averages shall be reported for each monitored constituent and parameter. Removal efficiencies (%) for biochemical oxygen demand and total suspended solids and all periodic averages and medians for which there are limitations shall also be calculated and reported.

The Discharger shall report minimum levels and method detection limits as defined in and required by the SIP.

With the exception of flow, all constituents monitored on a continuous basis (metered), shall be reported as daily maximums, daily minimums, and daily averages; flow shall be reported as the total volume discharged per day for each day of discharge.

If the Discharger monitors any pollutant at the locations designated herein more frequently than is required by this Order, the results of such monitoring shall be included in the calculation and reporting of the values required in the discharge monitoring report form. Such increased frequency shall be indicated on the discharge monitoring report form.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions.

By **1 February** of each year, the Discharger shall submit a written report to the Executive Officer containing the following:

a. The names, certificate grades, and general responsibilities of all persons employed at the WWTP (Standard Provision A.5).

b. The names and telephone numbers of persons to contact regarding the plant for emergency and routine situations.

c. A statement certifying when the flow meter and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration (Standard Provision C.6).

d. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the wastewater treatment plant as currently constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.

The Discharger may also be requested to submit an annual report to the Regional Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

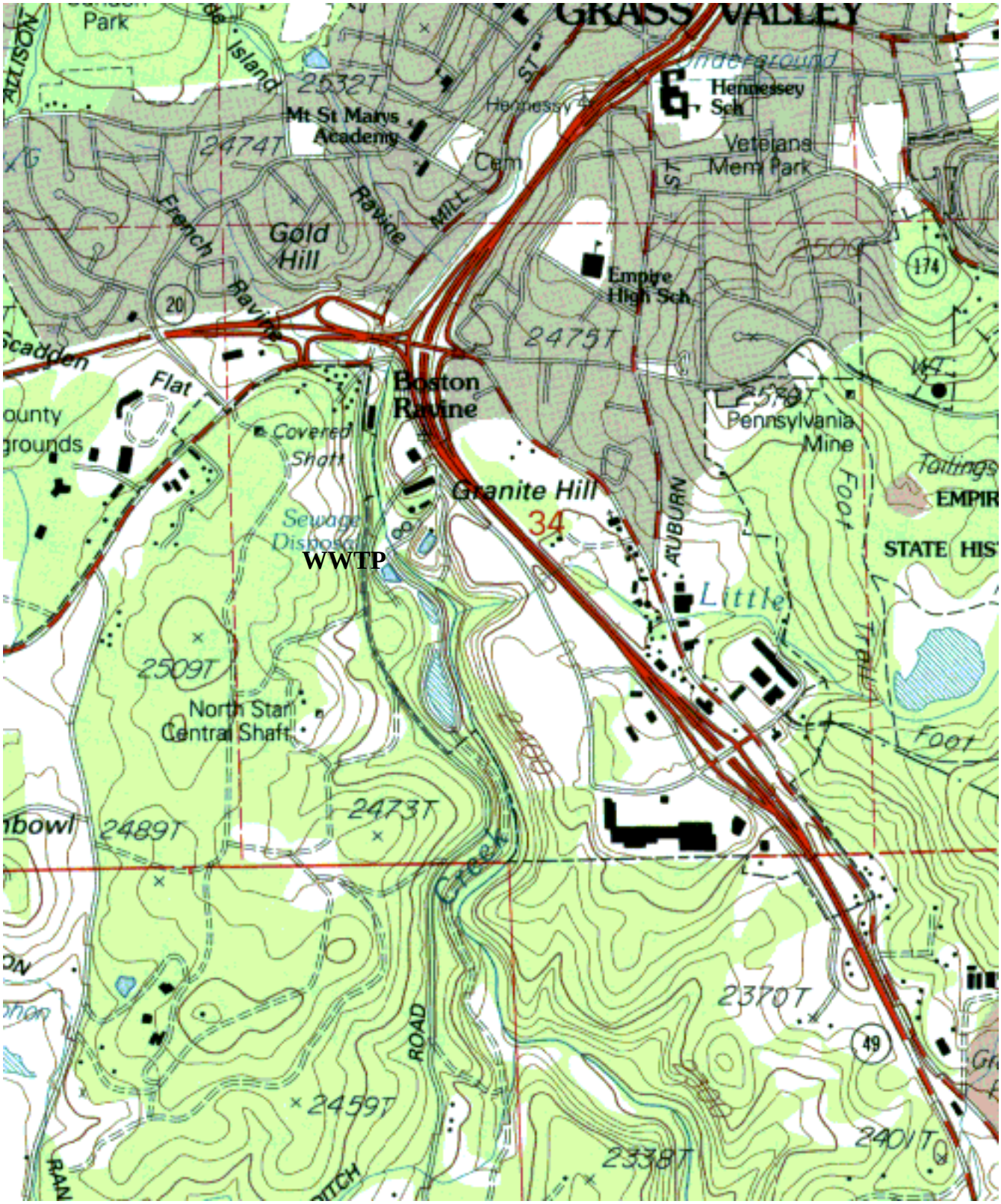
All reports submitted in response to this Order shall comply with the signatory requirements of Standard Provision D.6.

The Discharger shall implement the above monitoring program on the first day of the month following effective date of this Order.

Ordered by: _____
THOMAS R. PINKOS, Executive Officer

6 June 2003
(Date)

ATTACHMENT A



Drawing Reference: GRASS VALLEY U.S.G.S TOPOGRAPHIC MAP 7.5 MINUTE QUADRANGLE Photorevised 1973 Not to scale	SITE LOCATION MAP CITY OF GRASS VALLEY WASTEWATER TREATMENT PLANT NEVADA COUNTY	N W E S

Temperature- and pH-Dependent Effluent Limits for Ammonia
Criterion Continuous Concentration, Maximum Average Monthly Concentration

Ammonia Concentration Limitation (mg N/*l*)										
	Temperature, ºC (ºF)									
pH	**0** (32)	**14** (57)	**16** (61)	**18** (64)	**20** (68)	**22** (72)	**24** (75)	**26** (79)	**28** (82)	**30** (86)
6.5	6.67	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46
6.6	6.57	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.7	6.44	6.44	5.86	5.15	4.52	3.98	3.50	3.07	2.70	2.37
6.8	6.29	6.29	5.72	5.03	4.42	3.89	3.42	3.00	2.64	2.32
6.9	6.12	6.12	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25
7.0	5.91	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18
7.1	5.67	5.67	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09
7.2	5.39	5.39	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.3	5.08	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.4	4.73	4.73	4.30	3.78	3.32	2.92	2.57	2.26	1.98	1.74
7.5	4.36	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.6	3.98	3.98	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47
7.7	3.58	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32
7.8	3.18	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17
7.9	2.80	2.80	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8.0	2.43	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897
8.1	2.10	2.10	1.91	1.68	1.47	1.29	1.14	1.00	0.879	0.773
8.2	1.79	1.79	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661
8.3	1.52	1.52	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562
8.4	1.29	1.29	1.17	1.03	0.906	0.796	0.700	0.615	0.541	0.475
8.5	1.09	1.09	0.990	0.870	0.765	0.672	0.591	0.520	0.457	0.401
8.6	0.920	0.920	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339
8.7	0.778	0.778	0.707	0.622	0.547	0.480	0.422	0.371	0.326	0.287
8.8	0.661	0.661	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.244
8.9	0.565	0.565	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208
9.0	0.486	0.486	0.442	0.389	0.342	0.300	0.264	0.232	0.204	0.179

$$CCC = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) x\ MIN\left(2.85, 1.45 \cdot 10^{0.028(25-T)}\right)$$

