CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

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ORDER R5-2015-0002
NPDES NO. CA0081809

WASTE DISCHARGE REQUIREMENTS FOR ORIGINAL SIXTEEN TO ONE MINE, INC. SIXTEEN TO ONE MINE SIERRA COUNTY

The following Discharger is subject to waste discharge requirements (WDR's) set forth in this Order:

Table 1. Discharger Information

Discharger	Original Sixteen to One Mine, Inc.
Name of Facility	Sixteen to One Mine
Facility Address	506 Miners Street
	Alleghany, CA 95910
	Sierra County

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude (North)	Discharge Point Longitude (West)	Receiving Water
001	Mine Drainage from 21 Tunnel Portal	39 º 27 ' 45 " N	120 º 50 ' 15 " W	Kanaka Creek

Table 3. Administrative Information

This Order was adopted on:	**5 February 2015**
This Order shall become effective on:	**16 April 2015**
This Order shall expire on:	**31 March 2020**
The Discharger shall file a Report of Waste Discharge as an application for reissuance of WDR's in accordance with title 23, California Code of Regulations, and an application for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit no later than:	**30 September 2019**
The U.S. Environmental Protection Agency (U.S. EPA) and the California Regional Water Quality Control Board, Central Valley Region have classified this discharge as follows:	**Minor**

I, Pamela C. Creedon, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of the Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on **5 February 2015**.

Original signed by

PAMELA C. CREEDON, Executive Officer

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I. FACILITY INFORMATION

Information describing the Original Sixteen to One Mine, Inc. (Discharger) and Sixteen to One Mine (Facility or Sixteen to One Mine) is summarized in Table 1 and in sections I and II of the Fact Sheet (Attachment F). Section I of the Fact Sheet also includes information regarding the Facility's permit application.

II. FINDINGS

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

A. Legal Authorities. This Order serves as WDR's pursuant to article 4, chapter 4, division 7 of the California Water Code (commencing with section 13260). This Order is also issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. EPA and chapter 5.5, division 7 of the Water Code (commencing with section 13370). It shall serve as an NPDES permit for point source discharges from this facility to surface waters.

B. Background and Rationale for Requirements. The Central Valley Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and other available information. The Fact Sheet (Attachment F), which contains background information and rationale for the requirements in this Order, is hereby incorporated into and constitutes Findings for this Order. Attachments A through E and G through H are also incorporated into this Order.

C. Provisions and Requirements Implementing State Law. The provisions/requirements in subsection VI.C.2.c Special Provisions are included to implement state law only. These provisions/requirements are not required or authorized under the federal CWA; consequently, violations of these provisions/requirements are not subject to the enforcement remedies that are available for NPDES violations.

D. Monitoring and Reporting. 40 CFR 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the Central Valley Water Board to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements. The Monitoring and Reporting Program is provided in Attachment E.

The technical and monitoring reports in this Order are required in accordance with Water Code section 13267, which states the following in subsection (b)(1), *"In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged, discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region 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. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports."*

The Discharger owns and operates the Facility subject to this Order. The monitoring reports required by this Order are necessary to determine compliance with this Order. The need for the monitoring reports is discussed in the Fact Sheet.

E. Notification of Interested Parties. The Central Valley Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe WDR's for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of the notification are provided in the Fact Sheet.

F. Consideration of Public Comment. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the Public Hearing are provided in the Fact Sheet.

THEREFORE, IT IS HEREBY ORDERED that this Order supersedes Order R5-2002-0043, Amended, except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order. This action in no way prevents the Central Valley Water Board from taking enforcement action for past violations of the previous Order.

III. DISCHARGE PROHIBITIONS

A. Discharge of mining waste at a location or generated in a manner different from that described in sections I.B and II.A of the Fact Sheet, Attachment F of this Order, is prohibited.

B. Neither the discharge nor its treatment shall create a nuisance as defined in section 13050 of the Water Code.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point 001

1. Final Effluent Limitations – Discharge Point 001

The Discharger shall maintain compliance with the following effluent limitations at Discharge Point 001, with compliance measured at Monitoring Location EFF-001 (21 Tunnel Portal discharge) as described in the Monitoring and Reporting Program, Attachment E:

a. The Discharger shall maintain compliance with the effluent limitations specified in Table 4:

Table 4. Effluent Limitations

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Technology Based Effluent Limitations					
Mercury	µg/L	1	2	--	--
Zinc	µg/L	750	1,500	--	--
Total Suspended Solids	mg/L	20	30	--	--
Water Quality Based Effluent Limitations					
Antimony	µg/L	6.0	12	--	--

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Arsenic	µg/L	10	20	--	--
Cadmium	µg/L	0.85	1.7	--	--
Copper	µg/L	3.1	6.3	--	--
Lead	µg/L	0.90	1.8	--	--
Nickel	µg/L	21	43	--	--
pH	--	--	--	6.5	8.5

b. **Acute Whole Effluent Toxicity.** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

i. 70%, minimum for any one bioassay; and
ii. 90%, median for any three consecutive bioassays;

as shown by the results of the Chronic Toxicity Test conducted as described in Attachment E and elsewhere in this Order.

c. **Average Daily Flow**. The average daily discharge flow from the 21 Tunnel Portal shall not exceed 0.28 mgd.

d. **Electrical Conductivity**. For a calendar year, the annual average effluent concentration shall not exceed 900 µmhos/cm.

e. **Iron, Total Recoverable.** For a calendar year, the annual average effluent concentration shall not exceed 300 µg/L.

f. **Manganese, Total Recoverable.** For a calendar year, the annual average effluent concentration shall not exceed 50 µg/L.

2. Interim Effluent Limitations – Not Applicable

B. Land Discharge Specifications – Not Applicable

C. Recycling Specifications – Not Applicable

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

The mining waste discharged from Sixteen to One Mine at the 21 Tunnel Portal shall not cause the following in **Kanaka Creek:**

1. Chemical Constituents. Chemical constituents to be present in concentrations that adversely affect beneficial uses.

2. Color. Discoloration that causes nuisance or adversely affects beneficial uses.

3. Dissolved Oxygen:

a. The monthly median of the mean daily dissolved oxygen concentration to fall below 85 percent of saturation in the main water mass;

b. The 95 percentile dissolved oxygen concentration to fall below 75 percent of saturation; nor

c. The dissolved oxygen concentration to be reduced below 7.0 mg/L at any time.

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

5. **pH.** The pH to be depressed below 6.5 nor raised above 8.5.

6. **Salinity.** Salinity (electrical conductivity) objectives (see page III-6.02 of the Basin Plan).

7. **Settleable Substances.** Substances to be present in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.

8. **Suspended Material.** Suspended material to be present in concentrations that cause nuisance or adversely affect beneficial uses.

9. **Suspended Sediments.** The suspended sediment load and suspended sediment discharge rate of surface waters to be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

10. **Taste and Odors.** Taste- or odor-producing substances to be present in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.

11. **Temperature.** The natural temperature to be increased by more than 5°F. Compliance to be determined based on the difference in temperature at RSW-001 and RSW-002.

12. **Toxicity.** Toxic substances to be present, individually or in combination, in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.

13. **Turbidity.**

    a. Shall not exceed 2 Nephelometric Turbidity Units (NTU) where natural turbidity is less than 1 NTU;

    b. Shall not increase more than 1 NTU where natural turbidity is between 1 and 5 NTUs;

    c. Shall not increase more than 20 percent where natural turbidity is between 5 and 50 NTUs;

    d. Shall not increase more than 10 NTU where natural turbidity is between 50 and 100 NTUs; nor

    e. Shall not increase more than 10 percent where natural turbidity is greater than 100 NTUs.

B. Groundwater Limitations – Not Applicable

VI. PROVISIONS

A. Standard Provisions

1. The Discharger shall comply with all Standard Provisions included in Attachment D.
2. The Discharger shall comply with the following provisions. In the event that there is any conflict, duplication, or overlap between provisions specified by this Order, the more stringent provision shall apply:

   a. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:

      i. violation of any term or condition contained in this Order;

      ii. obtaining this Order by misrepresentation or by failing to disclose fully all relevant facts;

      iii. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; and

      iv. a material change in the character, location, or volume of discharge.

      The causes for modification include:

      i. *New regulations.* New regulations have been promulgated under section 405(d) of the CWA, or the standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued.

      ii. *Land application plans.* When required by a permit condition to incorporate a land application plan, to revise an existing land application plan, or to add a land application plan.

      iii. *Change in disposal practice.* Under 40 CFR 122.62(a)(1), a change in the Discharger's disposal practice is a cause for modification of the permit. It is cause for revocation and reissuance if the Discharger requests or agrees.

      The Central Valley Water Board may review and revise this Order at any time upon application of any affected person or the Central Valley Water Board's own motion.

   b. If a toxic effluent standard or prohibition (including any scheduled compliance specified in such effluent standard or prohibition) is established under section 307(a) of the CWA, or amendments thereto, for a toxic pollutant that is present in the discharge authorized herein, and such standard or prohibition is more stringent than any limitation upon such pollutant in this Order, the Central Valley Water Board will revise or modify this Order in accordance with such toxic effluent standard or prohibition.

      The Discharger shall comply with effluent standards and prohibitions within the time provided in the regulations that establish those standards or prohibitions, even if this Order has not yet been modified.

c. This Order shall be modified, or alternately revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:

   i. Contains different conditions or is otherwise more stringent than any effluent limitation in the Order; or

   ii. Controls any pollutant limited in the Order.

   The Order, as modified or reissued under this paragraph, shall also contain any other requirements of the CWA then applicable.

d. The provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order shall not be affected.

e. The Discharger shall take all reasonable steps to minimize any adverse effects to waters of the State or users of those waters resulting from any discharge or disposal in violation of this Order. Reasonable steps shall include such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge or disposal.

f. A copy of this Order shall be maintained at the discharge facility and be available at all times to operating personnel. Key operating personnel shall be familiar with its content.

g. Safeguard to electric power failure:

   i. The Discharger shall provide safeguards to assure that, should there be reduction, loss, or failure of electric power, the discharge shall comply with the terms and conditions of this Order.

   ii. Upon written request by the Central Valley Water Board, the Discharger shall submit a written description of safeguards. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means. A description of the safeguards provided shall include an analysis of the frequency, duration, and impact of power failures experienced over the past 5 years on effluent quality and on the capability of the Discharger to comply with the terms and conditions of the Order. The adequacy of the safeguards is subject to the approval of the Central Valley Water Board.

   iii. Should the treatment works not include safeguards against reduction, loss, or failure of electric power, or should the Central Valley Water Board not approve the existing safeguards, the Discharger shall, within 90 days of having been advised in writing by the Central Valley Water Board that the existing safeguards are inadequate, provide to the Central Valley Water Board and U.S. EPA a schedule of compliance for providing safeguards such that in the event of reduction, loss, or failure of electric power, the Discharger shall comply with the terms and conditions of this Order. The schedule of compliance shall, upon approval of the Central Valley Water Board, become a condition of this Order.

h. The Discharger, upon written request of the Central Valley Water Board, shall file with the Board a technical report on its preventive (failsafe) and contingency (cleanup) plans for controlling accidental discharges, and for minimizing the effect of such events. This report may be combined with that required under the Central Valley Water Board Standard Provision contained in section VI.A.2.i of this Order.

The technical report shall:

i. Identify the possible sources of spills, leaks, untreated waste by-pass, and contaminated drainage. Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered.

ii. Evaluate the effectiveness of present facilities and procedures and state when they became operational.

iii. Predict the effectiveness of the proposed facilities and procedures and provide an implementation schedule containing interim and final dates when they will be constructed, implemented, or operational.

The Central Valley Water Board, after review of the technical report, may establish conditions which it deems necessary to control accidental discharges and to minimize the effects of such events. Such conditions shall be incorporated as part of this Order, upon notice to the Discharger.

i. The Discharger shall submit technical reports as directed by the Executive Officer. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

j. The Central Valley Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.

k. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, effluent limitation, or receiving water limitation contained in this Order, the Discharger shall notify the Central Valley Water Board by telephone (916) 464-3291 within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within 5 days, unless the Central Valley Water Board waives confirmation. The written notification shall include the information required by the Standard Provision contained in Attachment D section V.E.1. [40 CFR 122.41(l)(6)(i)].

l. Failure to comply with provisions or requirements of this Order, or violation of other applicable laws or regulations governing discharges from this facility, may subject the Discharger to administrative or civil liabilities, criminal penalties, and/or other enforcement remedies to ensure compliance. Additionally, certain violations may subject the Discharger to civil or criminal enforcement from appropriate local, state, or federal law enforcement entities.

m. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, effluent limitation, or receiving water limitation of this Order, the Discharger shall notify the Central Valley Water Board by telephone (916) 464-3291 within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within five days, unless the Central Valley Water Board waives confirmation. The written notification shall state the nature, time, duration, and cause of noncompliance, and shall describe the measures being taken to remedy the current noncompliance and prevent recurrence including, where applicable, a schedule of implementation. Other noncompliance requires written notification as above at the time of the normal monitoring report.

B. Monitoring and Reporting Program (MRP) Requirements

The Discharger shall comply with the MRP (Attachment E), and future revisions thereto.

C. Special Provisions

1. Reopener Provisions

a. Conditions that necessitate a major modification of a permit are described in 40 CFR 122.62, including, but not limited to:

i. If new or amended applicable water quality standards are promulgated or approved pursuant to section 303 of the CWA, or amendments thereto, this permit may be reopened and modified in accordance with the new or amended standards.

ii. When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance.

b. **Reclassification of Mine Drainage**. If analytical monitoring results consistently indicate that the mine's treatment system, or best management practices, reduces constituent concentrations below water quality objectives, the mine drainage may be reassessed and this Order may be reopened and modified.

c. **New Milling Activities.** If the Discharger initiates milling activities, this Order may be reopened to include new or modified monitoring requirements and effluent limitations.

d. **Mercury.** If monitoring results indicate that concentrations in the mine drainage exceed water quality objectives, or if mercury is found to be causing toxicity based on chronic toxicity test results, or if a TMDL program is adopted, this Order may be reopened and an effluent limitation may be imposed. If the Central Valley Water Board determines that a mercury offset program is feasible for Dischargers subject to an NPDES permit, then this Order may be reopened to reevaluate need for interim mercury mass loading limitation(s) and the need for a mercury offset program for the Discharger.

e. **Whole Effluent Toxicity.** As a result of a Toxicity Reduction Evaluation (TRE), this Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE.

Additionally, if the State Water Board revises the SIP's toxicity control provisions that would require the establishment of numeric chronic toxicity effluent limitations, this Order may be reopened to include a numeric chronic toxicity effluent limitation based on the new provisions.

f. **Water Effects Ratios (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable when developing effluent limitations for cadmium. If the Discharger performs studies, in accordance with applicable federal guidelines and approved by the Executive Officer of the Central Valley Water Board, to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

g. **Dilution/Mixing Zones Study.** If the Discharger performs a Dilution/Mixing Zone Study, that was approved by the Executive Officer of the Central Valley Water Board, and submits the results, including defining the boundaries of the acute, chronic, and human health mixing zones, the Central Valley Water Board may reopen this Order to include effluent limitations based on the appropriate dilution factor for the protection of aquatic life or human health.

h. **Drinking Water Policy.** On 26 July 2013 the Central Valley Water Board adopted Resolution No. R5-2013-0098 amending the Basin Plan and establishing a Drinking Water Policy. The State Water Board approved the Drinking Water Policy on 3 December 2013. This Order may be reopened to incorporate monitoring of drinking water constituents to implement the Drinking Water Policy.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. **Toxicity Reduction Evaluation Requirements.** For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct chronic whole effluent toxicity (WET) testing, as specified in MRP section V. Furthermore, this Provision requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity. If the discharge exceeds the numeric toxicity monitoring trigger during accelerated monitoring established in this Provision, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE) in accordance with an approved TRE Work Plan, and take actions to mitigate the impact of the discharge and prevent recurrence of toxicity. A TRE is a site-specific study conducted in a stepwise process to identify the source(s) of toxicity and the effective control measures for effluent toxicity. TREs are designed to identify the causative agents and sources of whole effluent toxicity, evaluate the effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity. This Provision includes requirements for the Discharger to develop and submit a TRE Work Plan and includes procedures for accelerated chronic toxicity monitoring and TRE initiation.

i. **TRE Work Plan.** Within 90 days of the effective date of this Order, the Discharger shall submit to the Central Valley Water Board a TRE Work Plan for approval by the Executive Officer. The TRE Work Plan shall outline the procedures for identifying the source(s) of, and reducing or eliminating effluent toxicity. The TRE Work Plan must be developed in accordance with U.S. EPA WET Guidance Documents and be of adequate detail to allow the Discharger to immediately initiate a TRE as required in this Provision.

ii. **Accelerated Monitoring and TRE Initiation.** When the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity monitoring, and the testing meets all test acceptability criteria, the Discharger shall initiate accelerated monitoring as required in the Accelerated Monitoring Specifications. The Discharger shall initiate a TRE to address effluent toxicity if any WET testing results exceed the numeric toxicity monitoring trigger during accelerated monitoring.

iii. **Numeric Toxicity Monitoring Trigger.** The numeric toxicity monitoring trigger to initiate a TRE is >1 TUc (where TUc = 100/NOEC). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate a TRE.

iv. **Accelerated Monitoring Specifications.** If the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity testing, the Discharger shall initiate accelerated monitoring within 14-days of notification by the laboratory of the exceedance. Accelerated monitoring shall consist of four chronic toxicity tests conducted once every two weeks using the species that exhibited toxicity. The following protocol shall be used for accelerated monitoring and TRE initiation:

(a) If the results of four consecutive accelerated monitoring tests do not exceed the monitoring trigger, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring. However, notwithstanding the accelerated monitoring results, if there is adequate evidence of a pattern of effluent toxicity, the Executive Officer may require that the Discharger initiate a TRE.

(b) If the source(s) of the toxicity is easily identified (e.g., temporary plant upset), the Discharger shall make necessary corrections to the facility and shall continue accelerated monitoring until four consecutive accelerated tests do not exceed the monitoring trigger. Upon confirmation that the effluent toxicity has been removed, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring.

(c) If the result of any accelerated toxicity test exceeds the monitoring trigger, the Discharger shall cease accelerated monitoring and begin a TRE to investigate the cause(s) of, and identify corrective actions to reduce or eliminate effluent toxicity. Within thirty (30) days of notification by the laboratory of any test result exceeding the monitoring trigger during accelerated monitoring, the Discharger shall submit a TRE Action Plan to the Central Valley Water Board including, at minimum:

(1) Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including a TRE WET monitoring schedule;

(2) Specific actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and

(3) A schedule for these actions.

b. Dilution/Mixing Zone Study. If the Discharger would like to seek dilution credits towards calculation of water quality based effluent limitations, the Discharger must complete a Dilution/Mixing Zone Study in Kanaka Creek, in accordance with Section

1.4.2 of the SIP, Chapter 4 of the US EPA's *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001), and section IV.C.2.c of the Fact Sheet, Attachment F, of this Order. The Discharger shall comply with the following time schedule to complete the study:

Task	Compliance Date
i. Submit Work Plan and Time Schedule for approval by the Executive Officer	At the discretion of the Discharger
ii. Complete Dilution/Mixing Zone Study and submit Study Report	**Within 27 months** following Executive Officer approval of the Workplan and Time Schedule.

c. **Mining Waste Pile Characterization.** The Discharger shall characterize existing mining waste piles to the extent that the following classification can be made;

The California Code of Regulations, Title 27, section 22480, classifies mining wastes in three Groups as follows:

"(b) Waste Group Classification -Mining wastes shall be classified as Group A, Group B, or Group C mining wastes based on an assessment of the potential risk of water quality degradation posed by each waste. In setting requirements for each mining waste discharge under this article, the RWQCB shall assign the waste to Group A, Group B, or Group C according to the following criteria:

(1) Group A -mining wastes of Group A are wastes that must be managed as hazardous waste pursuant to Chapter 11 of Division 4.5, of Title 22 of this code, provided the RWQCB finds that such mining wastes pose a significant threat to water quality;

(2) Group B -mining waste of Group B are either:

(A) mining wastes that consist of or contain hazardous wastes, that qualify for a variance under Chapter 11 of Division 4.5, of Title 22 of this code, provided that the RWQCB finds that such mining wastes pose a low risk to water quality; or

(B) mining wastes that consist of or contain nonhazardous soluble pollutants of concentrations which exceed water quality objectives for, or could cause, degradation of waters of the state; or

(3) Group C -mining wastes from Group C are wastes from which any discharge would be in compliance with the applicable water quality control plan, including water quality objectives other than turbidity.

(c) Classification Considerations -In reaching decisions regarding classification of a mining waste as a Group B or Group C waste, the RWQCB can consider the following factors:

(1) whether the waste contains hazardous constituents only at low concentrations;

(2) whether the waste has no or low acid-generating potential; and (3) whether, because of its intrinsic properties, the waste is readily containable by less stringent measures."

The California Water Code has additional requirements for mining waste, including a report on the physical and chemical characteristics of the waste that could affect its

potential to cause pollution or contamination. A technical report is also required that evaluates the potential of the discharge of the mining waste to produce, over the long term, acid mine drainage, the discharge or leaching of heavy metals, or the release of other hazardous substances (CWC 13260(k)). This technical report should also evaluate the potential of salt loading from mining waste material (sulfate, nitrate, ammonia, etc.)

In accordance with California Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain work plans, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall contain the professional's signature and/or stamp of the seal.

The Discharger shall submit a workplan and final report in accordance with the compliance dates shown below. At a minimum, the final report shall include a map that identifies the mining waste piles within the Sixteen to One Mine property, and shall classify the mining waste piles in accordance with Title 27 classification shown above including the metals solubility.

Task	Compliance Date
i. Submit Mining Waste Pile Characterization Study Workplan and Time Schedule for approval by the Executive Officer.	1 June 2015
ii Complete mining waste pile characterization study and submit final report.	1 September 2016

3. Best Management Practices and Pollution Prevention

a. Pollutant Minimization Program

The Discharger shall develop and conduct a Pollutant Minimization Program (PMP) as further described below when there is evidence (e.g., sample results reported as DNQ when the effluent limitation is less than the MDL, sample results from analytical methods more sensitive than those methods required by this Order, presence of whole effluent toxicity, health advisories for fish consumption, results of benthic or aquatic organism tissue sampling) that a priority pollutant is present in the effluent above an effluent limitation and either:

i. A sample result is reported as DNQ and the effluent limitation is less than the RL; or

ii. A sample result is reported as ND and the effluent limitation is less than the MDL, using definitions described in Attachment A and reporting protocols described in MRP section X.B.4.

The PMP shall include, but not be limited to, the following actions and submittals acceptable to the Central Valley Water Board:

i. Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutants (arsenic, antimony, and cadmium) in the effluent at or below the effluent limitations;

ii. Implementation of appropriate cost-effective control measures for the reportable priority pollutants (arsenic, antimony, and cadmium), consistent with the control strategy; and

iii. An annual status report that shall be sent to the Central Valley Water Board on 1 February 2016 and annually thereafter. The annual status report shall include at a minimum:

(a) A summary of all actions undertaken pursuant to the control strategy; and

(b) A description of actions to be taken in the following year.

4. Construction, Operation and Maintenance Specifications – Not Applicable

5. Special Provisions for Municipal Facilities (POTWs Only) – Not Applicable

6. Other Special Provisions

a. **Ownership Change.** To maintain the accountability of the operation of the Facility, the Discharger is required to notify the succeeding owner or operator of the existence of this Order by letter if, and when, there is any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger.