Where: CCC = criteria continuous concentration
T = temperature in degrees Celsius (ºC)

Temperature- and pH-Dependent Effluent Limits for Ammonia
Maximum 4-day Average

Ammonia Concentration Limitation (mg N/*l*)										
Temperature, ºC (ºF)										
pH	**0** (32)	**14** (57)	**16** (61)	**18** (64)	**20** (68)	**22** (72)	**24** (75)	**26** (79)	**28** (82)	**30** (86)
6.5	16.7	16.7	15.1	13.3	11.8	10.3	9.04	7.95	6.99	6.14
6.6	16.4	16.4	14.9	13.1	11.5	10.1	8.91	7.83	6.88	6.05
6.7	16.1	16.1	14.6	12.9	11.3	9.94	8.74	7.68	6.75	5.94
6.8	15.7	15.7	14.3	12.8	11.1	9.71	8.54	7.51	6.60	5.80
6.9	15.3	15.3	13.9	12.2	10.7	9.44	8.30	7.30	6.41	5.64
7.0	14.8	14.8	13.4	11.8	10.4	9.12	8.02	7.05	6.19	5.45
7.1	14.2	14.2	12.9	11.3	9.95	8.75	7.69	6.76	5.94	5.22
7.2	13.5	13.5	12.3	10.8	9.46	8.32	7.31	6.43	5.65	4.97
7.3	12.7	12.7	11.5	10.1	8.91	7.84	6.89	6.05	5.32	4.68
7.4	11.8	11.8	10.8	9.46	8.31	7.31	6.42	5.65	4.96	4.36
7.5	10.9	10.9	9.92	8.72	7.66	6.74	5.92	5.20	4.57	4.02
7.6	9.94	9.94	9.03	7.94	6.98	6.14	5.39	4.74	4.17	3.66
7.7	8.95	8.95	8.13	7.15	6.28	5.52	4.85	4.27	3.75	3.30
7.8	7.96	7.96	7.23	6.36	5.59	4.91	4.32	3.79	3.34	2.93
7.9	6.99	6.99	6.36	5.59	4.91	4.32	3.80	3.34	2.93	2.58
8.0	6.08	6.08	5.53	4.86	4.27	3.76	3.30	2.90	2.55	2.24
8.1	5.24	5.24	4.77	4.19	3.68	3.24	2.85	2.50	2.20	1.93
8.2	4.48	4.48	4.07	3.58	3.15	2.77	2.43	2.14	1.88	1.65
8.3	3.81	3.81	3.46	3.04	2.68	2.35	2.07	1.82	1.60	1.40
8.4	3.22	3.22	2.93	2.58	2.26	1.99	1.75	1.54	1.35	1.19
8.5	2.72	2.72	2.48	2.18	1.91	1.68	1.48	1.30	1.14	1.00
8.6	2.30	2.30	2.09	1.84	1.61	1.42	1.25	1.10	0.964	0.848
8.7	1.95	1.95	1.77	1.55	1.37	1.20	1.06	0.928	0.816	0.717
8.8	1.65	1.65	1.50	1.32	1.16	1.02	0.897	0.788	0.693	0.609
8.9	1.41	1.41	1.28	1.13	0.992	0.872	0.766	0.674	0.592	0.520
9.0	1.22	1.22	1.11	0.971	0.854	0.751	0.660	0.580	0.510	0.448

$$2.5CCC = 2.5 \times \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) \times MIN\left(2.85, 1.45 \cdot 10^{0.028(25-T)}\right)$$

Where: CCC = criteria continuous concentration
T = temperature in degrees Celsius (ºC)

pH-Dependent Effluent Limits for Ammonia
Criterion Maximum Concentration, Maximum 1-hour Average

pH	Ammonia Concentration Limit (mg N/*l*)
6.5	**32.6**
6.6	**31.3**
6.7	**29.8**
6.8	**28.0**
6.9	**26.2**
7.0	**24.1**
7.1	**21.9**
7.2	**19.7**
7.3	**17.5**
7.4	**15.3**
7.5	**13.3**
7.6	**11.4**
7.7	**9.64**
7.8	**8.11**
7.9	**6.77**
8.0	**5.62**
8.1	**4.64**
8.2	**3.83**
8.3	**3.15**
8.4	**2.59**
8.5	**2.14**
8.6	**1.77**
8.7	**1.47**
8.8	**1.23**
8.9	**1.04**
9.0	**0.885**

$$CMC_{salmonids\ present} = \left(\frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}} \right)$$

Where: CMC = criteria maximum concentration

Hardness-Dependent Effluent Limitations for Copper (expressed as total recoverable metal)

Hardness[1] (mg/*l* as $CaCO_3$)	AMEL Average Monthly (µg/*l*)	MDEL Average Daily (µg/*l*)	Hardness1 (mg/*l* as $CaCO_3$)	AMEL Average Monthly (µg/*l*)	MDEL Average Daily (µg/*l*)
<25	*Calc.*	*Calc.*	180	14	22
25	2.3	3.8	190	14	23
30	2.8	4.5	200	15	24
35	3.2	5.2	210	16	25
40	3.7	5.9	220	16	26
45	4.1	6.6	230	17	27
50	4.5	7.3	240	17	28
55	4.9	8.0	250	18	29
60	5.3	8.6	260	19	30
65	5.7	9.2	270	19	31
70	6.1	9.8	280	20	32
75	6.4	10	290	20	33
80	6.8	11	300	21	34
85	7.2	12	310	22	35
90	7.5	12	320	22	36
95	7.9	13	330	23	37
100	8.2	13	340	23	38
110	8.9	14	350	24	39
120	9.6	16	360	25	40
130	10	17	370	25	41
140	11	18	380	26	42
150	12	19	390	26	43
160	12	20	400	27	44
170	13	21	>400	27	44

$$CCC = e^{[0.8545\ln(hardness)-1.702]} \qquad AMEL = 1.33[\min(0.466CMC, 0.666CCC)]$$

$$CMC = e^{[0.9422\ln(hardness)-1.700]} \qquad MDEL = 2.15[\min(0.466CMC, 0.666CCC)]$$

Where: CCC = criteria continuous concentration
CMC = criteria maximum concentration
AMEL = average monthly effluent limitation
MDEL = maximum daily effluent limitation

[1] The Discharger shall sample for hardness at the same time as the metal listed in the above table and, in calculating the applicable limitation, the Discharger shall use the R-2 hardness result for a sample collected on the same date.