7. Compliance Schedules – Not Applicable

VII. COMPLIANCE DETERMINATION

A. Average Daily Flow Effluent Limitation (Section IV.A.1.d). . Compliance with the average daily flow effluent limitation will be determined annually based on the sum of the estimated daily flows over a calendar year (e.g. January through December) divided by the number of samples.

B. Priority Pollutant Effluent Limitations. Compliance with effluent limitations for priority pollutants shall be determined in accordance with Section 2.4.5 of the SIP, as follows:

1. Dischargers shall be deemed out of compliance with an effluent limitation, if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

2. Dischargers shall be required to conduct a Pollutant Minimization Program (PMP) in accordance with section 2.4.5.1 of the SIP when there is evidence that the priority pollutant is present in the effluent above an effluent limitation and either:

a. A sample result is reported as detected, but not quantified (DNQ) and the effluent limitation is less than the RL; or

b. A sample result is reported as non-detect (ND) and the effluent limitation is less than the method detection limit (MDL).

3. When determining compliance with an average monthly effluent limitation (AMEL) and more than one sample result is available in a month, the discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of DNQ or ND. In those cases, the discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

a. The data set shall be ranked from low to high, reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

4. If a sample result, or the arithmetic mean or median of multiple sample results, is below the RL, and there is evidence that the priority pollutant is present in the effluent above an effluent limitation and the discharger conducts a PMP (as described in section 2.4.5.1), the discharger shall <u>not</u> be deemed out of compliance.

C. Permit Violations and Failure to Submit Reports. Violations of this Order and failure to submit reports containing the required monitoring results by the required dates may subject the Discharger to mandatory minimum penalties of up to $3,000 per violation and/or discretionary civil liability of up to $10,000 per day of violation as described in California Water Code section 13385 and 13268, and the State Water Resources Control Board's *Water Quality Enforcement Policy.*

ATTACHMENT A – DEFINITIONS

Arithmetic Mean (μ)
Also called the average, is the sum of measured values divided by the number of samples. For ambient water concentrations, the arithmetic mean is calculated as follows:

Arithmetic mean = $\mu = \Sigma x / n$ where: Σx is the sum of the measured ambient water concentrations, and n is the number of samples.

Average Monthly Effluent Limitation (AMEL)
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 Effluent Limitation (AWEL)
The highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Bioaccumulative
Those substances taken up by an organism from its surrounding medium through gill membranes, epithelial tissue, or from food and subsequently concentrated and retained in the body of the organism.

Carcinogenic
Pollutants are substances that are known to cause cancer in living organisms.

Coefficient of Variation (CV)
CV is a measure of the data variability and is calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.

Daily Discharge
Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

Detected, but Not Quantified (DNQ)
DNQ are those sample results less than the RL, but greater than or equal to the laboratory's MDL. Sample results reported as DNQ are estimated concentrations.

Dilution Credit
Dilution Credit is the amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the

dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

Effluent Concentration Allowance (ECA)
ECA is a value derived from the water quality criterion/objective, dilution credit, and ambient background concentration that is used, in conjunction with the coefficient of variation for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as waste load allocation (WLA) as used in U.S. EPA guidance (Technical Support Document For Water Quality-based Toxics Control, March 1991, second printing, EPA/505/2-90-001).

Estimated Chemical Concentration
The estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

Inland Surface Waters
All surface waters of the state that do not include the ocean, enclosed bays, or estuaries.

Instantaneous Maximum Effluent Limitation
The highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation
The lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

Maximum Daily Effluent Limitation (MDEL)
The highest allowable daily discharge of a pollutant, over a calendar day (or 24-hour period). 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 arithmetic mean measurement of the pollutant over the day.

Median
The middle measurement in a set of data. The median of a set of data is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of measurements (n) is odd, then the median = $X_{(n+1)/2}$. If n is even, then the median = $(X_{n/2} + X_{(n/2)+1})/2$ (i.e., the midpoint between the n/2 and n/2+1).

Method Detection Limit (MDL)
MDL is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in in 40 C.F.R. part 136, Attachment B, revised as of July 3, 1999.

Minimum Level (ML)
ML is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Mining Waste
Defined in the Porter-Cologne Water Quality Control Act (California Water Code, division 7) as "'Mining waste' means all solid, semisolid, and liquid waste materials from the extraction, beneficiation, and

processing of ores and minerals. Mining Waste includes, but is not limited to, soil, waste rock, and, overburden, as defined in Section 2712 of the Public Resources Code, and tailings, slag, and other processed waste materials…"

Mixing Zone
Mixing Zone is a limited volume of receiving water that is allocated for mixing with a wastewater discharge where water quality criteria can be exceeded without causing adverse effects to the overall water body.

Not Detected (ND)
Sample results which are less than the laboratory's MDL.

Persistent Pollutants
Persistent pollutants are substances for which degradation or decomposition in the environment is nonexistent or very slow.

Pollutant Minimization Program (PMP)
PMP means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce all potential sources of a priority pollutant(s) through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The Central Valley Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

Pollution Prevention
Pollution Prevention means any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant that is discharged into water and includes, but is not limited to, input change, operational improvement, production process change, and product reformulation (as defined in Water Code section 13263.3). Pollution prevention does not include actions that merely shift a pollutant in wastewater from one environmental medium to another environmental medium, unless clear environmental benefits of such an approach are identified to the satisfaction of the State Water Resources Control Board (State Water Board) or Central Valley Water Board.

Source of Drinking Water
Any water designated as municipal or domestic supply (MUN) in a Central Valley Water Board Basin Plan.

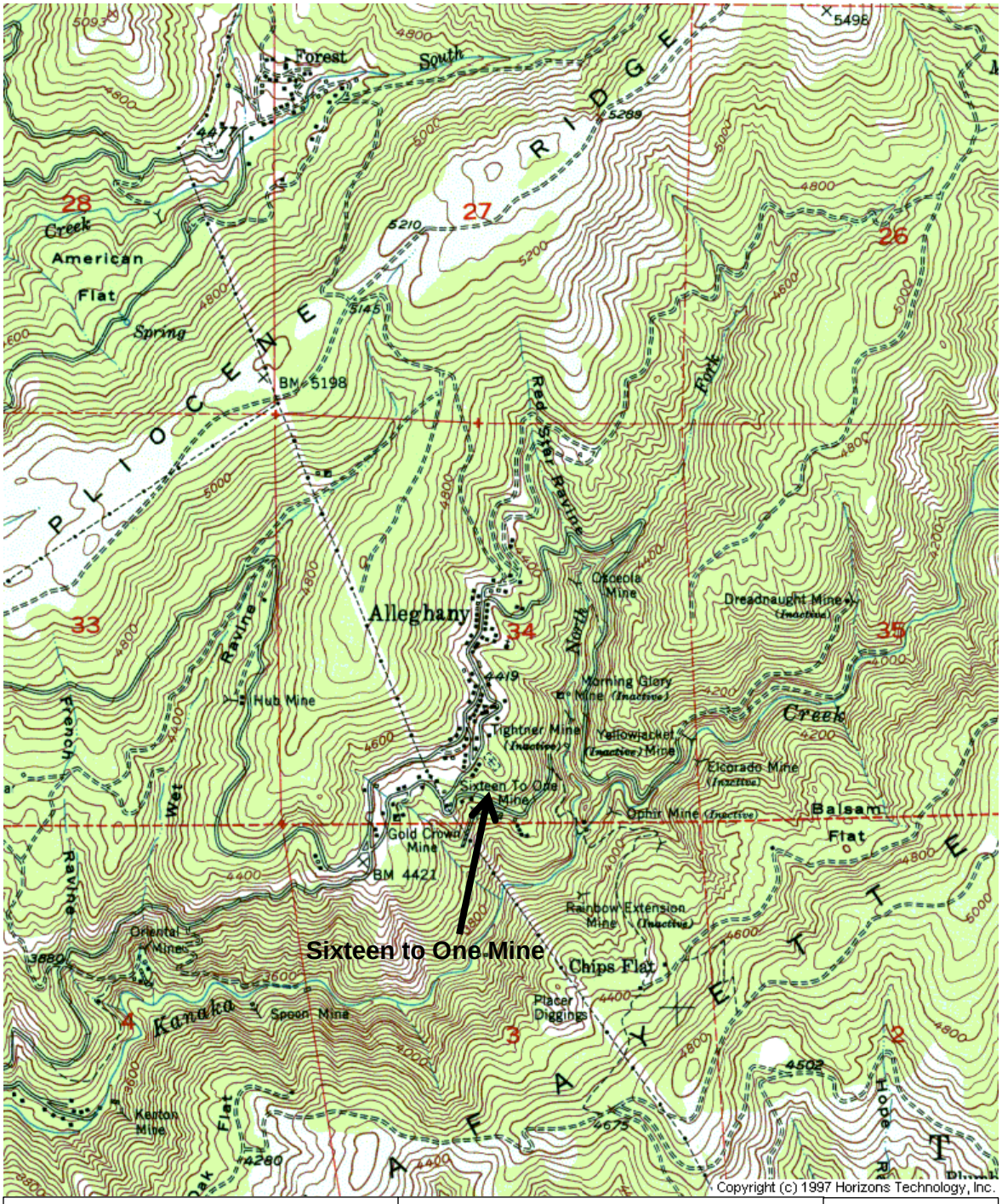
Standard Deviation (σ)
Standard Deviation is a measure of variability that is calculated as follows:

$$\sigma = (\sum[(x - \mu)^2]/(n - 1))^{0.5}$$

where:
x is the observed value;
μ is the arithmetic mean of the observed values; and
n is the number of samples.

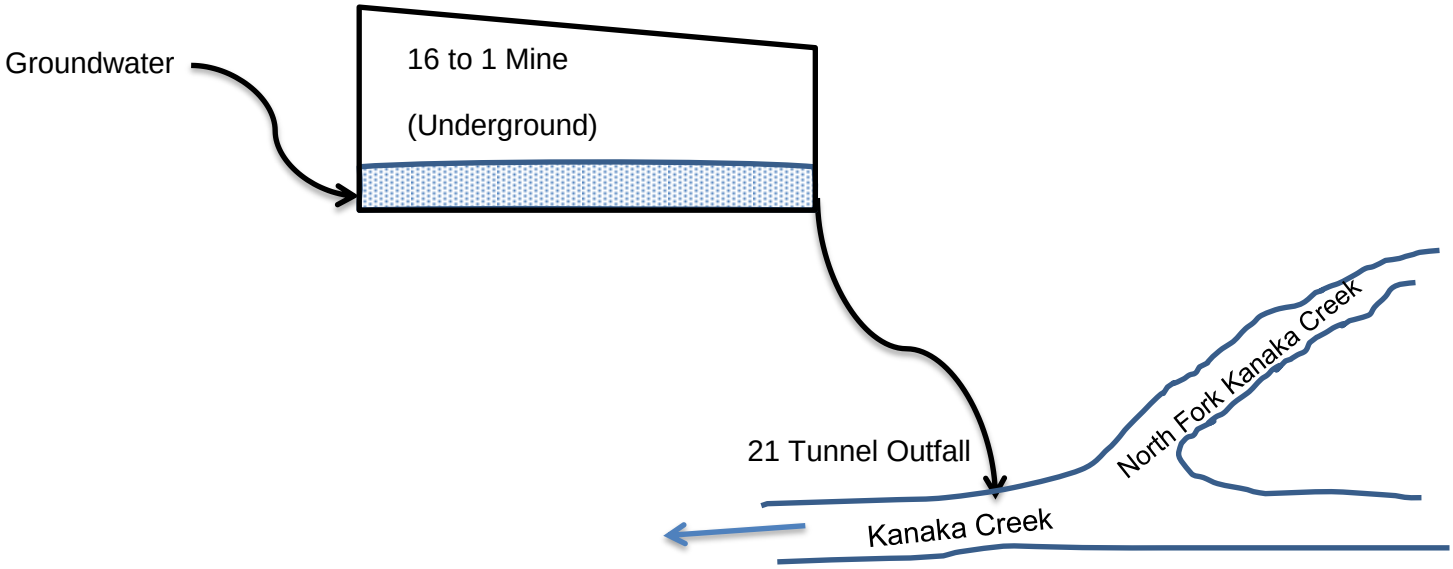
Toxicity Reduction Evaluation (TRE)
TRE is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

ATTACHMENT B – MAP



DRAWING REFERENCE: Alleghany Quadrangle U.S.G.S Topographic Map 7.5 Minute Quadrangle Sec. 34, T19N, R10E, MDB&M, Not to scale	SITE LOCATION MAP Original Sixteen To One Mine, Inc. Sixteen To One Mine Sierra County	N W E S

ATTACHMENT C – FLOW SCHEMATIC



ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the terms, requirements, and conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action, permit termination, revocation and reissuance, or modification; denial of a permit renewal application; or a combination thereof. (40 C.F.R. § 122.41(a)); Wat. Code, §§ 13261, 13263, 13265, 13268, 13000, 13001, 13304, 13350, 13385.).)
2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. (40 C.F.R. § 122.41(c).)

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 C.F.R. § 122.41(d).)

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order. (40 C.F.R. § 122.41(e).)

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 C.F.R. § 122.41(g).)
2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations. (40 C.F.R. § 122.5(c).)

F. Inspection and Entry

The Discharger shall allow the Central Valley Water Board, State Water Board, U.S. EPA, and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (33 U.S.C. § 1318(a)(4)(B); 40 C.F.R. § 122.41(i); Wat. Code, § 13383):

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (33 U.S.C § 1318(a)(4)(B)(ii); 40 C.F.R. § 122.41(i)(1); Wat. Code, §§ 13267, 13383);

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (33 U.S.C. § 1318(a)(4)(B)(ii); 40 C.F.R. § 122.41(i)(2); Wat. Code, §§ 13267, 13383);

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (33 U.S.C § 1318(a)(4)(B)(ii); 40 C.F.R. § 122.41(i)(3); Wat. Code, § 13267, 13383); and

4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (33 U.S.C § 1318(a)(4)(B); 40 C.F.R. § 122.41(i)(4); Wat. Code, §§ 13267, 13383.)

G. Bypass

1. Definitions

   a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. (40 C.F.R. § 122.41(m)(1)(i).)

   b. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 C.F.R. § 122.41(m)(1)(ii).)

2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 C.F.R. § 122.41(m)(2).)

3. Prohibition of bypass. Bypass is prohibited, and the Central Valley Water Board may take enforcement action against a Discharger for bypass, unless (40 C.F.R. § 122.41(m)(4)(i)):

   a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 C.F.R. § 122.41(m)(4)(i)(A));

   b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 C.F.R. § 122.41(m)(4)(i)(B)); and

   c. The Discharger submitted notice to the Central Valley Water Boards required under Standard Provisions – Permit Compliance I.G.5 below. (40 C.F.R. § 122.41(m)(4)(i)(C).)

4. The Central Valley Water Board may approve an anticipated bypass, after considering its adverse effects, if the Central Valley Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 C.F.R. § 122.41(m)(4)(ii).)

5. Notice

a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass. (40 C.F.R. § 122.41(m)(3)(i).)

b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). (40 C.F.R. § 122.41(m)(3)(ii).)

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. (40 C.F.R. § 122.41(n)(1).)

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 C.F.R. § 122.41(n)(2).)

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 C.F.R. § 122.41(n)(3)):

   a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 C.F.R. § 122.41(n)(3)(i));

   b. The permitted facility was, at the time, being properly operated (40 C.F.R. § 122.41(n)(3)(ii));

   c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b below (24-hour notice) (40 C.F.R. § 122.41(n)(3)(iii)); and

   d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 C.F.R. § 122.41(n)(3)(iv).)

3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 C.F.R. § 122.41(n)(4).)

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition. (40 C.F.R. § 122.41(f).)

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit. (40 C.F.R. § 122.41(b).)

C. Transfers

This Order is not transferable to any person except after notice to the Central Valley Water Board. The Central Valley Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 C.F.R. § 122.41(l)(3); 122.61.)

III. STANDARD PROVISIONS – MONITORING

A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 C.F.R. § 122.41(j)(1).)

B. Monitoring results must be conducted according to test procedures approved under 40 C.F.R. part 136 for the analyses of pollutants unless another method is required under 40 C.F.R. subchapters N or O. In the case of pollutants for which there are no approved methods under 40 C.F.R. part 136 or otherwise required under 40 C.F.R. subchapters N or O, monitoring must be conducted according to a test procedure specified in this Order for such pollutants. (40 C.F.R. § 122.41(j)(4); 122.44(i)(1)(iv).)

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 C.F.R. part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Central Valley Water Board Executive Officer at any time. (40 C.F.R. § 122.41(j)(2).)

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements (40 C.F.R. § 122.41(j)(3)(i));
2. The individual(s) who performed the sampling or measurements (40 C.F.R. § 122.41(j)(3)(ii));
3. The date(s) analyses were performed (40 C.F.R. § 122.41(j)(3)(iii));
4. The individual(s) who performed the analyses (40 C.F.R. § 122.41(j)(3)(iv));
5. The analytical techniques or methods used (40 C.F.R. § 122.41(j)(3)(v)); and
6. The results of such analyses. (40 C.F.R. § 122.41(j)(3)(vi).)

C. Claims of confidentiality for the following information will be denied (40 C.F.R. § 122.7(b)):

1. The name and address of any permit applicant or Discharger (40 C.F.R. § 122.7(b)(1)); and
2. Permit applications and attachments, permits and effluent data. (40 C.F.R. § 122.7(b)(2).)

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Central Valley Water Board, State Water Board, or U.S. EPA within a reasonable time, any information which the Central Valley Water Board, State Water Board, or U.S. EPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Central Valley Water Board, State Water Board, or U.S. EPA copies of records required to be kept by this Order. (40 C.F.R. § 122.41(h); Wat. Code, § 13267, 13383.)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Central Valley Water Board, State Water Board, and/or U.S. EPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 C.F.R. § 122.41(k).)

2. All permit applications shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. (40 C.F.R. § 122.22(a)(1).)

3. All reports required by this Order and other information requested by the Central Valley Water Board, State Water Board, or U.S. EPA shall be signed by a person described in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

    a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above (40 C.F.R. § 122.22(b)(1));

    b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 C.F.R. § 122.22(b)(2)); and

    c. The written authorization is submitted to the Central Valley Water Board and State Water Board. (40 C.F.R. § 122.22(b)(3).)

4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the Central Valley Water Board

and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 C.F.R. § 122.22(c).)

5. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." (40 C.F.R. § 122.22(d).)

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 C.F.R. § 122.41(l)(4).)
2. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 C.F.R. part 136, or another method required for an industry-specific waste stream under 40 C.F.R. subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the form specified by the Central Valley Water Board. (40 C.F.R. § 122.41(l)(4)(ii).)
3. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. (40 C.F.R. § 122.41(l)(4)(iii).)

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date. (40 C.F.R. § 122.41(l)(5).)

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 C.F.R. § 122.41(l)(6)(i).)
2. The following shall be included as information that must be reported within 24 hours under this paragraph (40 C.F.R. § 122.41(l)(6)(ii)):
   a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(A).)
   b. Any upset that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(B).)

3. The Central Valley Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours. (40 C.F.R. § 122.41(l)(6)(iii).)

F. Planned Changes

The Discharger shall give notice to the Central Valley Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when (40 C.F.R. § 122.41(l)(1)):

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in section 122.29(b) (40 C.F.R. § 122.41(l)(1)(i)); or
2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in this Order nor to notification requirements under section 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1). (40 C.F.R. § 122.41(l)(1)(ii).)
3. The alteration or addition results in a significant change in the Discharger's disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 C.F.R.§ 122.41(l)(1)(iii).)

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Central Valley Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with this Order’s requirements. (40 C.F.R. § 122.41(l)(2).)

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting V.C, V.D, and V.E above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E above. (40 C.F.R. § 122.41(l)(7).)

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Central Valley Water Board**,** State Water Board, or U.S. EPA, the Discharger shall promptly submit such facts or information. (40 C.F.R. § 122.41(l)(8).)

VI. STANDARD PROVISIONS – ENFORCEMENT

A. The Central Valley Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Non-Municipal Facilities

Existing manufacturing, commercial, mining, and silvicultural Dischargers shall notify the Central Valley Water Board as soon as they know or have reason to believe (40 C.F.R. § 122.42(a)):

1. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" (40 C.F.R. § 122.42(a)(1)):
   a. 100 micrograms per liter (µg/L) (40 C.F.R. § 122.42(a)(1)(i));
   b. 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 milligram per liter (mg/L) for antimony (40 C.F.R. § 122.42(a)(1)(ii));
   c. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 C.F.R. § 122.42(a)(1)(iii)); or
   d. The level established by the Central Valley Water Board in accordance with section 122.44(f). (40 C.F.R. § 122.42(a)(1)(iv).)
2. That any activity has occurred or will occur that would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following “notification levels" (40 C.F.R. § 122.42(a)(2)):
   a. 500 micrograms per liter (µg/L) (40 C.F.R. § 122.42(a)(2)(i));
   b. 1 milligram per liter (mg/L) for antimony (40 C.F.R. § 122.42(a)(2)(ii));
   c. Ten (10) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 C.F.R. § 122.42(a)(2)(iii)); or
   d. The level established by the Central Valley Water Board in accordance with section 122.44(f). (40 C.F.R. § 122.42(a)(2)(iv).)

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

The Code of Federal Regulations (40 C.F.R. § 122.48) requires that all NPDES permits specify monitoring and reporting requirements. Water Code sections 13267 and 13383 also authorize the Central Valley Water Board to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements that implement federal and California regulations.

I. GENERAL MONITORING PROVISIONS

A. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring locations specified below and, unless otherwise specified, before the monitored flow joins or is diluted by any other waste stream, body of water, or substance. Monitoring locations shall not be changed without notification to and the approval of the Central Valley Water Board.

B. Effluent samples shall be taken downstream of the last addition of wastes to the treatment or discharge works where a representative sample may be obtained prior to mixing with the receiving waters. Samples shall be collected at such a point and in such a manner to ensure a representative sample of the discharge.

C. Chemical, bacteriological, and bioassay analyses of any material required by this Order shall be conducted by a laboratory certified for such analyses by the State Water Board Division of Drinking Water Programs (DDWP). Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the Central Valley Water Board. In the event a certified laboratory is not available to the Discharger for any onsite field measurements such as pH, DO, turbidity, and temperature, such analyses performed by a noncertified laboratory will be accepted provided a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program for any onsite field measurements such as pH, DO, turbidity, and temperature must be kept onsite in the treatment facility laboratory and shall be available for inspection by Central Valley Water Board staff. The Discharger must demonstrate sufficient capability (qualified and trained employees, properly calibrated and maintained field instruments, etc.) to adequately perform these field measurements. The Quality Assurance-Quality Control Program must conform to U.S. EPA guidelines or to procedures approved by the Central Valley Water Board.

D. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary, at least yearly, to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year to ensure continued accuracy of the devices.

E. Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this Monitoring and Reporting Program.

F. Laboratories analyzing monitoring samples shall be certified by the DDWP, in accordance with the provision of Water Code section 13176, and must include quality assurance/quality control data with their reports.

G. The Discharger shall file with the Central Valley Water Board technical reports on self-monitoring performed according to the detailed specifications contained in this Monitoring and Reporting Program.

H. The results of all monitoring required by this Order shall be reported to the Central Valley Water Board, and shall be submitted in such a format as to allow direct comparison with the limitations and requirements of this Order. Unless otherwise specified, discharge flows shall be reported in terms of the monthly average and the daily maximum discharge flows.

I. Violations of this Order and failure to submit reports containing the required monitoring results by the required dates may subject the Discharger to mandatory minimum penalties of up to $3,000 per violation and/or discretionary civil liability of up to $10,000 per violation as described in California Water Code sections 13385 and 13268, and the State Water Resources Control Board's *Water Quality Enforcement Policy.*

II. MONITORING LOCATIONS

The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order:

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
001	EFF-001	21 Tunnel Portal Discharge Latitude: 39 º 27 ' 45 " N Longitude: 120 º 50 ' 15 " W
--	RSW-001	Upstream surface water monitoring location 100 feet upstream of discharge point
--	RSW-002	Downstream surface water monitoring location at the nearest accessible location 300 feet downstream of discharge point

III. INFLUENT MONITORING REQUIREMENTS – NOT APPLICABLE

IV. EFFLUENT MONITORING REQUIREMENTS

A. 21 Tunnel Portal, Monitoring Location EFF-001

1. The Discharger shall monitor 21 Tunnel Portal mine drainage at Monitoring Location EFF-001 as follows. If more than one analytical test method is listed for a given parameter, the Discharger must select from the listed methods and corresponding Minimum Level:

Table E-2. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow [8]	mgd	Estimate [8]	1/Quarter	[1]
Dissolved Oxygen	mg/L	Grab [2]	1/Quarter	[1]
Electrical Conductivity @ 25°C	µmhos/cm	Grab [2]	1/Quarter	[1]
Hardness (as $CaCO_3$)	mg/L	Grab	1/Quarter [6]	[1]
pH	--	Grab [2]	1/Quarter	[1]
Total Suspended Solids	mg/L	Grab	1/Quarter	[1]
Antimony, Total	µg/L	Grab	1/Quarter	[1]
Arsenic, Total	µg/L	Grab	1/Quarter	[1]
Cadmium, Total	µg/L	Grab	1/Quarter [6]	[1]
Copper, Total	µg/L	Grab	1/Quarter [6]	[1]
Iron, Total	µg/L	Grab	1/Quarter	[1]
Lead, Total	µg/L	Grab	1/Quarter [6]	
Manganese, Total	µg/L	Grab	1/Quarter	[1]
Nickel, Total	µg/L	Grab	1/Quarter [6]	
Priority Pollutants and Other Constituents of Concern	µg/L	Grab [4]	See Table E-5 [5, 6]	See Table E-5 [1, 3, 7]
Whole Effluent Toxicity (see Section V. below)	--	--	--	--

[1] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

[2] 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 Facility.

[3] For priority pollutant constituents the reporting level shall be consistent with Sections 2.4.2 and 2.4.3 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (See Attachment I, Table I-1).

[4] Volatile constituents shall be sampled in accordance with 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

[5] Priority pollutants and other constituents of concern shall be sampled quarterly during the third year following the date of permit adoption and shall be conducted concurrently with upstream receiving water monitoring for hardness (as $CaCO_3$) and pH. (See Attachment I.)

[6] Hardness samples shall be collected concurrently with cadmium, copper, lead, and nickelsamples.

[7] Unfiltered total mercury samples shall be taken using clean hands/dirty hands procedures, as described in U.S. EPA method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, for collection of equipment blanks (section 9.4.4.2), and shall be analyzed by U.S. EPA method 1630/1631 (Revision E) with a method detection limit of 0.2 ng/l for total mercury.

[8] <u>One Method of Estimating Flow Rate:</u>

Width of Test Section	= W (feet)
Average Depth of Test Section	= D (feet)
Length of Test Section	= L (feet)
Travel Time for Object Flowing Length of Test Section	= T (seconds)
Flow Velocity	= V = L ÷ T (feet/second)
Cross Sectional Area	= A = W x D (square feet)
Flow Rate	= Q = V x A (cubic feet/second) = V x A x 0.64632 (mgd)

This method or another comparable method shall be used to estimate flow. If this method is not used, the method used must be clearly explained in the monitoring report.

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

A. Chronic Toxicity Testing (and Acute Toxicity Testing). The Discharger shall conduct three species chronic toxicity testing to determine whether the effluent is contributing chronic toxicity to the receiving water. The results of the Chronic Toxicity Test include acute toxicity results and will be used to determine compliance with the Acute Toxicity Effluent Limitation. The Discharger shall meet the following chronic toxicity testing requirements:

1. *Monitoring Frequency –* The Discharger shall perform the three species chronic toxicity test one time per permit term.

2. *Sample Types* – Effluent samples shall grab samples and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at the effluent monitoring location EFF-001. The receiving water control shall be a grab sample obtained from the RSW-001 sampling location, as identified in this Monitoring and Reporting Program.

3. *Sample Volumes* – Adequate sample volumes shall be collected to provide renewal water to complete the test in the event that the discharge is intermittent.

4. *Test Species* – Chronic toxicity testing measures sublethal (e.g., reduced growth, reproduction) and/or lethal effects to test organisms exposed to an effluent compared to that of the control organisms. The Discharger shall conduct chronic toxicity tests with:

a. The cladoceran, water flea, *Ceriodaphnia dubia* (survival and reproduction test)

b. The fathead minnow, *Pimephales promelas* (larval survival and growth test); and

c. The green alga, *Selenastrum capricornutum* (growth test).

5. *Methods* – The presence of chronic toxicity shall be estimated as specified in Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002.

6. *Reference Toxicant –* As required by the SIP, all chronic toxicity tests shall be conducted with concurrent testing with a reference toxicant and shall be reported with the chronic toxicity test results.

7. *Dilutions* – For routine and accelerated chronic toxicity monitoring, it is not necessary to perform the test using a dilution series. The test may be performed using 100% effluent and one control. For TRE monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-5, below, unless an alternative dilution series is detailed in the submitted TRE Action Plan. A receiving water control or laboratory water control may be used as the diluent.

Table E-3. Chronic Toxicity Testing Dilution Series

Sample	Dilutions (%)					Control
	100	75	50	25	12.5	
% Effluent	100	75	50	25	12.5	0
% Control Water	0	25	50	75	87.5	100

8. *Test Failure* – The Discharger must re-sample and re-test as soon as possible, but no later than fourteen (14) days after receiving notification of a test failure. A test failure is defined as follows:

a. The reference toxicant test or the effluent test does not meet all test acceptability criteria as specified in the Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002 (Method Manual), and its subsequent amendments or revisions; or

b. The percent minimum significant difference (PMSD) measured for the test exceeds the upper PMSD bound variability criterion in Table 6 on page 52 of the Method Manual. (A retest is only required in this case if the test results do not exceed the monitoring trigger specified in the Special Provision at section VI. 2.a.iii. of the Order.)

B. WET Testing Notification Requirements. The Discharger shall notify the Central Valley Water Board within 24-hours after the receipt of test results exceeding the monitoring trigger during regular or accelerated monitoring, or an exceedance of the acute toxicity effluent limitation shown by the Chronic Toxicity Test.

C. WET Testing Reporting Requirements. All toxicity test reports shall include the contracting laboratory's complete report provided to the Discharger and shall be in accordance with the appropriate "Report Preparation and Test Review" sections of the method manuals. At a minimum, whole effluent toxicity monitoring shall be reported as follows:

1. Chronic WET Reporting. Regular chronic toxicity monitoring results shall be reported to the Central Valley Water Board within 30 days following completion of the test, and shall contain, at minimum:

a. The results expressed in TUc, measured as 100/NOEC, and also measured as 100/LC50, 100/EC25, 100/IC25, and 100/IC50, as appropriate.

b. The statistical methods used to calculate endpoints;

c. The statistical output page, which includes the calculation of the percent minimum significant difference (PMSD);

d. The dates of sample collection and initiation of each toxicity test; and

e. The results compared to the numeric toxicity monitoring trigger.

2. **TRE Reporting.** Reports for TREs shall be submitted in accordance with the schedule contained in the Discharger's approved TRE Workplan, or as amended by the Discharger's TRE Action Plan.

3. **Quality Assurance (QA).** The Discharger must provide the following information for QA purposes:

   a. Results of the applicable reference toxicant data with the statistical output page giving the species, NOEC, LOEC, type of toxicant, dilution water used, concentrations used, PMSD, and dates tested.

   b. The reference toxicant control charts for each endpoint, which include summaries of reference toxicant tests performed by the contracting laboratory.

   c. Any information on deviations or problems encountered and how they were dealt with.

VI. LAND DISCHARGE MONITORING REQUIREMENTS – NOT APPLICABLE

VII. RECYCLING MONITORING REQUIREMENTS – NOT APPLICABLE

VIII. RECEIVING WATER MONITORING REQUIREMENTS

A. Monitoring Locations RSW-001 and RSW-002

1. The Discharger shall monitor Kanaka Creek at RSW-001 and RSW-002 as follows:

Table E-4. Receiving Water Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow [3]	mgd	Estimate	Quarterly	--
pH	--	Grab [2]	Quarterly	--
Temperature	º F	Grab	Quarterly	--
Dissolved Oxygen	mg/L	Grab [2]	Quarterly	--
Electrical Conductivity @ 25°C	µmhos/cm	Grab [2]	Quarterly	--
Hardness (as $CaCO_3$)	mg/L	Grab	Quarterly	--
Turbidity	NTU	Grab [2]	Quarterly	--
Arsenic, Total	µg/L	Grab	Quarterly	--
Priority Pollutants and Other Constituents of Concern	As appropriate	Grab	See Table E-5 [1]	See Table E-5

1 Priority pollutants and other constituents of concern shall be sampled quarterly during the third year following the date of permit adoption and shall be conducted concurrently with receiving water monitoring for hardness (as $CaCO_3$) and pH.

2 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 Facility.

3 <u>One Method of Estimating Flow Rate:</u>

Width of Test Section	= W (feet)
Average Depth of Test Section	= D (feet)
Length of Test Section	= L (feet)
Travel Time for Object Flowing Length of Test Section	= T (seconds)
Flow Velocity	= V = L ÷ T (feet/second)
Cross Sectional Area	= A = W x D (square feet)
Flow Rate	= Q = V x A (cubic feet/second) = V x A x 0.64632 (mgd)

IX. OTHER MONITORING REQUIREMENTS

A. Effluent and Receiving Water Characterization

1. **2017 Monitoring**. Biannual priority pollutant samples shall be collected from the effluent and upstream receiving water (EFF-001 and RSW-001) and analyzed for the constituents listed in Table E-5, below. Biannual monitoring shall be conducted during the third year of the term of this Order (2 samples, obtained six months apart (e.g. January and July, or February and August, etc.) and the results of such monitoring be submitted to the Central Valley Water Board with the monthly self-monitoring reports. Each individual monitoring event shall provide representative sample results for the effluent and upstream receiving water.
2. **Concurrent Sampling.** Effluent and receiving water sampling shall be performed at approximately the same time, on the same date.
3. **Sample type.** All effluent and receiving water samples shall be taken as grab samples, as described in **Table E-5**, below.

Table E-5. Effluent and Receiving Water Characterization Monitoring

Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
Acrolein	µg/L	Grab	
Acrylonitrile	µg/L	Grab	
Benzene	µg/L	Grab	
Bromoform	µg/L	Grab	
Carbon Tetrachloride	µg/L	Grab	
Chlorobenzene	µg/L	Grab	
1,2,4-Trichlorobenzene	µg/L	Grab	
1,2-Dichloroethane	µg/L	Grab	
1,1,1-Trichloroethane	µg/L	Grab	
1,1-Dichloroethane	µg/L	Grab	
1,1,2,2-Tetrachloroethane	µg/L	Grab	
Chloroethane	µg/L	Grab	
1,2-Dichlorobenzene	µg/L	Grab	
1,3-Dichlorobenzene	µg/L	Grab	
1,4-Dichlorobenzene	µg/L	Grab	
1,1-Dichloroethylene	µg/L	Grab	
1,2-Dichloropropane	µg/L	Grab	
1,3-Dichloropropylene	µg/L	Grab	
Methyl bromide	µg/L	Grab	
2-Chloroethyl vinyl ether	µg/L	Grab	1
Chloroform	µg/L	Grab	2
Dibromochloromethane	µg/L	Grab	0.5
Dichlorobromomethane	µg/L	Grab	0.5
Dichloromethane	µg/L	Grab	2
Ethylbenzene	µg/L	Grab	2
Hexachlorobenzene	µg/L	Grab	1

Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
Hexachlorobutadiene	µg/L	Grab	1
Hexachloroethane	µg/L	Grab	1
Naphthalene	µg/L	Grab	10
Tetrachloroethene	µg/L	Grab	0.5
Toluene	µg/L	Grab	2
trans-1,2-Dichloroethylene	µg/L	Grab	1
Trichloroethene	µg/L	Grab	2
Vinyl chloride	µg/L	Grab	0.5
1,2-Benzanthracene	µg/L	Grab	5
1,2-Diphenylhydrazine	µg/L	Grab	1
2-Chlorophenol	µg/L	Grab	5
2,4-Dichlorophenol	µg/L	Grab	5
2,4-Dimethylphenol	µg/L	Grab	2
2,4-Dinitrophenol	µg/L	Grab	5
2,4-Dinitrotoluene	µg/L	Grab	5
2,4,6-Trichlorophenol	µg/L	Grab	10
2,6-Dinitrotoluene	µg/L	Grab	5
2-Nitrophenol	µg/L	Grab	10
2-Chloronaphthalene	µg/L	Grab	10
3,3'-Dichlorobenzidine	µg/L	Grab	5
3,4-Benzofluoranthene	µg/L	Grab	10
4-Chloro-3-methylphenol	µg/L	Grab	5
4,6-Dinitro-2-methylphenol	µg/L	Grab	10
4-Nitrophenol	µg/L	Grab	10
4-Bromophenyl phenyl ether	µg/L	Grab	10
4-Chlorophenyl phenyl ether	µg/L	Grab	5
Acenaphthene	µg/L	Grab	1
Acenaphthylene	µg/L	Grab	10
Anthracene	µg/L	Grab	10
Benzidine	µg/L	Grab	5
Benzo(a)pyrene (3,4-Benzopyrene)	µg/L	Grab	2
Benzo(g,h,i)perylene	µg/L	Grab	5
Benzo(k)fluoranthene	µg/L	Grab	2
Bis(2-chloroethoxy) methane	µg/L	Grab	5
Bis(2-chloroethyl) ether	µg/L	Grab	1
Bis(2-chloroisopropyl) ether	µg/L	Grab	10
Bis(2-ethylhexyl) phthalate	µg/L	Grab	5
Butyl benzyl phthalate	µg/L	Grab	10
Chrysene	µg/L	Grab	5
Di-n-butylphthalate	µg/L	Grab	10
Di-n-octylphthalate	µg/L	Grab	10
Dibenzo(a,h)-anthracene	µg/L	Grab	0.1
Diethyl phthalate	µg/L	Grab	10
Dimethyl phthalate	µg/L	Grab	10

Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
Fluoranthene	µg/L	Grab	10
Fluorene	µg/L	Grab	10
Hexachlorocyclopentadiene	µg/L	Grab	5
Indeno(1,2,3-c,d)pyrene	µg/L	Grab	0.05
Isophorone	µg/L	Grab	1
N-Nitrosodiphenylamine	µg/L	Grab	1
N-Nitrosodimethylamine	µg/L	Grab	5
N-Nitrosodi-n-propylamine	µg/L	Grab	5
Nitrobenzene	µg/L	Grab	10
Pentachlorophenol	µg/L	Grab	1
Phenanthrene	µg/L	Grab	5
Phenol	µg/L	Grab	1
Pyrene	µg/L	Grab	10
Aluminum	µg/L	Grab	
Antimony	µg/L	Grab	5
Arsenic	µg/L	Grab	10
Asbestos	µg/L	Grab	
Barium	µg/L	Grab	
Beryllium	µg/L	Grab	2
Cadmium	µg/L	Grab	0.5
Chromium (III)	µg/L	Grab	50
Chromium (VI)	µg/L	Grab	10
Copper	µg/L	Grab	0.5
Cyanide	µg/L	Grab	5
Fluoride	µg/L	Grab	
Iron	µg/L	Grab	
Lead	µg/L	Grab	0.5
Mercury	µg/L	Grab	0.5
Manganese	µg/L	Grab	
Molybdenum	µg/L	Grab	
Nickel	µg/L	Grab	20
Selenium	µg/L	Grab	5
Silver	µg/L	Grab	0.25
Thallium	µg/L	Grab	1
Tributyltin	µg/L	Grab	
Zinc	µg/L	Grab	20
4,4'-DDD	µg/L	Grab	0.05
4,4'-DDE	µg/L	Grab	0.05
4,4'-DDT	µg/L	Grab	0.01
alpha-Endosulfan	µg/L	Grab	0.02
alpha-Hexachlorocyclohexane (BHC)	µg/L	Grab	0.01
Alachlor	µg/L	Grab	
Aldrin	µg/L	Grab	0.005
beta-Endosulfan	µg/L	Grab	0.01

Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
beta-Hexachlorocyclohexane	µg/L	Grab	0.005
Chlordane	µg/L	Grab	0.1
delta-Hexachlorocyclohexane	µg/L	Grab	0.005
Dieldrin	µg/L	Grab	0.01
Diuron	µg/L	Grab	0.05
Endosulfan sulfate	µg/L	Grab	0.01
Endrin	µg/L	Grab	0.01
Endrin Aldehyde	µg/L	Grab	0.01
Heptachlor	µg/L	Grab	0.01
Heptachlor Epoxide	µg/L	Grab	0.02
Lindane (gamma-	µg/L	Grab	0.5
PCB-1016	µg/L	Grab	0.5
PCB-1221	µg/L	Grab	0.5
PCB-1232	µg/L	Grab	0.5
PCB-1242	µg/L	Grab	0.5
PCB-1248	µg/L	Grab	0.5
PCB-1254	µg/L	Grab	0.5
PCB-1260	µg/L	Grab	0.5
2,3,7,8-TCDD (Dioxin)	µg/L	Grab	
Boron	µg/L	Grab	
Chloride	mg/L	Grab	
Flow	MGD	Meter	
Hardness (as $CaCO_3$)	mg/L	Grab	
Mercury, Methyl	ng/L	Grab	
pH	Std Units	Grab	
Phosphorus, Total (as P)	mg/L	Grab	
Sodium		Grab	
Specific conductance (EC)	µmhos/cm	Grab	
Sulfate	mg/L	Grab	
Sulfide (as S)	mg/L	Grab	
Sulfite (as SO_3)	mg/L	Grab	
Temperature	^oC	Grab	
Total Dissolved Solids (TDS)	mg/L	Grab	

[1] The reporting levels required in this table for priority pollutant constituents are established based on section 2.4.2 and appendix 4 of the SIP.

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.

2. Upon written request of the Central Valley Water Board, the Discharger shall submit a summary monitoring report. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year(s).

3. **Compliance Time Schedules.** For compliance time schedules included in the Order, the Discharger shall submit to the Central Valley Water 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 Central Valley Water Board by letter when it returns to compliance with the compliance time schedule.

4. The Discharger shall report to the Central Valley Water 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.

B. Self-Monitoring Reports (SMR's)

1. The Discharger shall electronically submit SMR's using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). The CIWQS Web site will provide additional information for SMR submittal in the event there will be a planned service interruption for electronic submittal.

2. The Discharger shall report in the SMR the results for all monitoring specified in this MRP under sections III through IX. The Discharger shall submit **quarterly** SMR's including the results of all required monitoring using U.S. EPA-approved test methods or other test methods specified in this Order. SMR's are to include all new monitoring results obtained since the last SMR was submitted. If the Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.

3. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-6. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Quarterly	Permit Effective Date	1 January through 31 March 1 April through 30 June 1 July through 30 September 1 October through 31 December	1 May 1 August 1 November 1 February
Annually	Permit Effective Date	1 January through 31 December	1 February

4. Reporting Protocols. The Discharger shall report with each sample result the applicable Reporting Level (RL) and the current laboratory's Method Detection Limit (MDL), as determined by the procedure in 40 C.F.R. part 136.

   The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

   a. Sample results greater than or equal to the RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).

   b. Sample results less than the RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ. The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (± a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.

d. Dischargers are to instruct laboratories to establish calibration standards so that the Minimum Level (ML) value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

5. Multiple Sample Data. When determining compliance with an AMEL or MDEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of "Detected, but Not Quantified" (DNQ) or "Not Detected" (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

   a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

   b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

6. The Discharger shall submit SMR's in accordance with the following requirements:

   a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.

   b. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDR's; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.

7. The Discharger shall submit in the SMR's calculations and reports in accordance with the following requirements:

   a. **Annual Average Limitations**. For constituents with effluent limitations specified as "annual average" (electrical conductivity, iron, and manganese) the Discharger

shall report the annual average in the December SMR. The annual average shall be calculated as the average of the samples gathered for the calendar year.

b. **Turbidity Receiving Water Limitations**. The Discharger shall calculate and report the turbidity increase in the receiving water applicable to the natural turbidity condition specified in Section V.A.13.a-e of the Limitations and Discharge Requirements.

c. **Temperature Receiving Water Limitations**. The Discharger shall calculate and report the temperature increase in the receiving water based on the difference in temperature at RSW-001 and RSW-002.

C. Discharge Monitoring Reports (DMR's) – Not Applicable

D. Other Reports

1. The Discharger shall report the results of any TRE/TIE and PMP required by Special Provisions – VI.C.2.a and VI.C.3.a. The Discharger shall submit reports with the first SMR scheduled to be submitted on or immediately following the report due date, in compliance with SMR reporting requirements described in subsection X.B above.

2. Within 60 days of permit adoption, the Discharger shall submit a report outlining reporting levels (RLs), method detection limits, and analytical methods for approval. The Discharger shall comply with the monitoring and reporting requirements for CTR constituents as outlined in section 2.3 and 2.4 of the SIP. The maximum required reporting levels for priority pollutant constituents shall be based on the Minimum Levels (MLs) contained in Appendix 4 of the SIP, determined in accordance with Section 2.4.2 and Section 2.4.3 of the SIP. In accordance with Section 2.4.2 of the SIP, when there is more than one ML value for a given substance, the Central Valley Water Board shall include as RLs, in the permit, all ML values, and their associated analytical methods, listed in Appendix 4 that are below the calculated effluent limitation. The Discharger may select any one of those cited analytical methods for compliance determination. If no ML value is below the effluent limitation, then the Central Valley Water Board shall select as the RL, the lowest ML value, and its associated analytical method, listed in Appendix 4 for inclusion in the permit. Table I-1 (Attachment I) provides required maximum reporting levels in accordance with the SIP.

3. If the Discharger would like to seek dilution credits towards calculation of water quality effluent limitations, the Discharger must complete a Dilution/Mixing Zone Study in Kanaka Creek, in accordance with Section 1.4.2 of the SIP, Chapter 4 of the US EPA's *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001), and section IV.C.2.c of the Fact Sheet, Attachment F, of this Order. Submittal, of a Workplan and Time Schedule, is necessary for completion of the Dilution/Mixing Zone Study. The timing of the submittals is at the discretion of the Discharger. However, once the Workplan and schedule have been approved by the Executive Officer of the Central Valley Water Board, the Discharger must submit a complete Dilution/Mixing Zone Study Report within 27 months.

4. An annual status report regarding the Pollutant Minimization Program shall be sent to the Central Valley Water Board on 1 February 2016 and annually thereafter. The annual status report shall include a summary of all actions undertaken pursuant to the control strategy, and a description of actions to be taken in the following year.

5. For characterization of the waste piles, the Discharger shall submit a work plan and schedule, for approval by the Executive Officer, by 1 June 2015, and shall submit a Mining Waste Pile Characterization Report by 1 September 2016.

ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

As described in section II.B of this Order, the Central Valley Water Board incorporates this Fact Sheet as findings of the Central Valley Water Board supporting the issuance of this Order. This Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for Dischargers in California. Only those sections or subsections of this Order that are specifically identified as “not applicable” have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as “not applicable” are fully applicable to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table F-1. Facility Information

WDID	5A462023001
Discharger	Original Sixteen to One Mine, Inc.
Name of Facility	Sixteen to One Mine
Facility Address	506 Miners Street Alleghany, CA 95910 Sierra County
Facility Contact, Title and Phone	Michael M. Miller, President (530) 287-3223
Authorized Person to Sign and Submit Reports	Michael M. Miller
Mailing Address	P.O. Box 909 Alleghany, CA 95910
Billing Address	Same as Mailing Address
Type of Facility	Gold Mine, SIC Code 1041
Major or Minor Facility	Minor
Pretreatment Program	Not Applicable
Recycling Requirements	Not Applicable
Facility Permitted Flow	0.28 million gallons per day (mgd) (Average Flow)
Facility Design Flow	Not Applicable
Watershed	Camptonville Hydrologic Subarea 517.42, Middle Yuba Hydrologic Area, Yuba River Hydrologic Unit, of the Sacramento Hydrologic Basin
Receiving Water	Kanaka Creek
Receiving Water Type	Inland surface water

A. The Original Sixteen to One Mine, Inc. (hereinafter Discharger) is the owner and operator of Sixteen to One Mine (hereinafter Facility or Sixteen to One Mine), an underground hard rock gold mine.

For the purposes of this Order, references to the “discharger” or “permittee” in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. Defined in the Porter-Cologne Water Quality Control Act (California Water Code, division 7), *"'Mining waste' means all solid, semisolid, and liquid waste materials from the extraction, beneficiation, and processing of ores and minerals. Mining Waste includes, but is not limited to, soil, waste rock, and, overburden, as defined in Section 2712 of the Public Resources Code, and tailings, slag, and other processed waste materials…"*

Mine drainage, (defined in 40 CFR 440.132(h) as "any water drained, pumped, or siphoned from a mine") is a subset of mining waste. Mine drainage is generated in the Sixteen to One Mine by groundwater seepage that comes in contact with rock surfaces created by previous mining operations (e.g. tunneling, removal of gold and gold containing rock/ore, underground storage of tailings, etc.) and underground storage of crushed rock/material created by previous milling operations. Previous mining and milling operations exposed groundwater seepage to naturally occurring pollutants that would have otherwise been contained in the rock.

Mine drainage is a point source to be regulated through the effluent limitations in this NPDES Permit. Technology and water quality-based effluent limitations have been included in this Order where applicable and are discussed below.

Sixteen to One Mine discharges mine drainage via the 21 Tunnel Portal to Kanaka Creek, tributary to Middle Yuba River, Yuba River, Feather River, and Sacramento River, a water of the United States in the Sacramento Hydrologic Basin.

C. Title 23 (California Water Code, division 7), requires each person for whom waste discharge requirements have been prescribed, to submit an annual fee to the State Water Resources Control Board (State Water Board) in accordance with the NPDES program classification. Due to the presence of arsenic in the effluent, above drinking water and aquatic life standards, the discharge cannot be classified as a de minimis discharge. .If analytical monitoring results consistently indicate that a mining waste treatment system, or best management practices, reduces constituent concentrations below water quality objectives, the mine drainage may be reassessed and this permit may be reopened and modified. (See the reopener provision in section VI.C.1 of the Limitations and Discharge Requirements section of this Order.)

D. Waste Discharge Requirements Order R5-2002-0043, National Pollutant Discharge Elimination System (NPDES) Permit No. CA0081809, was adopted by the Central Valley Water Board on 1 March 2002. Within the time allowed for submittal of petitions, the Discharger filed a petition for review of Order R5-2002-0043 by the State Water Board. The Discharger contested many aspects of Order R5-2002-0043 but the significant contentions involved 1) monitoring requirements, 2) effluent limitations, and 3) denial of dilution credits. With its petition, the Discharger also requested a stay. The stay request was denied by the State Water Board Executive Director on 11 June 2002, and on 30 April 2003 the State Water Board adopted Water Quality Order WQO 2003-0006, which "*addresses the significant issues raised in the petition, upholds the Permit in large part, and revises various Permit findings and requirements*." The primary conclusions of WQO 2003-0006 were as follows:

1. The effluent and receiving water monitoring program for flow, pH, temperature, electrical conductivity, and suspended solids is reasonable, but a reduction in monitoring frequency is appropriate for the remaining pollutants. (See Monitoring and Reporting Program in Attachment E.)

2. As an internal waste stream, and with the exception of mercury, it was unreasonable to require monitoring of settling pond wastewater. (See Monitoring and Reporting Program in Attachment E.)

3. It was appropriate for the Central Valley Water Board to require mercury effluent limits and monitoring and a mercury study. (For further discussion see section IV.C.3 of this Fact Sheet.)

4. Technology-based effluent limits based on Best Available Technology (BAT) for mines contained in Title 40, Code of Federal Regulations part 440.103 (also known as Federal Effluent Limitation Guidelines or ELGs) must be included in the Permit. (For further discussion see section IV.B of this Fact Sheet)

5. The Central Valley Water Board properly denied dilution credit. (For further discussion see section IV.C.2.c of this Fact Sheet.)

As ordered by WQO 2003-0006, Order R5-2002-0043 was amended by the Central Valley Water Board on 3 June 2003 and became Order R5-2002-0043, Amended.

E. Order R5-2002-0043, Amended, expired 1 March 2007. Section 122.6 of Title 40, Code of Federal Regulations states that "*the conditions of an expired permit continue in force under 5 U.S.C. 558(c) until the effective date of a new permit (see §124.15)*" **if** "*the permittee has submitted a timely application under §122.21 which is a complete (under §122.21(e)) application for a new permit*."

An application for permit renewal was due 180 days before the expiration date (1 September 2006), as required in Provision F.9 of Order R5-2002-0043, Amended. The Discharger filed a report of waste discharge (ROWD) and application for reissuance of its WDR's and NPDES permit on 14 March 2008 (ROWD application).

A letter dated 7 July 2008 from Central Valley Water Board staff notified the Discharger that the ROWD application was incomplete and required submittal of supplemental information by 8 August 2008. By the due date the Discharger submitted additional information. The Discharger believes that an NPDES Permit is not necessary since the surface milling operation ceased. Therefore, Central Valley Water Board staff conducted a site visit on 17 June 2011. The objective of the inspection was to determine whether discharges from the Sixteen to One Mine through the 21 Tunnel Portal require an NPDES permit. Samples were obtained from the 21 Tunnel Portal discharge, and sample results indicated that the discharge from the 21 Tunnel Portal has the reasonable potential to cause, or contribute to an excursion above water quality standards in the receiving stream, Kanaka Creek, thus an NPDES permit is necessary.

On 23 June 2011, staff conducted a second site visit and samples were collected from the 21 Tunnel Portal discharge as well as from Kanaka Creek, upstream and downstream of the discharge point. These sample results again indicated that the discharge from the Facility has the reasonable potential to cause, or contribute to an excursion above water quality standards in Kanaka Creek (For further information on the reasonable potential analysis, see section IV.C. of this Fact Sheet).

In a letter dated 1 February 2012, supplemental information to complete the application was again requested by Central Valley Water Board staff. On 13 February 2012 the Discharger

submitted supplemental information to the ROWD application, and enough information was deemed by the Executive Officer to be available (with the data from the two 2011 staff inspections) to proceed with preparation of a new NPDES Permit.

II. FACILITY DESCRIPTION

The Sixteen to One Mine is a hard rock gold mine that covers approximately 412 acres in and around the town of Alleghany, Sierra County, California. Alleghany is approximately 20 miles (32 km) from the nearest highway (California State Route 49) and consists largely of a single main street. The town is home to a post office, a bar, and a mining museum. The population was 58 at the 2010 census. Sixteen to One Mine is one of the few, if not the only, industries in the town. The mine started operation in 1896 and is located on the south side of Pliocene Ridge and on the north side of Kanaka Creek ravine. The terrain is steep, with slopes of more than 45 degrees, and covered in heavy vegetation. The mine consists of about 35 miles of underground tunnels. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.

The gold at Sixteen to One Mine is located in a complex vein system of white quartz deposited in metamorphic rock. Other minerals associated with the gold-bearing quartz include galena, arsenopyrite, and serpentine. The mine operation is a hard rock underground mine in which the miners sink diagonal shafts from which the miners then create horizontal tunnels at various elevations. Prior to WWII, about 20,000 to 30,000 tons was mined and milled. Mercury was used in milling operations.

A. Description of Wastewater, and Treatment and Controls

Milling operations stopped in 1999, and during the 23 June 2011 inspection, Central Valley Water Board staff reported that the mill was dismantled and inoperable. Currently, the Discharger uses metal detectors on loose rock that has been blasted from the working surface of the mine underground, and collects probable gold in a sack to take to the office. Specimen gold is sold as-is, and the rest is milled by hand. In the February 2013 addendum to the ROWD application, the Discharger states the intent to restart milling activities at the Facility in the future. This Order contains waste discharge and monitoring requirements based on the dismantled and inoperable milling facility, and therefore, this Order prohibits any milling activities other than the current practice of hand-milling the specimens. However, this Order contains a reopener provision (section VI.C.1. in the Limitations and Discharge Requirements of this Order) that allows the Central Valley Water Board to reopen this Order to include new or modified waste discharge or monitoring requirements should the Discharger restart milling activities.

Currently there is no treatment or control on the mining waste including the mine drainage discharge from the 21 Tunnel Portal to Kanaka Creek at Discharge Point 001. The Discharger reported in the ROWD application, that the average flow at Discharge Point 001 is 0.28 million gallons per day (mgd). Sample analytical results obtained at Discharge Point 001 indicate that the mine drainage contains dissolved solids in the form of arsenic, metals, and minerals, and may at times contain settleable solids and suspended solids (see sections I.D and IV.C of this Fact Sheet for further discussion). This Order contains waste discharge requirements based on the Facility's mining activities described in this section. This Order also prohibits discharges to Kanaka Creek from any activities different than described in Attachment F, Sections I and II..

B. Discharge Points and Receiving Waters

1. The Facility is located in Section 34, Township 19North, Range 10East, Mount Diablo Baseline & Meridian, as shown in Attachment B, a part of this Order.

2. Untreated mine drainage is discharged at Discharge Point 001 to Kanaka Creek, a water of the United States and a tributary to the Middle Yuba River and Yuba River at a point latitude 39 º 27 ’ 45 ” N and longitude 120 º 50 ’ 15 ” W.

3. Kanaka Creek is located in the Camptonville Hydrologic Subarea 517.42, Middle Yuba Hydrologic Area, Yuba River Hydrologic Unit, of the Sacramento Hydrologic Basin.

C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data

Effluent limitations contained in Order R5-2002-0043, Amended, for discharges from the 21 Tunnel Portal (Discharge Point 001) and the Discharger’s representative monitoring data from the term of Order R5-2002-0043, Amended, and from Central Valley Water Board staff June 2011 sampling events are as follows:

Table F-2. Historic Effluent Limitations and Monitoring Data from term of Order R5-2002-0043, Amended

Parameter	Units	Effluent Limitation			Monitoring Data (From 2004 and 2011)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Electrical Conductivity	µmhos/cm	900	--	1600	--	--	1735
Settleable Solids	ml/L	0.1	--	5.0	--	--	--
Total Suspended Solids	mg/L	20	--	30	--	--	27
Mercury	µg/L	--	--	0.050	--	--	0.0281
Arsenic	µg/L	10	--	--	--	--	897
Cadmium	µg/L	50	--	100	--	--	26.2
Copper	µg/L	150	--	300	--	--	6.7
Lead	µg/L	300	--	600	--	--	2.5
Zinc	µg/L	750	--	1500	--	--	ND

D. Compliance Summary

1. Cease and Desist Order R5-2002-0044 required an arsenic study and a mercury study and submittal of arsenic and mercury reports by 1 November 2003. The Cease and Desist Order also required sampling for National Toxics Rule (NTR) and California Toxics Rule (CTR) constituents and submittal of a report containing the results by 1 June 2003. The arsenic, mercury, and NTR/CTR reports were not submitted.

2. Cease and Desist Order R5-2002-0044 required that the Discharger comply with Monitoring and Reporting Program R5-2002-0043. The Discharger submitted monthly monitoring reports from March 2004 through September 2004, but did not submit monthly monitoring reports between May 2003 and February 2004 and between October 2004 and February 2007. Between 2006 and 2013, the Discharger has submitted monthly letters explaining that Sixteen to One Mine was unable to submit monthly

monitoring reports for the following reasons: "inaccurate permit expired, lack of funds, inadequate staff, and accessibility considerations."

3. Resolution No. R5-2002-0045 was adopted with Order R5-2002-0043 and CDO R5-2002-0044 on 1 March 2002. Resolution R5-2002-0045 is a Referral to the Attorney General for Appropriate Action. The State of California Attorney General's Office brought suit against the Original Sixteen to One Mine, Inc. and is seeking fines for failure to submit monitoring reports. A court hearing has been postponed during settlement discussions between the Attorney General's Office and the representatives of the Original Sixteen to One Mine, Inc.

E. Planned Changes – Not Applicable

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the requirements and authorities described in this section.

A. Legal Authorities

This Order serves as Waste Discharge Requirements (WDR's) pursuant to article 4, chapter 4, division 7 of the California Water Code (commencing with section 13260). This Order is also issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. EPA and chapter 5.5, division 7 of the Water Code (commencing with section 13370). It shall serve as a National Pollutant Discharge Elimination System (NPDES) permit for point source discharges from this facility to surface waters.

B. California Environmental Quality Act (CEQA)

Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of CEQA, (commencing with section 21100) of Division 13 of the Public Resources Code.

C. State and Federal Laws, Regulations, Policies, and Plans

1. **Water Quality Control Plan.** Requirements of this Order specifically implement the applicable Water Quality Control Plan.

   a. **Basin Plan**. The Central Valley Water Board adopted a *Water Quality Control Plan, Fourth Edition (Revised October 2011), for the Sacramento and San Joaquin River* (hereinafter Basin Plan) on 15 September 1998 that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Requirements in this Order implement the Basin Plan. Beneficial uses applicable to the Yuba River, Sources to Englebright Reservoir (Kanaka Creek is one source), are shown in Table F-3 below.

   The Basin Plan at II-2.00 states that the beneficial uses of any specifically identified water body generally apply to its tributary streams. The Basin Plan in Table II-1, Section II, does not specifically identify beneficial uses for Kanaka Creek, but does identify present and potential uses for the Yuba River, Sources to Englebright Reservoir, to which Kanaka Creek, via the Middle Yuba River, is tributary. In addition, the Basin Plan implements State Water Board Resolution 88-63, which established state policy that all waters, with certain exceptions, should be considered

suitable or potentially suitable for municipal or domestic supply. Thus, beneficial uses applicable to Kanaka Creek are as follows:

Table F-3. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Kanaka Creek	Existing: Municipal and domestic supply (MUN); Agricultural supply, including irrigation and stock watering (AGR); Hydropower generation (POW); Water contact recreation, including canoeing and rafting (REC-1); Non-contact water recreation (REC-2); Cold freshwater habitat (COLD); Spawning, reproduction, and/or early development, cold (SPWN); and Wildlife habitat (WILD).

2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** U.S. EPA adopted the NTR on 22 December 1992, and later amended it on 4 May 1995 and 9 November 1999. About forty criteria in the NTR applied in California. On 18 May 2000, U.S. EPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on 13 February 2001. These rules contain federal water quality criteria for priority pollutants.

3. **State Implementation Policy.** On 2 March 2000, the State Water Board adopted the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Policy or SIP). The SIP became effective on 28 April 2000, with respect to the priority pollutant criteria promulgated for California by the U.S. EPA through the NTR and to the priority pollutant objectives established by the Central Valley Water Board in the Basin Plan. The SIP became effective on 18 May 2000, with respect to the priority pollutant criteria promulgated by the U.S. EPA through the CTR. The State Water Board adopted amendments to the SIP on 24 February 2005, which became effective on 13 July 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

4. **Antidegradation Policy.** Federal regulation 40 C.F.R. section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16 ("Statement of Policy with Respect to Maintaining High Quality of Waters in California"). Resolution 68-16 is deemed to incorporate the federal antidegradation policy where the federal policy applies under federal law.
Resolution 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Central Valley Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. The permitted discharge must be consistent with the antidegradation provision of 40 C.F.R. section 131.12 and State Water Board Resolution 68-16.

5. **Anti-Backsliding Requirements.** Sections 402(o) and 303(d)(4) of the Clean Water Act (CWA) and federal regulations at 40 C.F.R. section 122.44(l) restrict backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed.

6. **Domestic Water Quality.** In compliance with Water Code section 106.3, it is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This Order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.

7. **Endangered Species Act Requirements.** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code, §§ 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. §§ 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

8. **Storm Water Requirements.** 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 gold mining and milling facilities. Gold mining and milling facilities are applicable industries under the storm water program and are obligated to comply with the federal regulations. The Facility submitted its Notice of Intent (NOI) to be covered under the General Industrial Storm Water Permit on 13 February 2013.

9. **Title 27, California Code of Regulations.** These regulations contain State requirements for the disposal of wastes to land and include specific regulations that pertain to active mines. This Order contains Title 27 waste discharge requirements for characterization of existing mining waste piles and for operation of waste piles that accept new waste.

D. Impaired Water Bodies on CWA 303(d) List

1. Under section 303(d) of the 1972 CWA, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 30 November 2006 U.S. EPA gave final approval to California's 2006 section 303(d) List of Water Quality Limited Segments. The Basin Plan references this 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 Part 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 303(d) listing for Kanaka Creek includes: arsenic**.

2. **Total Maximum Daily Loads (TMDLs).** U.S. EPA requires the Central Valley Water Board to develop TMDLs for each 303(d) listed pollutant and water body combination. The TMDL for arsenic in Kanaka Creek is scheduled for completion in 2020.

3. The 303(d) listings and TMDLs have been considered in the development of this Order. A pollutant-by-pollutant evaluation of each pollutant of concern is described in section VI.C of this Fact Sheet.

E. Other Plans, Polices and Regulations

1. **Federal Effluent Limit Guidelines.** 40 C.F.R. part 440 for the Ore Mining and Dressing Point Source Category, Subpart J, Copper, Lead, Zinc, Gold, Silver, and Molybdenum Subcategory prescribes technology based effluent limits for underground operating gold mines. This Order contains several federal technology based effluent limits (see section IV.B of this Fact Sheet for detailed information).

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations established pursuant to sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), and 304 (Information and Guidelines), of the CWA and amendments thereto are applicable to the discharge.

The CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law [33 U.S.C., §1311(b)(1)(C); 40 CFR 122.44(d)(1)]. NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to criteria specifying maximum amounts of particular pollutants. Pursuant to federal regulations, 40 CFR 122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that "are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality." Federal regulations, 40 CFR 122.44(d)(1)(vi), further provide that "[w]here a state has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits."

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: 40 CFR 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 CFR 122.44(d) requires that permits include WQBELs to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Basin Plan at page IV-17.00, contains an implementation policy, "*Policy for Application of Water Quality Objectives*", that specifies that the Central Valley Water Board "*will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives*." This Policy complies with 40 CFR 122.44(d)(1). With respect to narrative objectives, the Central Valley Water Board must establish effluent limitations using one or more of three specified sources, including: (1) U.S. EPA's published water quality criteria, (2) a proposed state criterion (i.e., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (i.e., the Central Valley Water Board's "Policy for Application of Water Quality Objectives")(40 CFR 122.44(d)(1)(vi)(A), (B) or (C)), or (3) an indicator parameter.

The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, discoloration, radionuclides, and tastes and odors. The narrative toxicity objective states: "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at III-8.00) The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The narrative chemical constituents objective states that waters shall not contain chemical constituents in concentrations that

adversely affect beneficial uses. At minimum, "…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)" in Title 22 of CCR. The Basin Plan further states that, to protect all beneficial uses, the Central Valley Water Board may apply limits more stringent than MCLs. The narrative tastes and odors objective states: "Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses."

A. Discharge Prohibitions

1. **Prohibition III.A (No discharge or application of waste other than that described in this Order).** This prohibition is based on Water Code section 13260 that requires filing of a report of waste discharge (ROWD) before discharges can occur. The Discharger submitted a ROWD for the discharges described in section II.A of the Fact Sheet. Therefore, discharges from operations not described in this Order are prohibited.

2. **Prohibition III.B (No controllable condition shall create a nuisance).** This prohibition is based on Water Code section 13050 that requires water quality objectives established for the prevention of nuisance within a specific area. The Basin Plan prohibits conditions that create a nuisance

B. Technology-Based Effluent Limitations

1. **Scope and Authority**

Section 301(b) of the CWA and implementing U.S. EPA permit regulations at 40 C.F.R. section 122.44 require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The CWA requires that technology-based effluent limitations be established based on several levels of control. The two levels of control that are applicable to this discharge are:

a. Best practicable treatment control technology (BPT) represents the average of the best existing performance by well-operated facilities within an industrial category or subcategory. BPT standards apply to toxic, conventional, and non-conventional pollutants.

b. Best available technology economically achievable (BAT) represents the best existing performance of treatment technologies that are economically achievable within an industrial point source category. BAT standards apply to toxic and non-conventional pollutants.

The CWA requires U.S. EPA to develop effluent limitations, guidelines and standards (Effluent Limitation Guidelines or ELGs) representing application of BPT and BAT. Section 402(a)(1) of the CWA and 40 C.F.R. section 125.3 authorize the use of best professional judgment (BPJ) to derive technology-based effluent limitations on a case-by-case basis where ELGs are not available for certain industrial categories and/or pollutants of concern. Where BPJ is used, the Central Valley Water Board must consider specific factors outlined in 40 C.F.R. section 125.3.

2. **Applicable Technology-Based Effluent Limitations**

a. The applicable ELGs for active mines, found in 40 CFR, part 440 (Ore Mining and Dressing Point Source Category), subpart J (Copper, Lead, Zinc, Gold, Silver, and Molybdenum Ores Subcategory), require that the concentration of pollutants discharged from mining and milling activities and in mine drainage (defined in 40

CFR 440.132(h) as "any water drained, pumped, or siphoned from a mine") from mines not exceed the BPT and BAT limits shown in Table F-4 below:

Table F-4. Technology-Based Effluent Limitations

Pollutant	Units	BPT		BAT	
		Maximum for any 1 day	Average of daily values for 30 consecutive days	Maximum for any 1 day	Average of daily values for 30 consecutive days
Cadmium	mg/L	--	--	0.10	0.05
Copper	mg/L	0.30	0.15	0.30	0.15
Lead	mg/L	0.6	0.3	0.6	0.3
Mercury	mg/L	0.002	0.001	0.002	0.001
pH	standard units	[1]	[1]	--	--
Total Suspended Solids	mg/L	30	20	--	--
Zinc	mg/L	1.5	0.75	1.5	0.75

[1] Within the range of 6.0 to 9.0.

Technology based effluent limitations are included in this Order for total mercury, total suspended solids, and zinc. Cadmium, copper, lead, and pH, have more stringent water quality based effluent limitations as described in section IV.C. below.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

The 1972 CWA introduced the National Pollutant Discharge Elimination System (NPDES), which is a permit system for regulating point sources of pollution. Point sources include mines. Point sources may not discharge pollutants to surface waters without a permit from the National Pollutant Discharge Elimination System (NPDES). This system is managed by the United States Environmental Protection Agency (U.S. EPA) in partnership with state environmental agencies. U.S. EPA has authorized 46 states, including California, through the State Water Resources Control Board and nine Regional Water Quality Control Boards, to issue permits directly to the discharging facilities.

CWA Section 301(b) and 40 C.F.R. section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

Section 122.44(d)(1)(i) of 40 C.F.R. requires that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) U.S. EPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in section 122.44(d)(1)(vi).