Hardness-Dependent Effluent Limitations for Lead (expressed as total recoverable metal)

Hardness[1] (mg/*l* as $CaCO_3$)	AMEL Average Monthly (µg/*l*)	MDEL Average Daily (µg/*l*)	Hardness[1] (mg/*l* as $CaCO_3$)	AMEL Average Monthly (µg/*l*)	MDEL Average Daily (µg/*l*)
<25	*Calc.*	*Calc.*	180	5.9	9.6
25	0.48	0.78	190	6.4	10
30	0.61	1.0	200	6.8	11
35	0.74	1.2	210	7.2	12
40	0.87	1.4	220	7.7	12
45	1.0	1.7	230	8.1	13
50	1.2	1.9	240	8.6	14
55	1.3	2.1	250	9.0	15
60	1.5	2.4	260	9.5	15
65	1.6	2.6	270	9.9	16
70	1.8	2.9	280	10	17
75	1.9	3.2	290	11	18
80	2.1	3.4	300	11	18
85	2.3	3.7	310	12	19
90	2.5	4.0	320	12	20
95	2.6	4.3	330	13	21
100	2.8	4.6	340	13	22
110	3.2	5.1	350	14	22
120	3.5	5.8	360	14	23
130	3.9	6.4	370	15	24
140	4.3	7.0	380	15	25
150	4.7	7.6	390	16	26
160	5.1	8.3	400	16	27
170	5.5	9.0	>400	16	27

$$CCC = e^{[1.273\ln(hardness)-4.705]} \qquad AMEL = 1.33[\min(0.463CMC, 0.663CCC)]$$

$$CMC = e^{[1.273\ln(hardness)-1.460]} \qquad MDEL = 2.16[\min(0.463CMC, 0.663CCC)]$$

Where: CCC = criteria continuous concentration
CMC = criteria maximum concentration
AMEL = average monthly effluent limitation
MDEL = maximum daily effluent limitation

[1] The Discharger shall sample for hardness at the same time as the metal listed in the above table and, in calculating the applicable limitation, the Discharger shall use the R-2 hardness result for a sample collected on the same date.

Hardness-Dependent Effluent Limitations for Zinc (expressed as total recoverable metal)

Hardness[1] (mg/*l* as $CaCO_3$)	AMEL Average Monthly (µg/*l*)	MDEL Average Daily (µg/*l*)	Hardness[1] (mg/*l* as $CaCO_3$)	AMEL Average Monthly (µg/*l*)	MDEL Average Daily (µg/*l*)
<25	*Calc.*	*Calc.*	180	140	200
25	25	37	190	140	210
30	30	43	200	150	220
35	34	49	210	150	220
40	38	55	220	160	230
45	42	61	230	170	240
50	46	67	240	170	250
55	49	72	250	180	260
60	53	78	260	180	270
65	57	83	270	190	280
70	61	89	280	200	290
75	64	94	290	200	300
80	68	99	300	210	300
85	72	100	310	210	310
90	75	110	320	220	320
95	79	110	330	230	330
100	82	120	340	230	340
110	89	130	350	240	350
120	96	140	360	240	350
130	100	150	370	250	360
140	110	160	380	250	370
150	120	170	390	260	380
160	120	180	400	270	390
170	130	190	>400	270	390

$$CCC = e^{[0.8473\ln(hardness)+0.884]} \qquad AMEL = 1.24[\min(0.552CMC, 0.733CCC)]$$

$$CMC = e^{[0.8473\ln(hardness)+0.884]} \qquad MDEL = 1.81[\min(0.552CMC, 0.733CCC)]$$

Where: CCC = criteria continuous concentration
CMC = criteria maximum concentration
AMEL = average monthly effluent limitation
MDEL = maximum daily effluent limitation

[1] The Discharger shall sample for hardness at the same time as the metal listed in the above table and, in calculating the applicable limitation, the Discharger shall use the R-2 hardness result for a sample collected on the same date.

FACT SHEET

ORDER NO. R5-2003-0089
CITY OF GRASS VALLEY
WASTEWATER TREATMENT PLANT
NEVADA COUNTY
NPDES NO. CA0079898

SCOPE OF PERMIT

This renewed Order regulates the discharge of up to 2.78 million gallons per day (mgd), design average dry weather flow (ADWF), of effluent from the Grass Valley Wastewater Treatment Plant (WWTP). This Order includes effluent, groundwater, water supply, sludge, and surface water limitations, monitoring and reporting requirements, additional study requirements, and reopener provisions for effluent and groundwater constituents.

BACKGROUND INFORMATION

The City of Grass Valley (Discharger) provides sewerage service for the City of Grass Valley and serves a population of approximately 12,100. In addition, the Grass Valley WWTP has been treating water that has been surfacing from an abandoned mine portal located on City property. The WWTP design average dry weather flow capacity is 2.78 mgd. The treatment system at this facility consists of bar screening; primary sedimentation; alkalinity adjustment; biological treatment by activated sludge, including nitrification and denitrification; secondary sedimentation; filtration; disinfection; and dechlorination. The outfall is equipped with a stream-side rock pile diffuser. Sludge is treated by an anaerobic digester and dewatered using a belt filter press. Treated municipal and industrial wastewater is discharged to Wolf Creek.

As stated by the Discharger in the Report of Waste Discharge (EPA Form 1), "…*water that has been determined to be surfacing on City property from an abandoned mine shaft is also being routed through this facility.*" The discharge from the WWTP includes approximately 0.35 mgd of treated mine drainage. The Discharger, Regional Board staff, and U.S. EPA Region IX staff have collected samples of the mine drainage. The analytical laboratory results have indicated that the drainage contains concentrations of iron, manganese, and sulfate as high as 9,850 µg/*l* (disturbed condition), 1,400 µg/*l* (undisturbed), and 73 mg/*l* (undisturbed), respectively. The sulfate concentration and the pH (less than 6.0 standard units) indicate acid mine drainage. In addition, during the occasions when the drainage is disturbed following high stormwater flow events, the iron concentrations increase in the drainage and result in discoloration (brownish orange) of the drainage and contribute to discoloration of Wolf Creek. It is being considered whether to discontinue the diversion of the drainage to the WWTP and treat it separately. Elimination of the mine drainage from the WWTP influent would significantly reduce the concentrations of iron, manganese, and sulfate and aid in meeting Effluent Limitations for these constituents.

RECEIVING WATER BENEFICIAL USES AND ASSIMILATIVE CAPACITY

The receiving stream is Wolf Creek, which is tributary to the Bear River. Based on the available information, the worst-case dilution is assumed to be zero to provide protection for the receiving water

beneficial uses. The impact of assuming zero assimilative capacity within the receiving water is that discharge limitations are end-of-pipe limits with no allowance for dilution within the receiving water.

The Basin Plan states, on page II-1.00, "*Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning…*" and "*disposal of wastewaters is* [not] *a prohibited use of waters of the state; it is merely a use which cannot be satisfied to the detriment of beneficial uses*." The existing and beneficial uses that currently apply to surface waters of the basins are presented in Figure II-1 and Table II-1 of the Basin Plan. The beneficial uses of the Bear River, as identified in Table II-1 of the Basin Plan, are municipal and domestic supply, agricultural irrigation, water contact recreation, non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, cold spawning habitat, and wildlife habitat. Other beneficial uses identified in the Basin Plan apply to the Bear River, including groundwater recharge and freshwater replenishment.

EFFLUENT LIMITATIONS AND REASONABLE POTENTIAL

The City of Grass Valley conducted monitoring for priority and non-priority pollutants. The analytical results of nine comprehensive sampling events were submitted to the Regional Board. The results of these sampling events were used in developing Order No.R5-2003-0089. All detectable results from these analyses are summarized in Table 1 (below). Effluent limitations are included in the Order to protect the beneficial uses of the receiving stream and to ensure that the discharge complies with the Basin Plan objective that toxic substances not be discharged in toxic amounts. Unless otherwise noted, all mass limitations in Order No. R5-2003-0089 were calculated by multiplying the concentration limitation by the design flow and the appropriate unit conversion factors.