The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the California Toxics Rule (CTR) and National Toxics Rule (NTR).

2. **Applicable Beneficial Uses and Water Quality Criteria and Objectives**

The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Board Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply.

The Basin Plan on page II-1.00 states: "*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".*

The federal CWA section 101(a)(2), states: "it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water be achieved by July 1, 1983." Federal Regulations, developed to implement the requirements of the CWA, create a rebuttable presumption that all waters be designated as fishable and swimmable. Federal Regulations, 40 CFR sections 131.2 and 131.10, require that all waters of the State be regulated to protect the beneficial uses of public water supply, protection and propagation of fish, shell fish and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation. Section 131.3(e), 40 CFR, defines existing beneficial uses as those uses actually attained after 28 November 1975, whether or not they are included in the water quality standards. Federal Regulation, 40 CFR section 131.10 requires that uses be obtained by implementing effluent limitations, requires that all downstream uses be protected and states that in no case shall a state adopt waste transport or waste assimilation as a beneficial use for any waters of the United States.

a. **Receiving Water and Beneficial Uses.** Refer to III.C.1 above for a complete description of the receiving water and beneficial uses.

b. **Effluent and Ambient Background Data.** It is common practice for Central Valley Water Board staff to conduct the reasonable potential analysis (RPA) for a discharge to surface water based on the most recent 3 years of data provided in Self Monitoring Reports (SMRs) by the Discharger, unless site-specific circumstances warrant the use of other data. In most cases, the most recent 3 years of data are generally those years closest to the expiration date of the permit.

Order R5-2002-0043, Amended, expired on 1 March 2007 and was not administratively extended (see section I.D and I.E of this Fact Sheet). In this case, during the term of Order R5-2002-0043, Amended, the Discharger submitted SMRs with laboratory data between the dates of March through September 2004, only. Central Valley Water Board staff collected samples from the mine wastewater and receiving water on 17 and 23 June 2011. The RPA, as described in section IV.C.3 of

this Fact Sheet, was based on the data from March 2004 through September 2004 submitted by the Discharger and the laboratory analytical results from the two staff monitoring events conducted during the site inspections in June 2011.

c. **Assimilative Capacity/Mixing Zone/Dilution Credit.** The Discharger has expressed interest in the dilution capacity of Kanaka Creek. Central Valley Water Board previously determined that insufficient data was available to determine whether or not Kanaka Creek contains sufficient assimilative capacity to warrant a dilution credit, and therefore, dilution credits and a mixing zone were not granted in previous Order R5-2002-0043, Amended. To date the Discharger has not provided any additional information, and therefore this Order does not grant dilution credits or mixing zones. In order for the Central Valley Water Board to allow dilution credits for the calculation of water quality based effluent limits, Provision VI.C.2.b requires the Discharger to submit a Dilution/Mixing Zone Study in accordance with section 1.4.2.2 of the SIP, as described below. This Order also contains a reopener provision to allow the Central Valley Water Board to remove or modify effluent limitations based on the appropriate dilution factor from an approved dilution/mixing zone study. (See the reopener provision in section VI.C.1 of the Limitations and Discharge Requirements section of this Order.)

The CWA directs the states to adopt water quality standards to protect the quality of its waters. U.S. EPA's current water quality standards regulation authorizes states to adopt general policies, such as mixing zones, to implement state water quality standards (40 CFR 122.44 and 122.45). The U.S. EPA allows states to have broad flexibility in designing its mixing zone policies. Primary policy and guidance on determining mixing zone and dilution credits is provided by the SIP and the Basin Plan. If no procedure applies in the SIP or the Basin Plan, then the Central Valley Water Board may use the U.S. EPA *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001)(TSD).

For non-Priority Pollutant constituents, the allowance of mixing zones by the Central Valley Water Board is discussed in the Basin Plan, *Policy for Application of Water Quality Objectives*, which states in part, "*In conjunction with the issuance of NPDES and storm water permits, the Regional Board may designate mixing zones within which water quality objectives will not apply provided the discharger has demonstrated to the satisfaction of the Regional Board that the mixing zone will not adversely impact beneficial uses. If allowed, different mixing zones may be designated for different types of objectives, including, but not limited to, acute aquatic life objectives, chronic aquatic life objectives, human health objectives, and acute and chronic whole effluent toxicity objectives, depending in part on the averaging period over which the objectives apply. In determining the size of such mixing zones, the Regional Board will consider the applicable procedures and guidelines in the EPA's Water Quality Standards Handbook and the Technical Support Document for Water Quality-based Toxics Control [TSD]. Pursuant to EPA guidelines, mixing zones designated for acute aquatic life objectives will generally be limited to a small zone of initial dilution in the immediate vicinity of the discharge.*"

For Priority Pollutants, the SIP supersedes the Basin Plan mixing zone provisions. Section 1.4.2 of the SIP states, in part, "…*with the exception of effluent limitations derived from TMDLs, in establishing and determining compliance with effluent limitations for applicable human health, acute aquatic life, or chronic aquatic life priority pollutant criteria/objectives or the toxicity objective for aquatic life protection*

in a basin plan, the Regional Board may grant mixing zones and dilution credits to dischargers…The applicable priority pollutant criteria and objectives are to be met through a water body except within any mixing zone granted by the Regional Board. ***The allowance of mixing zones is discretionary and shall be determined on a discharge-by-discharge basis.*** *The Regional Board may consider allowing mixing zones and dilution credits only for discharges with a physically identifiable point of discharge that is regulated through an NPDES permit issued by the Regional Board*." [emphasis added]

For incompletely-mixed discharges, the Discharger must complete an independent mixing zone study to demonstrate to the Central Valley Water Board that a dilution credit is appropriate. Mixing zones are allowed under the SIP, provided all elements contained in Section 1.4.2.2 are met.

- The Central Valley Water Board will determine if these factors have been met based on the mixing zone study conducted by the Discharger: the mixing zone must be as small as practicable, will not compromise the integrity of the entire water body, restrict the passage of aquatic life, dominate the water body or overlap existing mixing zones from different outfalls.

- When allowing a mixing zone for human health constituents only, the Central Valley Water Board must be able to determine that such a mixing zone will not cause acutely toxic conditions to aquatic life passing through the mixing zone.

- When allowing a mixing zone, the Central Valley Water Board must be able to determine that the discharge will not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under the federal or State endangered species laws.

- When allowing a mixing zone, the Central Valley Water Board must be able to determine that the discharge will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum, produce objectionable odor, taste, or turbidity, cause objectionable bottom deposits, or cause nuisance.

- As required by the SIP, in determining the extent of or whether to allow a mixing zone and dilution credit, the Central Valley Water Board will consider the presence of pollutants in the discharge that are carcinogenic, mutagenic, teratogenic, persistent, bioaccumulative, or attractive to aquatic organisms, and must be able to conclude that the allowance of the mixing zone and dilution credit is adequately protective of the beneficial uses of the receiving water.

- The Central Valley Water Board must be able to determine that the mixing zone complies with the SIP for priority pollutants.

- Section 1.4.2.2B of the SIP, in part states, *"The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements."* The Central Valley Water Board may determine that a dilution factor calculated by the Discharger is not needed or necessary for the Discharger to achieve compliance with this Order.

- The Central Valley Water Board must be able to determine that the mixing zone complies with the Basin Plan for non-priority pollutants. The Basin Plan requires that a mixing zone not adversely impact beneficial uses. In determining the size of the mixing zone, the Central Valley Water Board will consider the procedures and guidelines in Section 5.1 of U.S. EPA's *Water Quality Standards Handbook*, 2nd Edition (updated July 2007) and Section 2.2.2 of the TSD. The SIP incorporates the same guidelines.

- The Central Valley Water Board must be able to determine that allowing dilution factors will comply with antidegradation policies. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy and requires that existing quality of waters be maintained unless degradation is justified based on specific findings. Item 2 of Resolution 68-16 states:

  "Any activity which produces or may produce a waste or increased volume or concentration of waste and which dischargers or proposed to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained."

d. **Conversion Factors.** The CTR contains aquatic life criteria for arsenic, cadmium, chromium III, chromium VI, copper, lead, nickel, silver, and zinc which are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The default U.S. EPA conversion factors contained in Appendix 3 of the SIP were used to convert the applicable dissolved criteria to total recoverable criteria.

   If the Discharger performs studies to determine site-specific Water Effect Ratios and/or site-specific dissolved-to-total metal translators in accordance with U.S. EPA guidance documents, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents. (See the reopener provisions in section VI.C.1 of the Limitations and Discharge Requirements section of this Order.)

e. **Hardness-Dependent CTR Metals Criteria.** The *California Toxics Rule* (CTR) and the *National Toxics Rule* (NTR) contain water quality criteria for seven metals that vary as a function of hardness. The lower the hardness value the lower the water quality criteria. The metals with hardness-dependent criteria are cadmium, copper, chromium III, lead, nickel, silver, and zinc.

   This Order has established the criteria for hardness-dependent metals based on the reasonable worst-case ambient hardness of the receiving water as required by the SIP[1], the CTR[2], and State Water Board Order WQO 2008-0008 (City of Davis). The

[1] The SIP does not address how to determine the hardness for application to the equations for the protection of aquatic life when using hardness-dependent metals criteria. It simply states, in Section 1.2, that the criteria shall be properly adjusted for hardness using the hardness of the receiving water.

SIP and the CTR require the use of "receiving water" or "actual ambient" hardness, respectively, to determine effluent limitations for these metals. (SIP, § 1.2; 40 CFR § 131.38(c)(4)) The CTR requires that the hardness values used shall be consistent with the design discharge conditions for design flows and mixing zones.[3] Where design flows for aquatic life criteria include the lowest one-day flow with an average reoccurrence frequency of once in ten years (1Q10) and the lowest average seven consecutive day flow with an average reoccurrence frequency of once in ten years (7Q10).[4] The CTR also requires that when mixing zones are allowed the CTR criteria apply at the edge of the mixing zone, otherwise the criteria apply throughout the water body including at the point of discharge.[5] The CTR does not define whether the term "ambient," as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions.

The State Water Board provided direction regarding the selection of hardness in two precedential water quality orders; WQO 2008-0008 for the City of Davis Wastewater Treatment Plant and WQO 2004-0013 for the Yuba City Wastewater Treatment Plant. The State Water Board recognized that the SIP and the CTR do not discuss the manner in which hardness is to be ascertained, thus regional water boards have considerable discretion in determining ambient hardness. (Davis Order, p.10). The State Water Board explained that it is necessary that, "The [hardness] value selected should provide protection for all times of discharge under varying hardness conditions." (Yuba City Order, p. 8). The Davis Order also provides that, "Regardless of the hardness used, the resulting limits must always be protective of water quality criteria under all flow conditions." (Davis Order, p. 11)

The equation describing the total recoverable regulatory criterion, as established in the CTR[6], is as follows:

$$\text{CTR Criterion} = \text{WER} \times (e^{m[\ln(H)]+b}) \qquad \text{(Equation 1)}$$

Where:

H = ambient hardness (as $CaCO_3$)[7]

WER = water-effect ratio

m, b = metal- and criterion-specific constants

Table F-5 shows the full extent of the hardness data available for the Facility. The minimum receiving water hardness upstream and downstream of the discharge are 24 mg/L and 26 mg/L, respectively. The minimum effluent hardness was 524 mg/L; however, federal regulations state to use the maximum hardness value of 400 mg/L in calculations of effluent limitations for hardness based metals.

Table F-5. Hardness Values

Date	Hardness (mg/L as $CaCO_3$)

[2] The CTR requires that, for waters with a hardness of 400 mg/L (as $CaCO_3$), or less, the actual ambient hardness of the surface water must be used.
[3] 40 C.F.R. 131.38 § (c)(4)(ii)
[4] 40 C.F.R. 131.38 § (c)(4)(iii) Table 4
[5] 40 C.F.R. 131.38 § (c)(2)(i)
[6] 40 CFR § 131.38(b)(2).
[7] For this discussion, all hardness values are in mg/L as $CaCO_3$.

	Effluent	Upstream	Downstream
7-Oct-94	--	60	140
17-Jun-11	524 [1]	--	--
23-Jun-11	546 [1]	24.0	26.0

[1] Maximum hardness value of 400 mg/L (as $CaCO_3$) used per 40 CFR 131.38(c)(4)

The average hardness of the Yuba River was calculated from data from 1996 to 1998 and was found to be 31.4 mg/L. Since Kanaka Creek, which is not effluent dominated, eventually flows into the Yuba River, the median of the four receiving water hardness data points for Kanaka Creek (43 mg/L) was selected as representative of the hardness of Kanaka Creek. The SIP, CTR, and State Water Board do not require use of the minimum observed ambient hardness in the CTR equations. Whatever hardness used must be protective of water quality criteria under all flow conditions. The median receiving water hardness is 43 mg/L and represents typical conditions in the receiving water and was considered for use in the CTR equations. The median hardness results in CTR criteria that are protective of water quality criteria under all flow conditions. Therefore, in this Order the median receiving water hardness of 43 mg/L has been used to calculate the CTR criteria.

The Facility discharges both hardness and metals, which must be considered in the downstream ambient receiving water to ensure the criteria are protective under all flow conditions. The tables below examine how the downstream ambient conditions change with varying mixtures of effluent and upstream receiving water. The calculations determine whether or not toxicity could result from one or more metals using the selected design ambient hardness to calculate the CTR criteria.

A simple mass balance (Equation 2) is used to model the ambient concentrations of hardness and metals in the receiving water downstream of the discharge for all possible mixtures of effluent and upstream receiving water under all flow conditions.

$$C_{downstream} = C_{upstream} \times (1\text{-}MIX) + C_{effluent} \times (MIX) \quad \text{(Equation 2)}$$ [8]

Where:

$C_{downstream}$ = Downstream receiving water concentration

$C_{upstream}$ = Upstream receiving water concentration

$C_{effluent}$ = Effluent concentration

MIX = Fraction of effluent in downstream ambient receiving water

In tables F-6 through F-13, for each of several downstream ambient mixtures of upstream receiving water and effluent, the potential for toxicity is examined. The hardness of the mixture is calculated, and the resultant water quality criterion is calculated from the CTR equation. The metals concentration is also calculated for the mixture of upstream receiving water and effluent. If the metals concentration complies with the CTR criterion for that mixture, the ambient mixture is not toxic, and “Yes” is indicated in the far right column. If the metals concentration exceeds the CTR criterion for that mixture, the ambient concentration is toxic, and “No” is

[8] USEPA NPDES Permit Writers’ Manual, September 2010 (EPA-833-K-10-001)

indicated in the far right column. The results of these evaluations are summarized in Table F-14.

For this evaluation the following conservative assumptions have been made:

- Upstream receiving water at the lowest observed upstream receiving water hardness (i.e., 24 mg/L)
- No assimilative capacity for each metal in the upstream receiving water (i.e., metals concentration equal to CTR criteria calculated using a hardness of 24 mg/L)
- Effluent hardness at 400 mg/L[9]

Table F-6. Cadmium (Chronic) Evaluation

Assumed Upstream Receiving Water Cadmium Concentration					**0.80 µg/L[1]**
				Cadmium Chronic Criterion[2]	**1.3 µg/L**
Effluent Fraction [6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness [3] (mg/L)	**CTR Criteria [4] (µg/L)**	**Cadmium [5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	27.76	0.9	0.8	**Yes**
	5%	42.8	1.3	0.8	**Yes**
	15%	80.4	2.1	0.9	**Yes**
	25%	118	2.8	0.9	**Yes**
	50%	212	4.4	1.0	**Yes**
	75%	306	5.9	1.2	**Yes**
Low Flow	100%	400	7.3	1.3	**Yes**

Table F-7. Cadmium (Acute) Evaluation

Assumed Upstream Receiving Water Cadmium Concentration					**0.90 µg/L[1]**
				Cadmium Acute Criterion[2]	**1.7 µg/L**
Effluent Fraction [6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness [3] (mg/L)	**CTR Criteria [4] (µg/L)**	**Cadmium [5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	27.76	1.1	1.0	**Yes**
	5%	42.8	1.7	1.0	**Yes**
	15%	80.4	3.5	1.1	**Yes**

[9] Maximum hardness value of 400 mg/L (as CaCO3) used per 40 CFR 131.38(c)(4)

Low Flow	25%	118	5.4	1.2	**Yes**
	50%	212	10.5	1.4	**Yes**
	75%	306	16.0	1.6	**Yes**
	100%	400	21.6	1.7	**Yes**

Table F-8. Chromium III Evaluation

Assumed Upstream Receiving Water Chromium III Concentration					**64.3 µg/L[1]**
			Chromium III Chronic Criterion[2]		**103.7 µg/L**
Effluent Fraction [6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness [3] (mg/L)	**CTR Criteria [4] (µg/L)**	**Chromium III [5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	27.76	72.5	64.7	**Yes**
	5%	42.8	103.3	66.3	**Yes**
	15%	80.4	173.1	70.2	**Yes**
	25%	118	237.0	74.2	**Yes**
	50%	212	383.0	84.0	**Yes**
	75%	306	517.3	93.8	**Yes**
Low Flow	100%	400	644.2	103.7	**Yes**

Table F-9. Copper Evaluation

Assumed Upstream Receiving Water Copper Concentration					**2.8 µg/L[1]**
			Copper Chronic Criterion[2]		**4.5 µg/L**
Effluent Fraction [6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness [3] (mg/L)	**CTR Criteria [4] (µg/L)**	**Copper [5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	27.76	3.1	2.8	**Yes**
	5%	42.8	4.5	2.8	**Yes**
	15%	80.4	7.7	3.0	**Yes**
	25%	118	10.7	3.2	**Yes**
	50%	212	17.7	3.6	**Yes**
	75%	306	24.3	4.1	**Yes**
Low Flow	100%	400	30.5	4.5	**Yes**

Table F-10. Lead Evaluation

Assumed Upstream Receiving Water Lead Concentration					**0.52 µg/L[1]**
			Lead Chronic Criterion[2]		**1.09 µg/L**
Effluent Fraction [6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness [3] (mg/L)	**CTR Criteria [4] (µg/L)**	**Lead [5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	27.76	0.6	0.5	**Yes**
	5%	42.8	1.1	0.5	**Yes**
	15%	80.4	2.4	0.6	**Yes**

Low Flow	25%	118	3.9	0.7	**Yes**
	50%	212	8.3	0.8	**Yes**
	75%	306	13.2	0.9	**Yes**
	100%	400	18.6	1.09	**Yes**

Table F-11. Nickel Evaluation

Assumed Upstream Receiving Water Nickel Concentration					**15.6 µg/L[1]**
				Nickel Chronic Criterion[2]	**25.5 µg/L**
Effluent Fraction [6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness [3] (mg/L)	**CTR Criteria [4] (µg/L)**	**Nickel [5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	27.76	17.6	15.7	**Yes**
	5%	42.8	25.4	16.1	**Yes**
	15%	80.4	43.4	17.1	**Yes**
	25%	118	60.0	18.1	**Yes**
	50%	212	98.5	20.6	**Yes**
	75%	306	134.4	23.1	**Yes**
Low Flow	100%	400	168.5	25.5	**Yes**

Table F-12. Silver (Acute) Evaluation

Assumed Upstream Receiving Water Silver Concentration					**0.3 µg/L[1]**
				Silver Acute Criterion[2]	**0.95 µg/L**
Effluent Fraction [6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness [3] (mg/L)	**CTR Criteria [4] (µg/L)**	**Silver [5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	27.76	0.4	0.4	**Yes**
	5%	42.8	0.9	0.4	**Yes**
	15%	80.4	2.8	0.4	**Yes**
	25%	118.0	5.4	0.5	**Yes**
	50%	212.0	14.8	0.6	**Yes**
	75%	306.0	27.8	0.8	**Yes**
Low Flow	100%	400.0	44.0	0.95	**Yes**

Table F-13. Zinc Evaluation

Assumed Upstream Receiving Water Zinc Concentration					**35.8 µg/L[1]**
				Zinc Chronic Criterion[2]	**58.6 µg/L**
Effluent Fraction [6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness [3] (mg/L)	**CTR Criteria [4] (µg/L)**	**Zinc [5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	27.76	40.5	36.0	**Yes**
	5%	42.8	58.4	36.9	**Yes**
	15%	80.4	99.6	39.2	**Yes**

Low Flow	25%	118	137.9	41.5	**Yes**
	50%	212	226.5	47.2	**Yes**
	75%	306	309.1	52.9	**Yes**
	100%	400	387.8	58.6	**Yes**

Footnotes for CTR Hardness-dependent Metals Tables

[1] Highest assumed upstream receiving water metals concentration calculated using Equation 1 for chronic/acute criterion at a hardness of **24 mg/L**.

[2] CTR Criteria calculated using Equation 1 for chronic/acute criterion at a hardness of **43 mg/L**.

[3] Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction using Equation 2.

[4] Fully mixed downstream ambient criteria are the chronic/acute criteria calculated using Equation 1 at the mixed hardness.

[5] Fully mixed downstream ambient metals concentration is the mixture of the receiving water and effluent metals concentrations at the applicable effluent fraction using Equation 2.

[6] The effluent fraction ranges from 1% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

The applicable design ambient hardness and CTR criteria for the hardness-dependent metals for which toxicity in ambient waters does not occur are as follows in Table F-14.

Table F-14. Summary of CTR Criteria for Hardness-dependent Metals

CTR Metals	Design Ambient Hardness (mg/L)	Criteria (µg/L, total recoverable) [1]	
		acute	chronic
Cadmium	43	1.7	1.3
Chromium III	43	870	110
Copper	43	6.3	4.5
Lead	43	27	1.1
Nickel	43	230	26
Silver	43	1.0	--
Zinc	43	59	59

[1] Metal criteria rounded to two significant figures in accordance with the CTR.

3. **Determining the Need for WQBELs**

a. **Constituents with No Reasonable Potential.** Water Quality Based Effluent Limitations (WQBELs) are not included in this Order for constituents that do not demonstrate reasonable potential (i.e. constituents were not detected in the effluent or receiving water, such as chromium III, DO, mercury, settleable solids, silver, and zinc); however, monitoring for those pollutants is established in this Order as required by the SIP. If the results of effluent monitoring demonstrate reasonable potential, or the Discharger initiates mining or milling activities different from that described in section II.A, this Order may be reopened and modified by adding an appropriate effluent limitation.

Most constituents with no reasonable potential are not discussed in this Order. However, the following constituents were found to have no reasonable potential after assessment of the data supplied in March through September 2004 by the Discharger and from the June 2011 inspections by Central Valley Water Board staff:

i. **Chromium III**

(e) **WQO.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for chromium III. These criteria for chromium III are presented in dissolved concentrations, as 1-hour acute criteria and 4-day chronic criteria. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default U.S. EPA translators were used for the receiving water and effluent. The acute and chronic chromium III criteria for the receiving water and effluent are shown in the table below.

(f) **RPA Results.** Section IV.C.2 of this Fact Sheet includes procedures for conducting the Reasonable Potential Analysis (RPA) for hardness-dependent CTR metals, such as chromium III. Based on one sample collected between March 2004 and June 2011, chromium III was not detected in the upstream receiving water with a laboratory Reporting Level of 5 µg/L, which is lower than the criterion. Therefore, there is no reasonable potential for chromium III in the upstream receiving water.

Chromium III was not detected in the effluent, based on two samples collected between March 2004 and June 2011. The laboratory reporting level was 5 µg/L, which is lower than the criterion. Therefore, there is no reasonable potential for the chromium III in the effluent.

	CTR Acute Criterion (Total Recoverable)	CTR Chronic Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
Receiving Water	540 µg/L[1]	65 µg/L[1]	ND at 5 µg/L	No[3]
Effluent	870 µg/L[2]	110 µg/L[2]	ND at 5 µg/L	No[4]

[1] Based on lowest upstream ambient hardness of 24 mg/L (as $CaCO_3$)
[2] Based on the median receiving water hardness of 43 mg/L (as $CaCO_3$)
[3] Per Section 1.3, step 4 of the SIP.
[4] Per Section 1.3, step 6 of the SIP.

Chromium III in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for the protection of aquatic life and therefore water quality-based effluent limitations for chromium III have not been included in this Order.

ii. **Dissolved Oxygen**

(a) **WQO.** For dissolved oxygen, the Basin Plan states the following:

"*For 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 of saturation. The*

dissolved oxygen concentrations shall not be reduced below the following minimum levels at any time:

Waters designated WARM 5.0 mg/L
Waters designated COLD 7.0 mg/L
Waters designated SPWN 7.0 mg/L"

(b) **RPA Results.** Order R5-2002-0043, Amended, contained an effluent limitation for DO such that "*The discharge to the receiving water shall not have a dissolved oxygen concentration less than 7.0 mg/L*." Monitoring results from 2004 and 2011 indicated that the effluent and downstream receiving water DO remained above 7.0 mg/L. Based on the new available data, DO in the discharge does not have reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan objective for DO. Therefore, this Order does not contain water quality-based effluent limitations for DO. Removal of these effluent limitations is in accordance with federal antibacksliding regulations (see section IV.D.3 of the Fact Sheet).

iii. **Mercury**

(a) **WQO.** The current National Ambient Water Quality Criterion 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 threshold dose level causing neurological effects in infants) of 0.050 µg/L for waters from which both water and aquatic organisms are consumed. Both values are controversial and subject to change. 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. Order R5-2002-0043, Amended, included effluent limitations for mercury based on the CTR criterion for protection of human health of 0.050 µg/L.

40 CFR part 440, subpart J contains ELGs for active or operating gold mines; these federal guidelines recommend BAT and BPT technology-based effluent limits for mercury of 0.001 mg/L as a monthly average and 0.002 mg/L as a daily maximum.

(b) **RPA Results.** From monitoring data collected by the Discharger in 2004 and by Central Valley Water Board staff in 2011, the MEC for mercury was 0.0281 µg/L, which does not exceed the CTR human health criterion. Therefore, mercury in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR human health criterion, and the effluent limitations for mercury have not been retained in this Order. Removal of these effluent limitations is in accordance with federal antibacksliding regulations (see section IV.D.3 of the Fact Sheet).

If mercury is found to be causing toxicity based on chronic toxicity test results, or if a TMDL program is adopted, this Order shall be reopened and an effluent concentration limitation imposed. If the Central Valley Water Board determines that a mercury offset program is feasible for Dischargers subject to an NPDES permit, then this Order may be reopened to reevaluate need for interim mercury mass loading limitation(s) and the need for a mercury offset program for the Discharger. (See the reopener provision in section VI.C.1 of the Limitations and Discharge Requirements section of this Order.)

This Order contains technology based effluent limitations for mercury based on the ELGs. These limits are less stringent than the water quality based effluent limitations included in the previous Order R5-2002-0043, Amended. Relaxation of these effluent limitations is in accordance with federal antibacksliding regulations (see section IV.D.3 of the Fact Sheet).

iv. **Settleable Solids**

(a) **WQO.** 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.*"

(b) **RPA Results.** The discharge of sediment-laden wastewater has a reasonable potential to cause or contribute to an excursion above the Basin Plan's narrative objective for settleable solids. However, the Discharger has not milled ore since 1999. The milling process yielded sediment-laden wastewater that was discharged to sedimentation basins. With no milling and no sedimentation basins, the discharge is not likely to contain sediment-laden wastewater. Therefore, effluent limitations are no longer necessary for stettleable solids. Order R5-2002-0043 contained effluent limitations for settleable solids of 0.1 ml/L as a monthly average and 5.0 ml/L as a daily maximum. Removal of these effluent limitations is in accordance with federal antibacksliding regulations (see section IV.D.3 of the Fact Sheet).

v. **Silver**

(a) **WQO.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for silver. These criteria for silver are presented in dissolved concentrations, as instantaneous maxima. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default U.S. EPA translators were used for the receiving water and effluent. The silver criteria for the receiving water and effluent are shown in the table below.

RPA Results. Section IV.C.2 of this Fact Sheet includes procedures for conducting the Reasonable Potential Analysis (RPA) for hardness-dependent CTR metals, such as silver. Based on one sample collected between March 2004 and June 2011, silver was not detected in the upstream receiving water with a laboratory Reporting Level of 5 µg/L, which is higher than the criterion. However, there is no reasonable potential for silver in the upstream receiving water because it was not detected.

Silver was not detected in the effluent, based on two samples collected between March 2004 and June 2011. The laboratory reporting level was 5 µg/L, which is higher than the criterion. However, there is no reasonable potential for the silver in the effluent because it was not detected.

	CTR Acute Criterion (Total Recoverable)	CTR Chronic Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
Receiving Water	0.30 µg/L[1]	--	ND at 5 µg/L	No[3]
Effluent	1.0 µg/L[2]	--	ND at 5 µg/L	No[4]

[1] Based on lowest upstream ambient hardness of 24 mg/L (as $CaCO_3$)
[2] Based on median receiving water hardness of 43 mg/L (as $CaCO_3$)
[3] Per Section 1.3, step 4 of the SIP.
[4] Per Section 1.3, step 6 of the SIP.

Silver in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for the protection of aquatic life and therefore water quality-based effluent limitations for silver have not been included in this Order.

vi. **Zinc**

(a) **WQO.** 40 CFR part 440, subpart J contains ELGs for active or operating gold mines; these federal guidelines recommend BAT and BPT technology-based effluent limits for zinc of 0.75 mg/L as a monthly average and 1.5 mg/L as a daily maximum. Previous Order R5-2002-0043, Amended, contained effluent limitations for zinc based on the ELGs (see section IV.B above).

The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for zinc. These criteria for zinc are presented in dissolved concentrations, as 1-hour acute criteria and 4-day chronic criteria. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default U.S. EPA translators were used for the receiving water and effluent. The acute and chronic zinc criteria for the receiving water and effluent are shown in the table below.

(b) **RPA Results.** Section IV.C.2 of this Fact Sheet includes procedures for conducting the Reasonable Potential Analysis (RPA) for hardness-dependent CTR metals, such as zinc. Based on one sample collected between March 2004 and June 2011, zinc was not detected in the upstream receiving water. The laboratory Reporting Level was 10 µg/L, which is lower than the criteria and therefore, there is no reasonable potential for zinc in the upstream receiving water.

Zinc was not detected in the effluent, based on three samples collected between March 2004 and June 2011. The laboratory reporting level was 10 µg/L, which is lower than the criteria and therefore, there is no reasonable potential for the zinc in the effluent.

	CTR Acute Criterion (Total Recoverable)	CTR Chronic Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
Receiving Water	36 µg/L[1]	36 µg/L[1]	ND at 10 µg/L	No[3]
Effluent	59 µg/L[2]	59 µg/L[2]	ND at 10 µg/L	No[4]

[1] Based on the lowest upstream ambient hardness of 24 mg/L (as $CaCO_3$)
[2] Based on the median receiving water hardness of 43 mg/L (as $CaCO_3$)
[3] Per Section 1.3, step 4 of the SIP.
[4] Per Section 1.3, step 6 of the SIP.

Zinc in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for the protection of aquatic life and therefore water quality-based effluent limitations for zinc have not been included in this Order.

Order R5-2002-0043, Amended, contained effluent limitations of 0.75 mg/L and 1.5 mg/L based on U.S. EPA technology-based effluent limit guidelines. This Order retains the technology based effluent limitations for zinc.

b. **Constituents with Reasonable Potential.** The Central Valley Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for antimony, arsenic, cadmium, copper, iron, lead, manganese, nickel, pH, and salinity (as EC). WQBELs for these constituents are included in this Order. A summary of the RPA is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

i. **Antimony**

(a) **WQO.** The California Toxics Rule (CTR) includes a criterion of 14 µg/L for antimony for the protection of human health for waters from which both water and organisms are consumed. The State Water Board Division of Drinking Water (DDW) has adopted a Primary Maximum Contaminant Level (MCL) for antimony of 6 µg/L, which is protective of the Basin Plan's chemical constituent objective.

(b) **RPA Results.** Between March 2004 and June 2011, only two sample events were conducted for antimony. The maximum effluent concentration (MEC) for antimony was 30.8 µg/L, while antimony was not detected in the upstream receiving water samples. The laboratory Reporting Level was 10 µg/L. The MEC exceeded the criteria, therefore, antimony in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Primary MCL and the CTR criterion.

(c) **WQBELs.** Dilution credits are not allowed for development of the Water Quality Based Effluent Limits for antimony due to lack of a completed Dilution/Mixing Zone Study by the Discharger. Antimony is a CTR constituent and Section 1.4 of the SIP prescribes the calculations of an average monthly effluent limitation and maximum daily effluent limitation. This Order contains a final AMEL and MDEL for antimony of 6 µg/L and 12 µg/L, respectively, based on the Primary MCL and the procedure outlined in the SIP for establishing effluent limitations for CTR constituents.

(d) **Discharge Treatment System Performance and Attainability.** The Discharger has not constructed a discharge treatment system or implemented Best Management Practices for treatment of mine discharge. Without mitigation, the discharge cannot comply with Final Effluent Limitations for antimony.

ii. **Arsenic, Total Recoverable or Dissolved**

(a) **WQO.** U.S. EPA has adopted a Primary Maximum Contaminant Level (MCL) for total recoverable arsenic of 10 µg/L, which is protective of the Basin Plan's chemical constituent objective. In addition, the California Toxics Rule (CTR) includes maximum 1-hour average and 4-day average criteria of 340 µg/L and 150 µg/L, respectively, for dissolved arsenic for the protection of freshwater aquatic life.

The receiving water, Kanaka Creek, has been listed as an impaired water body pursuant to Clean Water Act section 303(d) because of arsenic. A Total Maximum Daily Load (TMDL) for arsenic is scheduled for completion in January 2020.

(b) **RPA Results.** From monitoring data collected by the Discharger in 2004 and by Central Valley Water Board staff in 2011, eight sample events were conducted for total recoverable arsenic. The maximum effluent concentration (MEC) for arsenic was 897 µg/L while the maximum observed upstream receiving water concentration was 8.7 µg/L and the maximum downstream receiving water concentration was 213 µg/L. The MEC exceeded the criteria, therefore, arsenic in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the primary MCL and above the CTR criteria.

(c) **WQBELs.** Order R5-2002-0043, Amended, contained effluent limitations of 10 µg/L and 10.6 grams/day based on the Primary MCL and flow, and required monitoring for both total recoverable and dissolved fractions. Water Quality Based Effluent Limitations (WQBELs) were recalculated based on new data collected in 2004 and 2011. Dilution credits are not allowed for development of the WQBELs for arsenic due to lack of a completed Dilution/Mixing Zone Study by the Discharger. This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for arsenic of 10 µg/L and 20 µg/L, respectively, as total recoverable arsenic based on the Basin Plan's narrative chemical constituents objective for protection of the municipal/domestic (MUN) beneficial use and the procedure outlined in the State Implementation Policy for establishing effluent limitations for CTR constituents. This Order does not contain mass-based effluent limitations for arsenic as discussed in the Anti-backsliding section of the Fact Sheet below. Monitoring is required in this Order only for the total recoverable fraction of arsenic.

(d) **Discharge Treatment System Performance and Attainability.** The Discharger has not constructed a discharge treatment system or implemented Best Management Practices for treatment of mine discharge. Without mitigation, the discharge cannot comply with Final Effluent Limitations for arsenic.

iii. **Cadmium**

(a) **WQO.** 40 CFR part 440, subpart J contains ELGs for active gold mines; these federal guidelines recommend BAT and BPT technology-based effluent limits for cadmium of 0.05 mg/L as a monthly average and 0.10 mg/L as a daily maximum. Previous Order R5-2002-0043, Amended, contained effluent limitations for cadmium based on the ELGs (see section IV.B above).

The California Toxics Rule (CTR) includes hardness-dependent criteria for the protection of freshwater aquatic life for cadmium. These criteria for cadmium are presented in dissolved concentrations, as 1-hour acute criteria and 4-day chronic criteria. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default U.S. EPA translators were used for the receiving water and effluent. The CTR water quality based limitations are more stringent than the ELG technology-based limitations.

(b) **RPA Results.** Section IV.C.2 of this Fact Sheet includes procedures for conducting the Reasonable Potential Analysis (RPA) for hardness-dependent CTR metals, such as cadmium. The CTR includes hardness-dependent criteria for cadmium for the receiving water. Based on one sample collected between March 2004 and June 2011, cadmium was not detected in the upstream receiving water. The laboratory Reporting Level was 1 µg/L. The RPA was conducted using the upstream receiving water hardness of 24 mg/L to calculate the criteria for comparison to the maximum ambient background concentration. The observed maximum effluent concentration (MEC) was 26.2 µg/L, based on three samples collected between March 2004 and June 2011. The RPA was conducted using the median receiving water hardness of 43 mg/L to calculate the criteria for comparison to the maximum effluent concentration. The table below shows the specific criteria calculated for the RPA.

	CTR Acute Criterion (Total Recoverable)	CTR Chronic Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
Receiving Water	0.90 µg/L[1]	0.80 µg/L[1]	ND at 1 µg/L	No[3]
Effluent	1.7 µg/L[2]	1.3 µg/L[2]	26.2 µg/L	Yes[4]

[1] Based on lowest observed upstream hardness of 24 mg/L (as $CaCO_3$)
[2] Based on the median receiving water hardness of 43 mg/L.
[3] Per Section 1.3, step 4 of the SIP.
[4] Per Section 1.3, step 6 of the SIP.

Based on the available data, cadmium in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for the protection of freshwater aquatic life. Therefore, this Order contains water quality based effluent limitations for cadmium based on the CTR criteria. The water quality based effluent limitations are more stringent than the technology-based effluent limitations in Order R5-2002-0043, Amended. Replacement of the technology based effluent limitations with more stringent water quality based effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

(c) **WQBELs**. Order R5-2002-0043, Amended, contained effluent limitations of 0.05 mg/L and 0.10 mg/L based on U.S. EPA technology-based effluent limit guidelines. More stringent Water Quality Based Effluent Limitations (WQBELs) were calculated based on new data collected in 2004 and 2011. Dilution credits are not allowed for development of the WQBELs for cadmium due to lack of a completed Dilution/Mixing Zone Study by the Discharger. This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for cadmium of 0.85 µg/L and 1.7 µg/L, respectively, based on the median receiving water hardness of 43 mg/L and the CTR chronic criterion for the protection of freshwater aquatic life.

(d) **Discharge Treatment System Performance and Attainability.** The Discharger has not constructed a discharge treatment system or implemented Best Management Practices for treatment of mine discharge. Without mitigation, the discharge cannot comply with Final Effluent Limitations for cadmium.

iv. **Copper**

(a) **WQO.** 40 CFR part 440, subpart J contains ELGs for active gold mines; these federal guidelines recommend BAT and BPT technology-based effluent limits for copper of 0.15 mg/L as a monthly average and 0.30 mg/L as a daily maximum. Previous Order R5-2002-0043, Amended, contained effluent limitations for copper based on the ELGs (see section IV.B above).

The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for copper. These criteria for copper are presented in dissolved concentrations, as 1-hour acute criteria and 4-day chronic criteria. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default USEPA translators were used for the receiving water and effluent. The CTR water quality based limitations are more stringent than the ELG technology-based limitations.

(b) **RPA Results.** Section IV.C.2 of this Fact Sheet includes procedures for conducting the RPA for hardness-dependent CTR metals, such as copper. The CTR includes hardness-dependent criteria for copper for the receiving water. The maximum observed upstream receiving water concentration was ND with an RL of 1 µg/L based on one sample collected between March 2004 and June 2011. The RPA was conducted using the upstream receiving water hardness of 24 mg/L to calculate the criteria for comparison to the maximum ambient background concentration. The maximum observed effluent concentration was 6.7 µg/L, based on three samples collected between March 2004 and June 2011. The RPA was conducted using the median receiving water hardness of 43 mg/L to calculate the criteria for comparison to the maximum effluent concentration. The table below shows the specific criteria calculated for the RPA.

	CTR Acute Criterion (Total Recoverable)	CTR Chronic Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
Receiving Water	3.6 µg/L[1]	2.8 µg/L[1]	ND at 1 µg/L	No[3]
Effluent	6.3 µg/L[2]	4.5 µg/L[2]	6.7 µg/L	Yes[4]

[1] Based on the lowest observed upstream receiving water hardness of 24 mg/L (as $CaCO_3$)
[2] Based on the median receiving water hardness of 43 mg/L (as $CaCO_3$)
[3] Per Section 1.3, step 4 of the SIP.
[4] Per Section 1.3, step 6 of the SIP.

Based on the available data, copper in the discharge has reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for the protection of freshwater aquatic life. Therefore, this Order contains water quality based effluent limitations for copper based on the CTR criteria. The water quality based effluent limitations are more stringent than the technology-based effluent limitations in Order R5-2002-0043, Amended. Replacement of the technology based effluent limitations with more stringent water quality based effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

(c) **WQBELs.** Order R5-2002-0043, Amended, contained technology-based effluent limitations of 0.15 mg/L and 0.30 mg/L based on USEPA technology-based effluent limit guidelines. More stringent WQBELs were calculated based on new data collected in 2004 and 2011. Due to no assimilative capacity, dilution credits are not allowed for development of the WQBELs for copper. This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for copper of 3.1 µg/L and 6.3 µg/L, respectively, based on the median receiving water hardness of 43 mg/L and the CTR criterion for the protection of freshwater aquatic life.

(d) **Discharge Treatment System Performance and Attainability.** The Discharger has not constructed a discharge treatment system or implemented Best Management Practices for treatment of mine discharge. Without mitigation, the discharge cannot comply with Final Effluent Limitations for copper.

v. **Iron**

(a) **WQO.** The DDW has adopted a Secondary Maximum Contaminant Level (MCL) – Consumer Acceptance Limit for iron of 300 µg/L, which is used to implement the Basin Plan's chemical constituent objective for the protection of the municipal and domestic supply beneficial use.

(b) **RPA Results.** From monitoring data collected by the Discharger in 2004 and by Central Valley Water Board staff in 2011, only two sample events were conducted for iron. The maximum effluent concentration (MEC) for iron was 2090 µg/L while iron was not detected in the upstream receiving water. Therefore, iron in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the secondary MCL.

(c) **WQBELs.** Dilution credits are not allowed for development of the WQBELs for iron due to lack of a completed Dilution/Mixing Zone Study by the

Discharger. The iron secondary MCL is a drinking water standard contained in Title 22 of the California Code of Regulations, which requires compliance on an annual average basis. This Order contains an annual average effluent limitation for iron of 300 µg/L based on the Basin Plan's narrative chemical constituents objective for the protection of the municipal/domestic (MUN) beneficial use.

(d) **Discharge Treatment System Performance and Attainability.** The Discharger has not constructed a discharge treatment system or implemented Best Management Practices for treatment of mine discharge. Without mitigation, the discharge cannot comply with Final Effluent Limitations for iron.

vi. **Lead**

(a) **WQO.** 40 CFR part 440, subpart J contains ELGs for active gold mines; these federal guidelines recommend BAT and BPT technology-based effluent limits for lead of 0.30 mg/L as a monthly average and 0.60 mg/L as a daily maximum. Previous Order R5-2002-0043, Amended, contained effluent limitations for lead based on the ELGs (see section IV.B above).

The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for lead. These criteria for lead are presented in dissolved concentrations, as 1-hour acute criteria and 4-day chronic criteria. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default USEPA translators were used for the receiving water and effluent. The CTR water quality based limitations are more stringent than the ELG technology-based limitations.

(b) **RPA Results.** Section IV.C.2 of this Fact Sheet includes procedures for conducting the RPA for hardness-dependent CTR metals, such as lead. The CTR includes hardness-dependent criteria for lead for the receiving water.

The maximum observed upstream receiving water concentration was ND with an RL of 1.4 µg/L based on one sample collected between March 2004 and June 2011. The RPA was conducted using the upstream receiving water hardness of 24 mg/L to calculate the criteria for comparison to the maximum ambient background concentration. The maximum observed effluent concentration was 2.5 µg/L, based on two samples collected between March 2004 and June 2011. The RPA was conducted using the median receiving water hardness of 43 mg/L to calculate the criteria for comparison to the maximum effluent concentration. The table below shows the specific criteria calculated for the RPA.

	CTR Acute Criterion (Total Recoverable)	CTR Chronic Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
Receiving Water	13 µg/L[1]	0.52 µg/L[1]	ND at 1.4 µg/L	No[3]
Effluent	27 µg/L[2]	1.1 µg/L[2]	2.5 µg/L	Yes[4]

[1] Based on the lowest observed upstream hardness of 24 mg/L (as $CaCO_3$)
[2] Based on the median receiving water hardness of 43 mg/L (as $CaCO_3$)

[3] Per Section 1.3, step 4 of the SIP.
[4] Per Section 1.3, step 6 of the SIP.

Based on the available data, lead in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR chronic criterion for the protection of freshwater aquatic life. Therefore, this Order contains water quality based effluent limitations for lead based on the CTR criteria. The water quality based effluent limitations are more stringent than the technology-based effluent limitations in Order R5-2002-0043, Amended. Replacement of the technology based effluent limitations with more stringent water quality based effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

(c) **WQBELs.** Order R5-2002-0043, Amended, contained effluent limitations of 0.3 mg/L and 0.6 mg/L based on USEPA technology-based effluent limit guidelines. More stringent WQBELs were calculated based on new data collected in 2004 and 2011. Due to no assimilative capacity, dilution credits are not allowed for development of the WQBELs for lead. This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for lead of 0.90 µg/L and 1.8 µg/L, respectively, based on the median receiving water hardness of 43 mg/L and the CTR criterion for the protection of freshwater aquatic life.

(d) **Discharge Treatment System Performance and Attainability.** The Discharger has not constructed a discharge treatment system or implemented Best Management Practices for treatment of mine discharge. Without mitigation, the discharge cannot comply with Final Effluent Limitations for lead.

vii. **Manganese**

(a) **WQO.** The DDW has adopted a Secondary Maximum Contaminant Level (MCL) – Consumer Acceptance Limit for manganese of 50 µg/L, which is used to implement the Basin Plan's chemical constituent objective for the protection of municipal and domestic supply.

(b) **RPA Results.** From monitoring data collected by the Discharger in 2004 and by Central Valley Water Board staff in 2011, only two samples were collected for analysis. The maximum effluent concentration (MEC) for manganese was 134 µg/L while manganese was not detected in the upstream receiving water The laboratory Reporting Level was 10 µg/L. The MEC exceeded the criterion, therefore, manganese in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the secondary MCL.

(c) **WQBELs.** Due to no assimilative capacity, dilution credits are not allowed for development of the Water Quality Based Effluent Limitations (WQBELs) for manganese. The manganese secondary MCL is a drinking water standard contained in Title 22 of the California Code of Regulations, which requires compliance on an annual average basis. This Order contains an annual average effluent limitation for manganese of 50 µg/L based on the Basin Plan's narrative chemical constituents objective for the protection of the municipal/domestic (MUN) beneficial use.

(d) **Discharge Treatment System Performance and Attainability.** The Discharger has not constructed a discharge treatment system or implemented Best Management Practices for treatment of mine discharge. Without mitigation, the discharge cannot comply with Final Effluent Limitations for manganese.

viii. **Nickel**

(a) **WQO.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for nickel. These criteria for nickel are presented in dissolved concentrations, as 1-hour acute criteria and 4-day chronic criteria. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default USEPA translators were used for the receiving water and effluent.