Reasonable potential (RP) was determined by calculating the projected MEC (maximum effluent concentration) for each constituent and comparing it to applicable water quality criteria; if a criterion was exceeded, the discharge was determined to have reasonable potential to exceed a water quality objective for that constituent. The projected MEC (maximum effluent concentration) is determined by multiplying the observed MEC (the maximum detected concentration) by a factor that accounts for statistical variation. The multiplying factor is determined (for 99% confidence level and 99% probability basis) using the number of results available and the coefficient of variation (standard deviation divided by the mean) of the sample results. In accordance with the SIP, non-detect results were counted as one-half the detection level when calculating the mean. For all constituents for which the source of the applicable water quality standard is the CTR or NTR, the multiplying factor is 1. Reasonable potential evaluation was based on the methods used in the SIP and the U.S. EPA Technical Support Document for Water Quality-Based Toxics Control [EPA/505/2-90-001].

Effluent Limitations for water quality-based limitations were calculated in accordance with Section 1.4 of the SIP and the TSD. The following paragraphs describe the general methodology used for calculating Effluent Limitations.

Calculations for Effluent Limitations

In calculating maximum effluent limitations, the effluent concentration allowances were set equal to the criteria/standards/objectives.

$$ECA_{acute} = CMC \qquad ECA_{chronic} = CCC$$

$$ECA_{HH} = HH$$

where: ECA_{acute} = effluent concentration allowance for acute (one-hour average) toxicity criterion
$ECA_{chronic}$ = effluent concentration allowance for chronic (four-day average) toxicity criterion
ECA_{HH} = effluent concentration allowance for human health, agriculture, or other long-term criterion/objective
CMC = criteria maximum concentration (one-hour average)
CCC = criteria continuous concentration (four-day average, unless otherwise noted)
HH = human health, agriculture, or other long-term criterion/objective

Acute and chronic toxicity ECAs were then converted to equivalent long-term averages (LTA) using statistical multipliers and the lowest is used. Additional statistical multipliers were then used to calculate the maximum daily effluent limitation (MDEL) and the average monthly effluent limitation (AMEL). The statistical multipliers were calculated using data shown in Table 1.

Human health ECAs are set equal to the AMEL and a statistical multiplier is used to calculate the MDEL.

$$AMEL = mult_{AMEL}\left[\min\left(\overbrace{M_A ECA_{acute}}^{LTA_{acute}}, \underbrace{M_C ECA_{chronic}}_{LTA_{chronic}}\right)\right]$$

$$MDEL = mult_{MDEL}\left[\min\left(M_A ECA_{acute}, M_C ECA_{chronic}\right)\right]$$

$$MDEL_{HH} = \left(\frac{mult_{MDEL}}{mult_{AMEL}}\right) AMEL_{HH}$$

where: $mult_{AMEL}$ = statistical multiplier converting minimum LTA to AMEL
$mult_{MDEL}$ = statistical multiplier converting minimum LTA to MDEL
M_A = statistical multiplier converting CMC to LTA
M_C = statistical multiplier converting CCC to LTA

Table 2—Grass Valley Wastewater Treatment Facility Order No. R5-2003-____: Statistics for Effluent Constituents with Detectable Results (µg/l)

Constituent	Max.	Mean	σ	CV[1]	# Results
1,4-Dichlorobenzene	0.3[2]	0.09	0.07	0.600	12
Chloroform	24	15	7.1	0.461	12
Dibromochloromethane	1.4	0.56	0.58	1.04	12
Dichlorobromomethane	9.2	5.1	2.7	0.539	12
Toluene	2.7	0.73	0.96	1.33	12
Methyl-tert-butyl ether	4.8	0.89	1.5	1.65	12
Diethyl phthalate	1.0[2]	0.67	0.29	0.600	3
Aluminum	112	23	29	1.23	12
Antimony	0.40[2]	0.16	0.13	0.825	12
Arsenic	1.6	1.2	0.18	0.151	13
Barium	9.0	4.8	2.2	0.462	12
Cadmium	0.11[2]	0.078	0.048	0.616	13
Chromium (total)	0.9	0.4	0.3	0.684	13
Copper	6.9	4.1	1.5	0.367	13
Cyanide	11	3.3	3.6	1.11	12
Fluoride	150	100	49	0.471	12
Iron	264	75.2	78.0	1.04	13
Lead	0.6	0.5	0.2	0.371	13
Mercury	0.01010	0.00468	0.00212	0.454	13
Mercury (duplicate)	0.01070	0.00575	0.00286	0.600	6
Mercury (field blank)	0.00050[2]	0.00030	0.00014	0.475	12
Manganese	137	29.1	36.0	1.24	13
Nickel	6	4	0.7	0.175	13
Selenium	0.7[2]	0.4	0.1	0.340	13
Silver	0.08[2]	0.08	0.04	0.600	13
Thallium	0.02[2]	0.009	0.01	0.729	12
Zinc	85	56	15	0.276	13
Dalapon	3.25	1.51	1.38	0.600	4
Chloride (mg/*l*)	40.3	32.5	10.1	0.310	13
Foaming Agents (MBAS, mg/*l*)	0.28	0.11	0.072	0.643	12
Phosphorous, Total (as P, mg/*l*)	7.3	2.6	0.97	0.380	13
Specific Conductance (µmhos/cm)	612	442	70.6	0.160	81
Sulfate (mg/*l*)	46.1	36.3	11.0	0.303	13
Sulfide (as S, µg/*l*)	100	28	31	1.12	13
Sulfite (as S, mg/*l*)	2	1	0.4	0.600	12
Total Dissolved Solids (mg/*l*)	329	268	44.2	0.165	17

[1] Coefficient of variation

[2] J flag (estimated value)

The Basin Plan includes a list of Water Quality Limited Segments (WQLSs), which are defined as "*…those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR 130, et seq.).*" The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to WQLSs. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment*." The upper Bear River is listed in the 303(d) list as a WQLS for mercury. Wolf Creek is listed in the 303(d) list as a WQLS for fecal coliform organisms. Therefore, the receiving water for the discharge has no assimilative capacity for these constituents and applicable water quality standards must be applied as end-of-pipe effluent limitations. Effluent Limitations for these constituents are included in this Order.

Aluminum—According to information submitted by the Discharger in the Report of Waste Discharge and in additional submittals of analytical laboratory results, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the U.S. EPA National Recommended Ambient Water Quality Criteria for protection of freshwater aquatic life for aluminum. Aluminum was detected in an effluent sample collected 19 March 2002 at a concentration of 112 µg/*l*. The recommended continuous concentration (maximum four-day average concentration) is 87 µg/*l* and the recommended maximum concentration (maximum one-hour average concentration) is 750 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, effluent limitations for aluminum are required.

In U.S. EPA's *Ambient Water Quality Criteria for Aluminum—1988* [EPA 440/5-86-008], U.S. EPA states that "[a]cid-soluble aluminum…is probably the best measurement at the present…"; however, U.S. EPA has not yet approved an acid-soluble test method for aluminum. Replacing the ICP/AES portion of the analytical procedure with ICP/MS would allow lower detection limits to be achieved. Based on U.S. EPA's discussion of aluminum analytical methods, Order No. R5-2003-0089 allows the use of the alternate aluminum testing protocol described above to meet monitoring requirements.

Order No. R5-2003-0089 includes maximum four-day and one-hour effluent limitations for aluminum.