(b) **RPA Results.** Section IV.C.2 of this Fact Sheet includes procedures for conducting the RPA for hardness-dependent CTR metals, such as nickel. The CTR includes hardness-dependent criteria for nickel for the receiving water. The maximum observed upstream receiving water concentration was ND with an RL of 5 µg/L based on one sample collected between March 2004 and June 2011. The RPA was conducted using the upstream receiving water hardness of 24 mg/L to calculate the criteria for comparison to the maximum ambient background concentration. The maximum observed effluent concentration was 128 µg/L, based on two samples collected between March 2004 and June 2011. The RPA was conducted using the median receiving water hardness of 43 mg/L to calculate the criteria for comparison to the maximum effluent concentration. The table below shows the specific criteria calculated for the RPA.

	CTR Acute Criterion (Total Recoverable)	CTR Chronic Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
Receiving Water	140 µg/L[1]	16 µg/L[1]	ND at 5 µg/L	No[3]
Effluent	230 µg/L[2]	26 µg/L[2]	128 µg/L	Yes[4]

[1] Based on the lowest upstream observed hardness of 24 mg/L (as $CaCO_3$)
[2] Based on the median receiving water hardness of 43 mg/L (as $CaCO_3$)
[3] Per Section 1.3, step 4 of the SIP.
[4] Per Section 1.3, step 6 of the SIP.

Based on the available data, nickel in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR chronic criterion for the protection of freshwater aquatic life. Therefore, this Order contains water quality based effluent limitations for nickel based on the CTR criteria.

(c) **WQBELs.** Due to no assimilative capacity, dilution credits are not allowed for development of the WQBELs for nickel. This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for nickel of 21 µg/L and 43 µg/L, respectively, based on the median receiving water hardness of 43 mg/L and the CTR criterion for the protection of freshwater aquatic life.

(d) **Discharge Treatment System Performance and Attainability.** The Discharger has not constructed a discharge treatment system or implemented Best Management Practices for treatment of mine discharge. Without mitigation, the discharge cannot comply with Final Effluent Limitations for nickel.

ix. **pH**

(a) **WQO.** 40 CFR part 440, subpart J contains ELGs for active gold mines; these federal guidelines recommend BAT and BPT technology-based effluent limits for pH within the range of 6.0 to 9.0. 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.*"

(b) **RPA Results.** Order R5-2002-0043, Amended, contained an effluent limitation for pH as follows: "*The discharge to the receiving water shall not have a pH less than 6.5 nor greater than 8.5.*" New pH data was collected by the Discharger in 2004. The effluent pH ranged between 7.9 and 8.4, the upstream receiving water pH ranged between 7.2 and 8.2, and the downstream pH ranged between 7.2 and 8.1. While the effluent pH often exceeds the upstream pH, it is within the range of 6.5 to 8.5.

(c) **WQBELs.** This Order contains minimum and maximum effluent limitations of 6.5 and 8.5, respectively based on the Basin Plan.

(d) **Discharge Treatment System Performance and Attainability.** The Discharger has not constructed a discharge treatment system or implemented Best Management Practices for treatment of mine discharge. However, based on the most recent data, it appears that the discharge can comply with the Final Effluent Limitations for pH without mitigation of the mine discharge.

x. **Salinity**

(a) **WQO.** The Basin Plan contains a chemical constituent objective that incorporates state Maximum Contaminant Levels (MCLs), contains a narrative objective, and contains numeric water quality objectives for certain specified water bodies for electrical conductivity, total dissolved solids, sulfate, and chloride. The U.S. EPA Ambient Water Quality Criteria for Chloride recommends acute and chronic criteria for the protection of aquatic life. There are no U.S. EPA water quality criteria for the protection of aquatic life for electrical conductivity, total dissolved solids, and sulfate. Additionally, there are no U.S. EPA numeric water quality criteria for the protection of agricultural, livestock, and industrial uses. Numeric values for the protection of these uses are typically based on site specific conditions and evaluations to determine the appropriate constituent threshold necessary to interpret the narrative chemical constituent Basin Plan objective. The Central Valley Water Board must determine the applicable numeric limit to implement the narrative objective for the protection of agricultural supply. The Central Valley Water Board is currently implementing the Central Valley Salinity Alternatives for Long-term Sustainability (CV-SALTS) initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan

for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objective is to be interpreted for the protection of agricultural use. All studies conducted through this Order to establish an agricultural limit to implement the narrative objective will be reviewed by and consistent with the efforts currently underway by CV-SALTS.

Table F-8. Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Objective[1]	DDW Secondary MCL[3]	U.S. EPA NAWQC	Effluent	
				Average	Maximum
Electrical Conductivity (µmhos/cm)	Varies[2]	900, 1600, 2200	N/A	1115	1735
Total Dissolved Solids (mg/L)	Varies	500, 1000, 1500	N/A	N/A	659
Sulfate (mg/L)	Varies	250, 500, 600	N/A	N/A	249
Chloride (mg/L)	Varies	250, 500, 600	860 1-hr 230 4-day	N/A	40

[1] Narrative chemical constituent objective of the Basin Plan. Procedures for establishing the applicable numeric limitation to implement the narrative objective can be found in the Policy for Application of Water Quality, Chapter IV, Section 8 of the Basin Plan. However, the Basin Plan does not require improvement over naturally occurring background concentrations. In cases where the natural background concentration of a particular constituent exceeds an applicable water quality objective, the natural background concentration will be considered to comply with the objective.

[2] Maximum calendar annual average.

[3] The secondary MCLs are stated as a recommended level, upper level, and a short-term maximum level.

1) **Chloride.** The Secondary Maximum Contaminant Level (MCL) for chloride is 250 mg/L, as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum.

2) **Electrical Conductivity (EC).** The Secondary MCL for EC is 900 µmhos/cm as a recommended level, 1600 µmhos/cm as an upper level, and 2200 µmhos/cm as a short-term maximum.

3) **Sulfate.** The secondary MCL for sulfate is 250 mg/L as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum.

4) **Total Dissolved Solids (TDS).** The Secondary MCL for TDS is 500 mg/L as a recommended level, 1000 mg/L as an upper level, and 1500 mg/L as a short-term maximum.

(b) **RPA Results.**

1) **Chloride.** From a sample collected in June 2011, chloride was detected in the effluent at 40 mg/L. While this level is elevated, it does not exceed the Secondary MCL, therefore, there is no Reasonable Potential for chloride. Upstream receiving water chloride was reported at 0.6 mg/L and downstream chloride was reported at 1.0 mg/L.

2) **Electrical Conductivity.** Electrical conductivity data from 2004 and 2011 is shown below in Table F-9.

Table F-9. Sixteen to One Mine EC Data (µmhos/cm)

Date	Effluent EC	Upstream EC	Downstream EC
17-Mar-04	1272	30	62
24-Mar-04	1178	35	44
31-Mar-04	1126	42	49
7-Apr-04	1321	48	89
14-Apr-04	1168	33	66
22-Apr-04	486	59	36
29-Apr-04	584	50	46
7-May-04	1389	52	103
13-May-04	1487	64	116
21-May-04	1390	65	102
28-May-04	610	96	84
4-Jun-04	836	160	120
11-Jun-04	1472	95	213
8-Jul-04	687	116	123
16-Jul-04	1649	126	362
30-Jul-04	741	128	139
20-Sep-04	963	135	963
27-Sep-04	1735	158	517
17-Jun-11	1100	--	--

A review of the 2004 and 2011 data shows that 19 effluent samples were analyzed for EC with an average of 1115 µmhos/cm, with a minimum value of 486 µmhos/cm and a maximum value of 1735 µmhos/cm. The maximum effluent concentration and the average effluent concentration exceeded the Secondary MCL recommended level of 900 µmhos/cm. In addition, the maximum effluent concentration exceeded the Secondary MCL upper level of 1600 µmhos/cm. Therefore, EC in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary MCL recommended level of 900 µmhos/cm and the upper level of 1600 µmhos/cm. (Data from the 1990s had a maximum effluent concentration of 2290 µmhos/cm, which also exceeds the short-term maximum level of 2200 µmhos/cm.)

The upstream receiving water EC averaged only 83 µmhos/cm compared to the effluent average of 1115 µmhos/cm. and the downstream receiving water EC average of 180 µmhos/cm. It appears that the downstream receiving water is being degraded by the EC concentrations in the effluent.

3) **Sulfate.** From a sample collected in June 2011, sulfate was detected in the effluent at 249 mg/L. While this level is elevated, it does not exceed the Secondary MCL, therefore, there is no Reasonable Potential for sulfate. Upstream receiving water sulfate was reported at 2.4 mg/L and downstream sulfate was reported at 5.3 mg/L.

4) **Total Dissolved Solids.** A review of the 2004 and 2011 data shows only one sample was analyzed for TDS with a concentration of 888 mg/L. This level exceeds the Secondary MCL. Therefore, TDS in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the secondary MCL. Upstream receiving water TDS was reported as ND and downstream TDS was reported at 300 mg/L.

(c) **WQBELs.**
The Central Valley Water Board, with cooperation of the State Water Board, has begun the process to develop a new policy for the regulation of salinity in the Central Valley. In a statement issued at the 16 March 2006, Central Valley Water Board meeting, Board Member Dr. Karl Longley recommended that the Central Valley Water Board continue to exercise its authority to regulate discharges of salt to minimize salinity increases within the Central Valley. Dr. Longley stated, "*The process of developing new salinity control policies does not, therefore, mean that we should stop regulating salt discharges until a salinity Policy is developed. In the meantime, the Board should consider all possible interim approaches to continue controlling and regulating salts in a reasonable manner, and encourage all stakeholder groups that may be affected by the Regional Board's policy to actively participate in policy development.*"

The maximum effluent concentration for EC was 1735 µmhos/cm. The upstream receiving water EC averaged 83 µmhos/cm and the downstream receiving water EC averaged 180 µmhos/cm. Therefore, EC in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the narrative toxicity objective.

Order R5-2002-0043 contained final effluent limitations for EC of 900 µmhos/cm as a monthly average and 1600 µmhos/cm as a daily maximum. Current interpretation of the secondary MCLs would lead us to establish only an annual average limit of 900 µmhos/cm as contained in other recent NPDES Permits. The limits of 1600 µmhos/cm as a daily maximum and 2200 µmhos/cm as a short-term maximum are redundant and not included in this Order because the limit of 900 µmhos/cm as a monthly average incorporates both the daily maximum and short-term maximum in its calculation. Therefore, until the Central Valley Water Board completes development of a new salinity policy for the Central Valley, this Order includes an annual average effluent limitation of 900 µmhos/cm for EC. An EC limit of 900 µmhos/cm as an annual average is sufficient to regulate salinity discharges including the other salinity components, such as TDS, discussed in this section. Removal of the EC effluent limitation of 1600 µmhos/cm is in accordance with federal antibacksliding regulations (see section IV.D.3 of the Fact Sheet).

(d) **Discharge Treatment System Performance and Attainability.** The Discharger has not constructed a discharge treatment system or implemented Best Management Practices for treatment of mine discharge. Without mitigation, the discharge cannot comply with Final Effluent Limitations for EC.

4. **WQBEL Calculations**

a. This Order includes Water Quality Based Effluent Limitations (WQBELs) for antimony, arsenic, cadmium, copper, EC, iron, lead, manganese, nickel, and pH. The general methodology for calculating WQBELs based on the different criteria/objectives is described in subsections IV.C.4.b through e, below. See Attachment H for the WQBEL calculations.

b. **Effluent Concentration Allowance (ECA).** For each water quality criterion/objective, the ECA is calculated using the following steady-state mass balance equation from Section 1.4 of the SIP:

$$ECA = C + D(C - B) \quad \text{where } C>B, \text{ and}$$
$$ECA = C \quad \text{where } C \leq B$$

where:

ECA = effluent concentration allowance
D = dilution credit
C = the priority pollutant criterion/objective
B = the ambient background concentration.

According to the State Implementation Policy (SIP), the ambient background concentration (B) in the equation above shall be the observed maximum with the exception that an ECA calculated from a priority pollutant criterion/objective that is intended to protect human health from carcinogenic effects shall use the arithmetic mean concentration of the ambient background samples. For ECAs based on MCLs, which implement the Basin Plan's chemical constituents objective and are applied as annual averages, an arithmetic mean is also used for B due to the long-term basis of the criteria.

c. **Basin Plan Objectives and MCLs.** For WQBELs based on site-specific numeric Basin Plan objectives or MCLs, the effluent limitations are applied directly as the ECA as either an maximum daily effluent limitation (MDEL), average monthly effluent limitation (AMEL), or average annual effluent limitations, depending on the averaging period of the objective.

d. **Aquatic Toxicity Criteria.** WQBELs based on acute and chronic aquatic toxicity criteria are calculated in accordance with Section 1.4 of the SIP. The ECAs are converted to equivalent long-term averages (i.e. LTAacute and LTAchronic) using statistical multipliers and the lowest LTA is used to calculate the AMEL and MDEL using additional statistical multipliers.

e. **Human Health Criteria.** WQBELs based on human health criteria, are also calculated in accordance with Section 1.4 of the SIP. The ECAs are set equal to the AMEL and a statistical multiplier was used to calculate the MDEL.

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

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

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

where:
$mult_{AMEL}$ = statistical multiplier converting minimum LTA to AMEL
$mult_{MDEL}$ = statistical multiplier converting minimum LTA to MDEL
M_A = statistical multiplier converting acute ECA to LTA_{acute}
M_C = statistical multiplier converting chronic ECA to $LTA_{chronic}$

Summary of Water Quality-Based Effluent Limitations
Discharge Point No. EFF-001

Table F-10 Summary of Water Quality-Based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Annual	Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Antimony	µg/L	--	6	12	--	--
Arsenic	µg/L	--	10	20	--	--
Cadmium	µg/L	--	0.85	1.7	--	--
Copper	µg/L	--	3.1	6.3	--	--
Electrical Conductivity	µmhos/cm	900	--	--	--	--
Iron	µg/L	300	--	--	--	--
Lead	µg/L	--	0.90	1.8	--	--
Manganese	µg/L	50	--	--	--	--
Nickel	µg/L	--	21	43	--	--
pH	--	--	--	--	6.5	8.5

5. **Whole Effluent Toxicity (WET)**

For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct whole effluent toxicity testing for chronic toxicity, as specified in the Monitoring and Reporting Program (Attachment E section V.). This Order also contains effluent limitations for acute toxicity.

As a result of a Toxicity Reduction Evaluation (TRE), this Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if the State Water Board revises the SIP's toxicity control provisions that would require the establishment of numeric chronic toxicity effluent limitations, this Order may be reopened to include a numeric chronic toxicity effluent limitation based on the new provisions. (See the reopener provision in section VI.C.1 of the Limitations and Discharge Requirements section of this Order.)

a. **Acute Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at page III-8.00) The Basin Plan also states that, "…effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate…"

For priority pollutants, the SIP dictates the procedures for conducting the RPA. Acute whole effluent toxicity is not a priority pollutant. Therefore, due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA. U.S. EPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters).*" Acute toxicity effluent limits are required to ensure compliance with the Basin Plan's narrative toxicity objective.

U.S. EPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc." Accordingly, effluent limitations for acute toxicity have been included in this Order as follows:

Acute Toxicity. 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%

as shown by the results of the Chronic Toxicity Test conducted as described in Attachment E and elsewhere in this Order.

b. **Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at page III-8.00) Adequate chronic WET data is not available to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective.

The Monitoring and Reporting Program of this Order requires semi-annual (for at least the first two years of this Order) chronic WET monitoring for demonstration of compliance with the narrative toxicity objective. In addition to WET monitoring, the

Special Provision in section VI.C.2.a of the Order requires the Discharger to submit to the Central Valley Water Board an Initial Investigative TRE Workplan for approval by the Executive Officer, to ensure the Discharger has a plan to immediately move forward with the initial tiers of a TRE, in the event effluent toxicity is encountered in the future. The provision also includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated.

Numeric chronic WET effluent limitations have not been included in this Order. The SIP contains implementation gaps regarding the appropriate form and implementation of chronic toxicity limits. This has resulted in the petitioning of a NPDES permit in the Los Angeles Region[10] that contained numeric chronic toxicity effluent limitations. To address the petition, the State Water Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Board states the following in WQO 2003-012, "*In reviewing this petition and receiving comments from numerous interested persons on the propriety of including numeric effluent limitations for chronic toxicity in NPDES permits for publicly-owned treatment works that discharge to inland waters, we have determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the SIP to specifically address the issue. We anticipate that review will occur within the next year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitations for chronic toxicity contained in these permits."* The process to revise the SIP is currently underway. Proposed changes include clarifying the appropriate form of effluent toxicity limits in NPDES permits and general expansion and standardization of toxicity control implementation related to the NPDES permitting process. Since the toxicity control provisions in the SIP are under revision it is infeasible to develop numeric effluent limitations for chronic toxicity. Therefore, this Order requires that the Discharger meet best management practices for compliance with the Basin Plan's narrative toxicity objective, as allowed under 40 CFR 122.44(k).

To ensure compliance with the Basin Plan's narrative toxicity objective, the Discharger is required to conduct chronic WET testing, as specified in the Monitoring and Reporting Program (Attachment E section V.). Furthermore, the Special Provision contained at VI.C.2.a. of this Order requires the Discharger to investigate the causes of, and identify and implement corrective actions to reduce or eliminate effluent toxicity. If the discharge demonstrates toxicity exceeding the numeric toxicity monitoring trigger, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE) in accordance with an approved TRE work plan. The numeric toxicity monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to perform accelerated chronic toxicity monitoring, as well as, the threshold to initiate a TRE if effluent toxicity has been demonstrated.

D. Final Effluent Limitation Considerations

1. Mass-based Effluent Limitations

[10] In the Matter of the Review of Own Motion of Waste Discharge Requirements Order Nos. R4-2002-0121 [NPDES No. CA0054011] and R4-2002-0123 [NPDES NO. CA0055119] and Time Schedule Order Nos. R4-2002-0122 and R4-2002-0124 for Los Coyotes and Long Beach Wastewater Reclamation Plants Issued by the California Regional Water Quality Control Board, Los Angeles Region SWRCB/OCC FILES A-1496 AND 1496(a)

40 CFR 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 CFR 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order includes effluent limitations expressed in terms of concentration. In addition, pursuant to the exceptions to mass limitations provided in 40 CFR 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in terms of concentration (e.g., CTR criteria and MCLs) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

2. **Averaging Periods for Effluent Limitations**

40 CFR 122.45 (d) requires maximum daily and average monthly discharge limitations for all dischargers other than publicly owned treatment works unless impracticable. For the EC, iron, and manganese effluent limitations that are based on Secondary MCLs, this Order includes annual average effluent limitations. The Secondary MCLs are drinking water standards contained in Title 22 of the California Code of Regulations. Title 22 requires compliance with these standards on an annual average basis, when sampling at least quarterly. Since it is necessary to determine compliance on an annual average basis, it is impracticable to calculate average weekly and average monthly effluent limitations. The rationale for using alternative averaging periods for EC, iron, and manganese is discussed in section IV.C.3 of this Fact Sheet.

3. **Satisfaction of Anti-Backsliding Requirements**

The Clean Water Act specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in Clean Water Act sections 402(o) or 303(d)(4), or, where applicable, 40 CFR 122.44(l).

The effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order, with the exception of effluent limitations for arsenic as mass limits, for dissolved arsenic, dissolved oxygen, EC, mercury, and settleable solids. The effluent limitations for these pollutants are less stringent than those in Order No. R5-2002-0043, Amended. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

a. **CWA sections 402(o)(1) and 303(d)(4).** CWA section 402(o)(1) prohibits the establishment of less stringent water quality-based effluent limits “except in compliance with Section 303(d)(4).” CWA section 303(d)(4) has two parts: paragraph (A) which applies to nonattainment waters and paragraph (B) which applies to attainment waters.

i. For waters where standards are not attained, CWA section 303(d)(4)(A) specifies that any effluent limitation based on a TMDL or other WLA may be revised only if the cumulative effect of all such revised effluent limits based on such TMDLs or WLAs will assure the attainment of such water quality standards.

1) **Arsenic Mass-Based Limits.** Order R5-2002-0043, Amended, contains mass-based effluent limitations for arsenic. Mass-based limitations must be included for constituents that are bioaccumulative and/or oxygen demanding. Arsenic is not bioaccumulative or oxygen demanding. Additionally, 40 C.F.R. section 122.45(f)(1)(ii) states that mass limitations are not required when applicable standards and limitations are expressed in terms of other units of

measurement. The numerical effluent limitation for arsenic established in this Order is based on water quality standards and objectives, which are expressed in terms of concentration, and is equal to the mass-based limit at the permitted flow. Pursuant to 40 C.F.R. section 122.25(f)(1)(ii), expressing the effluent limitations in terms of concentration is in accordance with Federal Regulations. Discontinuing mass-based effluent limitations for arsenic is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution 68-16. Any impact on existing water quality will be insignificant. Therefore, relaxation of effluent limitations is allowed under CWA section 303(d)(4).

ii. For attainment waters, CWA section 303(d)(4)(B) specifies that a limitation based on a water quality standard may be relaxed where the action is consistent with the antidegradation policy.

The receiving water, Kanaka Creek, is an attainment water for DO, EC, mercury, and settleable solids. As discussed in section IV.D.4, below, removal of the effluent limitations for these pollutants complies with federal and state antidegradation requirements. Therefore, the removal of the effluent limitations for DO, EC, mercury, and settleable solids meets the exception in CWA section 303(d)(4)(B).

b. **CWA section 402(o)(2).** CWA section 402(o)(2) provides several exceptions to the anti-backsliding regulations. CWA 402(o)(2)(B)(i) allows a renewed, reissued, or modified permit to contain a less stringent effluent limitation for a pollutant if information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.

As described further in section IV.C.3.b of this Fact Sheet, updated information that was not available at the time Order R5-2002-0043, Amended was issued indicates that DO, EC, mercury, and settleable solids do not exhibit reasonable potential to cause or contribute to an exceedance of water quality objectives in the receiving water. The updated information that supports the relaxation or removal of effluent limitations for these constituents includes the following:

i. **Dissolved Oxygen (DO).** Order R5-2002-0043, Amended, contained final effluent limitations for DO such that "*The discharge to the receiving water shall not have a dissolved oxygen concentration less than 7.0 mg/L.*" Based on three samples collected in 2004, DO in the effluent remained above 7.0 mg/L. Therefore, DO in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan dissolved oxygen water quality objective and the DO effluent limits are not retained in this Order. This is consistent with the federal antibacksliding regulations, because the new data represents new information that was not available at the time the previous Order was adopted. The removal of DO effluent limits is consistent with the state and federal Antidegradation requirements.

ii. **Electrical Conductivity (EC).** Order R5-2002-0043, Amended, contained final effluent limitations for EC of 900 µmhos/cm as a monthly average and 1600 µmhos/cm as a daily maximum. Current interpretation of the secondary MCLs would lead the Central Valley Water Board to establish only an annual average limit of 900 µmhos/cm as in other recent NPDES Permits. The limit of 1600 µmhos/cm as a daily maximum is redundant and not included in this Order

because the limit of 900 µmhos/cm as a monthly average incorporates the daily maximum in its calculation. Therefore, until the Central Valley Water Board completes development of a new salinity policy for the Central Valley, this Order includes an annual average effluent limitation of 900 µmhos/cm for EC.

iii. **Mercury.** Previous Order R5-2002-0043, Amended, contained concentration- and mass-based effluent limitations for mercury for the effluent discharged to the receiving water. The concentration-based limitation was based on one sample that was reported at the same concentration as the criteria, 0.05 µg/L. From monitoring data collected by the Discharger in 2004 and by Central Valley Water Board staff in 2011, the MEC for mercury was 0.0281 µg/L, which does not exceed the CTR human health criterion. Therefore, based on new information, mercury in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR human health criterion, and the concentration-based effluent limitations for mercury have not been retained in this Order.