Ammonia, Nitrite, and Nitrate—Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. The Discharger uses nitrification to remove ammonia from the waste stream. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. Ammonia is known to cause toxicity to aquatic organisms in surface waters. Aquatic habitat is a beneficial use of the receiving stream. The Basin Plan prohibits the discharge of toxic materials in toxic concentrations. Nitrate and nitrite are known to cause adverse health effects in humans. The Basin Plan prohibits the discharge of chemical constituents in concentrations that adversely affect beneficial uses. Domestic water supply is a beneficial use of the Bear River. U.S. EPA has developed Primary Maximum Contaminant Levels (MCLs) for the protection of human health for nitrite and nitrate of 1 mg/*l* and 10 mg/*l*, respectively, and pH- and temperature-dependent Ambient Water Quality Criteria for ammonia. The discharge from the Grass Valley Wastewater Treatment Plant has a reasonable

potential to cause or contribute to an in-stream excursion above water quality standards for ammonia, nitrite, and nitrate. The Discharger recently completed an upgrade and expansion of the WWTP that included the addition of nitrification and denitrification facilities. Effluent Limitations for ammonia, nitrite, and nitrate are included in this Order to assure the treatment process continues to adequately nitrify and denitrify the waste stream to protect the beneficial uses of aquatic habitat and municipal and domestic supply.

In water, un-ionized ammonia (NH_3) exists in equilibrium with the ammonium ion (NH_4^+). The toxicity of aqueous ammonia solutions to aquatic organisms is primarily attributable to the un-ionized ammonia form, with the ammonium ion being relatively less toxic. The relative concentrations of these two forms are pH- and temperature-dependent. Total ammonia refers to the sum of these two forms in aqueous solutions.

The Basin Plan includes a water quality objective that "*[a]ll water shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*". U.S. EPA's Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life, for total ammonia, recommends acute (1-hour average) standards based on pH and chronic (30-day average) standards based on pH and temperature. It also recommends a maximum four-day average concentration. U.S. EPA found that as pH increased, both the acute and chronic toxicity of ammonia increased. Salmonids were more sensitive to acute toxicity effects than other species. However, while the acute toxicity of ammonia was not influenced by temperature, it was found that invertebrates and young fish experienced increasing chronic toxicity effects with increasing temperature. Because the receiving stream has a beneficial use of cold freshwater habitat, the recommended criteria for waters where salmonids are present were used.

U.S. EPA has presented the acute ammonia criteria in three ways: as equations, in a table, and in graphs that relate pH to ammonia concentrations. Attachment B shows the equation and table used for the 30-day average concentration criteria recommended for waters where fish early life stages are present. Attachment C shows the equation and table used for the 4-day average concentration criteria recommended for waters where fish early life stages are present. Attachment D shows the equation and table used for the 1-hour average concentration criteria recommended for waters where salmonid fish are present. A 30-day period is a reasonable representation of a calendar month; so, to conform to 40 CFR §122.45, the 30-day average criteria are set equal to average monthly limitations in Order No. R5-2003-0089.

For waters designated as having the beneficial use of municipal and domestic supply (MUN), the Basin Plan includes a water quality objective that water "*shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations…: Tables 64431-A (Inorganic Chemicals)…*". U.S. EPA has developed a primary MCL and an MCL goal of 1,000 µg/*l* for nitrite (as nitrogen). The primary MCL listed in Title 22 of the California Code of Regulations (CCR), Table 64431-A, is also 1,000 µg/*l* for nitrite as nitrogen. For nitrate, U.S. EPA has developed Drinking Water Standards (10,000 µg/*l* as Primary Maximum Contaminant Level) and Ambient Water Quality Criteria for protection of human health (10,000 µg/*l* for non-cancer health effects). Title 22 CCR, Table 64431-A,

also includes a primary MCL of 10,000 µg/*l* for the sum of nitrate and nitrite, measured as nitrogen. Recent toxicity studies have indicated a possibility that nitrate is toxic to aquatic organisms.

The conversion of ammonia to nitrites and the conversion of nitrites to nitrates present a reasonable potential for the discharge to exceed the primary maximum contaminant levels for nitrite and the sum of nitrite and nitrate. Therefore, Order No. R5-2003-0089 includes limitations for nitrite and the sum of nitrite and nitrate.

The Discharger's treatment system currently includes nitrification and denitrification, so no time schedule for compliance is necessary.

BOD and TSS—40 Code of Federal Regulations (CFR), Section 133.102 contains regulations describing the minimum level of effluent quality—for biochemical oxygen demand (BOD) and total suspended solids (TSS)—attainable by secondary treatment.

The WWTP is required to comply with effluent limitations appropriate for treatment systems providing tertiary or equivalent treatment. Effluent limitations for both BOD and TSS have been established at 10 mg/*l*, as a 30-day average, which is technically based on the capability of a tertiary system. In addition, 40 CFR 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent. If 85 percent removal of BOD and TSS must be achieved by a secondary treatment plant, it must also be achieved by a tertiary (*i.e*., treatment beyond secondary level) treatment plant. Order No. R5-2003-0089 contains a limitation requiring an average of 85 percent removal of BOD and TSS over each calendar month.

Chlorine, Total Residual—The Basin Plan prohibits the discharge of toxic materials in toxic concentrations. The Discharger uses chlorine for disinfection of the effluent waste stream. Aquatic habitat is a beneficial use of the Bear River. Chlorine can cause toxicity to aquatic organisms when discharged to surface waters. U.S. EPA recommends, in its Ambient Water Quality Criteria for the protection of fresh water aquatic life, maximum 1-hour average and 4-day average chlorine concentrations of 0.019 µg/*l* and 0.011 µg/*l*, respectively. The use of chlorine as a disinfectant presents a reasonable potential that it could be discharged in toxic concentrations. Effluent Limitations for chlorine have been included in this Order to protect the receiving stream aquatic life beneficial uses. Effluent Limitations have been established based on the ambient water quality criteria for chlorine.

Average one-hour and four-day effluent limitations for chlorine, based on these criteria, are included in Order No. R5-2003-0089.

Chloroform—Municipal and domestic supply is a beneficial use of the receiving stream. The narrative toxicity objective and this beneficial use designation comprise a water quality standard applicable to pollutants in the receiving stream. The Basin Plan contains the *Policy for Application of Water Quality Objectives*, which provides that narrative objectives may be translated using numerical limits published by other agencies and organizations. The California Environmental Protection Agency (Cal/EPA) Office of Environmental Health Hazard Assessment (OEHHA) has published the Toxicity Criteria Database, which contains cancer potency factors for chemicals, including chloroform, that have been used as a

basis for regulatory actions by the boards, departments and offices within Cal/EPA. The OEHHA cancer potency value for oral exposure to chloroform is 0.031 milligrams per kilogram body weight per day (mg/kg-day). By applying standard toxicologic assumptions used by OEHHA and U.S. EPA in evaluating health risks via drinking water exposure of 70 kg body weight and two liters per day water consumption, this cancer potency factor is equivalent to a concentration in drinking water of 1.1 µg/*l* (ppb) at the one-in-a-million cancer risk level. This risk level is consistent with that used by the Department of Health Services (DHS) to set *de minimis* risks from involuntary exposure to carcinogens in drinking water in developing MCLs and Action Levels and by OEHHA to set negligible cancer risks in developing Public Health Goals for drinking water. The one-in-a-million cancer risk level is also mandated by U.S. EPA in applying human health protective criteria contained in the *National Toxics Rule* and the *California Toxics Rule* to priority toxic pollutants in California surface waters. The maximum observed effluent chloroform concentration was 24 µg/*l*. Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to degradation of the municipal and domestic supply beneficial use by discharging elevated concentrations of chloroform. Therefore, an Effluent Limitation for chloroform is included in this Order and is based on the Basin Plan toxicity objective and OEHHA Toxicity Criteria for the protection of human health.