Mercury is bioaccumulative, therefore, mass-based limitations are included in NPDES permits where mercury is present. The former milling process at the Facility included the use of mercury. The milling operations have ended and the mill was dismantled. Therefore, based on new information, the mass-based effluent limitation for mercury is not retained in this Order;

This Order contains technology based effluent limitations for mercury based on the ELGs. These limits are less stringent than the water quality based effluent limitations included in the previous Order R5-2002-0043, Amended.

iv. **Settleable Solids.** Previous Order R5-2002-0043, Amended, contained effluent limitations for settleable solids. Because the mine's milling facility was dismantled and milling operations ceased, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan objective. Therefore, the settleable solids effluent limits are not retained in this Order. This is consistent with the federal antibacksliding regulations, because the new information was not available at the time the previous Order was adopted.

4. **Antidegradation Policies**

This Order does not allow for an increase in flow or mass of pollutants to the receiving water. Therefore, a complete antidegradation analysis is not necessary. The Order requires compliance with Water Quality Based Effluent Limitations where the discharge could have the reasonable potential to cause or contribute to an exceedance of water quality standards. The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 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.

Removal and Relaxation of Effluent Limitations. This Order removes effluent limitations for arsenic (mass-based), EC (MDEL of 1600 µmhos/cm), dissolved oxygen, mercury, and settleable solids, based on updated monitoring data demonstrating that the effluent does not cause or contribute to an exceedance of the applicable water quality criteria or objectives in the receiving water. The removal of WQBELs for these parameters will not result in an increase in pollutant concentration or loading, a decrease in the level of treatment or control, or a reduction of water quality. Therefore, the Central

Valley Water Board finds that the removal of effluent limitations does not result in an allowed increase in pollutants or any additional degradation of the receiving water. Thus, the removal of effluent limitations is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution 68-16.

5. **Stringency of Requirements for Individual Pollutants**

This Order contains water quality-based effluent limitations for individual pollutants. Restrictions on antimony, arsenic, cadmium, copper, electrical conductivity, iron, lead, manganese, and nickel are discussed in the Fact Sheet, section IV.C.3.

Water quality-based effluent limitations have been derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant water quality-based effluent limitations were derived from the California Toxics Rule (CTR), the CTR is the applicable standard pursuant to 40 C.F.R. section 131.38. The procedures for calculating the individual water quality-based effluent limitations for priority pollutants are based on the CTR implemented by the SIP, which was approved by U.S. EPA on May 18, 2000. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by U.S. EPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to U.S. EPA prior to May 30, 2000, but not approved by U.S. EPA before that date, are nonetheless “applicable water quality standards for purposes of the CWA” pursuant to 40 C.F.R. section 131.21(c)(1). Collectively, this Order’s restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

Summary of Final Effluent Limitations
Discharge Point No. EFF-001

Table F-11. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Annual	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Technology Based Effluent Limitations							
Mercury	µg/L	1	--	2	--	--	ELG
Zinc	µg/L	750	--	1,500	--	--	ELG
Total Suspended Solids	mg/L	20	--	30	--	--	ELG
Water Quality Based Effluent Limitations							
Antimony	µg/L	6	--	12	--	--	CTR
Arsenic	µg/L	10	--	20	--	--	CTR
Cadmium	µg/L	0.85	--	1.7	--	--	CTR
Copper	µg/L	3.1	--	6.3	--	--	CTR
Electrical Conductivity	µmhos/cm	--	900	--	--	--	SMCL
Iron	µg/L	--	300	--	--	--	SMCL
Lead	µg/L	0.90	--	1.8	--	--	CTR
Manganese	µg/L	--	50	--	--	--	SMCL
Nickel	µg/L	21	--	43	--	--	CTR
pH	--	--	--	--	6.5	8.5	BP

[1] BP = Basin Plan
ELG = Effluent Limitation Guidelines
CTR = California Toxics Rule
SMCL = Secondary Maximum Contaminant Level

E. Interim Effluent Limitations – Not Applicable

F. Land Discharge Specifications – Not Applicable

G. Recycling Specifications – Not Applicable

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

A. Surface Water

1. CWA section 303(a-c), requires states to adopt water quality standards, including criteria where they are necessary to protect beneficial uses. The Central Valley Water Board adopted water quality criteria as water quality objectives in the Basin Plan. The Basin Plan states that "[t]*he numerical and narrative water quality objectives define the least stringent standards that the Regional Water Board will apply to regional waters in order to protect the beneficial uses.*" The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains receiving surface water limitations based on the Basin Plan numerical and narrative water quality objectives for color, chemical constituents, dissolved oxygen, floating material, pH, suspended sediment, settleable substances, suspended material, tastes and odors, temperature, toxicity, and turbidity.

B. Groundwater – Not Applicable

VI. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 C.F.R. section 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 C.F.R. section 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42.

Sections 122.41(a)(1) and (b) through (n) of 40 C.F.R. establish conditions that apply to all state-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) of 40 C.F.R. allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 C.F.R. section 123.25, this Order omits federal conditions that address enforcement authority specified in 40 C.F.R. sections 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. **Reopener Provisions**

   a. **General Reopener Provision.** Conditions that necessitate a major modification of a permit are described in 40 CFR 122.62, include promulgation or approval of new or amended water quality standards pursuant to section 303 of the CWA and when new

information is available, this permit may be reopened and modified in accordance with the new or amended standards or new information.

b. Reclassification of Mine Drainage. If analytical monitoring results consistently indicate that the mine's treatment system, or best management practices, reduces constituent concentrations below water quality objectives, the mine drainage may be reassessed and this permit may be reopened and modified.

c. **New Milling or Mining Activities.** This Order contains waste discharge requirements applicable to current mining and milling activities. This provision allows the Central Valley Water Board to reopen this Order in the event the Discharger initiates either more extensive mining or milling activities at the Facility.

d. **Mercury.** This provision allows the Central Valley Water Board to reopen this Order in the event mercury is found in the mine drainage at concentrations above applicable water quality objectives, based on chronic toxicity test results, or if a TMDL program is adopted. In addition, this Order may be reopened if the Central Valley Water Board determines that a mercury offset program is feasible for dischargers subject to NPDES permits.

e. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable when developing effluent limitations for cadmium. If the Discharger performs studies approved by the Executive Officer of the Central Valley Water Board, to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

f. **Whole Effluent Toxicity.** As a result of a Toxicity Reduction Evaluation (TRE), this Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if the State Water Board revises the SIP's toxicity control provisions that would require the establishment of numeric chronic toxicity effluent limitations, this Order may be reopened to include a numeric chronic toxicity effluent limitation based on the new provisions.

g. **Dilution/Mixing Zones Study.** In order for the Central Valley Water Board to allow dilution credits for the calculation of WQBELs for the protection of aquatic life or human health, the Discharger must submit an approved Dilution/Mixing Zone Study which meets all of the requirements of Section 1.4.2.2 of the SIP. Upon submission of an approved Dilution/Mixing Zone Study that meets all of the requirements of Section 1.4.2.2 of the SIP, including defining the boundaries of the acute, chronic, and human health mixing areas, the Central Valley Water Board may reopen this Order to include effluent limitations based on the appropriate dilution factor for the protection of aquatic life or human health.

h. **Drinking Water Policy.** On 26 July 2013 the Central Valley Water Board adopted Resolution No. R5-2013-0098 amending the Basin Plan and establishing a Drinking Water Policy. The State Water Board approved the Drinking Water Policy on

3 December 2013. This Order may be reopened to incorporate monitoring of drinking water constituents to implement the Drinking Water Policy.

2. **Special Studies and Additional Monitoring Requirements**

a. **Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at page III-8.00.) Adequate WET data is not available to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective.

The Monitoring and Reporting Program of this Order requires chronic WET monitoring for demonstration of compliance with the narrative toxicity objective. In addition to WET monitoring, this provision requires the Discharger to submit to the Central Valley Water Board an Initial Investigative TRE Workplan for approval by the Executive Officer, to ensure the Discharger has a plan to immediately move forward with the initial tiers of a TRE, in the event effluent toxicity is encountered in the future. The provision also includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated.

Monitoring Trigger. A numeric toxicity monitoring trigger of **> 1** TUc (where TUc = 100/NOEC) is applied in the provision, because this Order does not allow any dilution for the chronic condition. Therefore, a TRE is triggered when the effluent exhibits toxicity at 100% effluent.

Accelerated Monitoring. The provision requires accelerated WET testing when a regular WET test result exceeds the monitoring trigger. The purpose of accelerated monitoring is to determine, in an expedient manner, whether there is toxicity before requiring the implementation of a TRE. Due to possible seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete.

The provision requires accelerated monitoring consisting of four chronic toxicity tests in a six-week period (i.e., one test every two weeks) using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water Quality-based Toxics Control,* EPA/505/2-90-001, March 1991 (TSD). The TSD at page 118 states, "*EPA recommends if toxicity is repeatedly or periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required.*" Therefore, four accelerated monitoring tests are required in this provision. If no toxicity is demonstrated in the four accelerated tests, then it demonstrates that toxicity is not present at levels above the monitoring trigger more than 20 percent of the time (only 1 of 5 tests are toxic, including the initial test). However, notwithstanding the accelerated monitoring results, if there is adequate evidence of effluent toxicity (i.e. toxicity present exceeding the monitoring trigger more than 20 percent of the time), the Executive Officer may require that the Discharger initiate a TRE.

See the WET Accelerated Monitoring Flow Chart (Figure F-1), below, for further clarification of the accelerated monitoring requirements and for the decision points for determining the need for TRE initiation.

TRE Guidance. The Discharger is required to prepare a TRE Workplan in accordance with USEPA guidance. Numerous guidance documents are available, as identified below:

1. Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants, EPA/833-B-99/002, August 1999.
2. Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs), EPA/600/2-88/070, April 1989.
3. Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures, Second Edition, EPA 600/6-91/003, February 1991.
4. Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I, EPA/600/6-91/005F, May 1992.
5. Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA/600/R-92/080, September 1993.
6. Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA 600/R-92/081, September 1993.
7. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, EPA-821-R-02-012, October 2002.
8. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA-821-R-02-013, October 2002.
9. Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991.

b. **Dilution/Mixing Zone Study.** If the Discharger would like to seek dilution credits towards calculation of water quality based effluent limitations, the Discharger must complete a Dilution/Mixing Zone Study in Kanaka Creek, in accordance with Section 1.4.2 of the SIP, Chapter 4 of the US EPA's *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001), and section IV.C.2.c of the Fact Sheet, Attachment F, of this Order.

c. **Mining Waste Pile Characterization.** The California Code of Regulations, Title 27, section 22480, describes mining wastes based on an assessment of the risk to water quality, giving the Central Valley Water Board the authority to assign the waste to one of three Groups, pursuant to Chapter 11, Division 4.5 of Title 22.

The California Water Code section 13260(k) has additional requirements for mining waste, including requirements for submittal of two technical reports to the appropriate Regional Board; 1) a report on the physical and chemical characteristics of the waste that could affect its potential to cause pollution or contamination and 2) a report that evaluates the potential of the discharge of the mining waste to produce, over the long term, acid mine drainage, the discharge or leaching of heavy metals, or the release of other hazardous substances. In this Order, the Central Valley Water Board requires submittal of a technical report on the characterization of existing mining waste piles.

3. **Best Management Practices and Pollution Prevention**

a. Pollutant Minimization Program

The Discharger shall develop and conduct a Pollutant Minimization Program (PMP) as further described below when there is evidence (e.g., sample results reported as DNQ when the effluent limitation is less than the MDL, sample results from analytical methods more sensitive than those methods required by this Order, presence of whole effluent toxicity, health advisories for fish consumption, results of benthic or aquatic organism tissue sampling) that a priority pollutant is present in the effluent above an effluent limitation and either:

i. A sample result is reported as DNQ and the effluent limitation is less than the RL; or

ii. A sample result is reported as ND and the effluent limitation is less than the MDL, using definitions described in Attachment A and reporting protocols described in MRP section X.B.4.

The PMP shall include, but not be limited to, the following actions and submittals acceptable to the Central Valley Water Board:

i. Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutants (arsenic, antimony, and cadmium) in the effluent at or below the effluent limitations;

ii. Implementation of appropriate cost-effective control measures for the reportable priority pollutants (arsenic, antimony, and cadmium), consistent with the control strategy; and

iii. An annual status report that shall be sent to the Central Valley Water Board including:

(a) A summary of all actions undertaken pursuant to the control strategy; and

(b) A description of actions to be taken in the following year.

4. **Construction, Operation, and Maintenance Specifications – Not Applicable**

5. **Special Provisions for Municipal Facilities (POTWs Only) – Not Applicable**

6. **Other Special Provisions**

a. **Ownership Change.** To maintain the accountability of the operation of the Facility, the Discharger is required to notify the succeeding owner or operator of the existence of this Order by letter if, and when, there is any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger.

7. **Compliance Schedules – Not Applicable**

VII. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Section 122.48 of 40 C.F.R. requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the **Central Valley Water Board** to require technical and monitoring reports. The Monitoring and Reporting Program (MRP), Attachment E, establishes monitoring and reporting requirements that implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the MRP for this facility.

A. Influent Monitoring – Not Applicable

B. Effluent Monitoring

1. Pursuant to the requirements of 40 CFR 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream and groundwater.

2. Technology Based Effluent Limitations have been retained from Order R5-2002-0043, Amended, for mercury, zinc, and TSS. Water Quality Based Effluent Limitations have been retained from Order R5-2002-0043, Amended for Acute Toxicity, arsenic, EC, and pH. This Order contains new Water Quality Based Effluent Limitations and monitoring requirements for antimony, cadmium, copper, iron, lead, manganese, and nickel.

   Monitoring frequency requirements for the retained Technology Based and Water Quality Based Effluent Limitations have been reduced. The State Water Board's WQO 2003-0006 and Order R5-2002-0043, Amended, included daily, weekly, twice monthly, monthly, and quarterly effluent monitoring frequencies that have all been reduced to quarterly monitoring in this Order. While the effluent monitoring data has been collected intermittently since 1991, the data has been consistent. It is no longer necessary to collect data more frequently than once per quarter. Monitoring once per quarter is sufficient to maintain up-to-date information on the mine discharge and receiving water quality

3. Monitoring data collected over the previous permit term for dissolved oxygen, mercury, and settleable solids did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, compliance monitoring requirements for these parameters are not contained in this Order, except as required under the monitoring for Priority Pollutants.

4. 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 Water Board] shall establish interim requirements…that require additional monitoring for the pollutant*…." All reported detection limits for antimony and nickel 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.

5. California Water Code section 13176, subdivision (a), states: "The analysis of any material required by [Water Code sections 13000-16104] shall be performed by a laboratory that has accreditation or certification pursuant to Article 3 (commencing with Section 100825) of Chapter 4 of Part 1 of Division 101 of the Health and Safety Code." The DDW certifies laboratories through its Environmental Laboratory Accreditation Program (ELAP).

   Section 13176 cannot be interpreted in a manner that would violate federal holding time requirements that apply to NPDES permits pursuant to the Clean Water Act. (Wat. Code §§ 13370, subd. (c), 13372, 13377.) Section 13176 is inapplicable to NPDES permits to the extent it is inconsistent with Clean Water Act requirements. (Wat. Code § 13372, subd. (a).) The holding time requirements are 15 minutes for dissolved oxygen and pH, and immediate analysis is required for temperature. (40 C.F.R. § 136.3(e), Table II) **Due to the location of Sixteen to One Mine, it is both legally and factually impossible for the Discharger to comply with section 13176 for constituents with short holding times.**

C. Whole Effluent Toxicity Testing Requirements

1. **Chronic Toxicity.** Chronic whole effluent toxicity testing is required once during the term of this Order in order to demonstrate compliance with the Basin Plan's narrative toxicity objective and the Acute Toxicity Effluent Limitations.

D. Receiving Water Monitoring

1. **Surface Water**

a. Receiving water monitoring is necessary to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream. The State Water Board's WQO 2003-0006 and Order R5-2002-0043, Amended, included weekly, twice monthly, and monthly receiving water monitoring frequencies that have all been reduced to quarterly monitoring in this Order. While the receiving water monitoring data has been collected intermittently since 1991, the data has been consistent. It is no longer necessary to collect data more frequently than once per quarter. Monitoring once per quarter is sufficient to maintain up-to-date information on the mine discharge and to characterize receiving water quality.

2. **Groundwater – Not Applicable**

E. Other Monitoring Requirements – Not Applicable

VIII. PUBLIC PARTICIPATION

The Central Valley Water Board has considered the issuance of WDR's that will serve as an NPDES permit for Sixteen to One Mine. As a step in the WDR adoption process, the Central Valley Water Board staff has developed tentative WDR's and has encouraged public participation in the WDR adoption process.

A. Notification of Interested Parties

The Central Valley Water Board notified the Discharger and interested agencies and persons of its intent to prescribe WDR's for the discharge and provided an opportunity to submit written comments and recommendations. Notification was provided through the following: Posting of one copy of the Notice of Public Hearing at the nearest city hall or county courthouse, posting of one copy at the post office nearest to the Facility, and posting of one copy at the public entrance to the Facility. The Discharger was also requested to post the Notice on the web site for Sixteen to One Mine if possible.

The public had access to the agenda and any changes in dates and locations through the Central Valley Water Board's website at:
http://www.waterboards.ca.gov/centralvalley/board_decisions/tentative_orders

B. Written Comments

Interested persons were invited to submit written comments concerning tentative WDR's as provided through the notification process. Comments were due either in person or by mail to the Executive Office at the Central Valley Water Board at 11020 Sun Center Drive #200, Rancho Cordova, CA 95670.

To be fully responded to by staff and considered by the Central Valley Water Board, the written comments were due at the Central Valley Water Board office by 5:00 p.m. on **3 November 2014**.

C. Public Hearing

The **Central Valley Water Board** held a public hearing on the tentative WDR's during its regular Board meeting on the following date and time and at the following location:

Date:	5/6 February 2015
Time:	8:30 a.m.
Location:	Regional Water Quality Control Board, Central Valley Region 11020 Sun Center Dr., Suite #200 Rancho Cordova, CA 95670

Interested persons were invited to attend. At the public hearing, the Central Valley Water Board heard testimony pertinent to the discharge, WDR's, and permit. For accuracy of the record, important testimony was requested in writing.

D. Reconsideration of Waste Discharge Requirements

Any aggrieved person may petition the State Water Board to review the decision of the Central Valley Water Board regarding the final WDR's. The petition must be received by the State Water Board at the following address within 30 calendar days of the Central Valley Water Board's action:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

For instructions on how to file a petition for review, see
http://www.waterboards.ca.gov/public_notices/petitions/water_quality/wqpetition_instr.shtml

E. Information and Copying

The Report of Waste Discharge, other supporting documents, and comments received are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Central Valley Water Board by calling (916) 464-3291.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDR's and NPDES permit should contact the Central Valley Water Board, reference this facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Elizabeth Thayer at (916) 464-4671 or beth.thayer@waterboards.ca.gov.

ATTACHMENT G – SUMMARY OF REASONABLE POTENTIAL ANALYSIS FOR CONSTITUENTS OF CONCERN

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Antimony	µg/L	30.8	10	14	--	--	14	4300	--	6	Yes
Arsenic	µg/L	897	8.7	10	340	150	--	--	--	10	Yes
Cadmium	µg/L	26.2	ND	1.2	1.7	1.2	--	--	--	5	Yes
Chromium III	µg/L	ND	ND	102	850	102	--	--	--	--	No
Copper	µg/L	6.7	ND	4.4	6.2	4.4	1300	--	--	1300	Yes
EC	µmhos/cm	1735	83	900	--	--	--	--	--	900	Yes
Iron	µg/L	2090	NA	300	--	--	--	--	--	300	Yes
Lead	µg/L	2.5	1.4	1.1	27	1.1	--	--	--	15	Yes
Manganese	µg/L	134	10	50	--	--	--	--	--	50	Yes
Mercury	µg/L	0.0281	0.0190	0.05	--	--	0.050	0.051	--	--	No
Nickel	µg/L	128	20	25	230	25	4600	610	--	100	Yes
Silver	µg/L	ND	ND	1.0	1.0	--	--	--	--	--	No
TDS	mg/L	888	NA	500	--	--	--	--	--	500	Yes
Zinc	µg/L	ND	ND	57	57	57	--	--	--	5000	No

General Note: All inorganic concentrations are given as a total recoverable.
MEC = Maximum Effluent Concentration
B = Maximum Receiving Water Concentration or lowest detection level, if non-detect
C = Criterion used for Reasonable Potential Analysis
CMC = Criterion Maximum Concentration (CTR or NTR)
CCC = Criterion Continuous Concentration (CTR or NTR)
Water & Org = Human Health Criterion for Consumption of Water & Organisms (CTR or NTR)
Org. Only = Human Health Criterion for Consumption of Organisms Only (CTR or NTR)
Basin Plan = Numeric Site-specific Basin Plan Water Quality Objective
MCL = Drinking Water Standards Maximum Contaminant Level
NA = Not Available
ND = Non-detect

Footnotes:
(1)
(2)

ATTACHMENT H – CALCULATION OF WQBELS

Parameter	Units	Most Stringent Criteria			Dilution Factors			HH Calculations			Aquatic Life Calculations									Final Effluent Limitations	
		HH	CMC	CCC	HH	CMC	CCC	ECA_{HH} = $AMEL_{HH}$	AMEL/MDEL $Multiplier_{HH}$	$MDEL_{HH}$	ECA $Multiplier_{acute}$	LTA_{acute}	ECA $Multiplier_{chronic}$	$LTA_{chronic}$	Lowest LTA	AMEL $Multiplier_{95}$	$AMEL_{AL}$	MDEL $Multiplier_{99}$	$MDEL_{AL}$	Lowest AMEL	Lowest MDEL
Antimony	µg/L	6	--	--	--	--	--	6	2.01	12	--	--	--	--	--	--	--	--	--	6	12
Arsenic	µg/L	10	340	150	--	--	--	10	2.01	20	0.32	109.2	0.53	79.12	79.12	1.55	123	3.11	246	10	20
Cadmium	µg/L	5	1.7	1.2	--	--	--	--	--	--	0.32	0.55	0.53	0.63	0.55	1.55	0.85	3.11	1.7	0.85	1.7
Copper	µg/L	1300	6.2	4.4	--	--	--	--	--	--	0.32	2.0	0.53	2.32	2.0	1.55	3.1	3.11	6.2	3.1	6.2
Iron	µg/L	300	--	--	--	--	--	300	2.01	602	--	--	--	--	--	--	--	--	--	300	602
Lead	µg/L	15	27	1.1	--	--	--	--	--	--	0.32	8.7	0.53	0.58	0.58	1.55	0.90	3.11	1.8	0.90	1.8
Manganese	µg/L	50	--	--	--	--	--	50	2.01	100	--	--	--	--	--	--	--	--	--	50	100
Nickel	µg/L	100	230	25	--	--	--	--	--	--	0.32	73.8	0.53	13.19	13.19	1.55	20	3.11	41	20	41
EC	µmhos/cm	900	--	--	--	--	--	900	2.01	1806	--	--	--	--	--	--	--	--	--	900	1806

ORIGINAL SIXTEEN TO ONE MINE, INC.
SIXTEEN TO ONE MINE