Chloroform was detected in an effluent sample collected 16 July 2002 at a concentration of 24 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent chloroform concentration is 77 µg/*l*. The equivalent concentration for the OEHHA cancer potency factor is 1.1 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, an Effluent Limitation for chloroform is required.

Order No. R5-2003-0089 includes an average monthly chloroform limitation.

Copper— Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for copper. The CTR includes hardness-dependent standards for the protection of freshwater aquatic life for copper. Freshwater aquatic habitat is a beneficial use of the receiving water. The standards for metals are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for copper in freshwater are 0.960 for both the acute and the chronic criteria.

The maximum observed effluent copper concentration was detected in a sample collected 19 March 2002 at a concentration of 6.9 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent copper concentration is 6.9 µg/*l*. Using the worst-case (lowest) measured hardness from the effluent and receiving water, (15 mg/*l*), the applicable continuous concentration (maximum four-day average concentration) is 1.8 µg/*l* and the applicable maximum concentration (maximum one-hour average concentration) is 2.3 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, Effluent Limitations for copper are required. The Effluent Limitations for copper included in this Order are

presented in total concentrations, and are based on CTR standards for the protection of freshwater aquatic life.

The SIP requires converting CTR chronic (four-day) and acute (one-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. Equations summarizing the conversion are shown below:

$$CCC = e^{[0.8545\ln(hardness)-1.702]} \qquad AMEL = 1.33[\min(0.46CMC, 0.666CCC)]$$

$$CMC = e^{[0.9422\ln(hardness)-1.700]} \qquad MDEL = 2.15[\min(0.466CMC, 0.666CCC)]$$

Order No. R5-2003-0089 includes maximum one-day and one-month hardness-dependent copper limitations.

Cyanide—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for cyanide. The CTR includes maximum 1-hour average and 4-day average cyanide concentrations of 22 µg/*l* and 5.2 µg/*l*, respectively, for the protection of freshwater aquatic life. Freshwater aquatic habitat is a beneficial use of the Bear River.

The maximum observed effluent cyanide concentration was detected in an effluent sample collected 17 September 2002 at a concentration of 11 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent cyanide concentration is 11 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, Effluent Limitations for cyanide are required. Effluent Limitations for cyanide are included in this Order and are based on CTR standards for the protection of freshwater aquatic life.

The SIP requires converting CTR chronic (four-day) and acute (one-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. Equations summarizing the conversion are shown below:

$$AMEL = 2.05[\min(0.185CMC, 0.342CCC)]$$
$$MDEL = 5.40[\min(0.185CMC, 0.342CCC)]$$

Order No. R5-2003-0089 includes maximum one-day and one-month cyanide limitations.

Dibromochloromethane— Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for dibromochloromethane. The CTR includes standards for the protection of human health based on a one-in-a-million cancer risk for dibromochloromethane. Municipal and domestic supply is a beneficial use of the receiving stream. The standard for waters from which both water and organisms are consumed is 0.41 µg/*l*. The maximum observed effluent

dibromochloromethane concentration was detected in an effluent sample collected 18 June 2002 at a concentration of 1.4 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent dibromochloromethane concentration is 1.4 µg/*l*. The CTR criterion for waters from which both water and aquatic organisms are consumed is 0.41 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, Effluent Limitations for dibromochloromethane are required. Effluent Limitations for dibromochloromethane are included in this Order and are based on the CTR standard for the protection of human health.

The SIP requires that CTR human health objectives be set equal to the average monthly limitation. A daily limitation was then calculated in accordance with the SIP, as shown below:

$$MDEL = \left(\frac{5.07}{1.98}\right) AMEL$$

Order No. R5-2003-0089 includes maximum one-day and one-month effluent limitations for dibromochloromethane.

Dichlorobromomethane— Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for dichlorobromomethane. The CTR includes standards for the protection of human health based on a one-in-a-million cancer risk for dichlorobromomethane. Municipal and domestic supply is a beneficial use of the receiving water. The standard for waters from which both water and organisms are consumed is 0.56 µg/*l*. The maximum observed effluent dichlorobromomethane concentration was detected in an effluent sample collected 18 June 2002 at a concentration of 9.2 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent dichlorobromomethane concentration is 9.2 µg/*l*. The CTR criterion for waters from which both water and aquatic organisms are consumed is 0.56 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, Effluent Limitations for dibromochloromethane are required. Effluent Limitations for dichlorobromomethane are included in this Order and are based on the CTR standard for the protection of human health.

The SIP requires that CTR human health objectives be set equal to the average monthly limitation. A daily limitation was then calculated in accordance with the SIP, as shown below:

$$MDEL = \left(\frac{2.85}{1.49}\right) AMEL$$

Order No. R5-2003-0089 includes maximum one-day and one-month effluent limitations for dichlorobromomethane.

Flow—The WWTF was designed to provide a tertiary level of treatment for up to its design flow of 2.78 mgd. The effluent flow limit is therefore set at 2.78 mgd.

Iron—The Basin Plan includes a water quality objective that "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449*." Municipal and domestic supply is a beneficial use of the receiving stream. Based on information included in analytical laboratory reports submitted by the Discharger, iron in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 300 µg/*l* for iron. The Basin Plan also includes a water quality objective that water "…*shall be free of discoloration that causes nuisance or adversely affects beneficial uses*." The Basin Plan identifies non-contact water recreation, which includes aesthetic enjoyment, as a beneficial use of the Bear River. Iron concentrations in excess of the Secondary MCL-Consumer Acceptance Limit cause aesthetically undesirable discoloration. An Effluent Limitation for iron is included in this Order and is based on protection of the Basin Plan water quality objectives for chemical constituents and color and the DHS Secondary MCL.

Iron was detected in an effluent sample collected 16 July 2002 at a concentration of 264 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent iron concentration is 1,338 µg/*l*. The secondary maximum contaminant level is 300 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, an Effluent Limitation for iron is required.

Order No. R5-2003-0089 includes an average monthly Effluent Limitation for iron that is equal to the secondary maximum contaminant level.

Lead—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for lead. The CTR includes hardness-dependent standards for the protection of freshwater aquatic life for lead. Freshwater aquatic habitat is a beneficial use of the receiving water. The standards for metals are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for lead in freshwater are 1.46203-[0.145712 X ln(hardness)] for both the acute and the chronic criteria. The maximum observed effluent lead concentration was detected in an effluent sample collected 20 August 2002 at a concentration of 0.60 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent lead concentration is 0.60 µg/*l*. Using the worst-case (lowest) measured hardness from the effluent and receiving water, (15 mg/*l*), the applicable continuous concentration (maximum four-day average concentration) is 0.28 µg/*l* and the applicable maximum concentration (maximum one-hour average concentration) is 7.3 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, Effluent Limitations for lead are required. The Effluent Limitations for lead included in this Order are presented in total concentrations, and are based on the CTR standards for the protection of freshwater aquatic life.

The SIP requires converting CTR chronic (four-day) and acute (one-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. Equations summarizing the conversion are shown below:

$$CCC = e^{[1.273\ln(hardness)-4.705]} \qquad AMEL = 1.33[\min(0.463CMC, 0.663CCC)]$$

$$CMC = e^{[1.273\ln(hardness)-1.460]} \qquad MDEL = 2.16[\min(0.463CMC, 0.663CCC)]$$

Monitoring and Reporting Program No. R5-2003-0089 requires 24-hour composite samples for metals. Results from 24-hour composite samples would not be comparable with one-hour average limitations. Order No. R5-2003-0089 includes hardness-dependent lead limitations.

Manganese—The Basin Plan includes a water quality objective that "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449*." Municipal and domestic supply is a beneficial use of the Bear River. Based on information included in analytical laboratory reports submitted by the Discharger, manganese in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 50 µg/*l* for manganese. The Basin Plan also includes water quality objectives that water be free of discoloration and taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan identifies non-contact water recreation, which includes aesthetic enjoyment, as a beneficial use of the Bear River. Manganese concentrations in excess of the Secondary MCL-Consumer Acceptance Limit produce aesthetically undesirable discoloration and taste. An Effluent Limitation for manganese is included in this Order and is based on protection of the Basin Plan water quality objectives for chemical constituents, color, and tastes and odors and the DHS Secondary MCL.

Manganese was detected in an effluent sample collected 16 April 2002 at a concentration of 137 µg/*l*. The secondary maximum contaminant level is 50 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, an Effluent Limitation for manganese is required.

Order No. R5-2003-0089 includes an average monthly Effluent Limitation for manganese that is equal to the secondary maximum contaminant level.

Mercury—Municipal and domestic supply is a beneficial use of the Bear River. The CTR contains a human health criterion (based on a one-in-a-million cancer risk) of 0.050 µg/*l* for waters from which both water and aquatic organisms are consumed. In 40 CFR Part 131, U.S. EPA acknowledges that the human health criteria may not be protective of some aquatic or endangered species and that "…*more stringent mercury limits may be determined and implemented through use of the State's narrative*

criterion." In the CTR, U.S. EPA reserved the mercury criteria for freshwater and aquatic life and may adopt new criteria at a later date. Mercury in the effluent has been detected in concentrations as high as 0.01070 µg/*l*. Lacking other applicable criteria, this Order contains Effluent Limitations for mercury based on the CTR human health criterion of 0.050 µg/*l*.

The upper Bear River has recently been added to the 303(d) list of water quality limited segments for impaired water bodies for mercury. The beneficial use of fish consumption has been impaired due to bioaccumulation of mercury in fish tissue. Effluent mass loading mercury limitations have been included in Order No. R5-2003-0089 and are based on current treatment plant performance and flow.

Methyl tert butyl ether (MTBE)—The Basin Plan includes a water quality objective that "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449.*" Municipal and domestic supply is a beneficial use of the receiving stream. Based on information included in analytical laboratory reports submitted by the Discharger, MTBE in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 5 µg/*l* for MTBE. An Effluent Limitation for MTBE is included in this Order and is based on protection of the Basin Plan water quality objectives for chemical constituents and the DHS Secondary MCL.

MTBE was detected in an effluent sample collected 16 April 2002 at a concentration of 4.8 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent MTBE concentration is 37.6 µg/*l*. The secondary maximum contaminant level is 5 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, an Effluent Limitation for MTBE is required.

Order No. R5-2003-0089 includes an average monthly Effluent Limitation for MTBE that is equal to the secondary maximum contaminant level.

Methylene blue active substances (MBAS)—The Basin Plan includes a water quality objective that "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449.*" Municipal and domestic supply is a beneficial use of the Feather River. Based on information included in analytical laboratory reports submitted by the Discharger, MBAS in the discharge have a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 500 µg/*l* for foaming agents (MBAS). The Basin Plan also includes water quality objectives that water not contain floating material or taste- or odor-producing substances in concentrations that causes nuisance or adversely affect beneficial uses. The Basin Plan identifies non-contact water recreation, which includes aesthetic enjoyment, as a beneficial use of the Feather River. MBAS concentrations in excess of the

Secondary MCL-Consumer Acceptance Limit produce aesthetically undesirable froth, taste, and odor. An Effluent Limitation for MBAS is included in this Order and is based on protection of the Basin Plan water quality objectives for chemical constituents, floating material, and tastes and odors and the DHS Secondary MCL.

MBAS was detected in an effluent sample collected 19 March 2002 at a concentration of 280 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent MBAS concentration is 3,000 µg/*l*. The secondary maximum contaminant level is 500 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, an Effluent Limitation for MTBE is required.

Order No. R5-2003-0089 includes an average monthly Effluent Limitation for MBAS that is equal to the secondary maximum contaminant level.

Pathogens—Tertiary treatment is required to protect the beneficial uses of water contact recreation, municipal and domestic supply, and agricultural irrigation downstream of the discharge into Deer Creek. The effluent limitation for total coliform organisms is intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of pathogen removal. The method of treatment is not prescribed by Order No. R5-2003-0089; however, wastewater must be treated to a level equivalent to that specified in Title 22 and in other recommendations by the California Department of Health Services.

Upstream of the discharge point, Wolf Creek is a low-flow stream. At times, Wolf Creek provides little or no dilution for wastewater effluent discharged from the WWTP. The California Code of Regulations, Title 22, contains criteria for the reuse or recycling of wastewater as an alternative to discharging to a receiving stream. Title 22 reclamation criteria were established to create minimum wastewater treatment standards to protect the public health when this water is reused for beneficial uses. The criteria are not directly applicable to streams that receive wastewater and the subsequent use of the combined stream/wastewater. This permit does not apply Title 22 standards to the discharge. However, in assessing the discharge standards necessary to protect the site-specific beneficial uses of Wolf Creek, Title 22 standards were compared to the level of treatment required to protect the public health when in contact with treated wastewater or when directly using undiluted effluent for food crop irrigation. Title 22 states that, for reuse as irrigation water for food crops and to protect for nonrestricted contact recreation, it is necessary for wastewater to receive tertiary treatment resulting in coliform counts that do not exceed 2.2 MPN/100 m*l* as a 7-day median, 23 MPN/100 m*l* more than once in any 30 day period, and 240 MPN/100 m*l* ever.

The California Department of Health Services (DHS) has determined that a specific level of treatment is required for recycled water delivered in a dedicated pipe or canal. Wolf Creek, a low-flow stream, is essentially the same as any other conveyance system (pipe or canal) when sufficient upstream flows are not present for dilution. Therefore, the same level of treatment as that required for recycled water would be necessary to protect the public if the water is delivered in a dry streambed for the same uses. In a letter to Regional Board staff, dated 8 April 1999, DHS concurred with the need to protect beneficial uses and recommended that the level of treatment required under Title 22 of the California Code of Regulations for reclaimed water in a dedicated pipe or canal be applied to agricultural drains or streams

where the water may be used or diverted for beneficial uses. Therefore, Order No. R5-2002-0050 includes tertiary effluent limitations based on protecting the beneficial uses of nonrestricted contact recreation and irrigation in Wolf Creek and the Bear River.

pH—The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the "…*pH shall not be depressed below 6.5 nor raised above 8.5*." No reliable dilution is available in the receiving stream, so the Order includes effluent limitations for pH at the Basin Plan objective values.

Settleable Solids—For inland surface waters, the Basin Plan states that "[w]*ater shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.*" Order No. R5-2003-0089 contains average monthly and average daily effluent limitations for settleable solids.

Toxicity—The Basin Plan states that "[a]*ll waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances.*" The Basin Plan requires that "[a]*s a minimum, compliance with this objective…shall be evaluated with a 96-hour bioassay*." Order No. R5-2003-0089 requires both acute and chronic toxicity monitoring to evaluate compliance with this water quality objective.

The Basin Plan further states that "…*effluent limits based upon acute biotoxicity tests of effluents will be prescribed*…". Effluent limitations for acute toxicity have been included in the Order.

Zinc—Based on information included in analytical laboratory reports submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for zinc. The CTR includes hardness-dependent standards for the protection of freshwater aquatic life for zinc. Freshwater aquatic habitat is a beneficial use of the Bear River. The hardness-dependent CTR standards for metals are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for zinc in freshwater are 0.978 for the acute criteria and 0.986 for the chronic criteria. The maximum observed effluent zinc concentration was detected in an effluent sample collected by U.S. EPA Region IX staff on 7 August 2002 at a concentration of 85 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent zinc concentration is 85 µg/*l*. Using the worst-case (lowest) measured hardness from the effluent and receiving water, (15 mg/*l*), the applicable continuous concentration (maximum four-day average concentration) and the applicable maximum concentration (maximum one-hour average concentration) are both 24 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, Effluent Limitations for zinc are required. Effluent Limitations for zinc (in total concentrations) are included in this Order and are based on the CTR standards for the protection of freshwater aquatic life.

The SIP requires converting CTR chronic (four-day) and acute (one-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. Equations summarizing the conversion are shown below:

$$CCC = e^{[0.8473\ln(hardness)+0.884]} \qquad AMEL = 1.24[\min(0.552CMC, 0.733CCC)]$$

$$CMC = e^{[0.8473\ln(hardness)+0.884]} \qquad MDEL = 1.81[\min(0.552CMC, 0.733CCC)]$$

Monitoring and Reporting Program No. R5-2003-0089 requires 24-hour composite samples for metals. Results from 24-hour composite samples would not be comparable with one-hour average limitations. Order No. R5-2003-0089 includes maximum one-day and one-month hardness-dependent zinc limitations.

Compliance Schedules—The use and location of compliances schedules in the permit depends on the Discharger's ability to comply and the source of the applied water quality criteria. For CTR-based Effluent Limitations, compliance schedules were included within the permit. For non-CTR-based Effluent Limitations, any necessary time schedules were generally included in the accompanying cease and desist order.

General Effluent Limitation Information—

Selected 40 CFR §122.2 definitions:

'*Average monthly discharge limitation* means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

Average weekly discharge limitation means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week.

Continuous discharge means a "discharge" which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities.

Daily discharge means the "discharge of a pollutant" measured during a calendar day or any 24-hour period that reasonable represents a calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Maximum daily discharge limitation means the highest allowable "daily discharge".'

The SIP contains similar definitions. These definitions were used in the development of Order No. R5-2003-0089. Alternate limitation period terms were used in the permit for the sake of clarity. Alternates are shown in the following table:

Term Used in Permit	SIP/40 CFR 122.2 Term
Average monthly	Average monthly discharge limitation. 30-day averages may have been converted to monthly averages to conform with 40 CFR §122.45 (see below)
Average daily	Maximum daily discharge limitation. Since the daily discharge for limitations expressed in concentrations is defined as the average measurement of the pollutant over the day, the term 'Average Daily' was used in the Order.

40 CFR §122.45 states that:

(1) "In the case of POTWs, permit effluent limitations…shall be calculated based on design flow."

(2) "For continuous discharges all permit effluent limitations…shall unless impracticable be stated as…[a]verage weekly and average monthly discharge limitations for POTWs."

(3) "All pollutants limited in permits shall have limitations…expressed in terms of mass except…[f]or pH, temperature, radiation, or other pollutants which cannot appropriately be expressed by mass…Pollutants limited in terms of mass additionally may be limited in terms of other units of measurement, and the permit shall require the permittee to comply with both limitations."

U.S. EPA recommends a maximum daily limitation rather than an average weekly limitation for water quality based permitting.

RECEIVING WATER LIMITATIONS AND MONITORING

Fecal coliform **--—**The Bear River has been designated as having the beneficial use of contact recreation (REC-1). For water bodies designated as having REC-1 as a beneficial use, the Basin Plan includes a water quality objective limiting the "…*fecal coliform concentration based on a minimum of not less than five samples for any 30-day period*…" to a maximum geometric mean of 200 MPN/100 ml. The objective also states that "…[no] *more than ten percent of the total number of samples taken during any 30-day period* [shall] *exceed 400/100 ml*." This objective is included in the Order as a receiving water limitation.

Dissolved Oxygen **--—**The Bear River has been designated as having the beneficial use of cold freshwater aquatic habitat (COLD). For water bodies designated as having COLD as a beneficial use, the Basin Plan includes a water quality objective of maintaining a minimum of 7.0 mg/*l* of dissolved oxygen.

Since the beneficial use of COLD does apply to the Bear River, a receiving water limitation of 7.0 mg/*l* for dissolved oxygen was included in the Order.

For surface water bodies outside of the Delta, the Basin Plan includes the water quality objective that "*…the monthly median of the mean daily dissolved oxygen (DO) concentration shall not fall below 85 percent of saturation in the main water mass, and the 95 percentile concentration shall not fall below 75 percent of saturation.*" This objective was included as a receiving water limitation in the Order.

pH—For all surface water bodies in the Sacramento River and San Joaquin River basins, the Basin Plan includes water quality objectives stating that "[t]*he pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses.*" The Order includes receiving water limitations for both pH range and pH change.

The Basin Plan allows an appropriate averaging period for pH change in the receiving stream. Since there is no technical information available that indicates that aquatic organisms are adversely affected by shifts in pH within the 6.5 to 8.5 range, an averaging period is considered appropriate and a monthly averaging period for determining compliance with the 0.5 receiving water pH limitation is included in the Order.

Temperature—The Bear River has the beneficial uses of both COLD and WARM. The Basin Plan includes the objective that "[a]*t no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5ºF above natural receiving water temperature*." The Order includes a receiving water limitation based on this objective.

Turbidity—The Basin Plan includes the following objective: "*Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits*:

- Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU.
- Where natural turbidity is between 5 and 10 NTUs, increases shall not exceed 20 percent.
- Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTU.
- Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent."

Ammonia and Chlorine—U.S. EPA has developed Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life for ammonia and for chlorine. The Order contains effluent limitations for ammonia and for chlorine equal to the Ambient Water Quality Criteria. Compliance with the effluent limitations for ammonia and for chlorine means that the discharge cannot cause an exceedance of the criteria in the receiving stream; in other words, the limitations are fully protective of water quality. Therefore, no receiving water ammonia or chlorine limitations are included in the Order.

Narrative Limitations—Receiving Water Limitations E.1.b (biostimulatory substances), E.1.c (color), E.1.e(floating material), E.1.f (oil and grease), E.1.h (radioactivity), E.1.i (settleable material), E.1.j (tastes and odors), and E.1.l (toxicity) are based on narrative Basin Plan objectives. The objectives are located in Chapter III: Water Quality Objectives, under the Water Quality Objectives for Inland Surface Waters heading.

POND LIMITATIONS AND MONITORING

Dissolved Oxygen—Anaerobic (lacking in oxygen) processes tend to produce aesthetically undesirable odors. To minimize production of undesirable odors, the Discharger is required to maintain some (at least 1.0 mg/*l*) dissolved oxygen in the upper one foot of the pond.

Freeboard—The Order contains a limitation for pond freeboard. Pond levees can fail for a variety of reasons, typically, a lack of maintenance or overtopping due to wave action. The Order requires a minimum pond freeboard of two feet be maintained to prevent overtopping.

MRH/mrh